



Mediterranean Network FORUM/22

Barcelona
29 Nov. – 1 Dec.
2022



**Mediterranean
Network**

FORUM/22

Theme 4:

Social and business innovations and
policy instruments supporting the
Mediterranean forest-based
bioeconomy

Laura Secco

23 November, Barcelona

A specific study



Review

Innovations for the Mediterranean forest-based bioeconomy: breakthroughs, knowledge gaps and recommendations

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Abstract:

Innovation is often considered as an all-purpose answer to overcome emerging challenges and tackle wicked problems, including the development of an effective forest-based bioeconomy. The topic is regaining attention in Europe and worldwide. So far, publications around forest-based bi-

Ready for submission

Objectives

- i. to identify **breakthroughs and knowledge gaps in research on innovation** towards a forest-based bioeconomy transition in Mediterranean countries,
- ii. to understand the **gaps in relation to relevant R&I agendas (until 2020)**
- i. to formulate **recommendations** and future avenues for practitioners, policymakers and researchers to unlock the **potential of integrating various types of innovation** (organisational/business, institutional and social innovations)



Focus/methods

- Literature review
- Scopus database
- 1980-2020
- Search string: *“Forest* AND innovat* AND bioeconomy (OR bio-economy OR bio-based) AND Mediterranean OR MENA” (+ run for each single country).*
- In Title, Abstract and Key Words of papers, in English
- Content analysis

21 Mediterranean signatory countries of the Barcelona Convention:

- Albania
- Algeria
- Bosnia and Herzegovina
- Croatia
- Cyprus
- Egypt
- France
- Greece
- Israel
- Italy
- Lebanon
- Libya
- Malta
- Monaco
- Montenegro
- Morocco
- Slovenia
- Spain
- Syrian Arab Republic
- Tunisia
- Turkey



+ 6 other countries and territories that are part of the Mediterranean bioclimatic basin:

- Bulgaria
- Jordan
- Palestine
- Portugal
- Serbia
- the former Yugoslav Republic of Macedonia

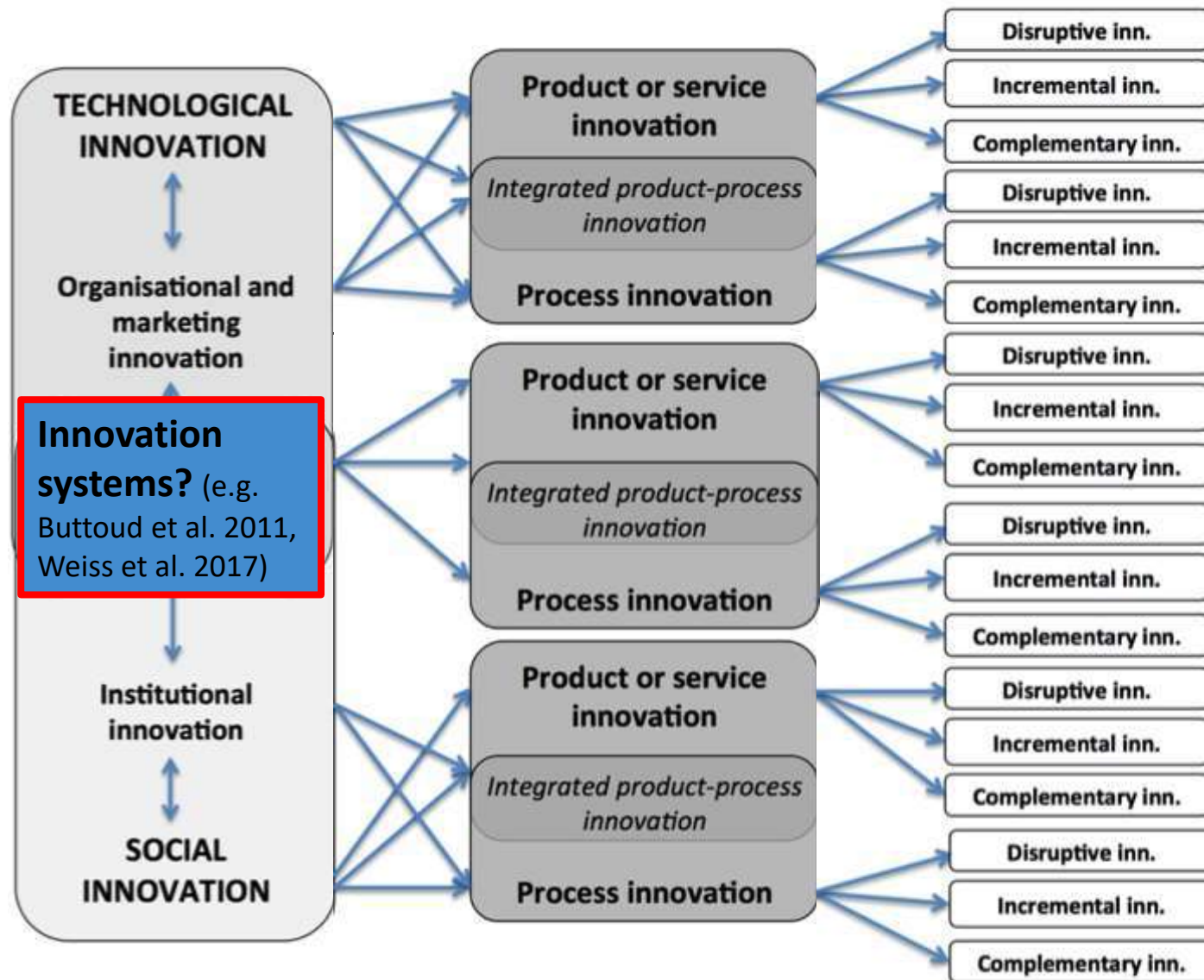
Source: *State of Mediterranean Forests (FAO and Plan Bleu, 2018: 2)*



Focus/methods (also an output?)

A framework to guide
the
understanding/classific
ation of innovations
was needed!

Types, scopes and levels of
innovation and their
possible interconnections
(**but still... a linear model!**)



Source: own elaboration

Focus/methods (also an output?)

- **MFRA2010-2020**
- **DGAgri R&I agenda 2018-2020**

Suggested correspondences between the MFRA 2010-2020 and the DGAgri 2018-2020 agendas for research and innovation (source: own elaboration)

ANNEX 1

Table a)

Table b) P

SRA Strategic Objective		Priority area	
1	Development of innovative products for changing markets and customer needs	1	Resource management
3	Enhancing the availability and use of forest for products and energy	2	Healthier plants and animals
4	Meeting the multifunctional demands on forest resources and their sustainable management	3	Integrated ecological approaches from farm to landscape level
		4	New openings for rural development
		5	Enhancing human social conditions and rural development

MFRA 2010-2020		DGAGRI R&I agenda 2018-2020
SRA Strategic Objectives		Priorities (P) and Cross-cutting issues (CCI)
1. Development of innovative products for changing markets and customer needs		P1. Resource management
3. Enhancing the availability and use of forest biomass for products and energy		P2. Healthier plants and animals
4. Meeting the multifunctional demands on forest resources and their sustainable management		P3. Integrated ecological approaches from farm to landscape level
		P4. New openings for rural growth
		P2. Healthier plants and animals
		CCI1. Systems approach
4-2: Advancing knowledge on forest ecosystems		P3. Integrated ecological approaches from farm to landscape level
4-3: Adapting forestry to climate change		P3. Integrated ecological approaches from farm to landscape level
		P2. Healthier plants and animals
5. The sector in a societal perspective		CC1. Systems approach
		CC2. Social engagement
		CC2. Social engagement
		P5. Socio-economic research

Source: own elaboration





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RESULTS

Mediterranean Forest Research Agenda **2030**



WEBINAR #4

Social and business innovations
and policy instruments to
implement the Mediterranean
forest-based bioeconomy

Laura Secco,
University of Padova
23 Nov. **2022**

Results of the literature review

- 86 papers (ca. 35% in 2020)
- **Unbalanced distribution:** a few dominant countries (**Italy, France, Spain**) by far, followed by **Portugal, Slovenia, Turkey, Greece, Croatia** (Morocco, Serbia, Macedonia, Israel). No papers on e.g. Algeria, Tunisia

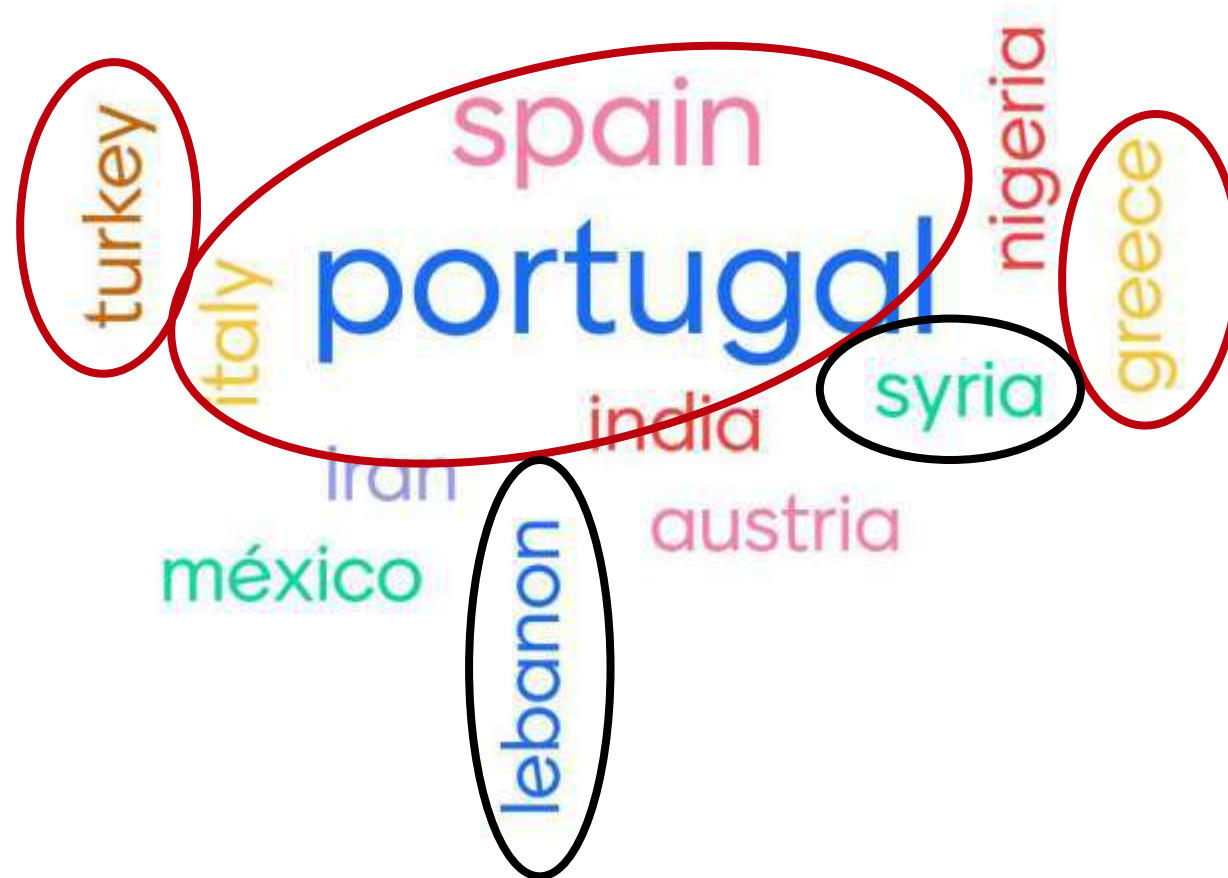


Source: State of Mediterranean Forests (FAO and Plan Bleu, 2018: 2)

Results of the Webinar MFRA 2030, Wednesday 23.11.2022



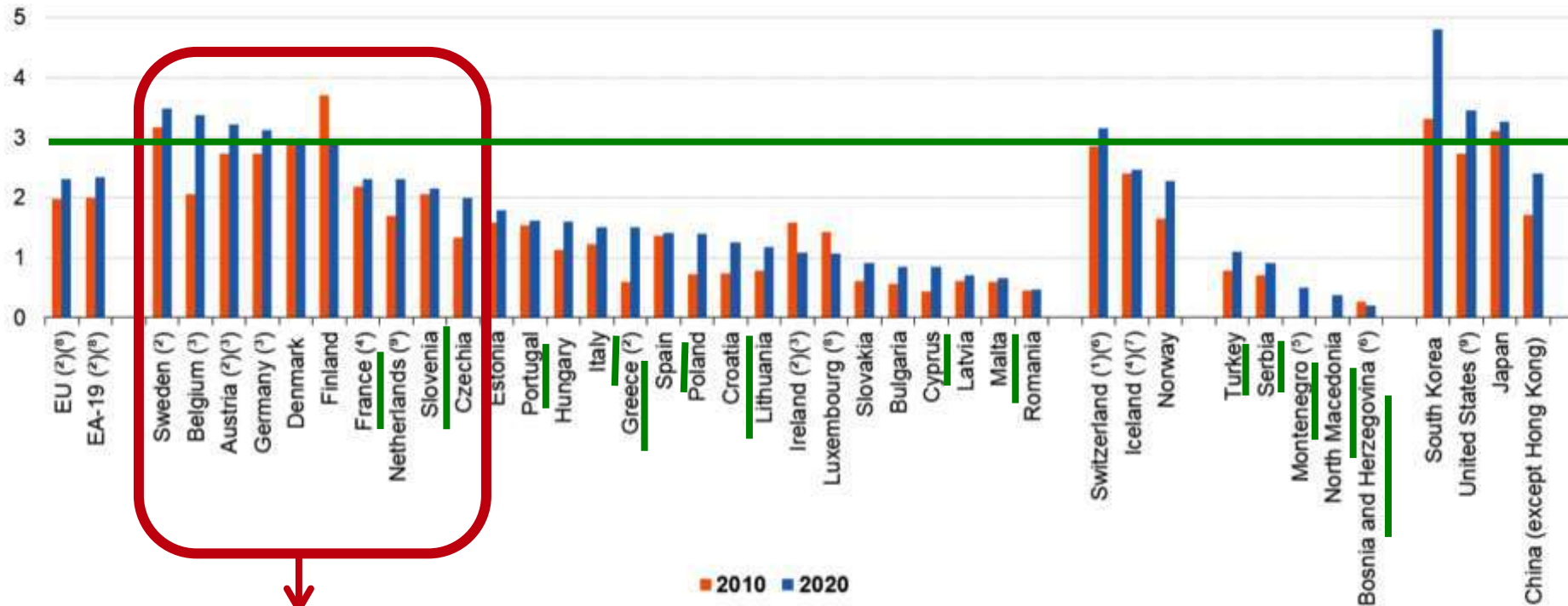
Q#1 - Where are you from ?



The main challenges to implement the research proposed are: about

i) in general, limited investments in R&D in Mediterranean countries

Gross domestic expenditure on R&D, 2010 and 2020
(%, relative to GDP)



In the top 10 countries 2018,
only France and Slovenia!!!

Eurostat (2022). R&D expenditure. Online publications. Available at URL: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Gross_domestic_expenditure_on_R_and_D,_2010_and_2020_\(%25,_relative_to_GDP\)_04-10-2022.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Gross_domestic_expenditure_on_R_and_D,_2010_and_2020_(%25,_relative_to_GDP)_04-10-2022.png)

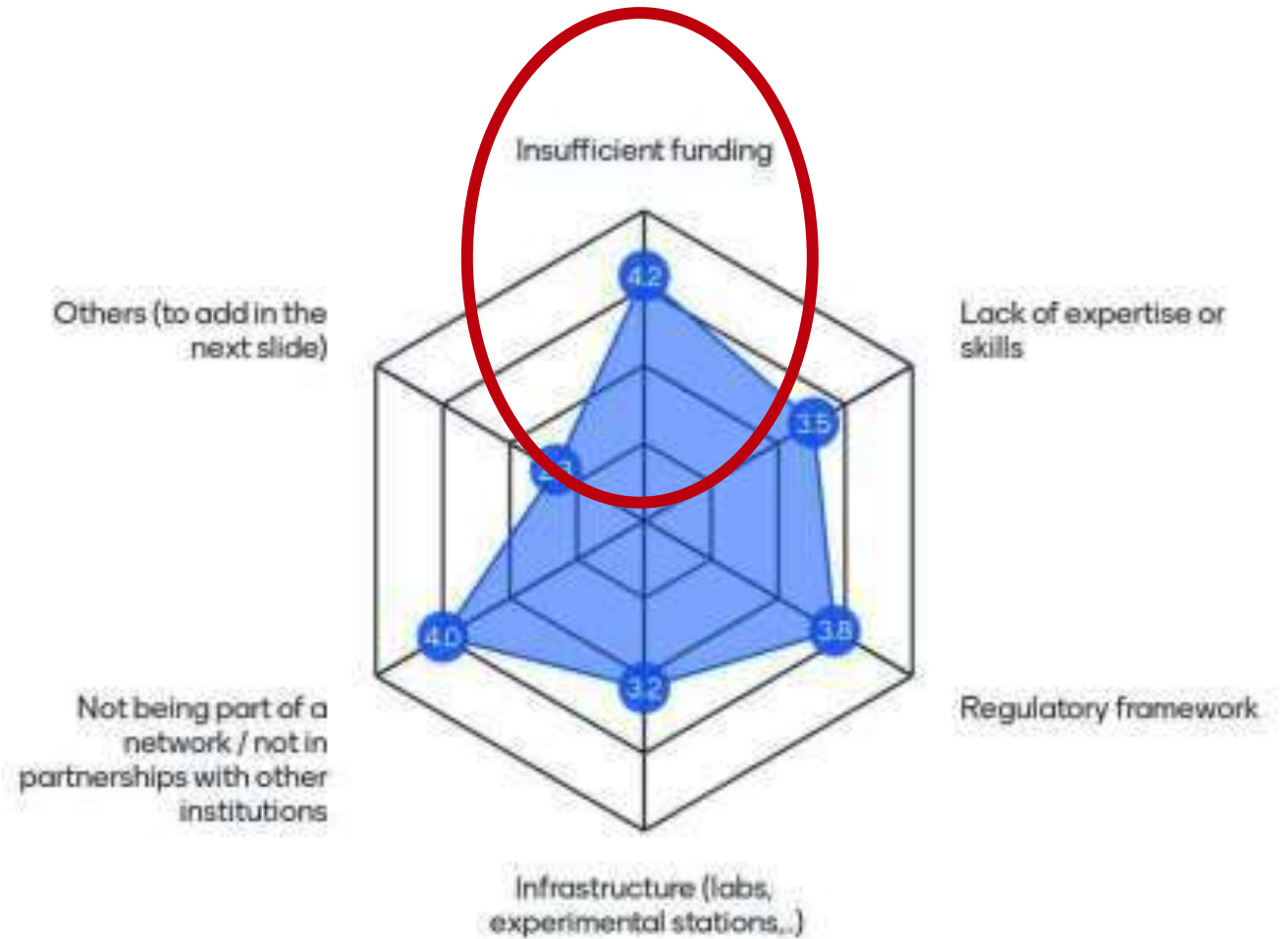
The main challenges to implement the research proposed are: about funds

Results of the literature review

- Most of the papers derived from **public-funded research**, in particular EU programs (H2020, Era-net)



Leadership by the top-three countries is expected to persist in the near future (Lovrić et al. 2020), as the **level of competition for international and EU funding calls will increase** and the most structured countries and research groups will probably continue to prevail



Results of the EFIMED Webinar 23.11.2022

The main challenges to implement the research proposed are: about funds

The **Strategic Research and Innovation Agenda 2020 (SRA)**, released in 2006 and revised in 2013, resulted in the launch of **more than 230 research projects** relevant for the European forest-based sector and an amount of over **€ 1 billion of EU funding (Forest-based sector Technology Platform, 2017)**.

However...

19 Research and Innovation Areas identified as key to unlocking the potential of the forest-based sector and ensuring its future competitiveness (Secco et al. 2018):

- **12 mainly technologically-oriented** (e.g. Enhanced biomass production, Secured wood supply, forest operations and logistics, Cascade use, reuse and recycling systems, Resource efficiency in manufacturing, Biorefinery concepts, New biobased products, Intelligent packaging solutions, etc.)
- **3 mainly socially-oriented** (e.g. Citizen's perception of the sector, Policies and good governance, New business models and service concepts)
- **4 mixed** (e.g., Multi-purpose management of forests, Forest ecology and ecosystem services)

ii) specifically, investments concentrated on technological-oriented innovations



Source: Secco, 2019 – in SIMRA

Implications of unbalanced distribution of funds (gaps vs R&I agenda)

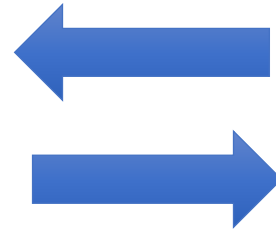
MFRA 2010-2020		DGAGRI R&I agenda 2018-2020
SRA Strategic Objectives	Forestry-based value chains	Priorities (P) and Cross-cutting issues (CCI)
1. Development of innovative products for changing markets and customer needs	1-6: Commercialising soft forest values	P1. Resource management
3. Enhancing the availability and use of forest biomass for products and energy	3-1: Trees for the future	P2. Healthier plants and animals
4. Meeting the multifunctional demands on forest resources and their sustainable management	4-1: Forests for multiple needs	P3. Integrated ecological approaches from farm to landscape level
		P4. New openings for rural growth
	4-2: Advancing knowledge on forest ecosystems	P2. Healthier plants and animals
		CCI1. Systems approach
		P3. Integrated ecological approaches from farm to landscape level
	4-3: Adapting forestry to climate change	P3. Integrated ecological approaches from farm to landscape level
		P2. Healthier plants and animals
5. The sector in a societal perspective	5-2: Instruments for good forest-sector governance	CC1. Systems approach
		CC2. Social engagement
	5-3: Citizens' perceptions	CC2. Social engagement
		P5. Socio-economic research

There is a need for the integration of various types of innovation

Technological innovation

*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)



Social innovation



*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)

- Typically, knowledge of techno-innov is private
- Key capitals: financial, infrastructural, **human**
- Vertical connections

- Knowledge of SI is collective
- Key capitals: social, institutional, **human**
- Horizontal networks



The main challenges to implement the research proposed: about networks

- High fragmentation



It confirms that **organizational innovations are needed to reinforce collaboration among research structures and groups/countries** (Bajocco et al. 2013; Di Matteo et al. 2015)

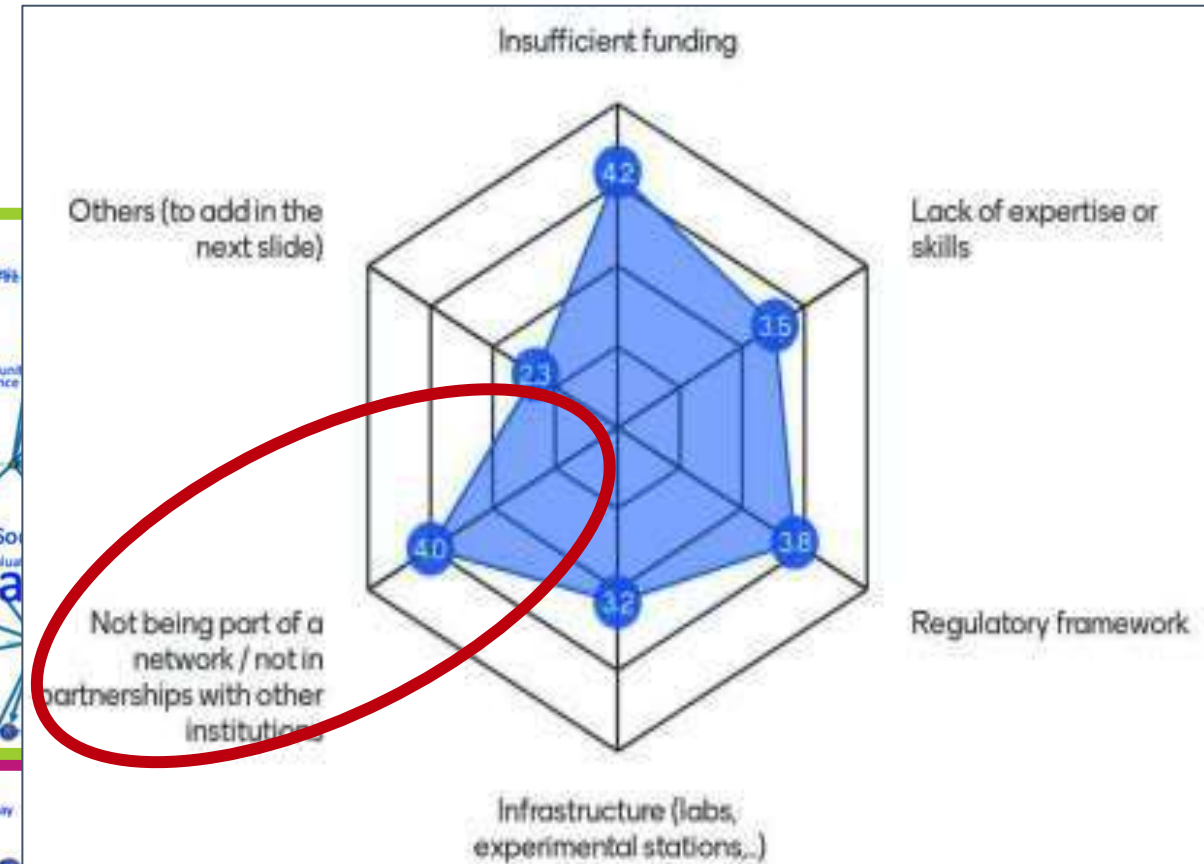
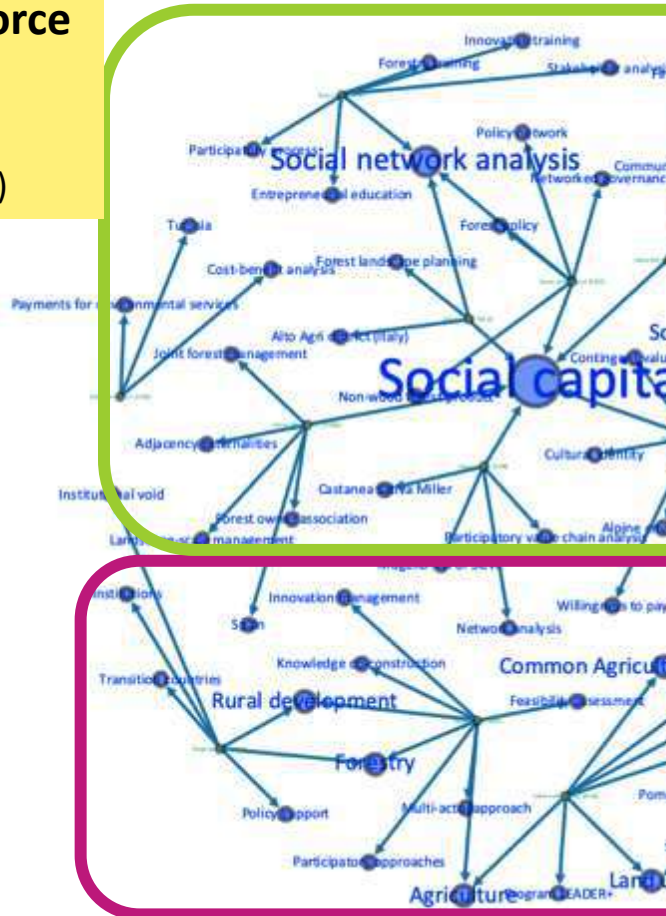
An example of the **network of concepts** explored in relation to forest innovation and social capital

Papers: 13

Small green nodes: Authors

Blue nodes: keywords identified by the Authors

Edges: connections between papers based on the keywords



Results of the EFIMED Webinar 23.11.2022

Source: own elaboration, us

Theme #4: key research questions



1

What are the barriers for innovation adoption and social, technical or institutional/business entrepreneurship in Mediterranean forests and how to overcome them?

2

What types of innovation and what innovation systems would help support more resilient forests and forest-related communities in the Mediterranean region?

3

What opportunities do Mediterranean forests offer for innovative substitutions of Greenhouse gas emissions-rich materials and processes? Which innovative mechanisms would allow for internalising currently non-marketised ecosystem services?

4

What does it take for more PES initiatives to emerge, thrive, and deliver high-level impacts?

5

How can scientists, policymakers and other stakeholders better translate real-time needs and challenges into effective innovation processes?

6

What communication and knowledge transfer approaches between scientists, policymakers, and practitioners might serve/improve the development pathways of innovation in Mediterranean forestry?

7

How can the playing field be levelled so that social, institutional and organisational innovations, backed up by social science research, receive the same levels of support as natural/physical sciences and technology?

Q#2: Are the research questions relevant to your country?

4.8 - 4.5

4.6 - 4.5



Results of the EFIMED
Webinar 23.11.2022

Theme #4: suggested research approaches



1

Adopt transformative transdisciplinary research approaches and tools that reciprocally engage scientists and other stakeholders.

2

Design, test and apply systems thinking/system dynamics frameworks to analyse complex socio-ecological-institutional systems for the development of a Mediterranean forest bioeconomy and required innovations.

3

Combine quantitative and qualitative approaches and tools, and triangulate data to monitor and evaluate innovation and policy effectiveness, and design and use appropriate visualisations (see “research weaving” - Nakagawa et al., 2019) to communicate results.

4

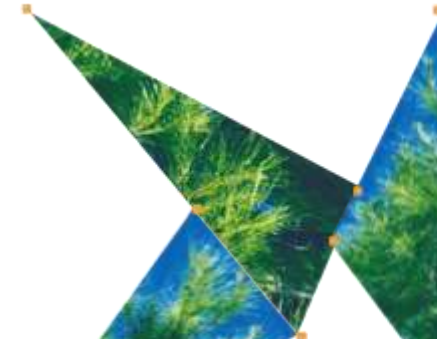
Exploit forest-science knowledge through co-creation processes to bolster social innovation processes, for example by adopting creative methods and appreciative inquiry techniques, emphasizing solutions, and stimulating citizen proactivity by empowering actors.

5

Focus on needs-driven research rather than interest-driven topics when developing the research agenda.

6

Knowledge sharing and capacity building through training, coaching and skills transfer among Mediterranean institutions.

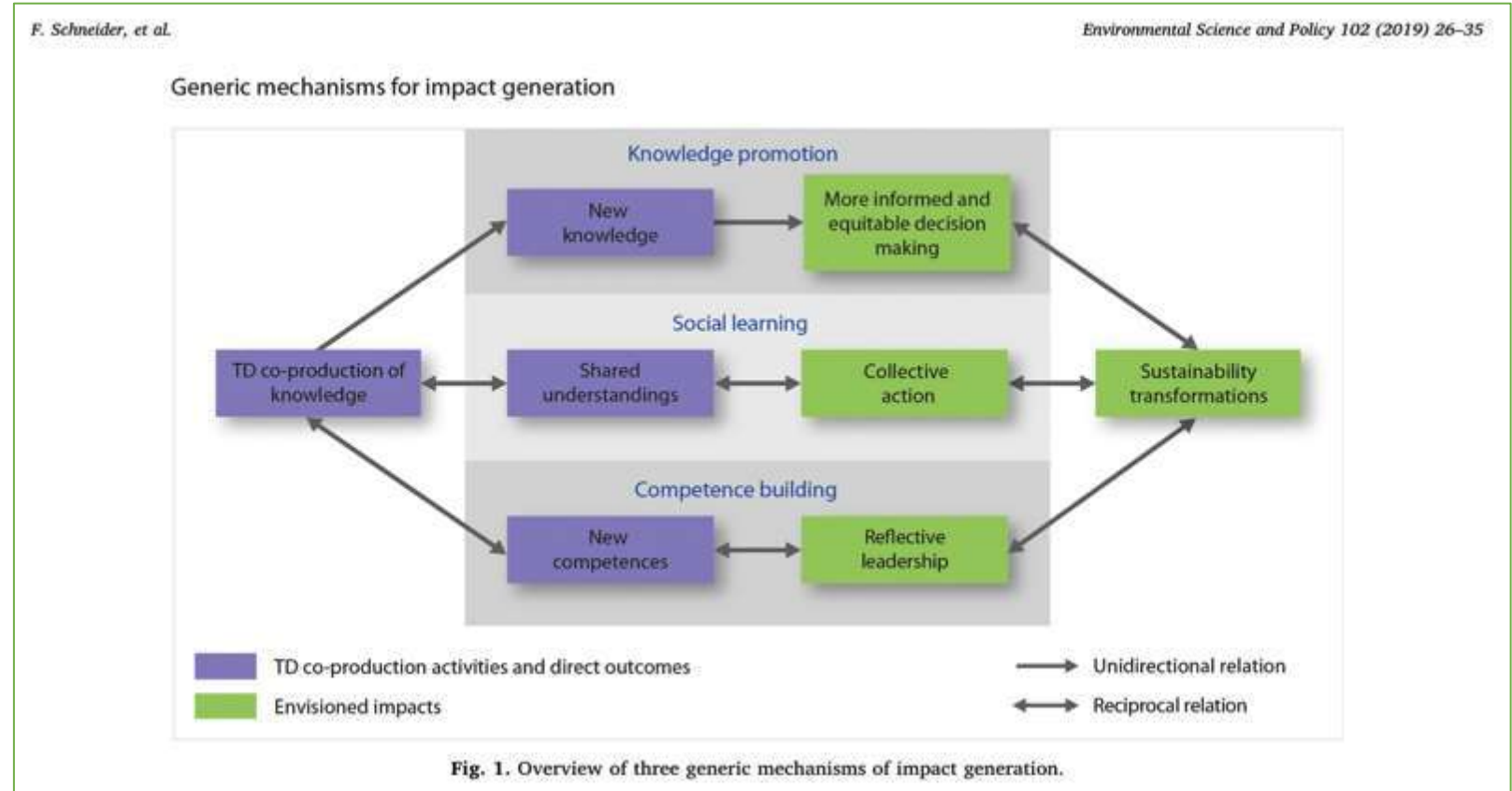


Theme #4: suggested research approaches

- Increase the adoption of **transformative transdisciplinary solution-oriented research** approaches **able to generate impacts** (e.g. action-research, knowledge co-creation processes) (e.g. Schneider et al. 2019)

1

Adopt transformative transdisciplinary research approaches and tools that reciprocally engage scientists and other stakeholders.



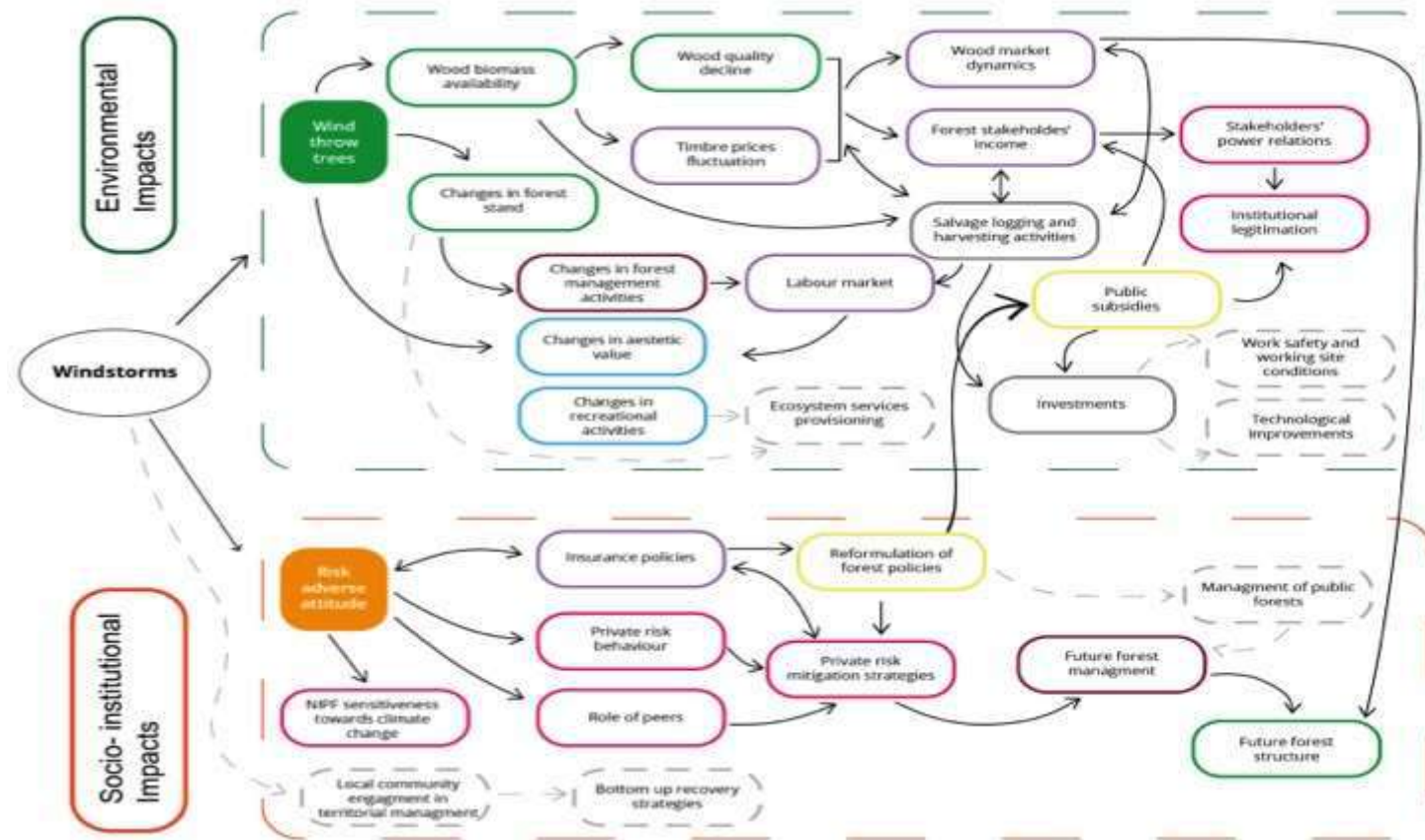
Source: <https://www.sciencedirect.com/science/article/pii/S1462901119303867>

Theme #4: suggested research approaches

- **Shift from silos- to system thinking/system dynamics-based approaches** (e.g. from linear cause-effects analysis to more holistic understanding of the drivers-consequences of actions, reverse loops, cross-sectoral interactions)

2

Design, test and apply systems thinking/system dynamics frameworks to analyse complex socio-ecological-institutional systems for the development of a Mediterranean forest bioeconomy and required innovations.

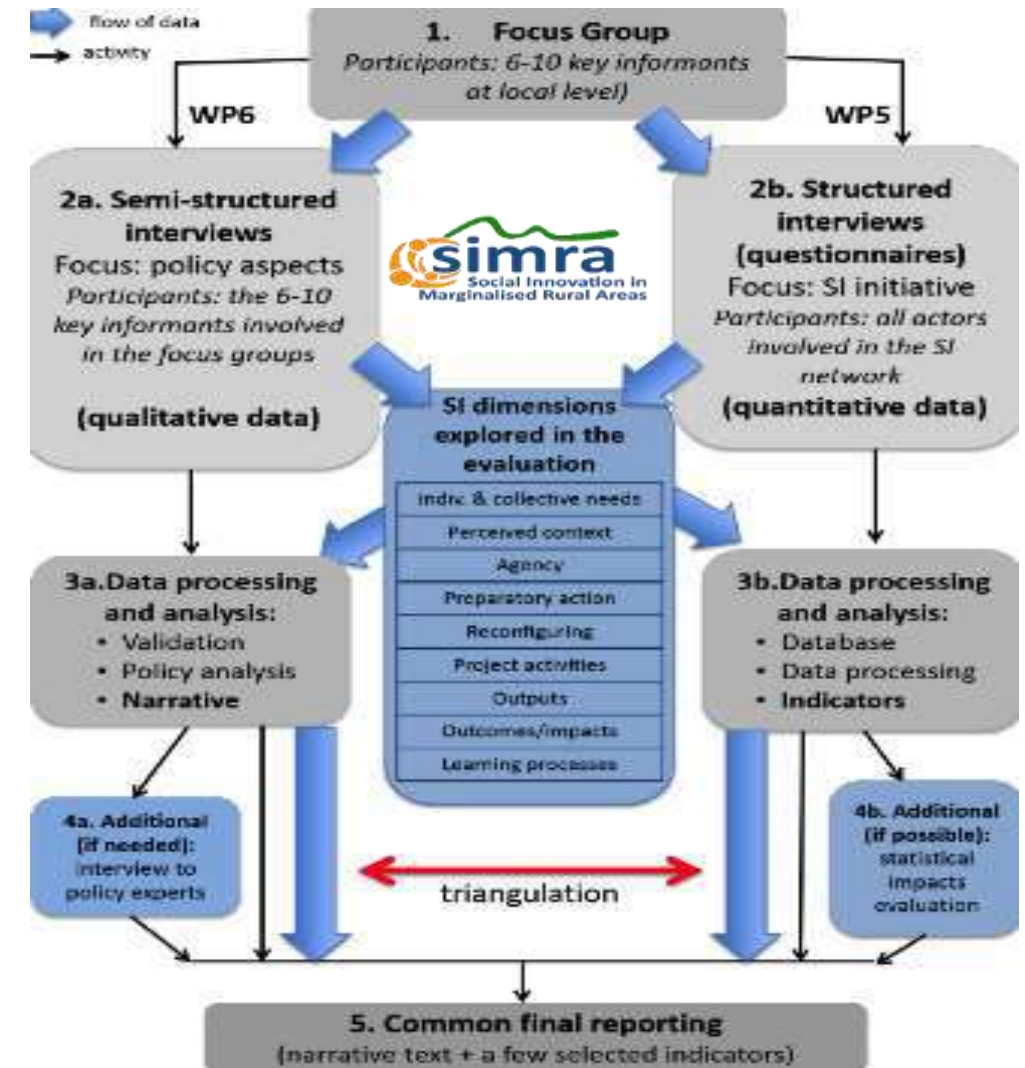


(Source: Romagnoli et al. – in press)

Theme #4: suggested research approaches

- Apply **mixed methods (quanti-qualitative research, triangulation)** (e.g. quantitative indicators to overview, qualitative narrative to deepen, triangulation to validate)

3 Combine quantitative and qualitative approaches and tools, and triangulate data to monitor and evaluate innovation and policy effectiveness, and design and use appropriate visualisations (see “research weaving” - Nakagawa et al., 2019) to communicate results.



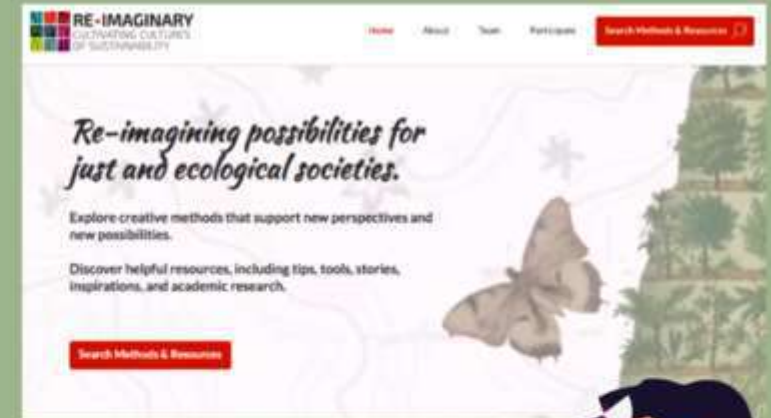
Theme #4: suggested research approaches

- Increase the adoption of **transformative transdisciplinary solution-oriented research** approaches **able to generate impacts** (e.g. action-research, knowledge co-creation processes) (e.g. Schneider et al. 2019)

4

Exploit forest-science knowledge through co-creation processes to bolster social innovation processes, for example by adopting creative methods and appreciative inquiry techniques, emphasizing solutions, and stimulating citizen proactivity by empowering actors.

- Book chapter "**Co-creativity and engaged scholarship**"
- Creative methods website: www.re.imaginary.com
- Children book '**Once Upon the Future**' (@UponFuture)
- 10' documentary '**Nature as Pathway**' (youtube)
- Project VERVE '**Co-creative** visioning processes for **transformative social innovation** in rural areas' - (Marie Curie Individual Fellowship, Sept 2022 - 2024)

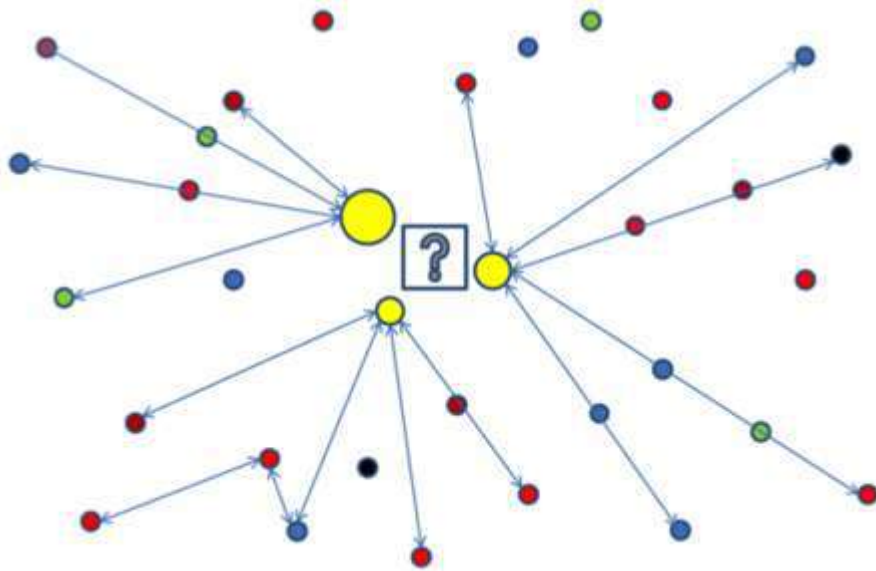


An example:
ideas/material
by Angela
Moriggi et al.
2022



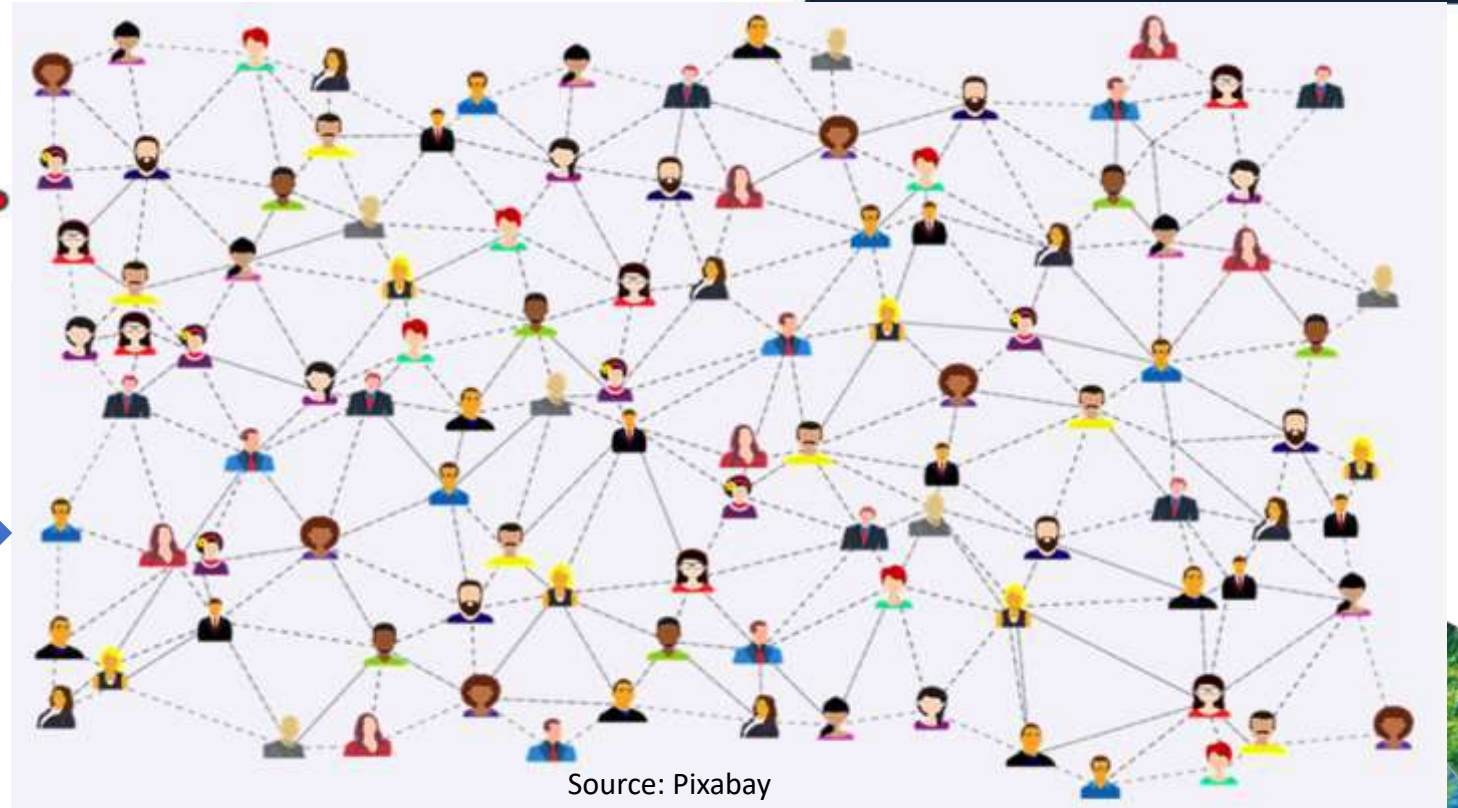
Theme #4: suggested research approaches

- **Improve communication capacity and skills**, invest in dissemination and work to reinforce **cross-country/institutions education/training/networking programs**



Source: Gallo, 2017

From casual, not fully
integrated networks to...



Source: Pixabay

6

Knowledge sharing and
capacity building through
training, coaching and skills
transfer among Mediterranean
institutions.

Theme #4: What are the additional challenges to implement this w

Questions

Only show unanswered questions Sort by Upvotes 0

Asked on: Q 4: What are the additional challenges to implement this work?
Lack of cross-sectoral programmes and support mechanisms, as many innovations are of cross sectoral nature 6

Asked on: Q 4: What are the additional challenges to implement this work?
rural people and forest dwellers are not involved in innovations. 3

Asked on: Q 4: What are the additional challenges to implement this work?
Lack of effective communication 2

Asked on: Q 4: What are the additional challenges to implement this work?
Lack of collaborative culture between "guilds" (disciplines: foresters, natural scientists, economists, social sciences, stakeholders, etc.) lack of interdisciplinary research approaches. 2

Asked on: Q 4: What are the additional challenges to implement this work?
People are not fully aware about what social innovation is! 1

Asked on: Q 4: What are the additional challenges to implement this work?
traditional norms or social practices that are hard to be changes (e.g. role of females in rural areas) 1

**Lack of collaborative culture
between guilds and
interdisciplinary research
approach**



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**Rural and forest dwellers are
not always involved**

Asked on: Q 4: What are the additional challenges to implement this work?
Lack of support for risky projects (nor by financial institutions, but also supporting organisations who can not see benefits)

Showing 12 out of 12 questions.



Opportunities

- An increasing interest in the topic due to rising global demand to provide sustainable alternatives for technologies and products, as well as adjustments to the consumption and waste generation patterns.
- Examples of success stories where social and business innovations in the domain of forest-based bioeconomy turned into viable flourishing businesses.



Challenges

- Knowledge transfer to policymakers and practitioners is critical for transforming scientific research into an innovation actions that are supported, accepted, and used by actors.
- Funding for innovation focuses on technology meaning there is a lack of stable and long-term funds, resources and institutional efforts for transdisciplinary research, and innovative social-political-governance actions.



Recommendations

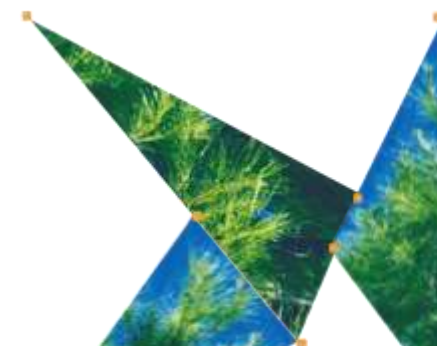
- The novelty and innovation of research and development in the Mediterranean can be enhanced by I) using a multidisciplinary approach, from natural to social sciences; II) using holistic governance frameworks; III) motivating private investors, businesses and entrepreneurs to participate; and IV) integrating various types of knowledge and innovation (technological, organizational, social and institutional).
- Frugal and small-scale innovations need support. These are based on key factors other than large financial capital and industrial investments, which are more appropriate to Mediterranean peculiarities. These factors include: I) social capital; II) trust towards institutions; III) site-specific nature-based solutions designed, implemented and monitored by local networks; IV) niche markets; and V) interdependencies between forest and other systems (e.g., tourism, local development, health, education, finance, food security).
- Criteria for evaluating scientists/researchers performance needs modification, and science-stakeholder-policy efforts need to be weighted in a similar way to scientific publications to encourage knowledge transfer from science to policy and practice.

Theme #4: Being aware that other, new additional challenges are emerging!

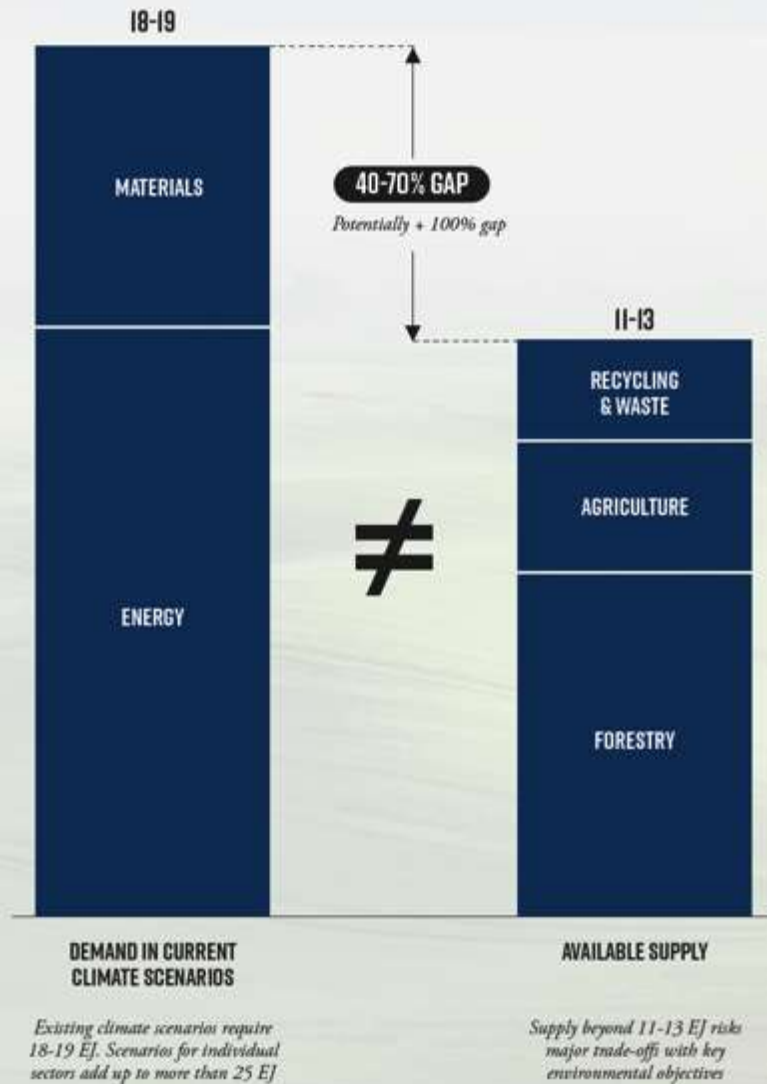
New EU strategies and actions

e.g. 3 billions of trees, the new EU Biodiversity Strategy (30% protected areas)

- which trees?
- which lands?
- which regulatory instruments?
- which incentives?
- which stakeholders' attitudes?
-



BIOMASS SUPPLY AND DEMAND FOR MATERIALS AND ENERGY IN THE EU
PRIMARY ENERGY EQUIVALENTS IN EJ PER YEAR



Theme #4: Being aware that other, new additional challenges are emerging!

New crises: e.g. energy and the role of wood

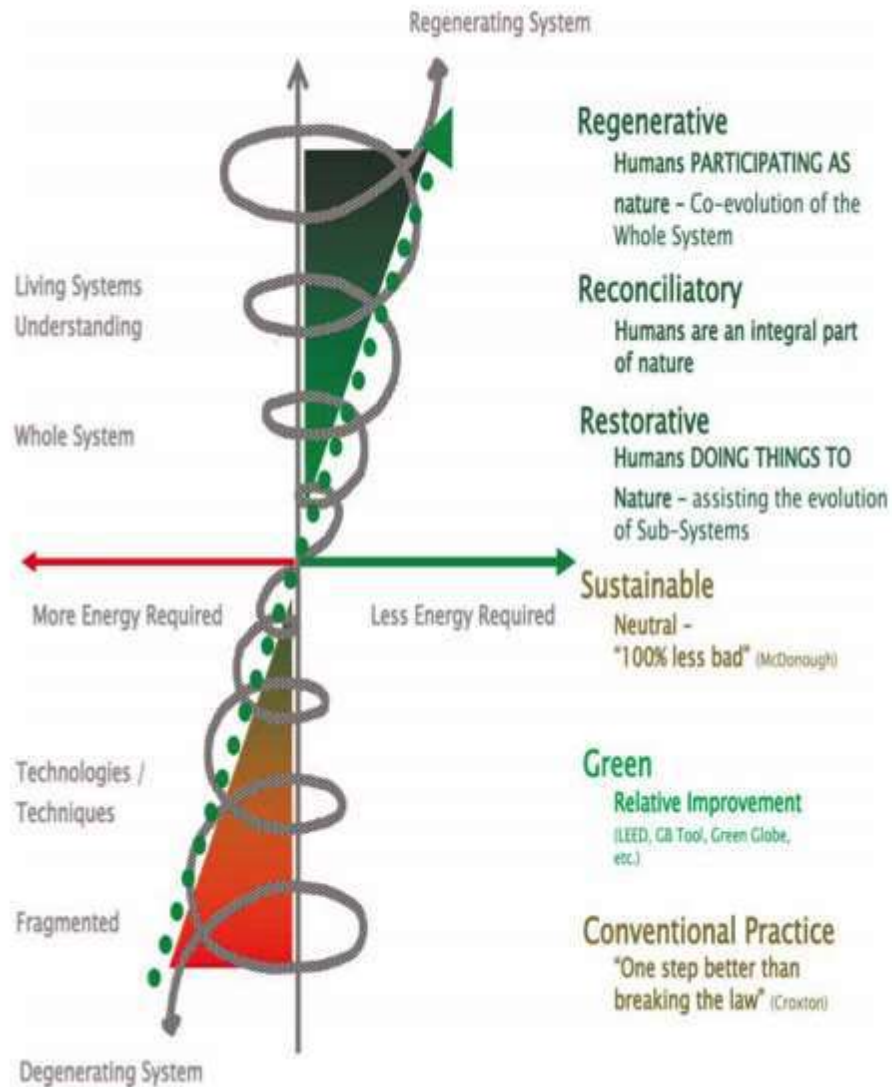
Wood energy consumption sourced from forests	2020 (billion m ³)	2050 (billion m ³)	Percentage change 2020-2050
Basic outlook (based on IEA, IPCC and GFPM)		2.3-2.7	+17-42
High outlook (based on IPCC)	1.9	7.7	+400
Low outlook (based on IPCC)		1.6	-19

Sources: Author's own elaboration based on chapters 4.2.1 to 4.2.2.

Fonte: FAO, GFSO 2050 (2022)

Theme #4: Being aware that other, new additional challenges are emerging!

New discourses e.g. the One Health approach, regenerative approaches, ...



Source: Reed, 2007 – p. 661



Source: World Health Organisation, 2021



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Thanks!!



Laura Secco



Mauro Masiero



Elena Pisani



Elena Górriz-Mifsud



Davide Pettenella



Paola Gatto

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