Yearly analysis of European harvest levels 2004-2018

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European Forests: Key for EU’s Green Deal

- Landscape
- Air to breathe
- Carbon cycle
- Clean water
- Biomass for energy
- Wood for raw materials
- Erosion control
Demands for Economic and Ecological services on EU forests

*Needs of society:*

- wood production;
- ecosystem services.

Trade-offs requires monitoring of forest management
Needs: timely and accurate monitoring of forest harvest

Timely, consistent and robust assessments of forest harvest to track economic and environmental progress towards a sustainable bio-economy.

Monitoring of forest is still largely based on national forest inventories that cannot provide detailed spatial information and timely updates.

In Europe, almost 13% of the harvested forest biomass is not accounted for in official statistics.
Monitor Forest Harvest Rate of Clear-cut and Exclude Natural Disturbances

**Fires:** JRC European Forest Fire Information System (EFFIS) dataset masked out.

**Windthrown/Insect Outbreaks:**

Hp. Major windstorms are causing larger losses than those generally caused by forest management.
Power of Satellite Monitoring

1) it increases transparency because governments or civil society can better track forest management, both spatially and temporally;

2) it supports the calculation of maps of greenhouse gas emissions and removals, as required in recent EU land-related legislation;

3) it facilitates early warnings and timely policy responses;

4) it assists in validating official statistics by enabling independent checks.
Knowledge gaps

1) Remote sensing with Landsat platforms is not able to capture small scale harvest operations (< 30m).

Copernicus and Lidar will improve the accuracy.

2) Uncertainties in the attribution of natural forest disturbances to various drivers (e.g. fires, insects outbreaks, windthrown, etc).

Detection and attribution of disturbance events from anthropogenic or natural drivers / Early detection of forest health and stress events with Earth Observations.
Take Home Messages

1) Forest resources need to be mapped better.
2) Accurate, timely, and representative *in-situ* observations.
3) Integrate ground observation and NFIs with satellite observations.
4) No single technology that can directly and remotely assess forest resources.
5) Multi-temporal assessment of forest biomass
Thank you

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Despite the risks insect and disease outbreaks pose, there is currently no spatially explicit database of such disturbances across Europe.

The Joint Research Centre (JRC) of the European Commission aims to develop a comprehensive spatially explicit database of insect and disease outbreaks in European forests and neighboring regions.
New database of wind disturbances in European forests (FORWIND)

A spatially explicit database of wind disturbances in European forests over the period 2000–2018

![Graph showing forest area loss from 2000 to 2018]