



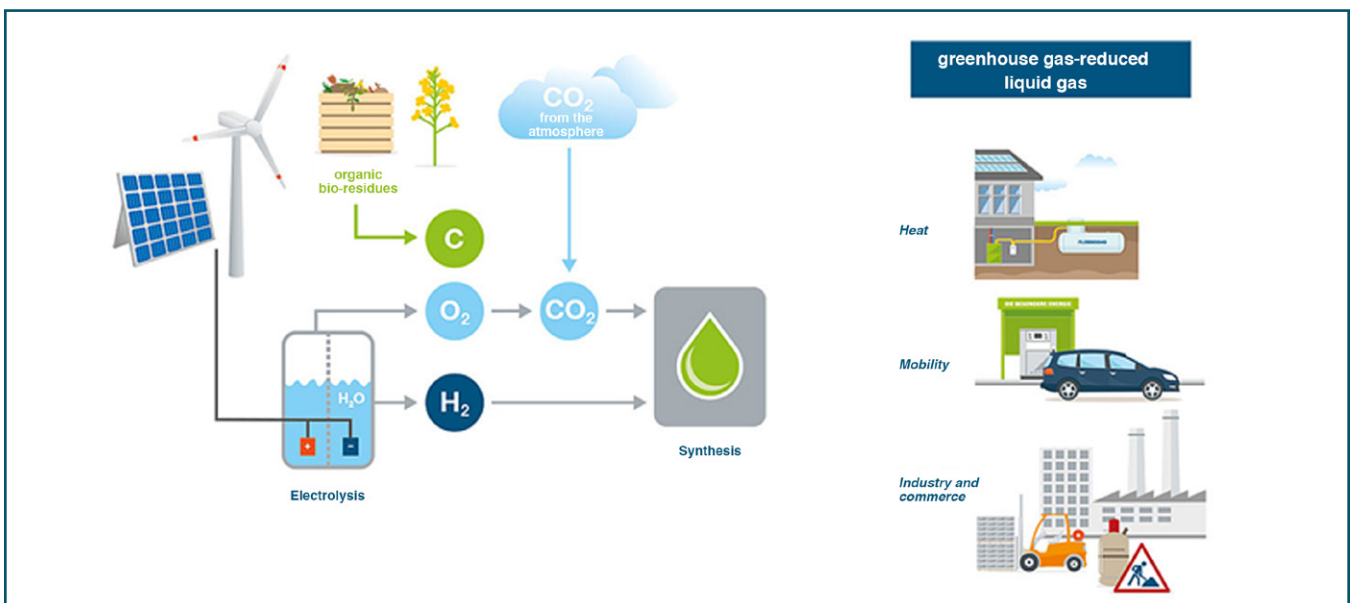
# Synthetic fuels

## Synthetic Liquid gas LPG

*Production: electrolysis and Fischer-Tropsch synthesis*

Synthetic liquefied gas is produced with the help of carbon, hydrogen and regeneratively generated electricity: conventional water is first split into its components - hydrogen and oxygen - by electrolysis. To produce hydrocarbons such as propane and butane, carbon from the air, exhaust gases or carbon of biogenic origin is also required. Further processing is carried out by means of Fischer-Tropsch synthesis - a proven process that allows a wide range of hydrocarbons with different chain lengths can be generated. Up to now,

Fischer-Tropsch synthesis has mainly been designed to produce longer hydrocarbon chains than propane or butane. However, the optimization of process parameters such as pressure and temperature as well as the development of new catalyst compositions can in future ensure yields of up to 35 percent liquefied gas. The other hydrocarbons produced in this process can also be used as liquid fuels or industrial applications, for example as process oils.



### Synthetic liquid gas fits perfectly into the concept

Liquefied petroleum gas is an ideal partner for establishing e-fuels, because it is a grid-independent well memoryable and storable energy. Synthetic liquefied petroleum gas would thus be particularly well suited for flexible use across different sectors. The high energy density is also important

here of liquid gas: At approx. 12.9 kWh/kg, liquid propane, for example, has an energy storage density that is about 65 times higher than that of modern lithium-ion batteries. They store only 0.2 kWh per kilogram and are used in electric and hybrid vehicles.

Sources: <https://www.welt.de/wirtschaft/energie/article134236409/Aus-CO2-und-Wasser-macht-diese-Anlage-Benzin.html>  
<https://www.moto.ch/e-fuels-aus-abgas-wird-kraftstoff/>