

Phd research title
***“Adaptive strategies and community
resilience after climatic events: the
case of Vaia storm in Italy”***

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Structure of the presentation

- ***PhD project research***
 - *Objectives and methodologies*
- ***Phd research activities development***
- ***Scientific articles and collaboration***
 - *Vaia Front and Young Scientist for Vaia projects*
- ***Future step of PhD research project***
- ***Dissemination of preliminary results***

PhD research objectives

General objective

To analyze key factors that boost and positively impact community socio-economic resilience after a disruptive natural event, starting from the experiences learned from Vaia and comparing the measures implemented in the five areas mostly affected by the storm.

Specific objectives

- ★ To clarify the cause-effects complex interlinks among nature, society and institutions in European forest socio-ecological systems affected by windstorms
- ★ To develop and test a framework to identify governance and socio-economic elements that influence reactions to natural events in the areas hit by Vaia and identify gaps between the strategies implemented and the need perceived by the affected populations.
- ★ To formulate recommendations for policy, governance and future researches for improvements of socio-economic resilience of local communities hit by windstorms

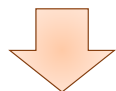
RESEARCH QUESTIONS	SPECIFIC OBJECTIVES	METHODOLOGY
<p>Which are the cascade effects linked with extreme events?</p>	<p>- To clarify the cause-effects complex interlinks among nature, society and institutions in European forest socio-ecological systems affected by windstorms</p>	<ul style="list-style-type: none"> • Literature review and content analysis of windstorm impacts on European Forest SES and cause-effects linkages • Casual and interrelations mapping • Interviews to key stakeholders to identify main Forest SES hit by Vaia
<p>Which socio-economic and governance factors have better ensured risk management and community resilience in the case of Vaia storm?</p>	<ul style="list-style-type: none"> - To develop and test a framework to identify governance and socio-economic elements that influence reactions to natural events in the areas hit by Vaia - To identify gaps between the strategies implemented and needs of the affected populations 	<ul style="list-style-type: none"> • Stakeholders analysis and social network analysis • Vulnerability assessment • Cost benefit analysis • Focus group and semi-structured interviews
<p>Which governance structures and interregional strategies can be developed to boost resilience of socio-economic systems hit by an extreme climate event?</p>	<p>- To formulate recommendations for policy, governance and future researches to improve socio-economic resilience of local communities after extreme natural events</p>	<ul style="list-style-type: none"> • Literature review and content analysis of strategies implemented in other EU countries hit by a windstorm • Generalization of the information acquired from the case study • Focus groups, semi-structured interviews to validate the results

PhD research activities development

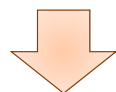
Review of existing literature

work in progress

Specific objective 1)



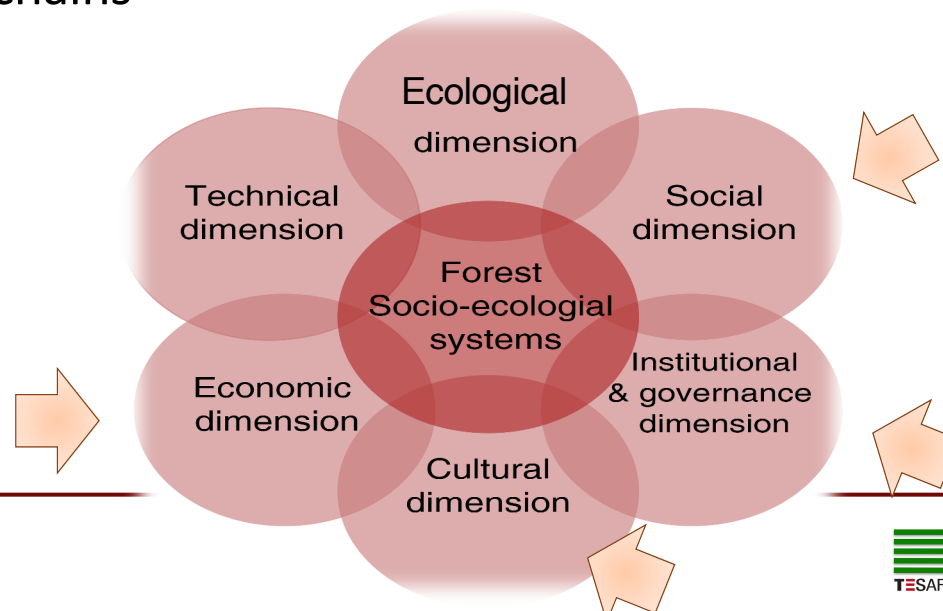
Literature analysis
to investigate:



Dimensions considered

To clarify the cause-effects complex interlinks among nature, society and institutions in areas affected by windstorms

- **socio-economic, institutional and governance impacts** of windstorms in forest socio-ecological systems (SES)
- **cause-effects linkages** along forest-based “value chains”



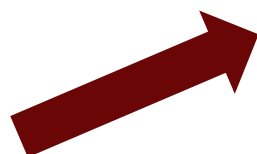
PhD research activities development

Review of existing literature

work in progress

✓ *Sample of key-words identified :*

- *Forest OR European Forest OR forestry*
- *Windstorm OR Windthrow*
 - *Socio – economic*
 - *Impact OR effect*
- *Damage AND/ OR costs*
 - *Community*
 - *Livelihood*
 - *Resilience*
 - *Risk*
 - *Market and prices*
 - *Ecosystem services*
 - *Landscape*
 - *Climatic events*



✓ *Literature review in Scopus*

✓ *Analysis of other scientific articles and grey literature selected from other sources and from other researches*

Preliminary overview of windstorm damages on socio-economic and institutional dimensions

Review of existing literature on windstorms impacts on forest SES in Europe

- In depth analysis of **452 papers**
- **25 papers** deepening windstorm consequences on **socio-economic and institutional dimensions**

PhD research activities development

Categorization of effects

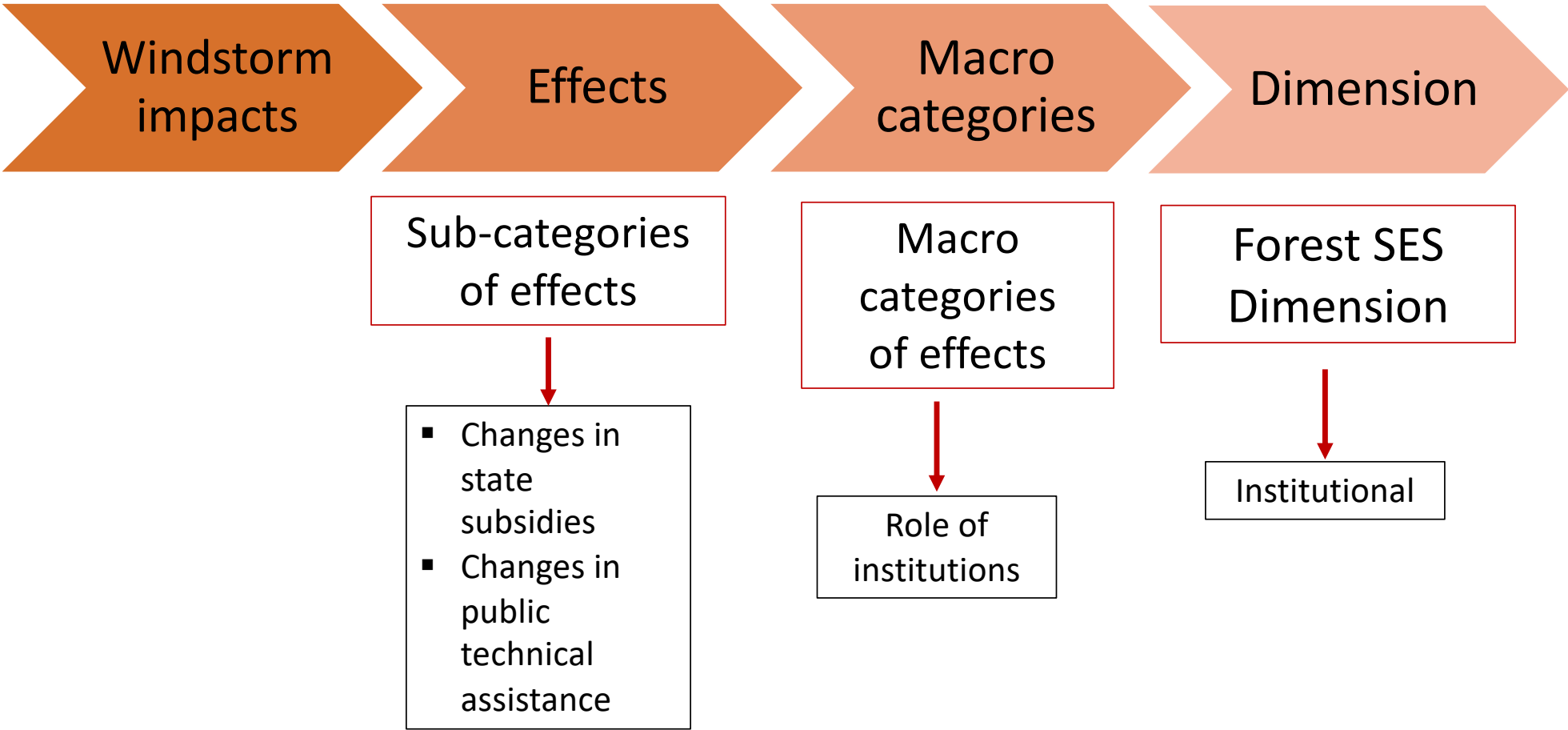
work in progress

n.	Type of review key words	Title	Authors	type of paper + rationale	geographical area	country	storm	wind speed of the storm	year of the storm	damage estimation
13	Scopus forest AND wind AND soc AND econom AND effect	The calm before the storm: How climate change drives forestry evolutions	Fouqueray T., Charpentier A., Trommetter M., Frascaria-Lacoste N.	Empirical, data collectio (France as study case) + rationale: foresters' field adaptatio measures implemented in temperate forest sector, and drivers that influence implementation of these measures. How foresteres handle climate chnage impacts	French, regional : Vosges (n = 13) and the Landes (n = 14). Interviewees	France	Lothar		1999	
data collection methodology		time span of the effect	type of effect: effects empirically measured or inference theroretically based	dimensions	macro categories	sub categories of effects	specific effects citeed/ mentioned in papers			
qualitative interviews to 27 forest managers and private forest owners in 2 different areas with 2 different forest managment plan		middle/ long	theoretically based, reference (MTES, 2017)	economic/ managment	investments, forestry and logistic operations	investment and technology in forestry operations	investment and new technology in forestry operations after Lothar more investments in machines			
		middle/long	theoretically based, reference ((Abel et al., 2006)	economic/ forest managment	investments, forestry and logistic operations	logging technology, investments	more investment in machine from industry side: subsidies to frim try new machineris			
		short	empirically estimated	environmental	forest composition	fprest managment, species selection	identification of which species resist most			
		short to long	empirically measured	social	forest owners perceptions,	forest owners' perception of forestry sector	faith in forestry sector and techno,ogy improvements to overcome windstorms effects			
		short to long	empirically measured	forest managment	forest composition	future forest managment plans	introduction to some minor changes in forest planting , and subsc techniques to decrease damages for the next time of a strom			
		short	empirically estimated	social / cultural	forest owners perceptions,	forest owners' self perception information	<u>feel powerless and with no information</u> to implement the correct measure to minimize effects of a windstorm and the potential impacts of tfuture ones.			
		short to middle	empirically estimated	social / cultural	forest owners perceptions,	information role of institutions, stakeholders' perceptions technicians attitudes	some rely on technical information and choose adaptative strategies in that sense, instead of choosing something they will like to .			
		short to middle	empirically estimated	social / cultural	forest owners perceptions, stakeholders' relations	stakeholders' perceptions technicians attitudes network	feeling of potentially being cheated by the industry that take advantages to implement measure to favour their interests: POTENTIAL CONFLICT WITHIN FOREST SECTOR STAKEHOLDERS			
		short to long	empirically estimated	cultural/ forest managment	forest owners perceptions,	forest owners' perception of forest managment practices	identification of which forest managment practice to implement after a storm: slow reversable changes : non long term view			

PhD research activities development

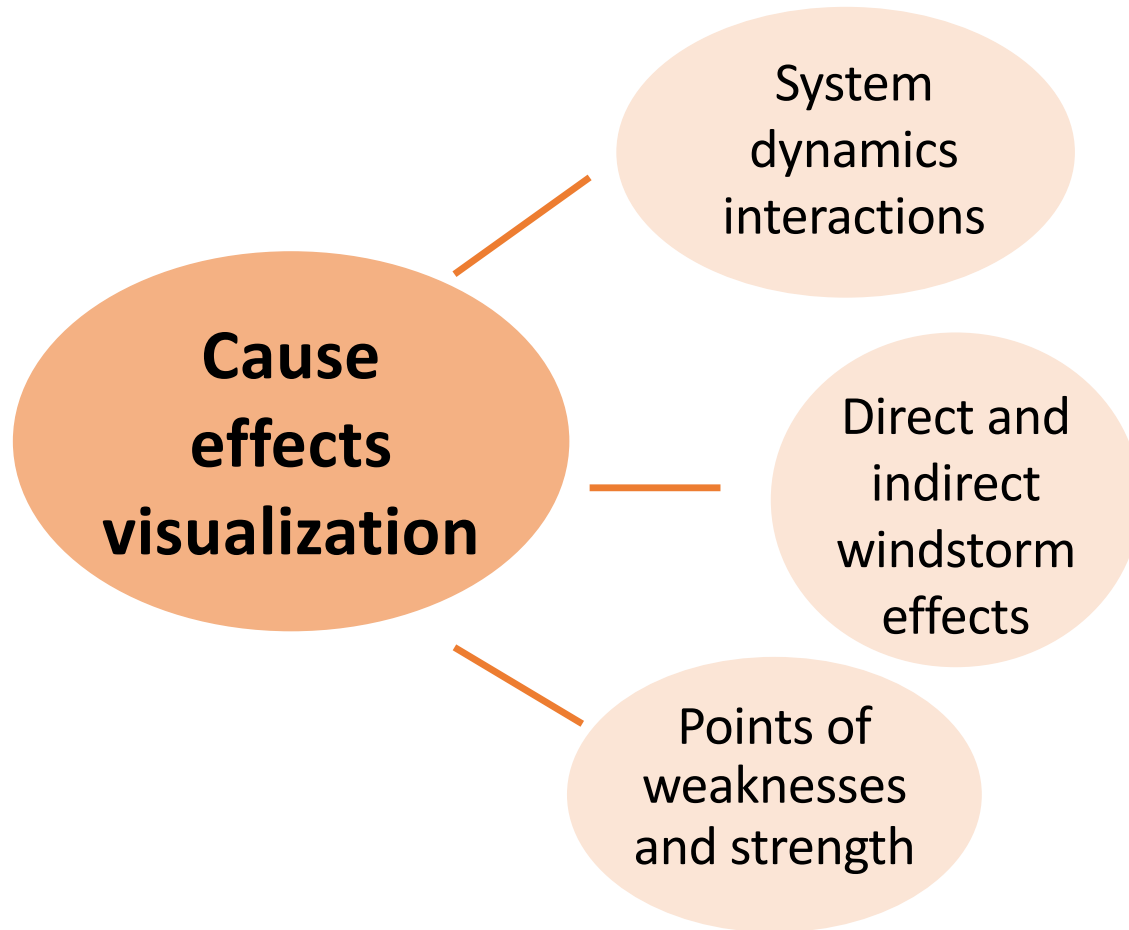
Categorization of effects

work in progress



PhD research activities development

Visual mapping
work in progress



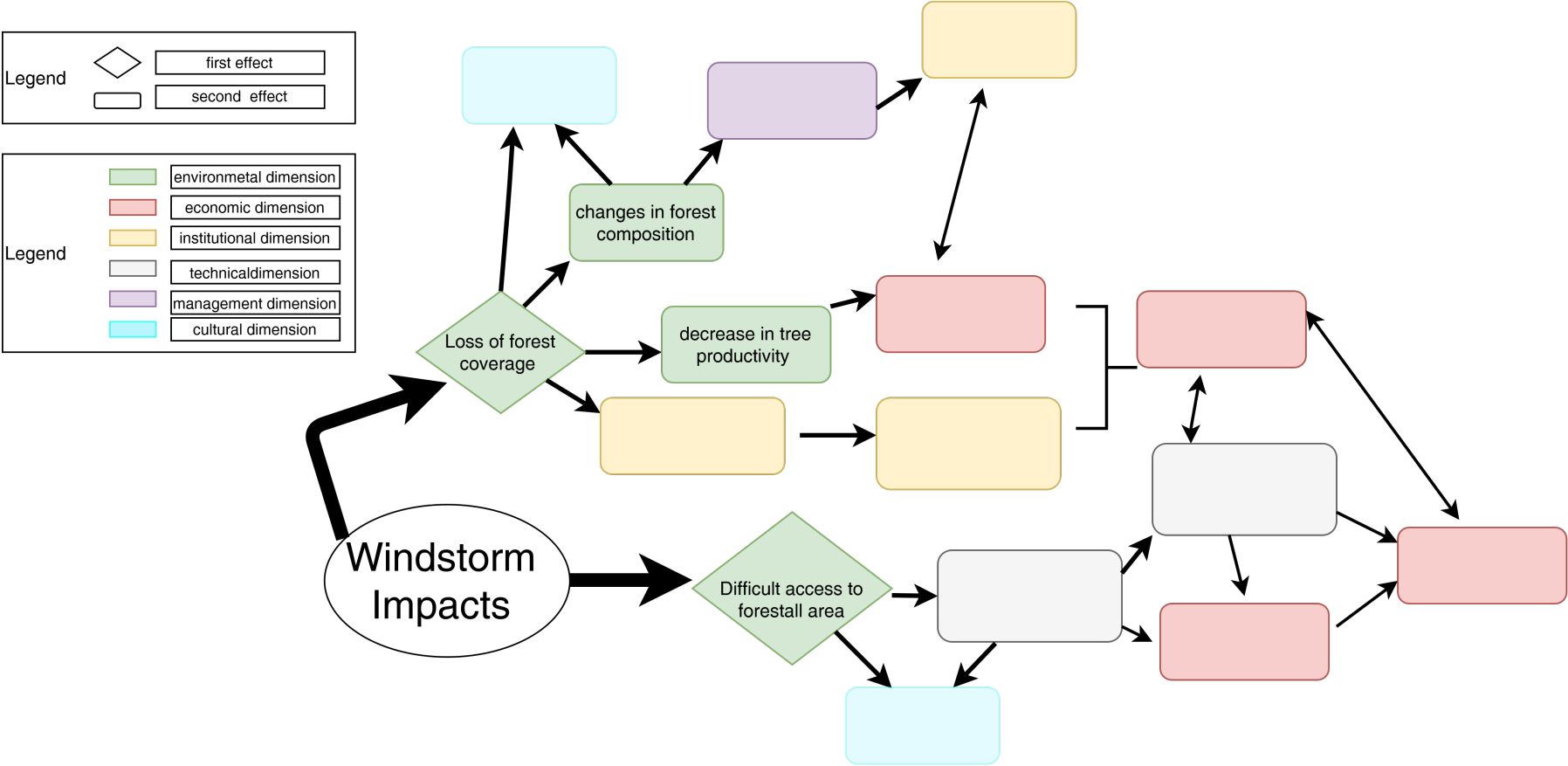
- **Clear representation of system dynamics interactions** (Riguelle et al., 2016)

- **Identification of indirect impacts and spillover effects among system dimensions** (Riguelle et al., 2016)

- **Improvements in design and implementation of resilience strategies** (Kerner and Thomas, 2014)

PhD research activities development

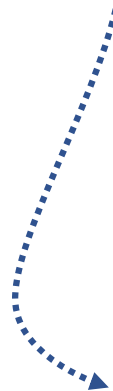
Visual mapping
work in progress



PhD research activities development

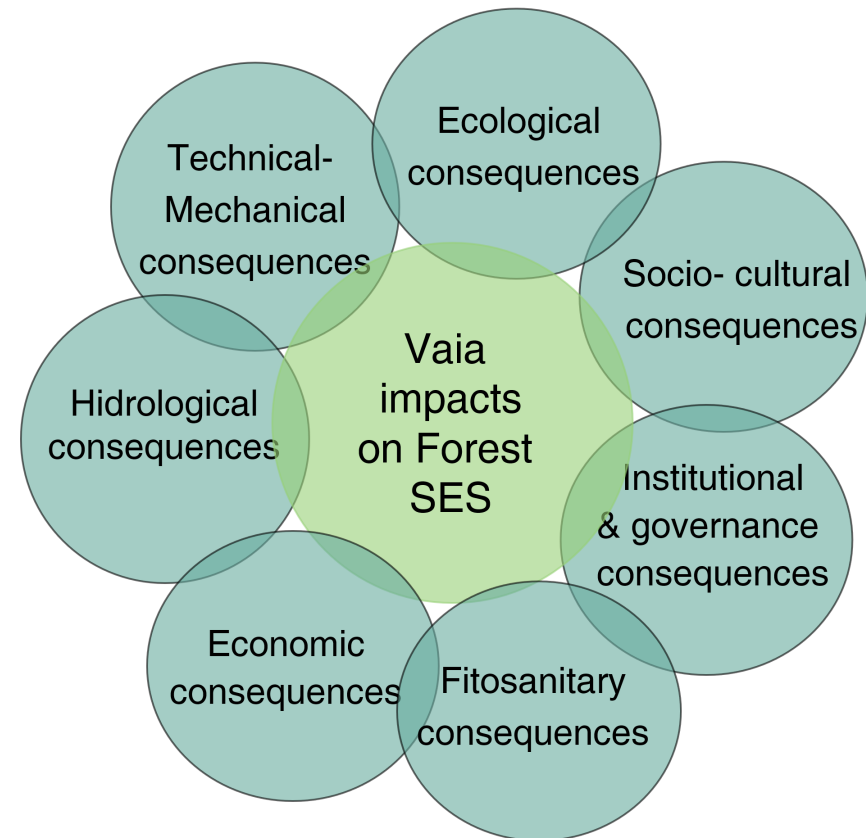
Scientific articles and collaborations

Investigation of cause-effects linkages
along forest-based “value chains”



Interdisciplinary collaborations

- Vaia Front project
- Young Scientist For Vaia



PhD research activities development

Scientific articles and collaborations



Interdisciplinary Article:

**Interdisciplinary and
multisectorial analysis of
windstorm impacts**

Have an overall comprehension of European windstorm related scientific literature

- Have a global **comprehension** of existing literature on **windstorm impacts on European Forests**

Identify cause-effects linkages

- Analyze interrelations **among ecosystems services, ecological and social dimensions** and wellbeing in areas hit by a windstorm

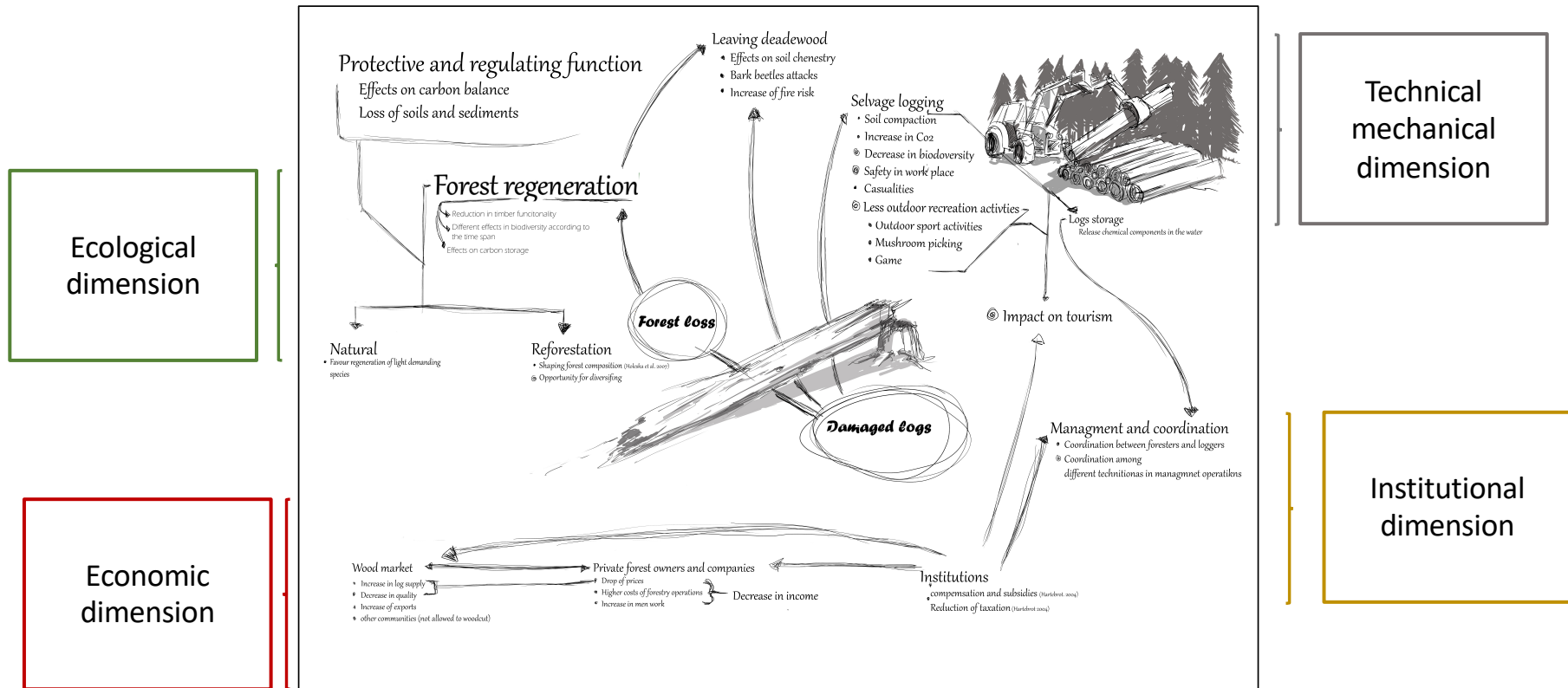
Identify temporal and spatial scale influence

- Understand temporal and spatial influence **on windstorm effects**

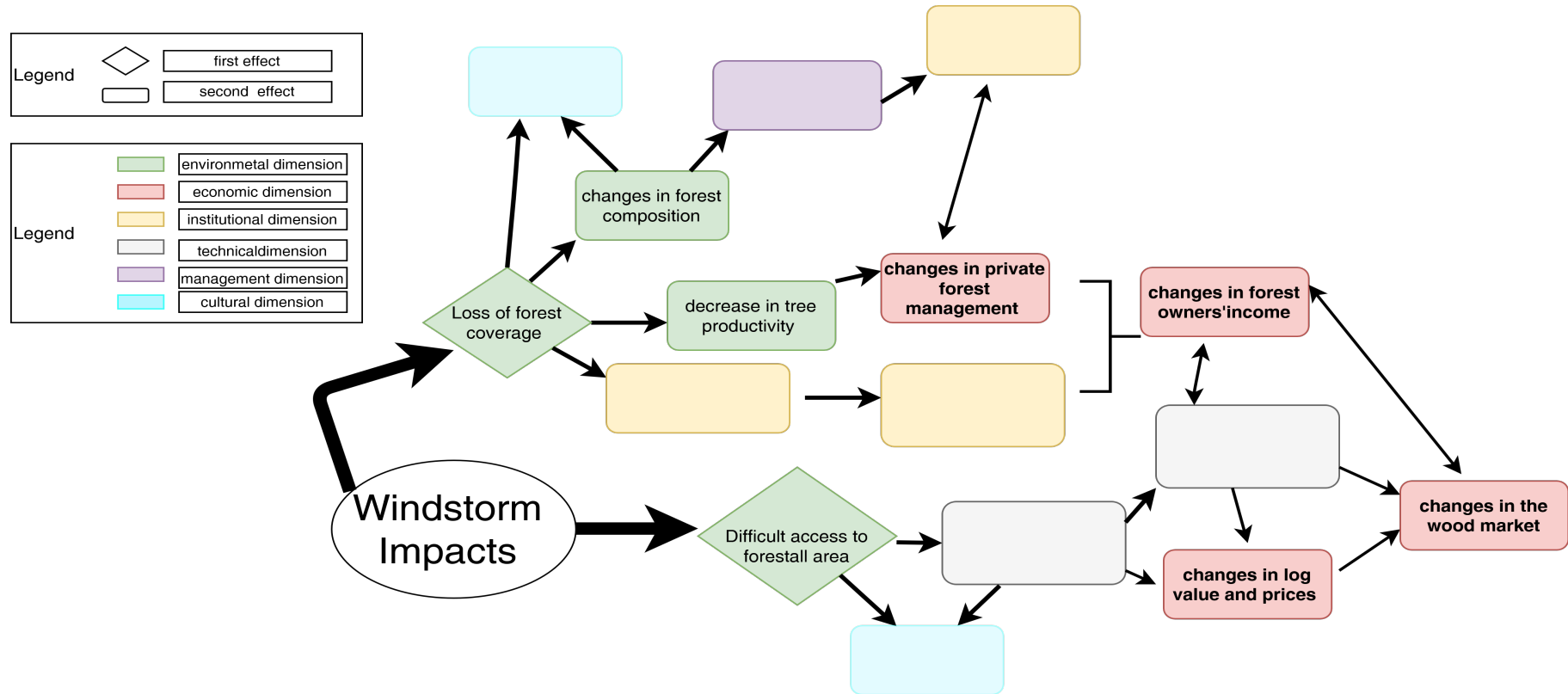
PhD research activities development

Scientific articles and collaborations

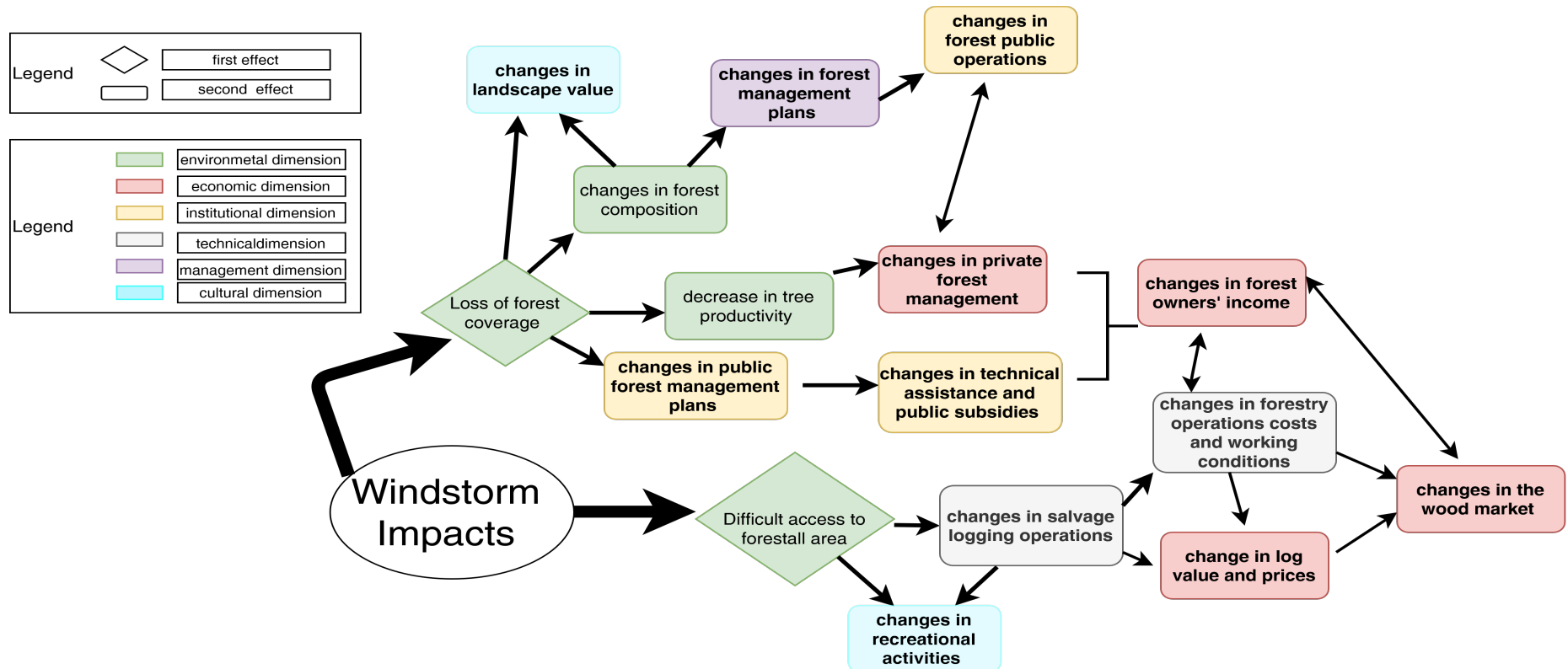
Visual mapping: focus on key forest sectors/ research areas



Visual mapping: focus on cause-effects relations



Visual mapping: focus on cause-effects relations



PhD research activities development

Scientific articles and collaborations



Possible Follow up:
**Interdisciplinary and
multisectorial analysis of
Vaia windstorm impacts
in Roccapietore**

Identify forest SES dimensions affected

- Define which **forest SES dimensions, sectors and stakeholders** have been **mostly affected** by Vaia Windstorm

Identify cause-effects linkages

- Analyze interrelations **among ecosystems services, natural resources, human actions** in the areas hit by **Vaia Windstorm**

Compare mitigation strategies implemented

- Identify which **interactions occurred** after Vaia and which **recovery measures were implemented**

PhD research activities development

2019-2020 (1st year):

Literature review

- Literature review of **windstorm impacts on socio-economic & institutional dimensions** in European Forests SES
- Analysis of **cause effects linkages**
- Analysis of **systemic interactions** among different sectors

2020-2021 (2nd year):

Data collection

- Identification of **main socio-economic sectors, FES and stakeholders hit by Vaia** storm in the five areas hit
- Quantitative data collection of windstorm impacts
- Qualitative data collection of stakeholders' perceptions of windstorms impacts

Future steps

2021-2022 (3rd year):

Result analysis and systematization

- Identification of **governance frame works and decision dynamics** regarding recovery strategies
- Analysis of **recovery strategies implemented**
- **Systematization of results** and identification of best practices

PhD research activities development

Future steps

Sector specific Article:

In-depth review of windstorm consequences on socio-economic, institutional and governance dimensions

Identify indirect windstorm effects

- Identify windstorm consequences and indirect effects in **socio-economics, institutional and governance dimensions**

Identify consequences of FES changes

- Identify **social and economic consequences** of changes forest ecosystem services functionality

Determine knowledge gaps in socio-economic windstorm related literature

- Identify knowledge gaps related to windstorm impacts **on socio-economic and institutional sectors**

PhD research activities development

Dissemination of research results



11/06/2020



Socio-economic and institutional effects of windstorms damaging forests: preliminary observations from European cases and Vaia windstorm



08/07/2020



Le comunità montane ed eventi climatici estremi: analisi delle fragilità territoriali e strategie di riattivazione del territorio



23-24/
10/2020



The short and long terms socio-economic and institutional effects of windstorms which damaged forests: lessons learned from European cases



Vaia storm

an opportunity to boost
resilience

Thank you for
the attention

PhD research activities development

Dissemination of research results

Lists of possible journal for article publication



✓ Forest Ecology and Management



✓ European Journal of Forest Research



✓ forests



✓ Heliyon