Title: Policy (in)consistency and future wood availability in Europe

Authors: Ragnar Jonsson

Publication year: 2024

Publisher: Department of Energy and Technology, Swedish University of Agricultural Sciences

Presented at: LULUCF, EU Forest Policy & the Climate, Umeå, 2024-10-31

Policy (in)consistency and future wood availability in Europe

Drivers of change

Forest policy and legal framework

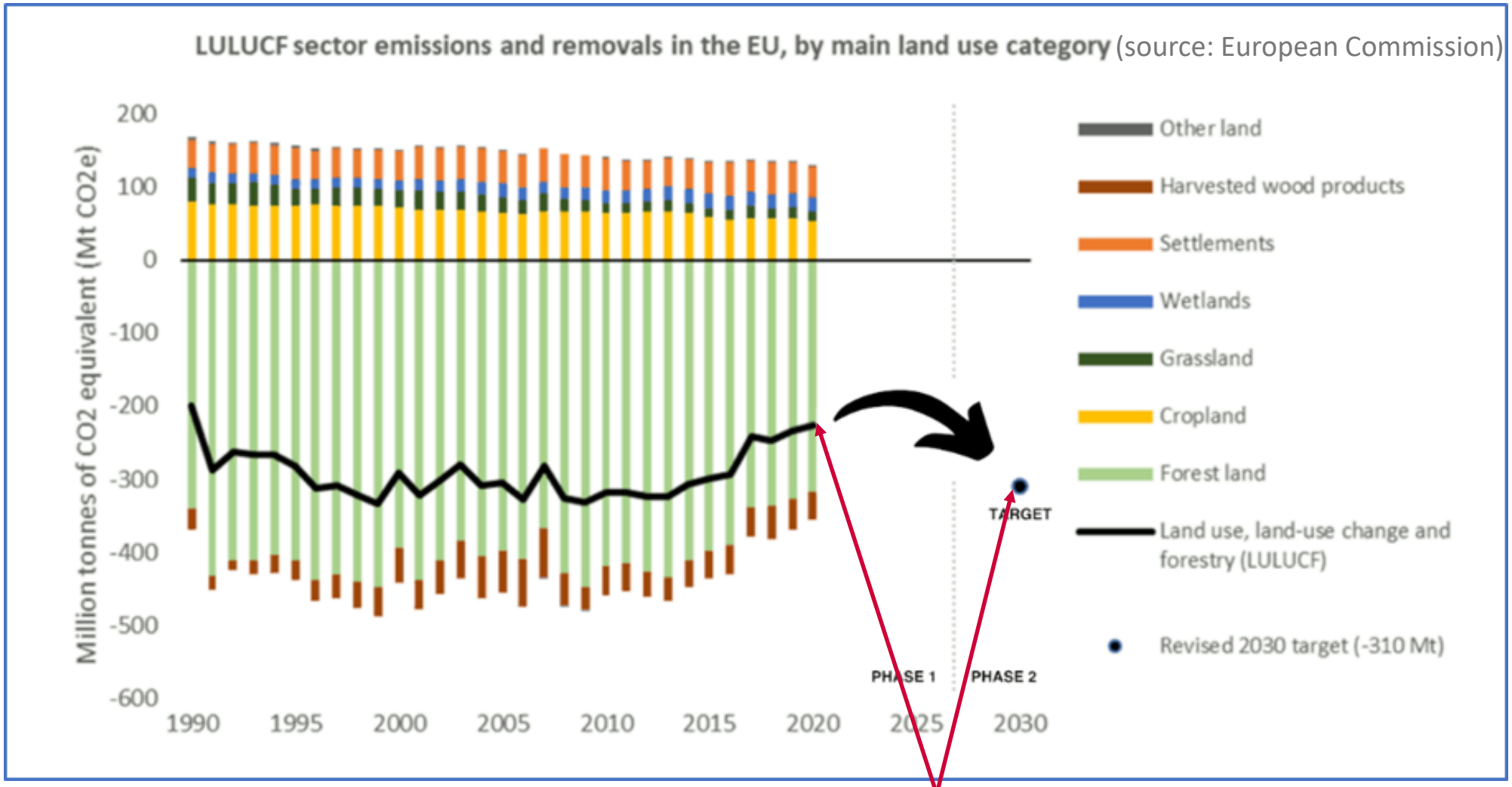
Increase in wood use ⟷ **Decrease in wood use**

Priority / *Level*	**Bioenergy and Carbon (HWP) Forestry**	**Wood Yield Forestry**	**Multi-Purpose Forestry**	**Carbon Forest Management (Forest Sinks)**	**Forest Biodiversity Conservation**
Global		(ITTO, FLEGT)	UNFF / IAF FSC/PEFC	UNFCCC (REDD)	CBD
Pan-Europe			Forest Europe SFM C&I		
European Union	**Renewable Energy Directive** Bioeconomy Strategy	EUTR/FLEGT	CAP Rural Development Regulation (Forest Strategy)	**LULUCF Regulation** Fit for 55 Green Deal	(Forest Strategy) Biodiversity Strategy Nature Restoration Law Habitats Directive Birds Directive Deforestation Regulation
National	Forest policy and law in North, Central and Eastern Europe	Forest policy and law in North & Eastern Europe	Forest policy and law in Central & Eastern Europe	Forest Policy and law in Western Europe	Forest policy and law in Western and Southern Europe

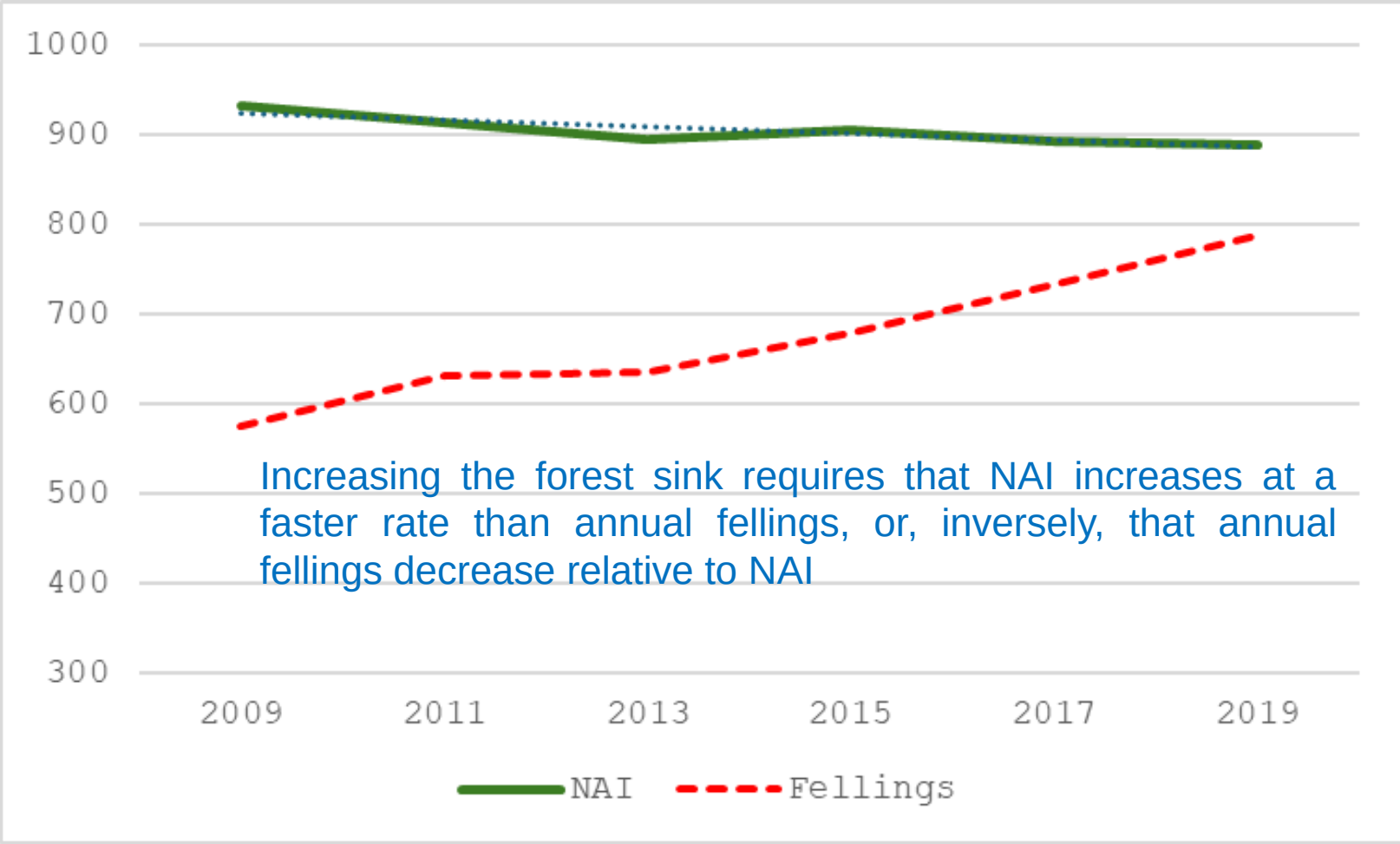
Winkel & Sotirov 2016; Sotirov & Storch 2018; Sotirov et al. 2020; Wolfslehner et al. 2020; Lindahl et al. 2023; Sotirov et al. 2024

- The 2023 revision of the *Renewable Energy Directive* raised EU's binding target to a minimum of **42.5% renewables** in final energy consumption by 2030. Year 2022 share 23%

- The updated *Land Use, Land-use Change and Forestry (LULUCF) regulation* sets binding targets for net GHG removals: on EU level **310 million tons of CO_2 equivalent** for year 2030



EU net removals need to increase by 42 million tonnes of CO_2 equivalent



EU28 net annual increment and fellings, million m^3_{ob} (sources: fellings estimated from removals: European Commission, NAI data: Eurostat European forest accounts)

The adoption of the Renewable Energy Directive in 2009 => strong increase in the use of wood for energy. For EU28, 48%, or 159 million m^3, between 2009 and 2019

In comparison, the use of woody biomass for material purposes increased by 20%, or 76 million m^3 (source: European Commission, https://knowledge4policy.ec.europa.eu/publication/wood-resource-balances_en)

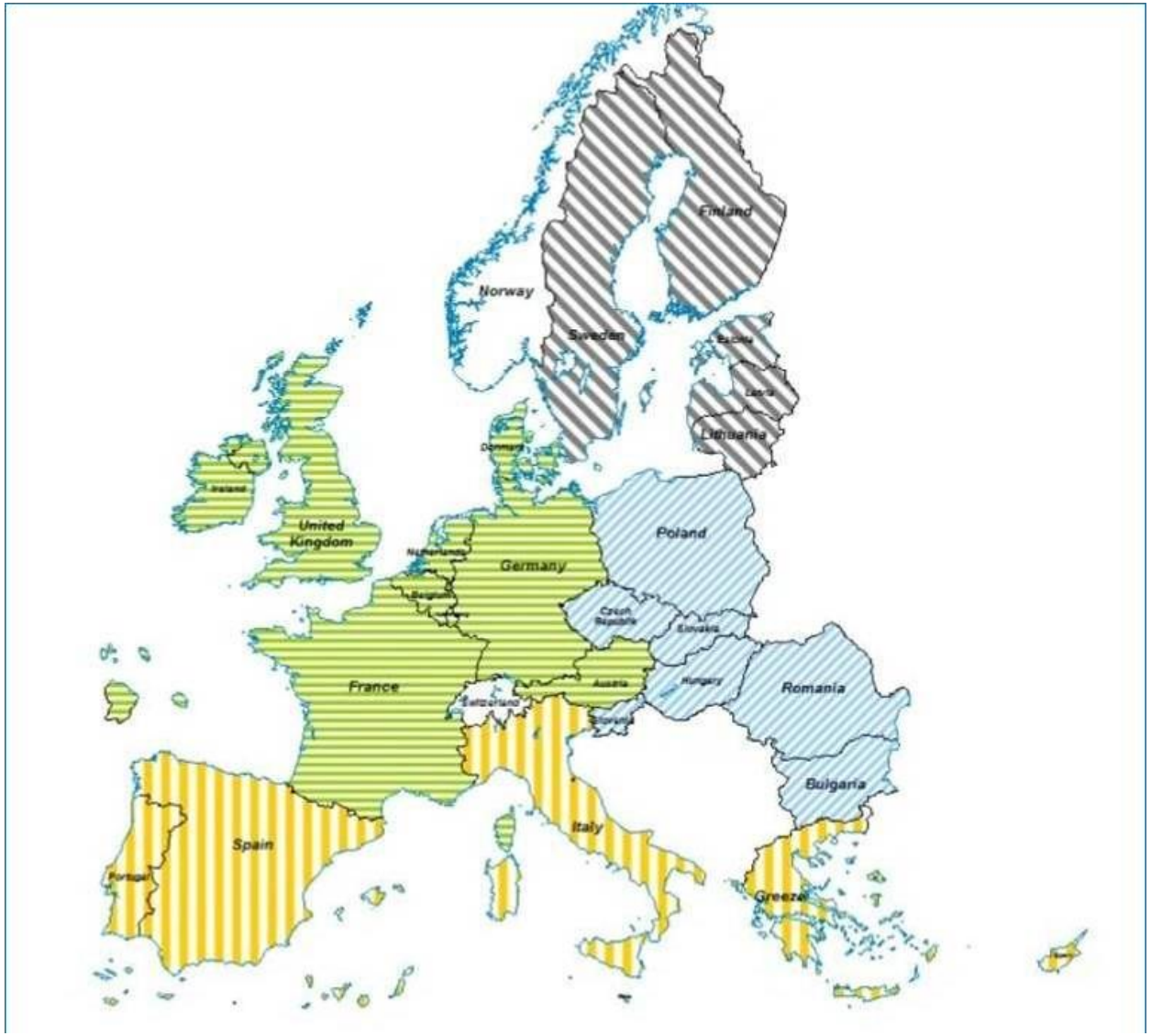
Geopolitics

The ongoing geopolitical crisis has changed the conditions as to woody biomass availability and demand:

- The European council in 2022 banned the import from Russia and Belarus of most timber and timber products covered by the EUTR
- Sanctions and the sabotage of the Nordstream natural gas pipelines raised further already elevated electricity prices, increasing the demand for woody biomass from energy uses
- Sanctions and other trade disruptions have exacerbated inflation and adversely affected economic growth in Europe

Current state of European forests

- 40% of the land area of EU27
- huge diversity of forest types
  - mono-species plantations
  - (mixed) semi-natural forests
- Six tree species genera represent 84% of growing stock:
  - pine (30%) & spruce (23%)
  - beech (12%) & oak (10%),
  - birch (6.6%) & fir (3.2%)
- 85% of forest area available for wood production


Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Denmark
Ireland
United Kingdom
Netherlands
Germany
Poland
Belgium
Czech Republic
Slovakia
France
Austria
Hungary
Romania
Switzerland
Slovenia
Bulgaria
Italy
Spain
Portugal
Greece

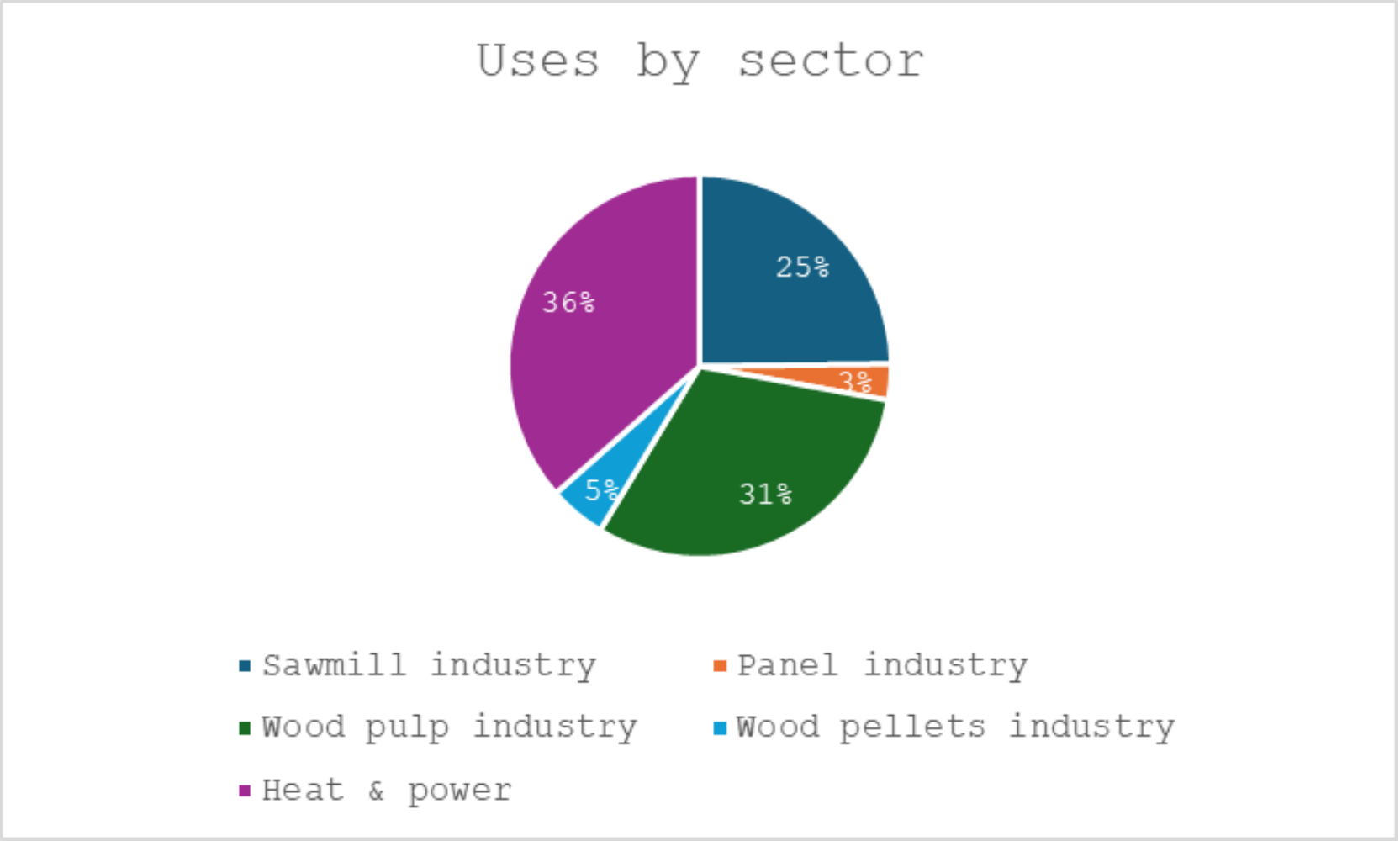
State of play

Region North

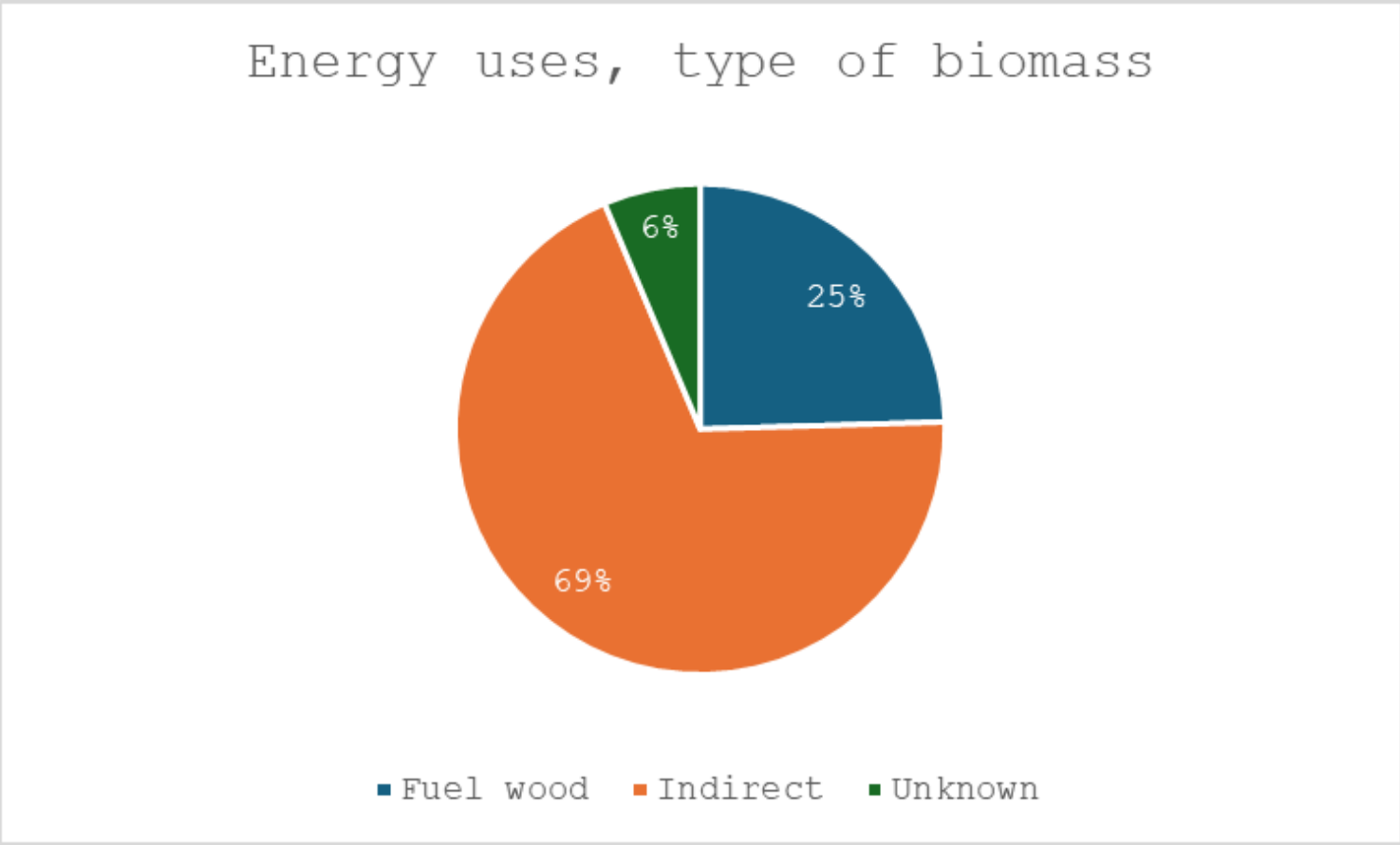
WRB 2019

	SOURCES	1000 m³		1000 m³	USES	
PRIMARY	Industrial roundwood removals (conifer)	135 147		76 261	Sawmill industry (conifer)	MATERIAL
	Industrial roundwood removals (non-conifer)	24 444		2 627	Sawmill industry (non-conifer)	
	Fuel wood removals (conifer)	9 237		658	Veneer sheets industry	
	Fuel wood removals (non-conifer)	14 303		4 062	Plywood industry	
	Net-import industrial roundwood (conifer)	343		4 267	Particle board industry	
	Net-import industrial roundwood (non-conifer)	3 275		599	Fiberboard industry	
	Net-import fuel wood	-521		15 776	Mechanical pulp industry	
	Bark	25 582		73 535	Chemical pulp industry	
SECONDARY	Sawmill residues	39 517		2 628	Semi-chemical pulp industry	
	Other industrial residues	3 003		6 133	Dissoving pulp industry	
	Wood pellets	15 288		15 288	Wood pellets industry	
	Black liquor	43 060		28 465	Direct wood	H&P
	Net-import wood chips and particles	4 662		80 131	Indirect wood	
	Net-import other wood residues	749		7 415	Unknown wood	
	Net-import wood pellets	-6 923				
	Post-consumer wood	7 279				
	Total sources	**318 446**		**317 846**	**Total uses**	
	Balance		601			

Region North



Region North

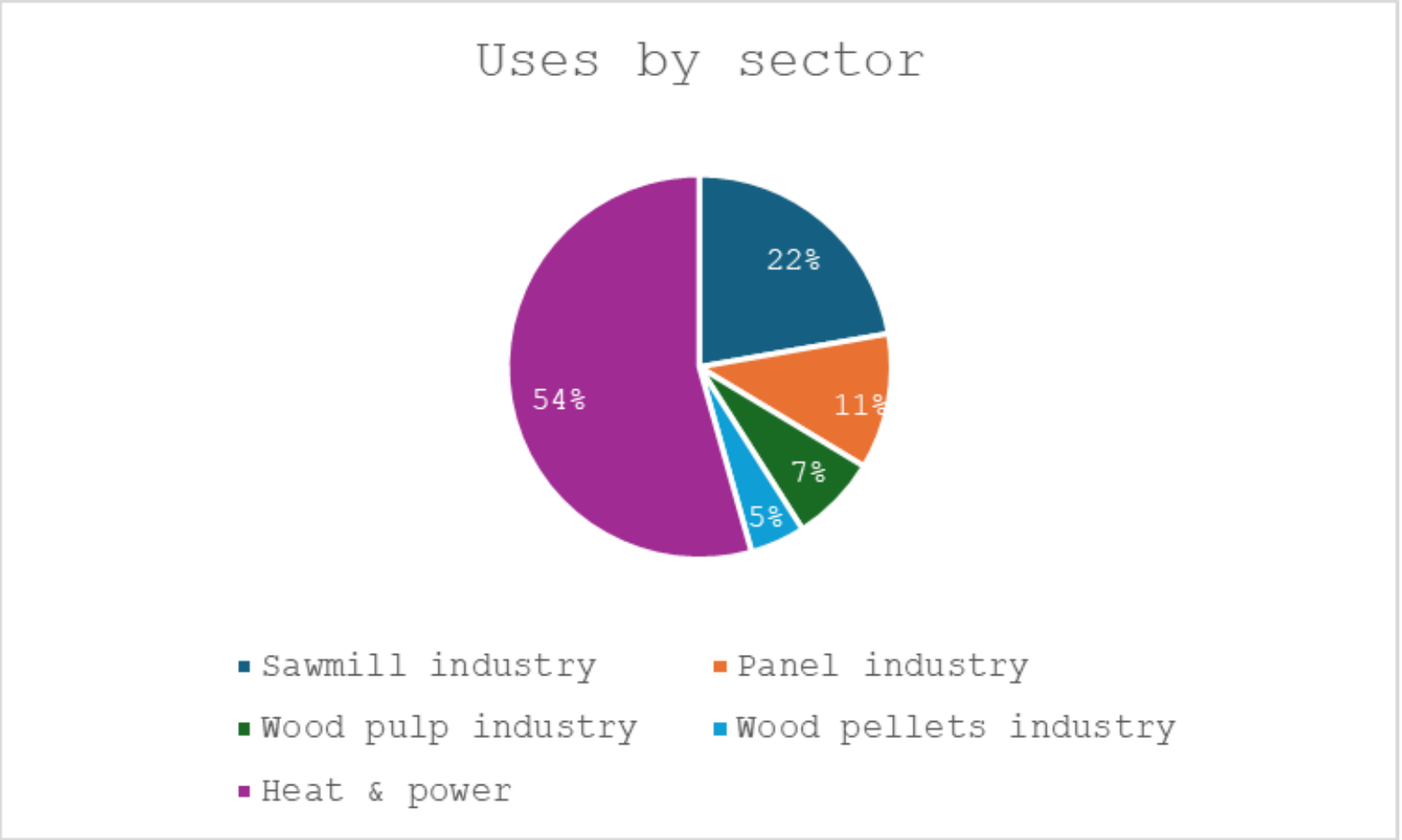


Region West

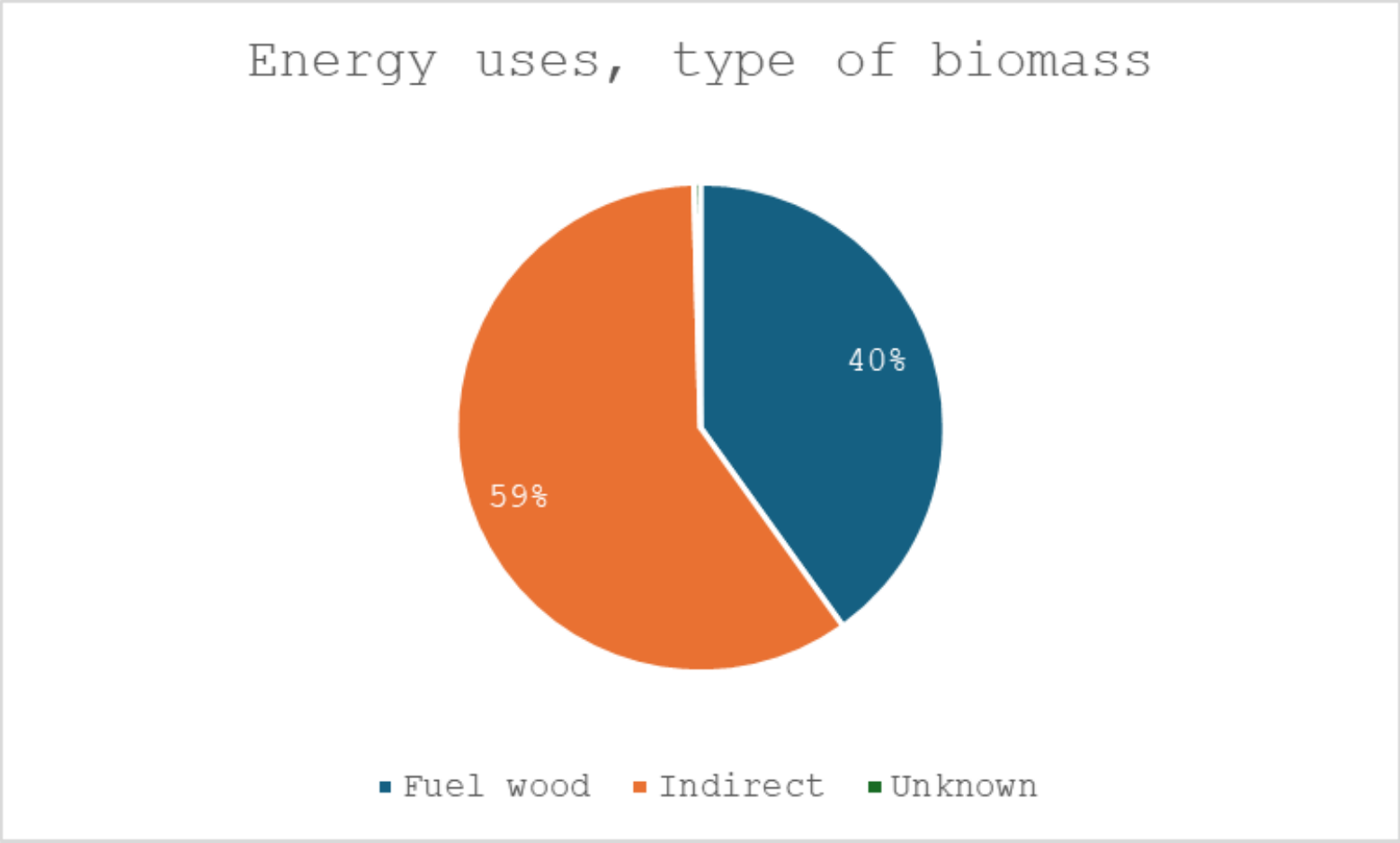
WRB 2019

	SOURCES	1000 m^3		1000 m^3	USES	
PRIMARY	Industrial roundwood removals (conifer)	96 677		80 276	Sawmill industry (conifer)	MATERIAL
	Industrial roundwood removals (non-conifer)	18 013		5 807	Sawmill industry (non-conifer)	
	Fuel wood removals (conifer)	20 426		846	Veneer sheets industry	
	Fuel wood removals (non-conifer)	42 890		1 367	Plywood industry	
	Net-import industrial roundwood (conifer)	8 759		26 208	Particle board industry	
	Net-import industrial roundwood (non-conifer)	-871		15 824	Fiberboard industry	
	Net-import fuel wood	390		3 839	Mechanical pulp industry	
	Bark	25 963		21 493	Chemical pulp industry	
SECONDARY	Sawmill residues	35 446		0	Semi-chemical pulp industry	
	Other industrial residues	3 331		3 117	Dissoving pulp industry	
	Wood pellets	17 949		17 949	Wood pellets industry	
	Black liquor	13 130		84 463	Direct wood	H&P
	Net-import wood chips and particles	783		125 304	Indirect wood	
	Net-import other wood residues	3 053		905	Unknown wood	
	Net-import wood pellets	27 931				
	Post-consumer wood	37 187				
	Total sources	**351 056**		**387 398**	**Total uses**	
	Balance		-36 342			

Region West


Uses by sector
22%
11%
7%
5%
54%
Sawmill industry
Panel industry
Wood pulp industry
Wood pellets industry
Heat & power

Region West


Energy uses, type of biomass
40%
59%
Fuel wood
Indirect
Unknown

Region West

Sources

Type of biomass	Million m³	%
Industrial roundwood	122,6	35%
Fuelwood	63,7	18%
Bark	26,0	7%
Secondary	138,8	40%

Uses by type of biomass

Material uses	Million m³	%
Industrial roundwood	130,9	74%
Secondary	45,9	26%
Energy uses	**Million m³**	
Fuel wood	84,5	40%
Indirect	125,3	59%
Unknown	0,9	0%

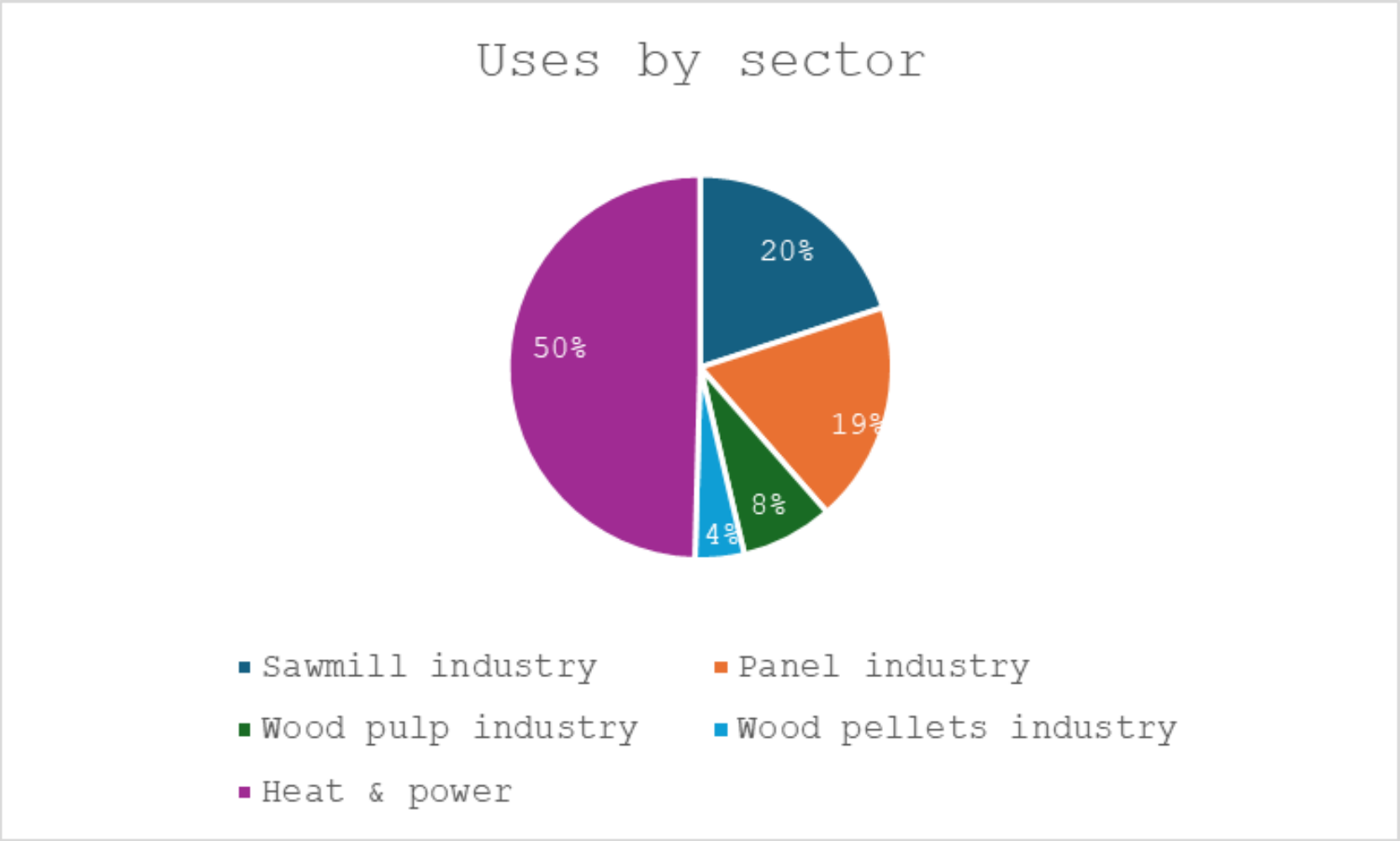
8 million m³ of IRW & 21 million m³ of FW unreported (missing)

Region East

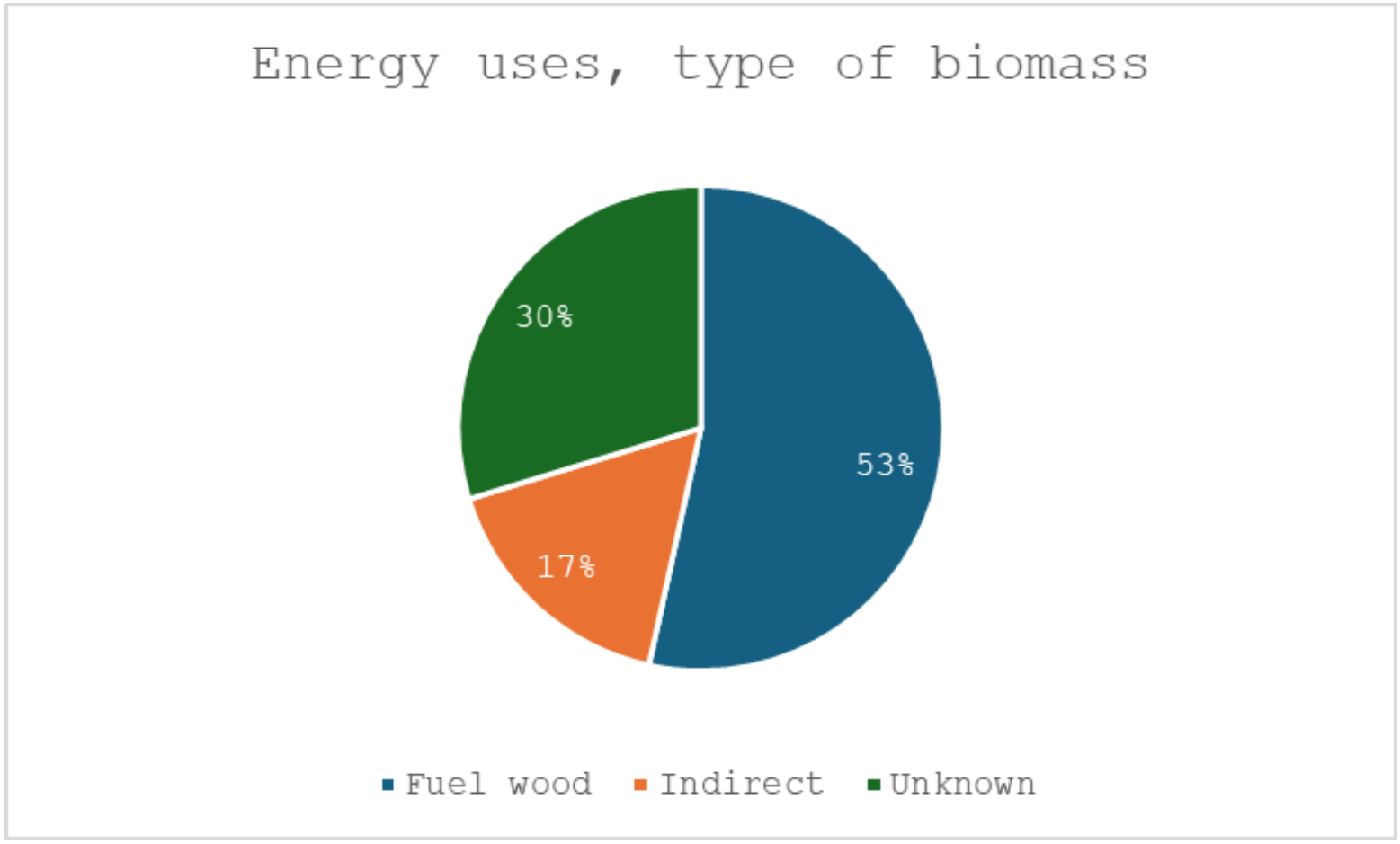
WRB 2019

	SOURCES	1000 m³		1000 m³	USES	
PRIMARY	Industrial roundwood removals (conifer)	72 626		29 254	Sawmill industry (conifer)	MATERIAL
	Industrial roundwood removals (non-conifer)	23 822		8 233	Sawmill industry (non-conifer)	
	Fuel wood removals (conifer)	10 197		743	Veneer sheets industry	
	Fuel wood removals (non-conifer)	15 750		3 751	Plywood industry	
	Net-import industrial roundwood (conifer)	-16 531		19 608	Particle board industry	
	Net-import industrial roundwood (non-conifer)	-180		10 803	Fiberboard industry	
	Net-import fuel wood	-932		1 209	Mechanical pulp industry	
	Bark	14 490		10 589	Chemical pulp industry	
SECONDARY	Sawmill residues	16 708		823	Semi-chemical pulp industry	
	Other industrial residues	3 968		1 956	Dissoving pulp industry	
	Wood pellets	7 761		7 761	Wood pellets industry	
	Black liquor	6 749		49 752	Direct wood	H&P
	Net-import wood chips and particles	1 753		15 663	Indirect wood	
	Net-import other wood residues	-565		27 672	Unknown wood	
	Net-import wood pellets	-2 872				
	Post-consumer wood	2 273				
	Total sources	**155 017**		**187 817**	**Total uses**	
	Balance		-32 800			

Region East


Uses by sector
20%
19%
8%
4%
50%
Sawmill industry
Panel industry
Wood pulp industry
Wood pellets industry
Heat & power

Region East


Energy uses, type of biomass
30%
53%
17%
Fuel wood
Indirect
Unknown

Region East

Sources

Type of biomass	Million m³	%
Industrial roundwood	79,7	51%
Fuelwood	25,0	16%
Bark	14,5	9%
Secondary	35,8	23%

Uses by type of biomass

Material uses	Million m³	%
Industrial roundwood	70,1	74%
Secondary	24,6	26%
Energy uses	**Million m³**	
Fuel wood	49,8	53%
Indirect	15,7	17%
Unknown	27,7	30%

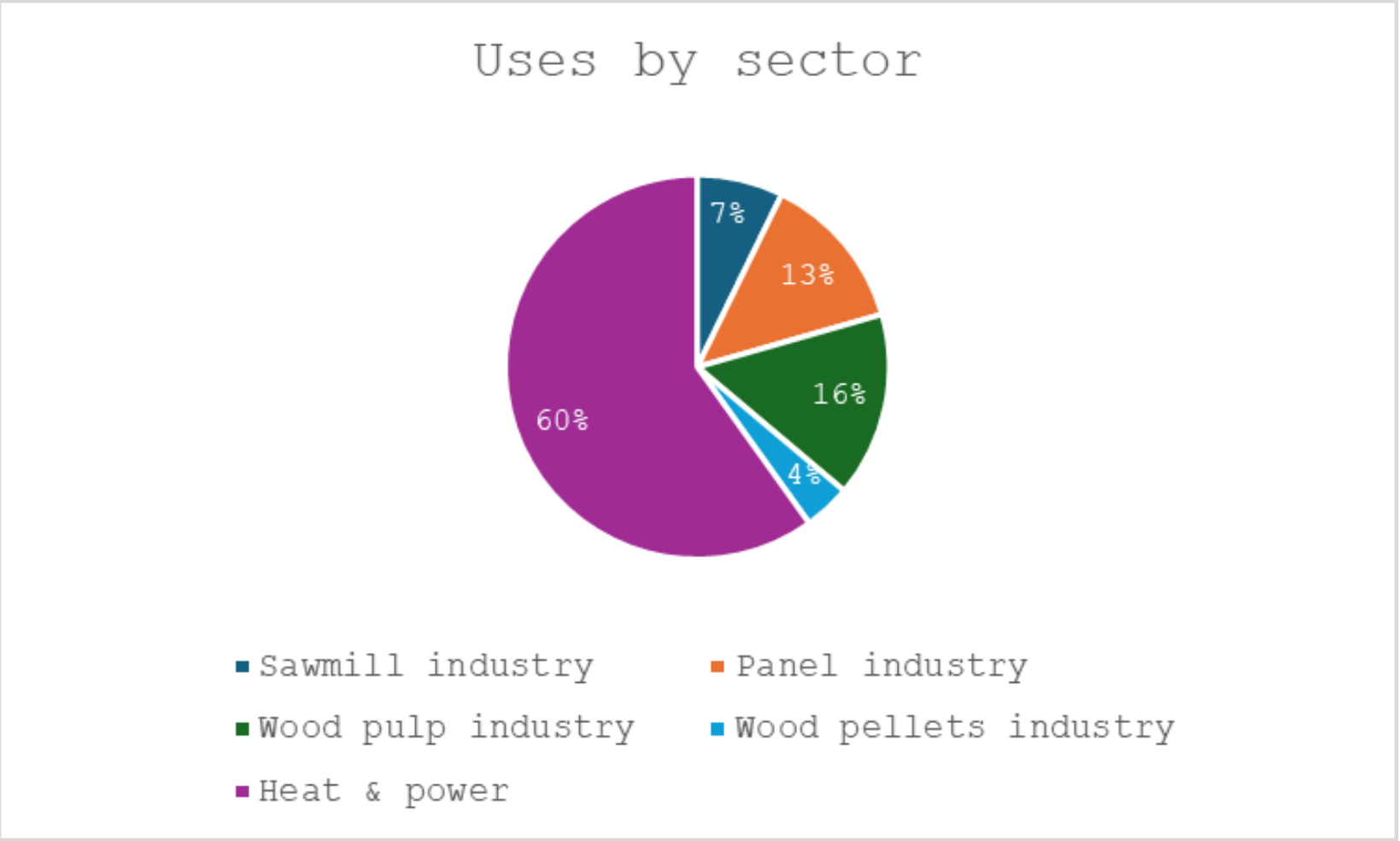
10 million m³ of “surplus” IRW & 25 million m³ of unreported (missing) FW

Region South

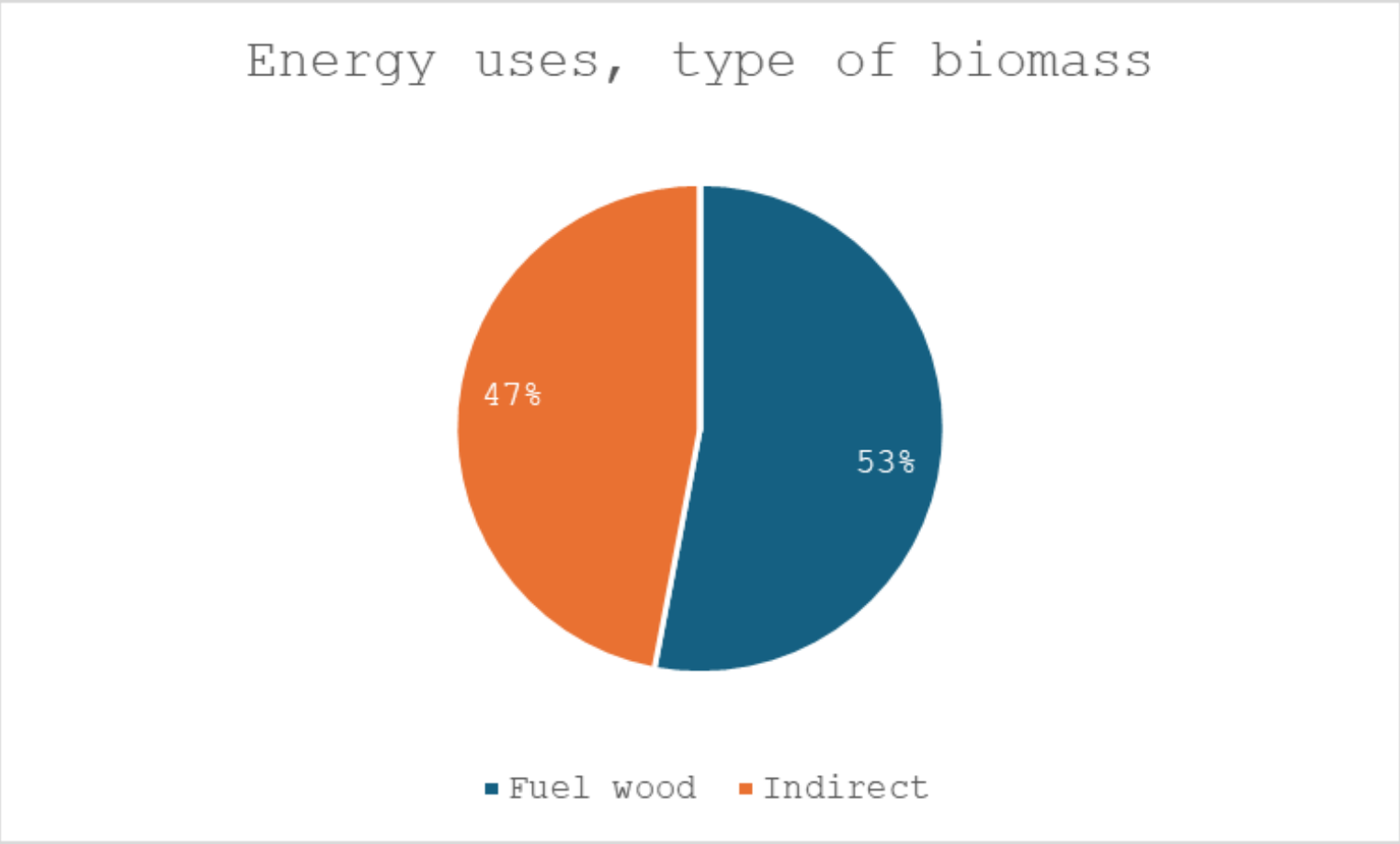
WRB 2019

	SOURCES	1000 m³		1000 m³	USES	
PRIMARY	Industrial roundwood removals (conifer)	19 113		6 915	Sawmill industry (conifer)	MATERIAL
	Industrial roundwood removals (non-conifer)	16 490		2 262	Sawmill industry (non-conifer)	
	Fuel wood removals (conifer)	2 085		535	Veneer sheets industry	
	Fuel wood removals (non-conifer)	12 567		2 185	Plywood industry	
	Net-import industrial roundwood (conifer)	284		9 061	Particle board industry	
	Net-import industrial roundwood (non-conifer)	2 605		5 094	Fiberboard industry	
	Net-import fuel wood	1 152		1 220	Mechanical pulp industry	
	Bark	7 568		17 361	Chemical pulp industry	
SECONDARY	Sawmill residues	4 027		211	Semi-chemical pulp industry	
	Other industrial residues	2 189		910	Dissoving pulp industry	
	Wood pellets	5 012		5 012	Wood pellets industry	
	Black liquor	9 997		40 185	Direct wood	H&P
	Net-import wood chips and particles	2 468		35 637	Indirect wood	
	Net-import other wood residues	370		0	Unknown wood	
	Net-import wood pellets	4 317				
	Post-consumer wood	4 122				
	Total sources	**94 367**		**126 591**	**Total uses**	
	Balance		-32 225			

Region South



Region South



Region South

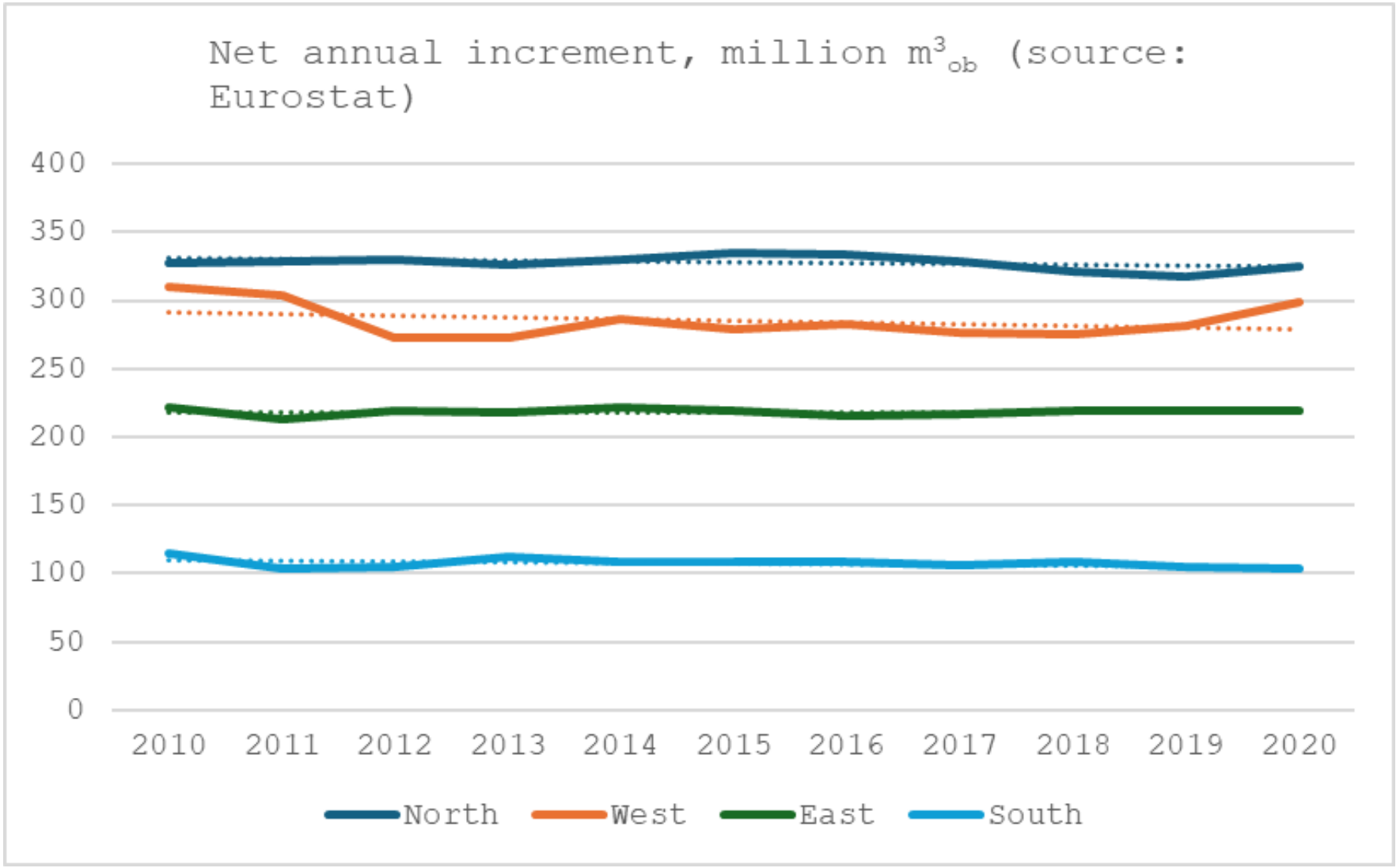
Sources

Type of biomass	Million m³	%
Industrial roundwood	38,5	41%
Fuelwood	15,8	17%
Bark	7,6	8%
Secondary	32,5	34%

Uses by type of biomass

Material uses	Million m³	%
Industrial roundwood	34,7	68%
Secondary	16,1	32%
Energy uses	**Million m³**	
Fuel wood	40,2	53%
Indirect	35,6	47%
Unknown	0,0	0%

4 million m³ of “surplus” IRW & 24 million m³ of unreported (missing) FW



Annual rate of change 2010-2020

North	-0,07%
West	-0,38%
East	-0,11%
South	-1,04%

Outlook

Scenario 1. High availability and low use:

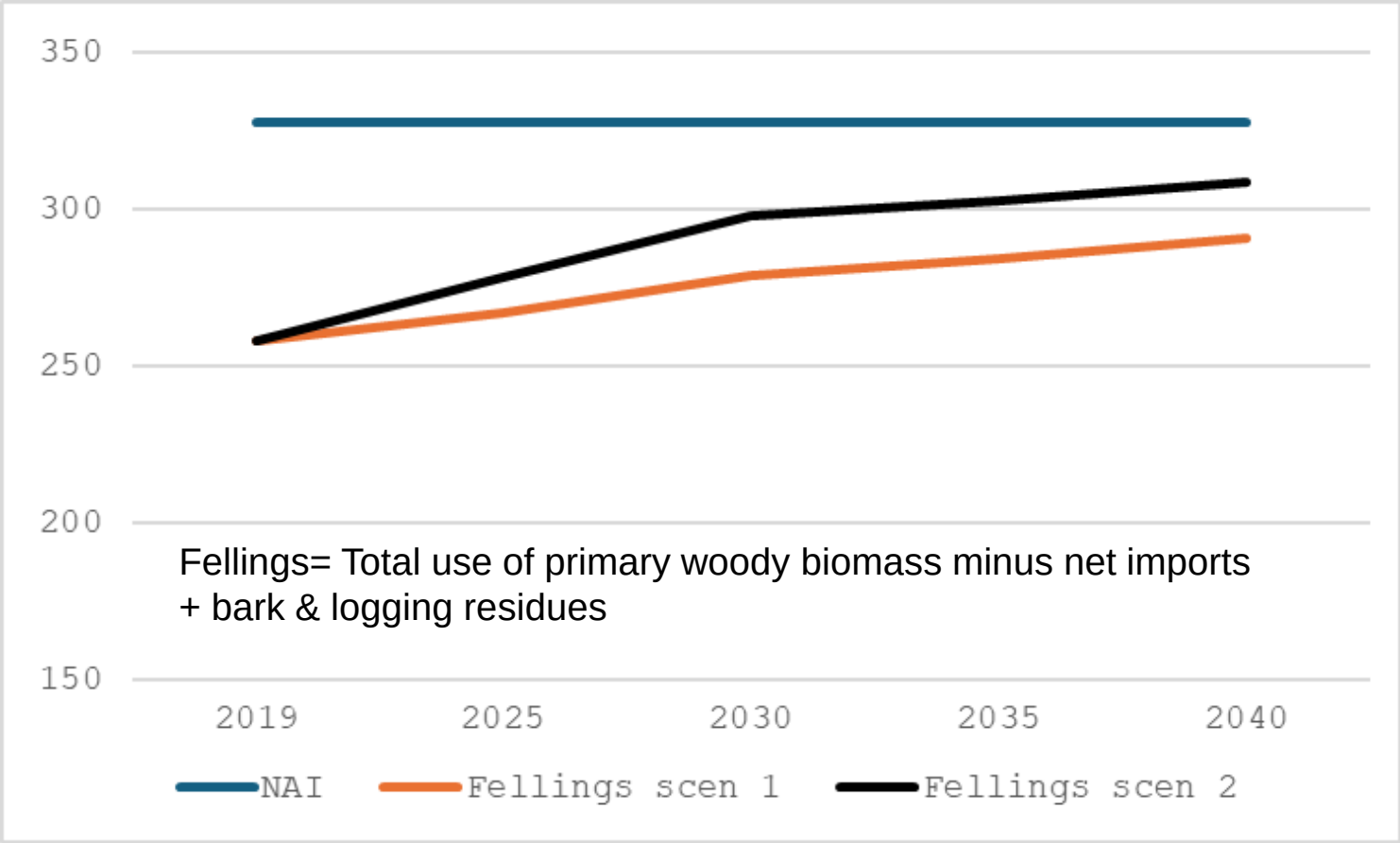
- GDP growth according to Shell corporation scenario *Archipelagos* (“energy security first”)
- Wood for energy projected according to the rate of change of biomass and waste in the *EU 2020 reference scenario**
- *Unchanged trade from 2019*

Scenario 2. Lower availability and higher use:

- GDP growth according to Shell corporation scenario *Sky 2050* (“net zero GHG emissions by 2050”)
- Wood for energy projections to 2030 corrected for the updated RED target, thereafter developing according to the rate of change of biomass and waste in the *EU 2020 reference scenario*
- Imports of roundwood = 2019 values minus 2019 imports from the Russian Federation and Belarus

*The *EU 2020 Reference Scenario* builds on EU and Member State policies as of end of 2019

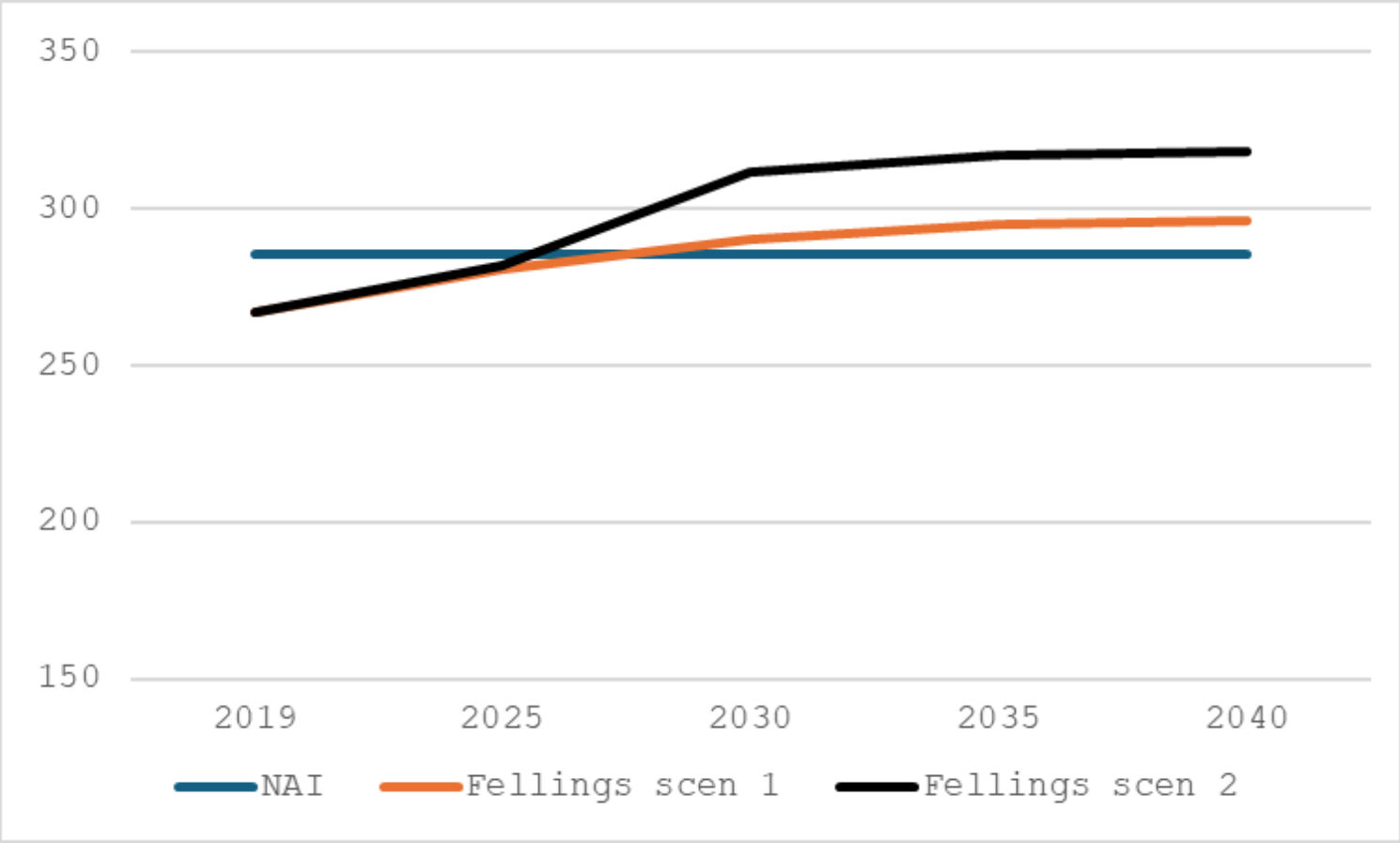
Region North



Fellings and the average (2010-2020) NAI for region North, million m^3_{ob}
(source: average NAI derived from Eurostat European forest accounts)

- **Scenario 1:** total use of wood increases by 8% from 2019 to 2040. Material uses increase by 18%, energy uses decline by 7% over the whole outlook period, after initial increase by 6,5% from 2019-2030
- **Scenario 2:** total use of wood increases by 21% from 2019 to 2040. Material uses increase by 18%, energy by 27%.

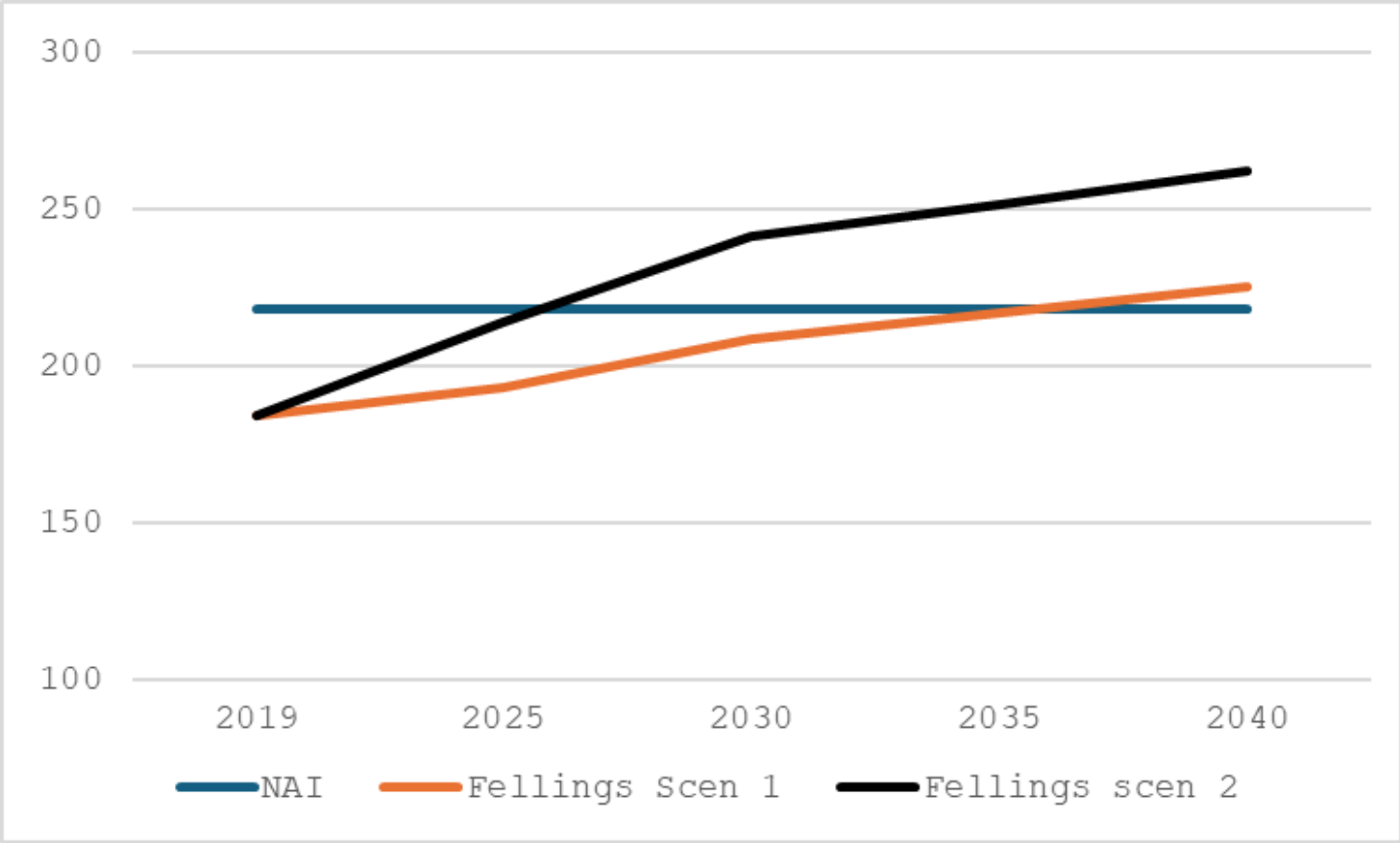
Region West



Fellings and the average (2010-2020) NAI for region West, million m^3_{ob}
(source: average NAI derived from Eurostat European forest accounts)

- **Scenario 1**: Total use of wood increases by 10% from 2019 to 2040. Material uses increase by some 15% in all, energy uses increase by around 8%
- **Scenario 2:** Total use of wood increases by 32% from 2019 to 2040. Material uses increase by some 15% in all, energy uses increase by 48%.

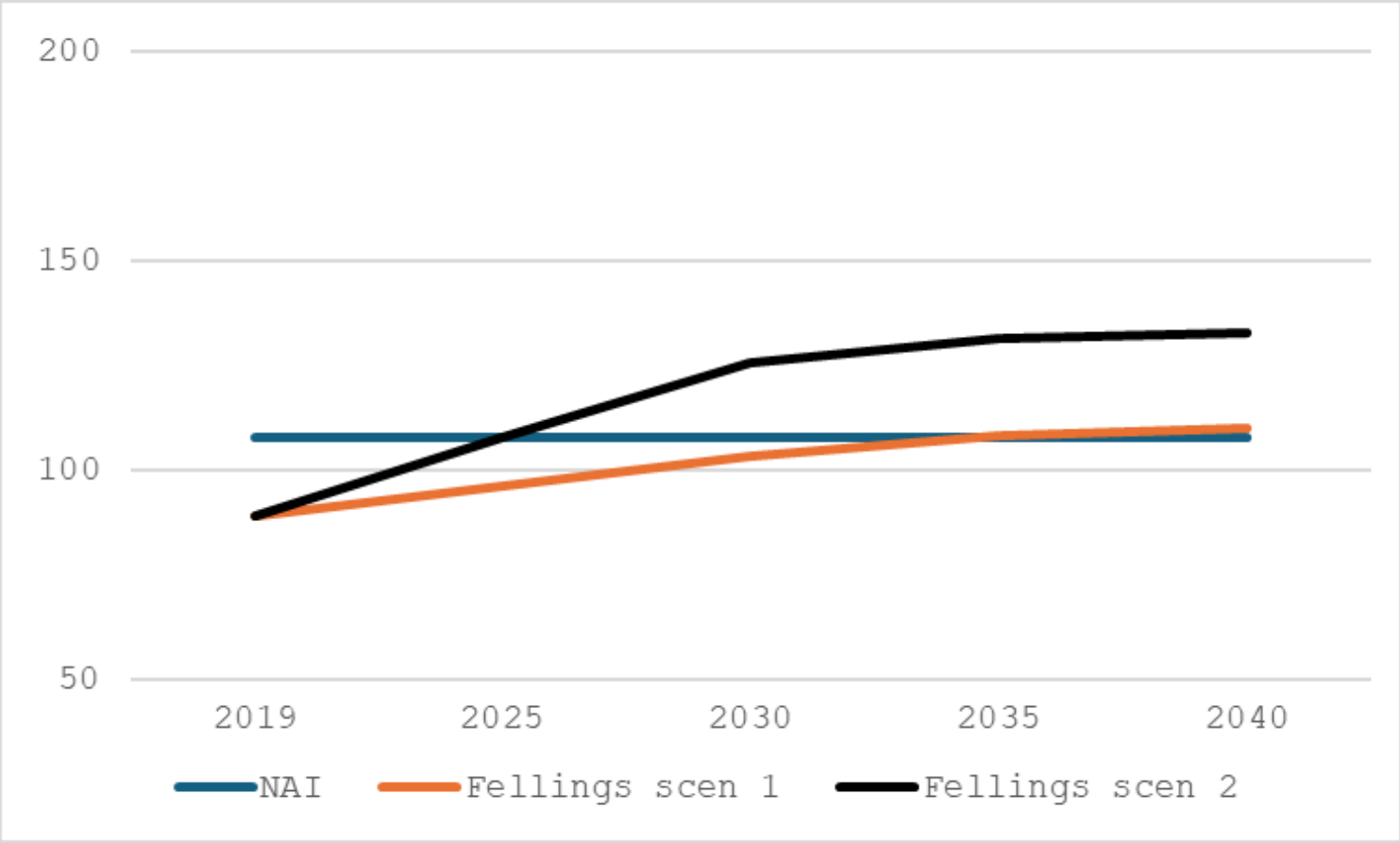
Region East



- **Scenario 1**: Total use of wood increases by 27% from 2019 to 2040. Material uses by 17%, energy uses by 38%
- **Scenario 2**: Total use of wood increases by 53% from 2019 to 2040. Material by 17%, energy uses grow by 91%

Fellings and the average (2010-2020) NAI for region East, million m^3_{ob}
(source: average NAI derived from Eurostat European forest accounts)

Region South



Fellings and the average (2010-2020) NAI for region South, million m^3_{ob} (source: average NAI derived from Eurostat European forest accounts)

- **Scenario 1**: Total use of wood increases by some in 22% from 2019 to 2040, Material and energy uses grow at the same pace.
- **Scenario 2**: Total use of wood increases by 49% from 2019 to 2040. Material uses grow by 25%, energy uses by 68%

Conclusions

Options

- Increase NAI:

  increasing gross annual increment and/or reduce natural losses. Difficult, at least in the short to medium term

  Increase imports:

  Hard, given the geopolitical situation and policy instruments, notably the EUTR/EUDR. Anyway a dubious approach, implying increasing fellings or crowding out of wood uses elsewhere, potentially negating any climate benefits achieved in Europe

- Enhance cascading:

  Perhaps the most promising avenue. The high share of primary woody biomass used for heat and power in most of the regions – precluding any cascading – is problematic

Thank you!