Exercise 4b.2: Lifecycle Assessment of insulation materials (2/2)

Estimated time requirement: 20 minutes

Introduction

This second part on lifecycle assessments (LCA) will focus on the material with the biggest global warming potential: flax insulation.

Please form groups of four to five persons and work on the task below.

Part	Tasks	Time
4	Simplified overview of the life cycle of flax insulation products is presented in the figure in the background information, as well as Inventory results for emissions to air for the three insulation materials. Analyze the provided information and discuss possible reasons for the high impact potential of flax. Identify lifecycle stages that have particular high impact. Note your findings on worksheet 3.	20 min

Flax insulation

- Based on flax plant (*Linum usitatissimum*)
- Large-scale agricultural production
- Large amounts of additive material needed to achieve the requested and desired technical properties (mostly polyester, also diammonium hydrogen phosphate and borax)
- Binder materials are melted and then mixed with flax raw material during production process
- Finished insulation material: no uniform product
- Used in construction sector: most sold product based on recycling material

Background information

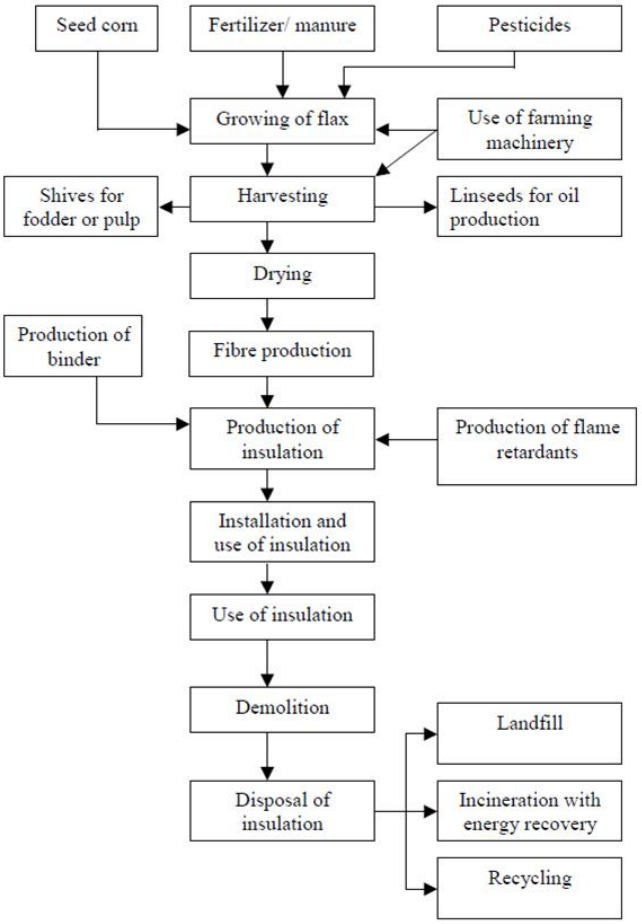

Figure 1: Simplified overview of the life cycle of flax insulation products (Source: Schmidt et al. 2003)

Table 1: Inventory results for emissions to air for the three insulation materials

Emission to air	Unit	Stone wool	Flax	Paper wool
CO_2 (fossil)	g	1421	2142	805
CO	g	105	2.0	1.0
SO_x	g	6.08	11.57	2.88
No_x	g	2.47	7.44	3.74
N_2O	g	0.02	0.41	0.01
CH_4	g	1.04	4.19	0.57
HCl	g	0.06	0.04	0
H_2S	g	0.03	0	0
Ammonia	g	2.37	0.02	0
Hydrocarbons (except CH_4)	g	0.21	2.2	1.22
VOC	g	0.7	0.85	0.39
Particulates	g	1.19	1.54	5.08

Worksheet 3

Task 4: Analyse the provided information and discuss possible reasons for the high impact potential of flax. Identify lifecycle stages that have particular high impact.

Space for your notes