

## Supplementary material

Table S1: Process contribution to indicator global warming for generation of 1 MJ of thermal heat from wood logs.

Process	Value	Unit	Percentage [%]
Harvesting	0.00069667	kg CO <sub>2</sub> eq	4.2
Transport	0.00042646	kg CO <sub>2</sub> eq	2.6
Wood logs preparation	0.00178792	kg CO <sub>2</sub> eq	10.8
Heating	0.013572636	kg CO <sub>2</sub> eq	82.3

Table S2: Impact assessment for categories considered for wood logs scenarios with respect to the transportation distance.

Impact category	Unit	1 MJ of thermal heat from logs_10 km	1 MJ of thermal heat from logs_15 km	1 MJ of thermal heat from logs_20 km
Global warming	kg CO <sub>2</sub> eq	0.016160933	0.016160933	0.016160933
Stratospheric ozone depletion	kg CFC11 eq	2.19E-07	2.19E-07	2.19E-07
Ozone formation, Human health	kg NO <sub>x</sub> eq	0.000169539	0.000169539	0.000169539
Fine particulate matter formation	kg PM <sub>2.5</sub> eq	9.50E-05	9.50E-05	9.50E-05
Ozone formation, Terrestrial ecosystems	kg NO <sub>x</sub> eq	0.000178028	0.000178028	0.000178028

Table S3: Impact assessment for categories considered for wood pellets scenarios with respect to the transportation distance.

Impact category	Unit	1 MJ of thermal heat generated from pellets_100 km	1 MJ of thermal heat generated from pellets_250 km	1 MJ of thermal heat generated from pellets_1000 km
Global warming	kg CO <sub>2</sub> eq	0.028089395	0.032884647	0.056860902
Stratospheric ozone depletion	kg CFC <sub>11</sub> eq	5.78E-08	5.85E-08	6.20E-08
Ionizing radiation	kBq Co-60 eq	0.003666675	0.00378232	0.004360547
Ozone formation, Human health	kg NO <sub>x</sub> eq	0.000190364	0.000217321	0.000352105
Fine particulate matter formation	kg PM <sub>2.5</sub> eq	0.000102584	0.000108221	0.000136411
Ozone formation, Terrestrial ecosystems	kg NO <sub>x</sub> eq	0.000195749	0.000223744	0.000363718
Terrestrial acidification	kg SO <sub>2</sub> eq	0.000133484	0.00014721	0.000215838
Freshwater eutrophication	kg P eq	1.14E-05	1.18E-05	1.40E-05
Marine eutrophication	kg N eq	1.70E-06	1.83E-06	2.50E-06
Terrestrial ecotoxicity	kg 1,4-DCB	0.2589892	0.3097387	0.56348621
Freshwater ecotoxicity	kg 1,4-DCB	0.001219335	0.001355418	0.002035834
Marine ecotoxicity	kg 1,4-DCB	0.001712087	0.001921948	0.002971256
Human carcinogenic toxicity	kg 1,4-DCB	0.002281156	0.002570827	0.004019185

<b>Human non-carcinogenic toxicity</b>	kg 1,4-DCB	0.043112479	0.047277163	0.068100583
<b>Land use</b>	m <sup>2</sup> a crop eq	0.045775801	0.045914968	0.0466108
<b>Mineral resource scarcity</b>	kg Cu eq	9.57E-05	0.000110045	0.000181713
<b>Fossil resource scarcity</b>	kg oil eq	0.007439127	0.008932178	0.016397432
<b>Water consumption</b>	m <sup>3</sup>	0.000266756	0.000277519	0.00033133

Table S4: Airborne emissions for wood pellets transportation scenarios.

Substance		1 MJ of thermal heat generated from pellets_100 km	Percentage [%]	1 MJ of thermal heat generated from pellets_250 km	Percentage [%]	1 MJ of thermal heat generated from pellets_1000 km	Percentage [%]
Carbon dioxide, fossil	kg CO <sub>2</sub> eq	0.023051962	82.1	0.027285408	83.0	0.048452634	85.2
Carbon dioxide, land transformation	kg CO <sub>2</sub> eq	0.000151325	0.5	0.000154054	0.5	0.000167697	0.3
Dinitrogen monoxide	kg CO <sub>2</sub> eq	0.001557702	5.5	0.001573635	4.8	0.001653303	2.9
Methane, biogenic	kg CO <sub>2</sub> eq	0.000257117	0.9	0.000259234	0.8	0.000269823	0.5
Methane, fossil	kg CO <sub>2</sub> eq	0.002958265	10.5	0.003494621	10.6	0.006176401	10.9
Sulfur hexafluoride	kg CO <sub>2</sub> eq	9.99E-05	0.4	0.000102295	0.3	0.000114142	0.2