

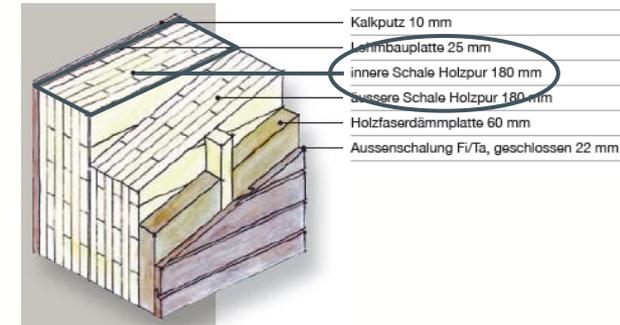
LCA of a Glue and Metal Free Wooden Wall Element

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Discussion Forum: Environmental Use of Wood Resources
Zurich, 4 December 2015

Product Description

- Trade name: “holzpur”
- Producer: Walter Küng AG, Alpnach
- Wood: Spruce and fir from a regional forest
- Characteristics:
 - No nails or screws / glue / wood preservatives
 - Reinforced kraft paper for wind protection
 - Moisture content: 6%; Density: 420 kg/m³
- Application:
 - Wall element (mainly used for dwelling houses)



Impressions



Images received by Patrick Stalder (Walter Küng AG)

Goal and Scope

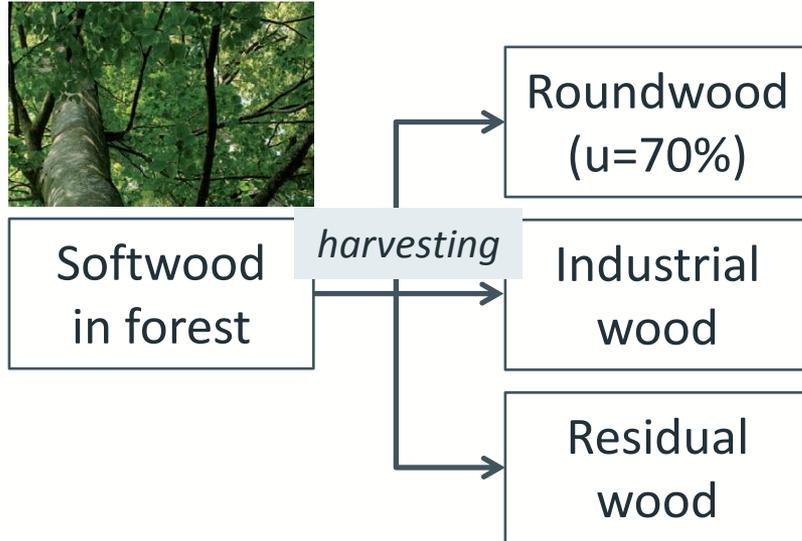
- Perform a LCA of holzpur wall elements
- Environmental indicators:
 - Total impacts according to the Ecological Scarcity Method 2013
 - Cumulative Energy Demand (total and non-renewable)
 - Greenhouse Gas Emissions according to IPCC 2013
- KBOB Recommendation:
Include environmental indicator results as producer-specific values in the next update of the KBOB recommendation
- Functional unit: 1 m³ of a holzpur wall element

Process Overview

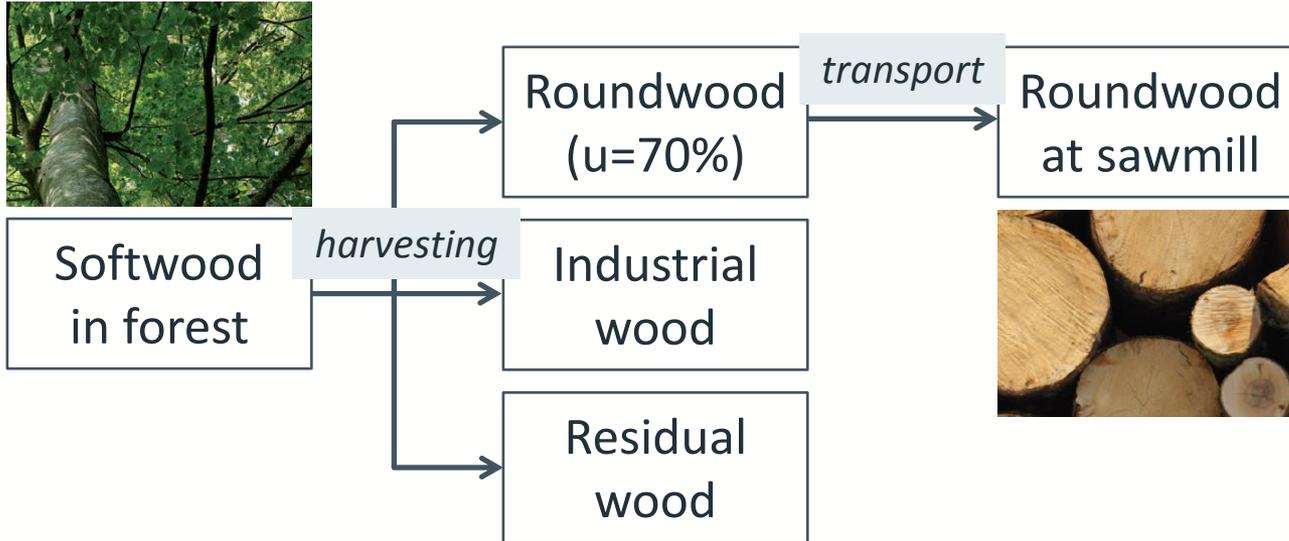


Softwood
in forest

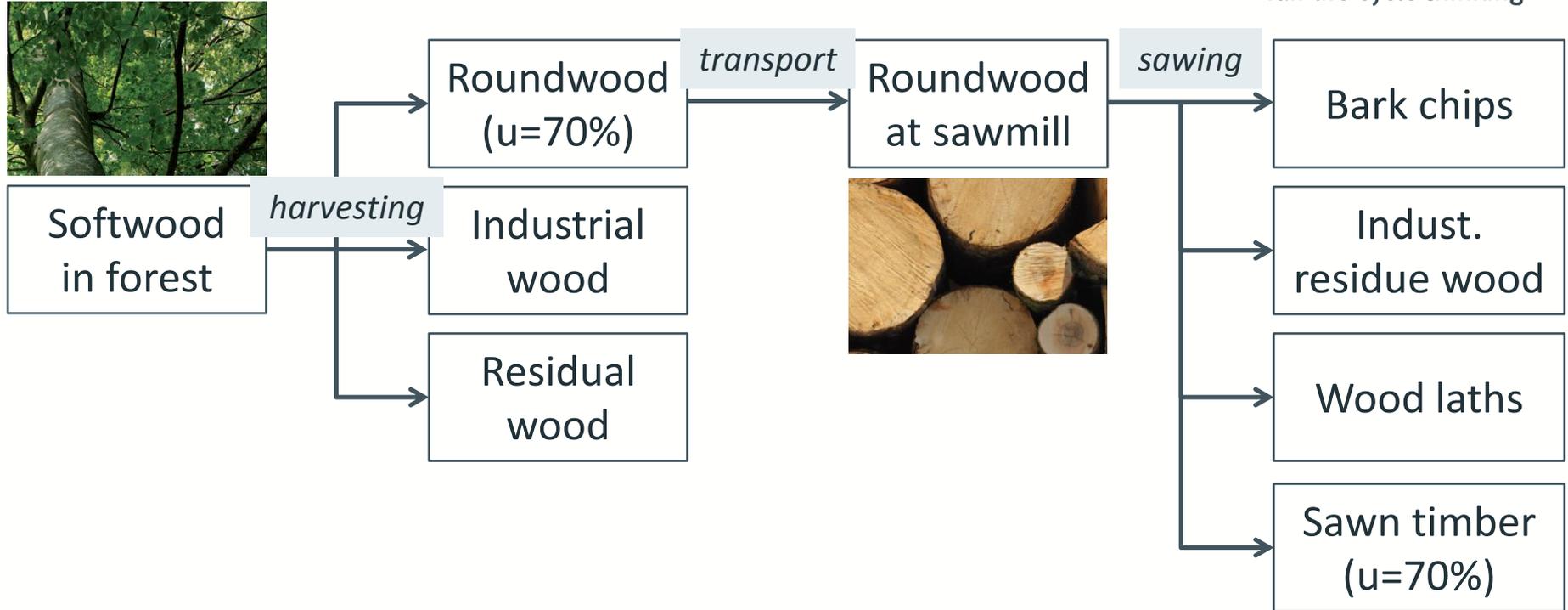
Process Overview



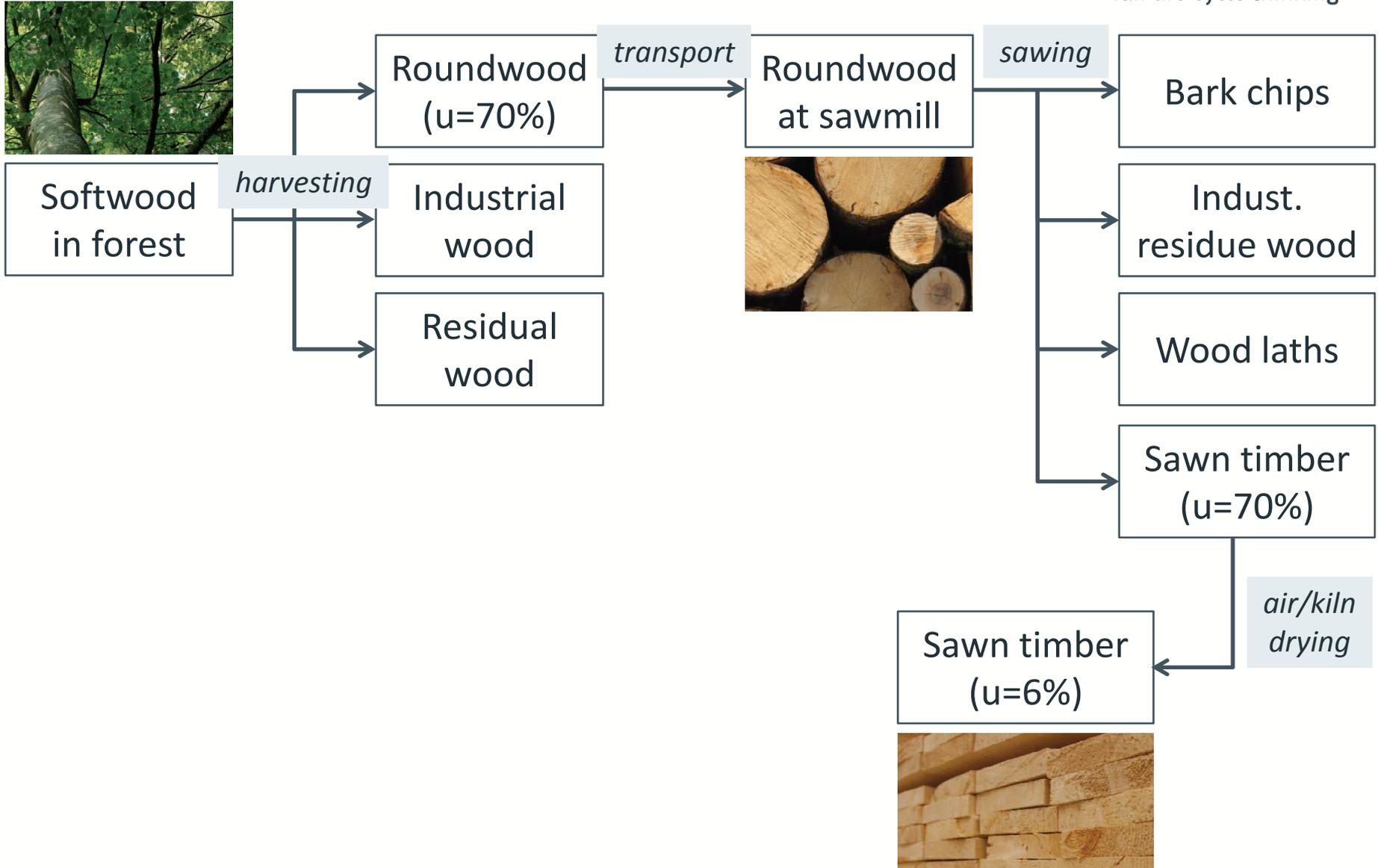
Process Overview



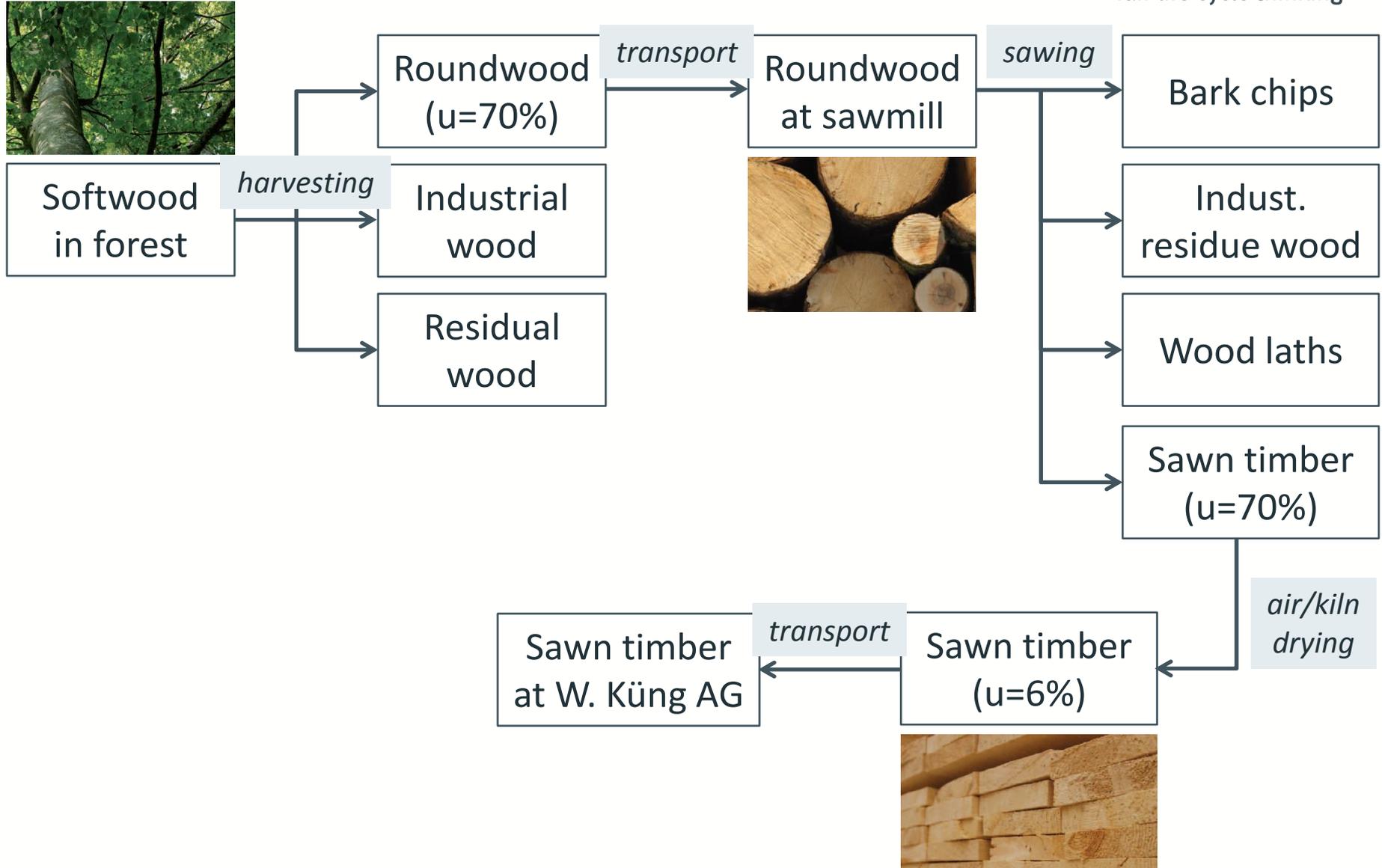
Process Overview



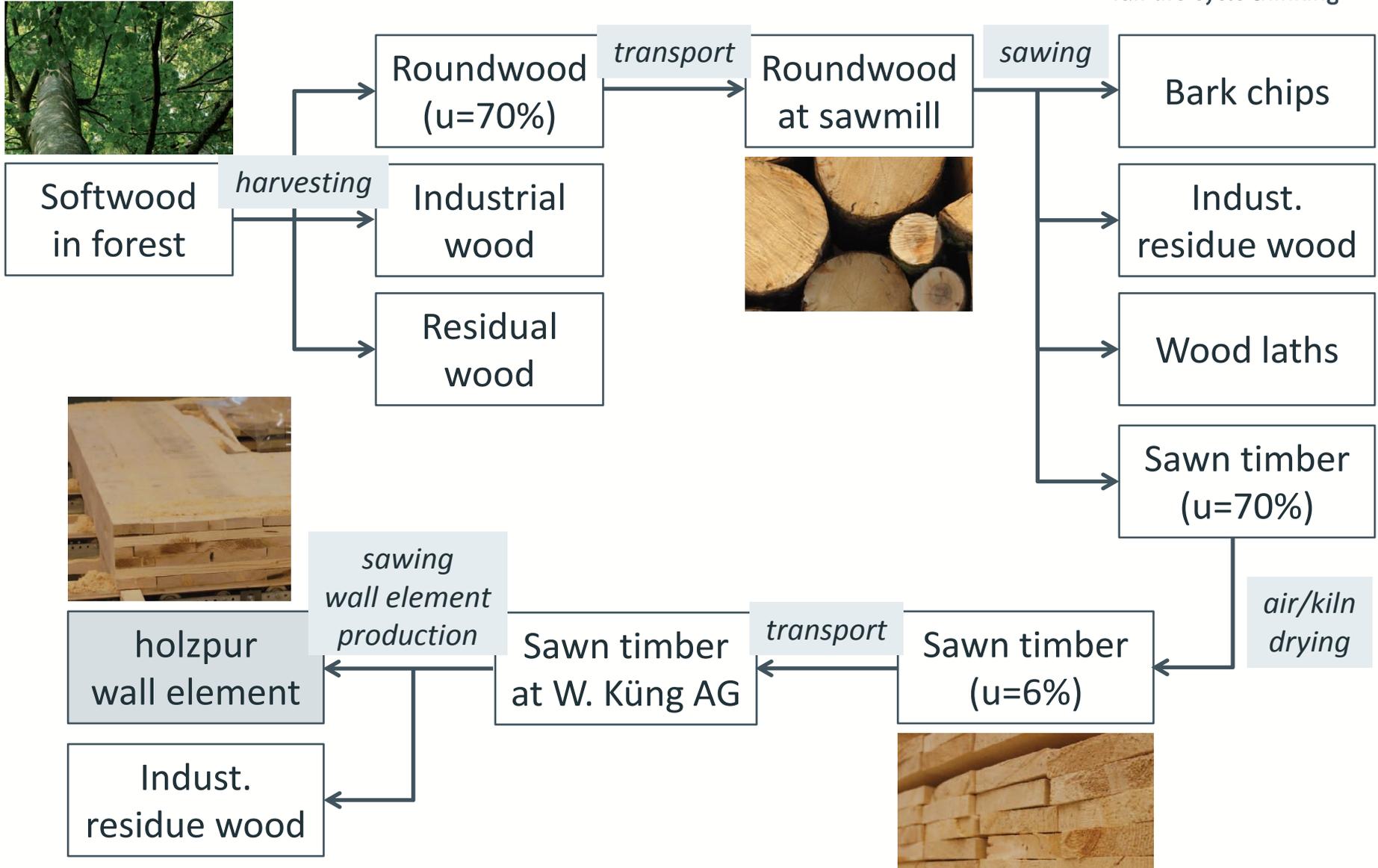
Process Overview



Process Overview



Process Overview



LCI Modelling

- Data:
 - Specific data for the whole supply chain (forest, sawmill, air/kiln drying, wall element production)
 - Ecoinvent v2.2+ data for background processes
- Multi-Output processes:
 - Physical allocation (volume) for inputs of wood products (e.g., round / industrial / residual wood)
 - Economic allocation (volume and revenue) for common inputs and outputs (e.g., land occupation, power sawing)
- Disposal:
 - 50% recycling, 50% incineration

Ecological Scarcity 2013

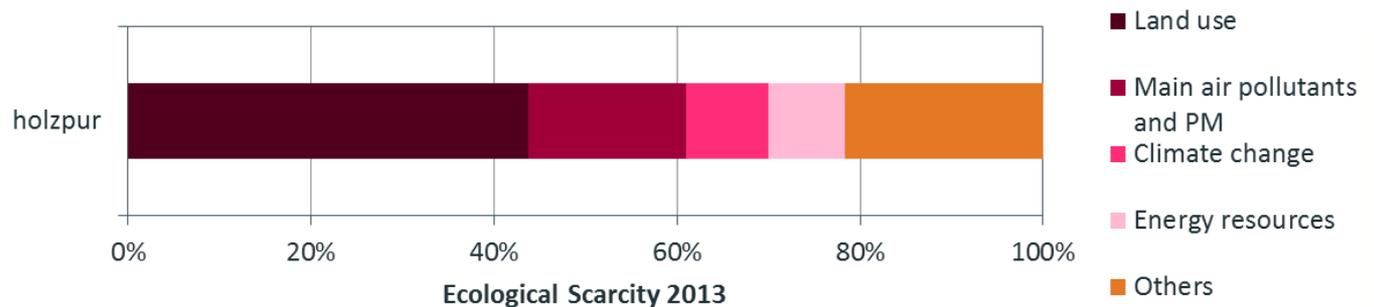
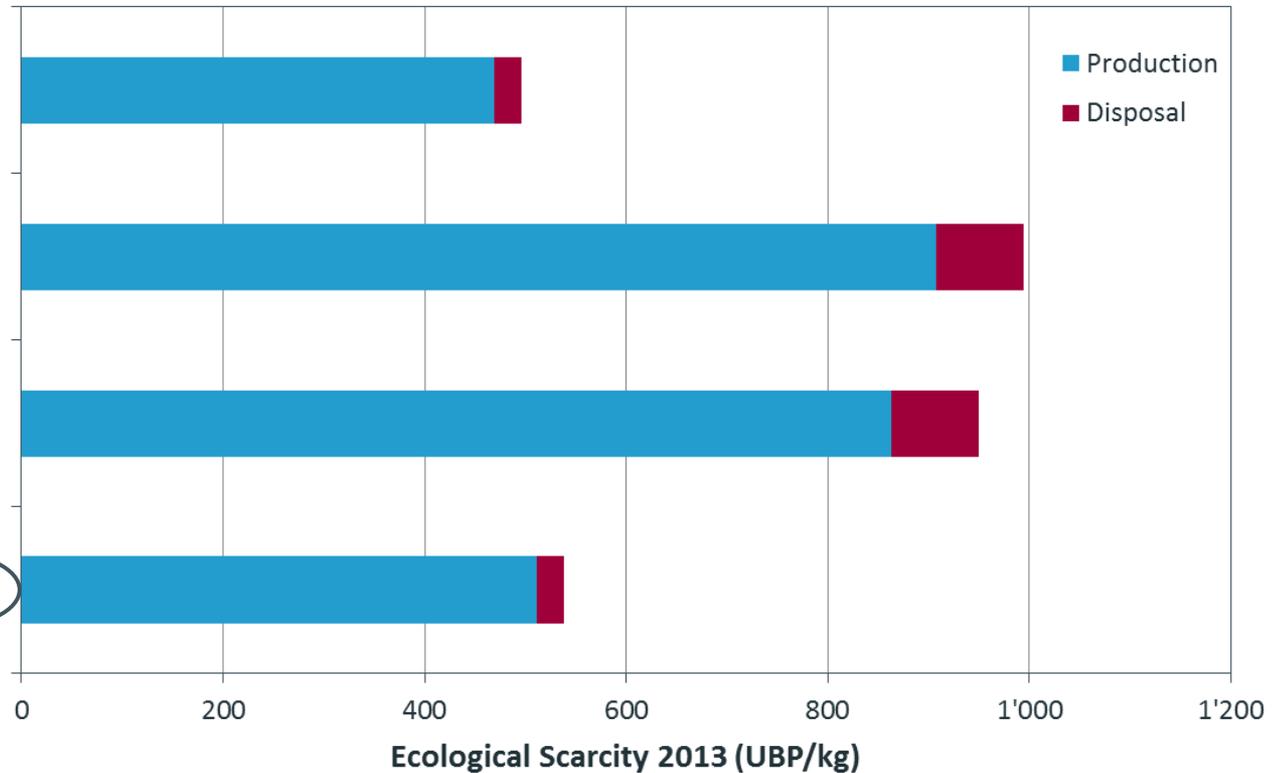


Solid wood spruce / fir / larch,
kiln dried, planed

Glued-laminated timber,
MF resin, wet area

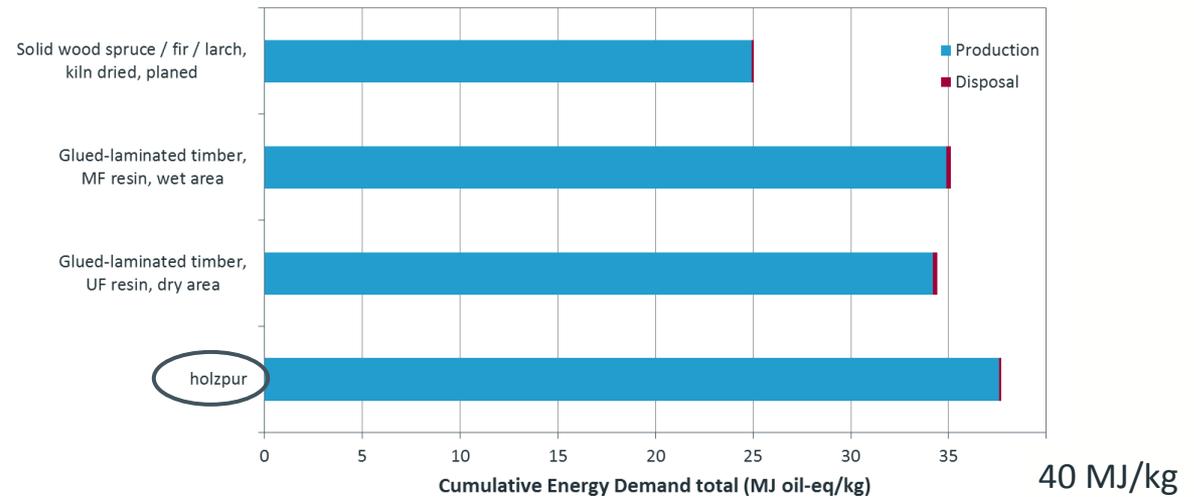
Glued-laminated timber,
UF resin, dry area

holzpur

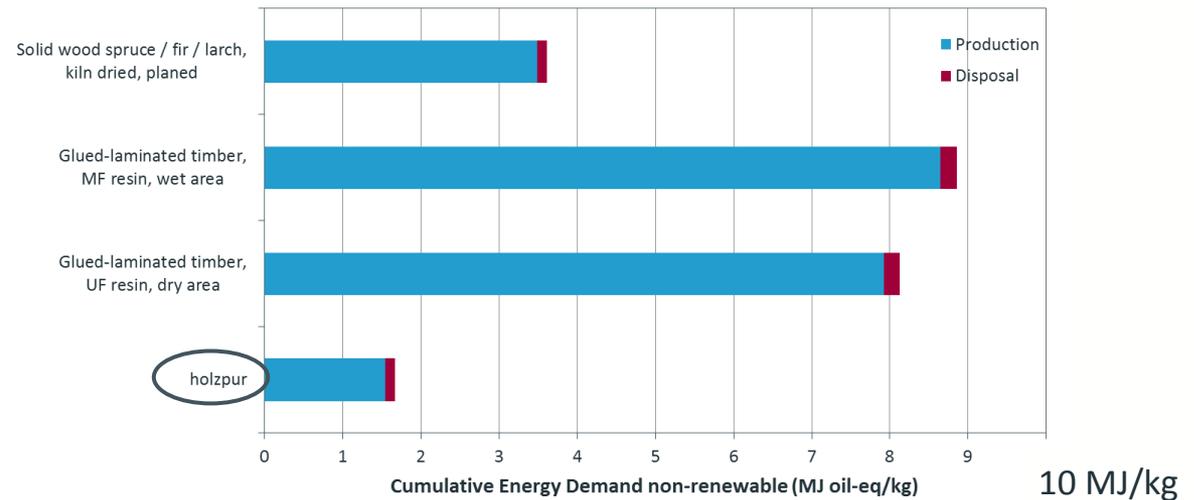


Cumulative Energy Demand

total



non-renewable



Conclusions

- holzpur is an innovative glue and metal free wall element
- Environmental impacts caused by holzpur are significantly lower than those of glued-laminated timber
- Non-renewable CED is significantly lower compared to solid wood because of use of renewable energy in wood drying and electricity

Thank you very much for your
attention!

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holzpur on the internet: <http://www.kueng-holz.ch/holzpur>