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LIFE CYCLE ASSESSMENT OF ALUMINIUM RECYCLING: CASE OF ELECTRIC CABLES

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Goals of the Study

- Use Life Cycle Analysis (LCA) to compare aluminium production.
- Validate environmental benefits of mechanical recycling facing traditional melting recycling.
- Identify possible improvements for MTB recycling processes.

Product Description

- Mechanical recycling process, developed by MTB, can recycle all types of cables such as old or new scraps
- Only dry and mechanical processes are used by MTB
- The purity of MTB recycled aluminium overtake 99,5%
- Secondary aluminium used traditional melting method for recycling
- The purity of secondary aluminium is around 97%

Functional Unit

The impacts have been calculated according to the following reference :

“Produce one ton of aluminium, with purity above 97% in Europe, for end-user applications.”

Life Cycle Steps

The characterization of the compared systems is based on the life cycle steps presented on the Fig 1 below.

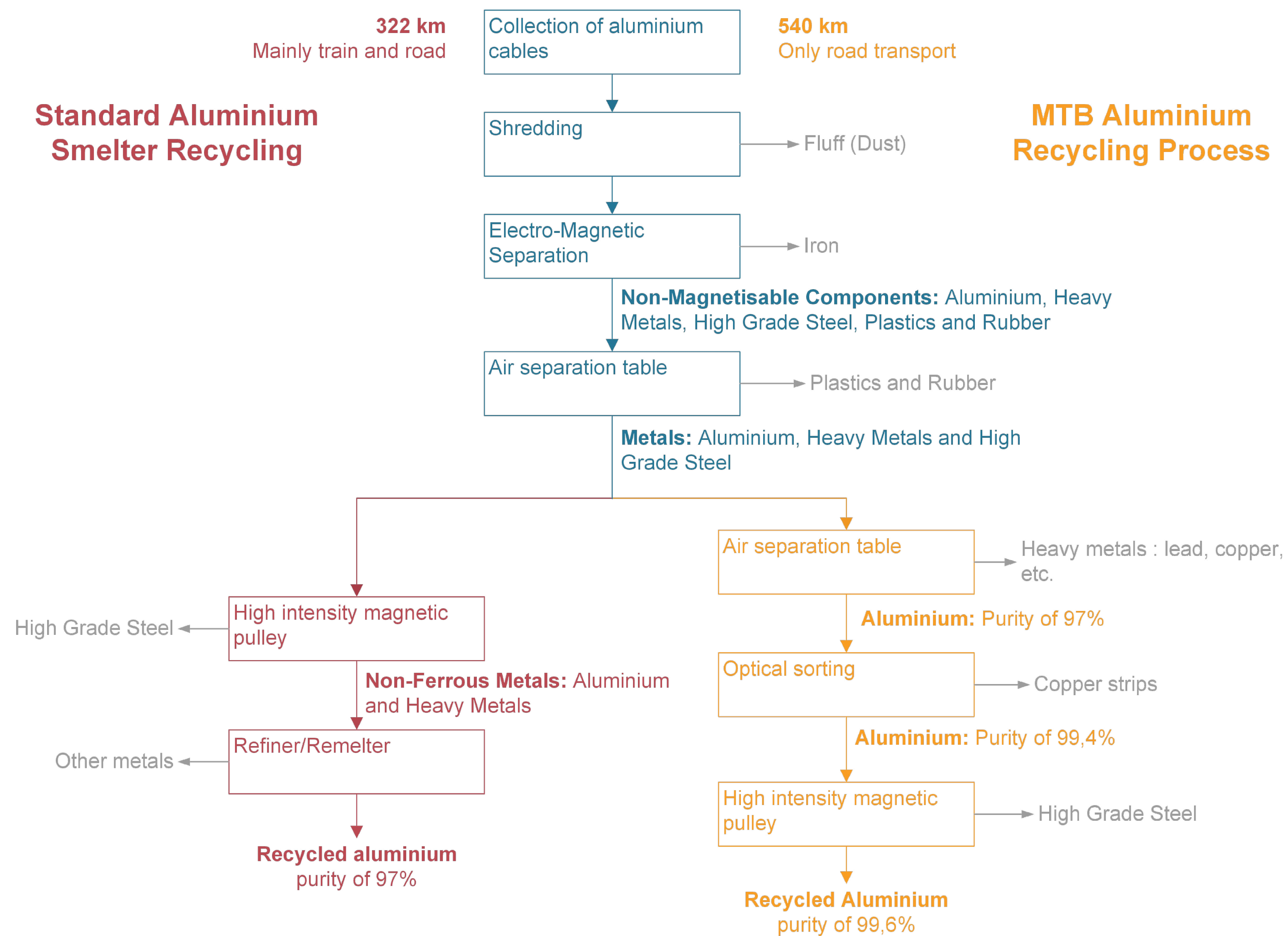
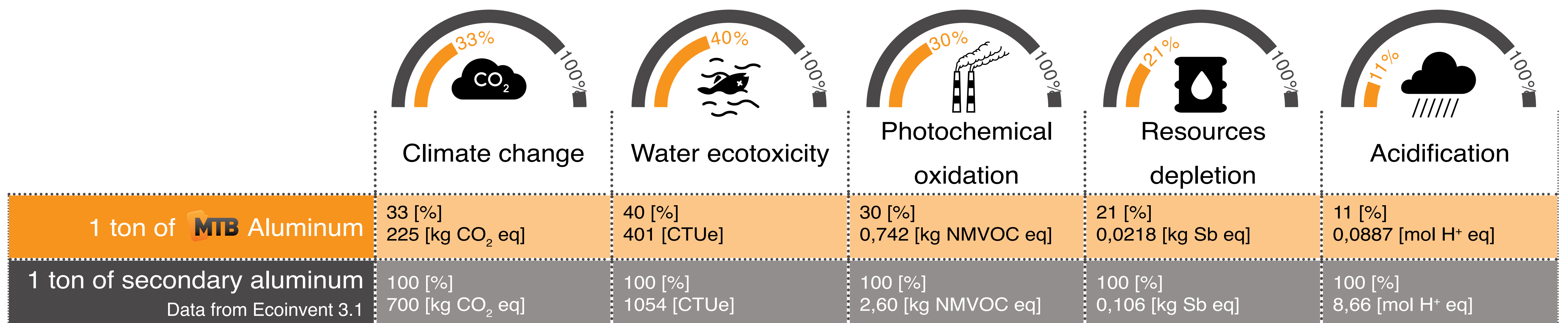
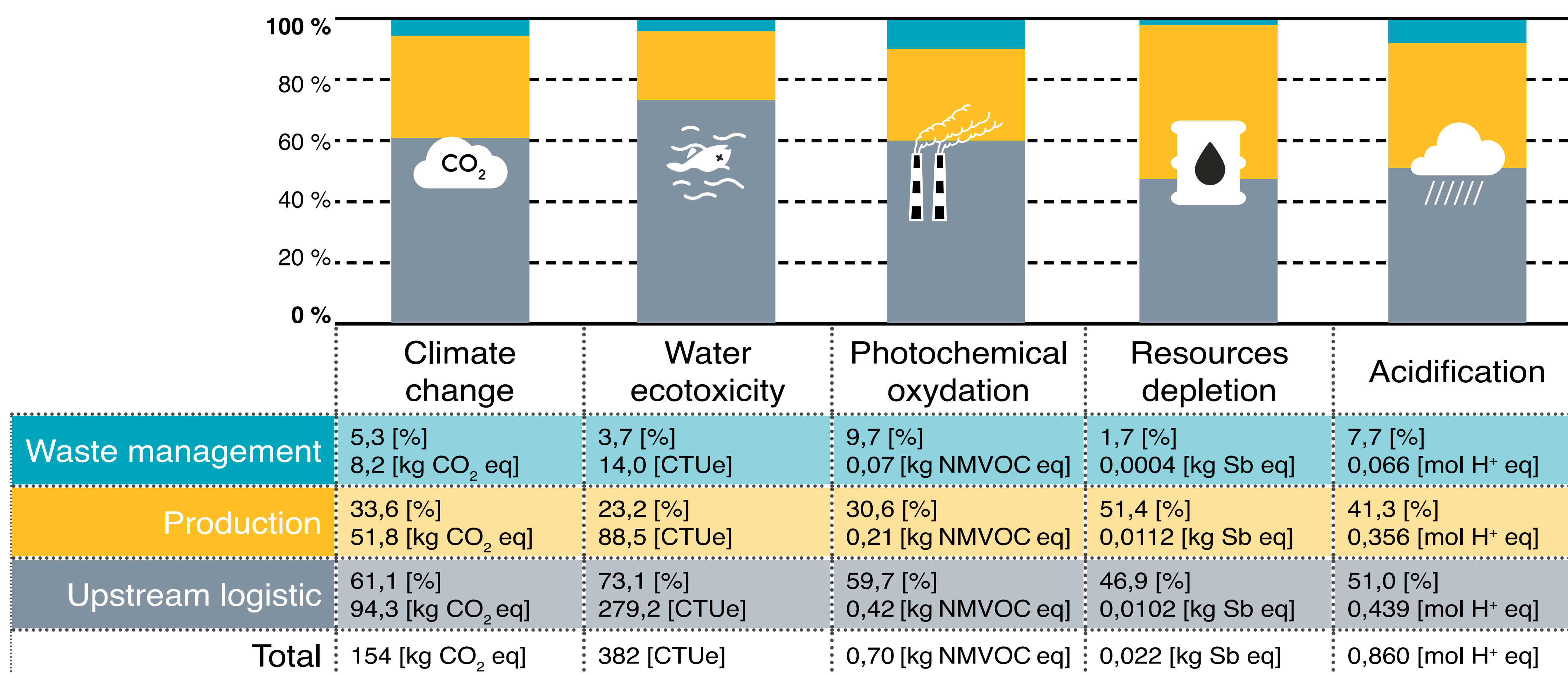


Fig 1 Life Cycle steps of the 2 recycling scenarios of the study

Recycled Aluminium Comparison



MTB Aluminium Characterization



Interpretations

- Upstream logistic is the main contributor in MTB system with an average impact of 35%⁽²⁾.
- Compared to traditional melting methods the environmental benefit of MTB technologies for aluminium recycling is around 60%⁽²⁾.
- Compared to aluminium from mining, MTB aluminium recycling allows impact reduction of 96%⁽²⁾.

⁽²⁾ Average on the 11 indicators set without weighting.

References

- Environmental assessment of aluminum recycling by MTB cold refining processes, published in March 2015.
- ISO 14025: Environmental labels and declarations — Type III environmental declarations, 2010.
- LCI data from database Ecoinvent v3.1 and indicators from ILCD 2011 MidPoint+ v1.05/EU27 method.
- Software data aggregation on SimaPro™ v8.0.4.30 Analyst.

Acknowledgment

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