Concept of the cascade use of wood and the related reporting

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Outline

- Why measure cascade use?
- The cascade use concept
- Advantages of a cascade use indicator
- How to measure it?
- Challenges
- Conclusions
Why measure it?

- **Resource specific indicator**
- **Material efficiency** of the sector assessed;
- **Complete Indicator** reflecting the entire sector;
- No impact by changes in trade balances;
- **Monitoring progress made** towards circular economies / green economy;
- Little additional reporting effort in the long term.
The cascade use concept

“The same biogenic resources are used sequentially: first (and possibly repeatedly) for material applications and then for subsequent energy applications.” [FPAMR 2014]

“The overall use of wood raw material divided by its roundwood component; the cascade factor is a measure of the extent to which the (...) wood-processing industry has succeeded in increasing the utilization of wood co-products and recycled fibres.” [INDUFOR 2013]

... used by the UNECE/FAO in the context of the wood resource balance
1 m³

Energy use
Total Products
1.5 m³

Total Energy
1.0 m³
# The cascade use concept - example

(EUwood study, Mantau et al. 2010)

<table>
<thead>
<tr>
<th>Sources</th>
<th>[mio. m³]</th>
<th>Uses</th>
<th>[mio. m³]</th>
</tr>
</thead>
<tbody>
<tr>
<td>industrial Roundwood</td>
<td>100</td>
<td>sawmill industries</td>
<td>100</td>
</tr>
<tr>
<td>industrial Roundwood - unrep.</td>
<td></td>
<td>panel industry</td>
<td>20</td>
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<tr>
<td>fuelwood – JFSQ</td>
<td></td>
<td>pulp industry</td>
<td>10</td>
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<tr>
<td>fuelwood – unrep.</td>
<td></td>
<td>other physical utilization</td>
<td>10</td>
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<tr>
<td>bark</td>
<td></td>
<td>wood fuel industry</td>
<td>10</td>
</tr>
<tr>
<td>used logging residues</td>
<td></td>
<td>power and heat</td>
<td>5</td>
</tr>
<tr>
<td>woody biomass outside forest</td>
<td></td>
<td>industrial internal</td>
<td>4</td>
</tr>
<tr>
<td>chips, particles &amp; residues</td>
<td>40</td>
<td>private households</td>
<td>5</td>
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<tr>
<td>pulp production co-products</td>
<td>4</td>
<td>undifferentiated energy use</td>
<td>4</td>
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<tr>
<td>recovered wood</td>
<td>4</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>processed wood fuel</td>
<td>10</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

∑ total sources in example: 154 100% 100% 154

cascade factor of wood resource balance for Europe on primary biomass: 1.54
Industrial roundwood production AND wood fuel production

Chips and particles
Post consumer recov. wood
Recovered paper for recycling?

Sawnwood
Wood based panels
Pulp
Processed wood based fuels

Energy use
Energy use

Wood in domestically produced forest products

= Numerator

Solid wood equivalents

= Energy use

Raw material data

= Denominator

To be defined and applied in a constant manner
Wood in domestically produced forest products

Data:
Joint Forest Sector Questionnaire + Industrial Roundwood balance

Energy use data:
Joint Wood Energy Enquiry

Raw material data:
Joint Forest Sector Questionnaire + Industrial Roundwood balance
Limits of the indicator

➤ Needs to start from the **net apparent consumption** of wood fibres.

➤ Requires good set of **national conversion factors**;

➤ Information on **recycled fibres** required

➤ **Balanced national wood balance** required;
Conclusions

The cascade use indicator

... allows for monitoring progress made by the forest sector towards a green/circular economy;

... is MUCH better than simple ratio of industrial roundwood production/wood fuel production;

... is closely tied to wood balances which is a challenge AND opportunity for data quality and availability;

... will require cross-sectoral (country experts, UNECE ToS, etc.)

...IT IS POSSIBLE!!!
THANK YOU
FOR YOUR ATTENTION

For more information please visit: www.unece.org/forests or contact florian.steierer@unece.org