



EUROPEAN FOREST
INSTITUTE

Forest-based Circular Bioeconomy and the EU Policy Environment

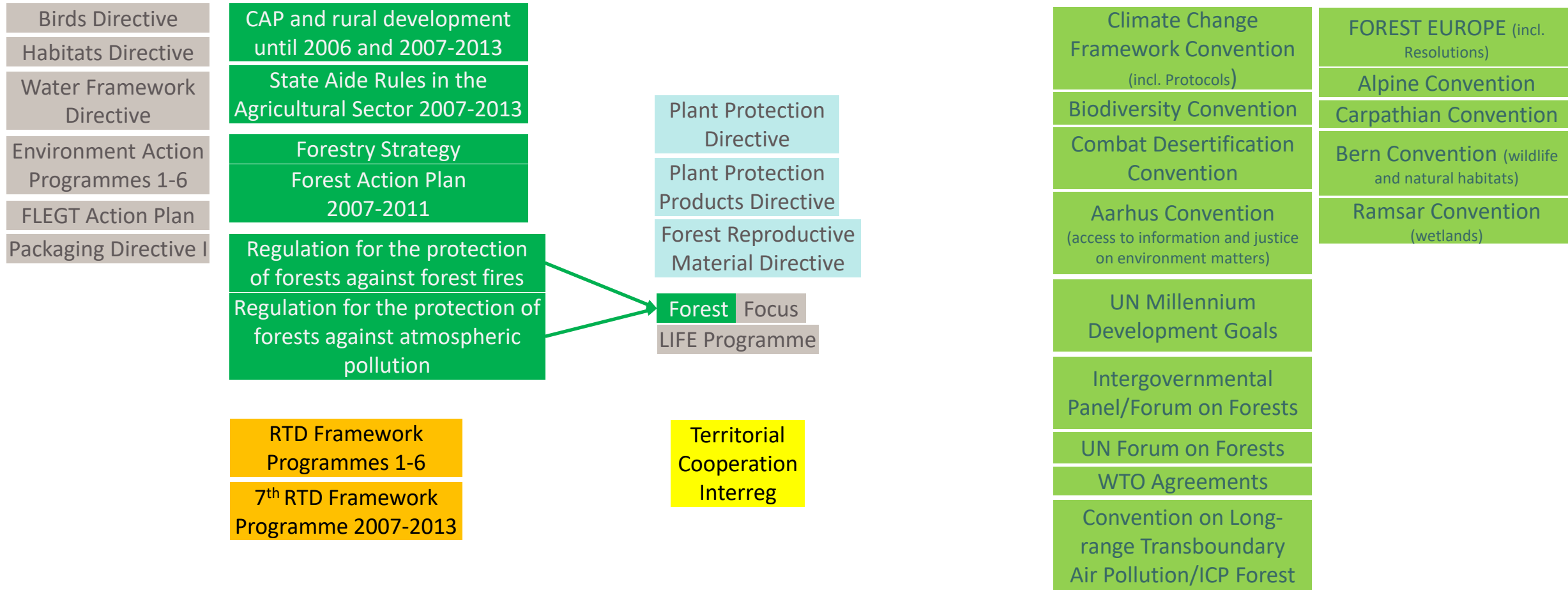
Koli Forum Round Table - September 28, 2022

Harald Mauser

EFI Liaison Office Brussels

WWW.EFI.INT

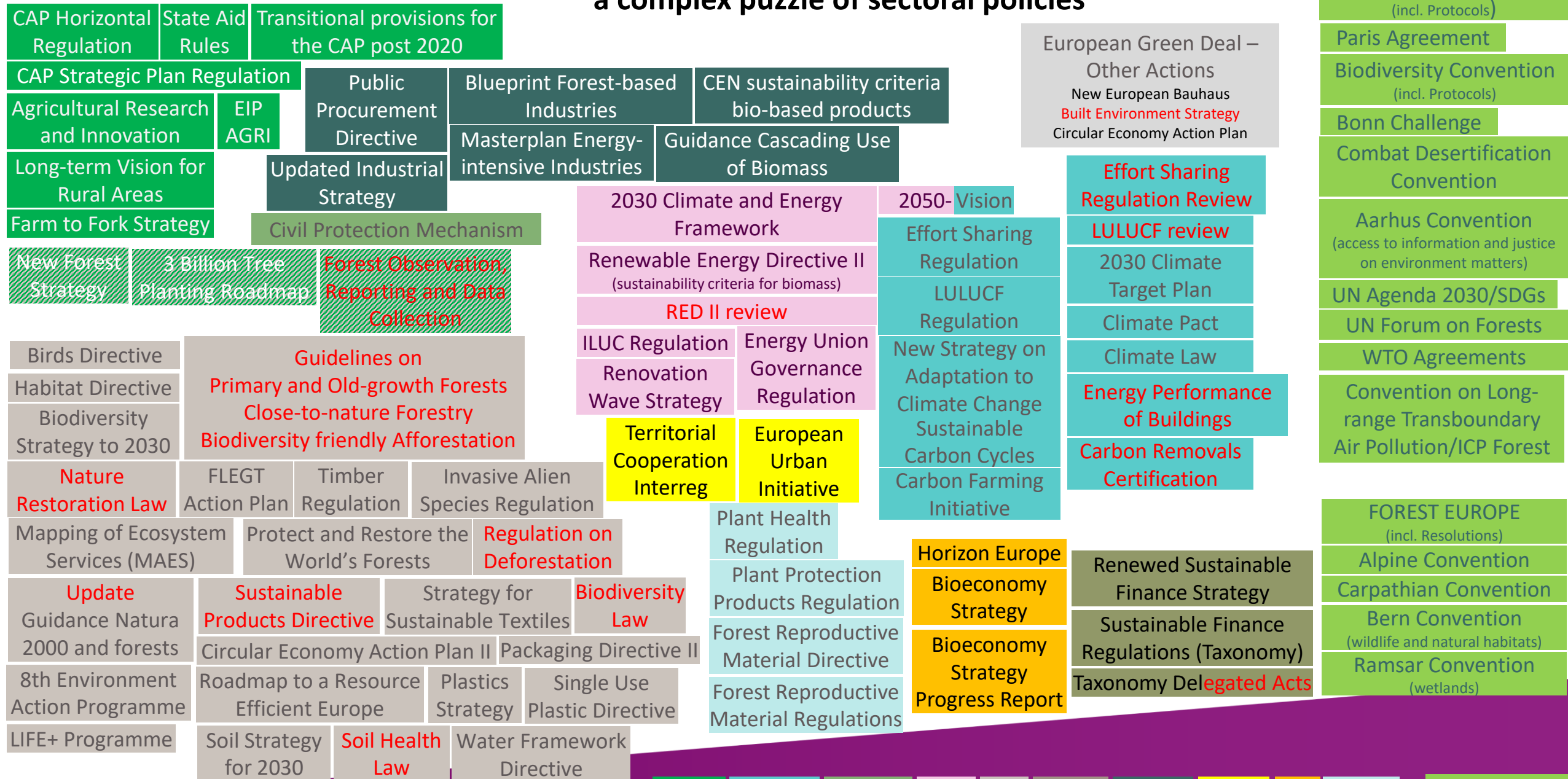
EU Forest Policy Environment 1979-2007



EU Forest Policy Environment 2022

a complex puzzle of sectoral policies

in preparation



Recent EU Initiatives relevant for the Forest-Based Sector

Year	Recent Legislation and Policy in Force	
	Legislative	Non-Legislative
2019	Plant Health Delegated and Implementing Regulations	EU Action Plan on Protecting and Restoring the World's Forests
	Taxonomy Regulation	
2020	Plant Health Delegated and Implementing Regulations	A New Industrial Strategy for Europe
	2030 Climate Target Plan	New Circular Economy Action Plan
	Delegated Regulation on Forest Reference Levels	A Farm to Fork Strategy
	CAP Transitional Provisions	Biodiversity Strategy to 2030
		A Renovation Wave for Europe
2021	Horizon Europe	New EU Strategy on Adaptation to Climate Change
	European Climate Law	Updating the 2020 New Industrial Strategy
	Amending the Aarhus Regulation (better access to justice)	A long-term Vision for the EU's Rural Areas
	CAP Horizontal Regulation	New EU Forest Strategy for 2030
	CAP Strategic Plan Regulation	New European Bauhaus
	Taxonomy Delegated Act on Climate Change Mitigation and Adaptation	Soil Strategy for 2030
	Taxonomy Delegated Act on Disclosure	Restoring Sustainable Carbon Cycles incl. Carbon Farming Initiative
	LIFE Regulation	
LIFE Multiannual Work Programme 2021-2024		
2022	Vertical Block Exemption Regulation ('VBER') accompanied by the new Vertical Guidelines	Sustainable Products Policy Initiative
	General Union Environment Action Programme to 2030	Strategy on Sustainable Textiles
	Corporate Sustainability Reporting Directive	Bioeconomy Strategy Progress Report and Re-framing within the new Context
Co-Legislators currently working on Legislative Proposals from the European Commission		
	Revision of the Effort Sharing Regulation	
	Revision of the LULUCF Regulation	
	Revision of the Renewable Energy Directive	
	Revision of the Energy Performance of Buildings Directive	
	Regulation on Social Climate Fund	
	Regulation on European Green Bonds	
	Directive on Corporate Sustainability Due Diligence	
	Regulation on Carbon Border Adjustment Mechanism	
	Directive on Improving Environmental Protection through Criminal Law	
	Regulation on Deforestation and Forest Degradation	
	Revision of the Ecodesign Directive	
	Regulation on Nature Restoration (Restoration Law)	
	Update of EU Rules on Sustainable Use of Pesticides	

Announced EU Initiatives

Proposals for EU Legislation and Strategies announced by the European Commission		
Announced for	Legislative	Non-Legislative
Q1/Q2 2022	Horizon Europe Work Programmes 2023-2024	
Q2 2022	Policy Framework on biobased, biodegradable and compostable Plastics	
Q3/4 2022	Revision of the horizontal Block Exemption	
Q2 2022	Renewed Strategic Partnership with the outermost Regions	
Q3 2022	Revision of the Ambient Air Quality Directive	
Q4 2022	Regulation on Carbon Removal Certification	
Q4 2022	Revision of the Legislation on Forest Reproductive Material	
Q4 2022	GreenData4All - Revision of INSPIRE	
2022	Biodiversity Governance Framework (Biodiversity Law)	
2022	Taxonomy Delegated Acts on 4 Environmental Objectives	
2022-2023	Revision of Ecolabel Commission Decisions (on wood-based products)	
Q2 2023	EU Forest Observation, Reporting and Data Collection	
Q2-2023	Soil Health Law	
Open public consultations		
	Aarhus Convention Compliance Committee case on State aid: implications/options	13 July 2022 - 05 October 2022
	Soil Health Law (Soil health – protecting, sustainably managing and restoring EU soils)	01 August 2022 - 24 October 2022
	EU forests – new EU Framework for Forest Monitoring and Strategic Plans	25 August 2022 - 17 November 2022
	Interim evaluation of PRIMA	05 September 2022 - 03 October 2022

New EU Forest Strategy for 2030

Planned Actions

40 to be led by the European Commission

8 to be led by the Member States

Discussions in the Working Group Forests and Nature Guidelines for

- primary and old-growth forests
- biodiversity friendly afforestation and reforestation
- closer-to-nature-forestry practices
- update of the Natura 2000 guidance on forests

Voluntary closer-to-nature forest management certification scheme

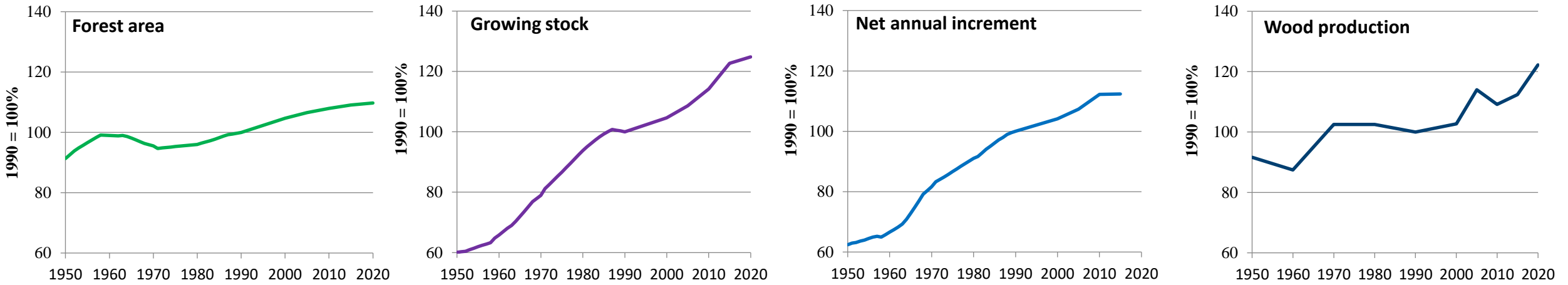
Additional indicators, thresholds, ranges for sustainable forest management concerning forest ecosystem conditions, such as health, biodiversity and climate objectives

Legislative proposal for a Forest Observation, Reporting and Data Collection framework

European Forest Science Partnership through JRC

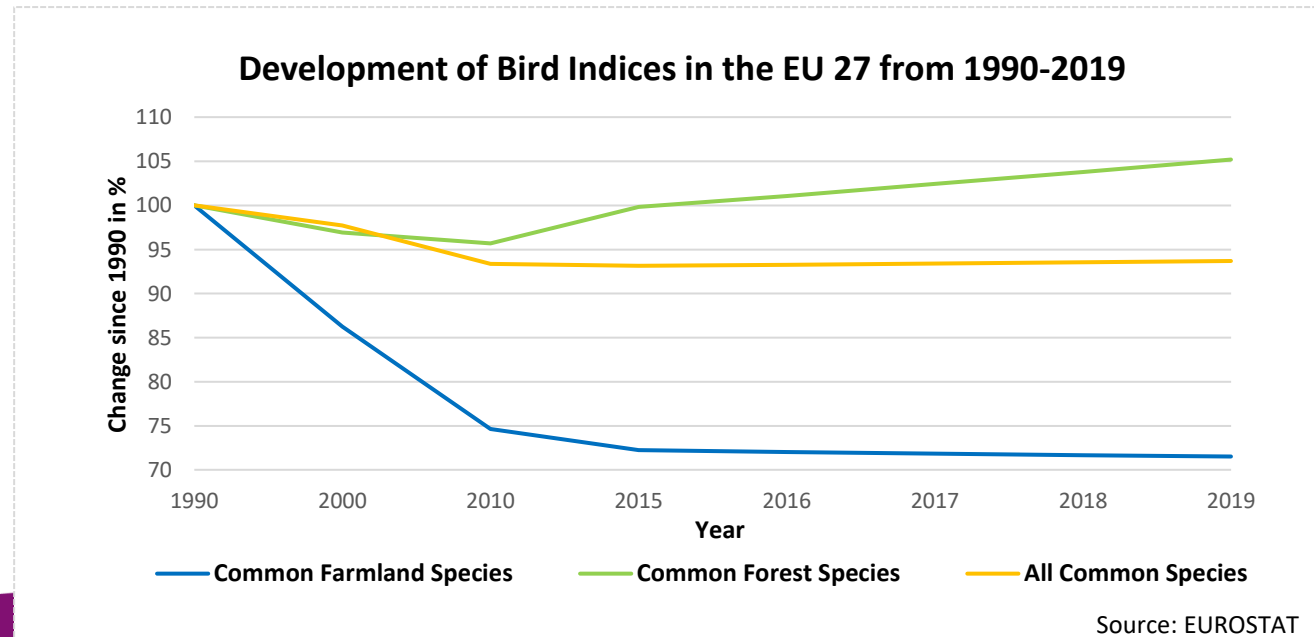
Expansion of Forest Resources in the EU

- large expansion of European forest resources during the past 70 years – unique at global level



Source: adapted from Verkerk 2015; multiple data sources

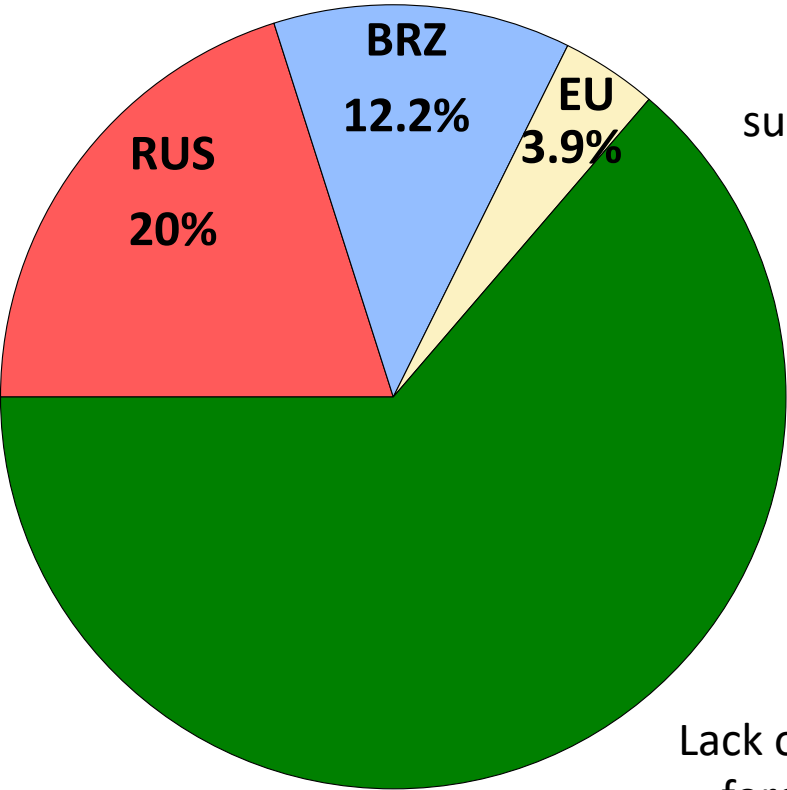
- more mixed and structured forests
- higher amount of deadwood
- rising share of natural regeneration
- more protected forest areas



Global Role of EU Forests and Forest-based Products

EU - not a huge forested region, but a huge forest products producer

Forest Area in 2020 (ha)

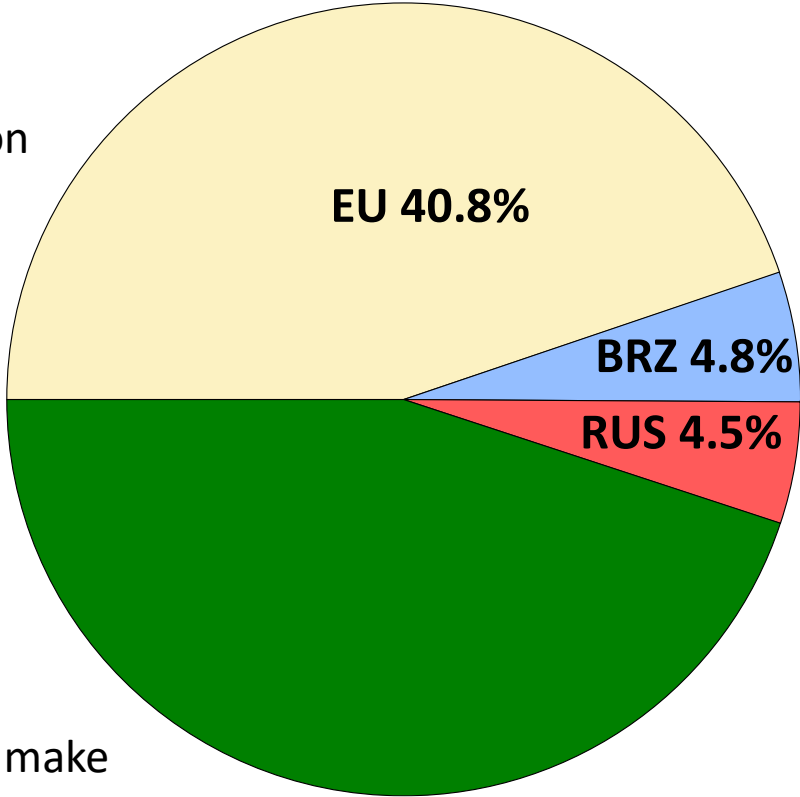


Source: FAOSTAT

EU has major opportunities to shape sustainable consumption and production

Lack of forest-based bioeconomy does not make forests more resilient, could be the contrary

Forest Products Export Value in 2019 (\$)



New Forest-based Bio-Products – Examples

Forest biomass



Viscose fibre



Increasing demand in textile markets to replace e.g. cotton and polyester

Biofuels



Increasing demand in transportation sector

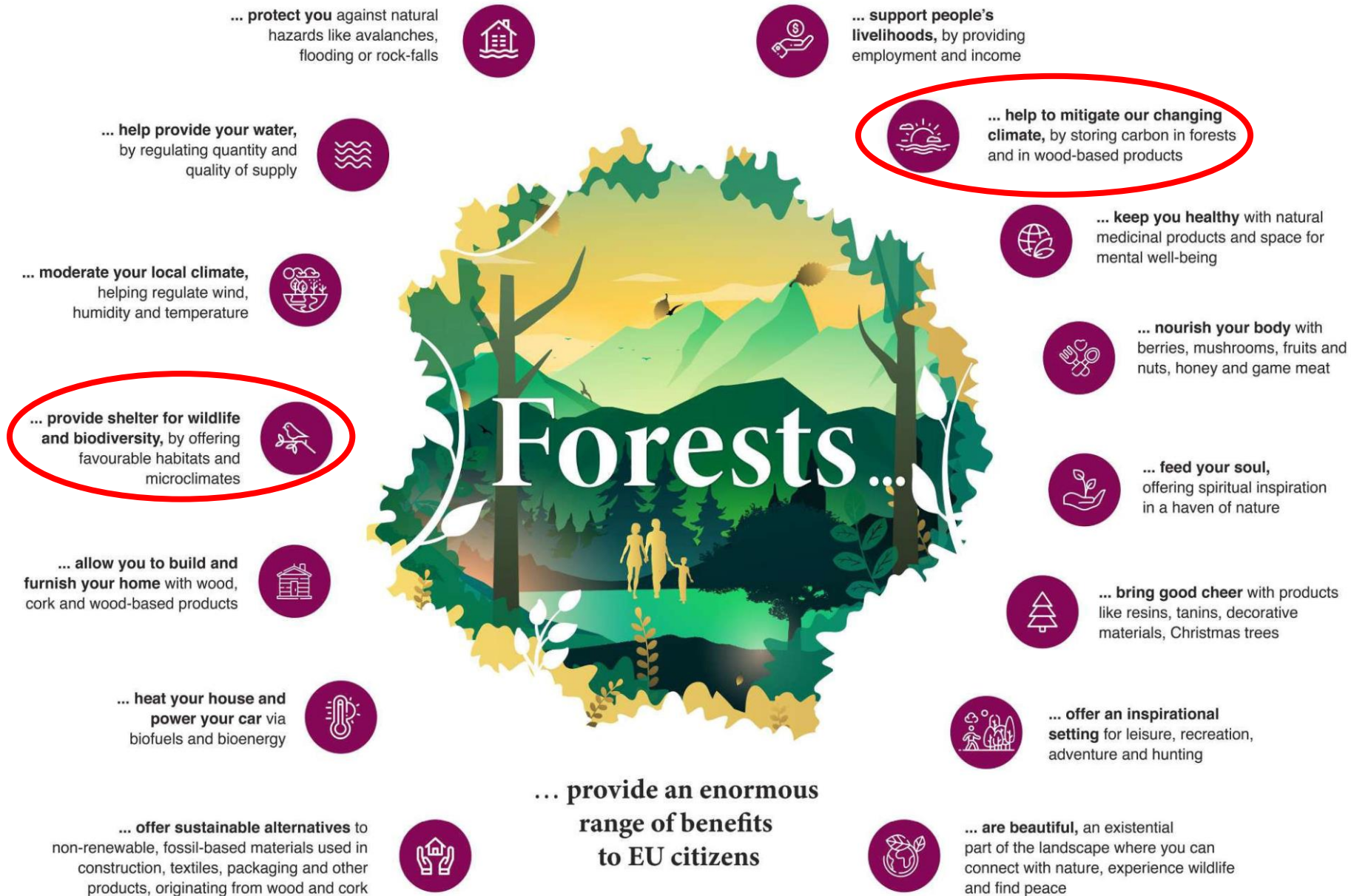
Construction materials



Increasing demand for low CO₂, healthy and cost competitive construction material

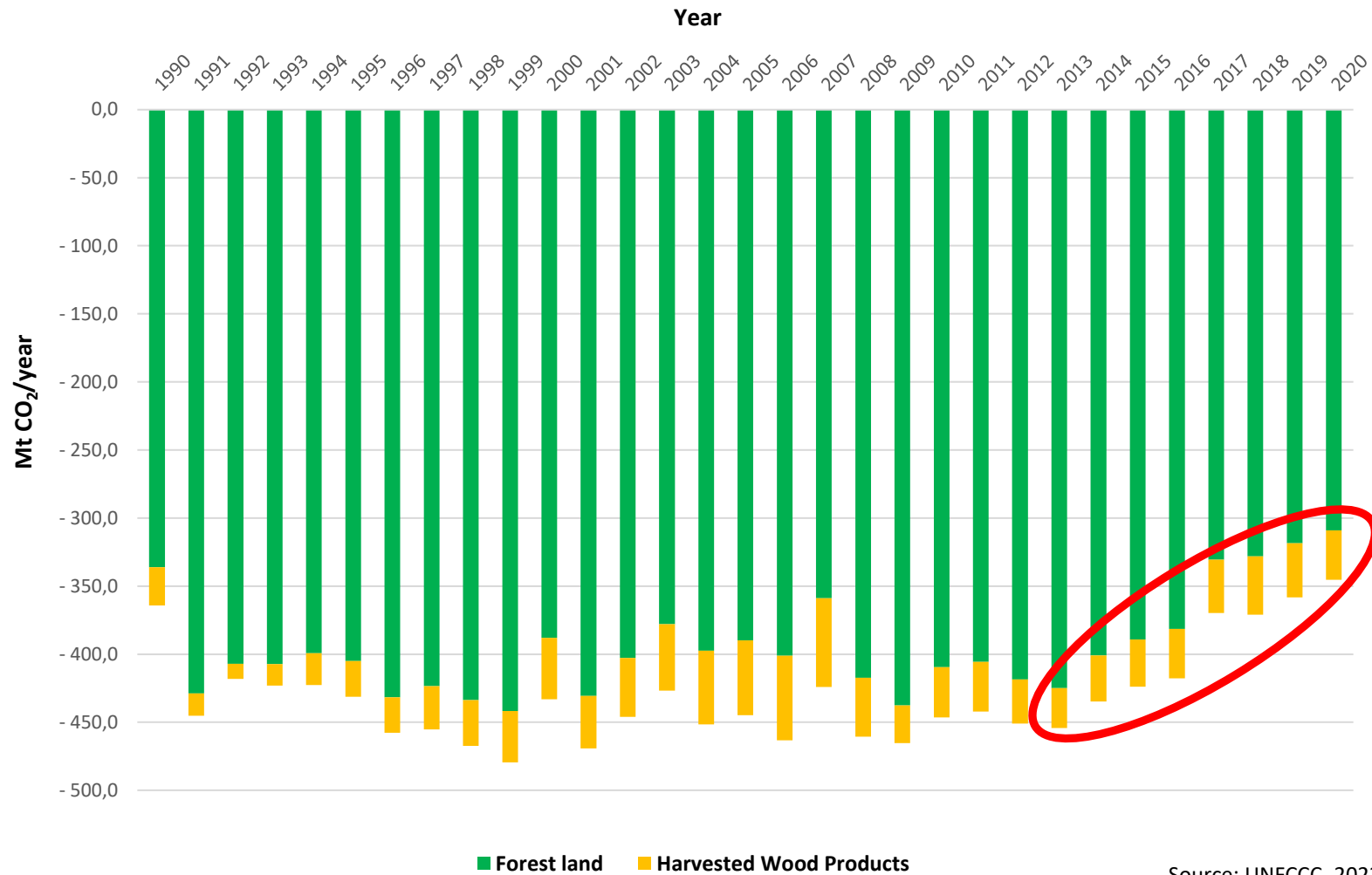
- Platform chemicals
- (plastic) Packaging
- Cosmetics
- Food additives
- Pharmaceuticals

Multiple Roles Forests play for Society



Forest-related Carbon Sink in the EU

Annual CO₂ Removals by Forests and Harvested Wood Products 1990-2020 in the EU
(in Mt CO₂/year)



2013-2020

Sink: -24%

Roundwood Production: +11%

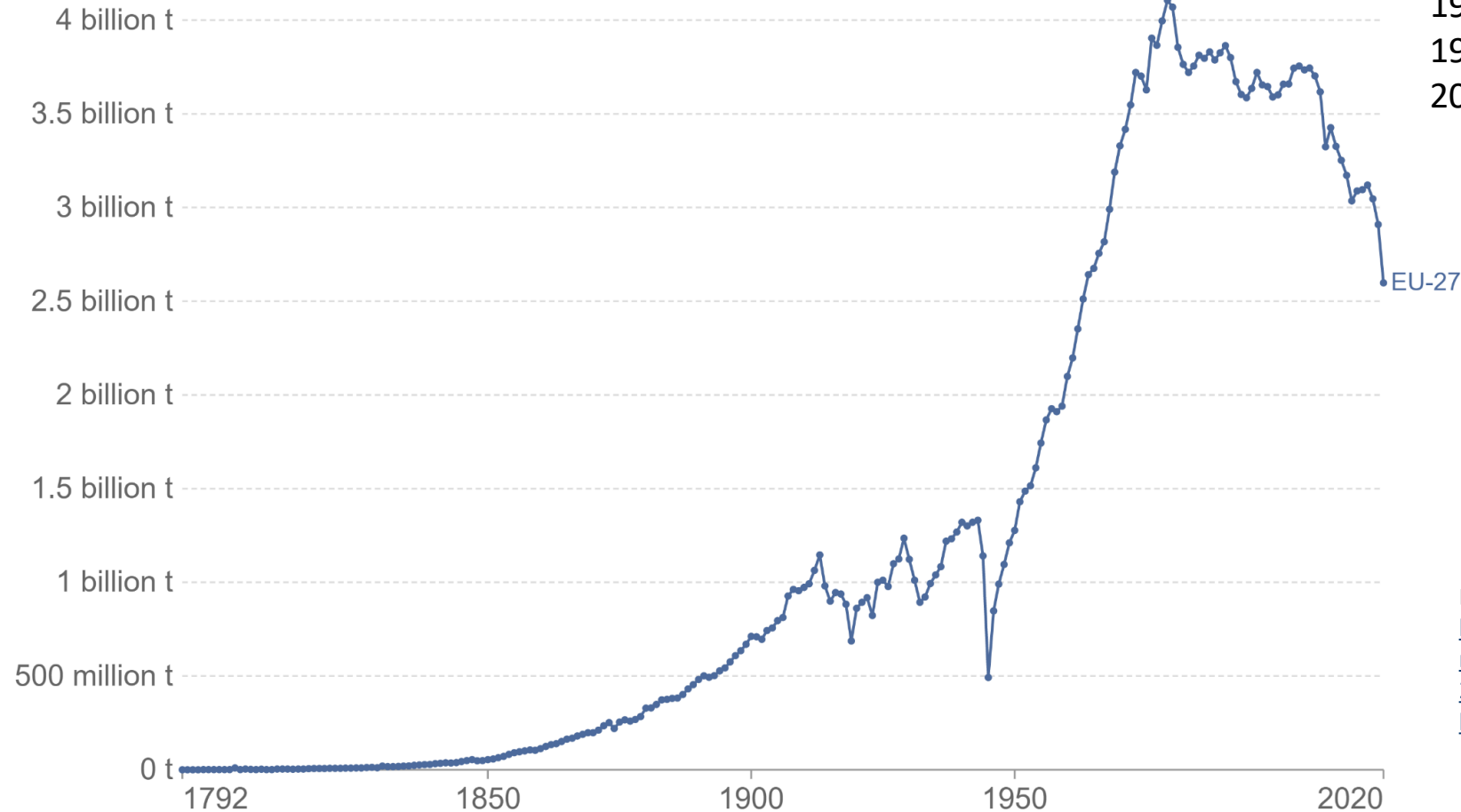
Source: UNFCCC, 2022

Development of Fossil-based CO₂-Emissions in the EU

Annual CO₂ emissions

Carbon dioxide (CO₂) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World
in Data



1950: 1,28 billion t
1990: 3,86 billion t +288% to 1950
2020: 2,60 billion t +103% to 1950, -33% to 1990

Data Source:

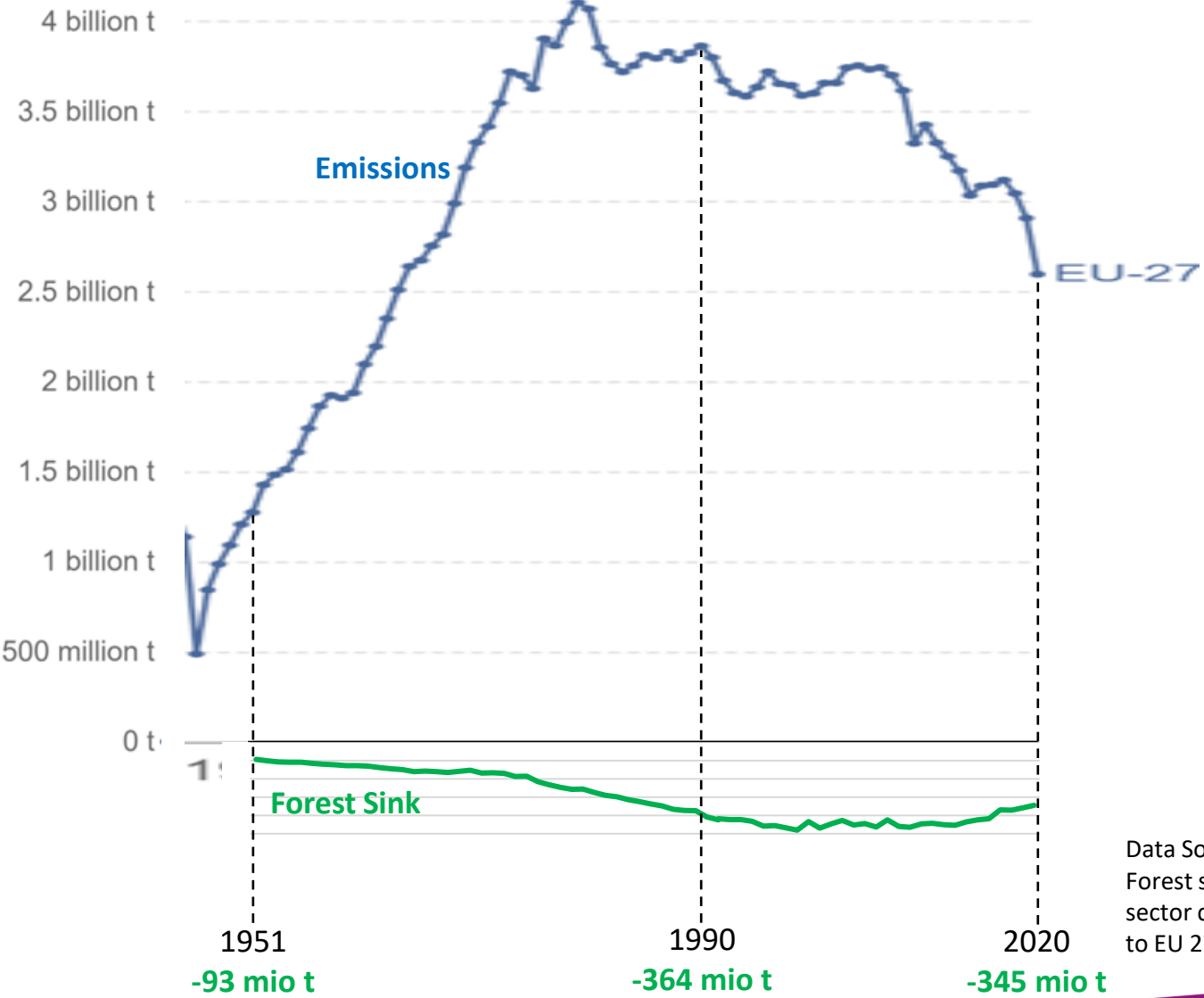
<https://ourworldindata.org/explorers/co2?time=earliest..latest&facet=none&country=EU-27~EU~EU~EU&Gas=CO%E2%82%82&Accounting=Production-based&Fuel=Total&Count=Per+country&Relative+to+world+total=false>

Source: Our World in Data based on the Global Carbon Project

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY

Note: CO₂ emissions are measured on a production basis, meaning they do not adjust for emissions embedded in traded goods.

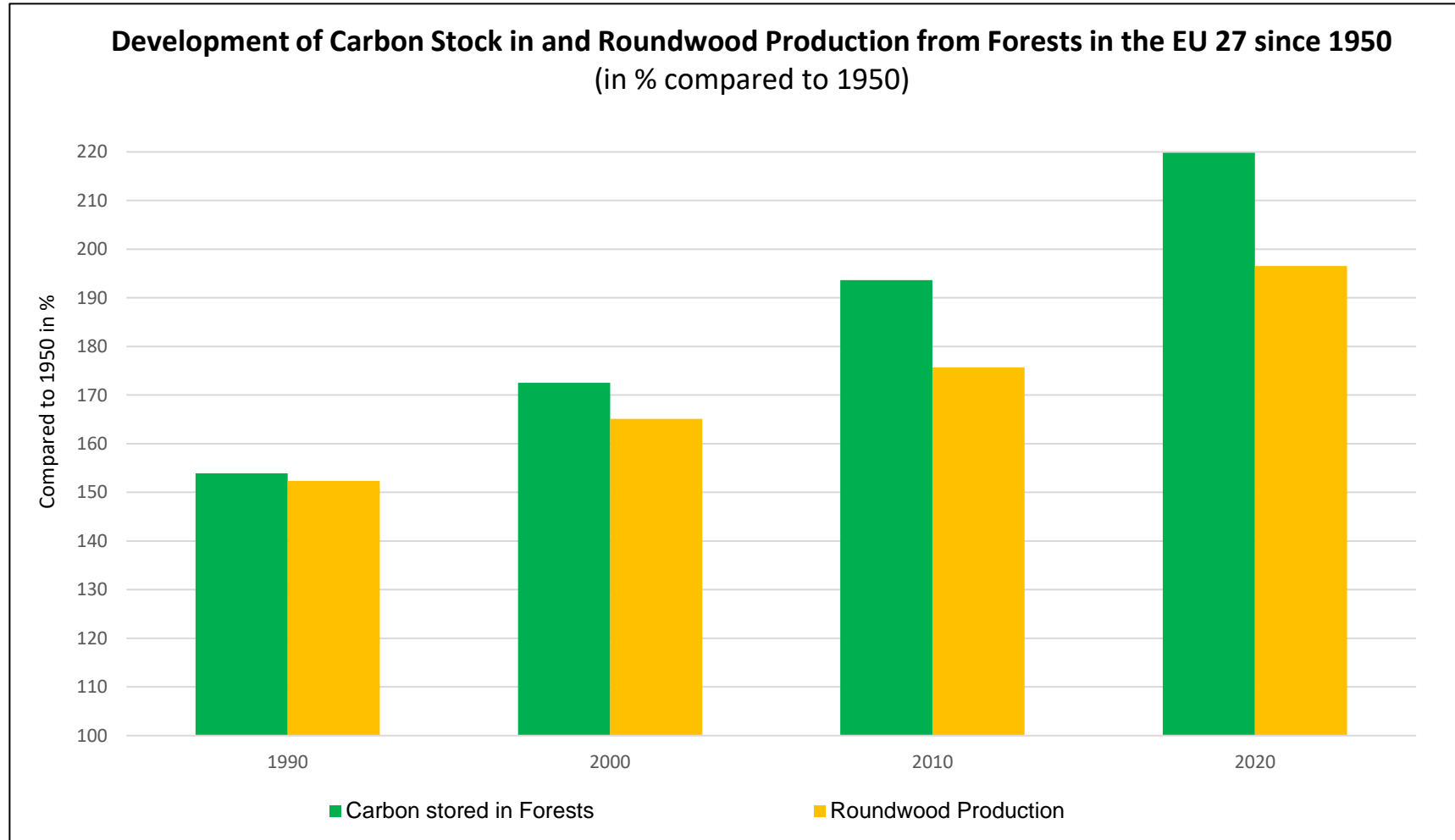
CO₂-Emissions and Forest-based Carbon Sink in the EU



Substitution effects by wood-based products and energy are not explicitly visualised

Data Sources: Annual CO₂ emissions: Our World in Data
Forest sink: UNFCCC; Nabuurs et al. (2003): Temporal evolution of the European forest sector carbon sink from 1950 to 1999. Global Change Biology (2003) 9, 152-160. (Scaled to EU 27)







Forest Carbon Stock Development in the EU since 1950



Year	Carbon stored in Forests GT	Roundwood Production Mill m ³
1950	4,88	254,08
1961	no data	283,78
1990	7,51	387,07
2000	8,41	419,51
2010	9,44	446,47
2019	10,64	508,47
2020	10,72	499,40
Compared to 1950 in %		
1990	153,9%	152,3%
2000	172,5%	165,1%
2010	193,7%	175,7%
2019	218,3%	200,1%
2020	219,9%	196,6%

Source:
 Carbon stored 1950: Nabuurs, 2003. EU countries scaled to EU 27 with FAO FRA data on growing stock 1990.
 Carbon stored 1990-2020: FAO STAT. 2020 data from FAO FRA 2020.
 Round wood production: FAOSTAT. 1950 data from Kuusela (1994), upscaled to EU 27 by FAOSTAT 1992 data on roundwood production.

Mitigating GHG Emissions by Forests... and Use of Wood!

Option		current offset of total EU emissions (%)	Short-term relative impact of > harvest	Reported/accounted in:
Increase in C stock	in existing forests (CO ₂ sink or "removal") 	≈ 10% (only 1% accounted under KP in 2008-2012)	<<	
	in wood products 	≈ 1%	>	
Substitution effects by wood (approximate figures)	Material  → 	≈ 1-2%	>	Other GHG sectors
	Fossil-fuel energy  → 	≈ 4-5%	*	

* While the emission saving by material substitution are immediate, when wood replaces fossil fuels the emissions saving highly depends on the context, assumptions and time frame.

Source: Grassi 2017

CEPI study presented on 19. June 2020:
20% offset in 2018

Source: Peter Holmgren, 2020: Climate effects of the forest-based sector in the European Union. FutureVistas AB.

Component	Climate effect Mt CO ₂ e/year	Note
1. Net sink in forest	-406	= LULUCF 4.A
2. Harvested Wood Products, HWP	-41	= LULUCF 4.G
3. Fossil emissions in value chain	51	Estimate. Input goods not included
4. Substitution effect, industry products	-394	Conservative calculation based on available literature
5. Substitution, traditional bioenergy	-16	
Total climate effect	-806	= 20% of EU emissions

Main Drivers for the Development of EU Forest Resources

natural forest expansion



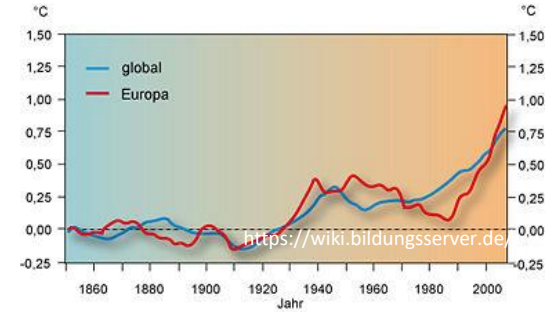
afforestation



increased nitrogen depositions
increased CO₂ concentration in the atmosphere



rising temperature and extended growing season



age class effects



improved forest management
and tree breeding



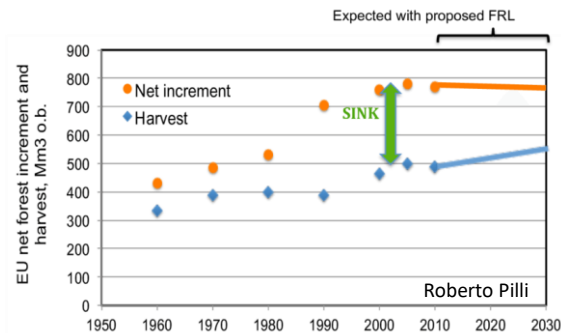
demand for
wood-based products



recovery of forest soils



harvesting rate below increment



How will the Forest Carbon Sink in the EU develop?

Biogeosciences, 19, 3263–3284, 2022
https://doi.org/10.5194/bg-19-3263-2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.



Biogeosciences  Open Access

Research article

The European forest carbon budget under future climate conditions and current management practices

Roberto Pilli¹, Ramdane Alkama², Alessandro Cescatti², Werner A. Kurz³, and Giacomo Grassi²

¹independent researcher: Padua, Italy

²Joint Research Centre (JRC), European Commission, Via E. Fermi 2749, 21027 Ispra (VA), Italy

³Canadian Forest Service, Natural Resources Canada, Victoria, BC, V8Z 1M5, Canada

Correspondence: Giacomo Grassi (giacomo.grassi@ec.europa.eu)

Received: 31 January 2022 – Discussion started: 1 February 2022

Revised: 12 May 2022 – Accepted: 20 June 2022 – Published: 13 July 2022

Forest Ecology and Management 405 (2017) 44–55



ELSEVIER

Contents lists available at ScienceDirect

Forest Ecology and Management

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



Sustaining the sequestration efficiency of the European forest sector

Aude Valade^{a,*}, Valentin Bellassen^b, Claire Magand^a, Sebastiaan Luyssaert^c

^a Institut Pierre Simon Laplace (IPSL), CNRS-UPMC, Paris, France

^b CESAER, AgroSup Dijon, INRA, Univ. Bourgogne Franche-Comté, F-21000 Dijon, France

^c Department of Ecological Sciences, VU University Amsterdam, Amsterdam, The Netherlands



https://efi.int/sites/default/files/files/publication-bank/2022/efi_fstp_14_2022.pdf

Assessment of the Conservation Status of Habitats ¹

4 Parameters

Range
Area
Structure and Functions (Habitat Condition)
Future prospects

Parameter Status

FV Favourable
U1 Unfavourable-inadequate
U2 Unfavourable-bad
X Unknown

Conservation Status of Habitats - Rules for combining the 4 Parameter Statuses

FV Favourable	All green OR three green and one unknown
U1 Unfavourable-inadequate	One or more amber BUT no red
U2 Unfavourable-bad	One or more red
X Unknown	Two or more unknown combined with green OR all unknown

Assessment of the Conservation Status of Habitats ²

Possible Combinations of the 4 Parameter Statuses for the Assessment of the Conservation Status of Habitats

Conservation Status Favourable				Conservation Status Unfavourable-inadequate				Conservation Status Unfavourable-bad				Conservation Status Unknown			
Range	Area	Condition	Future prospects	Range	Area	Condition	Future prospects	Range	Area	Condition	Future prospects	Range	Area	Condition	Future prospects
FV	FV	FV	FV	FV	FV	FV	U1	FV	FV	FV	U2	X	X	FV	FV
X	FV	FV	FV	FV	FV	U1	FV	FV	FV	U2	FV	X	FV	X	FV
FV	X	FV	FV	FV	U1	FV	FV	FV	U2	FV	FV	X	FV	FV	X
FV	FV	X	FV	U1	FV	FV	FV	U2	FV	FV	FV	FV	FV	X	X
FV	FV	FV	X	FV	FV	U1	U1	FV	FV	U2	U2	FV	X	X	FV
				FV	U1	FV	U1	FV	U2	FV	U2	X	X	X	FV
				FV	U1	U1	FV	FV	U2	U2	FV	X	X	X	FV
				U1	U1	FV	FV	FV	U2	U2	FV	FV	X	X	X
				U1	FV	FV	U1	U1	U2	FV	FV	U2	FV	X	X
				U1	FV	U1	FV	FV	U2	FV	U2	FV	X	X	X
				FV	U1	U1	U1	U1	FV	U2	U2	U2	X	X	X

Conservation Status of Habitats - Rules for combining the 4 Parameter Statuses

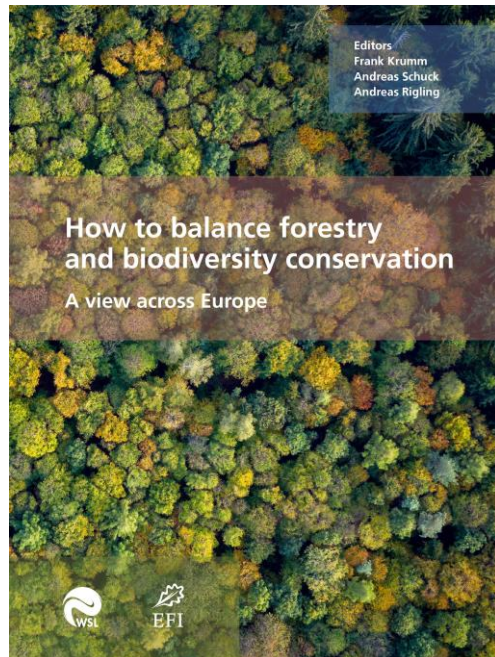
- FV Favourable** All green OR three green and one unknown
- U1 Unfavourable-inadequate** One or more amber BUT no red
- U2 Unfavourable-bad** One or more red
- X Unknown** Two or more unknown combined with green OR all unknown

Results		
	All Cases	Condition=FV
	242	63
	100%	26%
FV	2%	6%
U1	26%	30%
U2	66%	57%
X	5%	6%

Transition to a sustainable and climate-friendly Economy



facilitated by EFI
<https://integratenetwork.org/>



[https://www.dora.lib4ri.ch/wsl/islandora/object/wsl%3A25581/datastream/PDF/Krumm-2020-How to balance forestry and-%28published version%29.pdf](https://www.dora.lib4ri.ch/wsl/islandora/object/wsl%3A25581/datastream/PDF/Krumm-2020-How_to_balance_forestry_and-%28published_version%29.pdf)



https://efi.int/sites/default/files/files/publication-bank/2022/efi_fstp_13_2022.pdf



https://efi.int/sites/default/files/files/publication-bank/2019/efi_fstp_2_2015.pdf



https://efi.int/sites/default/files/files/publication-bank/2019/efi_fstp_6_2018.pdf



https://efi.int/sites/default/files/files/publication-bank/2020/EFI_K2A_02_2020.pdf



Photo: Sanit Fuangnakhon / Shutterstock

**Thank you
for your attention!**