



# WOODCIRCLES

## *New life for wood*

Luca Galeasso, Environment Park



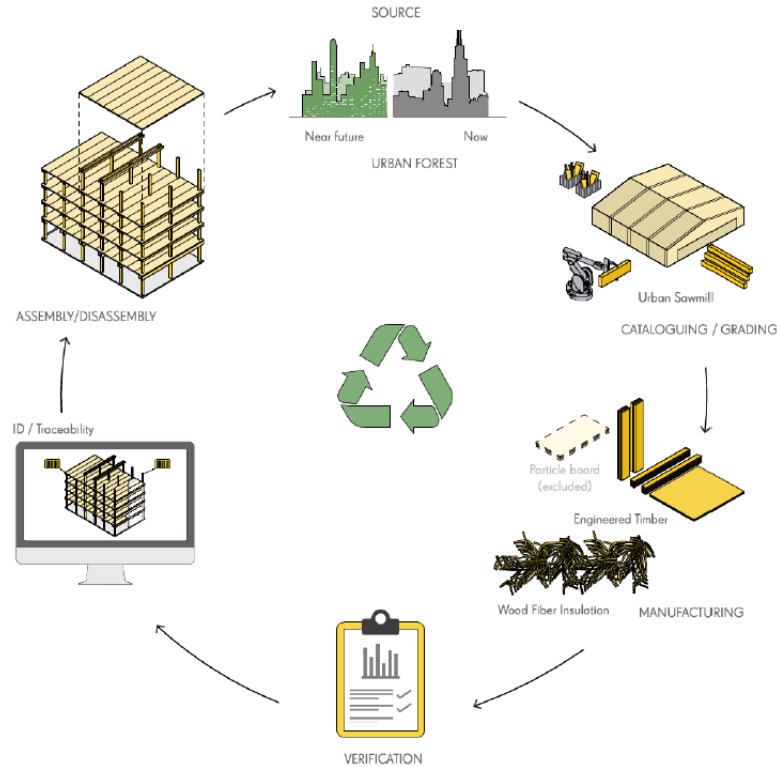
Co-funded by  
The European Union

LIFE ReNatural NZEB final event  
March 14 2024

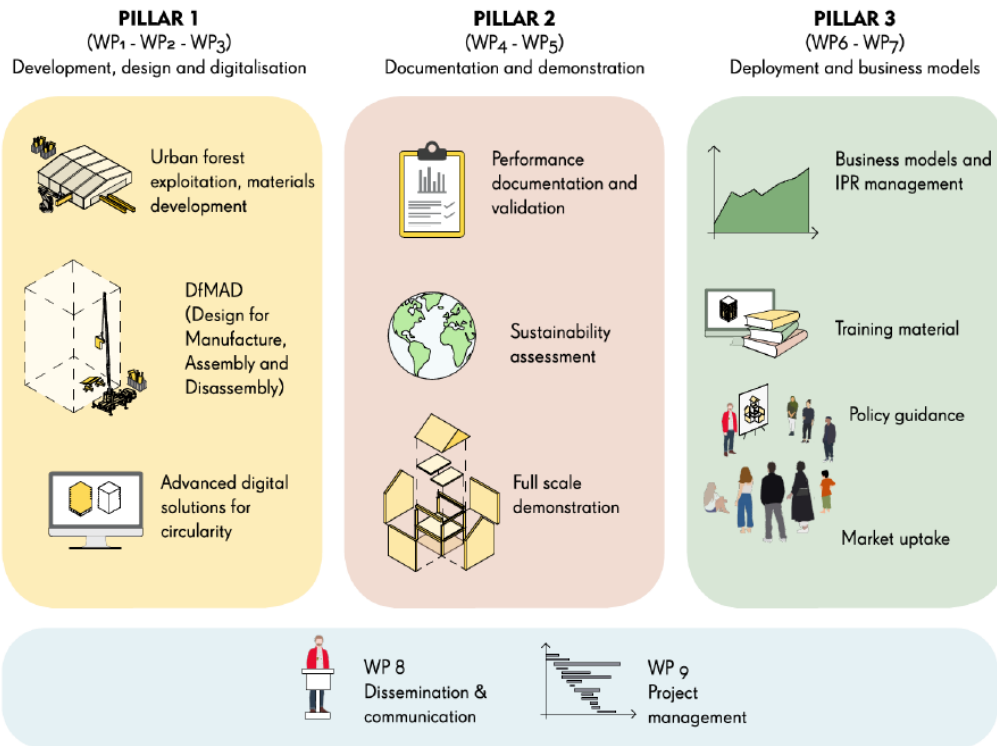
The construction sector is responsible for over 35% of the EU's total waste generation and about 50% of all extracted resources



# WOODCIRCLES project concept

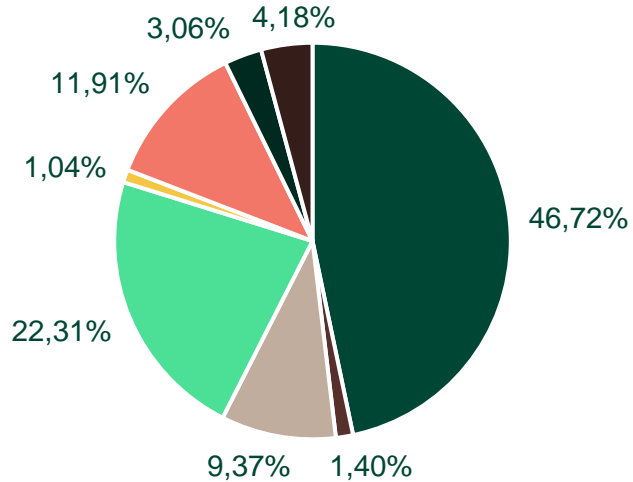


# The 3 pillars of the project



# Wood C&D waste flow analysis

Production wood waste EER 17.01.01 (ton)



- Torino
- Novara
- Asti
- Biella
- Vercelli
- Cuneo
- Alessandria
- Verbanco-cusio-ossola





# Circularity potential of the raw material for engineered timber products

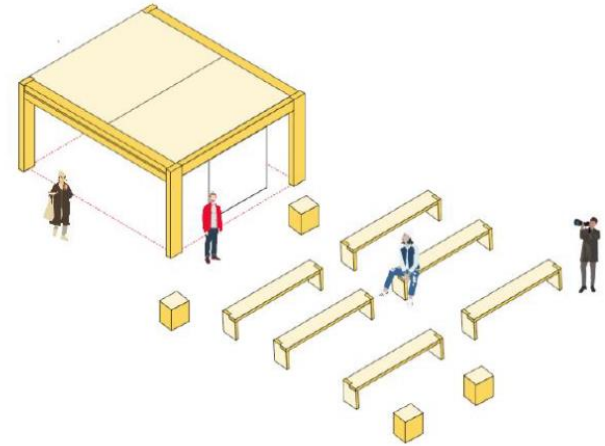


## Key data

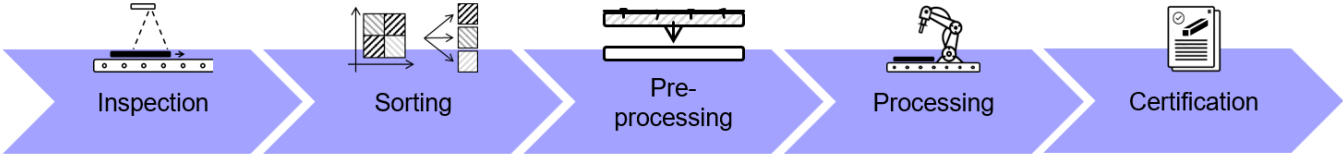
<b>Application</b>	Structural elements for walls, floors and roofs
<b>Maximum element dimensions</b>	Length: 16 m / Width: 3.45 m / Thickness: 0.35 m
<b>Invoiced widths</b>	2.25 m / 2.45 m / 2.75 m / 2.95 m / 3.25 m / 3.45 m 3.25 m and 3.45 m only available from Gruvön mill on request
<b>Panel lay-up</b>	3, 5, 7 or more layers depending on structural design requirements
<b>Wood species</b>	Spruce (pine, fir, stone pine/larch and other wood types on request)
<b>Strength class</b>	C24 according to EN 338, maximum 10% C16 permitted (other strength class compare with ETA 14/0349)
<b>Moisture of wood according to EN 13183-2</b>	6% to 15% Within one member of CLT the moisture content shall not differ by more than 5%
<b>Adhesive</b>	Formaldehyde-free PUR adhesive for finger jointing and surface bonding, approved for load-bearing and non-load-bearing components indoors and outdoors according to EN 15425; Formaldehyde-free EPI adhesive for narrow side bonding
<b>Surface quality</b>	Non-visual quality (NVI), Industrial visual quality (IVI) and Visual quality (VI); the surfaces are always sanded on both faces
<b>Weight</b>	5.0 kN/m <sup>3</sup> according to DIN 1055-2002 for structural analysis 490 kg/m <sup>3</sup> for determination of transport weight
<b>Fire rating</b>	In accordance with Commission Decision 2003/43/EC: • Timber components (apart from floors) ● Euroclass D-s2, d0 • Floors ● Euroclass Dfl-s1
<b>Thermal conductivity</b>	0.12 W/(mK)
<b>Air tightness</b>	CLT panels are made up of at least three layers of single-layer panels and are therefore extremely air-tight. The air-tightness of a 3-layer CLT panel was tested according to EN 12 114
<b>Service class</b>	Service class 1 and 2 according to EN 1995-1-1





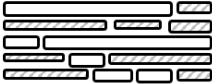
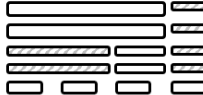
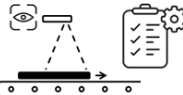
# Identification and design of prototypes of innovative building systems (DfD)



# Optimization of the process (Urban Sawmill)



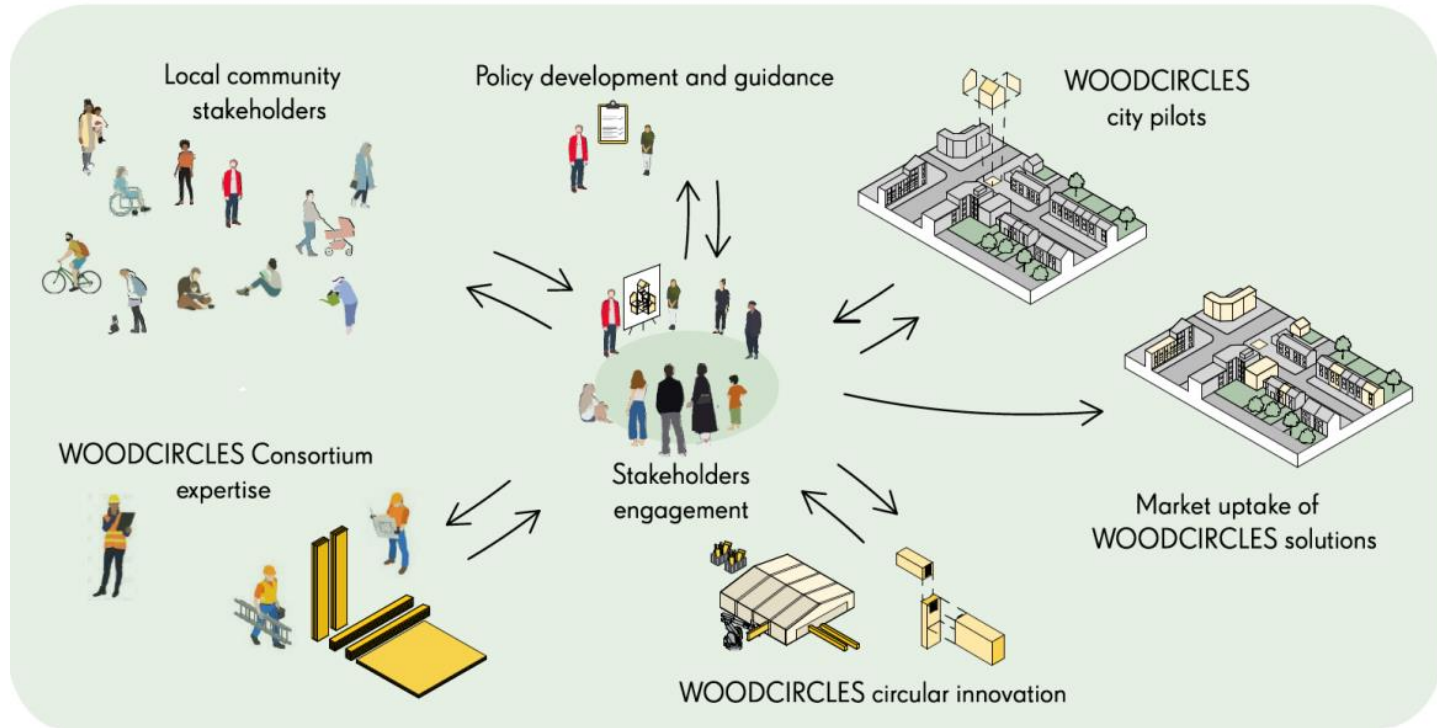
<b>Actions</b>	Digital intake	Decision making Robotic sorting	Metal removal Cleaning Drying	Cutting Labelling Finger-joining	Visual inspection Mechanical testing Stacking > storing
<b>Equipment</b>	Camera Scale 3D scanner Moisture sensor Metal scanner	Decision making software Robotic sorting	Drying machine Planing machine Circular saw <i>Metal removal</i> <ul style="list-style-type: none"> <li>• Robotic milling</li> <li>• Nail pulling system</li> <li>• Regioning software</li> </ul>	Planing machine? Circular saw Finger-joining machine?	Camera Checking software Robotic sorting Certifying/testing equipment

<b>Output</b>	 Photo Weight 3D geometry Moisture % Metal position Wood type	 Filtered stream (viability)	 Clean, dried and variable stream	 Sorted and standardized stream	 Checked, certified and stored stream
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# Mapping and involvement of stakeholders



# Woodcircles consortium



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