Towards a More Holistic Approach to Fire Management and Biomass in the EU

European Commission, Joint Research Centre

Directorate D – Sustainable Resources, Forests and Bioeconomy Unit (JRC.D.1)

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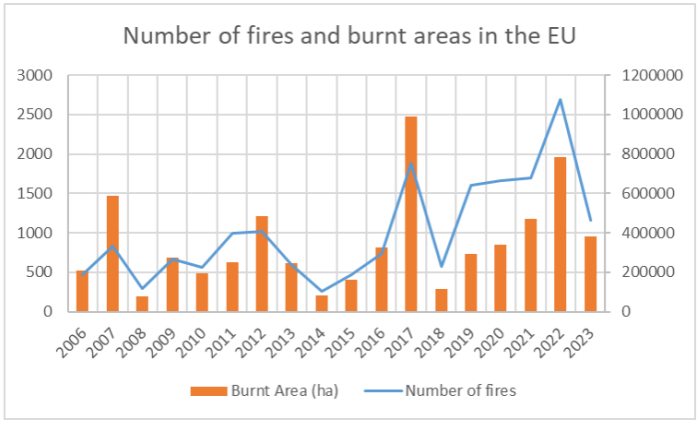
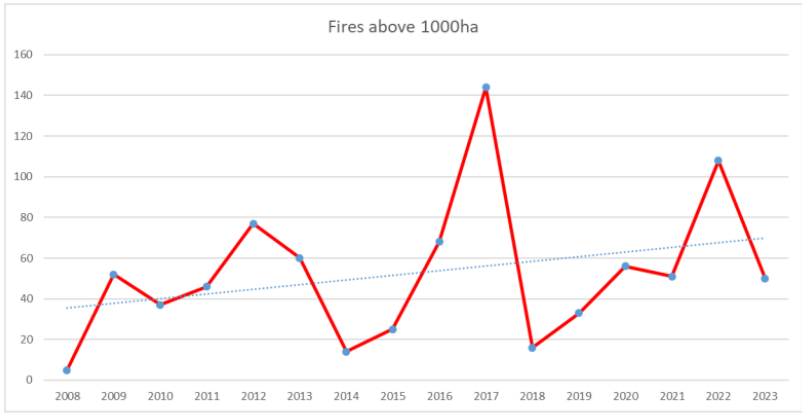
Fire Risk

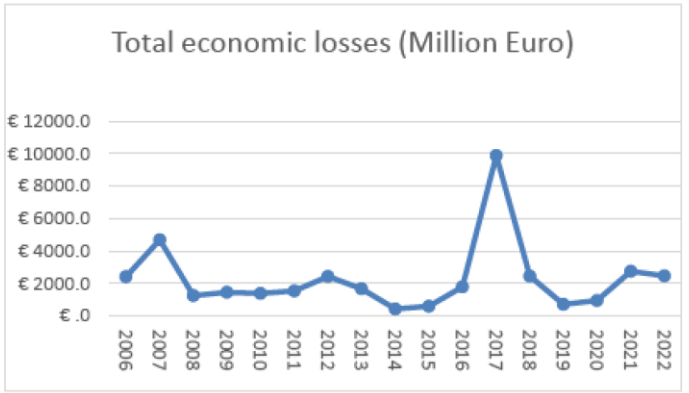
Fire risk is increasing with major (and costly) impacts on forest ecosystems and socioeconomic development, threatening human lives and infrastructures

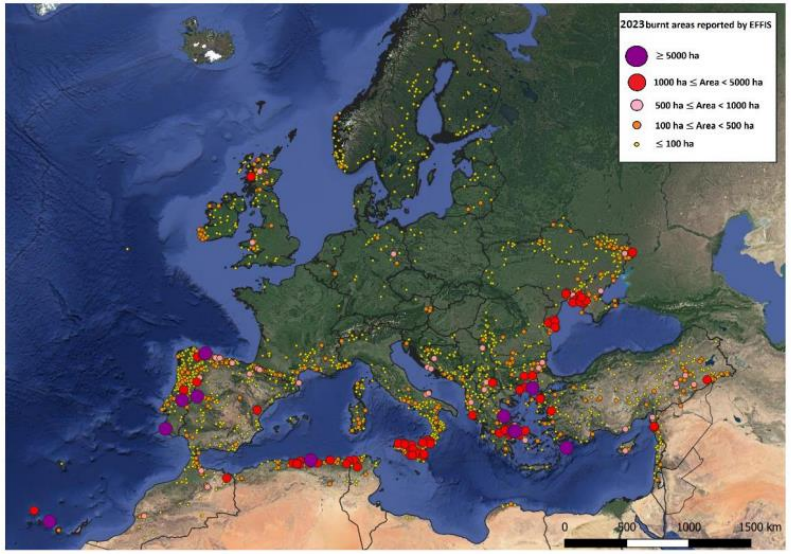
Increase in the number of fires and burned areas

Countries not commonly affected by wildfires in the past (central Europe) are becoming more exposed









Almost 200, 000 ha in 2023, more than 40% above the average recorded over the period from 2003 to 2022 (130,000 ha)

Source: Joint Research Center (JRC) / European Forest Fire Information System (EFFIS) https://gwis.jrc.ec.europa.eu

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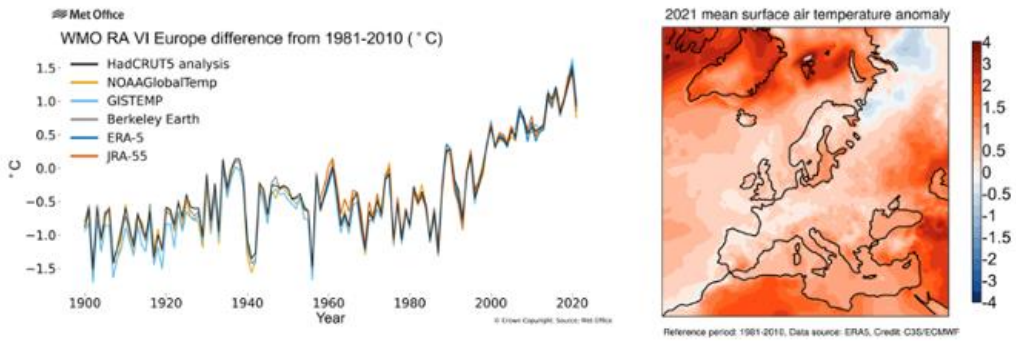
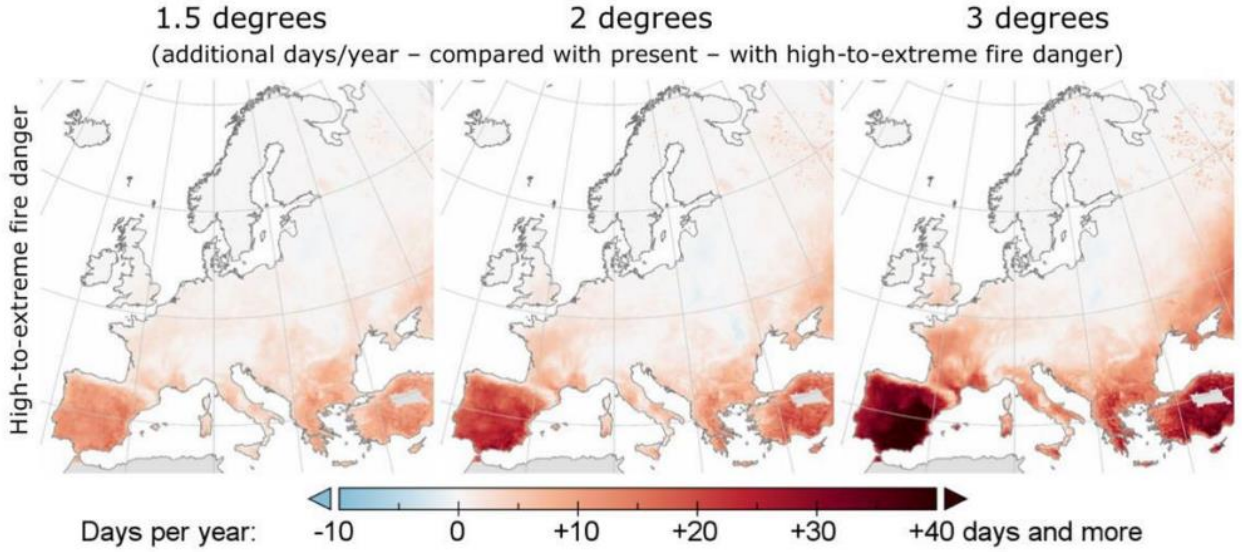
Climate Change

Temperatures in EU increase more than twice global average

Days with high-to-extreme wildfire danger will increase



Annual average temperature anomaly for 1900-2021 compared to the 1981-2010 reference period for land-only over Europe. Credit: UK MetOffice. Right: Annual average surface air temperature anomaly (°C) for 2021 compared to the 1981-2010 reference period. Data: ERA5 reanalysis. Credit: Copernicus Climate Change Service/ECMWF



Source: European wildfire danger and vulnerability in a changing climate: towards integrating risk dimensions, EUR 30116 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN: 978-92-76-16898-0, doi:10.2760/46951, JRC119980

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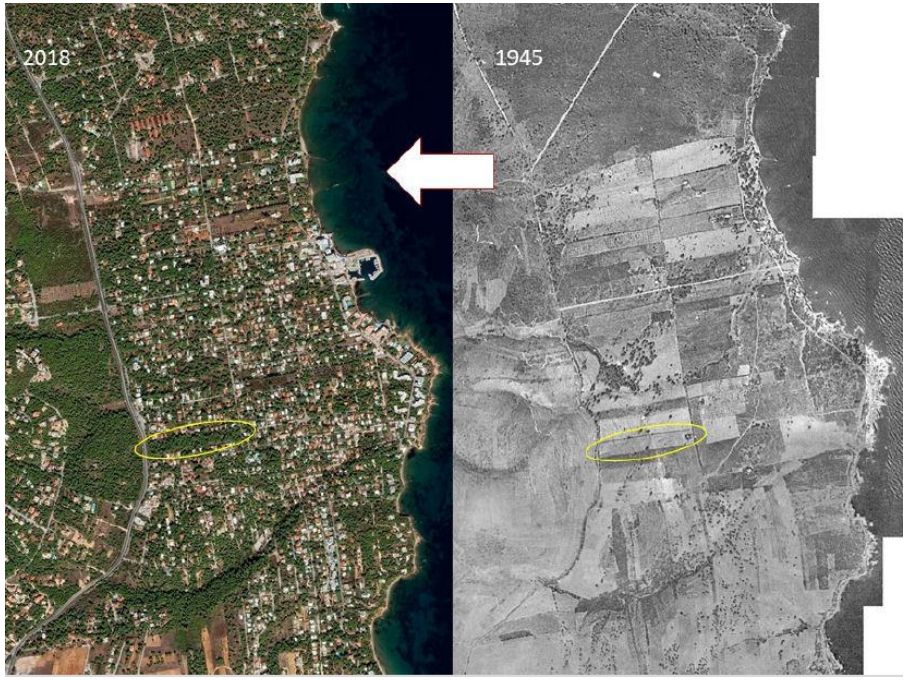
Wildland–Urban Interfaces

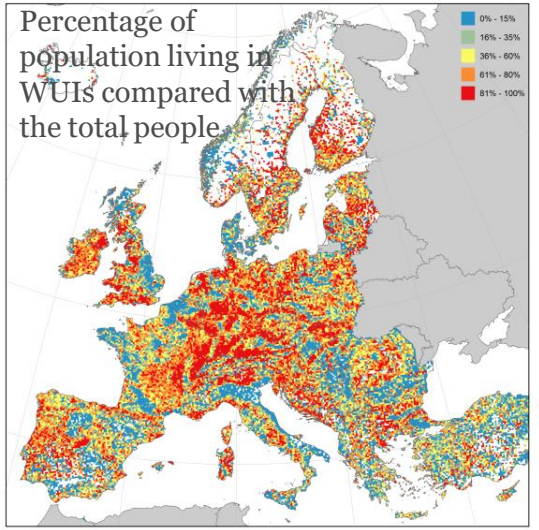
Focusing on biomass/fuel management within the WUI is a top priority because of the scale of the potential economic damages and the risk to people

Areas at risk from forest fires are projected to increase by 200% in EU by 2100 due to climate change and the expansion of WUI

The WUI covers about 7.4 % of the European surface area

Calls for international collaboration in fire research and prevention





Left image: The Mati area in Greece before the devastating fire of July 2018. Highly-populated residential area close to the sea side. Right image: the same area around 70 years before, dominated by crop fields (Source: David Caballero). Bar-Massada, Avi, et al. "The wildland–urban interface in Europe: Spatial patterns and associations with socioeconomic and demographic variables." Landscape and Urban Planning 235 (2023): 104759.

Integrated Fire Risk Management

Shifting focus from suppression to prevention and increasing the awareness and preparedness of population at risk

Developing synergies between EU and national policies to improve wildfire risk management

Promoting resilient landscapes and communities through integrated Fire management in the EU

Improving firefighting and rescue capacities of first responders in crisis management

European Commission, Directorate-General for Research and Innovation, Vallejo Calzada, V., Faivre, N., Cardoso Castro Rego, F. et al., *Forest fires – Sparking firesmart policies in the EU*, Faivre, N.(editor), Publications Office, 2018, https://data.europa.eu/doi/10.2777/181450

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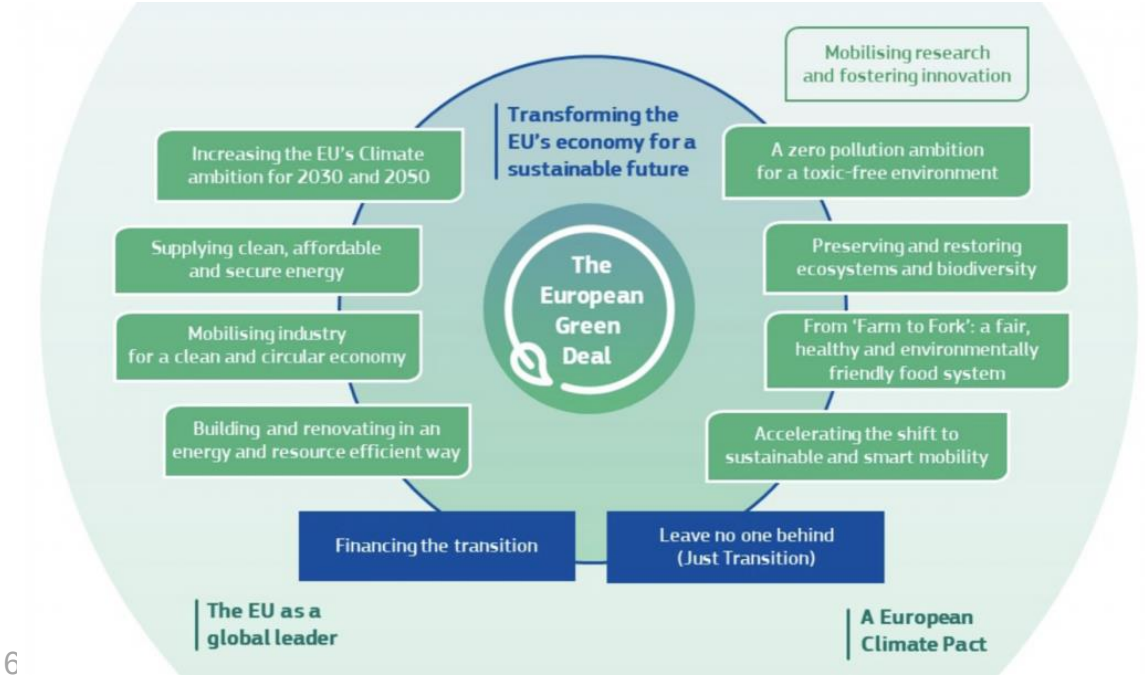
Policy Context-Forest

Covering 39% of Europe's land area, forest ecosystems are expected to play a multifunctional role in the European Green Deal (EGD), to simultaneously provide ecosystem services, and to help mitigate climate change

Forests are at the interface of many policies to solve many global challenges



EU Biodiversity Strategy
EU Forest Strategy
EU Nature Restoration Law
EU Bioeconomy Strategy

- Improve the quantity and quality of forests to protect ecosystem services and their resilience
- Increase biodiversity and restore degraded ecosystems
- Plant at least 3 billion additional trees by 2030
- Contribute to Net zero objectives
- Increase resource-efficient and competitive economy
- Increase renewable energy use including bioenergy
- Preserve jobs in rural areas

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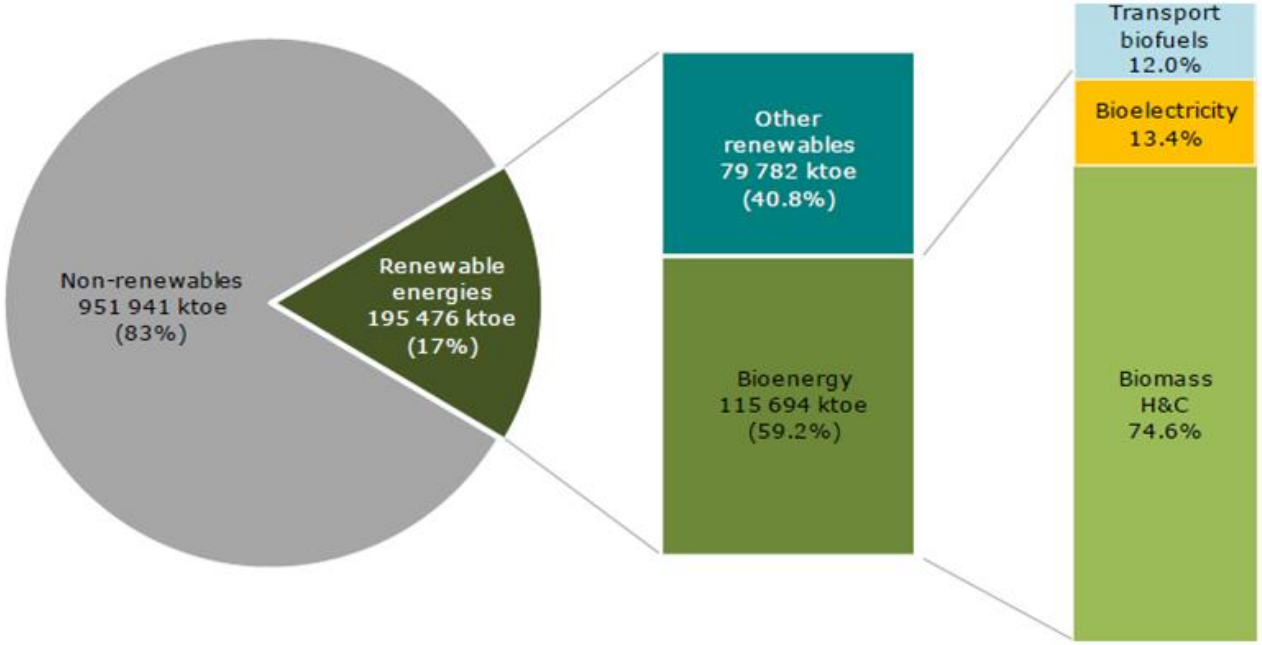
Policy Context-Biomass

Biomass is the largest source of renewable energy globally today, accounting for 60% of renewable energy in Europe and over 6% of global energy supply.



The primary source of biomass for energy purposes is wood: Only 4% of this biomass was imported from outside of the EU, while 96% came from the Member States. Most of the biomass for energy purposes is used within the country of origin, accounting for around 93% (source: JRC).

Policy Context-Biomass

Renewable Energy Directive (RED) aims to increase the share of renewable energy sources in EU energy consumption to support the EU's clean energy transition and to accelerate the EU's independence from fossil fuels

- ✓ The REDI was launched in 2009, with an overall EU target for renewable energy use of 20% by 2020, no mandatory sustainability criteria were included for forest biomass feedstocks.
- ✓ In 2018, the target for the REDII was increased to 32% by 2030, and mandatory criteria for forest biomass were introduced.
- ✓ In 2023 further amendments raised the target to 42.5% by 2030 and introduced additional measures to increase safeguards against excessive removal of biomass and against forestry practices damaging forest ecosystems.

Biomass Supply and Uses

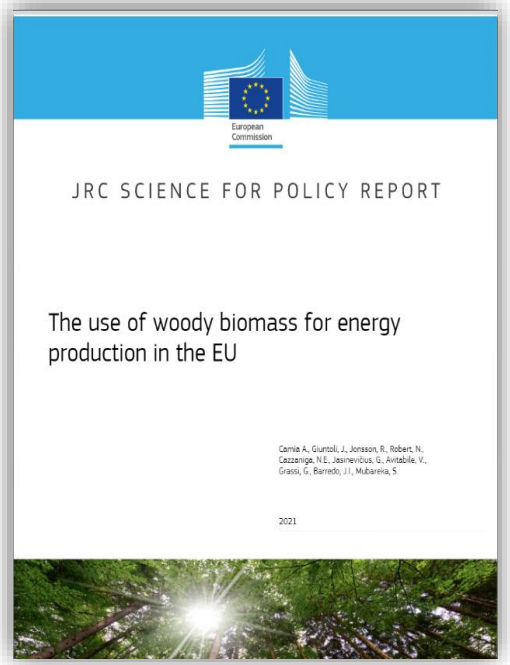
The removals from forests directly for bioenergy production has been steadily increasing over the last decades (44% from 2000 to 2013) accounting for 23% of the EU roundwood production in 2021

Between 44% and 52% of biomass used for bioenergy in the EU comes from primary sources (stemwood, treetops, branches, etc.) harvested from forests) whereas the remaining comes from secondary sources (forest industry by-products and recovered post-consumer wood)

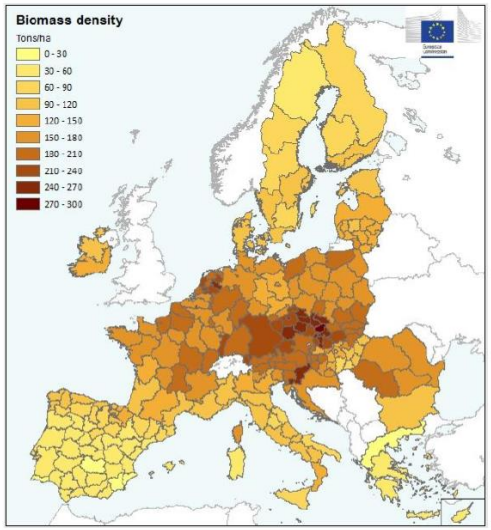
Salvage logging has increased up to 23% of total removal in 2018

The biomass potential varies greatly from one country to another

Inconsistencies and gaps in methodology and data reporting



Source: Camia et al. 2021



Source: JRC 2022 (own data)

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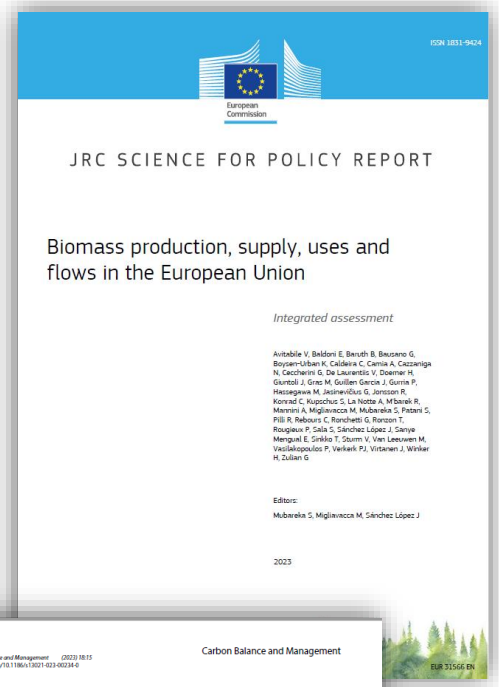
Biomass Supply and Uses

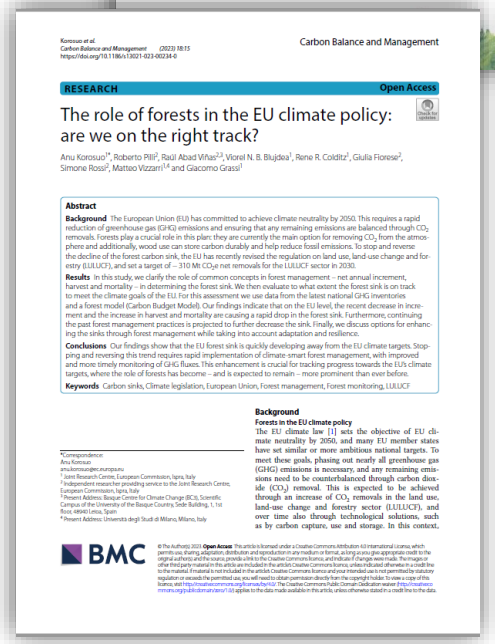
The increase in the use of primary wood for bioenergy has fueled a scientific and societal debate about the sustainability of bioenergy, particularly regarding the impacts on soil health, ecosystems condition, and bioenergy's role as a mitigation strategy

Increased biomass removals could conflict with biodiversity targets and the Paris Agreement (forest carbon sink)

The revised REDII requires sustainability criteria to avoid biomass harvest from primary forests, old-growth forests, "high biodiversity" forests, wetlands, peatlands, including deadwood

In addition, Member States need to assess biomass supply and the compatibility of forest biomass use with LULUCF carbon objectives





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Keys Messages

Fire risk is increasing in EU. WUIs are also expanding

Demand for biomass is increasing in EU and globally

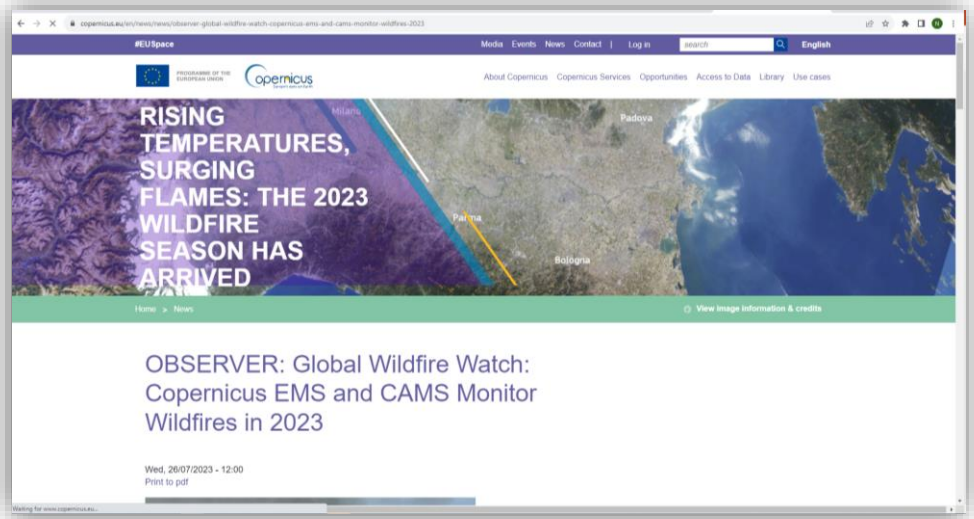
Given the increasing demand for woody biomass and the impacts of climate change, the EU forest ecosystems have come under pressure to meet unprecedented environmental and societal goals while adapting to changing conditions

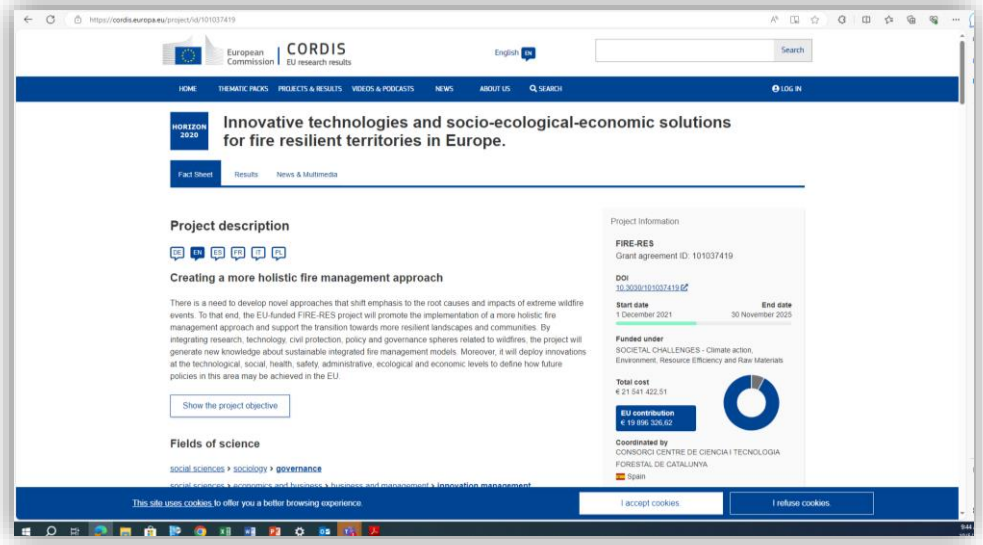
Assess the ecological limits of bioenergy systems (biomass removals) is the top priority, find "*win-win solutions for bioenergy generation*", support the principle of multifunctionality of forests

Develop synergies between the forestry and the energy sector, align European and national policies, including harmonized data to report on biomass uses and their environmental impacts at EU level.

Consider the other disturbances - wind being the most important disturbance (46% of total damage), fire (24%) and bark beetles (17%) with major impacts on forest structure and biomass availability

Questions





[Innovative technologies and socio-ecological-economic solutions for fire resilient territories in Europe. | FIRE-RES | Project | Fact sheet | H2020 | CORDIS | European Commission (europa.eu)]

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