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EFSOS II: methods, scenarios and assessment

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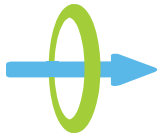
Methods Overview

	Wood Resource Balance		
Method	SUPPLY	DEMAND	Method
EFISCEN	Potential supply from forest	Demand for products	Econometric projections
EUwood	Supply of other woody biomass	Demand for wood energy	Trend projections
EFI-GTM	+/- GAP ?		

Scenarios

- Reference Scenario
  - *What if we continue business as usual?*



- Maximizing Biomass Carbon
  - *How much carbon could be stored?*

- Priority to Biodiversity
  - *What if we focus on preserving /enhancing biodiversity?*

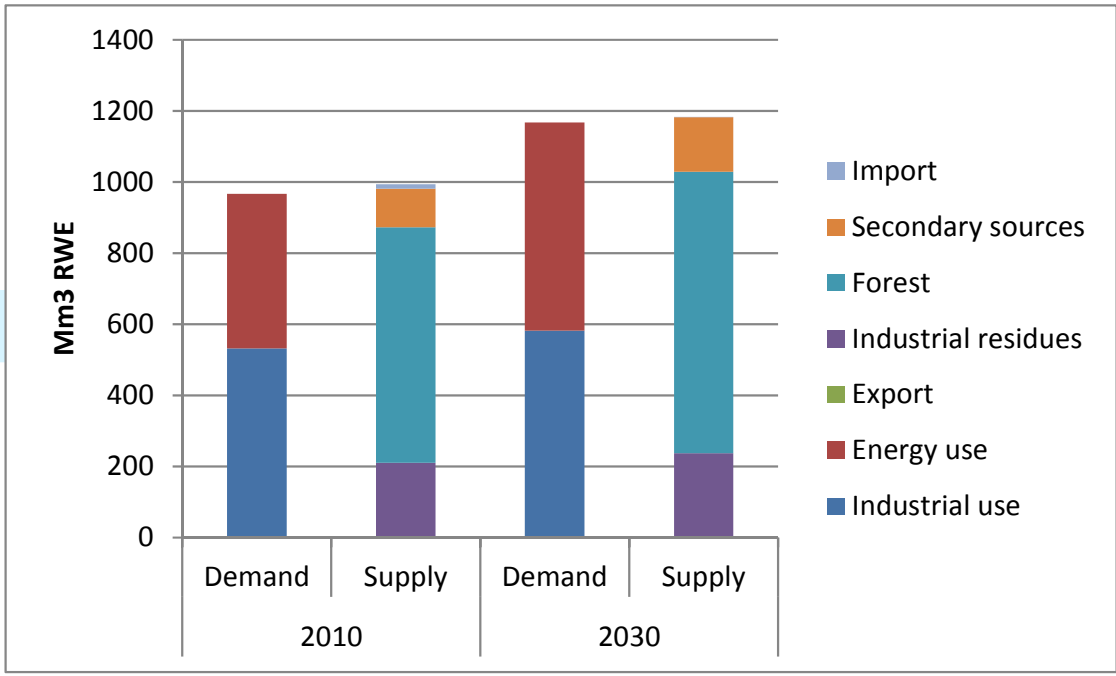
- Promoting Wood Energy
  - *How to achieve the renewable energy targets?*

- Fostering innovation/Competitiveness
  - *What would a successful innovation strategy lead to?*

Reference Scenario

- Based on **IPCC B2** scenario

- A **gradually increasing demand for wood** over the coming 20 years, especially for energy
- **Increasing supply** including harvest residue extraction and non-forest sources
- **Expansion** of forest area **continues** (0.6 million ha/yr)



Maximising Biomass Carbon

- **Longer rotations** and **increased thinning share**
- **No reduction in supply**

- **Total increment** increases by 14.6%

- **Total growing stock** volume is 7.8% higher

- **Average C sink** is 0.67 tonnes C/ha/yr, +64%

- Somewhere after 2030, maximum **sequestration capacity will be reached** as increment decreases for older stands

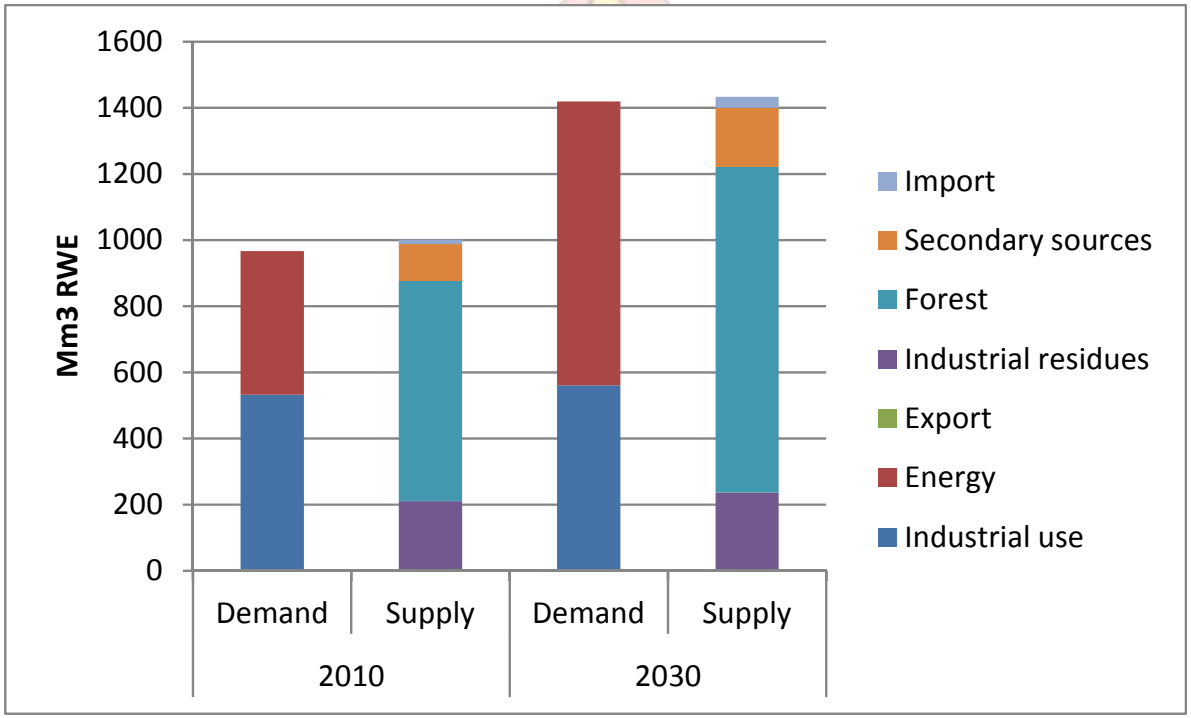
Priority to Biodiversity

- **Dedicated management** on 5% of current FAWS
- **Longer rotations** on remaining 95%, **no extraction of residues**

- **Wood supply decreases** by 12% compared to reference scenario
- The **growing stock** shows considerably higher **increase**
- A shift from younger to **older age-classes** is projected
- **Carbon stock** shows a significantly **positive trend**
- Amount of downed **deadwood** will grow

Promoting Wood Energy

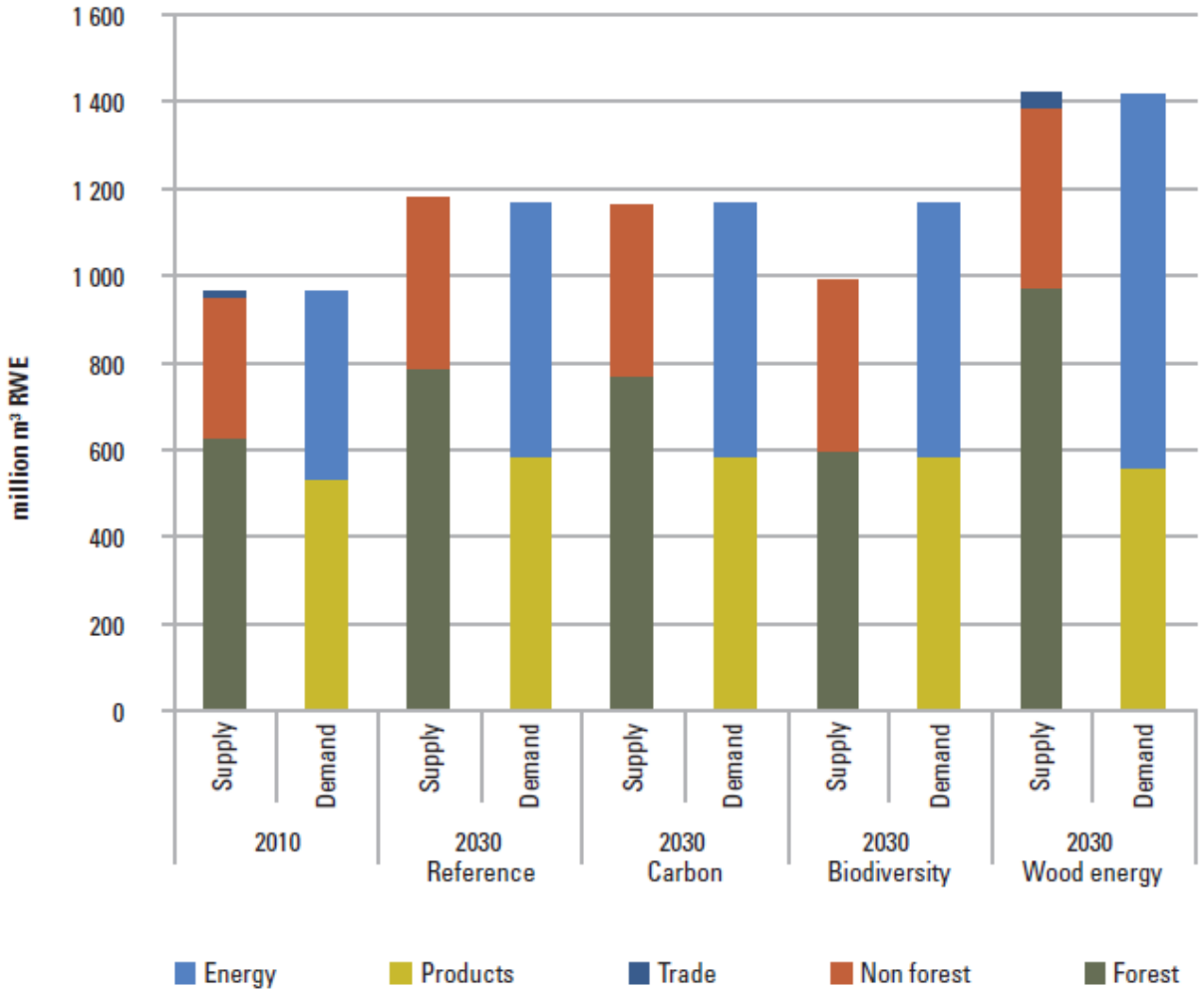
- **To reach the targets, supply** would have to increase by **50%** by 2030
- **Forest residues supply and stumps** together would have a **seven fold increase**
- **Increased supply** from landscape care wood and post consumer wood.
- **Net imports** for other regions would also increase from **12 million m³ wood equivalent** in 2010 **to 33 million m³** in 2030
- **<u>Significant environmental, financial and institutional costs.</u>**



Fostering Innovation and Competitiveness

- **Image** of wood based materials is transformed
- **New products** appear
- Total demand may not be higher than in the reference scenario, although **prices could be higher**
- **New requirements** by bio-refineries might lead to changes in forests management in the long term and changing structures in the wood market in the short term.
- Demand is driven by **innovation** and therefore sensitive to cost. Tightening supply might halt innovation.

Supply and Demand in 2030



Scenarios in 2030 compared to reference

	Max carbon	Biodiv	Wood energy
FAWS	0%	**-5%**	0%
Growing stock	**8%**	8%	-1%
Increment	**15%**	7%	0%
Fellings	0%	**-12%**	2%
Residue extraction	**-15%**	**-100%**	**263%**
Deadwood (per ha FAWS)	-3%	3%	-4%
Product consumption	0%	?	-4%
Wood energy consumption	0%	?	**147%**
Sawlog prices	?	?	6%
Pulplog prices	?	?	15%
Product prices	?	?	3%

Are the scenarios sustainable? Where are the weak points?

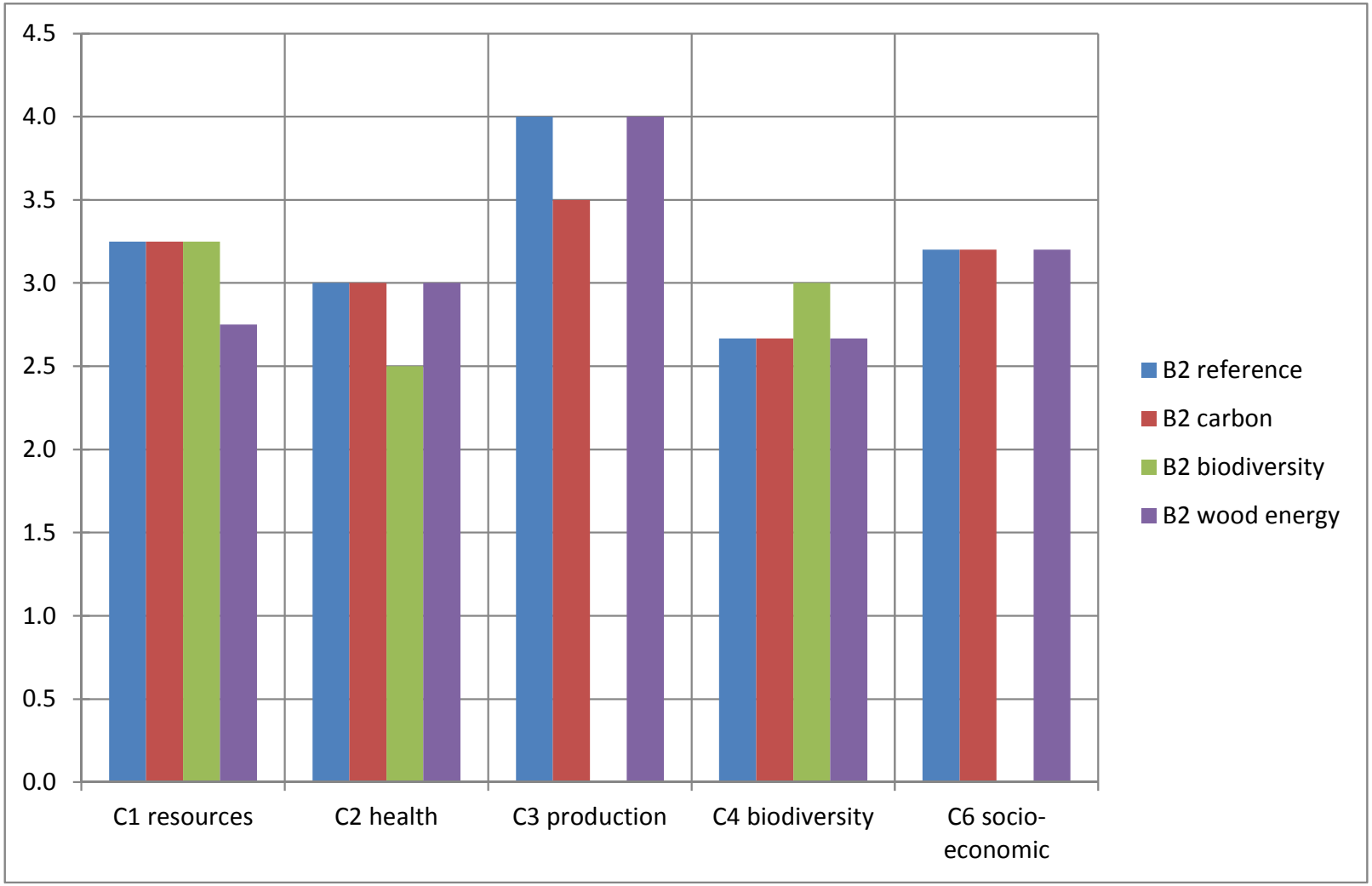
- We adopted the experimental method as developed for the State of Europe's Forests 2011 report.

- Countries' performance for each key parameter was assessed on a scale from one "tree" (🌲) to five "trees" (🌲🌲🌲🌲🌲). We used numbers to allow decimals in averages.

- An assessment was prepared for a limited set of quantitative indicators, by country, country group, and for the EFSOS region as a whole.

Relates to FOREST EUROPE indicator	Key parameter	Unit	Thresholds					Data sources
			1	2	3	4	5	
1.1	annual change in forest cover	%	< -0.2%	-0.2% - 0.0%	0.0 - 0.1%	0.1 - 0.2%	> 0.2%	forest area (EFISCEN), total land area (SoEF 2011)
1.2	annual change in growing stock/ha	m^3ha	< -1.0	-1.0 - 0.0	0.0 - 1.0	1.0 - 3.0	> 3.0	EFISCEN
1.4	annual change in living carbon stock/ha	tonnes C/ha	< -1.0	-1.0 - 0.0	0.0 - 1.0	1.0 - 3.0	> 3.0	EFISCEN
1.4	annual change in soil carbon stock/ha	tonnes C/ha	< -1.0	-1.0 - 0.0	0.0 - 1.0	1.0 - 3.0	> 3.0	EFISCEN
2.4	fire vulnerability/ha in 2030	index/ha	> 4.0	2.5 - 4.0	2 -2.5	1.5 - 2.0	< 1.5	EFISCEN
2.4	wind vulnerability/ha in 2030	index/ha	> 4.0	2.5 - 4.0	2 -2.5	1.5 - 2.0	< 1.5	EFISCEN
3.1	ratio fellings/NAI, 2025-2030	%	> 100%	95% -100	n.a.	<95%	n.a.	EFISCEN
3.2	annual change in ratio of value of marketed roundwood/growing stock	EUR/1000 m^3	< -20	-20 - 0	0 - 20	20 - 40	> 40	value of roundwood (EFI-GTM), growing stock (EFISCEN)
4.5	annual change in quantity of deadwood/ha	t dry matter/ha	< -0.2	-0.2 - 0.0	0.0 - 0.1	0.1 - 0.2	> 0.2	EFISCEN
4.9	FNAWS in 2030 as percentage of total forest area	%	< 5%	5% - 10%	10% - 20%	20% - 40%	> 40%	EFISCEN
	change in share of forest stands >100 years of age	%	< -0.2%	-0.2% - 0.0%	0.0 - 0.1%	0.1 - 0.2%	> 0.2%	EFISCEN
6.2	annual change in share of GDP taken by forest sector	%	< -0.1%	-0.1% - 0%	0% - 0.1%	0.1% - 0.2%	> 0.2%	total added value in forest sector (EFI-GTM), GDP (scenario assumption)
6.7	consumption of wood products (RWE) per capita in 2030	m^3/capita	< 0.45	0.45 - 0.8	0.8 - 1.6	1.6 - 2.9	> 2.9	consumption of wood products (EFI-GTM) population (scenario assumption)
6.8	net import as percentage of apparent consumption in 2030	%	> 65%	20% - 65%	-20% - 20%	-70% - -20%	< -70%	EFI-GTM
6.9	wood energy use (RWE) per capita in 2030	m^3/capita	< 0.45	0.45 - 0.8	0.8 - 1.6	1.6 - 2.9	> 2.9	consumption of wood used for energy (EFI-GTM), population (scenario assumption)

Overall results



Sustainability

- **Increased harvest pressure in reference, carbon and energy scenarios**, lowers amount of deadwood and reduces share of old stands.
- **Energy scenario shows a reduction in forest resources** and carbon due to intensified extraction.
- Trade-off between biodiversity and health?

Remarks on sustainability analysis

- Highly sensitive to thresholds
- Some parameters are still rather experimental
- Some parameters are based on uncertain model outcomes
- Extension of parameter set would be useful
- Method should be reviewed by the community for approach and thresholds
- Differences between scenarios are small due to the large size of the region

Availability of results and data

- Outcomes of models and sustainability analysis will be available from the UNECE website.
- Containing data at country level, country group level and for EFSOS region as a whole.
- 5 discussion papers are foreseen with more details on methods and outcomes

Many thanks to the team, the country correspondents, and everybody else that contributed in one way or the other