

Use of renewable DME in domestic and commercial applications

A simple, clean-burning molecule with multiple applications

Renewable DME is a low-carbon, clean-burning and increasingly available fuel that can be used for heating and cooking in domestic and commercial settings which are not connected to a gas grid.

The challenge: global access to clean, reliable heating and cooking fuels

SUSTAINABLE DEVELOPMENT GOALS

Access to **affordable, reliable, sustainable and modern energy for heating and cooking is one of the UN's Sustainable Development Goals.**¹ It is essential for people to develop and thrive, and supports economies.



LPG is a clean-burning, portable and efficient fuel that is used by billions of people around the world **for cooking and heating in domestic and commercial settings**, particularly those without connection to a gas grid in both developed and developing economies.²



For developing rural communities, LPG can provide an **attractive alternative to traditional fuels** such as firewood, lowering indoor air pollution and reducing time spent collecting fuel.³



However, there is an increasing drive to replace fossil fuels such as LPG with low-carbon alternatives. **A blend of 20% renewable DME in LPG can be used from today in existing infrastructure**, to reduce the GHG emissions from domestic and commercial heating and cooking.

¹ THE 17 GOALS | Sustainable Development (un.org) ;

² Clean Cooking Alliance ; LPG Apps - An overview of the innumerable applications of LPG (lpg-apps.org)

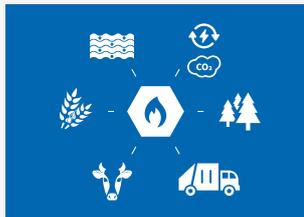
³ LPG Apps - An overview of the innumerable applications of LPG (lpg-apps.org) ; Cooking-with-Gas-Why-Women-in-Developing-Countries-Want-LPG-and-How-They-can-Get-It.pdf (wfp.org)

Renewable DME could provide a solution for off-grid domestic and commercial sector defossilisation



A simple product

Dimethyl-ether is a single molecule. Gaseous at room temperature and pressure, it is transported as a liquid in pressurised cylinders and tanks like LPG.



Renewable

Produced from a **wide range** of renewable feedstocks.



Numerous applications

rDME can be used in the transport sector, for cooking, as well as domestic and industrial heating.



Safe, clean & green

rDME can reduce GHG emissions by up to 85% compared to diesel and heating oil. Its use also significantly improves air quality.

Use of renewable DME in the off-grid domestic and commercial sectors

Customers currently using LPG



- Customers currently using LPG can use a **blend of 20% rDME in LPG with no modification** to their existing appliance or storage tank.



- This provides a simple way for customers to **increase the amount of renewable fuel they use, reducing GHG emissions**

Customers currently using other solid or liquid fuels



- Customers currently using heating oil, coal, traditional biomass, or other fuels **can switch to a 20% blend of rDME in LPG**.



- This would significantly reduce **SOx, NOx and particulate matter**, improving air quality and consequently customer health.³



- Use of rDME also significantly **lowers GHG emissions** compared to fossil fuels

rDME can be supplied using existing LPG infrastructure



- Delivery of a 20% rDME/LPG blend to domestic and commercial customers can be carried out using existing LPG delivery infrastructure: **in cylinders, or bulk transport by vehicle.**



- Use of a 20% rDME/LPG blend requires **no modifications to existing LPG equipment.**

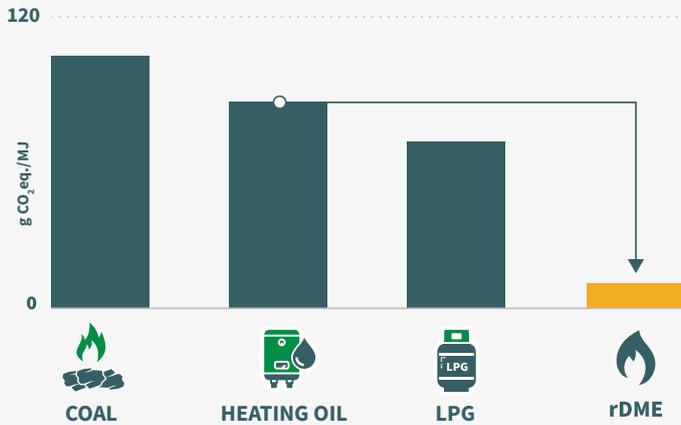


- Customers switching away from other solid or liquid fuels could move directly **to an LPG appliance and use a 20% rDME/LPG blend**

Sustainability

Carbon Intensity

- Up to 85% GHG emission reduction compared to diesel
- Can be produced from multiple renewable feedstocks including waste streams and residues, with a low GHG footprint



GHG
 UP TO **85%**
 GHG reduction saving could be higher if manure or in-process carbon capture are used

Air Quality



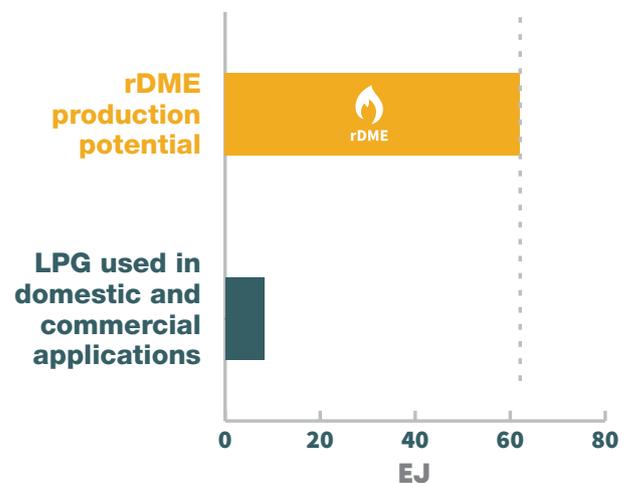
Heating oil, LPG and rDME: Prussi, M., Yugo, M., De Prada, L., Padella, M., Edwards, R. and Lonza, L., JEC Well-to-Tank report v5, EUR 30269 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19926-7 (online), doi:10.2760/959137 (online), JRC119036. ; Coal: BEIS (2019) <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

How can rDME use in domestic & commercial sectors be scaled up?

- ✓ **Support scale-up** in the production of rDME
- ✓ **Ensure that fuel standards** and specifications allow the use of an rDME/LPG blend in appliances
- ✓ **Include rDME in market-based support mechanisms** for the use of renewable fuel in domestic and commercial applications
- ✓ **Support the dissemination** of information on the potential use of rDME in domestic and commercial applications

Large production potential

The global rDME production potential easily exceeds total LPG use today in domestic and commercial applications.





www.shvenergy.com



www.aboutdme.org