



Lessons learned from wood-based energy sector as a result of Covid crisis impact
Online event, 15th November 2021

Before and after Covid: an overview of challenges, trends and perspectives for the biomass sector

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Outline

- An introduction: biomass for energy before Covid-19
- Covid-19 measures and impacts on the bioenergy sector: a quick overview
- Post-lockdown and ongoing issues: a broader view
- Resilience and recovery plans
- Final considerations

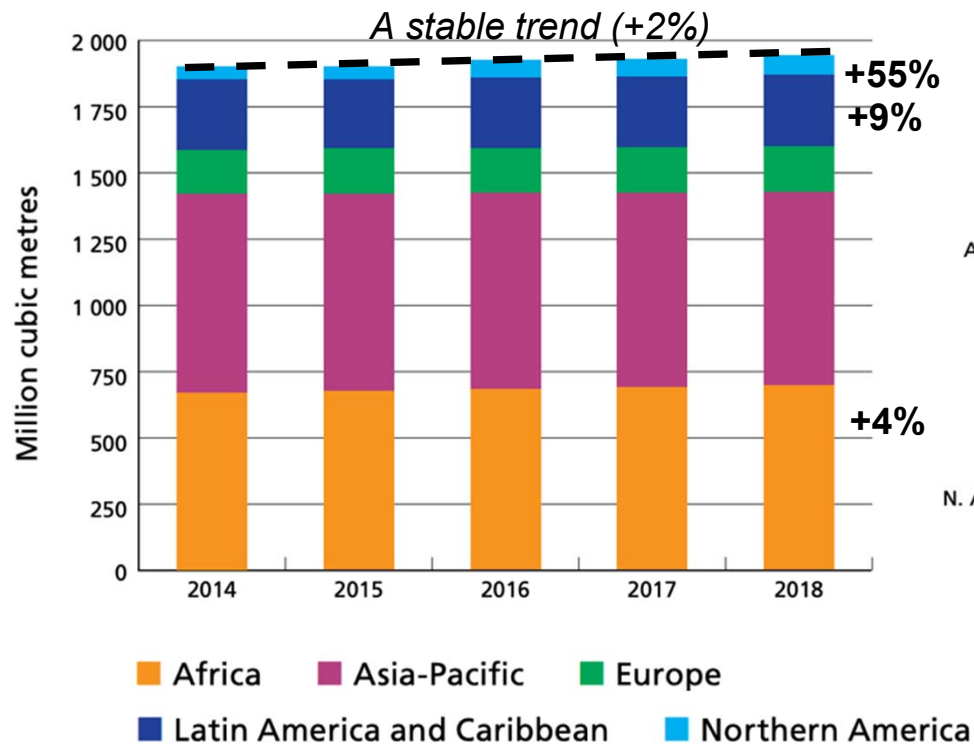
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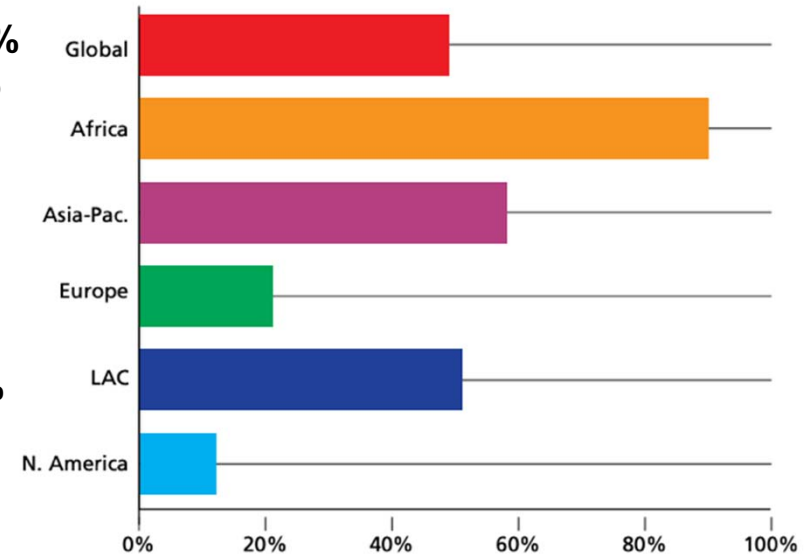
Forest removals for energy purposes

Between traditional uses and emerging demand for bioenergy

Wood fuel removals 2014-2018

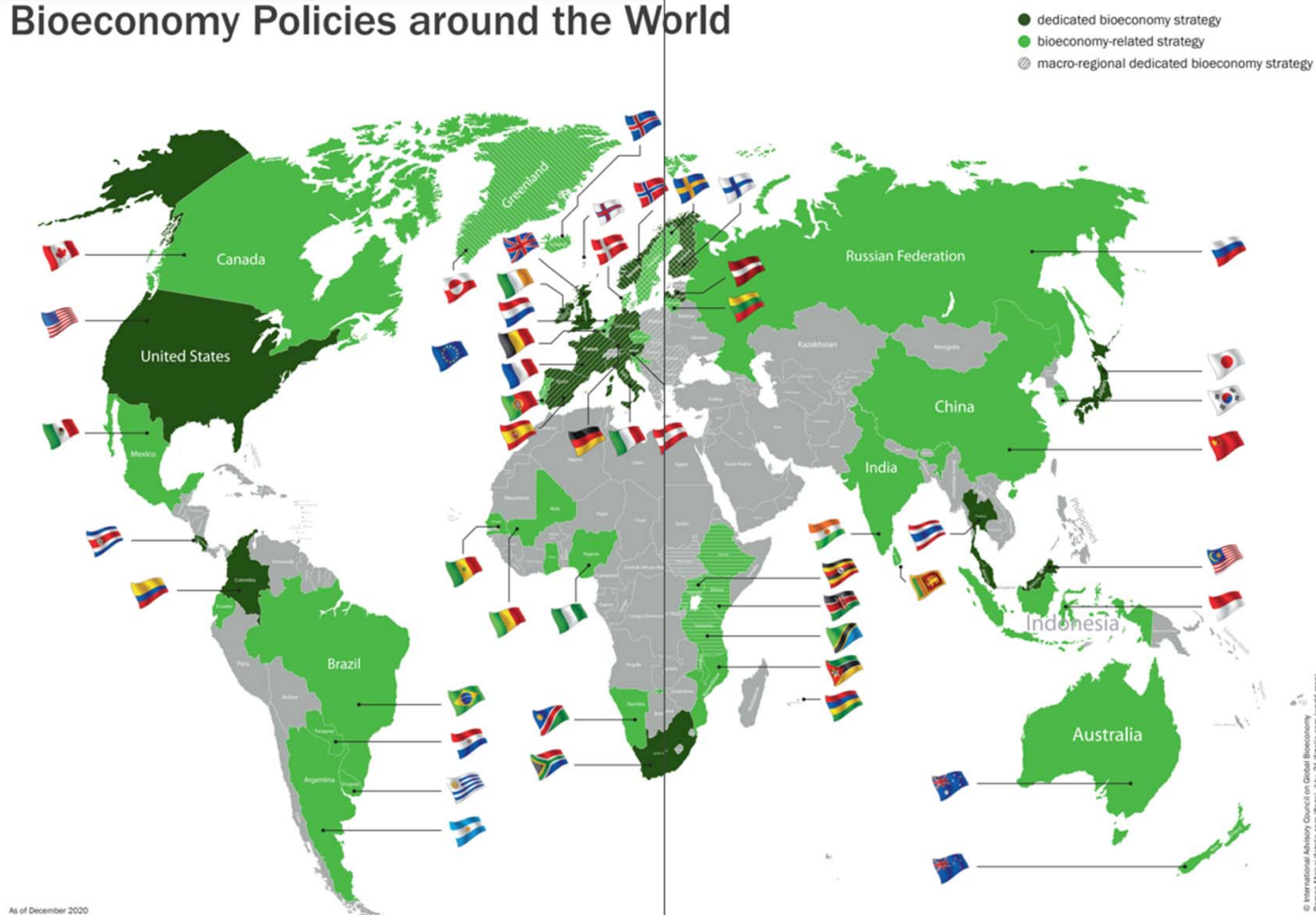


Wood fuel share in roundwood removals in 2018



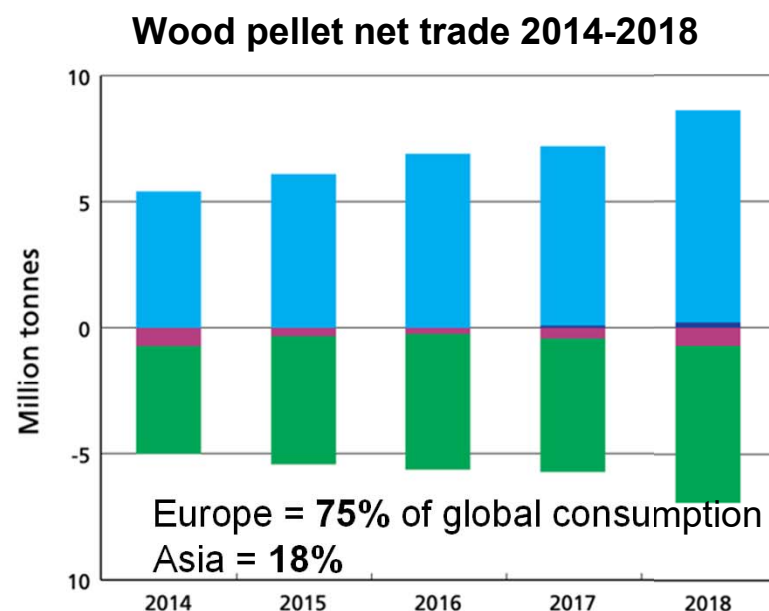
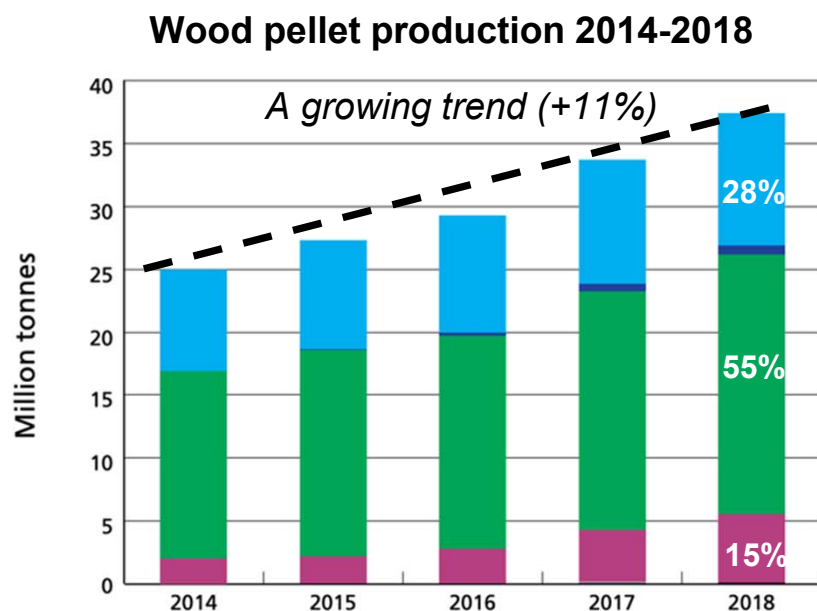
Source: FAO, 2018

Bioeconomy Policies around the World



Fonte: International Advisory Council on Global Bioeconomy, 2020

Increasing wood pellet production and trade



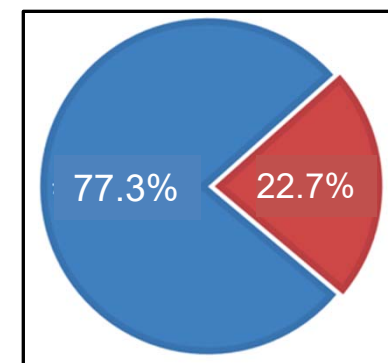
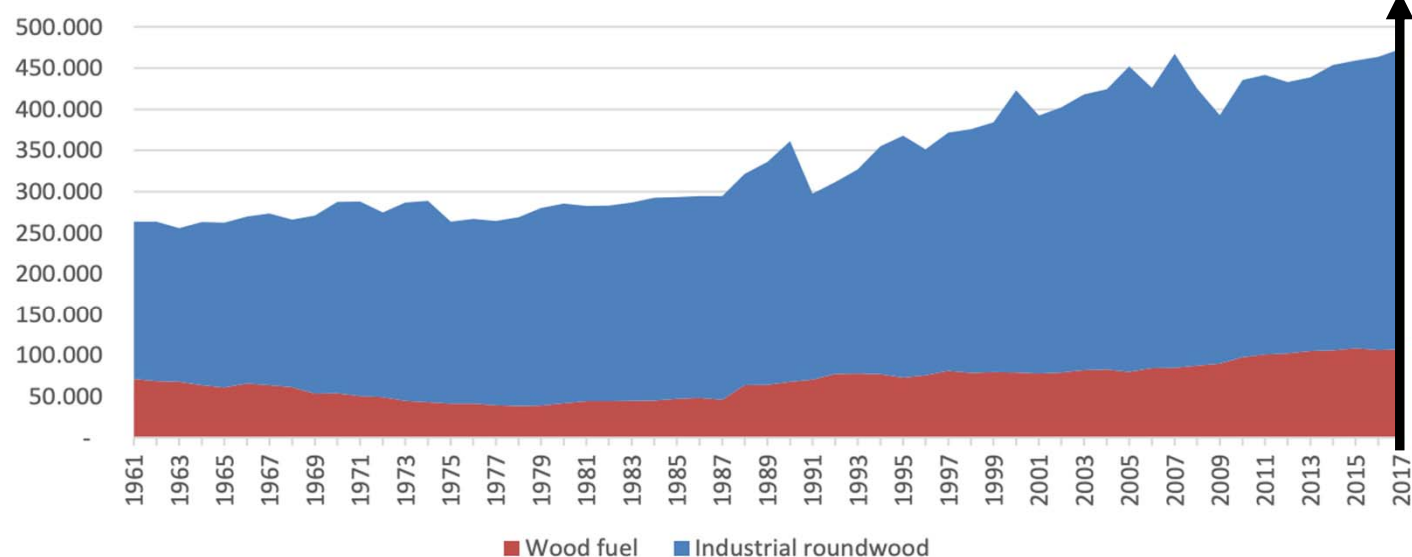
■ Africa ■ Asia-Pacific ■ Europe ■ Latin America and Caribbean ■ Northern America

About **65%** of pellet production is **internationally traded**

Source: FAO, 2018

EU removals according to end use

Evolution of roundwood production by type of end use in the EU28 (1000 m³)



Total EU28
2017 figures

Source: FAOSTAT

%of wood removal harvested for wood energy: **from 18.7% (2000) to 22.7% (2017)**
No significant changes since the 1990s, while consumption of bioenergy in Europe: +300%

Europe

Summer droughts and bark beetle *2015-2019 figures*

Austria: 41Mm³

Czech Republic: 75Mm³

Germany: 135 Mm³

Ca. 250 Mm³

Windstorms

2015-2019 figures

>60 Mm³

Fires

2015-2019 figures

Ca. 3.3 Mha

British Columbia (CA)

Bark beetle

1990s and 2000s

Ca. 750 Mm³

US West Coast

Fires

Summer 2020

Ca. 3 Mm³

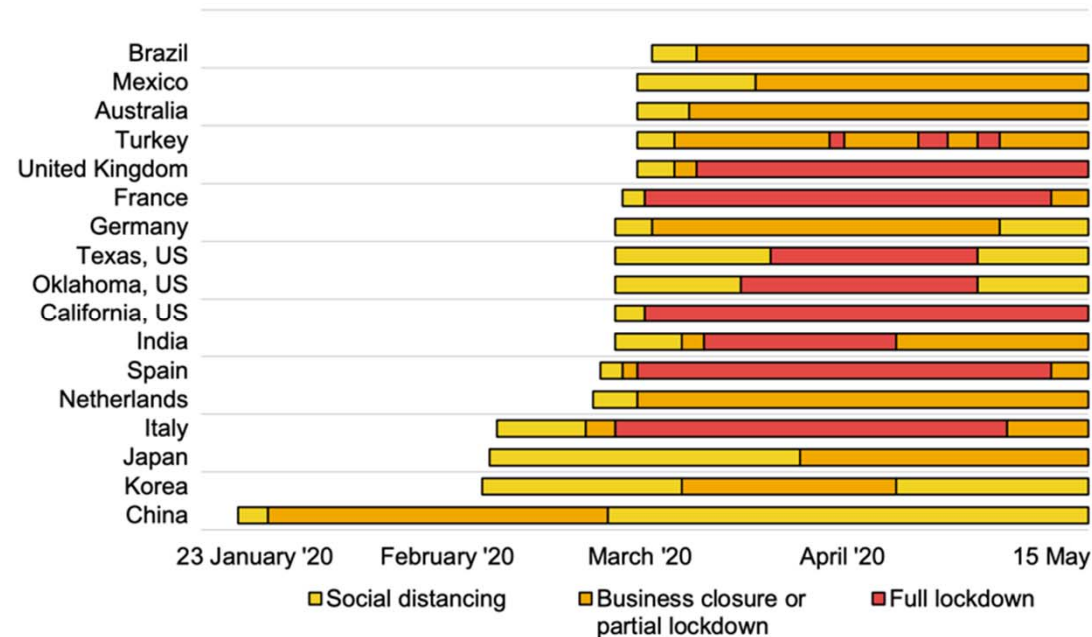
Source: Forest Europe 2020 and UNECE/FAO, 2020

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Covid-19 lockdown implementation

Length of full and partial lockdown measures in top renewable growth markets

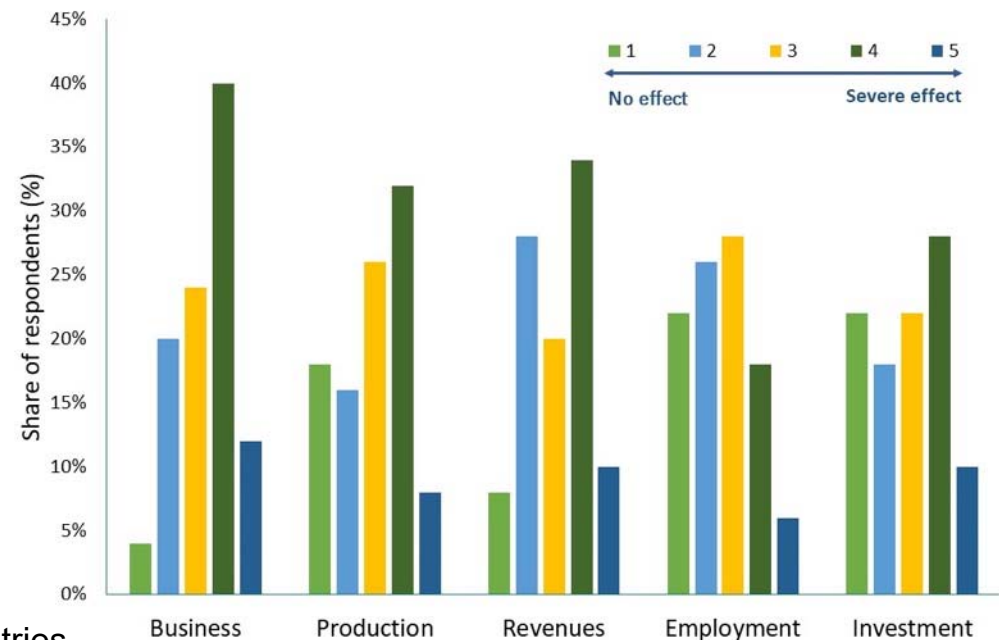


Source: IEA analysis based on Olivier Lejeune (2020), Coronavirus Counter Measures, <https://github.com/OlivierLej/Coronavirus>.

Covid-19 and impact on the global bioenergy sector (World Bioenergy Association, 2020)

- **Liquid biofuel** sector hardest hit (*low oil prices and drop in demand for transport fuels*)
- **Solid biomass** sector has shown more resilience (*with regional differences, e.g. EU vs USA*)

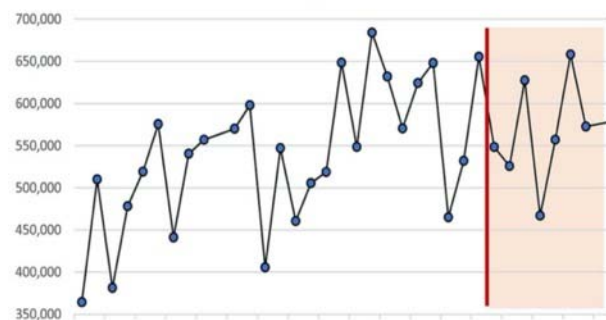
Effects of Covid-19 restrictions on the bioenergy sector



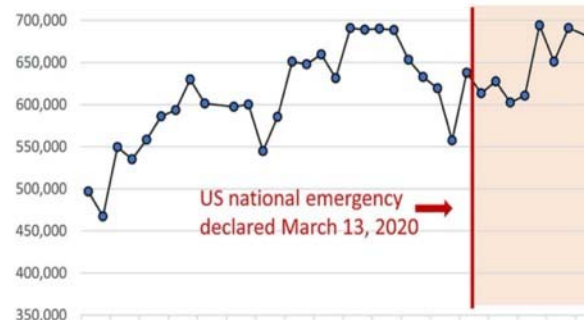
Target: Bioenergy sector actors from > 30 countries

Covid-19: the US pellet sector

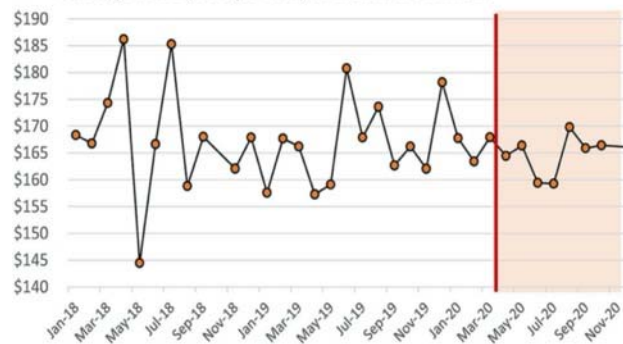
A Quantity (tons) of densified biomass exported from the US



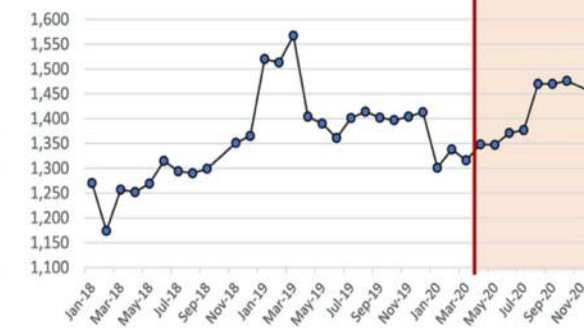
B Quantity (tons) of densified biomass produced in the SE US



C Average Price (USD per ton) of densified biomass



D Number of FTE employed in the production of densified biomass in the SE US



Production, exports, prices, and employment had few changes pre- and post-pandemic

Main problems:

- General uncertainty
- Shortage of truckers
- Waving in supply (sawmills)

Recovery on late 2020 (building sector, packaging, paper...)

Source: Kline et al., 2021

Post-lockdown recovery (2020-21)

Wood production fell during lockdowns—but has since rebounded

Industrial production index of wood product

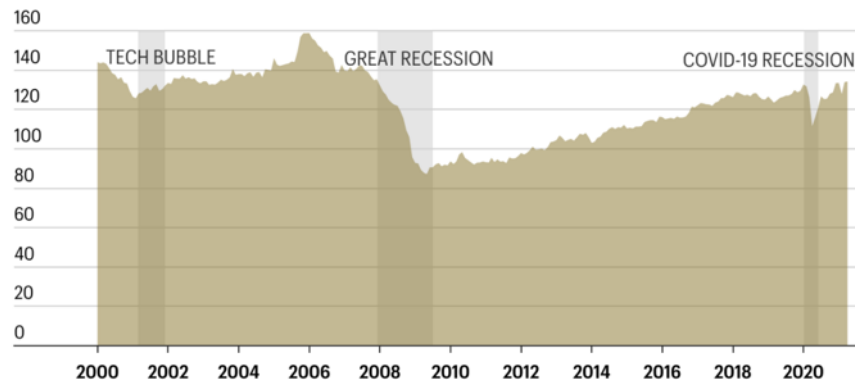
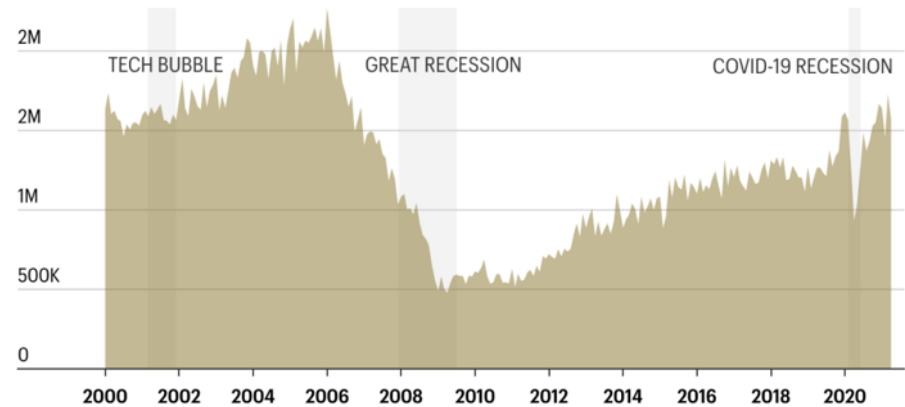


CHART: LANCE LAMBERT • SOURCE: BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM (US)

FORTUNE

Home construction hits highest level since 2006

New privately owned housing units started



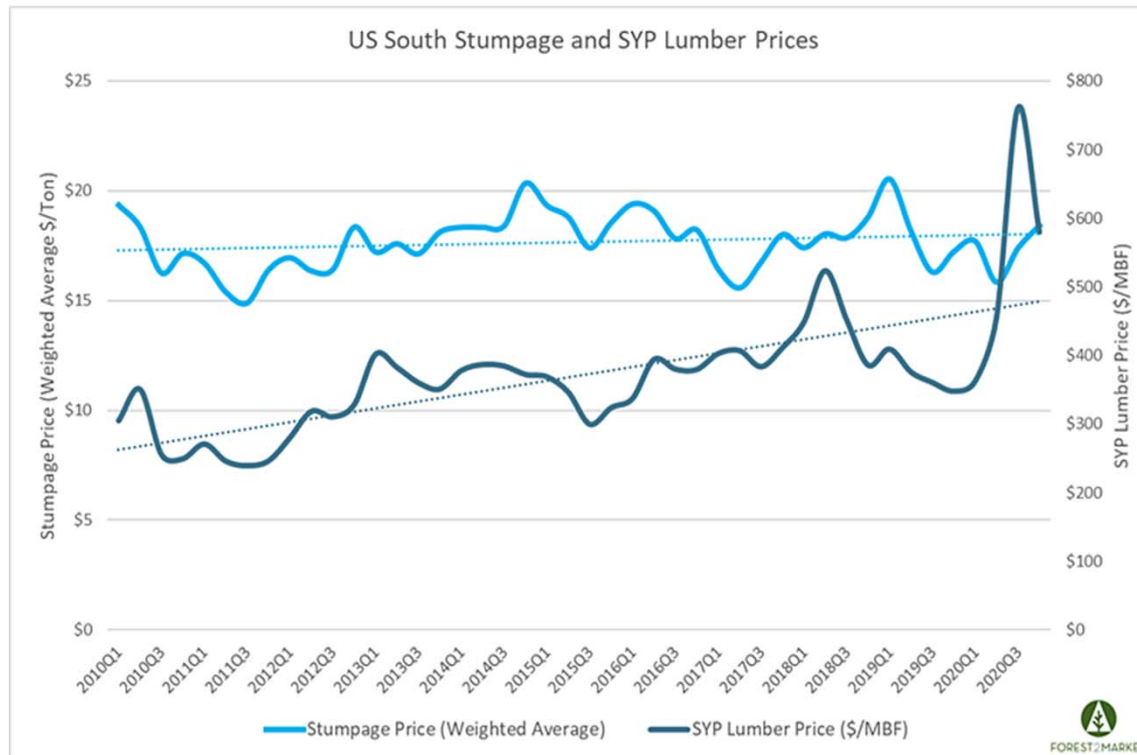
HIGHLIGHTED AREA DENOTES RECESSION

CHART: LANCE LAMBERT • SOURCE: U.S. CENSUS BUREAU

FORTUNE

Stronger than expected housing and unforeseen demand from home-improvement projects → production of lumber & building products (e.g. OSB) → surge in residues → high pellet production

Price waving for logs and lumber



Key Drivers:

- House market
- Inventories
- Capacity and supply chain adjustments
- Demand from mills
- Market speculation driving uncertainty

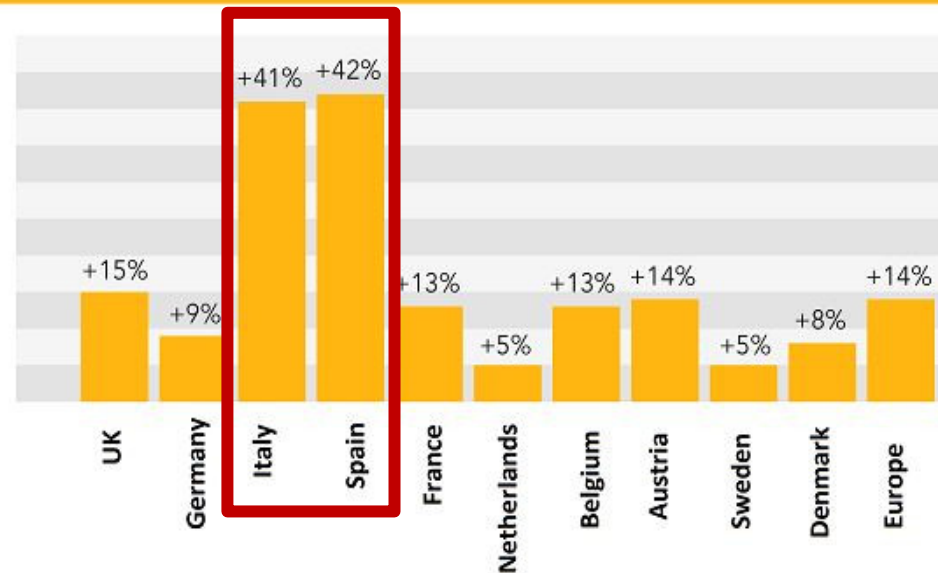
Source: www.forest2market.com

SYP = Southern yellow pine

A focus on Europe

Increase in heating energy consumption in Europe
(03/2019 - 03/2020 in percent)

Source: tado GmbH



*Based on 100,000 European households using tado

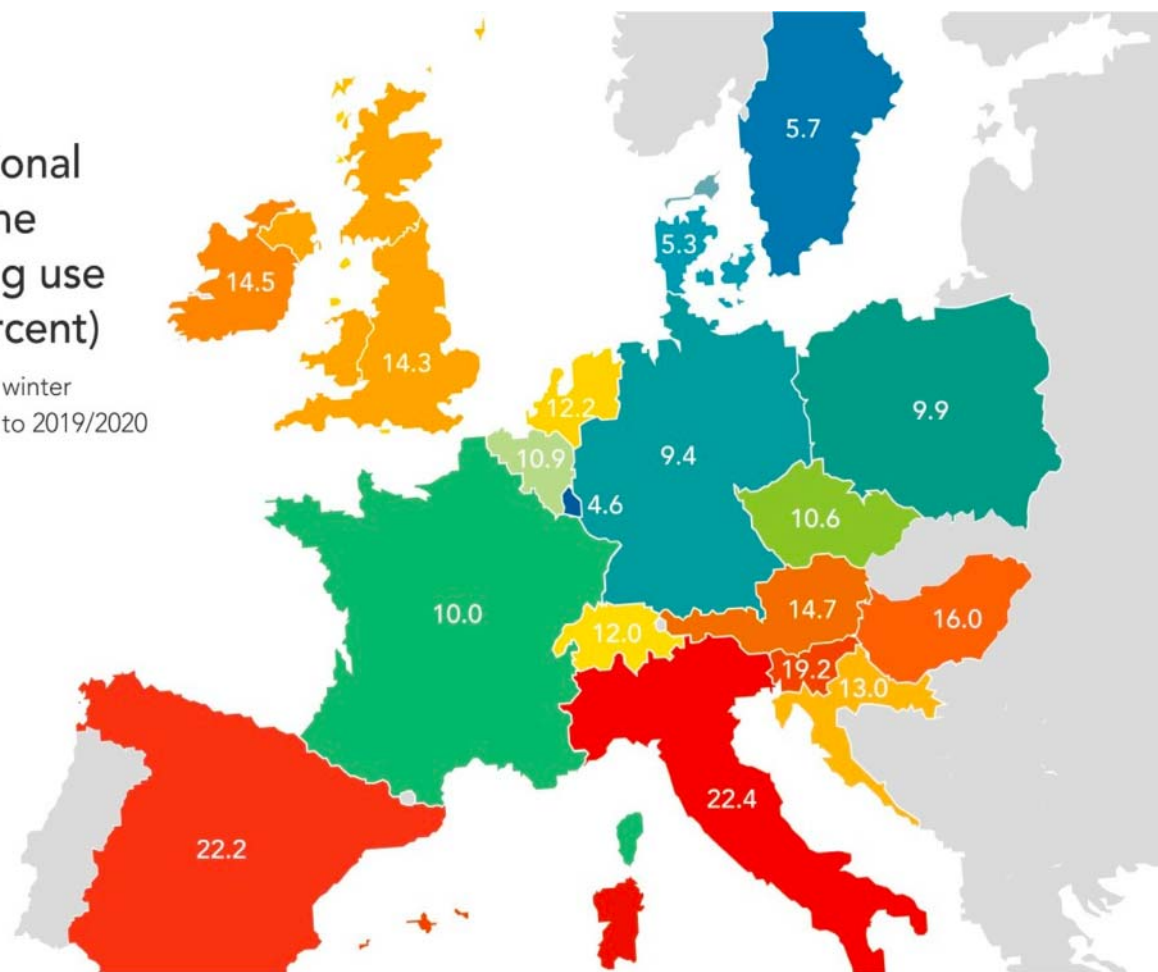
**The average temperature in March 2020 was 1°C below that of 2019

Source: www.cleanenergywire.org

tado°

Additional daytime heating use (in percent)

in 2020/21 winter
compared to 2019/2020



Based on a sample of 300,000 European tado° homes

Sep 1 - Mar 1, weekdays only 8:00 - 18:00

2020/2021 European winter was 0.6°C warmer than 2019/2020 winter

Mainly due to
increased home-
working

Heating and hot
water make up
approximately 75%
of a home's energy
use and 65% of the
energy used for the
heating, cooling and
hot water in
residential buildings
still stems from fossil
fuels

Source: www.tado.com

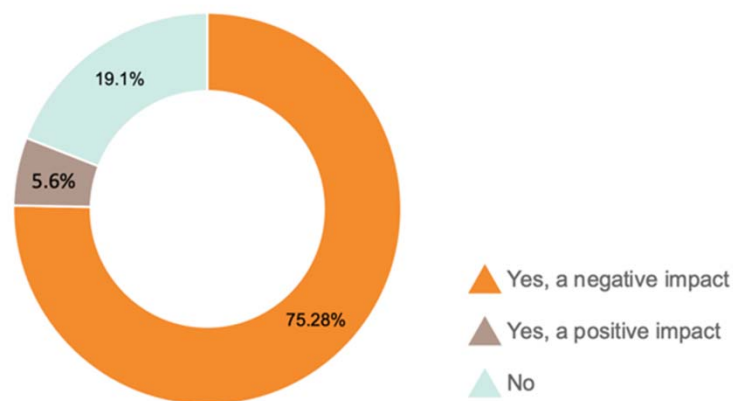
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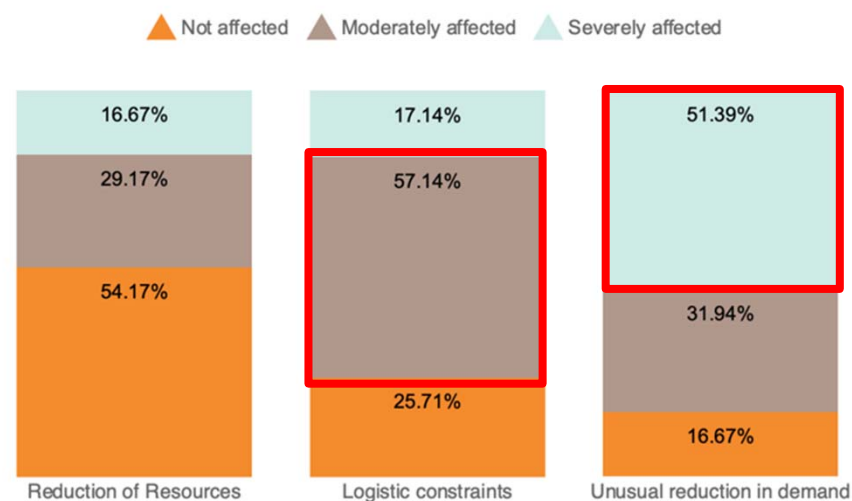


Impacts of pandemics on the EU pellet industry (with a focus on ENplus-certified org.s)

Has the pandemic had an impact on your business?



Reported relevance of drivers for pandemic negative impacts

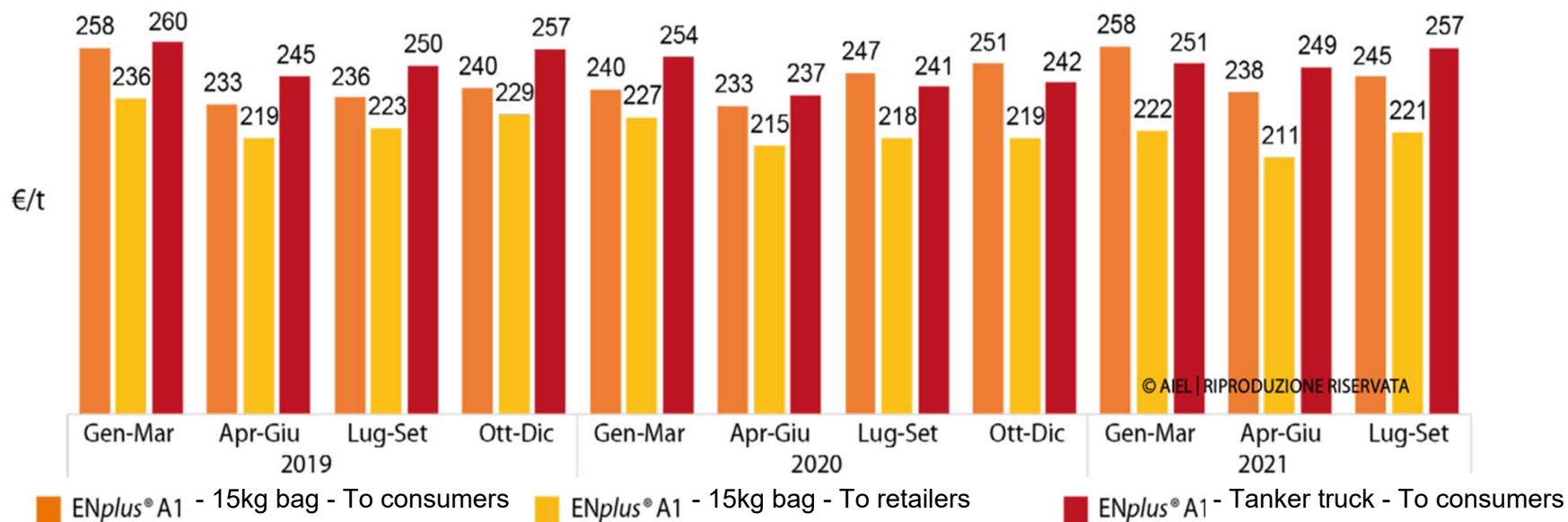


Source: Enplus/Energy Europe, 2020

June/July 2020, 93 respondents

Price trends

ENplus-certified A1 pellets, prices for different assortments (VAT not included)



Source: AIEL, 2021

Impact of Covid-restrictions and PM_{10} and NO_x emissions: an example for Northern Italy

Red zones limited to
some municipalities

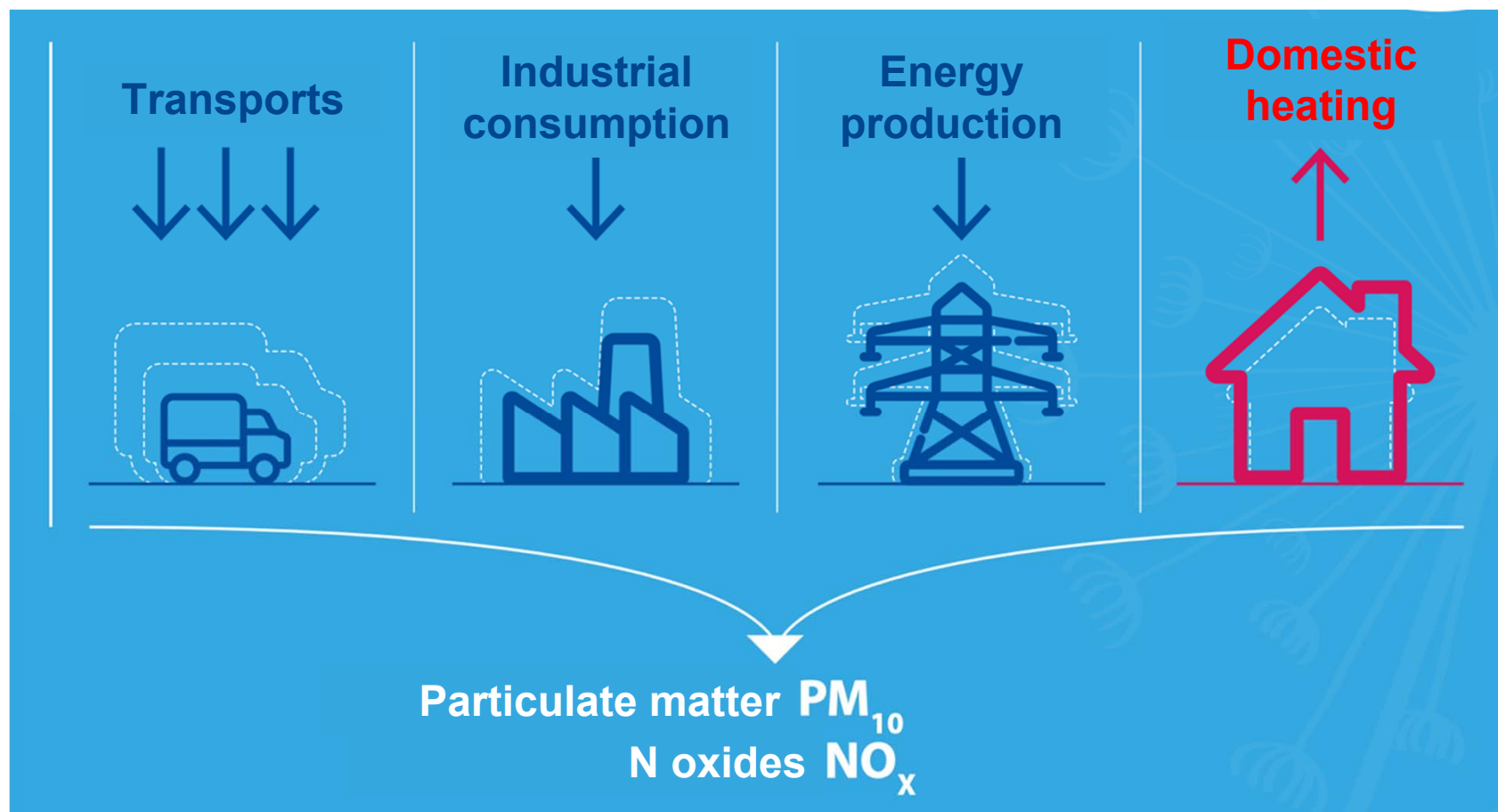
Red zone =
whole Italy

Lockdown

Phase 2
(soft lockdown measures)



Source: modified from Life Prepair, 2020



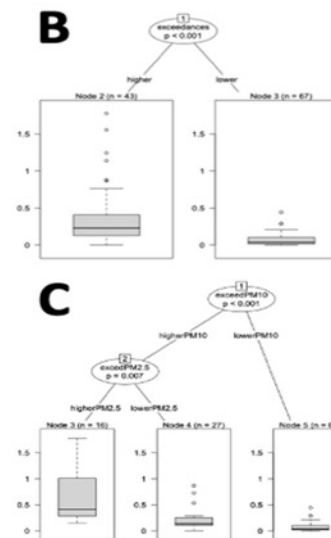
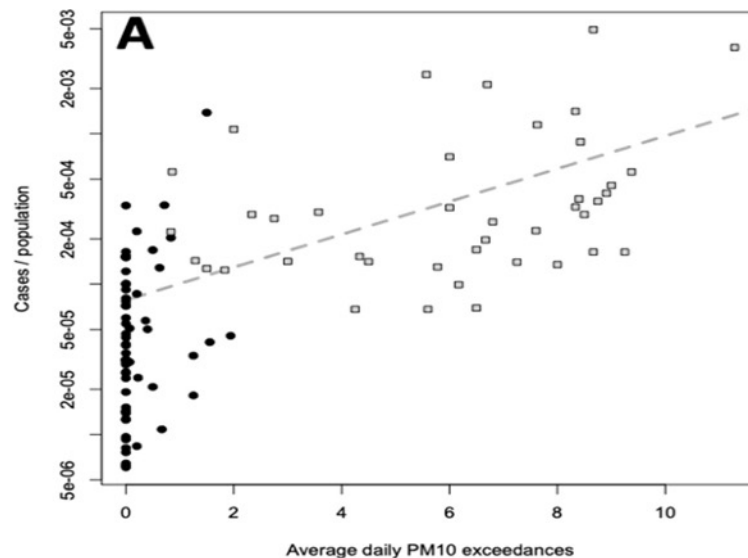
Source: modified from Life Prepair, 2020

Open access

Original research

BMJ Open Potential role of particulate matter in the spreading of COVID-19 in Northern Italy: first observational study based on initial epidemic diffusion

Leonardo Setti,¹ Fabrizio Passarini,¹ Gianluigi De Gennaro,² Pierluigi Barbieri,³ Sabina Licen,³ Maria Grazia Perrone,⁴ Andrea Piazzalunga,⁵ Massimo Borelli,³ Jolanda Palmisani,² Alessia Di Gilio,² Emanuele Rizzo,⁶ Annamaria Colao,⁷ Prisco Piscitelli,⁸ Alessandro Miani⁹



«A **significant association** has been found between the geographical distribution of **daily PM₁₀ exceedances** and the **initial spreading of COVID-19** in the 110 Italian provinces».

Correlation between particulate and Covid-19 spreading not confirmed

Contents lists available at ScienceDirect

Environmental Research

journal homepage: www.elsevier.com/locate/envres

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environmental research

Check for updates

On the concentration of SARS-CoV-2 in outdoor air and the interaction with pre-existing atmospheric particles

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ARTICLE INFO

Keywords:
SARS-CoV-2
COVID-19
Airborne virus transmission
Coronavirus
Aerosol
Coagulation

ABSTRACT

The spread of SARS-CoV-2 by contact (direct or indirect) is widely accepted, but the relative importance of airborne transmission is still controversial. Probability of outdoor airborne transmission depends on several parameters, still rather uncertain: virus-laden aerosol concentrations, viability and lifetime, minimum dose necessary to transmit the disease. In this work, an estimate of outdoor concentrations in northern Italy (region Lombardia) was performed using a simple box model approach, based on an estimate of respiratory emissions, with a specific focus for the cities of Milan and Bergamo (Italy). In addition, the probability of interaction of virus-laden aerosol with pre-existing particles of different sizes was investigated. Results indicate very low (<1 RNA copy/m³) average outdoor concentrations in public area, excluding crowded zones, even in the worst case scenario and assuming a number of infects up to 25% of population. On average, assuming a number of infects equal to 10% of the population, the time necessary to inspire a quantum (i.e. the dose of airborne droplet nuclei required to cause infection in 63% of susceptible persons) would be 31.5 days in Milan (range 2.7–91 days) and 51.2 days in Bergamo (range 4.4–149 days). Therefore, the probability of airborne transmission due to respiratory aerosol is very low in outdoor conditions, even if it could be more relevant for community indoor environments, in which further studies are necessary to investigate the potential risks. We theoretically examined if atmospheric particles can scavenge virus aerosol, through inertial impact, interception, and Brownian diffusion. The probability was very low. In addition, the probability of coagulation of virus-laden aerosol with pre-existing atmospheric particles resulted negligible for accumulation and coarse mode particles, but virus-laden aerosol could act as sink of ultrafine particles (around 0.01 µm in diameter). However, this will not change significantly the dynamics behaviour of the virus particle or its permanence time in atmosphere.

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Inquinamento da Particolato e COVID 19.

Ai possibili rischi per la salute delle popolazioni residenti nella Valle del Mercure, determinate dall'attività della Centrale, va aggiunto un altro elemento, anch'esso fortemente preoccupante, derivante dai drammatici tempi che viviamo.

Il Particolato fine e ultrafine (v. paragrafo successivo), infatti, derivante dalla combustione delle biomasse bruciate nella Centrale ed immesso in atmosfera, non soltanto svolge una attività dannosa per la salute di per sé, in primo luogo a livello dell'apparato respiratorio e cardio circolatorio, ma può anche fungere da *carrier*, cioè trasportatore di altre sostanze nocive che su di esso si depositano e tramite esso penetrano nel nostro organismo attraverso la via respiratoria. Aggiungendo danno a danno.

In particolare, queste frazioni del Particolato, rivestono un ruolo pro-infiammatorio con produzione a livello polmonare e sistemico di mediatori della flogosi, esattamente come avviene per il COVID 19. Inoltre, l'azione vasocostrittiva determinata dallo stress ossidativo che è generato dal Particolato aumenta il rischio trombotico, come pare faccia anche il COVID 19 a livello del microcircolo polmonare, tanto che l'eparina – farmaco antitrombotico – viene da alcuni proposto come uno dei trattamenti coadiuvanti per i pazienti affetti da polmoniti da COVID 19 (<https://www.pharmastar.it/news/altre-news/covid-19-raccomandata-dalloms-per-i-pazienti-ospedalizzati-enoxaparina-potrebbe-contribuire-anche-a-contrastare-il-virus-31679>).

Ma, al di là di una attività per alcuni versi simile tra i meccanismi eziopatogenetici del Particolato e del coronavirus COVID 19, un problema che è stato sollevato, nell'ambito della comunità scientifica, è proprio quello del possibile trasporto del virus, da parte delle polveri sottili (cfr.es. 1) il Position Paper redatto da SIMA – Società Italiana di Medicina Ambientale- e condiviso con strutture dell'Università di Bologna e dell'Università di Bari: http://www.simaonline.it/wpsima/wp-content/uploads/2020/03/COVID19_Position-Paper_Relazione-circa-l%E2%80%99effetto-dell%E2%80%99inquinamento-da-particolato-atmosferico-e-la-diffusione-di-virus-nella-popolazione.pdf 2) Devra Davis. *How Pollution Aggravates the Impact of Coronavirus*. <https://www.usnews.com/news/best-countries/articles/2020-03-16/commentary-pollution-in-italy-china-and-iran-worsens-the-coronavirus-impact>), come già in passato riscontrato per altri virus (cfr Mehta et al. *Ambient particulate air pollution and acute lower respiratory infections: a systematic review and implications for estimating the global burden of disease*. *Air Qual Atmos Health*. 2013 Mar; 6(1): 69–83. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3578732/>) nonché anche quello di una possibile maggiore persistenza del coronavirus in sospensione aerea, proprio a motivo dell'“ausilio” offerto dalla presenza di micro e nano-polveri.

...in short: biomass burning causes particulate emissions that can increase Covid-19 virus spreading...

Nonetheless a (ri)emerging discourse: biomass for energy as a threat to human health

Biomass burning represents a severe risk for human health (...). According to the EU Environmental Agency (EEA) PM_{2.5} emissions in the atmosphere due to biomass combustion is responsible for **about 20,000 premature casualties/year in Italy**, not considering additional effects on health deriving from pollutants emitted as a consequences of wood burning. (...) Italy sadly ranks first in Europe for casualties due to bad air quality

Source: www.gufitalia.it/category/salute/

Campaigning

Forest biomass for energy and their impacts on climate, environment and health



**Biomasse forestali
a uso energetico:
impatto su
Clima Ambiente e Salute**

intervengono

Giovanni Damiani-
Biologo, Presidente del GUFi-Gruppo Unitario per
le Foreste Italiane

Alessandro Bottacci
Forestale, Direttore del Parco Nazionale delle
Foreste Casentinesi, Monte Falterona e Campigna.

Ferdinando Laghi
Presidente di ISDE Internazionale, medici per
l'ambiente

25 marzo - ore 20:30
In streaming su Facebook sulla pagina Gufitalia

Logos:   

Requests/petitions to stop running biomass plants due to Covid-19 emergency

POLLINO. EMERGENZA COVID-19: CHIESTA CHIUSURA DELLA CENTRALE DEL MERCURE

di [Redazione Radio Azzurra](#) — 27 Marzo 2020 in News



Conflicting positions and networks

COORDINAMENTO FREE 21 ore fa

AIEL e Conaibo ed emergenza Covid19: inserire tra le attività consentite anche la gestione forestale



Wood for energy Association and Forest Enterprise Federation asking for forest activities to be listed among allowed activities despite restrictions...

MODULO LETTURA

aA aA

CONDIVIDI SU

A seguito delle misure per il contenimento dell'epidemia di COVID-19, CONAIBO (Coordinamento nazionale delle imprese boschive) e AIEL (Associazione italiana energie agroforestali) hanno scritto una lettera alle istituzioni chiedendo di inserire tra le attività consentite e descritte nell'allegato 1 del DPCM 22 marzo 2020 anche quelle rientranti nel codice ATECO 02, relativo alle attività forestali.

Strada Alternativa


STRADA ALTERNATIVA.IT

www.aielenergia.it/

change.org Lancia una petizione Le mie petizioni Sfoglia Sostienici! Q Accedi

Dettagli della petizione Commenti Aggiornamenti

Taglialegna #stateacasa: l'assalto ai boschi italiani continua anche durante la quarantena



4.494 hanno firmato. Arriviamo a 5.000.

Le petizioni con più di 5000 firme hanno il 50% di probabilità in più

...civil society organizations launching an online petition to stop the on-going assault to Italian forests...

GUFU - Gruppo Unitario per le Foreste Italiane ha lanciato questa petizione e l'ha diretta a Mario Draghi (Presidente del Consiglio dei Ministri) e a 5 altri/altre

Le associazioni ISDE Italia - Medici per l'Ambiente, GUFU - Gruppo Unitario per le Foreste Italiane, Italia Nostra Toscana, Italia Nostra Marche, Italia Nostra Friuli Venezia Giulia, Italia

Email

Italia

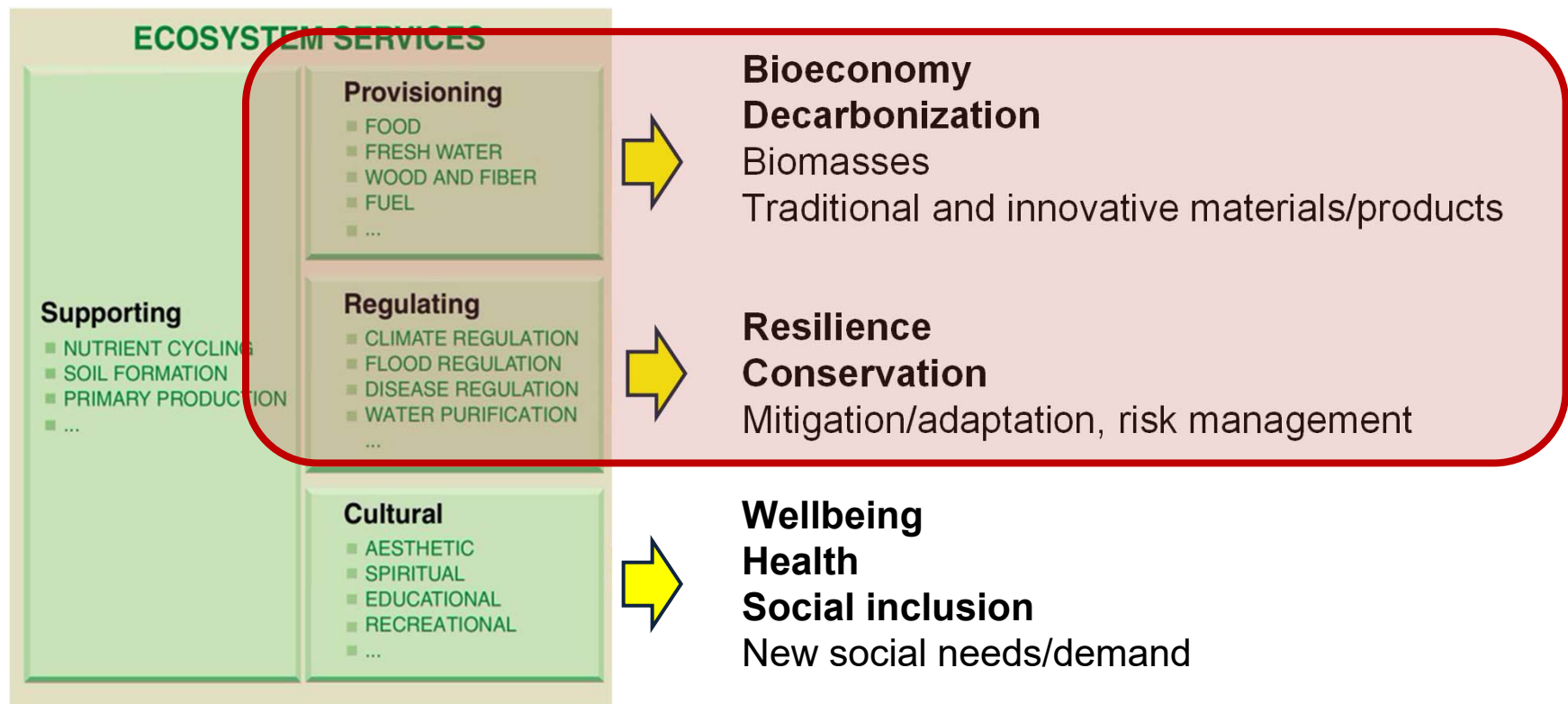
Città

www.change.org

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A few considerations within the ecosystem service spectrum



EU bioeconomy strategy

Bioeconomy

Biomass production

*Circular bioeconomy
Building sector
New product
Cascading approach
RED II + Fit-for-55 criteria*

EU Farm to Fork strategy

Stepping up EU Action to
Protect and Restore the
World's Forests

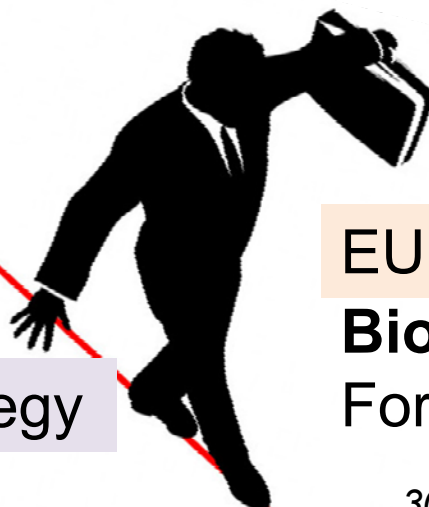
EU biodiversity strategy to 2030

Biodiversity

Forest protection/conservation

*30% protection (10% strictly)
FM criteria
Old growth forests definition and mapping
A/R 3 Bln trees
Support to ES mechanisms and
carbon farming*

EU forest strategy
to 2030



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T=SAF

Draft new EU Forest Strategy: time to really consider the opinion of EU forest and forest-based sector



The Forest Strategy must support people, nature and the climate, and not bow to industry pressure

Photo: Nils-Göran Carlén

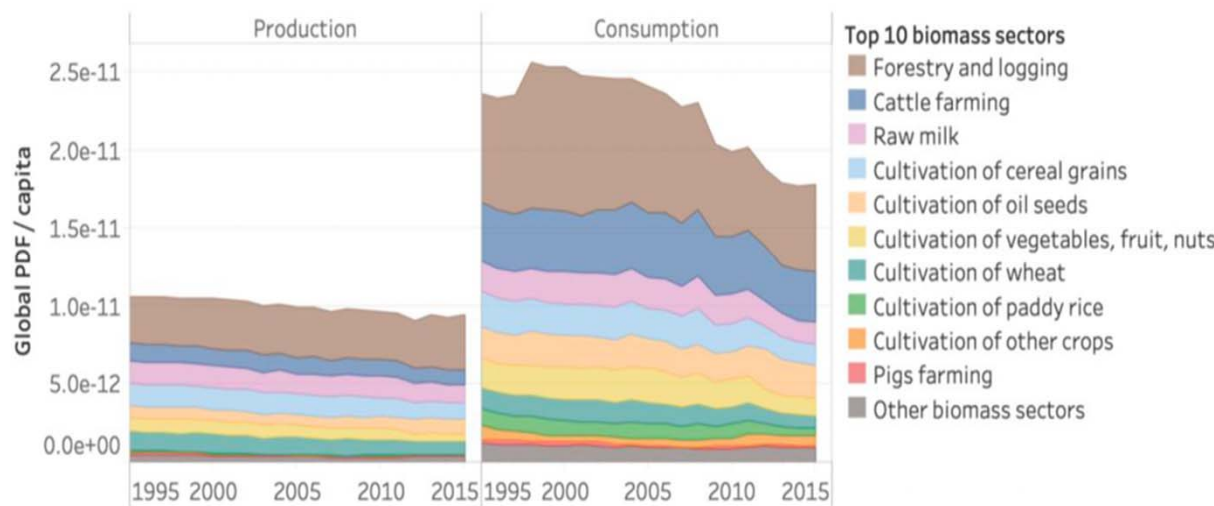


New regulations, certification and labeling initiatives for sustainable forest management (as from EU Forest strategy for 2030)

- **“closer-to-nature”** guidelines and voluntary certification scheme → EU quality label for biodiversity friendly management practices (by 2023)
- **legally binding instrument** for **ecosystem restoration**, including forest ecosystems (by 2021)
- (if appropriate) set **minimum standards for third party certification schemes** to ensure adequate standards of reliability, transparency and independent audit
- **Carbon farming** and a regulatory framework for **certifying carbon removals** → inclusion of forest carbon credits within the **EU ETS**
- **Zero deforestation** commitment and initiatives → link with bioeconomy

Bioeconomy made in?

Figure 5 Domestic and total land-use related biodiversity loss implied by the EU biomass production, consumption, and imports (excluding land use by households)



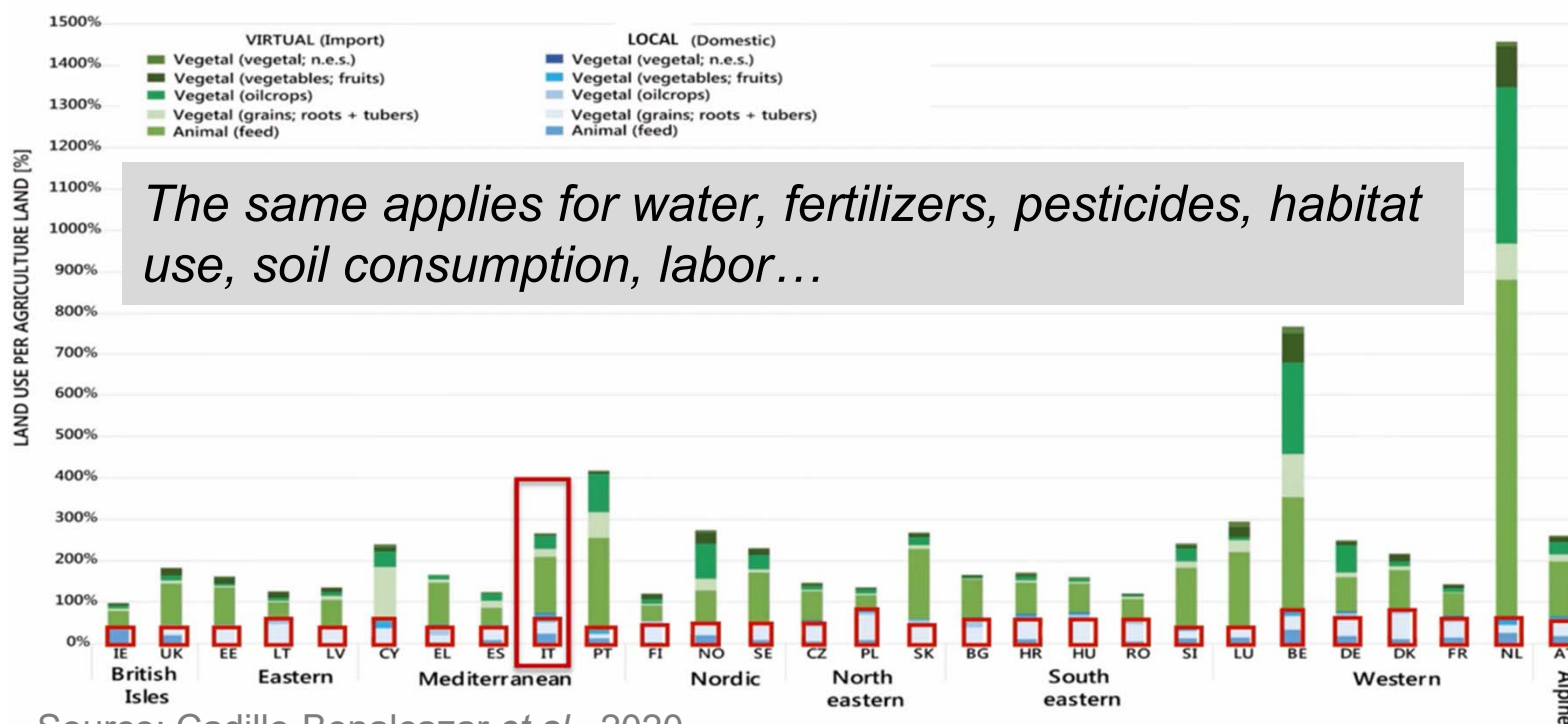
Source: own elaboration supported by L. Cabernard based on methods from Cabernard, Pfister & Hellweg (2019); data from Exiobase v3.4 (<https://www.exiobase.eu>); PDF = potentially disappeared fraction of species; note that In Exiobase, land use data show a decreasing trend (particularly after 2011), while other studies show an increasing trend (Di Fulvio et al. 2019)

Source: Fritsche et al., 2020

More than 1/3
of biomass
inputs for the
EU bioeconomy
are sourced
and **imported**
from **extra-UE**
areas

Demand for land for biomass production on the rise (dependency)

Imported (green) and domestic (blue and red boxes) land use for EU countries



Source: Cadillo-Benalcazar *et al.*, 2020

Associated risks: embodied deforestation (agriculture and forest commodities)

Table S7. The 10 largest importers of embodied forest loss.

Country	Forest transition stage	Imports of embodied forest loss (Mha yr ⁻¹)	Percentage of total imports
China, mainland	4. Post	0.20	14%
India	4. Post	0.10	7%
Russian Federation	4. Post	0.09	6%
The U.S.	4. Post	0.07	5%
Japan	4. Post	0.06	4%
Germany	4. Post	0.05	3%
Italy	4. Post	0.04	3%
United Kingdom	4. Post	0.04	3%
Egypt	Unclassified	0.03	2%
Brazil	3. Late	0.03	2%
All other	Not applicable	0.69	50%



Source: Pendrill *et al.*, 2019

A new expected EU Regulation



Due diligence approach applied to beef, palm oil, soy, wood, cocoa, coffee, and related products

*«This Regulation retains the obligation to ensure the legality of relevant commodities and products, **including wood and wood products**, placed on the Union market and complements them with the requirement on sustainability. The **EUTR is therefore rendered redundant by this Regulation and should be repealed.**» (p. 27)*

Outline

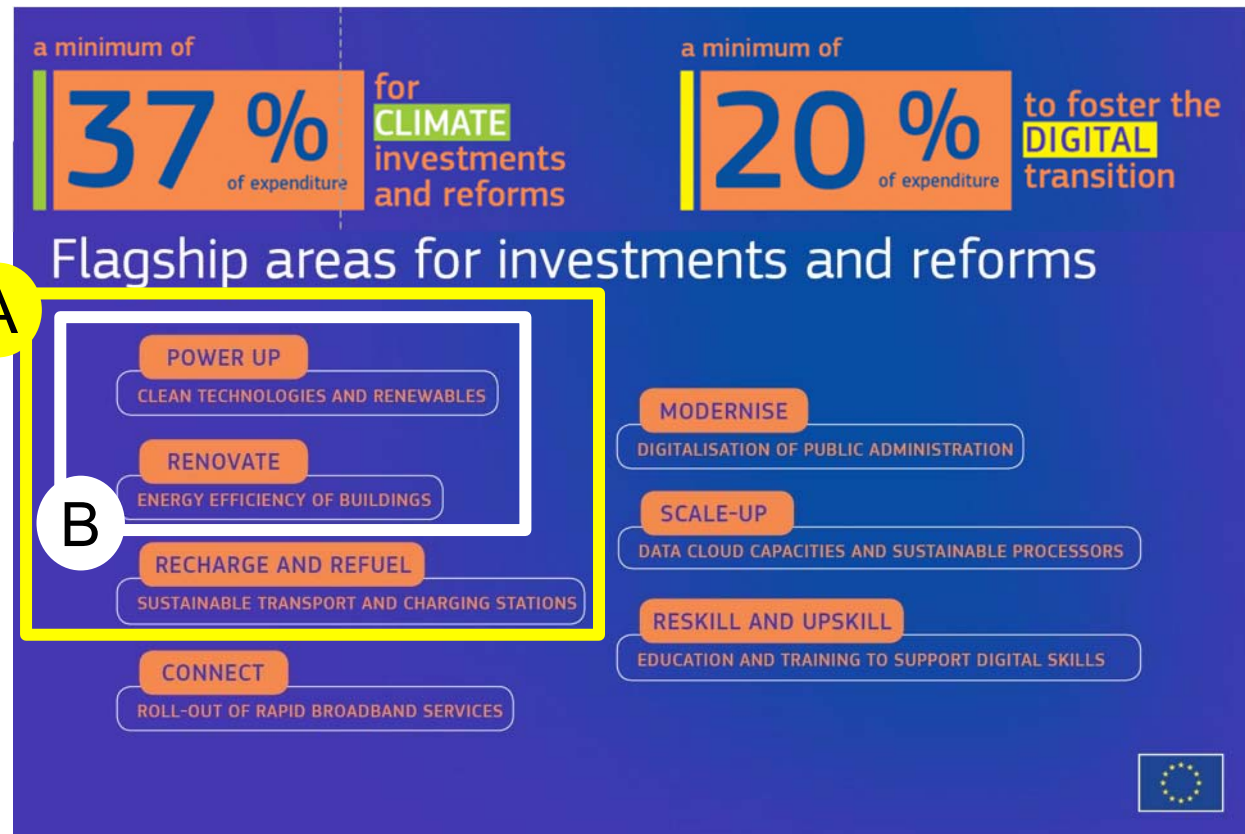
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EU Recovery and Resilience Facility

723.8 € billion
(grants+loans)

A. Main “green”
flagship areas

B. Renewables
and energy
efficiency

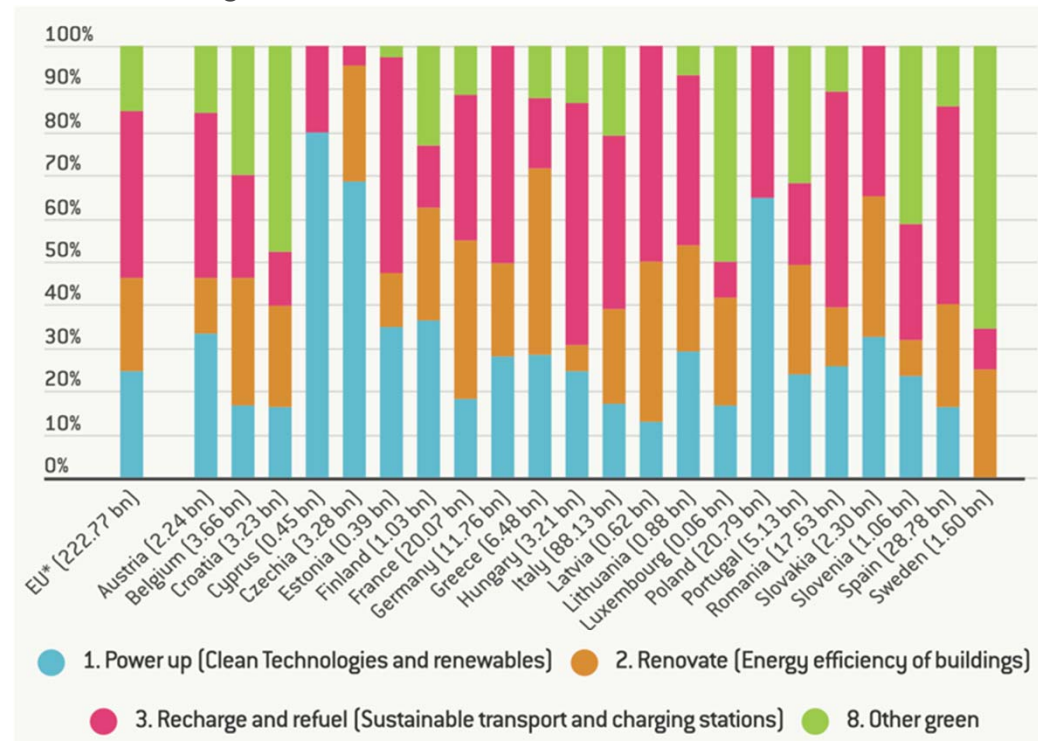


Green spending within NRRPs

- About **223 € billion** on “green” flagship areas (22 plans)
- **350 € billion** estimated investment needed to achieve EU 2030 climate target plan

Green spending in the national Recovery and Resilience Plans, according to the EC's flagship classification (€ billion and %)

Source: Bruegel, 2021



Renewables within NRRPs

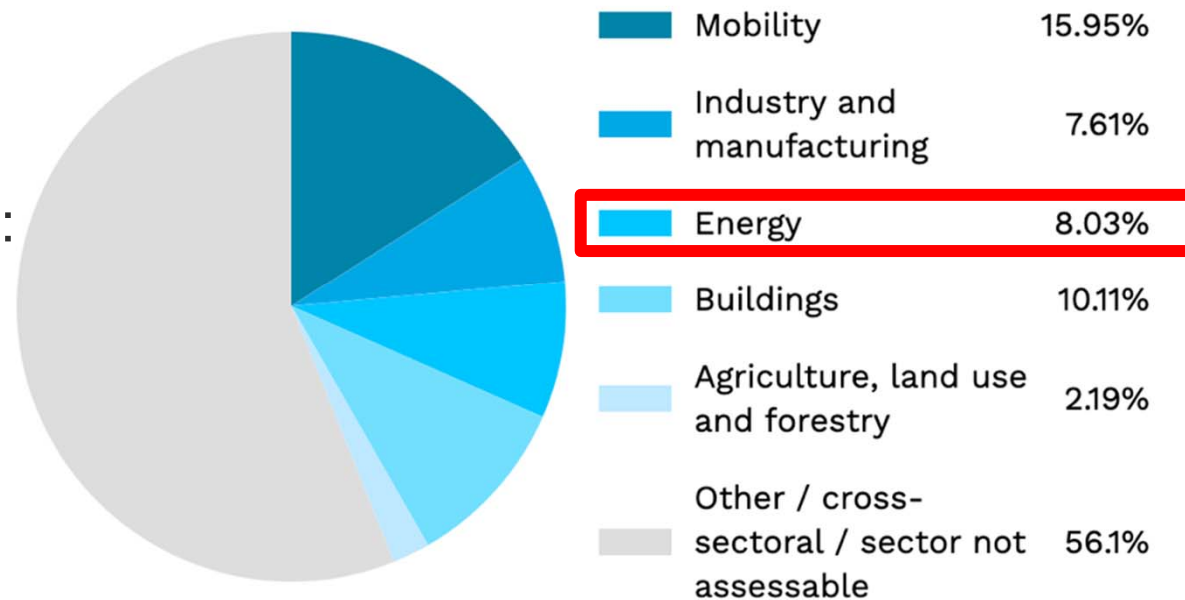
Renewable energy
sources **€23 bln**

Mainly in 3 countries:

Poland → **€9 bln**

Italy → **€6 bln**

Spain → **€5 bln**



Source: Green Recovery Tracker, 2021

Forest sector measures within European NRRPs

	Circular bioeconomy	Green revolution Ecological transition	Green jobs	Rural development	Climate adaptation Natural hazard prevention	Climate mitigation	Biodiversity	Sustainable forestry	FES provision & enforcement	Urban nature-based solutions	Gender balance and women inclusion	Innovation
Austria												
Belgium			X		X		X		X	X		
Bulgaria			X	X	X	X	X		X			
Croatia		X		X			X					
Cyprus					X	X	X					
Czech Rep.				X	X	X	X	X	X			
Denmark						X	X			X		
Estonia	X	X				X						X
Finland	X				X	X	X	X	X			X
France	X			X	X	X	X	X	X			X
Germany	X		X			X		X				X
Greece			X	X	X		X		X			
Hungary				X	X		X					
Ireland												
Italy				X			X		X	X		X
Latvia		X			X							X
Lithuania	X											X
Luxemburg							X			X		
Malta												
Poland				X					X			
Portugal	X		X	X	X	X	X	X	X			X
Romania					X		X	X		X		
Slovakia	X	X	X		X	X	X	X	X	X		X
Slovenia	X	X	X		X	X	X	X				X
Spain				X	X		X	X	X		X	
Sweden		X					X		X		X	

Source: Bottaro, Liagre and Pettenella (in press)

Outline

- An introduction: biomass for energy before Covid-19
- Covid-19 measures and impacts on the bioenergy sector: a quick overview
- Post-lockdown and ongoing issues: a broader view
- Resilience and recovery plans
- Final considerations

Final considerations (1/2)

- Impacts of Covid-19 on bioenergy sector depending on biomass **segment** and **geographical region**
 - **Divisive debate** among “pro-bioeconomy” and “pro-biodiversity” coalitions intensifying → effects on policies, public opinion, media and lobbying
 - Rising importance of **cultural ecosystem services** (green care)
- Provisioning vs. Regulating + Cultural services?

Final considerations (2/2)

- A forecasted **increasing role of regulations, new certification and labeling systems** in the EU (side effects: new burdens for organizations, confusion for consumers?)
- **NRPPs**: uneven attention to the forest sector and biomass for energy
- Besides Covid-19 crisis, **climate crisis** → changing conditions + extreme events and their impacts on forest resources and markets



Solid biomass is key to achieve net-zero emission targets to 2050

From producing “more biomass” (= replacing) to producing better biomass

- **cascading**
- **sustainable management** criteria and standards
- **efficiency** (circular economy, technology)
- **communication**