

S1 Methods

S1.1 Functional Regional Mapping

It is important to note that data at intermediate NUTS+ levels are not necessarily suitable for aggregation to the next higher NUTS+ level, as it would be usually the case in the NUTS classification. This is because the boundaries of country-specific regions may not align with those of the original NUTS regions. To address this issue, the NUTS+ levels to which aggregation are permitted were specified in the database. In Sweden's case for example, data at NUTS+1.5 level can only be aggregated to the NUTS0 level (the national level) and not to the NUTS1 level which is the next higher level.

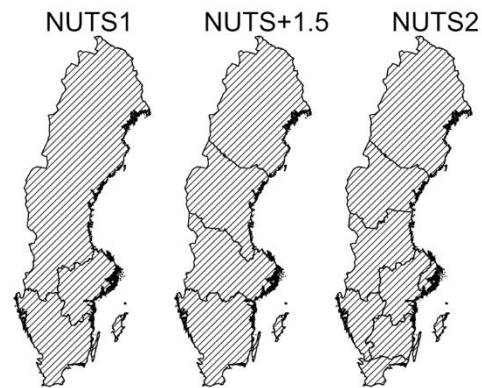


Figure S1 NUTS regions of Sweden with an added intermediate NUTS+ level based on harvest regions defined in the Swedish census.

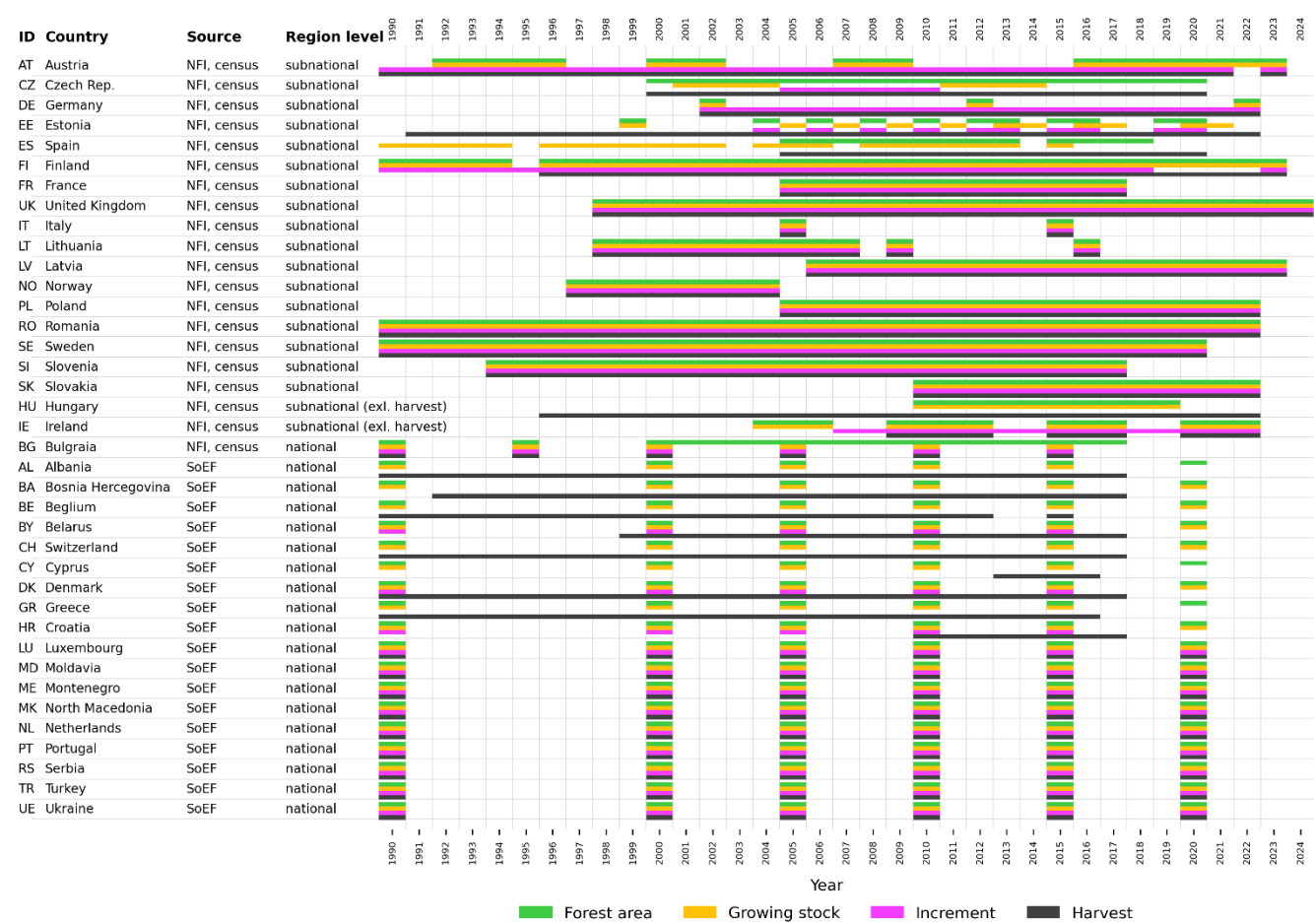


Figure S2 Overview of forest indicators (area, stock, increment, harvest) included in EuFor-reported per year for countries.

Table S1 EuFor-reported column names and description or forest area, growing stock, harvest and increment table

Column name	Description	example
cntry_ID_EuFor	EuFor internal country identifier, consistent with NUTS+ IDs	AT
cntry_ID_ISO	ISO country code	AT
NUTS+_ID	NUTS2021 with added NUTS_IDs for country-specific region systems that lie between the original NUTS levels = NUTS+.	AT11
NUTS+_level	NUTS+ level: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5	2

variable	Variable represented by the record (area, stock, increment, or harvest).	area
forest_area_def	Original term/definition for reported forest area (sometimes empty when English term was available from original source)	Ertragswald
forest_area_trans	English translation of forest area term/definition from original source	Forest area under use
harvest_cat_def	Original term/definition for reported harvest if no English translation was available (harvest table only).	
harvest_cat_trans	English translation of forestry harvest term/definition from original source (harvest table only).	
species	English translation of reported species type	spruce
species_group	<u>Added species class information:</u> con: coniferous tree species noncon: non-coniferous tree species unstocked: unstocked forest area unknown: unknown tree species <u>Added totals within a category/region:</u> con-total: sum of con at unique NUTS_ID, year, forest_area, (harvest_cat) noncon-total: sum of noncon at unique NUTS_ID, year, forest_area, (harvest_cat) total-con-ncon: sum of con-total and noncon-total at unique NUTS_ID, year, forest_area, (harvest_cat) total-allclass: sum of con-total, noncon-total, unknown and unstocked.	con
year	Reference year	2000
source	Is either: NFI, census or SoEF.	NFI
unit_orig	Unit reported in the original source.	1000ha
value_orig	Value reported in the original source.	20
unit_norm	Standardized unit used in EuFor. 1000 ha for area 1000 m3 for stock, increment, harvest	1000ha
value_norm	value converted to the EuFor standard unit.	20
NUTS+0		AT
NUTS+0_5		
NUTS+1	Functional NUTS+ mapping. It can be used to aggregate from this entry to larger spatial NUTS units. In this case from NUTS2 to NUTS1 and NUT0.	AT1
NUTS+1_5		
NUTS+2		AT11

NUTS+2_5

NUTS+3

NUTS+3_5

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Table S2 Species data included in EuFor-reported per variable; x = included at subnational level, o = included at national level, blank = no data.

entry_ID	data source	forest area	Growing stock	harvest	increment	species data at subnational level for all 4 variables	species data at subnational level for forest area, growing stock, harvest
BG	census	x	o	o	o	0	0
SK	census	x	x	x		0	1
UK	census	x	x	x		0	1
CZ	census & NFI	x	x	x	x	1	1
LT	census & NFI	x	x	x	x	0	1
LV	census & NFI	x	x	x		0	1
RO	census & NFI	x	x	x	x	1	1
SI	census & NFI	o	x	x	x	0	0
AT	NFI	x	x	x	x	1	1
DE	NFI	x	x	x	x	1	1
EE	NFI	x	x	o	o	0	0
ES	NFI	x	o	x		0	0
FI	NFI	x	x	x	x	1	1
FR	NFI	x	x	x	x	1	1
HU	NFI	x	x	x		0	1
IE	NFI	x	x	x	x	1	1
IT	NFI	x	x	o	x	0	0
NO	NFI	x	x	x	x	1	1
PL	NFI	x	x	x	x	1	1
SE	NFI	x	x	x	x	1	1
AL	SoEF/FAOSTAT	x	x	x		0	1
BA	SoEF/FAOSTAT	o	x	x		0	0
BE	SoEF/FAOSTAT	x	x	x		0	1
BY	SoEF/FAOSTAT	x	x	x	o	0	1
CH	SoEF/FAOSTAT	x	x	x		0	1
CY	SoEF/FAOSTAT	x	x	x		0	1
DK	SoEF/FAOSTAT	x	x	x	o	0	1
EL	SoEF/FAOSTAT	o	x	x		0	0
HR	SoEF/FAOSTAT	x	x	x	o	0	1
LU	SoEF/FAOSTAT	o	x	x		0	0

MD	SoEF/FAOSTAT	x	x	x		0	1
ME	SoEF/FAOSTAT	x	x	x		0	1
MK	SoEF/FAOSTAT	x	x	x		0	1
NL	SoEF/FAOSTAT	x	x	x	o	0	1
PT	SoEF/FAOSTAT	x	x	x		0	1
RS	SoEF/FAOSTAT	o	x	x		0	0
TR	SoEF/FAOSTAT	x	x	x	o	0	1
UA	SoEF/FAOSTAT	x	x	x	o	0	1

S1.3 Creation of EuFor-harmonized

20 **Table S3: Calculation flags in “flag_calc” column of initial aggregation steps.**

Calculation flag	Description
original data	Original data from EuFor-reported
species([NUTS_level])	Indicates from which NUTS-level the species aggregate (e.g. coniferous total) was formed
tree_stock([NUTS_level])	Indicates from which NUTS-level the total (e.g. coniferous total + broadleaved total + unstocked) was formed.
regions([NUTS_level])	Indicates from which lower NUTS level this aggregate was formed (e.g. entry is at NUTS1 and was calculated from NUTS2)
Removals (industrial roundwood (under/over bark), wood fuel (under/over bark))	Indicates that roundwood removals were calculated from industrial roundwood and wood fuel entry when both entries are either under or over bark.
wood_fuel_of_indr_rdwd([wood_fuel_share])	Indicates that the wood_fuel entry was calculated by using national shares of wood fuel to industrial roundwood from SoEF.

Table S4: Calculation flags of forest area harmonization and gap filling.

Calculation flag	Description
inter([year0]-[year1])	Indicated the years from which the interpolation was performed. E.g. for an entry for year =2010 it could be: year0=2008, year1=2012
extra([yearN])	Indicates that the value has been kept constant from yearN.
harm(JRC/SoEF)	Indicates the source (Avitabile et al., 2024 or SoEF) used for the harmonisation.

Table S5: Calculation flags of forest harvest harmonization and gap filling.

Calculation flag	Description
inter([year0]-[year1])	Indicates the years from which the interpolation was performed. E.g. for an interpolated entry with year =2010 it could be: year0=2008, year1=2012.
extra([yearN])	Indicates the value has been kept constant from yearN.
harm(SoEF)	Indicates that harvest is harmonized by averaging of EuFor-harvest-estimate and SoEF-harvest-estimate.

Table S6: Calculation flags of growing stock harmonization and gap filling.

Calculation flag	Description
PilliCorr()	Indicates that the growing stock volume was corrected to roundwood under bark levels using adapted correction factors from Pilli et al., (2024), given in Table S12.
CRAFT(sourceyear)	Indicates that in this year growing stock data was used as input for CRAFT
CRAFT(modelled)	Indicates growing stock data points were modelled CRAFT
GS_unused_subshare ([allocation_source], [reference year])	Indicates that natioanl growing stock volumes for unused/non-reported areas are estimated using SoEF ratios between growing stock at FNAWs to FAWS and subnational allocated using JRC or NFI as allocation source from the reverence year x.
expandbark()	Indicates that roundwood over bark levels have been calculated using bark factors from Table S9.

Table S7 EuFor-harmonized column names and description for forest area, growing stock and harvest table

Column name	Description	example
cntry_ID_EuFor	EuFor internal country identifier, consistent with NUTS+ IDs	AT
cntry_ID_ISO	ISO country code	AT
NUTS+_ID	NUTS2021 with added NUTS_IDs for country-specific region systems that lie between the original NUTS levels = NUTS+.	AT11
NUTS+_level	NUTS+ level: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5	2
variable	Variable represented by the record (area, stock, or harvest).	area
species_group	total-allclass: sum of con-total, noncon-total, unknown and unstocked.	total-allclass
year	Reference year	2000
source	Is either: NFI, census or SoEF.	NFI

unit	Standardized unit used in EuFor. 1000 ha for area 1000 m3 for stock, harvest	1000ha
value_EuFor_harmonized	Harmonized EuFor value. (For harvest: average between value_SoEF_normalized and value_EuFor_estimate)	130
value_SoEF_normalized	Only for harvest: EuFor_estimate normalized to SoEF national total	
value_EuFor_estimate	Only for harvest: estimate stemming from EuFor harmonization processes	
flag_calc	indicates whether values originate directly from EuFor-reported data or were generated through processing steps such as interpolation or aggregation (for details see Tables 2–5).	original,inter(1994- 2001),JRCharm(JRC)
NUTS+0		AT
NUTS+0_5		
NUTS+1		AT1
NUTS+1_5	Functional NUTS+ mapping. It can be used to aggregate from this entry to larger spatial NUTS units. In this case from NUTS2 to	
NUTS+2	NUTS1 and NUT0.	AT11
NUTS+2_5		
NUTS+3		
NUTS+3_5		

S1.4 Harmonisation and Completion of Annual Time Series: Harvest

30 **Table S8 Intersection between EuFor NUTS+ and JRC NUTS regions with applied harmonization factor and source**

cntry_ ID _ISO	EuFor _NUTS+	JRC_NUTS	intersect	harmonizati on factor	source for harmonizati on
AL	AL	AL	AL	1,000	SoEF
AT	AT	AT	AT	0,978	JRC
AT	AT11	AT11	AT11	0,988	JRC
AT	AT12	AT12	AT12	0,889	JRC
AT	AT13	AT13	AT13	0,978	JRC
AT	AT21	AT21	AT21	0,973	JRC
AT	AT22	AT22	AT22	0,986	JRC
AT	AT31	AT31	AT31	0,944	JRC
AT	AT32	AT32	AT32	0,925	JRC
AT	AT33	AT33	AT33	0,856	JRC

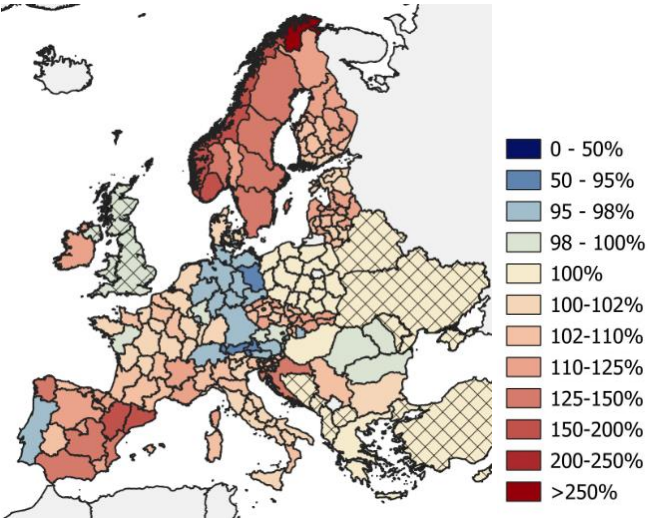
AT	AT34	AT34	AT34	1,000	SoEF
BA	BA	BA	BA	1,009	JRC
BE	BE	BE	BE	1,006	JRC
BG	BG	BG	BG	1,000	SoEF
CH	CH	CH	CH	0,967	JRC
CY	CY	CY	CY	1,000	SoEF
CZ	CZ010	CZ010	CZ010	1,017	JRC
CZ	CZ020	CZ020	CZ020	1,084	JRC
CZ	CZ031	CZ031	CZ031	1,101	JRC
CZ	CZ032	CZ032	CZ032	1,067	JRC
CZ	CZ041	CZ041	CZ041	1,061	JRC
CZ	CZ042	CZ042	CZ042	1,114	JRC
CZ	CZ051	CZ051	CZ051	1,077	JRC
CZ	CZ052	CZ052	CZ052	1,106	JRC
CZ	CZ053	CZ053	CZ053	1,065	JRC
CZ	CZ063	CZ063	CZ063	1,009	JRC
CZ	CZ064	CZ064	CZ064	1,070	JRC
CZ	CZ071	CZ071	CZ071	1,051	JRC
CZ	CZ072	CZ072	CZ072	1,120	JRC
CZ	CZ080	CZ080	CZ080	1,035	JRC
DE	DE1	DE1	DE1	1,009	JRC
DE	DE2	DE2	DE2	0,975	JRC
DE	DE3_DE4	DE3,DE4	DE3_DE4	0,934	JRC
DE	DE6_DE5	DE5,DE6	DE6_DE5	0,409	JRC
DE	DE7	DE7	DE7	0,976	JRC
DE	DE8	DE8	DE8	0,966	JRC
DE	DE9	DE9	DE9	0,968	JRC
DE	DEA	DEA	DEA	0,967	JRC
DE	DEB	DEB	DEB	0,987	JRC
DE	DEC	DEC	DEC	0,978	JRC
DE	DED	DED	DED	0,972	JRC
DE	DEE	DEE	DEE	0,962	JRC
DE	DEF	DEF	DEF	0,965	JRC

DE	DEG	DEG	DEG	0,975	JRC
DK	DK	DK	DK	1,006	JRC
EE	EE001,EE004,EE006,EE007,EE008	EE	EE	1,014	JRC
GR	EL	GR	EL	1,000	JRC
ES	ES11	ES111,ES112,ES113,ES114	ES11	1,307	JRC
ES	ES12	ES120	ES12	1,054	JRC
ES	ES13	ES130	ES13	1,130	JRC
ES	ES21	ES211,ES212,ES213	ES21	1,153	JRC
ES	ES22	ES220	ES22	1,189	JRC
ES	ES23	ES230	ES23	1,113	JRC
ES	ES24	ES241,ES242,ES243	ES24	1,537	JRC
ES	ES30	ES300	ES30	1,138	JRC
ES	ES41	ES411,ES412,ES413,ES414,ES415,ES416,ES417,ES418,ES419	ES41	1,144	JRC
ES	ES42	ES421,ES422,ES423,ES424,ES425	ES42	1,251	JRC
ES	ES43	ES431,ES432	ES43	1,088	JRC
ES	ES51	ES511,ES512,ES513,ES514	ES51	1,542	JRC
ES	ES52	ES521,ES522,ES523	ES52	1,407	JRC
ES	ES53	ES530	ES53	1,031	JRC
ES	ES61	ES611,ES612,ES613,ES614,ES615,ES616,ES617,ES618	ES61	1,268	JRC
ES	ES62	ES620	ES62	1,161	JRC
ES	ES70	ES701,ES702	ES70	1,121	JRC
FI	FI193,FI194,FI195,FI196,FI197	FI19	FI19	1,024	JRC
FI	FI1B1	FI1B	FI1B	1,015	JRC
FI	FI1C1,FI1C2,FI1C3,FI1C4,FI1C5	FI1C	FI1C	1,045	JRC
FI	FI1D1,FI1D2,FI1D3,FI1D5,FI1D7,FI1D8,FI1D9	FI1D	FI1D	1,110	JRC
FI	FI200	FI20	FI20	1,289	JRC
FR	FR10	FR10	FR10	1,002	JRC
FR	FRB0	FRB0	FRB0	1,019	JRC
FR	FRC1	FRC1	FRC1	1,013	JRC
FR	FRC2	FRC2	FRC2	1,015	JRC
FR	FRD1	FRD1	FRD1	1,039	JRC
FR	FRD2	FRD2	FRD2	1,011	JRC
FR	FRE1	FRE1	FRE1	1,022	JRC

FR	FRE2	FRE2	FRE2	1,023	JRC
FR	FRF1	FRF1	FRF1	1,004	JRC
FR	FRF2	FRF2	FRF2	1,053	JRC
FR	FRF3	FRF3	FRF3	1,010	JRC
FR	FRG0	FRG0	FRG0	0,999	JRC
FR	FRH0	FRH0	FRH0	1,016	JRC
FR	FRI1	FRI1	FRI1	1,020	JRC
FR	FRI2	FRI2	FRI2	1,011	JRC
FR	FRI3	FRI3	FRI3	1,014	JRC
FR	FRJ1	FRJ1	FRJ1	1,080	JRC
FR	FRJ2	FRJ2	FRJ2	1,064	JRC
FR	FRK1	FRK1	FRK1	1,048	JRC
FR	FRK2	FRK2	FRK2	1,107	JRC
FR	FRL0	FRL0	FRL0	1,140	JRC
FR	FRM0	FRM0	FRM0	1,240	JRC
HR	HR	HR	HR	1,283	JRC
HU	HU	HU	HU	1,000	JRC
IE	IE	IE	IE	1,136	JRC
IT	ITC1	ITC1	ITC1	1,037	JRC
IT	ITC2	ITC2	ITC2	1,001	JRC
IT	ITC3	ITC3	ITC3	1,011	JRC
IT	ITC4	ITC4	ITC4	1,048	JRC
IT	ITF1	ITF1	ITF1	1,006	JRC
IT	ITF2	ITF2	ITF2	1,009	JRC
IT	ITF3	ITF3	ITF3	1,012	JRC
IT	ITF4	ITF4	ITF4	1,020	JRC
IT	ITF5	ITF5	ITF5	1,020	JRC
IT	ITF6	ITF6	ITF6	1,022	JRC
IT	ITG1	ITG1	ITG1	1,010	JRC
IT	ITG2	ITG2	ITG2	1,064	JRC
IT	ITH1	ITH10	ITH1	1,013	JRC
IT	ITH2	ITH20	ITH2	1,007	JRC
IT	ITH3	ITH3	ITH3	1,006	JRC

IT	ITH4	ITH4	ITH4	1,024	JRC
IT	ITH5	ITH5	ITH5	1,020	JRC
IT	ITI1	ITI1	ITI1	1,008	JRC
IT	ITI2	ITI2	ITI2	1,009	JRC
IT	ITI3	ITI3	ITI3	1,004	JRC
IT	ITI4	ITI4	ITI4	1,017	JRC
LT	LT	LT	LT	1,057	JRC
LT	LT011	LT00A	LT011	1,014	JRC
LT	LT021	LT001	LT021	1,047	JRC
LT	LT022	LT002	LT022	1,010	JRC
LT	LT023	LT003	LT023	1,055	JRC
LT	LT024	LT004	LT024	1,082	JRC
LT	LT025	LT005	LT025	1,057	JRC
LT	LT026	LT006	LT026	1,043	JRC
LT	LT027	LT007	LT027	1,122	JRC
LT	LT028	LT008	LT028	1,042	JRC
LT	LT029	LT009	LT029	1,161	JRC
LU	LU	LU	LU	1,000	SoEF
LV	LV	LV	LV	1,154	JRC
ME	ME	ME	ME	1,000	SoEF
MK	MK	MK	MK	1,000	SoEF
NL	NL	NL	NL	1,009	JRC
NO	NO0_5_1	NO011,NO012,NO021,NO31	NO0_5_1	1,052	JRC
NO	NO0_5_2	NO022,NO032,NO033	NO0_5_2	1,239	JRC
NO	NO0_5_3	NO034,NO041,NO042	NO0_5_3	1,421	JRC
NO	NO0_5_4	NO043,NO051,NO052,NO053	NO0_5_4	1,505	JRC
NO	NO0_5_5	NO060	NO0_5_5	1,513	JRC
NO	NO0_5_6	NO071,NO072	NO0_5_6	1,670	JRC
NO	NO0_5_7	NO073	NO0_5_7	2,962	JRC
PL	PL21	PL21	PL21	1,000	JRC
PL	PL22	PL22	PL22	1,000	JRC
PL	PL41	PL41	PL41	1,000	JRC
PL	PL42	PL42	PL42	1,000	JRC

PL	PL43	PL43	PL43	1,000	JRC
PL	PL51	PL51	PL51	1,000	JRC
PL	PL52	PL52	PL52	1,000	JRC
PL	PL61	PL61	PL61	1,000	JRC
PL	PL62	PL62	PL62	1,000	JRC
PL	PL63	PL63	PL63	1,000	JRC
PL	PL71	PL11	PL71	1,000	JRC
PL	PL72	PL33	PL72	1,000	JRC
PL	PL81	PL31	PL81	1,000	JRC
PL	PL82	PL32	PL82	1,000	JRC
PL	PL84	PL34	PL84	1,000	JRC
PL	PL92	PL12	PL92	1,000	JRC
PT	PT	PT	PT	0,974	JRC
RO	RO	RO	RO	0,998	JRC
RS	RS	RS	RS	1,065	JRC
SE	SE	SE	SE	1,288	JRC
SI	SI_01, SI_02, SI_03, SI_04, SI_05, SI_06, SI_07, SI_08, SI_09, SI_10, SI_11, SI_12, SI_13, SI_14	SI	SI	1,026	JRC
SK	SK010	SK010	SK010	1,062	JRC
SK	SK021	SK021	SK021	1,038	JRC
SK	SK022	SK022	SK022	1,137	JRC
SK	SK023	SK023	SK023	0,973	JRC
SK	SK031	SK031	SK031	1,111	JRC
SK	SK032	SK032	SK032	1,118	JRC
SK	SK041	SK041	SK041	1,152	JRC
SK	SK042	SK042	SK042	1,170	JRC
GB	UK	GB	UK	0,992	SoEF



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Figure S3 Area harmonization factors calculated by division of total forest area from Avitabile et al. (2024) and SoEF and highest aggregate of forest area from EuFor-selected: blue = EuFor is higher, red = Avitabile/SoEF is higher. Hashed lines indicated the use of SoEF values.

S1.5 Harmonisation and Completion of Annual Time Series: Harvest

Table S9 Bark factors derived from Table 2.3.2 in the FAO, 2020 report “Forest product conversion factors”.

cntry ID ISO	bark factors
HR	0,91
CZ	0,90
DK	0,90
FI	0,88
FR	0,86
DE	0,90
IE	0,89
LT	0,90
MD	0,87
NL	0,83
NO	0,90
PL	0,88
PT	0,81
RU	0,90
SK	0,90
SI	0,89
ES	0,86
SE	0,90

UA	0,87
UK	0,89
median	0,89

Table S10 Residue factors to calculate roundwood under bark volumes from felling harvest entries.

Country	Residue factor: fellings to roundwood u.b. volume	source
Hungary (HU)	0,85	calculated from census netto / brutto harvest, averaged 2007-2020 https://agrarstatistika.kormany.hu/download/d/d4/13000/Net_felling_volume.xlsx
Sweden (SE)	0,84	Calculated from NFI average 2000-2022, used: Total net fellings, mill. m³ solid volume excl. Bark to Gross fellings, mill. m³ standing volume. https://skogsstatistik.slu.se/pxweb/en/OffStat/
Estonia (ES)	0,86	Calculated as average of Fellings/roundwood under bark roundwood ratios of the years 1990, 2000, 2005, 2010 and 2015 from SoEF (FOREST EUROPE, 2020).

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Table S11 Overview of extended SoEF harvest data for roundwood under bark (million m³). Green cells indicate values directly reported in SoEF. Yellow cells indicate extrapolations based on relative trends in FAOSTAT harvest data. Blue cells represent extrapolations obtained by holding values constant using the average of the three closest years.

FA O co de	SoEF name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
3	Albania	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
11	Austria	16	11	12	12	14	14	15	15	14	14	13	13	15	17	16	16	19	21	22	17	18	19	18	17	18	17	18	19	19	17	18	19	18	18
57	Belarus	10	10	10	10	9	9	10	12	11	10	11	12	13	15	16	14	13	15	15	13	15	18	18	19	20	18	21	24	28	27	27	27	25	22
25	5	Belgium	6	2	3	3	4	4	3	3	3	3	3	5	5	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4
80	Bosnia and Herzegovina																																		
		0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	5	4	4	4	4
27	Bulgaria	4	4	4	4	3	3	3	3	3	4	5	4	5	5	6	6	6	6	6	5	6	6	7	6	6	6	6	6	6	6	5	5	6	5
98	Croatia	2	2	2	2	3	3	2	3	3	3	4	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	6	5
50	Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	7	Czechia	13	11	10	10	12	12	13	13	14	14	14	15	15	16	16	18	19	16	16	17	15	15	15	15	16	18	19	26	33	33	30	25	18
54	Denmark	2	2	2	2	2	2	2	2	2	2	4	2	2	2	2	3	2	3	2	2	3	3	3	4	4	4	4	4	4	4	4	4	4	4
63	Estonia	2	3	2	3	4	5	5	7	8	8	9	11	9	8	7	7	5	4	4	6	7	8	9	9	9	10	10	10	12	11	11	10	10	10
67	Finland	43	35	38	42	49	50	47	51	54	54	54	52	53	54	54	52	51	57	51	42	51	51	52	57	57	59	61	63	68	64	60	67	66	63
68	France	63	63	63	59	60	60	57	58	57	57	66	59	54	52	53	52	53	54	52	55	56	55	52	51	52	51	51	51	50	50	48	54	50	50
79	Germany	85	34	33	33	40	39	37	38	39	38	54	39	42	51	55	57	62	77	55	48	54	56	52	53	54	56	52	53	58	58	62	65	67	58
84	Greece	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1
97	Hungary	5	5	5	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	5	6	5	5

104	Ireland	2	2	2	2	2	2	2	2	2	3	3	2	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	4	4	4	4	4	4	
106	Italy	8	8	8	9	9	10	9	9	10	11	9	8	8	8	9	9	9	8	9	8	8	8	8	7	6	6	6	6	6	9	8	8	8	6
119	Latvia	6	6	2	5	6	7	8	9	10	14	14	13	13	13	13	13	12	9	10	13	13	13	12	13	12	13	13	13	15	15	16	15	17	
126	Lithuania	5	5	3	5	4	6	6	5	5	5	6	6	6	6	6	6	6	6	5	7	7	7	7	7	6	7	7	7	7	6	7	7	7	
256	Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
273	Montenegro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	
150	Netherlands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
154	North Macedonia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
162	Norway	13	12	11	11	11	11	10	11	10	10	10	10	10	10	10	11	10	11	11	11	10	11	11	12	11	12	12	12	12	12	12	12	13	13
173	Poland	20	19	23	23	23	23	23	25	26	27	28	27	30	32	33	33	33	37	35	36	37	38	38	39	41	42	42	45	47	43	41	43	46	43
174	Portugal	11	11	10	10	10	9	9	9	9	9	11	9	9	10	11	11	11	11	10	10	10	11	11	11	12	13	14	13	14	13	15	15	14	
146	Republic of Moldova	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	
183	Romania	13	13	12	9	12	12	12	14	12	13	13	12	15	15	16	15	14	15	14	13	13	14	16	15	15	15	15	15	16	16	18	18	18	18
272	Serbia	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	8	8	8	8	8	8	8	8	8	8	8	8	8	
199	Slovakia	5	4	4	5	5	5	5	5	6	6	6	6	6	6	7	9	8	8	9	9	10	9	8	8	9	9	9	9	10	9	7	8	7	7
198	Slovenia	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	5	5	5	5	5	5	4	4	4	4
203	Spain	16	15	14	14	15	16	16	16	15	15	14	15	16	16	16	16	16	15	17	14	16	15	16	16	16	17	16	18	19	17	16	18	18	20
210	Sweden	54	52	54	54	56	63	56	60	61	59	63	63	67	67	70	98	65	78	71	64	72	72	70	70	73	74	74	73	73	74	74	77	77	72
211	Switzerland	7	5	5	5	5	5	5	5	6	6	11	7	5	6	6	6	7	7	6	6	6	6	5	5	5	5	4	5	5	4	5	5	5	5
223	Türkiye	19	18	18	18	15	18	18	16	15	15	15	14	16	15	16	16	16	17	19	19	20	20	21	20	20	22	22	20	24	25	25	31	31	24
230	Ukraine	10	10	10	10	10	10	11	11	10	11	12	13	14	15	15	16	17	16	14	16	18	18	18	18	19	20	19	20	18	17	17	17	16	
229	United Kingdom	6	6	7	7	8	8	7	8	8	8	8	8	8	8	8	9	8	9	8	9	10	10	10	11	11	11	11	11	11	11	10	11	10	10

S1.6 Harmonisation and Completion of Annual Time Series: Growing Stock

45 S1.6.1 Converting Growing Stock volumes to roundwood under bark

Table S12 Expanded correction factors from Pilli et al. (2024) to calculate roundwood under bark levels from reported growing stock data from NFIs from. For countries not included in Pilli et al. (2024), factors were estimated using averages of allocated macro-regions.

cntry ID ISO	macro region classification	growing stock correction factor	source
--------------	-----------------------------	---------------------------------	--------

AL	Balkan Region	0,78	macro-region-average
AT	Central Europe	0,85	Pilli et al (2024)
BA	Balkan Region	0,78	macro-region-average
BE	Western Europe	0,73	Pilli et al (2024)
BG	Eastern Europe	0,85	Pilli et al (2024)
BY	Eastern Europe	0,72	macro-region-average
CH	Western Europe	0,82	macro-region-average
CY	Southern Europe	0,77	macro-region-average
CZ	Central Europe	0,82	Pilli et al (2024)
DE	Central Europe	0,86	Pilli et al (2024)
DK	Western Europe	0,83	Pilli et al (2024)
EE	Northern Europe	0,86	Pilli et al (2024)
ES	Southern Europe	0,88	Pilli et al (2024)
FI	Northern Europe	0,83	Pilli et al (2024)
FR	Western Europe	0,85	Pilli et al (2024)
GR	Southern Europe	0,60	Pilli et al (2024)
HR	Balkan Region	0,73	Pilli et al (2024)
HU	Central Europe	0,70	Pilli et al (2024)
IE	Western Europe	0,82	macro-region-average
IT	Southern Europe	0,85	Pilli et al (2024)
LT	Northern Europe	0,85	Pilli et al (2024)
LU	Western Europe	0,88	Pilli et al (2024)
LV	Northern Europe	0,86	Pilli et al (2024)
MD	Eastern Europe	0,72	macro-region-average
ME	Balkan Region	0,78	macro-region-average
MK	Balkan Region	0,78	macro-region-average
NL	Western Europe	0,82	Pilli et al (2024)
NO	Northern Europe	0,85	macro-region-average
PL	Central Europe	0,85	Pilli et al (2024)
PT	Southern Europe	0,75	Pilli et al (2024)
RO	Eastern Europe	0,59	Pilli et al (2024)
RS	Balkan Region	0,78	macro-region-average
SE	Northern Europe	0,85	Pilli et al (2024)
SI	Balkan Region	0,83	Pilli et al (2024)
SK	Central Europe	0,96	Pilli et al (2024)
TR	Southern Europe	0,77	macro-region-average
UA	Eastern Europe	0,72	macro-region-average
UK	Western Europe	0,82	macro-region-average
macro-region-averages			

	all	0,81	
	Northern Europe	0,85	
	Central Europe	0,84	
	Southern Europe	0,77	
	Western Europe	0,82	
	Eastern Europe	0,72	
	Balkan Region	0,78	

50 **S1.6.2 CRAFT model**

The CRAFT model allows to reconstruct changes in biomass stocks and flows in forest ecosystems based on parsimonious input and calibration data and the establishment of a place and time-specific relationship between biomass stocks and Net Primary Production (NPP). Required input data are annual forest area and harvest plus factors on other losses (e.g. mortality, fire) if no specific data is available. For calibrating the growth parameters r and K of the biomass growth function (Eq. 1) some
55 observed values of biomass stock within the modeling period are necessary as well. The growth parameters are then optimized to produce an annual time-series of biomass stock development (Eq. 2) that best matches these observed biomass stock values. The assessment of model success uses the RMSE between the modeled biomass stock values and the observed biomass stock values. The constraining ranges for the optimization are 0.03 - 0.21 for r , and 170 – 1220 m3/ha for K . To represent possible variability of r over time, the additional parameter α was introduced as a linear change factor for r and optimized between 0.8
60 and 1.2. This allows for a $\pm 20\%$ change of r over the modeling period.

Biomass growth function:

$$NPP = B_t * r * (1 - B_t/K)$$

with

NPP...Net Primary Production

B...living biomass stock

t...point in time, based on annual steps

r...forest growth rate per year

K...theoretical maximum carrying capacity

Eq. S1

$$B_{t+1} = B_t + NPP - H - m$$

with

H...harvest including losses (i.e. logging residues)

m...natural losses (e.g. mortality, fires, pests,...)

Eq. S2

We initiated the CRAFT model using the harmonized and gap-filled forest area, harvest estimates and biomass stock described above. We adapted the constraints for modelling the biomass density development before the first and last datapoint derived from the harmonized biomass stock data: the annual change in biomass density for these periods is constrained to two times the annual change between the first and last datapoint, creating conservative estimates of biomass dynamics.

S1.6.3 Estimating Growing Stock for Total Forest Area

Table S13 Country-specific annual ratios of growing stock in Forest Not Available for Wood Supply (FNAWS) to Forest Available for Wood Supply (FAWS) derived from SoEF data. Green cells indicate values directly reported in SoEF, while white cells represent values interpolated between reporting years or extrapolated by holding the closest available value constant.

ISO Code	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
AT	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03
FR	0,05	0,05	0,05	0,05	0,05	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06
DE	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,02	0,03	0,03
IT	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
LV	0,10	0,10	0,10	0,10	0,09	0,09	0,09	0,09	0,09	0,09	0,08	0,08	0,08	0,08	0,08	0,08	0,08
NO	0,08	0,08	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,10	0,10	0,10	0,10	0,10
SK	0,11	0,10	0,09	0,09	0,08	0,08	0,07	0,07	0,06	0,06	0,05	0,06	0,07	0,07	0,08	0,09	0,09
SI	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07
SE	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23
UK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ISO Code	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AT	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,02	0,02	0,02	0,02	0,02	0,02	0,02
FR	0,06	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
DE	0,04	0,04	0,04	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
IT	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
LV	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,09	0,09	0,09
NO	0,10	0,11	0,11	0,11	0,11	0,11	0,12	0,12	0,12	0,12	0,12	0,12	0,13	0,13	0,13	0,13	0,13
SK	0,08	0,08	0,08	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07
SI	0,06	0,06	0,06	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,07	0,08	0,08	0,08	0,08	0,08	0,08
SE	0,23	0,23	0,23	0,23	0,23	0,24	0,25	0,25	0,26	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27

UK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Table S14 Shares of subnational Forest Not Available for Wood Supply (FNAWS) used to allocate estimated growing stock in non-reported forest areas to subnational regions. Shares are derived from JRC subnational FNAWS area data or calculated from NFI data from EuFor-reported.

ISO Code	NUTS+ ID	YEAR reference	source	FNAWS share	ISO Code	NUTS+ ID	YEAR reference	source	FNAWS share
AT	AT	2008	JRC	100%	IT	ITI1	avrg 2005 - 2015	NFI	5%
AT	AT11	2008	JRC	0%	IT	ITI2	avrg 2005 - 2015	NFI	3%
AT	AT12	2008	JRC	5%	IT	ITI3	avrg 2005 - 2015	NFI	3%
AT	AT13	2008	JRC	0%	IT	ITI4	avrg 2005 - 2015	NFI	4%
AT	AT21	2008	JRC	11%	IT	ITF1	avrg 2005 - 2015	NFI	2%
AT	AT22	2008	JRC	20%	IT	ITF2	avrg 2005 - 2015	NFI	1%
AT	AT31	2008	JRC	11%	IT	ITF3	avrg 2005 - 2015	NFI	2%
AT	AT32	2008	JRC	17%	IT	ITF4	avrg 2005 - 2015	NFI	1%
AT	AT33	2008	JRC	31%	IT	ITF5	avrg 2005 - 2015	NFI	2%
AT	AT34	2008	JRC	4%	IT	ITF6	avrg 2005 - 2015	NFI	4%
BG	BG	2007	JRC	100%	IT	ITG1	avrg 2005 - 2015	NFI	1%
DE	DE	2002	JRC	100%	IT	ITG2	avrg 2005 - 2015	NFI	20%
DE	DE1	2002	JRC	2%	LV	LV	2012	JRC	100%
DE	DE2	2002	JRC	22%	LV	LV003	avrg 2013-2023	NFI GS used forest	24%
DE	DE3_DE4	2002	JRC	8%	LV	LV005	avrg 2013-2023	NFI GS used forest	17%
DE	DE6_DE5	2002	JRC	0%	LV	LV006	avrg 2013-2023	NFI GS used forest	0%
DE	DE7	2002	JRC	6%	LV	LV007	avrg 2013-2023	NFI GS used forest	18%
DE	DE8	2002	JRC	10%	LV	LV008	avrg 2013-2023	NFI GS used forest	26%
DE	DE9	2002	JRC	11%	LV	LV009	avrg 2013-2023	NFI GS used forest	15%
DE	DEA	2002	JRC	12%	NO	NO	2010	JRC	100%
DE	DEB	2002	JRC	6%	NO	NO0_5_1	2010	JRC	10%
DE	DEC	2002	JRC	1%	NO	NO0_5_2	2010	JRC	10%
DE	DED	2002	JRC	10%	NO	NO0_5_3	2010	JRC	13%
DE	DEE	2002	JRC	5%	NO	NO0_5_4	2010	JRC	14%
DE	DEF	2002	JRC	2%	NO	NO0_5_5	2010	JRC	15%
DE	DEG	2002	JRC	3%	NO	NO0_5_6	2010	JRC	21%
FR	FR	2010	JRC	100%	NO	NO0_5_7	2010	JRC	17%
FR	FR10	2010	JRC	1%	SE	SE	2011	NFI	100%
FR	FRB0	2010	JRC	1%	SE	SE1_5_1	avrg 2005 - 2016	NFI	54%
FR	FRC1	2010	JRC	1%	SE	SE1_5_2	avrg 2005 - 2016	NFI	19%
FR	FRC2	2010	JRC	2%	SE	SE1_5_3	avrg 2005 - 2016	NFI	17%
FR	FRD1	2010	JRC	0%	SE	SE1_5_4	avrg 2005 - 2016	NFI	9%
FR	FRD2	2010	JRC	0%	SI	SI	2012	JRC	100%
FR	FRE1	2010	JRC	0%	SI	SI_01	2012	JRC_SI04	20%
FR	FRE2	2010	JRC	1%	SI	SI_02	2012	JRC_SI04	9%
FR	FRF1	2010	JRC	1%	SI	SI_03	2012	JRC_SI04	9%
FR	FRF2	2010	JRC	4%	SI	SI_04	2012	JRC_SI04	19%
FR	FRF3	2010	JRC	1%	SI	SI_05	2012	JRC_SI03	4%
FR	FRG0	2010	JRC	1%	SI	SI_06	2012	JRC_SI03	4%

FR	FRH0		2010	JRC		0%	SI	SI_07		2012	JRC_SI03		4%
FR	FR11		2010	JRC		2%	SI	SI_08		2012	JRC_SI03		3%
FR	FR12		2010	JRC		1%	SI	SI_09		2012	JRC_SI03		3%
FR	FR13		2010	JRC		1%	SI	SI_10		2012	JRC_SI03		2%
FR	FR11		2010	JRC		11%	SI	SI_11		2012	JRC_SI03		3%
FR	FRJ2		2010	JRC		10%	SI	SI_12		2012	JRC_SI03		4%
FR	FRK1		2010	JRC		4%	SI	SI_13		2012	JRC_SI03		2%
FR	FRK2		2010	JRC		20%	SI	SI_14		2012	JRC_SI04		12%
FR	FRL0		2010	JRC		26%	SK	SK		2006	JRC		100%
FR	FRM0		2010	JRC		11%	SK	SK010		2006	JRC		2%
IT	IT	avrg 2005 - 2015	NFI			100%	SK	SK021		2006	JRC		4%
IT	ITC1	avrg 2005 - 2015	NFI			17%	SK	SK022		2006	JRC		11%
IT	ITC2	avrg 2005 - 2015	NFI			0%	SK	SK023		2006	JRC		1%
IT	ITC4	avrg 2005 - 2015	NFI			17%	SK	SK031		2006	JRC		33%
IT	ITH1	avrg 2005 - 2015	NFI			1%	SK	SK032		2006	JRC		17%
IT	ITH2	avrg 2005 - 2015	NFI			1%	SK	SK041		2006	JRC		26%
IT	ITH3	avrg 2005 - 2015	NFI			3%	SK	SK042		2006	JRC		7%
IT	ITH4	avrg 2005 - 2015	NFI			6%	UK	UK		-	census		100%
IT	ITC3	avrg 2005 - 2015	NFI			1%							
IT	ITH5	avrg 2005 - 2015	NFI			6%							

75

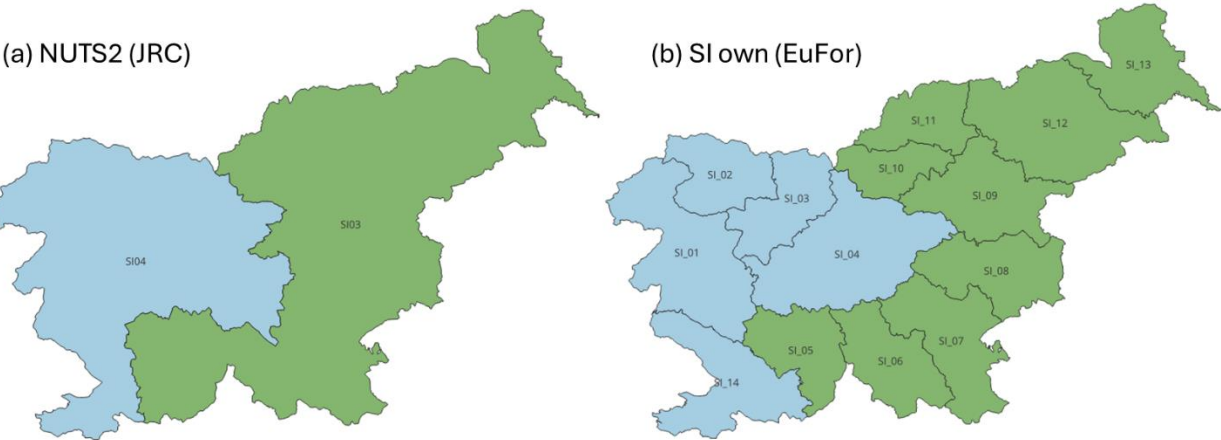
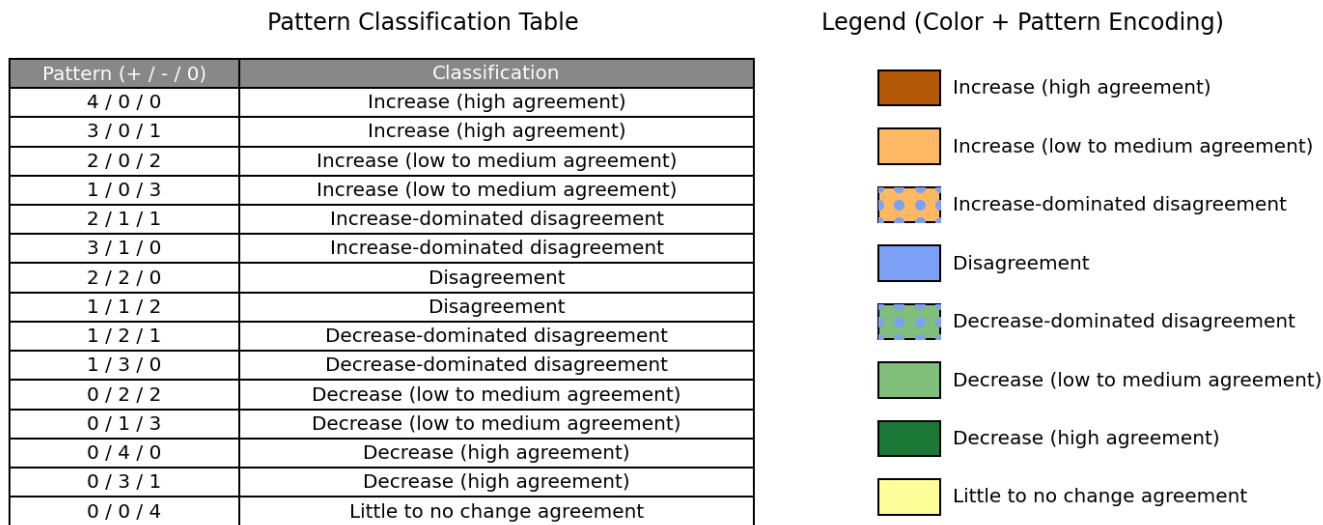


Figure S4 Fuzzy match of Slovenian NUTS+ regions from EuFor (derived from country specific region classification) and NUTS2 regions from JRC for attributing non-reported growing stock volumes at subnational level. Colours indicate which EuFor NUTS+ region was allocated to with NUTS2 region.

80

S1.7 Assessment of Forest Dynamics and Forest-Use Intensity

S1.7.1 Synthesis of Change Agreement between Forest Use Intensities



85 **Figure S5 Pattern classification of combined indicator change signals.** The table on the left shows the 15 order-independent temporal patterns of increased (+), decreased (–), and little to no change (0) use-intensity indicators (harvest per area, growing stock, NAI, and NPPpot), expressed as counts of increase/decrease/no to little change signals, along with their aggregation into eight classification types. The legend on the right illustrates these eight aggregated classes and their corresponding colour scheme used in the maps.

S2 Results and Discussion

90 S2.1 Spatial Patterns, Temporal Dynamics, and Data Source Disagreement for Forest Area, Growing Stock, and Harvest

95 Table S15 Consistency of data agreement across indicators based on collapsed agreement classes. The original five agreement classes were aggregated into three categories (High, Medium, Low), and country-level agreement patterns are reported for forest area, growing stock, and harvest. A composite score (0–6) summarizes overall agreement across variables, with High = 2, Medium = 1, and Low = 0.

Simplified patterns Area Growing Stock Harvest	country count	countries	agreement score
High High Medium	1	PL	5
High Medium High	1	UK	5
High High Low	1	FR	4
High Medium Medium	1	BG	4
High Medium Low	3	AT, IE, IT	3
Low Medium High	3	EE, ES, NO	3
Medium Medium Medium	2	LT, SE	3
Medium Low High	1	RO	3
Low High Low	2	DE, HU	2
Low Low High	2	CZ, SI	2
Low Medium Medium	1	FI	2
Medium Medium Low	1	LV	2
Low Medium Low	1	SK	1

S2.2 Forest Use Intensity and its Sensitivity to Data Source Disagreements

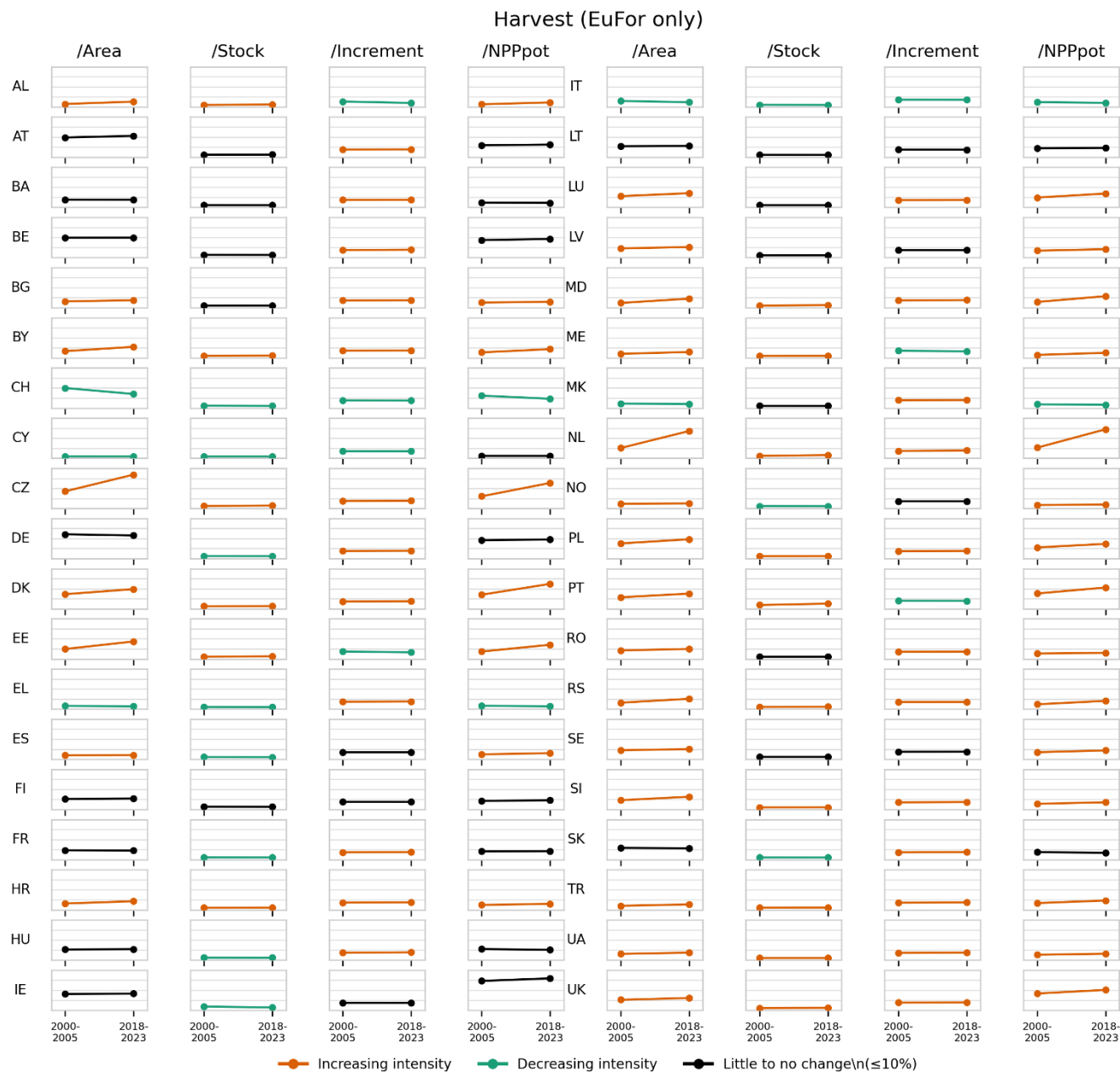


Figure S6 Change of use intensity estimates of EuFor-harmonized at country level. Coloured lines connect corresponding bounds between the period 2000-2005 and 2018-2023 and indicate the direction of change (increase, decrease or stable ($\leq 10\%$ change)).

Table S16 Forest use intensity change agreement between period 2000-2005 and period 2018-2023 across Europe for 214 sub-national regions from EuFor-Harmonized. Forest area shares area calculated from EuFor-Harmonized at the year 2020.

Use Intensity Change agreement pattern	Classification	region count	share of region count	forest area [1000ha]	forest area share	EuFor IDs
4 / 0 / 0	Increase (high agreement)	61	29%	69 289	31%	AT13,AT21,AT31,AT33,BY,CZ031,CZ042,CZ051,CZ052,CZ053,CZ064,CZ072,DE7,DEA,DED,DEE,DEG,DK,EE001,EE004,EE007,ES12,ES13,ES21,ES22,ES62,FI1D1,FI200,HR,ITC2,ITC3,ITG2,ITH3,ITH5,MD,NL,NOO_5_4,NOO_5_7,PL42,PL43,PL52,PL61,PL63,PL71,PL84,RS,SI_01,SI_02,SI_03,SI_04,SI_05,SI_06,SI_08,SI_10,SI_11,SI_12,SK010,SK031,TR,UKO_5_3,UKR
3 / 0 / 1	Increase (high agreement)	21	10%	21 096	9%	CZ020,DE9,DEC,EE006,ES11,FI194,FI195,FI196,FI1D3,FI1D8,LU,PL22,PL41,PL62,PL72,PL92,SE1_5_3,SI_07,SI_09,SI_14,SK021
1 / 0 / 3	Increase (low to medium agreement)	14	7%	15 565	7%	AT12,AT22,AT32,BA,BE,FI1B1,FRE1,LT024,PL81,PL82,RO1_5_3,SE1_5_4,SK032,UKO_5_2
2 / 0 / 2	Increase (low to medium agreement)	12	6%	11 270	5%	AT11,BG,CZ041,FI193,FI1C2,FI1C4,FI1D5,ITG1,LV008,RO1_5_1,SI_13,SK023
2 / 1 / 1	Increase-dominated disagreement	14	7%	18 604	8%	DE3_DE4,DE8,DEF,ES23,FI197,FI1C1,FI1D7,FI1D9,IE,LV006,NOO_5_1,NOO_5_6,RO1_5_2,SK022
3 / 1 / 0	Increase-dominated disagreement	16	7%	10 266	5%	AL,AT34,CZ010,CZ032,CZ063,CZ071,CZ080,DE6_DE5,EE008,ITF5,LV003,LV005,ME,PL51,PT,UKO_5_1
2 / 2 / 0	Disagreement	1	0%	2 117	1%	ES24
1 / 1 / 2	Disagreement	9	4%	6 191	3%	DEB,ES30,FI1C3,FRF1,FRF2,HU,LT011,LV007,SK041
1 / 2 / 1	Decrease-dominated disagreement	13	6%	10 963	5%	ESS1,FRB0,FRD1,FRD2,FRF3,FRG0,FRH0,FRK1,LT021,LT023,MK,NOO_5_2,NOO_5_3
1 / 3 / 0	Decrease-dominated disagreement	4	2%	5 529	2%	EL,ESS2,ITH2,SK042
0 / 2 / 2	Decrease (low to medium agreement)	11	5%	19 024	8%	ES42,FI1D2,FRC2,FRE2,FRI2,FRI3,FRLO,ITF6,ITI3,NOO_5_5,SE1_5_1
0 / 1 / 3	Decrease (low to medium agreement)	10	5%	5 121	2%	DE1,FI1C5,FRJ2,LT022,LT026,LT027,LT028,LT029,LV009,PL21
0 / 4 / 0	Decrease (high agreement)	16	7%	15 616	7%	CH,ES41,ES43,ES61,ES70,FRM0,ITC1,ITC4,ITF1,ITF2,ITF4,ITH1,ITH4,ITI1,ITI2,ITI4
0 / 3 / 1	Decrease (high agreement)	10	5%	14 600	6%	CY,DE2,ESS3,FRC1,FRI1,FRJ1,FRK2,ITF3,SE1_5_2,UKO_5_4
0 / 0 / 4	Little to no change agreement	2	1%	488	0%	FR10,LT025

Table S17 Forest use intensity change agreement between period 2000-2005 and period 2018-2023 across Europe for 38 countries from EuFor-Harmonized. Forest area shares area calculated from EuFor-Harmonized at the year 2020.

Use Intensity Change agreement pattern	Classification	region count	share of region count	forest area [1000ha]	forest area share	EuFor IDs
4 / 0 / 0 / 0	Increase (high agreement)	12	32%	54 185	25%	BY,CZ,DK,HR,MD,NL,PL,RS,SI,TR,UA,UK
3 / 0 / 1 / 0	Increase (high agreement)	3	8%	10 583	5%	BG,LU,RO
1 / 0 / 3 / 0	Increase (low to medium agreement)	3	8%	6 767	3%	AT,BA,BE
2 / 0 / 2 / 0	Increase (low to medium agreement)	2	5%	31 918	15%	LV,SE
2 / 1 / 1 / 0	Increase-dominated disagreement	2	5%	33 115	15%	ES,NO
3 / 1 / 0 / 0	Increase-dominated disagreement	4	11%	7 193	3%	AL,EE,ME,PT
1 / 1 / 2 / 0	Disagreement	4	11%	31 794	15%	DE,FR,HU,SK
1 / 2 / 1 / 0	Decrease-dominated disagreement	1	3%	1 001	0%	MK
1 / 3 / 0 / 0	Decrease-dominated disagreement	1	3%	3 903	2%	EL
0 / 1 / 3 / 0	Decrease (low to medium agreement)	1	3%	801	0%	IE
0 / 4 / 0 / 0	Decrease (high agreement)	2	5%	10 370	5%	CH,IT
0 / 3 / 1 / 0	Decrease (high agreement)	1	3%	173	0%	CY
0 / 0 / 4 / 0	Little to no change agreement	2	5%	24 246	11%	FI,LT

Uncertainty Envelopes Across EuFor-SoEF Pairings (2000-2015) strict

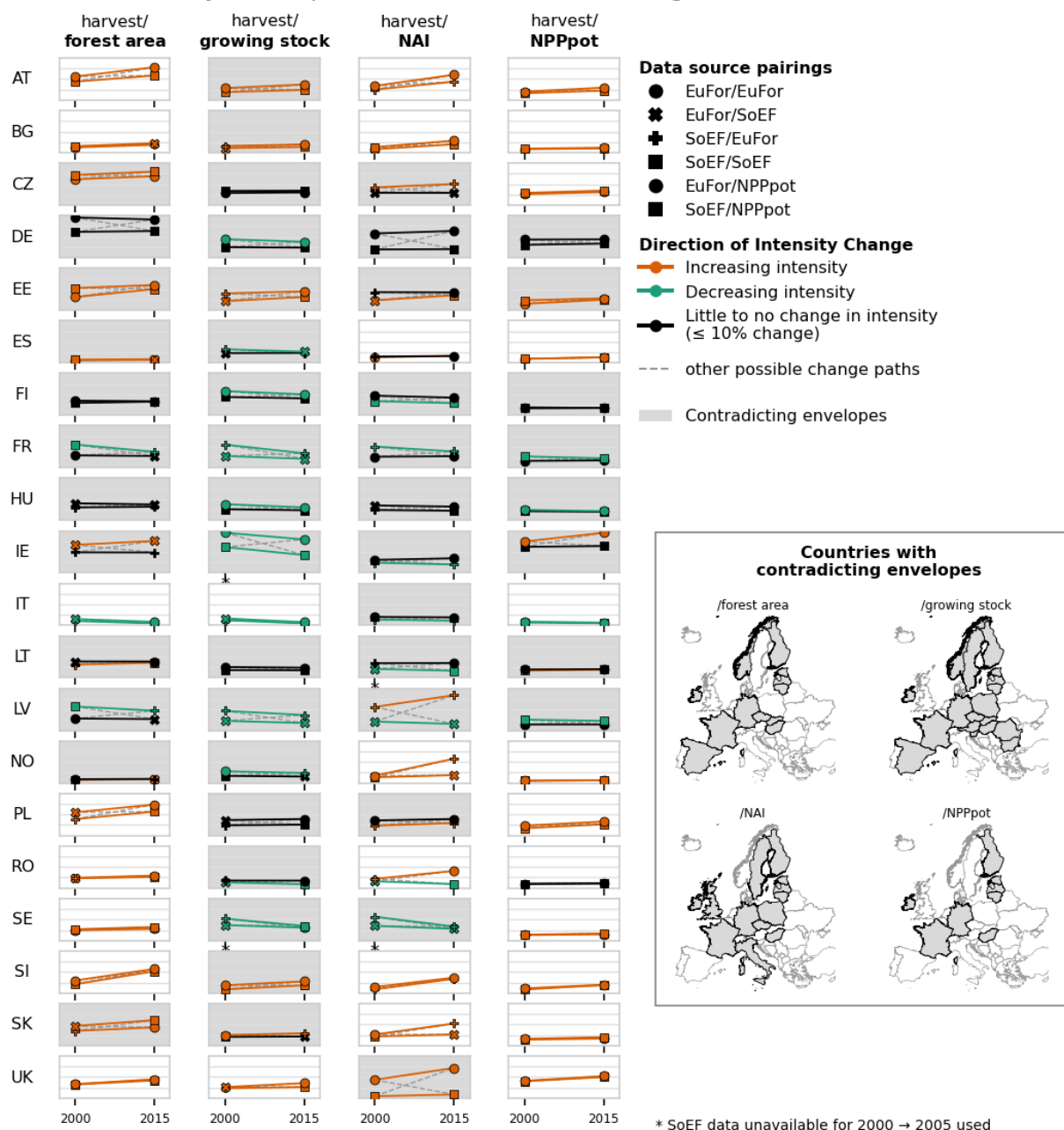


Figure S7 Envelope representation of use intensity estimates across data sources with strict inconsistency classification including cases where the envelope width does not allow for a clear trend classification even when both bounds shift in the same direction. Vertical bars indicate the range between minimum and maximum values derived from crossed data source combinations between EuFor and SoEF. Colored lines connect corresponding bounds between 2000 and 2015 and indicate the direction of change (increase, decrease, stable, or conflicting). Grey crossed lines show possible change paths between bounds. Marker shapes denote the underlying data source combination for each bound.

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