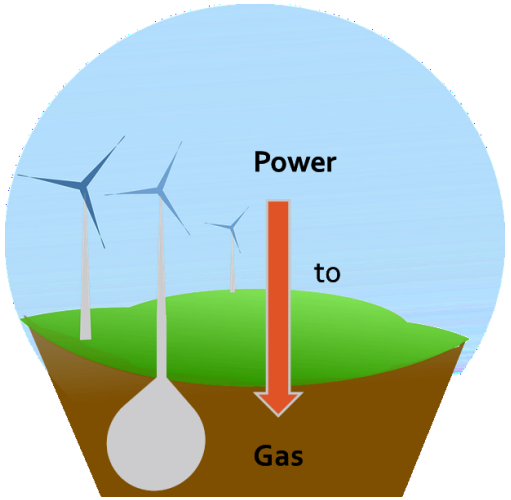
Power-to-gas

- Uses electricity to produce hydrogen- a flammable fuel that can be used to generate electricity or as a transport fuel.
- Producing hydrogen using electricity is not very energy efficient but, once it is made, hydrogen can be stored for long periods without losing energy.
- Hydrogen can also be used as a heating fuel. This would require expensive modifications of household appliances and the natural gas grid.
- Hydrogen can be combined with CO_2 to create synthetic natural gas which could be used without making changes to the gas network.



Power to gas from wind energy. Image adapted from Open Clipaart Vectors (2013), Creative Commons CCO

Key facts	
Technologies:	Hydrogen, synthetic natural gas (SNG)
Location:	National electricity & gas networks
Readiness:	Demonstration stage
Environmental impacts, safety and resource use:	• Hydrogen and SNG are highly flammable and pose a fire risk if not handled carefully. • Burning SNG releases CO_2 which contributes to climate change.

Applications

- Enables more renewables
- Storage across seasons
- Storage across hours & days
- Less network upgrades
- Use in remote areas
- Back-up power
- Transport fuel (hydrogen only)