

WP2 _ Current approaches for forest SES risk management

Task 2.1 _ Global windstorms consequences on forest socio-ecological systems.

A multidisciplinary review on European forests_ State of the Art

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(Young Scientist for Vaia_ young researchers)

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Theoretical background

WP 2_ Current approaches for forest socio-ecological systems (SES) risk management

- ↳ Preliminary tasks: acquire a **full comprehension of overall windstorm impacts** on forest SES
- Task 2.1: Development of a **semi-systematic literature review** on windstorms in Europe



The mainstreamed approach in analyzing windstorms impacts is **highly specific and sector-oriented**

(Heinmann 2010; Thom and Seidl 2016)

The **globality of windstorms impacts** depends on the **interplay among forest SES dimensions** affected

(Thom and Seidl, 2016; Fleischer 2017)

Full understanding of spillover effects and interplay among forest SES dimensions is needed to effectively design mitigation policies.

(Seidl et al., 2011)

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Semi-systematic review research questions

WP 2.1_ Development **semi-systematic literature review on windstorms in Europe**



- Which are the **dimensions** and **windstorms impacts** mainly studied in academic research?

- Are there studies investigating the **interplay among dimensions**?
- Which is the role played by **cause-effect linkages**?

- Which are the main **methods/approaches** implemented in **windstorm impacts analysis**?
- **Are they effective** in understanding overall windstorms impacts?

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Semi- systematic review objectives

WP 2.1_ Development **semi-systematic literature review on windstorms in Europe**



In depth understanding of scientific literature on European windstorm:

Identifying the main forest **dimensions** and most relevant **impacts** investigated

Identify cause-effect linkages among forest SES dimensions:

-Stressing **interconnections and cause-effect linkages**
- **direct and indirect effects** within and across forest SES dimensions

Gain a systemic understanding

of windstorm impacts on all SES dimensions implementing an **innovative analytical approach**

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Research team_ multidisciplinary and inter-departmental

PhD 6 students from five different research areas:



Forest policy
and
economics,
governance

Forest
ecology and
silviculture

Forest
operations

Forest
entomology

Geo-
morphology

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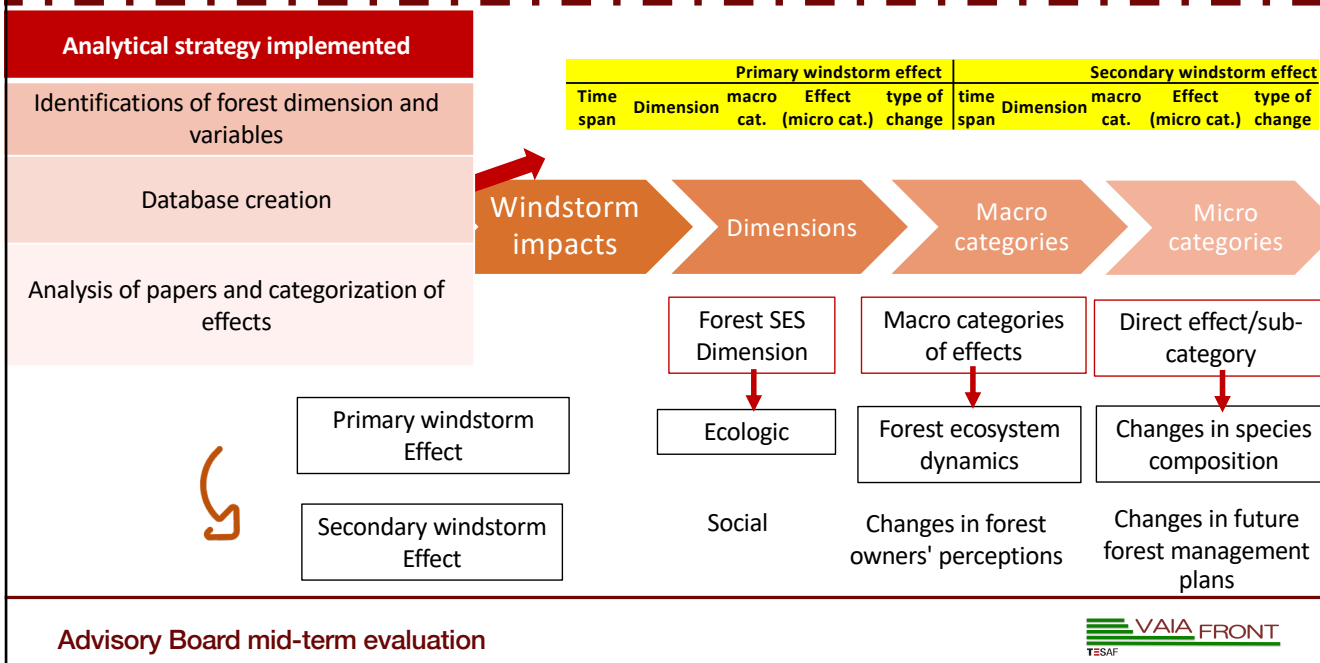


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Methodology applied (1/3)	Scientific dimension	keywords used	N° paper found	tot paper	effectively analyzed (after duplicate and in depth analysis cleaning)
Search strategy implemented	Socio- economic	forest* OR woodland AND wind* AND disturb* OR damage* AND soc* AND economic* OR financial*	84	188	10
		forest* OR woodland AND wind* AND disturb* OR damage* AND ecosystem* AND service*	99		
Identification of research queries	Institutional / governance	forest* OR woodland AND wind* AND disturb* OR damage* AND institution* AND govern*:	5		
Papers identification	Ecology	forest* OR woodland AND wind* AND disturb* OR damage* AND ecolog* or management* OR "climat* chang**"	1485	1485	59
	Geomorphology	forest* OR woodland AND wind* AND disturb* OR damage* AND sediment* or largewood	98	211	8
		forest* OR woodland AND wind* AND disturb* OR damage* AND flood	113		
	Forest operations	forest* OR woodland AND wind* AND disturb* OR damage* AND harvest* OR "savage logging"	444		13
Pest risk	((forest* OR woodland) AND wind* AND (disturb* OR damag*) AND outbreak* AND (beetle* OR pest* OR "bark beetles" OR "wood boring insects" OR "wood-boring insects	140		33	
Advisory Board mid-term evaluation	Multidisciplinary papers				17
	TOT papers		2468		140

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Methodology applied (2/3)

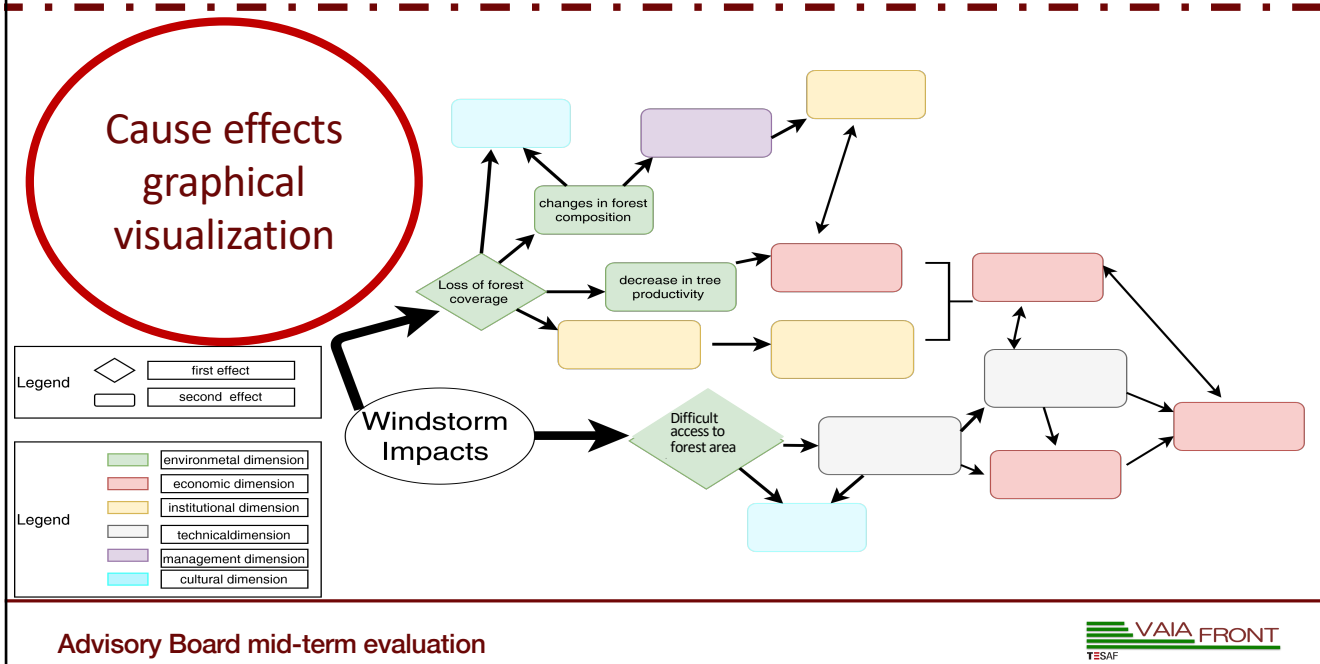


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Methodology applied (3/3)



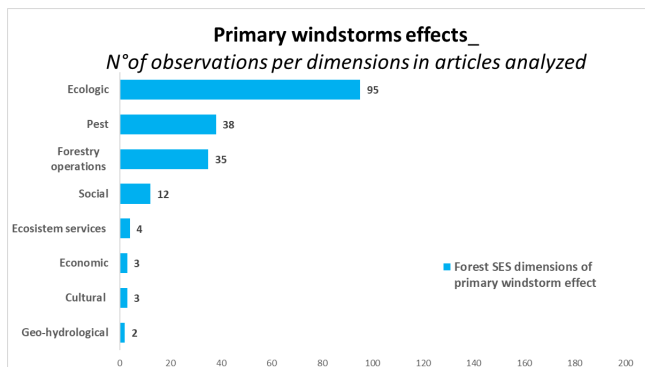
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Preliminary results (1/3) *≈ work in progress*

- Total number of observations/ effects categorized : **ca 190**



Primary windstorm effect_ most frequent impacts recorded		
Dimensions	Macro-categories	Micro-categories*
Ecologic	Forest ecosystem dynamics	Species compositions
	Regulating services	Changes related to wood biomass
Pests	Pest outbreaks risks	Bark beetle
		Prevention strategies
Forestry operations	Forestry operations and logistics	Consequences in ecosystem components
Social	Role of institutions	Changes in state subsidies
	Forest owners' perceptions	
Economic	Wood market and prices	Wood quality and prices
Cultural	Cultural services / changes in landscape	Changes in landscape values
Geo-hydrological	Slope dynamics	Hillslope instabilities

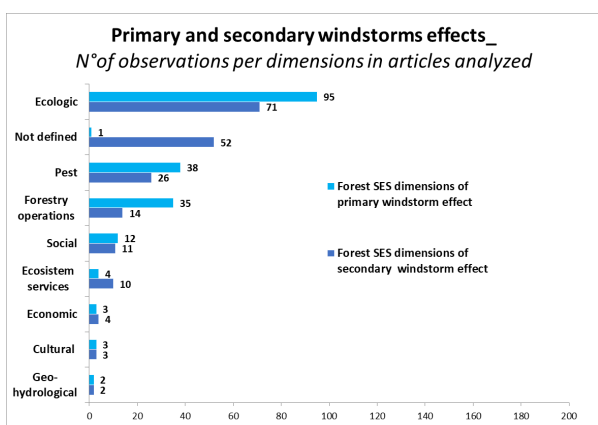
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* Most frequent impacts within the specific category



Preliminary results (2/3) *≈ work in progress*

- Total number of observations/ effects categorized : **ca. 190**



- Secondary windstorm effects are mainly verified **in the same dimension** of the primary effect

Primary windstorm effect_ most frequent impacts recorded		
Dimensions	Macro-categories	Micro-categories*
Ecologic	Forest ecosystem dynamics	Species compositions /regeneration dynamics
	Regulating services	Changes in absorption of CO ₂
Pests	Pest outbreaks risks	Bark beetle
		Pest species
Forestry operations	Forestry operations and logistics	Changes in investments or costs
Social	Forest owners' perceptions	Risk management
Ecosystem services	Regulating services	
	Provisioning services	
Economic	Income variations	Changes in wood sector income
Cultural	Cultural services	Changes in recreational activities
Slope dynamics	Variations in sediments transports	Slope dynamics

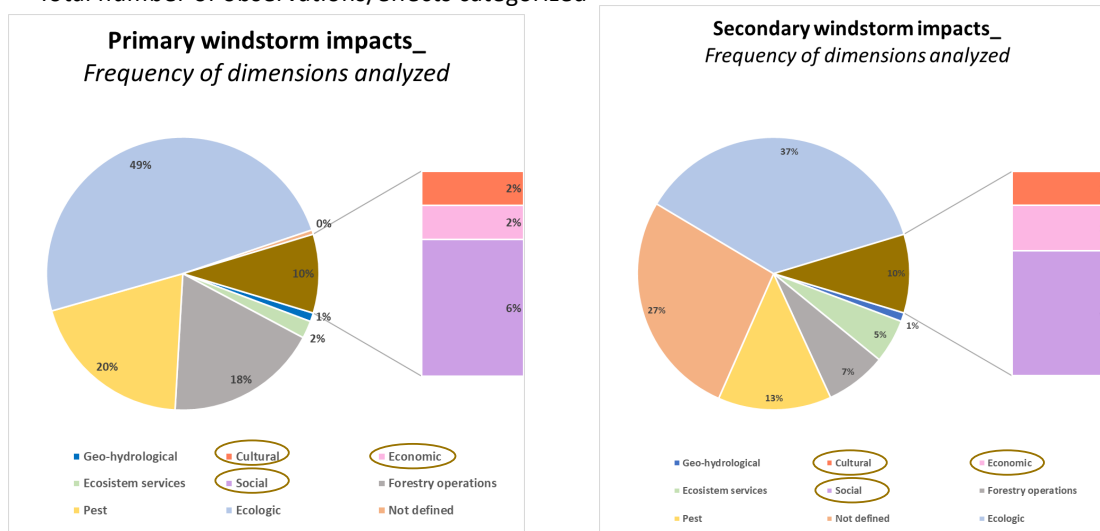
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* Most frequent impacts within the specific category



Preliminary results (3/3) *≈ work in progress*

- Total number of observations/effects categorized : **ca 190**



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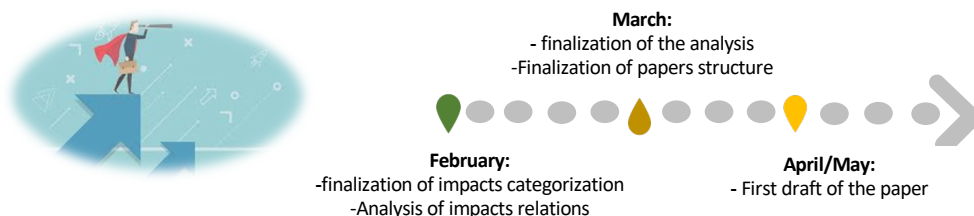


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Preliminary results: main findings and future analysis *≈ work in progress*

- Total number of **papers analysed** : **ca 140**
- Total number of **windstorm impacts categorized**: **ca 193**
- Main dimensions categorized in **primary windstorm impacts** → ✓ Ecology
✓ Pest outbreaks
✓ Forestry operations
- Secondary windstorm effects** are mainly verified in the **same dimension** of primary windstorms effects


Papers Timeline



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***Thank you
for
your
attention !!***

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