



Recycling of wood from household waste - opportunities and barriers

COST Action FP1303

“Performance of Bio-based Building Materials”

TRAINING SCHOOL

PRODUCT DEVELOPMENT FROM RENEWABLE RESOURCES

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Agenda

- Collection schemes of wood from households in Denmark
- Methods at the recycling station
- Amounts and quality
- Existing recycling methods
- Recycling opportunities
- Market barriers



Collection schemes for household wood

The Danish waste legislation requires that:

- the municipalities provide collection schemes for impregnated and wood treated with creosote
- that all citizens have access to a recycling station
- that the municipalities provide an arrangement for construction waste
- the target for recycling of household waste (including wood) is 50 % in 2022
- there is no specification for collection of wood other than the mentioned above
- Incineration of wood (classified as waste) is costly (€62/tonnes)

Practices of wood collection

- All municipalities collect:
 - Clean wood (or indoor wood)
 - Impregnated wood
- At recycling stations
- Or collect from curb site or in yards
- Crafts men have access to the recycling station but need to pay a gate fee
- Industrial wood waste is managed by the private sector





Challenges for waste wood collection

- People don't pay attention
- Difficult to identify different types of wood
- Low barrier for using “small mixed waste for incineration”

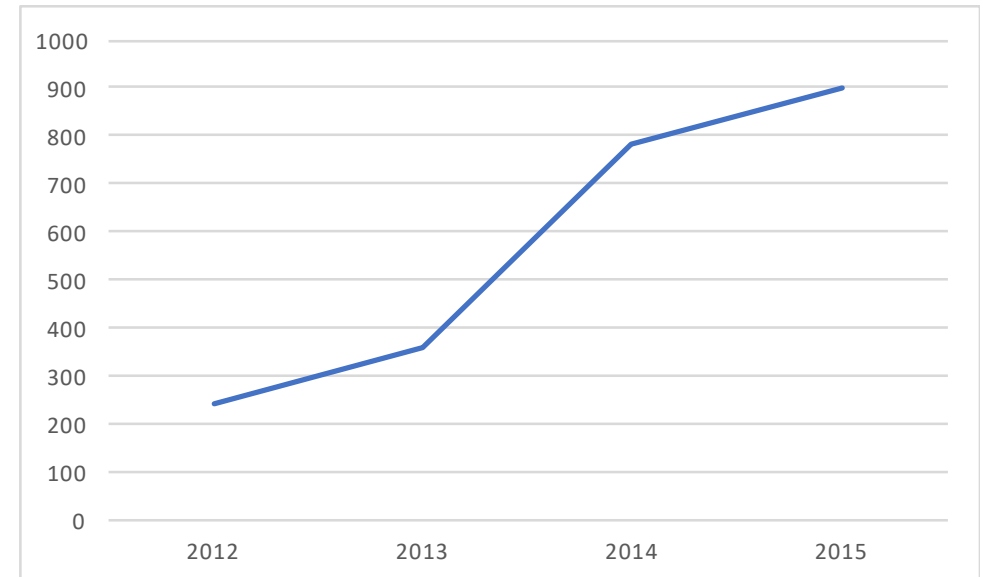


Amounts and quality

Collected annually in Denmark (5m people)

- 155.792 tonnes wood
- 16.346 tonnes impregnated wood
- 7.481 tonnes packaging wood (pallets)

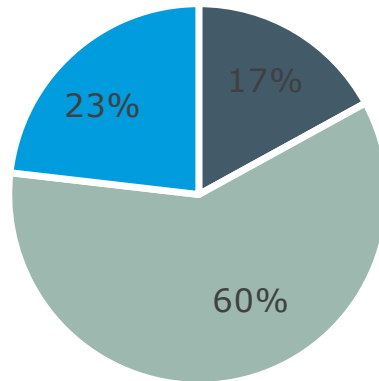
The potential is estimated 324.000 tonnes.



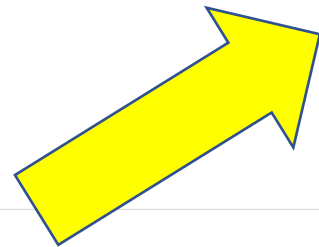
Development in tonnes collected wood in Albertslund Municipality

Qualities

Devison on qualities (based on sorting of 60.000 tonnes)



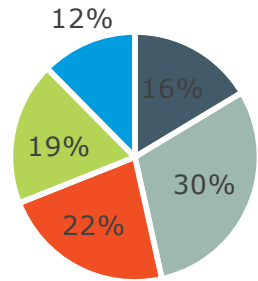
■ A1 ■ A2 ■ X1



It still looks like this



Division of qualities, Randers Municipality (6.5 tonnes sorted)



■ A1 ■ A2 - clean ■ A2 - chip board ■ A2 - masonite ■ X1



A2 Masonite



A2 Chip board



A1



A2 Clean



X1

Recycling

All most all indoor wood is recycled as chip board. In DK there is one chip board manufacturer – Kronospan. 70-80% of their chip board is recycled wood.

The wood that Kronospan cannot use, is sold to chip wood producers in Germany and Poland. Or incinerated

.....but the market is completely flooded

Impregnated wood is incinerated in Germany



Alternative recycling-opportunities





Business model



**Udvikling af en ny
forretningsmodel og
kontakt til potentielle kunder**

Virksomheden Advance Nonwoven A/S



Case





Business model

Stea sells wood packaging; pallets, slabs, etc.

- They take back disposable pallets and other wood packaging
- They repair
- Items that cannot be repaired and resold, is incinerated. The heating is sold to the local town

Advantages and barriers for recycling

Advantages

- Relatively/ mostly dry
- No cost or even a small positive price of raw materials
- Branding

Barriers

- Problematic substances
- Foreign objects
- Sorting is necessary (?)
- Low price of competing raw materials