Slovenia
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Department of Wood Science and Technology

ProHolz Austria
European Wood Network Meeting
25.-27. May 2011, Vienna

pro:Holz
Austria

Wooden Buildings in Slovenia
Lesena gradnja v Sloveniji
Rational use of wood in the context of sustainable forest management
Annual wood consumption (m³ per capita) in selected countries of the EU

Slovenia is 3rd EU country with high forest cover after Sweden and Finland

Forest structure

<table>
<thead>
<tr>
<th></th>
<th>Österreich</th>
<th>Steiermark</th>
<th>Slowenien</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest area</td>
<td>3,960,000 ha</td>
<td>1,002,000</td>
<td>1,221,749 ha</td>
</tr>
<tr>
<td>Forest %</td>
<td>47,2 %</td>
<td>61,1 %</td>
<td>63 %</td>
</tr>
<tr>
<td>Growing stock [m³/ha]</td>
<td>325</td>
<td>338</td>
<td>270</td>
</tr>
<tr>
<td>Prirastek [m³/ha]</td>
<td>9,3</td>
<td>9,8</td>
<td>6,6</td>
</tr>
<tr>
<td>Nutzung [m³/ha]</td>
<td>5,6</td>
<td>6,4</td>
<td>2,8</td>
</tr>
<tr>
<td>Nutzung [%]</td>
<td>60,2 %</td>
<td>65,3 %</td>
<td>43,7 %</td>
</tr>
<tr>
<td>Forest owners</td>
<td>170,548</td>
<td>44,027</td>
<td>cca 314,000</td>
</tr>
<tr>
<td>Durschnittliche Waldgröße</td>
<td>23,2 ha</td>
<td>22,8 ha</td>
<td>2,6 ha</td>
</tr>
</tbody>
</table>

Sources: Holzcluster Steiermark GmbH, ProHolz Steiermark, 2010 The Slovenia Forest Service Report on Slovenian forest

The dominant tree species: beech, followed by pine, fir and larch as a species with the highest growing stock
Wooden Building has been increased in Slovenia since last years!

The highest number of prefabricated wooden houses is produced by Slovenian producers of prefabricated houses Association, which operates under the Chamber of Commerce and Industry of Slovenia Wood Processing and Furniture Association since 1999. The members are:

In addition to the production of bigger companies, a non negligible amount of wooden houses have appeared lately, constructed by the undertakings themselves and through smaller tradesmen - carpentry workshops.
The number of people opting for a wooden building is higher than 5 years ago.

What kind of building would you choose?

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick</td>
<td>60%</td>
<td>51%</td>
</tr>
<tr>
<td>Wood</td>
<td>34%</td>
<td>42%</td>
</tr>
<tr>
<td>Don't know</td>
<td>6%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: The Slovenian public opinion survey on wooden buildings 2006-2011 | University of Ljubljana

Choosing the window material

Choosing the window material

Wooden building enable healthier living as brick-concrete one

<table>
<thead>
<tr>
<th></th>
<th>Fully agree</th>
<th>Agree</th>
<th>Not even</th>
<th>Don't agree</th>
<th>At all don't agree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>32%</td>
<td>30%</td>
<td>28%</td>
<td>5%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>2011</td>
<td>60%</td>
<td>24%</td>
<td>10%</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Choosing the window material

<table>
<thead>
<tr>
<th>Material</th>
<th>2006</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>25%</td>
<td>34%</td>
</tr>
<tr>
<td>Wood-Alu</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Alu</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>PVC</td>
<td>60%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Source: ProHolz Austria European Wood Network Meeting 25.-27. May 2011, Vienna
Communities support the wood!

Would you be willing to invest more money in your municipality in order to provide for an environment, which would have a positive impact on people?“
► 79% yes, 17% no, 4% don’t know

In your opinion, in what proportion wood / wood products could be installed in new public buildings in your community?

Source: The Slovenian public opinion survey on wooden buildings (2)2011 | University of Ljubljana | selected municipalities as a potential investors]
New projects: Family houses
New projects: Kindergartens

Year | 2011
Location | Slovenia
Constructor | Riko hiše d.o.o.
Construction System | Panel construction
New projects: Public buildings
Year | 2010-2011
Built up area | 1.165 m²
Location | Slovenija
Construction System | Massive cross-laminated timber construction

New projects: multy storey building

Future!

www.lesena-gradnja.si
Object reconstruction & timber extension

Object | Hotel terme Čatež
Year 2011
Location | Slovenija, Čatež
Velikost | obstoječa 4 etažna + dodatna 3 lesena nadstropja
Construction System | Massive cross-laminated timber construction
Constructor | Hoja d.d., Structural engineering-CBD d.o.o.
Load bearing roof structure - curved glued laminated timber 44 m

Object | Olimpic swimming pool
Year 2011
Location | Slovenija Koper
Razpon: 14 nosilcev
dim 20 cm × 250 cm × 4400 cm
Constructor | Hoja d.d.
Footprint indicator is becoming in Slovenia desired and even required information

Partners in Cradle To Cradle Network

Year | 2010-2011
Built up area | 1.165 m²
Location | Slovenija
Construction System | panel construction
Constructor | Lumar IG d.o.o

<table>
<thead>
<tr>
<th>Cradle to grave Carbon footprint (t/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete 1.86</td>
</tr>
<tr>
<td>Steel frame 1.9</td>
</tr>
<tr>
<td>Brick 1.89</td>
</tr>
<tr>
<td>Wood frame 1.53</td>
</tr>
<tr>
<td>Solid wood 1.29</td>
</tr>
</tbody>
</table>

Plusenergy house Primus, Lumar IG Slovenia
Timber plus building

International co-operations

- Publications

Building with wood - challenge and opportunities for Slovenia, Manja Kitek Kuzman et.al
2008 1st edition sold out in 2 months, 2009 2nd edition

Wood in Slovenian Contemporary Architecture 2010
International co-operations

▪ Seminars 2009, 2010,...
▪ Excursions

Music CD

Chamber of Architecture and Spatial Planning of Slovenia
Biotechnical faculty, Department of wood science and technology, University of Ljubljana

Faculty of Architecture, Ljubljana, University of Ljubljana

Faculty of civil engineering and geodesy University of Ljubljana

Faculty of Civil Engineering, University of Maribor

Chamber of Architecture and Spatial Planning of Slovenia

Slovenian Chamber of Engineers IZS

Eco Found Slovenian Public Fund financing

Slovenia forest service

Chamber of Commerce and Industry of Slovenia Wood Processing and Furniture Association