



nature
energy

Next steps
for
biomethane

Biogas
PowerON

28-09-2023



SAFETY MOMENT

SAFETY ON SITE



Make sure that you can hear the fire alarm



Know what the fire alarm sounds like



Know locations for fire alarms, extinguishers, emergency exits, defibrillators and muster points

ON THE MOVE



Do not take this call, or any other call, while driving - ever



Do not use any hands-free device - Bluetooth, built-in, etc. - whilst driving

SAFETY IN OFFICE



Ensure confidential discussions are not overheard



Clean surfaces frequently



Make sure your workspace is ergonomically sound



Have an emergency and evacuation plan in place



Make sure your smoke alarms work

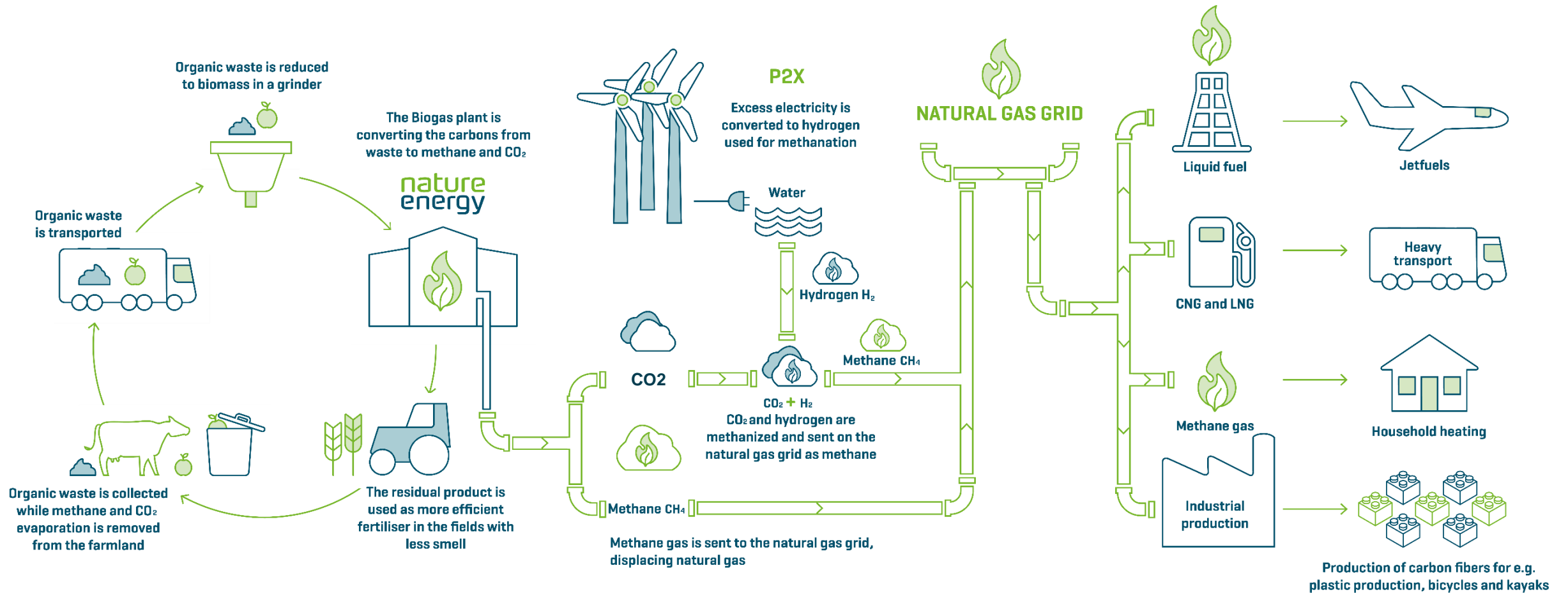


Maintain clear walkways and fire exits

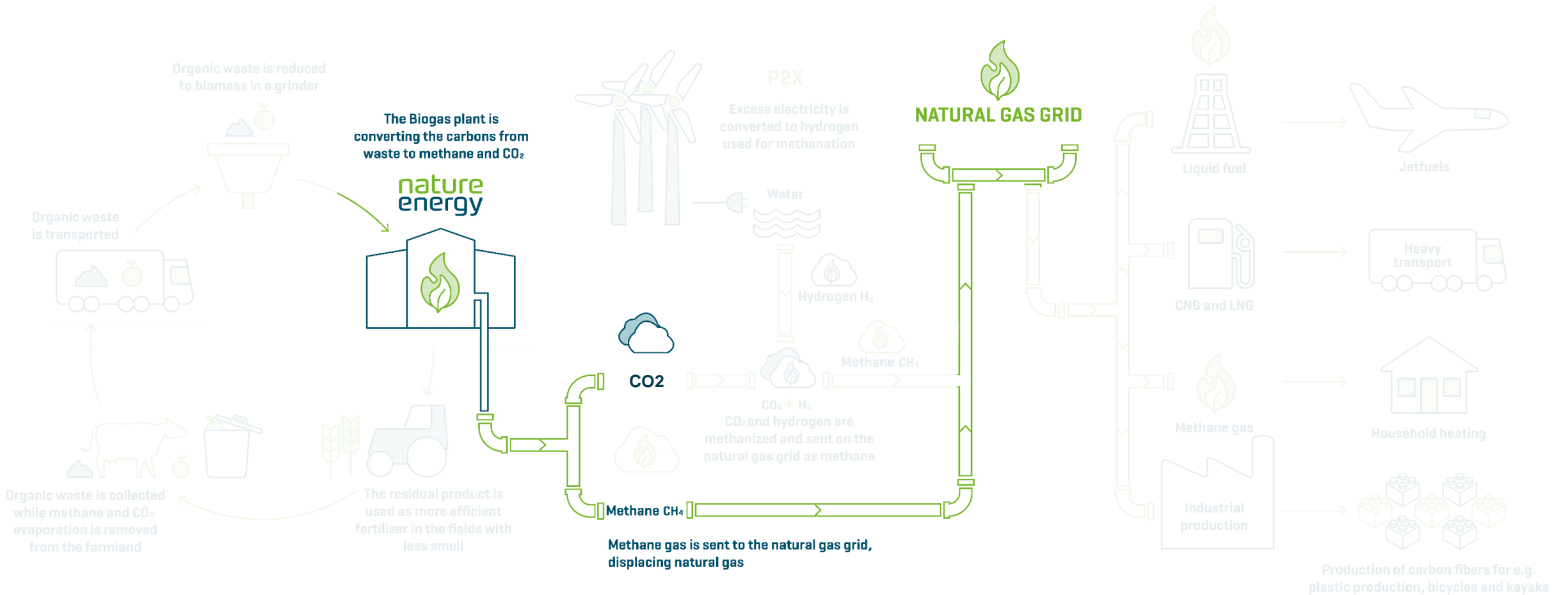


Ensure adequate lighting in the room when you work

From Heterogenous wastes to Homogenous products



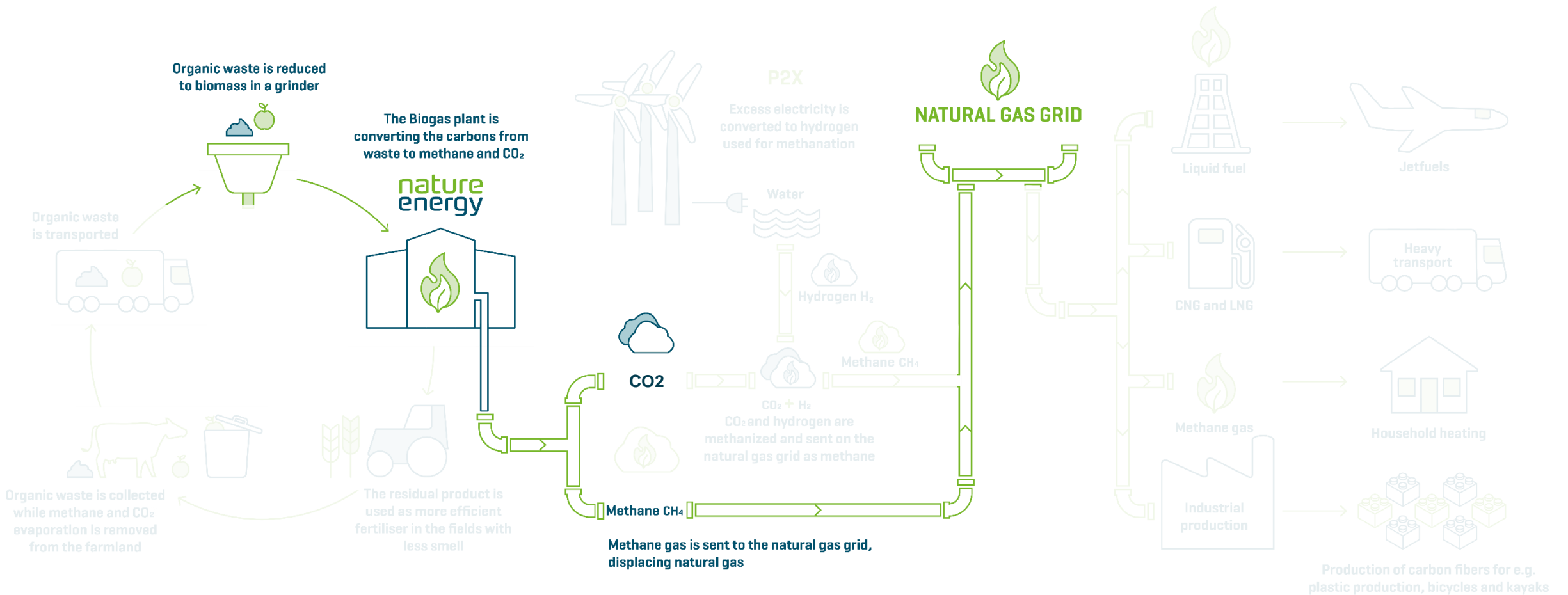
From Heterogenous wastes to Homogenous products



Biomethane is an awesome fuel

- Drop in substitution of a major fuel
- Infrastructure exists, locally, regionally and globally
- There is not enough, yet
- And it is, for now, more expensive than fossil gas
- If the willingness to pay was sufficient there would be much more

From Heterogenous wastes to Homogenous products

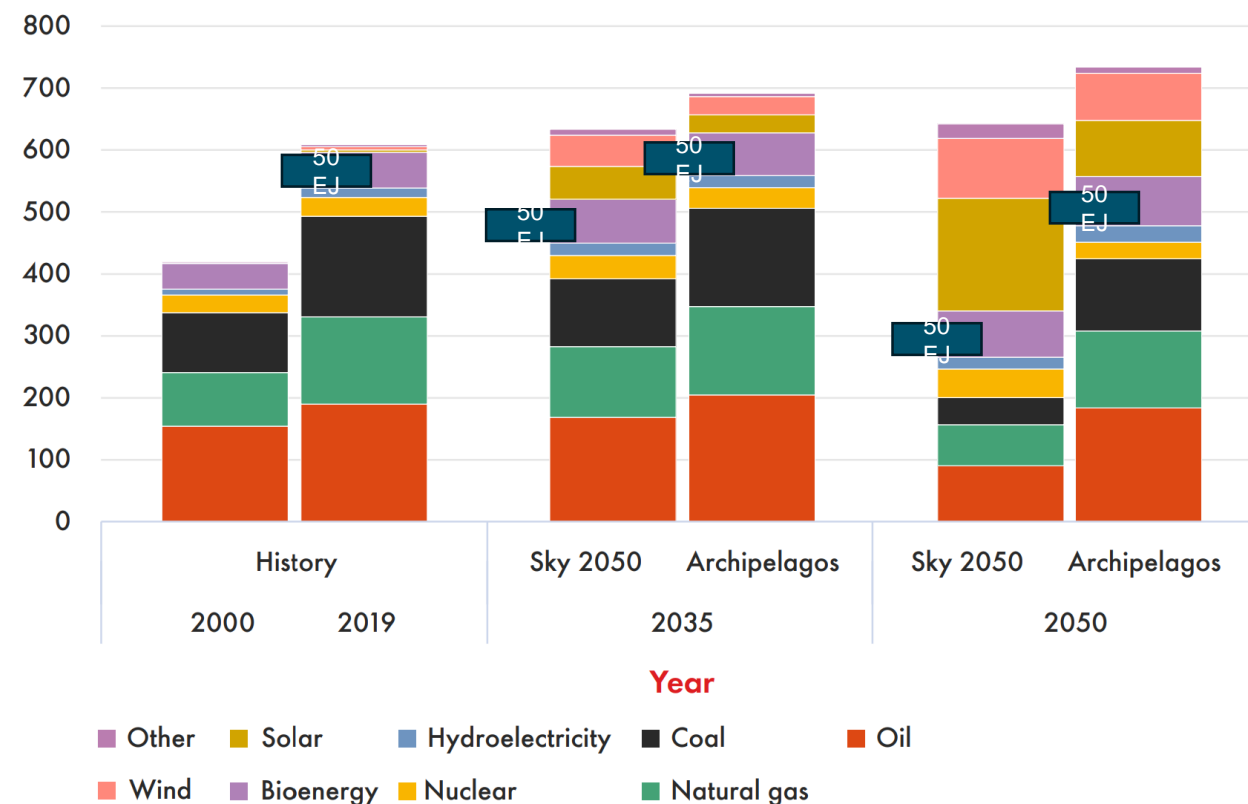


Biomasses are not endless

- Most bioenergy resources are in play already
- We are not restricting what can be done with biomass because it is too expensive
- But because there is not enough, and what is left is expensive to manage
- Next step for biomethane production is integrating with waste streams, not just agriculture

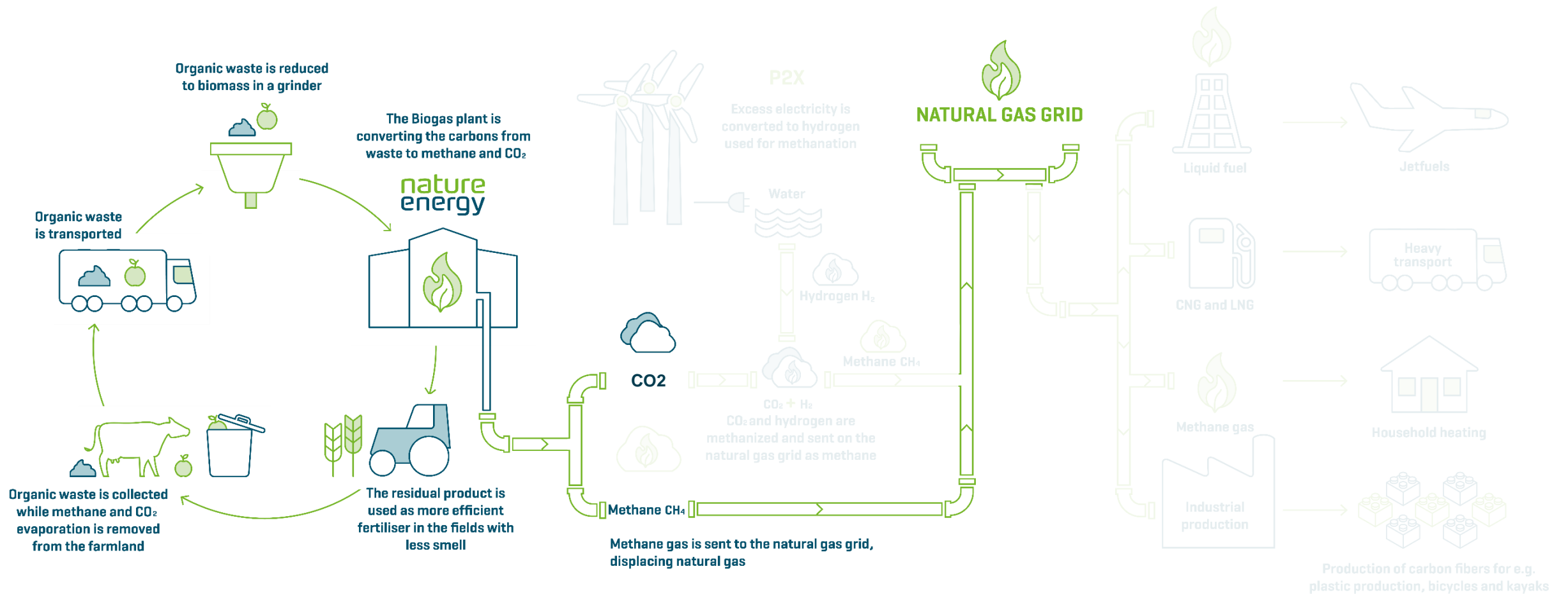
Primary energy trends to 2050

EJ/year



Source: Shell Energy Scenarios, The Energy Security Scenarios

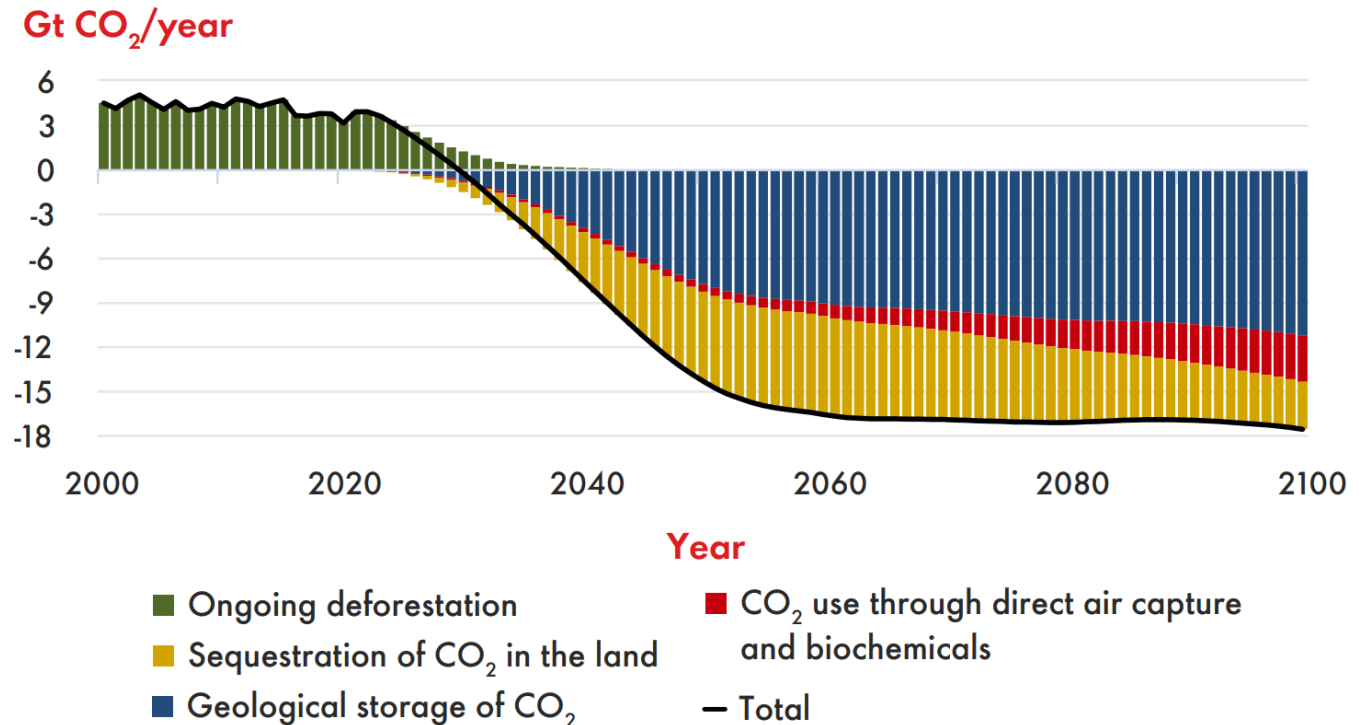
From Heterogenous wastes to Homogenous products



Land Use must adapt

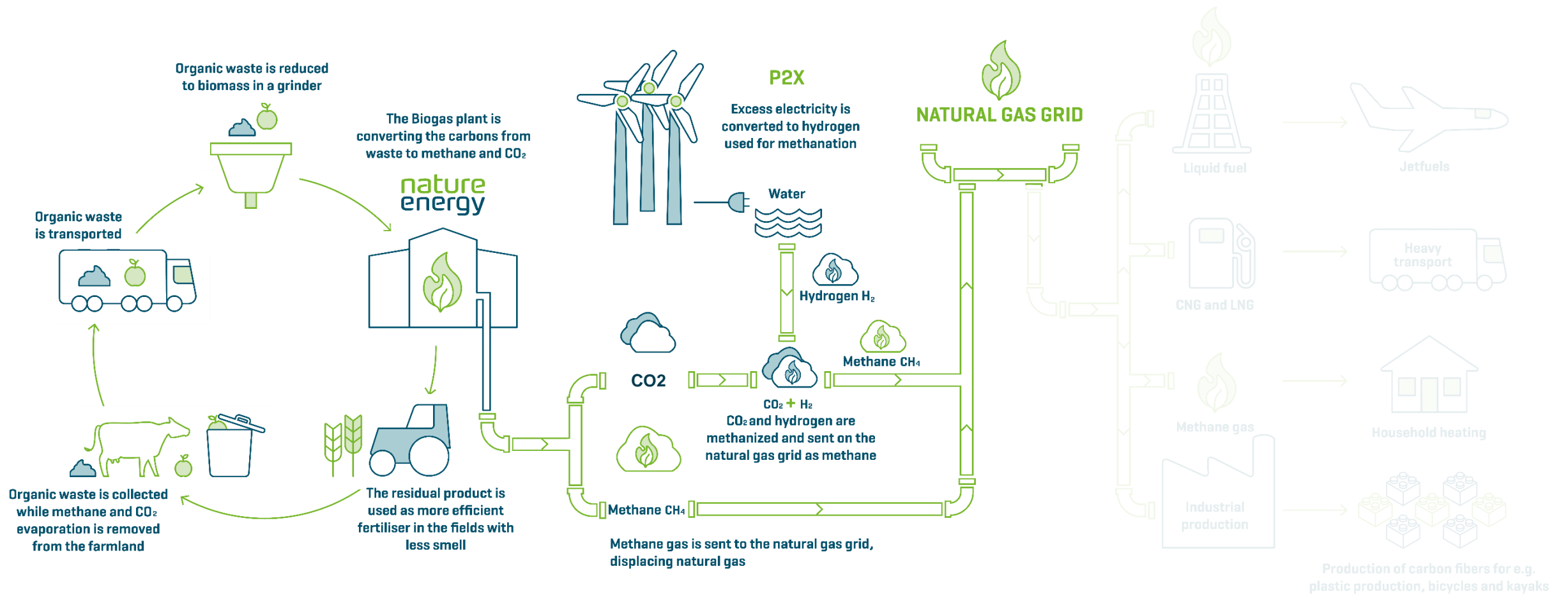
- Developing carbon sinks will be necessary
- Biochar and residues can improve agricultural land
- Increased return of nutrients to agriculture both reduces emissions from their production and improves yields
- Next step for biomethane is integrating with agricultural practices to help with land usage problems

Land use change and development of sinks – Sky 2050



Source: Shell Energy Scenarios, The Energy Security Scenarios

From Heterogenous wastes to Homogenous products

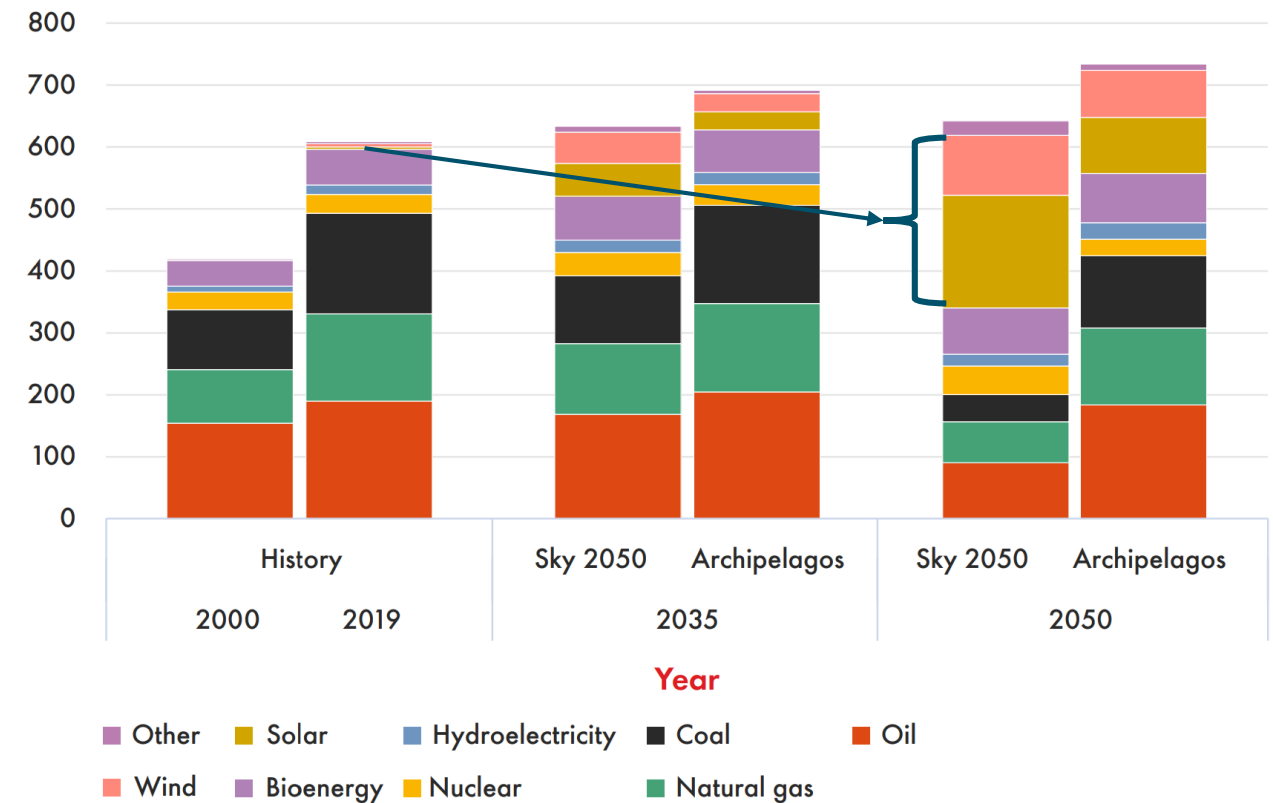


We are not running out of Electricity

- Intermittent power is expected to be very abundant
 - And needs to find a consumer when there is too much
- We are however short on CO₂ that we can freely use
- We think eMethane is awesome
- But equally methanol, SAF, and other electric fuels requires a carbon molecule to carry Hydrogen
- Next step for Biomethane production is integrating with PtX either locally or regionally

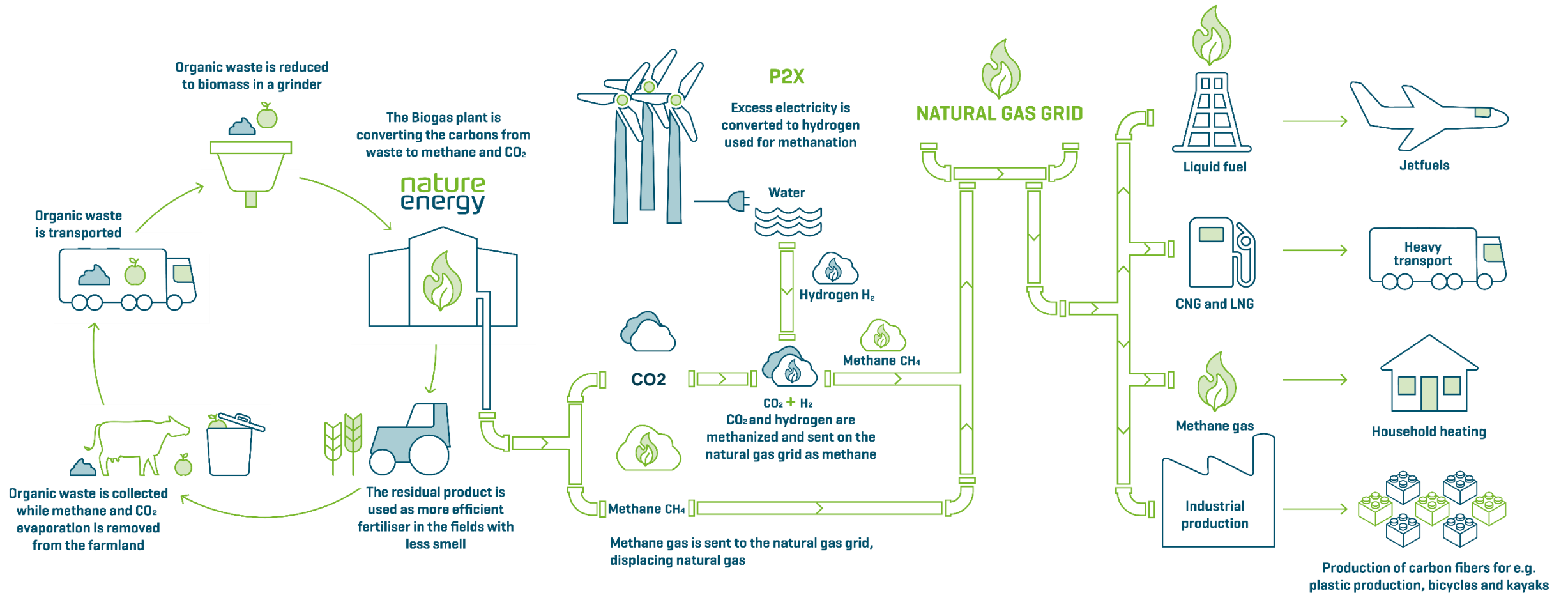
Primary energy trends to 2050

EJ/year



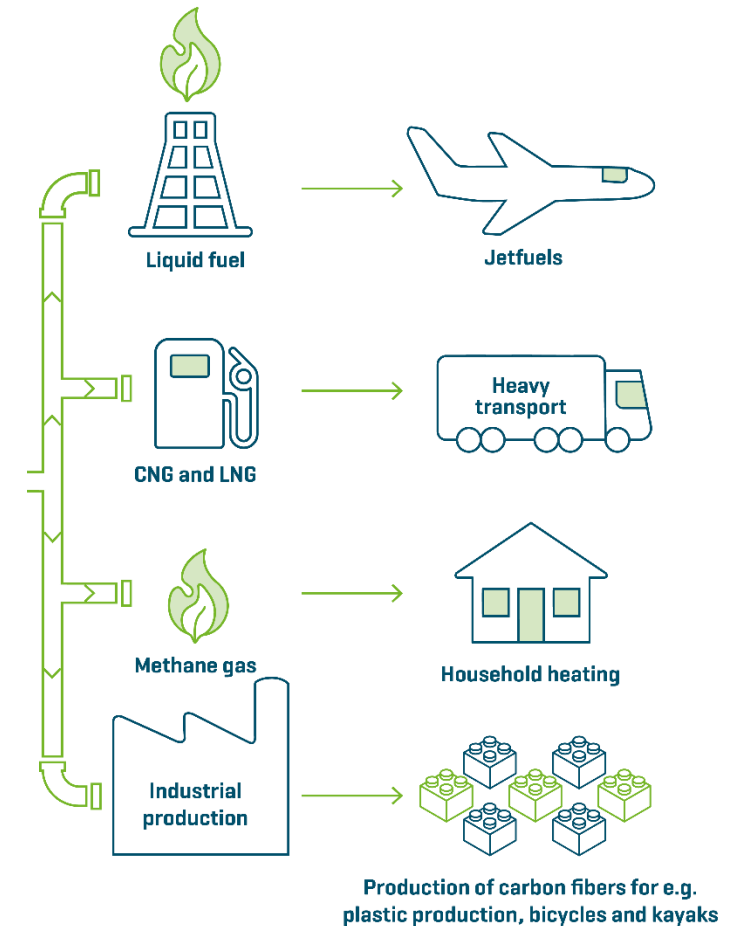
Source: Shell Energy Scenarios, The Energy Security Scenarios

From Heterogenous wastes to Homogenous products



Markets and political objectives will determine the best end use

- Markets and political focus changes quickly
- The right market and its requirements today will not be the same tomorrow
- This will bring changes from end users and regulation that must be adapted to quickly



THANK YOU FOR YOUR ATTENTION

Jonas Svendsen

Head of Innovation and Trading

Mobile: +45 40 34 18 52

E-mail: jcs@nature-energy.com