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# Building Forest Resilience Against Climate Change Through Diversification of Ecosystem Services

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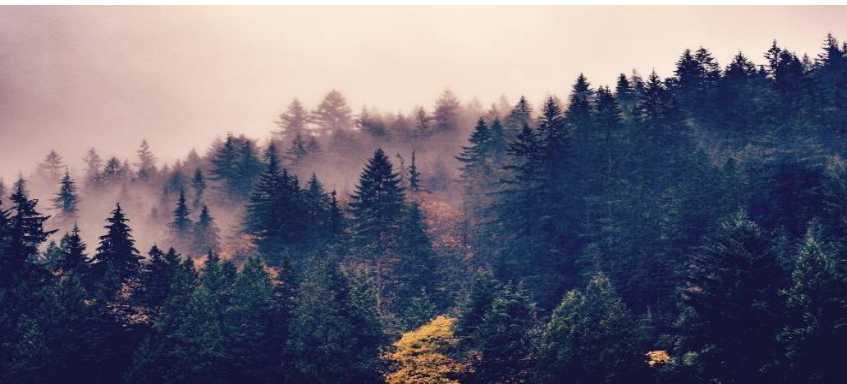
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# Background

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- Need for creating resilient forests ( biodiversity strategy 2030)
- European Forestry condition
- Stakeholders' involvement in forest management



- **Resilience** is the capacity of an ecosystem to return to the pre-condition state following a perturbation.

Why focus on **forest resilience**?

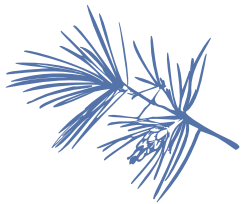
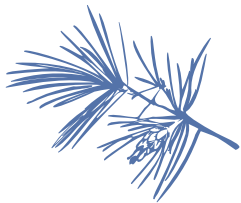


Figure: the Pillars of Resilience



Source: Tahoe Conservancy

# Forests provide important environmental services and economic opportunities.



Source: FAO Forestry Paper, 2010

## Forests provide important environmental services & irreplaceable economic opportunities

### Sinks of carbon dioxide

The world's forests absorb and store carbon in both above and below ground biomass

### Habitats for biodiversity conservation

The world's forest area primarily designated for biodiversity and forest within protected areas have increased since 1990

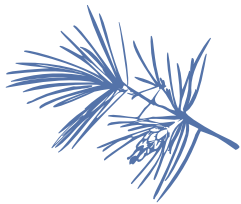
### Providers of important environmental services

Forests managed for clean water supply, resilience against disasters, recreation, cultural and spiritual activities have increased since 1990

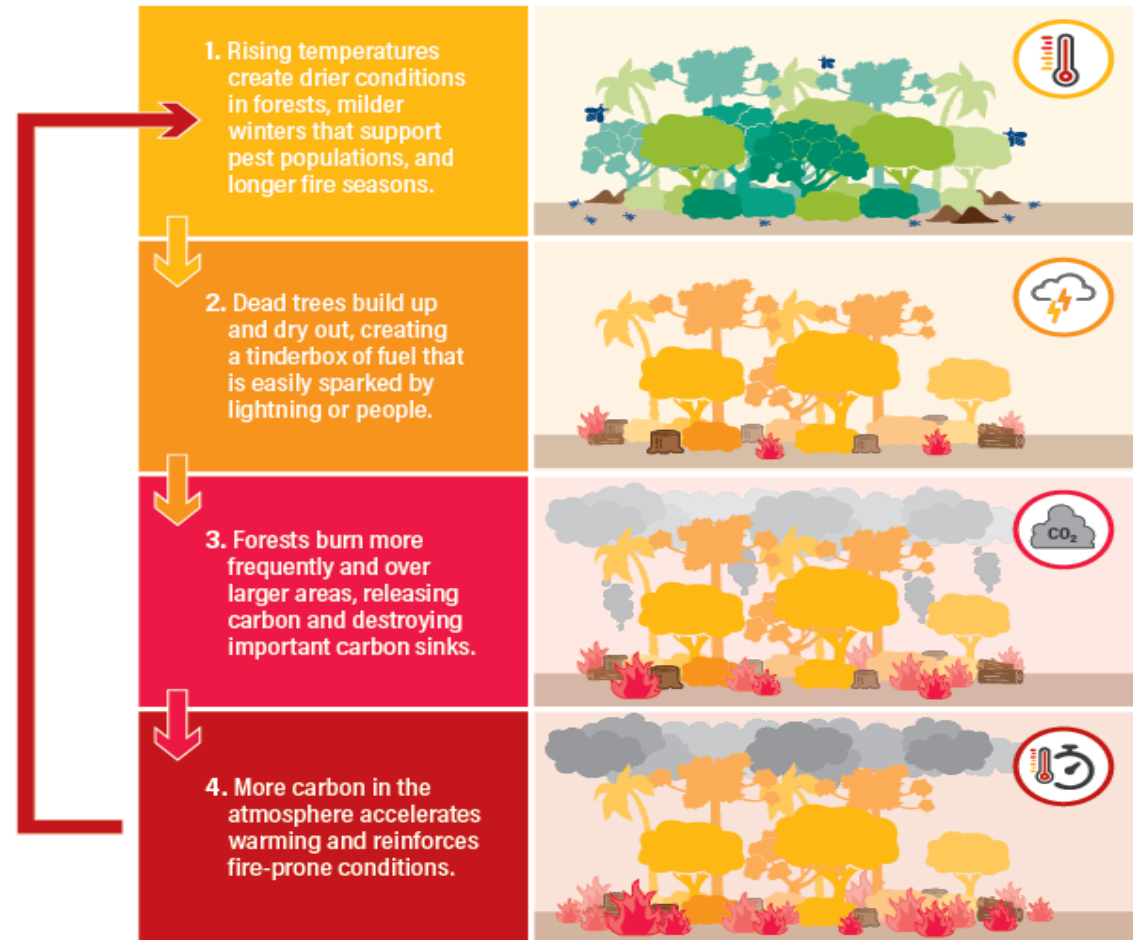
### Sustaining livelihood and economic opportunities

Forests supply the world's population with wood and non-wood forest products. In low-income countries woodfuel is still the most important wood product

# Climate Change will alter Forests due to extreme events



## How rising temperatures impact forest fires



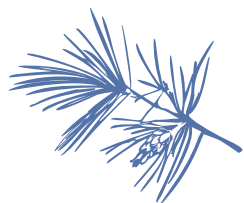
Source: Global Forest Watch.  
20.08.03



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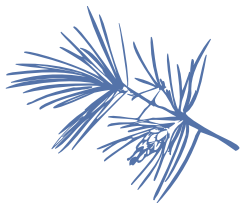


# European Forests in numbers



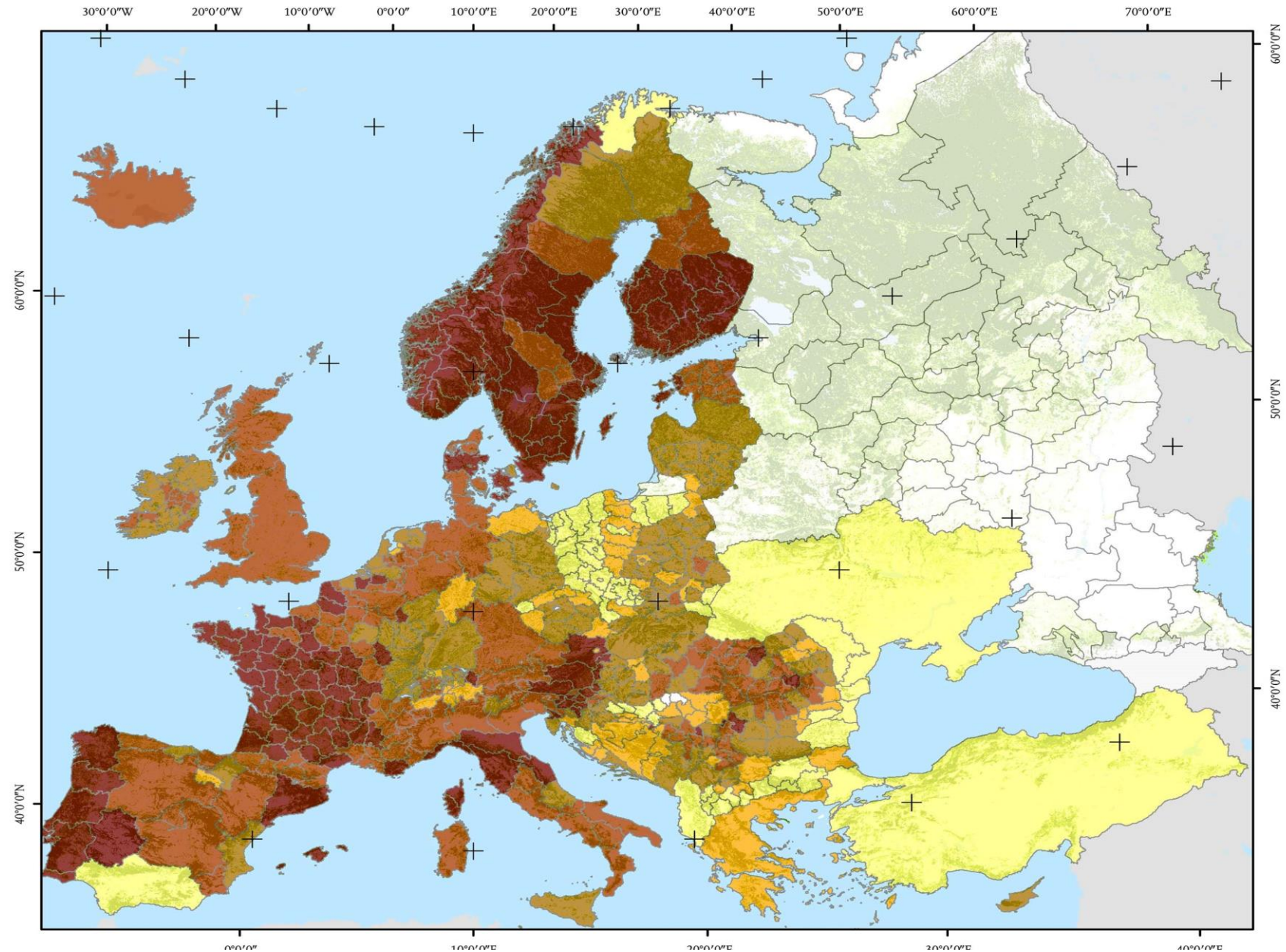


# Forest Ownership Map of Europe



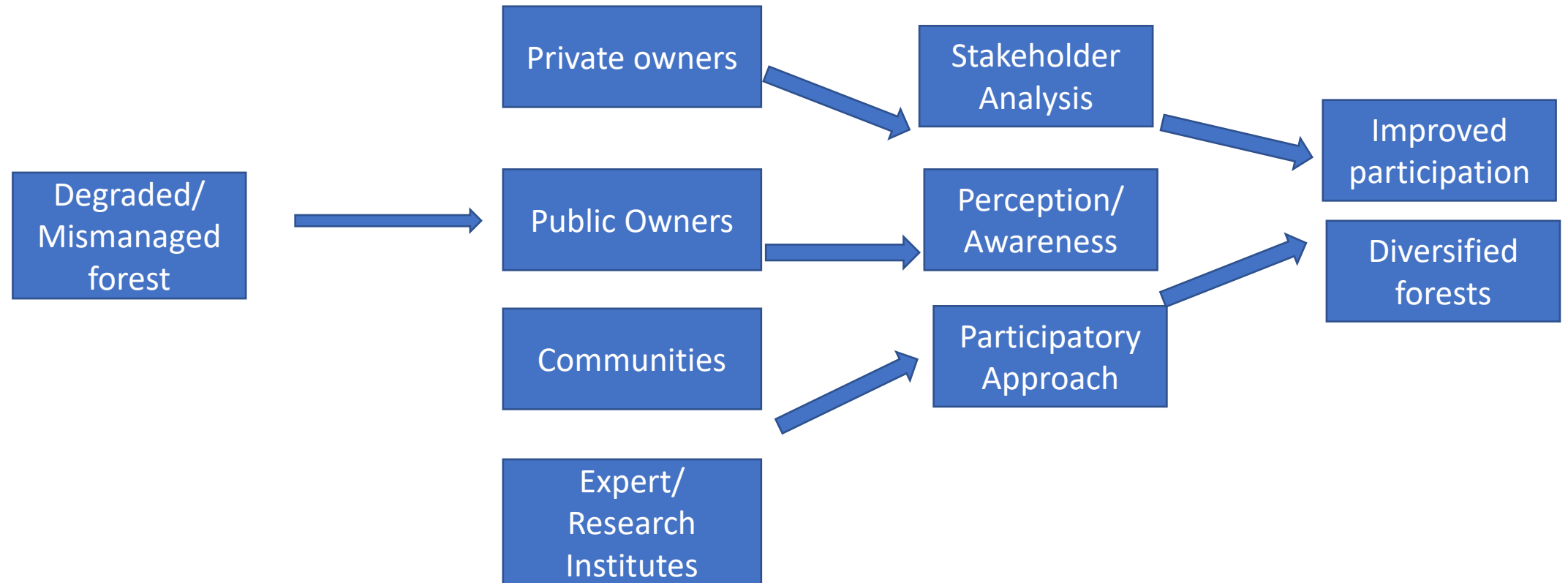
(Red-strong private, yellow-strong public)

Source: Pulla et al., 2013





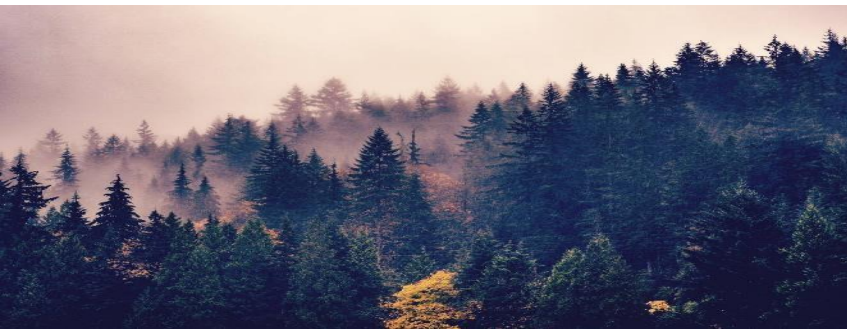
# PhD Framework



# Research Method

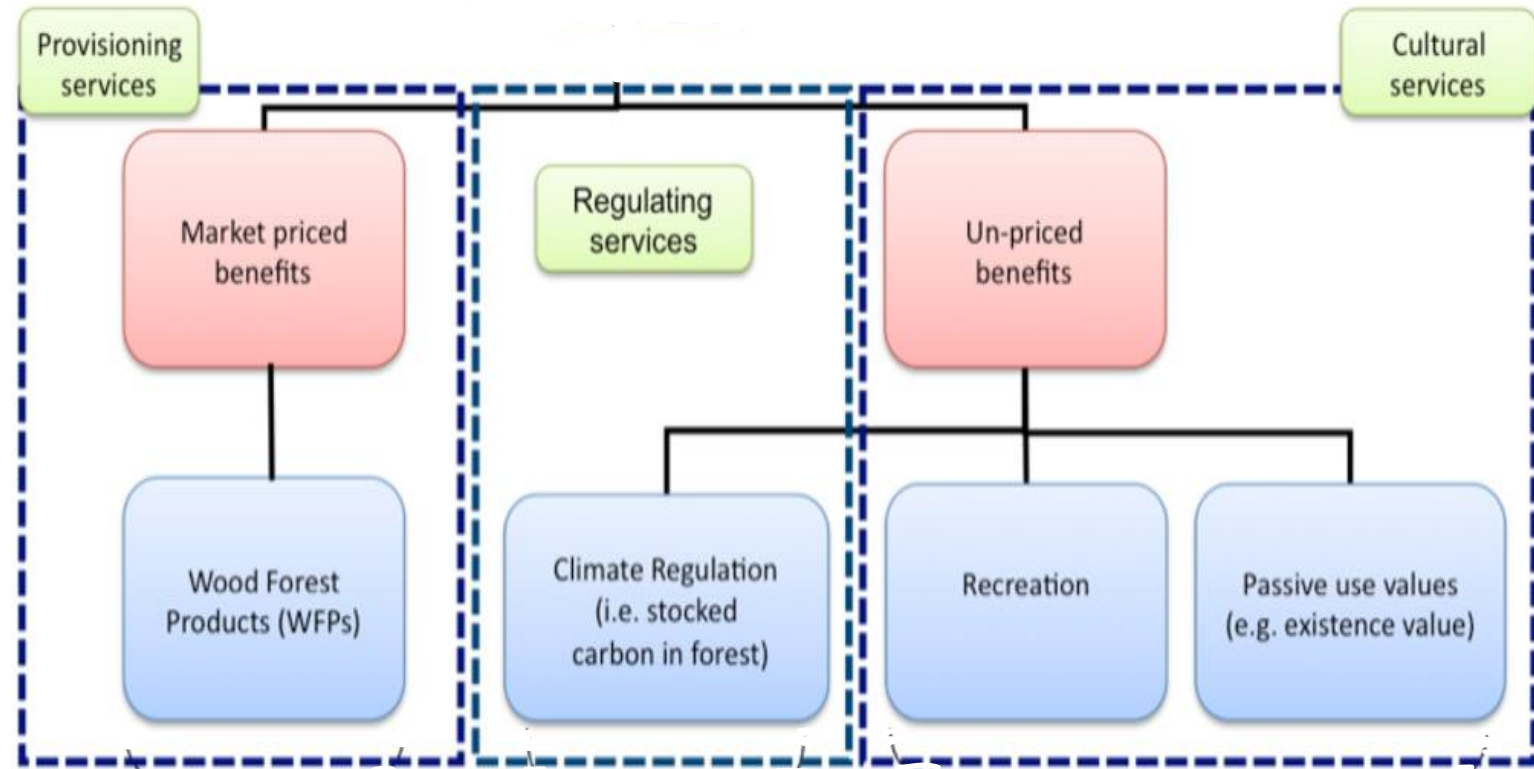
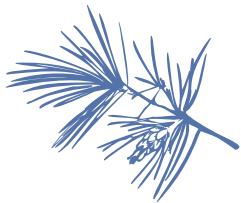
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1. Stakeholders' analysis
2. Questionnaire survey
3. Forest participatory approach





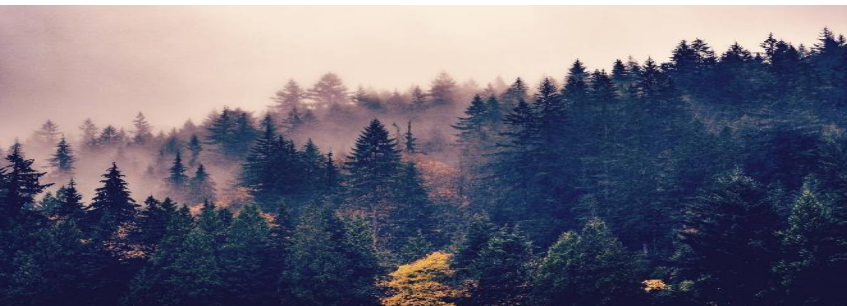
# Thematic Questionnaire



# Research Question

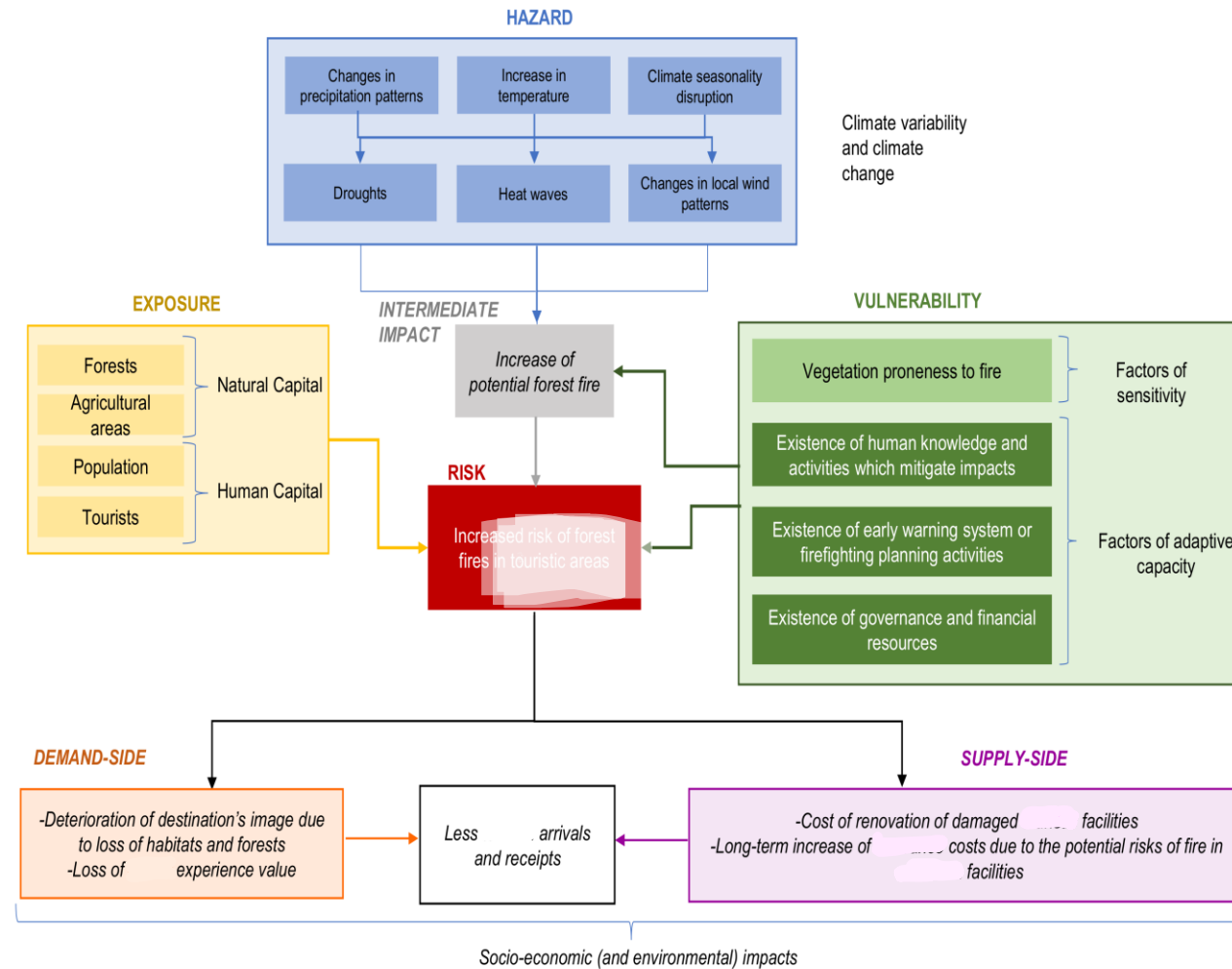
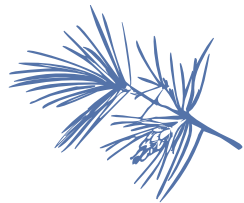
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1. What are the main benefit sought by forest stakeholders resulting from the participation approach? What are the future challenges from the stakeholder's perspective?
2. What incentives can improve the stakeholders' engagement to achieve the goal of the sustainable and resilient forest?
3. Given government incentives and future challenges, will the forest stakeholders be willing to diversify the forest land area?





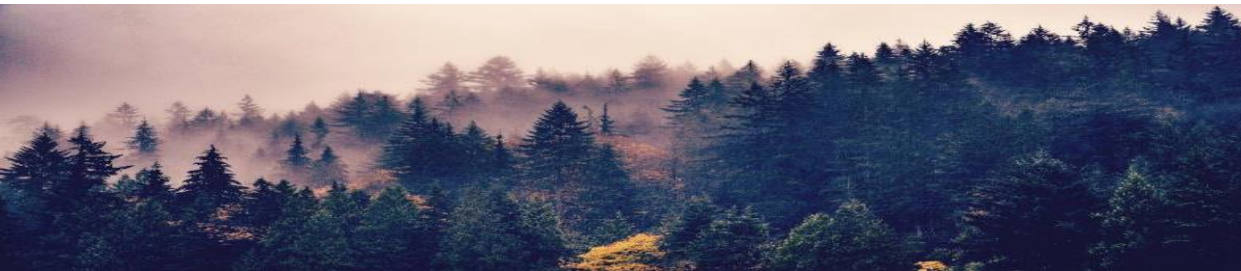
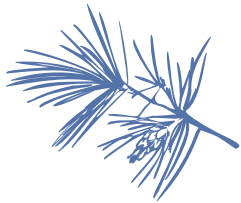
# Risk Assessment



Source: Bacciu et al., 2021

# Conclusion

- Problem: Lack of diversification and ownership rights
- Aim: Forest diversification and resilience through improving stakeholders' participation
- Approach: Questionnaire/interview discussions or informational seminar and using participatory approaches







Thank you



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