

BIOMASS TRANSPORT FOR ENERGY

COST, ENERGY AND CO₂ PERFORMANCE OF FOREST WOOD AND MANURE TRANSPORT CHAINS IN SWITZERLAND

V. Schnorfa^{a,b}, E. Trutnevte^b, G. Bowman^a, V. Burg^{a,c}

^a Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Zürcherstrasse 111, 8903 Birmensdorf,

^b Université de Genève, faculté des sciences de l'environnement, Boulevard Carl-Vogt 66, CH-1211 Geneva,

^c Swiss Federal Institute of Technology Zürich (ETH Zürich), Institute of Environmental Engineering, John-von-Neumann-Weg 9, CH-8093 Zürich,

BACKGROUND

Promoting the use of new renewables, including biomass, is key to decarbonizing the energy sector. Biomass in Switzerland could double its contribution by 2050. Forest wood and manure still have a large unused sustainable potential. Transport represents a significant share of the final cost of the resource, requires energy and emits CO₂. However, there is a lack of data on the transport of biomass in Switzerland.

OBJECTIVES

1. Identify the main forest wood & manure transport chains in Switzerland
2. Calculate their costs (in Swiss francs CHF), energy requirements, and eq-CO₂ emissions per tonne of dry mass (t_{DM})
3. Calculate threshold transport distances
4. Compare the performance of transport between Swiss cantons

KEY RESULTS

- A total of 12 transport chains for four different feedstock (chips, firewood, solid and liquid manure) were identified and calculated.
- Costs vary between 24 and 244 CHF/t_{DM}. (Fig. 2)
- The performance of these chains varies significantly, leading to threshold distances of forest wood between 43 and 477 km and between 3 and 326 km for manure for costs.
- Distances of hundreds of kilometers are theoretically possible when it comes to energy or CO₂ emissions.
- Differences in feedstock type and category directly impact the cantonal performance (Fig. 3).

RESEARCH PARTNERS

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- Université de Genève, faculté des sciences de l'environnement
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METHODOLOGY

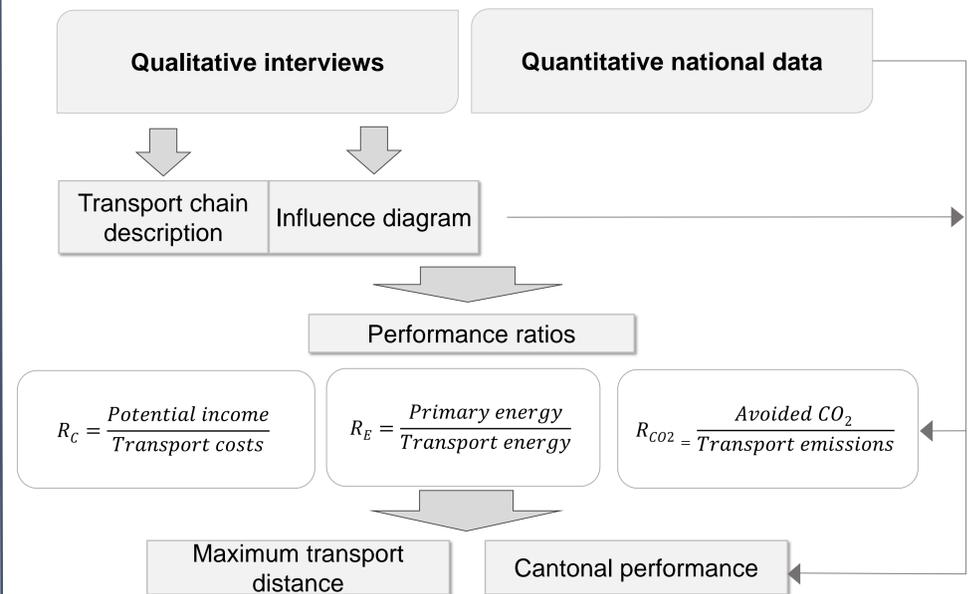


Fig. 1: Methodological framework

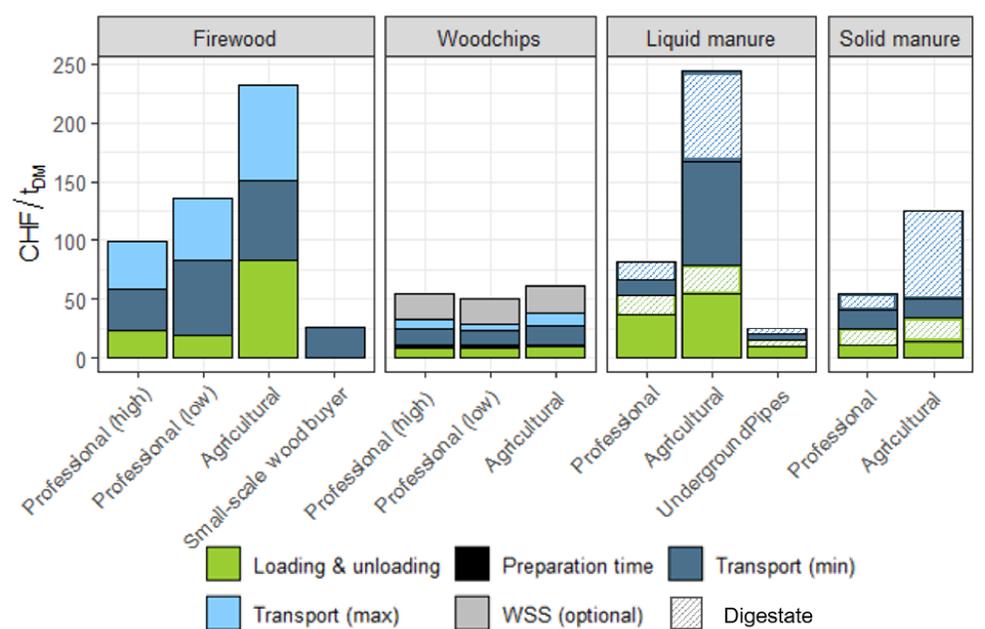


Fig. 2: Costs of the different transport chains

Economic performance forest wood (R_c)

Income : Transport costs

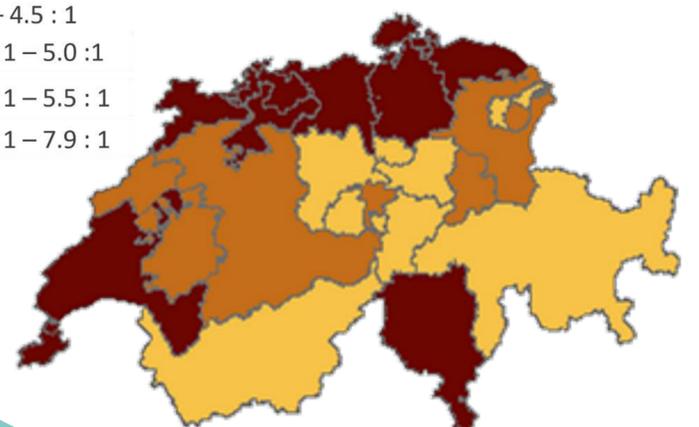
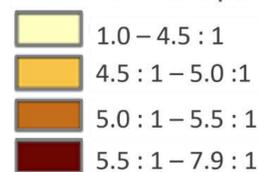


Fig. 3: Cantonal upscaling of the results