Use of renewable DME in industry
A simple, clean-burning molecule with multiple applications

Defossilisation options, particularly for high-temperature industrial heating, are currently limited. rDME is a renewable fuel that can be used in a wide variety of industrial processes. It is clean-burning, increasingly available, and can reduce GHG emissions.

The industrial sector defossilisation challenge

Industrial production provides the goods that people require to live healthy and fulfilled lives.

Globally, industry adds around $13.8 trillion / year to the global economy, equivalent to around 17% of global GDP.¹

However, the industrial sector has high energy demands and GHG emissions: industry is responsible for approximately a third of global GHG emissions.² Pressure from policymakers and consumers is driving change.

Whilst some industries can be electrified, many high-temperature industrial applications will continue to require a chemical energy source. Renewable DME can be used from today with existing industrial infrastructure.

¹ World Bank, data refers to manufacturing sector only, based on most recent available figures (2018 for contribution to global GDP and 2019 for value add to global GDP in $)
² IPCC AR5 Report, data from 2010, and includes direct emissions from industry and emissions from electricity and heat required for industrial processes.
Renewable DME could provide a solution for industrial 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 industry

Industrial sites currently using coal and oil
- Are facing pressure to switch to lower-carbon fuels
- Can switch to a 100% DME boiler for roughly the same cost as a new LPG or natural gas boiler

Industrial sites currently using Gaseous Fuels
- Boilers currently using LPG can use a 20% DME/LPG blend with no modification
- Boilers currently using LPG or natural gas can be easily and cheaply converted to 100% rDME

rDME can be supplied using existing LPG infrastructure

Delivery of DME to industrial customers can be carried out using existing LPG delivery infrastructure with only minor modifications. DME is already transported commercially today.

Use of DME requires only minor modifications to existing LPG equipment. Industrial users switching away from heating oil or coal could move directly to a DME boiler.
**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

**Air Quality**
- Zero SO\textsubscript{2}
- Zero NO\textsubscript{x}

**How can renewable DME use in industry be scaled up?**
- Support scale-up in the production of rDME
- Ensure that fuel standards and specifications allow the use of rDME in industrial boilers
- Include rDME in market-based support mechanisms for the use of renewable fuels in industry
- Support the development of new industrial appliances which can use 100% DME
- Support the dissemination of information on the potential use of rDME in industrial applications

**Large production potential**
The global rDME production potential is roughly equal to the entire global fuel requirement from industry.

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Feedstock data: IRENA (2014) Converted to DME production based on 0.02 Mtonnes DME / PJ feedstock
Current fuel consumption in industry from IEA (2020) - Data reflects 2018 data