



Symposium "Climate Change and Natural Hazards:
coping with and managing hazards in the context of a changing climate"

University of Padova, Italy
25th-26th February 2019

Climate change, extreme events and forests: multifaceted and multidisciplinary measures for coping with complex threats

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- Introduction: climate change, extreme events and socio-economic implications
- The case of Vaia Storm in Italy:
 - Socio-economic impacts
 - Governance aspects
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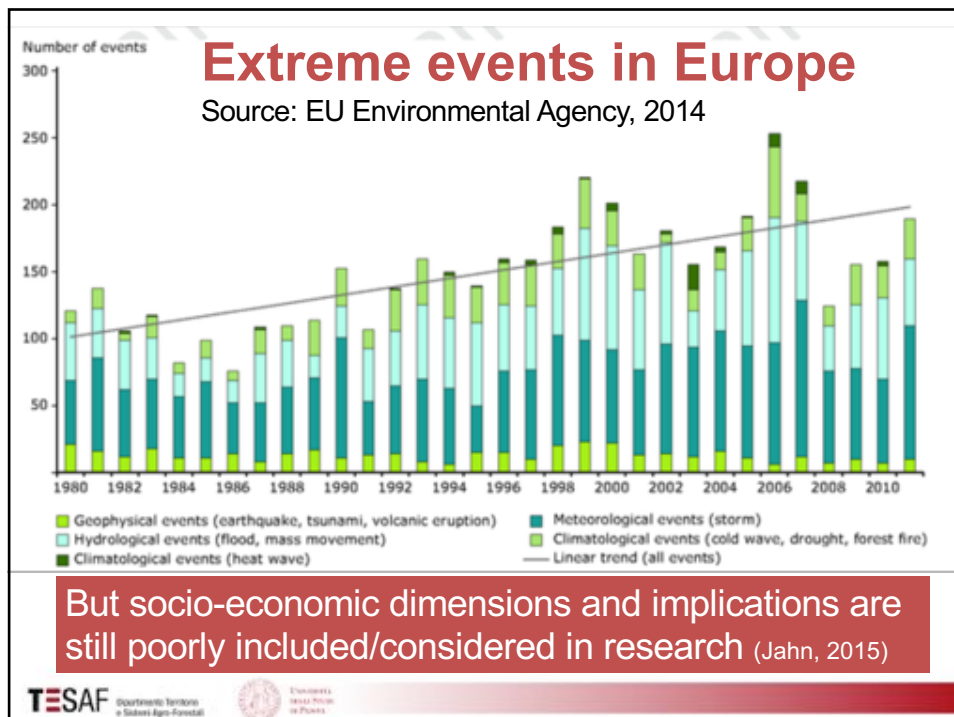
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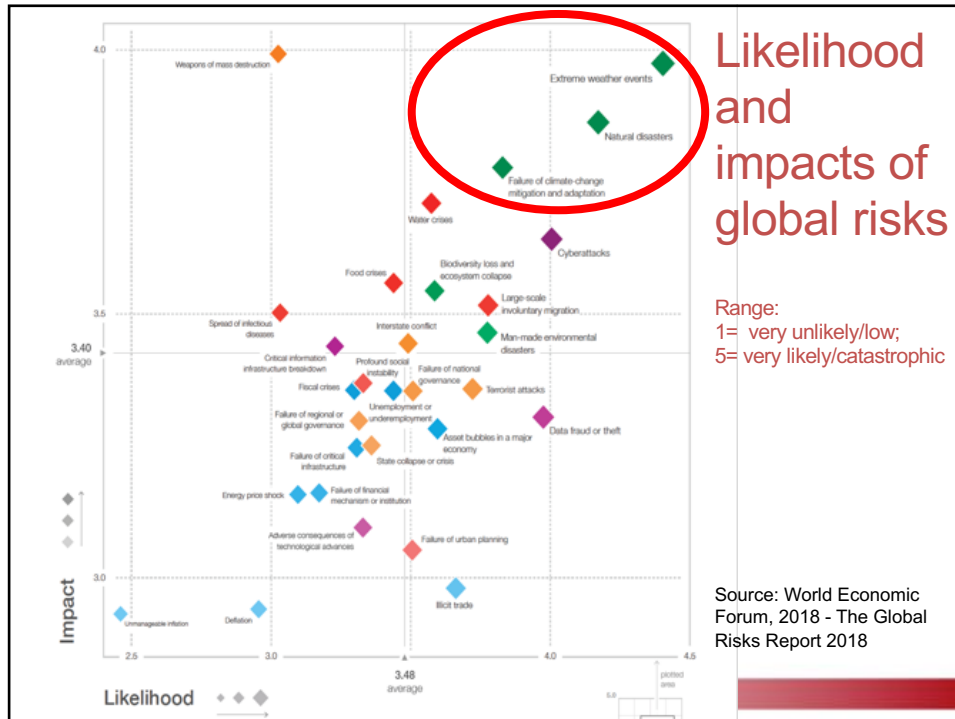
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Symposium "Climate Change and Natural Hazards: coping with and managing hazards in the context of a changing climate", 25th - 26th February 2019, University of Padova, Italy

Climate change, extreme events and forests: multifaceted and multidisciplinary measures for coping with complex threats

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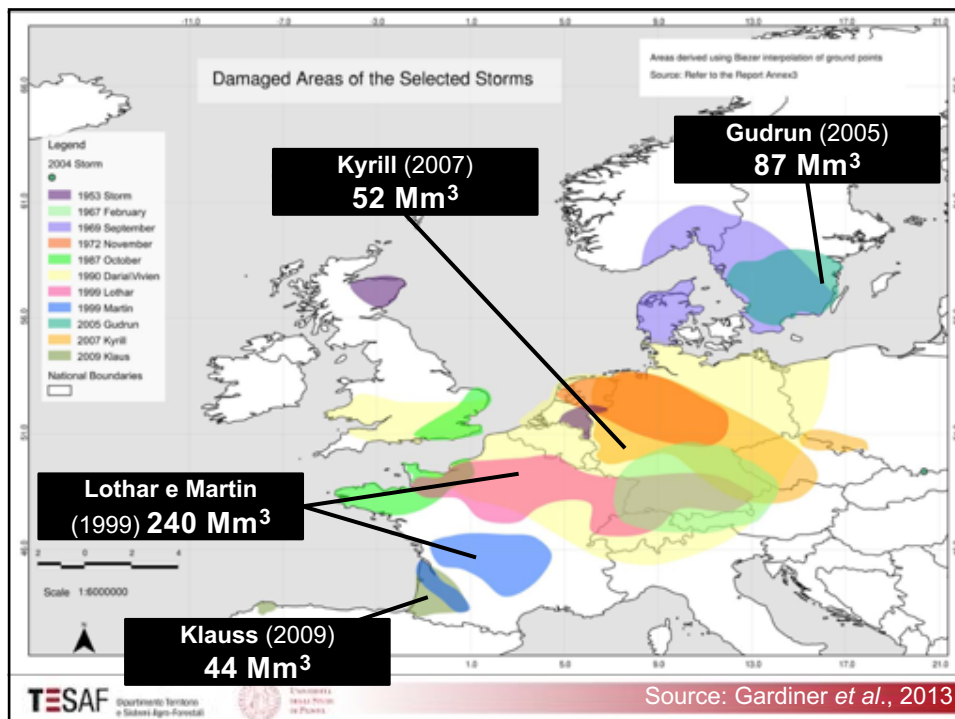
Abstract

Climate change and forests are interlinked: while forests play a major role in mitigating climate change, they are also threatened by it. Climate change is expected to produce long-term effects on forests and meanwhile increase the occurrence of extreme events directly/indirectly affecting forest resources. Windstorms, prolonged droughts, heat waves, fires etc. have increasingly occurred in the last decades and their impacts grown with the increase of the growing stock and average forest age observed across Europe. Besides damaging forest resources in environmental terms, extreme events have also socio-economic impacts, affecting for example timber supplies, market prices, management/investment choices and costs of insurance; not mentioning damage costs, losses of human lives and public goods or psychological effects.

After providing an overview of recent and forecasted trends in extreme events affecting forests, with a focus on storms and fires in Europe, the paper discusses a broad range of possible prevention and adaptation measures, as well as their economic and political implications. Technical forest management solutions, traditionally considered center-staged, need to be revised and innovative specific policy and governance solutions, with new roles assigned to the civil society and private spheres, need to be identified both at the local and global scale.

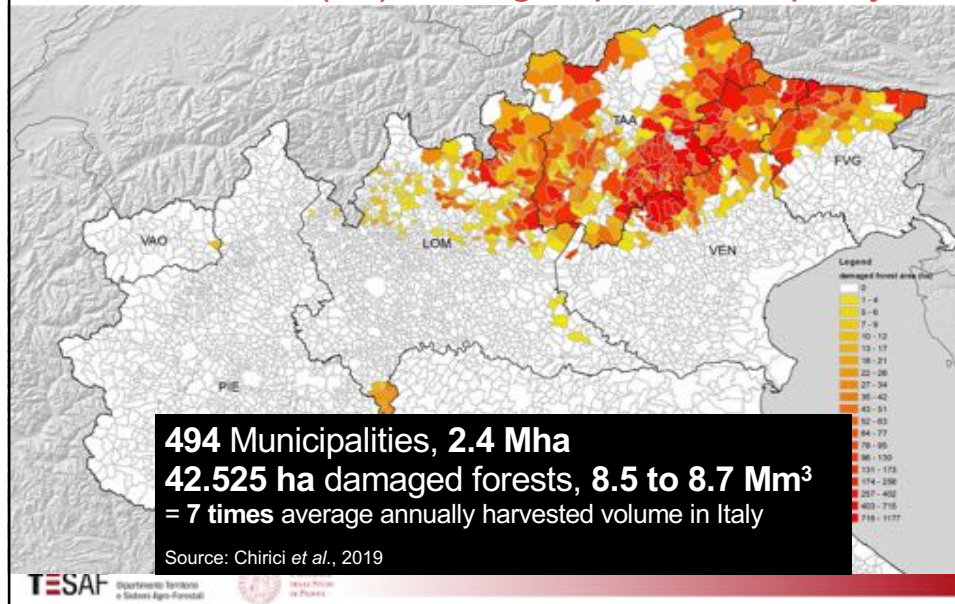
Words: 200

28th September 2018



Vaia storm (28-30th October 2018)

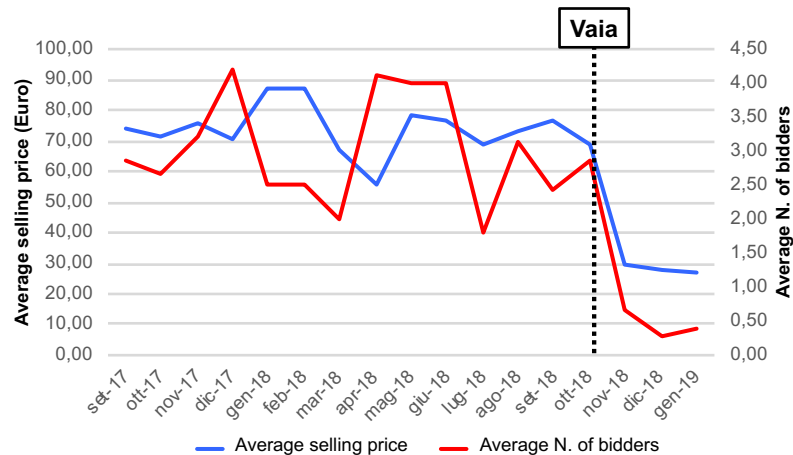
Forest areas (ha) damaged per municipality



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Decreasing number of bidders and average wood selling prices



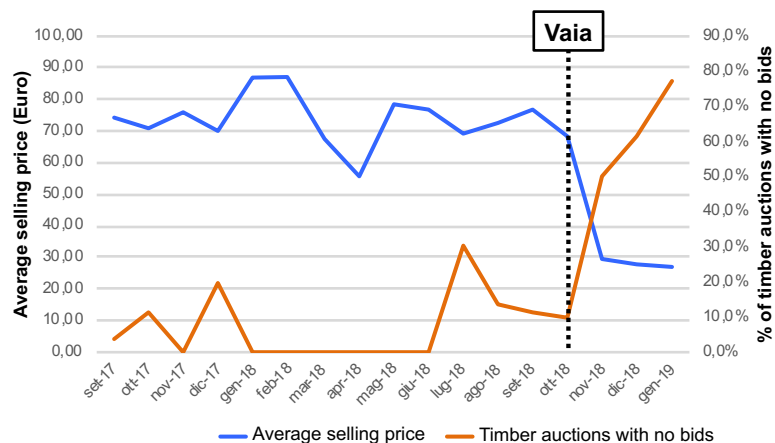
Source: Andrighetto et al., 2019; 1 008 timber sale lots; total volume placed on the market 0.34 Mm³ (of which 0.23Mm³ (=68%) standing trees). Period: from 1 Sept. 2017 to 31 Jan. 2019

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Market saturation: decreasing prices, increasing auctions with no bidders



Source: Andrighetto et al., 2019; 1 008 timber sale lots; total volume placed on the market 0.34 Mm³ (of which 0.23Mm³ (=68%) standing trees). Period: from 1 Sept. 2017 to 31 Jan. 2019

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Vaia damages to forest resources: a quick preliminary assessment

Regions/ provinces	Damaged forest area (ha)	Timber volume 1 000 m ³	Damage estimation (M€)		
			Timber		ES
			^A 50 €/m ³	^A 20 €/m ³	^B €/anno
Veneto	12 114	2 500	125	50	5.7
Trentino	18 300	3 300	165	66	8.6
South Tyrol	4 200	1 500	75	30	2.0
Friuli VG	3 600	950	48	19	1.7
Lombardia	3 200	400	20	8	1.5
Total	41 491	8 690	434	174	19.5

A. Assuming an average stumpage price equal to 50 €/m³ and an actual selling price equal to 20 €/m³

B. Quick estimation via benefit transfer assuming an average value of 470 €/ha/year for ecosystem services (ES) losses (CLIBIO project quoted by ten Brink et al. 2009)



Adventure park
Roana (VI)
Credits: S. Cesca

Additional damages:

- **Urban trees and green areas** → e.g.
Feltre (BL): 850 trees, 20M€ (+1 casualty)
- **Machinery and equipment** of forestry enterprises
- **Forest-based business activities**
- **Hiking paths**
- Discouraging effects on **tourists/visitors**
- ...



Dolomites bike path
Castellavazzo (BL)
Credits: A. Pra

Social impacts

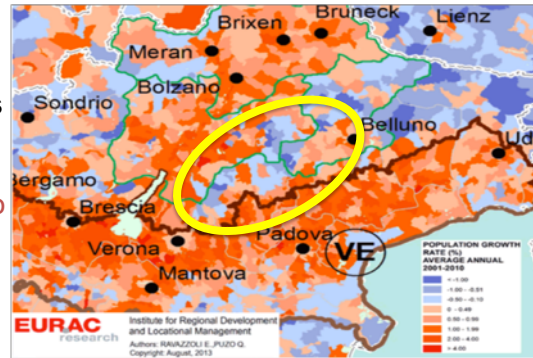
Catastrophic events might increase/accelerate on-going abandonment trends in marginalized areas

An example – Southern Belluno area (23 municipalities):

2011-17 Population Var. **-8.6%**

2011-15: **-1.8%**

2015-17: **-6.8%**



Source: own elaboration from Istat 2011-2015 and Comuni Italiani.it, 2017

Ageing:

<50 years old: **-4%**

>50 years old: **+4.4%**

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A biased public perception of forests



Forest cover in Italy **doubled** in the last **50-60 years**

About **40%** of the Country is covered by forests

...but **more than 60%** of the population has the opposite perception

(Gari *et al.*, 2018)

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A “black and white” picture

- **A quick reaction on emergency issues** (safety, basic services and infrastructures)
- **Prompt and effective** reaction by:
 - Civil society organizations
 - Education institutions (Schools and Universities)
 - Private sector organizations
 - Mayors and institutions at municipal level
- Massive **attention/coverage by media**
- Some **discrepancies and gaps at the intermediate (regional/provincial) scale**

Bi-dimensional discrepancies and gaps

Public sector



Lack of an inclusive approach, coordination of different levels and actors...sometimes even within the public sector (e.g. Veneto Region and Veneto Agricoltura)

**Private sector
and civil society**



Lombardia Trentino South Tyrol Veneto Friuli V.G.

Differences in: normative frameworks, law-derogations, data collection and monitoring, financial support measures, forest enterprises coordination, nursery management, management of protection areas, primary sector (sawmilling) capacity...

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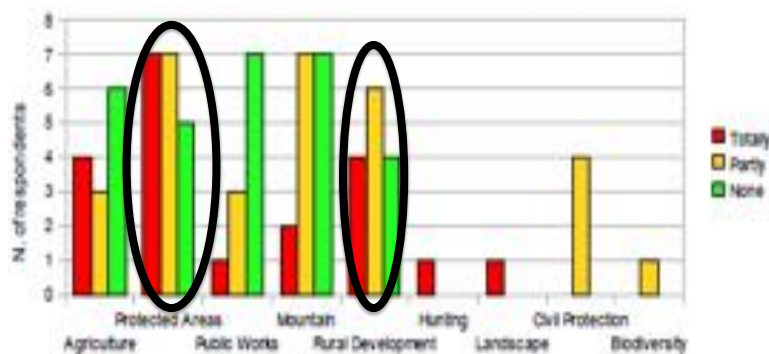
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Public forest sector competences dispersed among different sectors

Transfer of forest competences to other sectors within Public Administrations



Results of an analysis carried out in 2012 in 6 Public Forest Administrations at Regional level in Northern Italy (Source: Saccone, 2013)

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Adequate resources allocated? An example

Proactive prevention measures should include forest management (FM) planning to support active FM

From 2012 Veneto Region has **stopped** financial supporting measures for **FM planning**

Year	Forest area with a FM plan in place (ha)	N. of valid FM plans
2010	282 000	257
2017	175 000	111

**FM planning over broad areas including multiple smallholders
ca. additional 70 000 ha*



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Conclusions (1/2)

- Extreme events likely to become more intense and (maybe) frequent
- Effective prevention and management capacity goes **beyond pure technical aspects**
- “(...) *a rapid response to such disorganising, catastrophic, psychologically shocking events rarely produces good results **unless there is already a deep understanding of forest ecology [and governance] firmly embedded in management rules and culture***” (Vallauri, 2005; p. 342)

Conclusions (2/2)

Learning from crisis:

- New **management models** for active FM (silvicultural practices...but also public-private partnerships, medium/long-term contracts for management of public forests,...)
- Managing **natural capital** → valuing **social capital** (e.g. mountain/marginalised areas)
- **Linking** different actors within areas at risk (the public sector as a “catalyst” and “glue”)
- Rethinking and reorganizing **governance structures** to fill the gaps and make them more effective

Facing an
increasing
intensity of
extreme events...

...we need to
assume a new
perspective on
governance and
management of
forest resources

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