

Natural building materials: what are the users' perception of naturalness?

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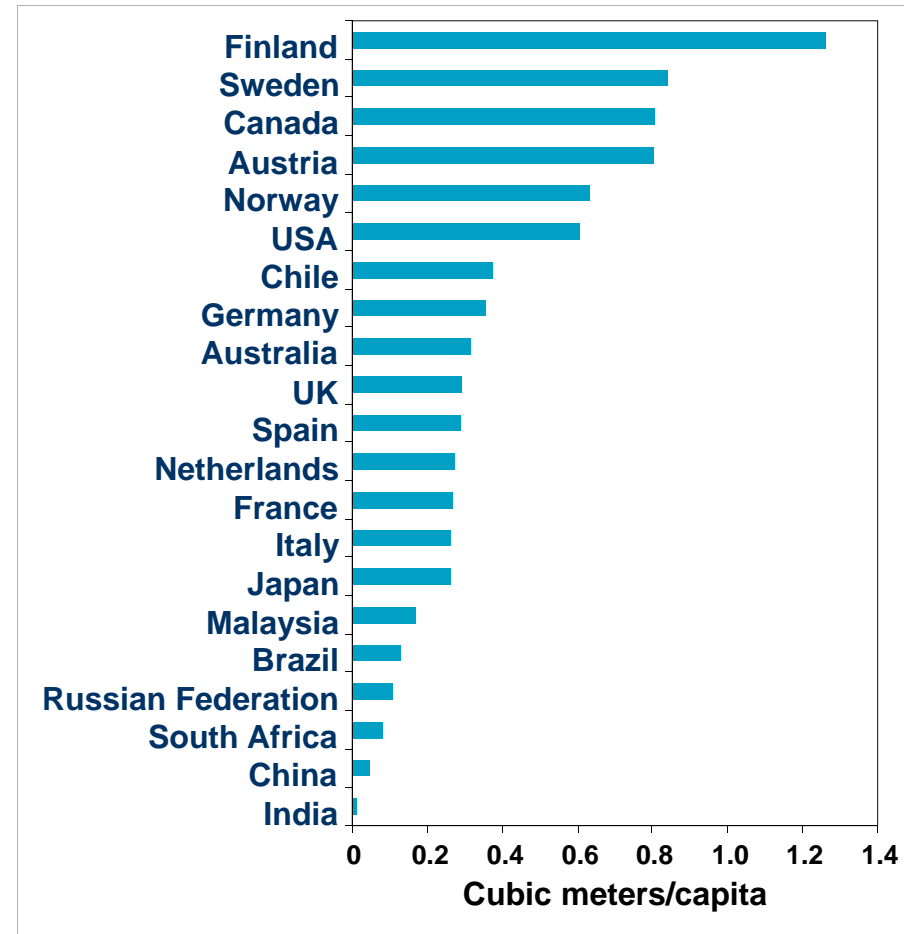
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Introduction

- **Traditional building material**
- **Natural building material**



Apparent consumption of sawn goods and wooden panels, 2006

Previous studies on the human-nature relationship

- **Preference for nature**
 - Aesthetic evaluation of landscapes
 - Nature scenes vs. built scenes
 - Natural elements provides positive responses
- **Psychological benefits of nature**
 - Benefits from engagement with nature
 - Passive and active engagement
 - Passive viewing nature/natural features

Literature review

- **Literature review**

Nyrud and Bringslimark. 2010. Wood and Fiber Science

- **Conclusion:**

- **Preferences for wood products**

- Aesthetics
- Environmental properties
- Natural building material
- ...

- **Affective responses toward wood seem to be measurable, giving indications of psychological beneficial effects.**



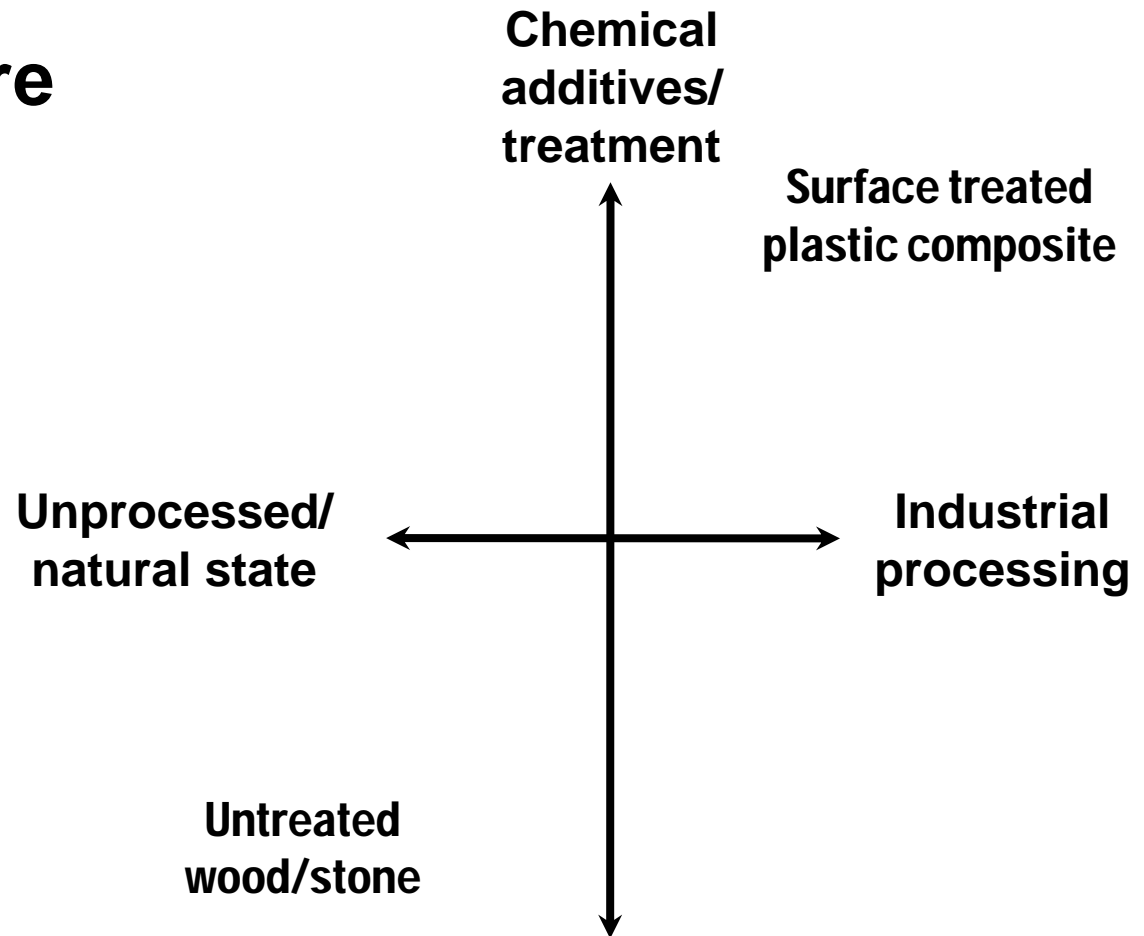
Focus group analysis

- **Research question:**
What does people associate with natural building materials?
- **Structured discussion within a group of people**
- **Four groups:**
 1. Non-scandinavians (male + female)
 2. No prev. experience with building/remodeling (m+f)
 3. Previous experience with building/remodeling (f)
 4. Previous experience with building/remodeling (m)

Focus group analysis: Natural building materials

**1. Manufacture
process**

**2. Additives/
treatment**



Study of perceived naturalness

- **24 building materials**
- **Questionnaire**
 - 54 respondents
 - Q1: "Is this a natural material?" Yes or No
 - Q2: "Is this a natural material?"
Rate on a seven-point scale, 1=not natural, 7=natural
- **22 small samples: 10 cm x 10 cm**
 - Visual and tactile evaluation
- **20 large samples (wall): 60 cm x 200 cm**
 - Visual evaluation
 - Context

Questionnaire: Small samples

	ID	Share rated natural
Untreated pine w/knots + uncanted pine lumber	113/344	100 %
Untreated pine wo/nots + stone	420/510	95 %
Untreated planed heartwood ash + OSB	615/007	87 %
Brick	235	68 %
Untreated cork	193	63 %
Untreated MDF + Untreated particle board	712/158	53 %
Surface treated planed pine	560	50 %
Wool fabric	469	48 %
Surface treated MDF w/grain structure	401	42 %
Rough leather	829	34 %
Textile wallpaper	823	29 %
Surface treated MDF	210	24 %
Glazed tiles	292	21 %
Wood plastic composites	321	17 %
Woven fiber glass + rolled steel	307/447	8 %
Untreated plastic	642	7 %
Surface treated rolled steel	773	0 %



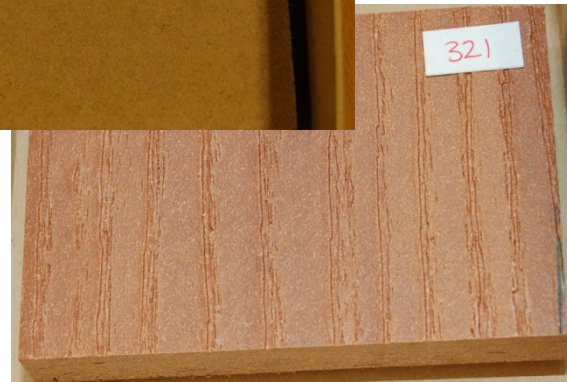
100 %



95 %



53 %



17 %



0 %

Study of naturalness: Large samples

	ID	Share rated natural
Untreated pine wo/nots	420	100 %
Untreated pine w/knots + untreated spruce	113/095	97 %
Untreated planed birch wo/knots + uncanted pine	002/344	95 %
Surface treated planed pine + heartwood ash + stone	560/615/510	90 %
OSB	007	66 %
Bricks	235	50 %
Untreated particle board	158	45 %
Surface treated MDF (12 mm)	210	42 %
Surface treated MDF w/grain structure	401	40 %
Untreated MDF (12 mm)	712	34 %
Textile wallpaper	823	18 %
Glazed tiles	292	17 %
Woven fiber glass	307	13 %
Untreated rolled steel	447	7 %
Surface treated rolled steel + untreated plastic	773/642	3 %

100 %

34 %

17 %





3 %



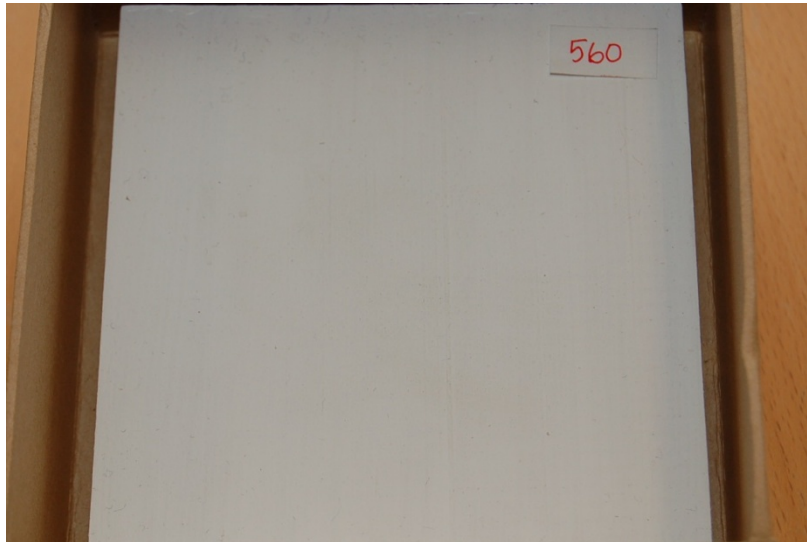
Questionnaire: Comparison of small and large samples

		Small samples Share rated natural	Large samples Share rated natural
Untreated planed pine wo/notes (<i>pinus silvestris</i>)	420	95 %	100 %
Untreated planed pine w/knots (<i>pinus silvestris</i>)	113	100 %	97 %
Surface treated planed pine (<i>pinus silvestris</i>)	560	50 %	90 %
Untreated planed birch wo/knots (<i>Betula veruuciosa</i>)	002		95 %
Untreated planed heartwood ash (<i>fraxinus exslsior</i>)	615	87 %	90 %
Untreated planed sruce w/knots (<i>picea abies</i>)	095		97 %
Untreated uncanted pine (<i>pinus silvestris</i>)	344	100 %	95 %
Surface treated MDF (12 mm)	210	24 %	42 %
Untreated MDF (12 mm)	712	53 %	34 %
Surface treated MDF w/grain structure	401	42 %	40 %
OSB	007	87 %	66 %
Untreated particle board	158	53 %	45 %
Textile wallpaper , rough	307	8 %	13 %
Textile wallpaper, fine	823	29 %	18 %
Glazed tiles	292	21 %	17 %
Bricks	235	68 %	50 %
Natural stone	510	95 %	90 %
Untreated metal	447	8 %	7 %
Surface treated metal	773	0 %	3 %
Untreated plastic	642	7 %	3 %
Wood-plastic components	321	17 %	
Untreated leather	829	34 %	
Wool fabric	469	48 %	
Untreated cork	193	63 %	

Questionnaire: Comparison of small and large samples

	Small samples Share rated natural	Large samples Share rated natural
Surface treated planed pine	50 %	90 % 
Surface treated MDF (12 mm)	24 %	42 % 
OSB	87 %	66 % 
Untreated MDF (12 mm)	53 %	34 % 

50 %

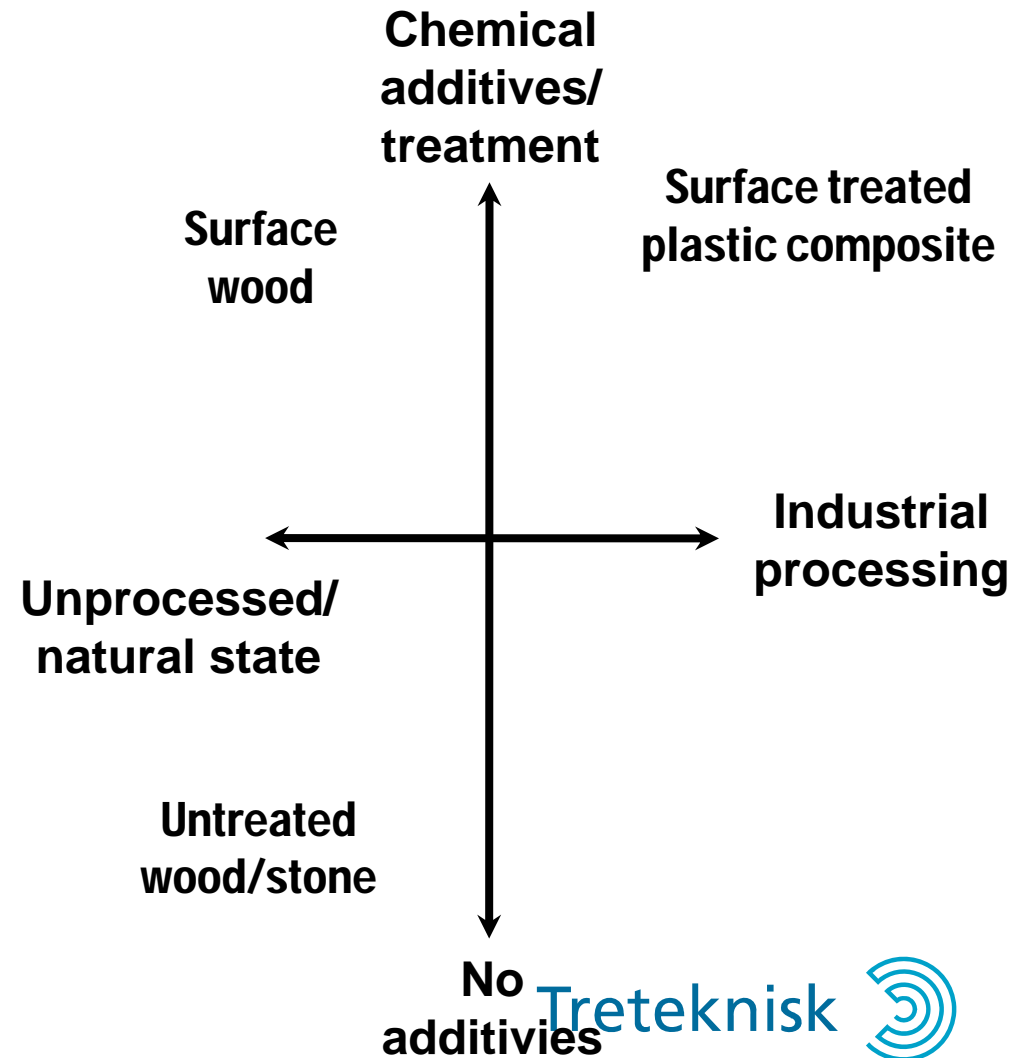


90 %



Natural building materials

- 1. Manufacture process**
- 2. Additives/treatment**
- 3. Usage context**



Conclusions

- **Some empirical evidence that wood may have beneficial psychological effects**
- **Natural material/natural elements**
- **What is considered a natural material?**
 - **Processing**
 - **Additives/treatment**
- **What is a natural element?**
 - **Context**
- **Use in design**

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