



Can heavy-duty road transport switch over to biogas?

*Kalle Aro,^a Antti Rautiainen,^b Kim Talus,^c
Anna Pääkkönen,^b Pami Aalto,^a Matti Kojo,^a
and Topi Rönkkö^{b 1}*

a = University of Tampere

b = Tampere University of Technology

c = University of Eastern Finland

Abstract [*Full text available in Finnish, see:*
<https://el-tran.fi/analyysit/>]

Heavy-duty vehicles are responsible for over 30% of the greenhouse gas emissions in the Finnish transport sector. During the last decade, no significant progress has been made and current mitigation efforts are heavily concentrated on passenger vehicles. However, in order to reach CO₂-reduction goals it is obvious that also heavy-duty vehicles have to switch over towards alternative fuels. In addition to climate and environmental benefits, utilization of biogas would benefit Finland also in other ways. As a domestic fuel, biogas would strengthen self-sufficiency of energy and especially transport sector. Successful biogas utilization would also support actors outside the traditional energy sector, such as farms and waste treatment.

The aim of this analysis was to estimate techno-economical potential of biogas² in the Finnish heavy duty-road transport, as well as potential obstacles which may hinder this development. Our findings show that by utilizing all technically available and economically feasible feedstock in biogas production, it is possible to cover over 40% of the energy consumption of trucks and

busses in Finland. Even with modest production levels, biomethane could fuel the whole Finnish bus fleet.

Utilization of biogas in transport sector has remained low during the last decades. A central issue lies with lacking political framework and implementation plan. Lack of comprehensive framework is prone to lead to incoherent political decisions, which often focus on limited parts of biogas value chain, instead of examining it as a whole. In transport sector, lack of gas delivery infrastructure and uncertainty of the future for gas operated vehicles pose significant barriers, as low demand does not encourage investments in biogas production. Role of biogas in heavy duty transportation could be strengthened by promoting it as a creditable political goal, by supporting creation of local biogas ecosystems, and by creating stable demand through public investments in gas operated vehicles.

¹ We also thank Fanni Mylläri and Jaakko Sorri for the comments.

² In this policy brief, biogas refers to the gas produced in the anaerobic digestion process.