Dealing with extreme events and forest management: can universities have a role? The case of Vaia storm in Italy

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• The case of Vaia Storm in Italy
• Reaction and initiatives (with a focus on forestry and PD University)
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Global trend of extreme (weather) events
Source: EM-DAT, 2018
Extreme events in Europe (baseline: 1980)
Source: EASAC, 2018

Likelihood and impacts of global risks
Range:
1= very unlikely/low;
5= very likely/catastrophic

Forest damages due to disturbances in Europe (Schelhaas 2008)

* "Other causes" includes anthropogenic damage, unidentified causes and mixed causes.

Lothar e Martin (1999) 240 Mm³
Klauss (2009) 44 Mm³
Kyrill (2007) 52 Mm³
Gudrun (2005) 87 Mm³
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**Vaia storm** (28-30th October 2018)

Forest areas (ha) damaged per municipality

494 Municipalities, 2.4 Mha

42,525 ha damaged forests, 8.5 to 8.7 Mm³

= 7 times average annually harvested industrial roundwood volume in Italy

Source: Chirić et al., 2019
A multifaceted event: some impacts and risks (among others)

• Natural capital and biodiversity
• Infrastructures and hydrogeological risks
• Economic impacts
• Social aspects
Damaged forests in protected areas

About **809 ha** in natural and national parks (incl. Natura 2000 sites) (Aut. Prov. BZ, 2019)


About **5,000 ha** in 27 Natura 2000 sites (Sitzia, 2019)

Changed landscapes
Ecological, social and economic implications

Credits: G. Corradini
Impacted infrastructures

- Power/mobile lines
- Water facilities
- Roads
- Forest roads
- Hiking and bike paths
- Defensive infrastructures
- River banks
- Urban green areas/parks and facilities
- …

Including green infrastructures and their protective functions
Timber market
Standing trees - Autonomous Province of Trento (online + offline auctions)

Source: own elaborations from Legno Trentino web portal & Autonomous Province of TN data

Domestic market got saturated: export towards traditional (Austria) and new (China) trade partners

Source: Il Corriere delle Alpi – 11th May 2019
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)

But also more visibility for the forestry sector

A TV program on 4 highly-specialized forest-enterprises working in forest areas damaged by Vaia storm
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A “black and white” picture

• A quick reaction by institutional and voluntary bodies on emergency issues (safety, basic services and infrastructures)

• Post-emergency issues:
  – Uneven reaction by regional/provincial Public Administration bodies on
  – Quick and (quite) significant reaction by:
    • Civil society organizations
    • Education institutions (Schools and Universities)
    • Private sector organizations
    • Mayors and institutions at municipal level
The main forestry department in NE Italy

A broad set of (different) initiatives involving/promoted by TESAF-UNIPD

- *Formal involvement by the regional government in post-event initiatives*
- Conferences/Public events
- International networking
- Initiatives by Department staff
- PhD research activities
- Initiatives for/in cooperation with students
- Side initiatives promoted by partner organizations
Conferences and public events

International visibility and networking

Coping with the aftermath of storm Vaia in North-East Italy

A multidisciplinary research project proposal covering key-aspects (draft) (including grants for young scientists)

**WP1:** Project Coordination; Communication and dissemination

**WP2:** Review of current approaches for forest risk management and establish a language for risk assessment

**WP3:** Forest socio-ecological systems (SES) risk assessment:
- Vulnerability
- Expected Damages
- Risk assessment

(forests, ecosystem services, linear infrastructures, social vulnerability/ perception, wood market)

**WP4:** Forest SES risk management and governance for resistance and resilience
- Governance structures
- Technical guidance
- Integrated framework

**WP5:** Vaia observatory (data repository)

Early draft version for consultation only, please do not cite or circulate
PhD research activities

Priority research topics

Research areas: Agriculture, forest and food economy and policy

Under the Collaborative Research Centre (CoS) with the Joint Research Centre (JRC) of the European Commission type but for socio-technical, a superior research topic is:

- Integration of social and economic aspects in the EU bio-economy

The updated EU bio-economy strategy encompasses not only the primary production sectors and the institutional sectors that use integrated renewable and agricultural systems to manage natural resources and agri-food systems, but also the economic and cultural aspects that play a role in the local economies, even if indirectly in small-scale activities connected to tourism, educational, cultural, and social activities. In this context, the assessment and monitoring of forest ecosystems, in terms of biodiversity and landscape value, are seen as key components for the sustainability of ecosystems and the social benefits they provide.

Young scientists for Vaia research program

4 thematic areas for PhD candidates applying in 2019

Initiatives for/in cooperation with students

Research and teaching staff:
Addressing “extreme events and forests” from different view points (from silviculture to forest governance)

(Informal) commitment to include “Extreme events” as a complementary topic within multiple courses of Forest Science MSc and BSc programs

Roundtable with experts from 5 regional Forestry Departments
Training courses for students and practitioners

55th CORSO DI CULTURA IN ECLOGIA
Storm damages to forests
3-5 giugno 2019

Field-trips and on-site visits
Initiatives promoted by partner organizations

An example
Arte Sella (Val di Sella)
Fundraising and activities

3 companies:
- Barilla → improved habitats
- Levico → carbon sequestration
- Prodeco → tree planting
  → Impacts to be verified via FSC® procedure for ecosystem services

+ About 300 single donors

Support to: planting, planning, management, FSC certification, communication & promotional activities
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Conclusions (1/2)

• Extreme events likely to become more intense and (maybe) frequent → impacts on forests
• Effective prevention and management capacity goes beyond pure technical aspects
• “…a rapid response to such disorganizing, 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)
  → Higher education/research shall be part of it
Conclusions (2/2)

Learning and innovating from crisis:

• Addressing “extreme events” within existing teaching programs (adapting existing courses, creating ad hoc modules, seminars, MOOCs/SPOCs…)

• Research programs/activities involving young researchers

• Linking different actors within areas at risk (higher education institutions as a “catalyst” and “glue”?)

• Rethinking how to communicate forests and forestry

• Learning from each-other and sharing across EU and globally (windstorms, wildfires…)

Facing an increasing intensity of extreme events…

…a new perspective is needed while approaching forestry education and forest management