

Energy from biomass

Biomethane

A 'Carbon Neutral' Natural Gas

Rachael NUTTALL

Business Development Manager
Victoria, Tasmania & South Australia

ready for the resource revolution



SUEZ's main research programs (CIRSEE)

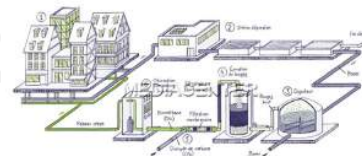
In line with our business objectives

1



Tomorrow's WWTP:
more efficient and
producing energy

2



MethaLab:
Production and use of
biogas from WWTPs
and other biowaste

3



PlastLab:
Production of
secondary raw
materials from waste

4



MemLab:
Advanced treatment
processes for drinking
water (micropollutants,
desalination)

5



Smart Water:
Aquadvanced, network
management & building
management

6



**Treatment processes
for water from oil & gas
exploration and
production**

SUEZ's main research programs (CIRSEE)

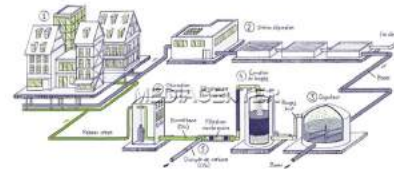
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SUEZ France June 2017



Valenton WWTP

- Anaerobic Digestion
- Thermal Oxidation
- Biomethane injection & BioLNG



Angers WWTP

- Enclosed Biofiltration
- AD
- Biomethane injection



SUEZ France June 2017

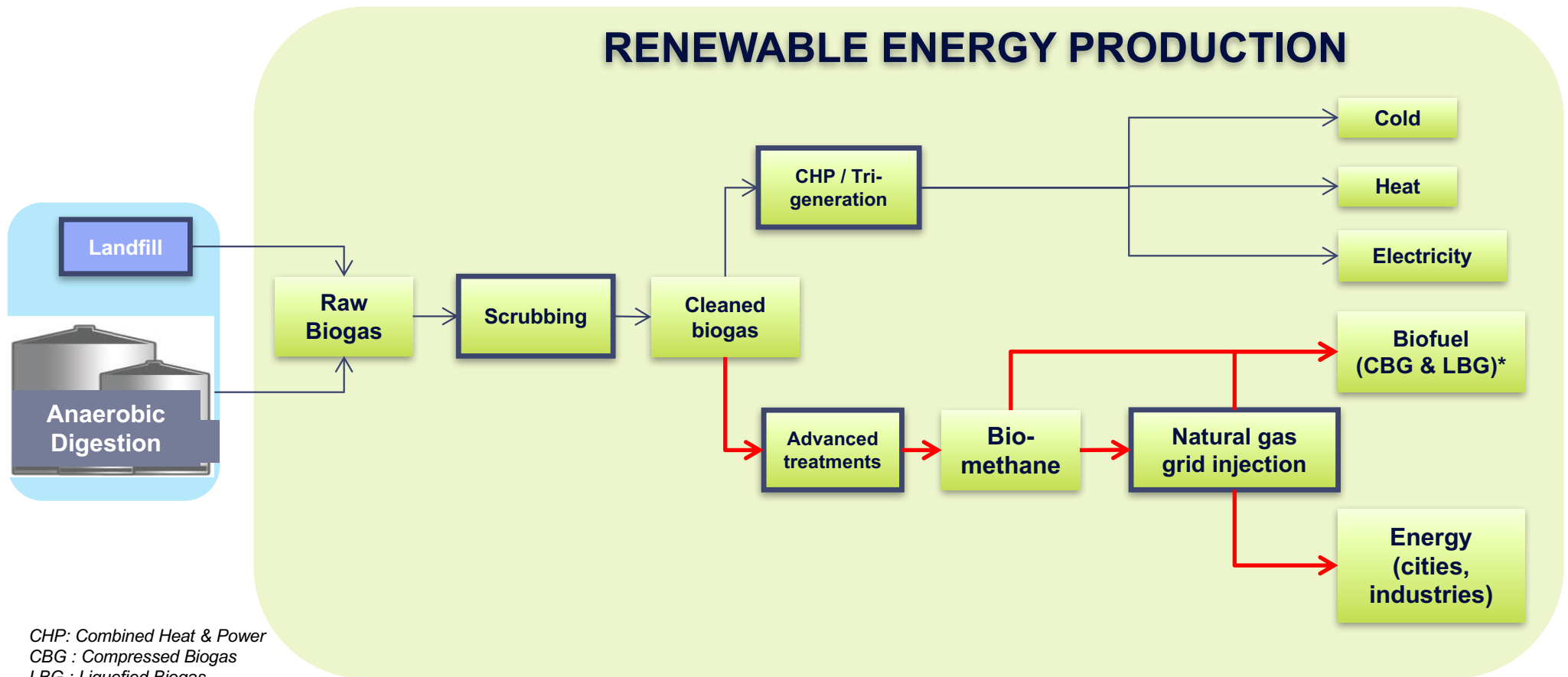


MBE W2E

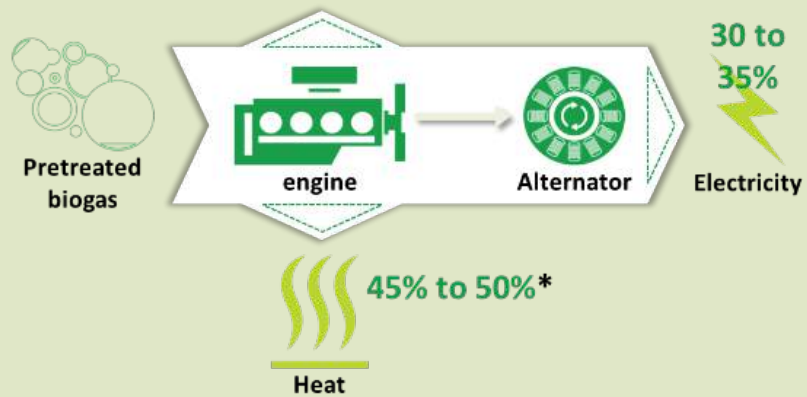
- Organic Waste feed
- Anaerobic Digestion
- Composting

Biogas

The different ways to utilise it



CHP – Combined Heat and Power Electricity and Heat



Biogas Features

- On-site recovered energy and heat (self-sufficient)
- Production & sale of electricity
- Heat injection into the grid for urban and industrial heating
- Applicable on any plant size

But :

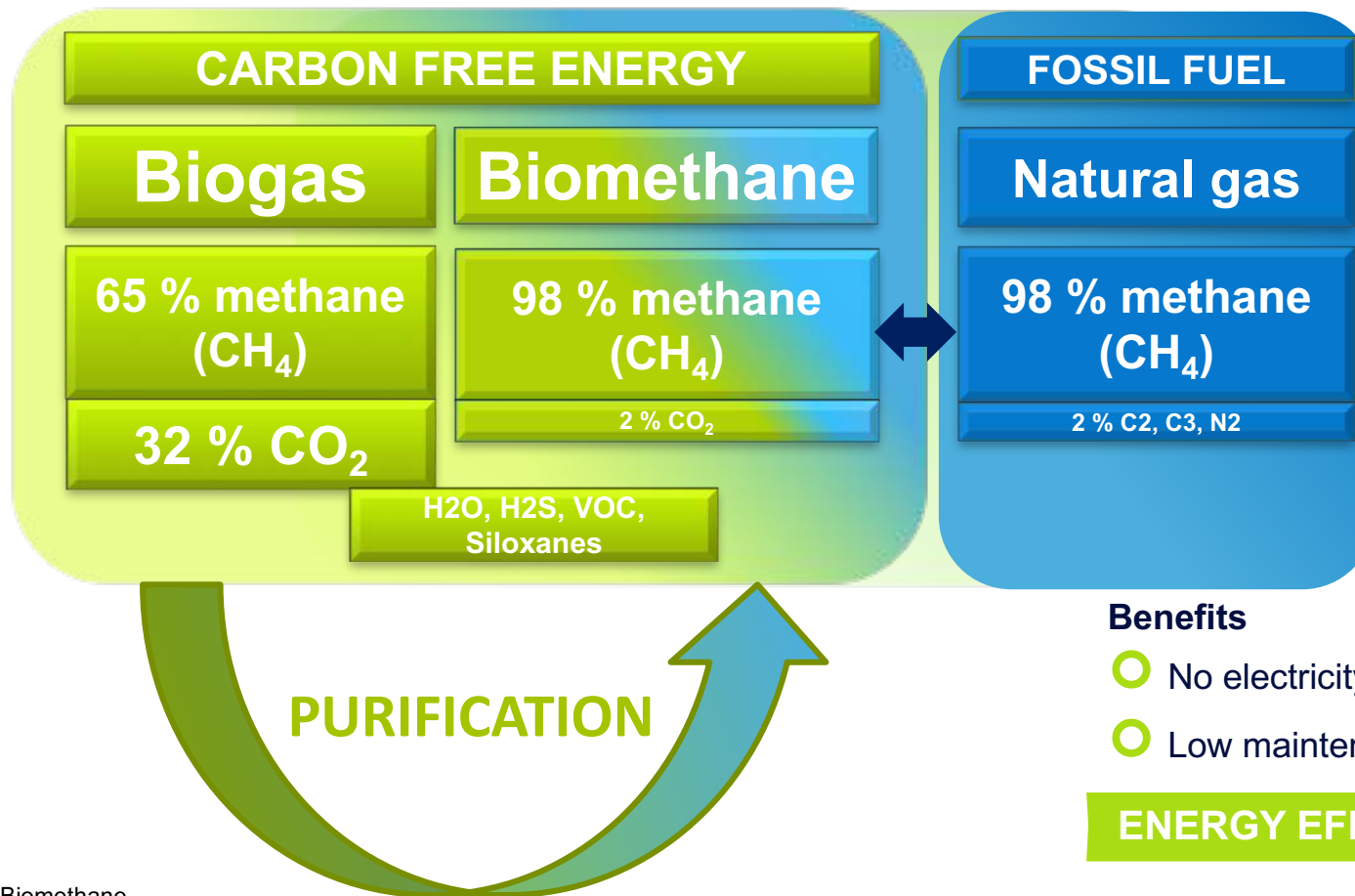
O&M costs often underestimated

Electricity yield often overestimated

* Heat utilisation

ENERGY EFFICIENCY MAX 85%

Biomethane by biogas upgrading

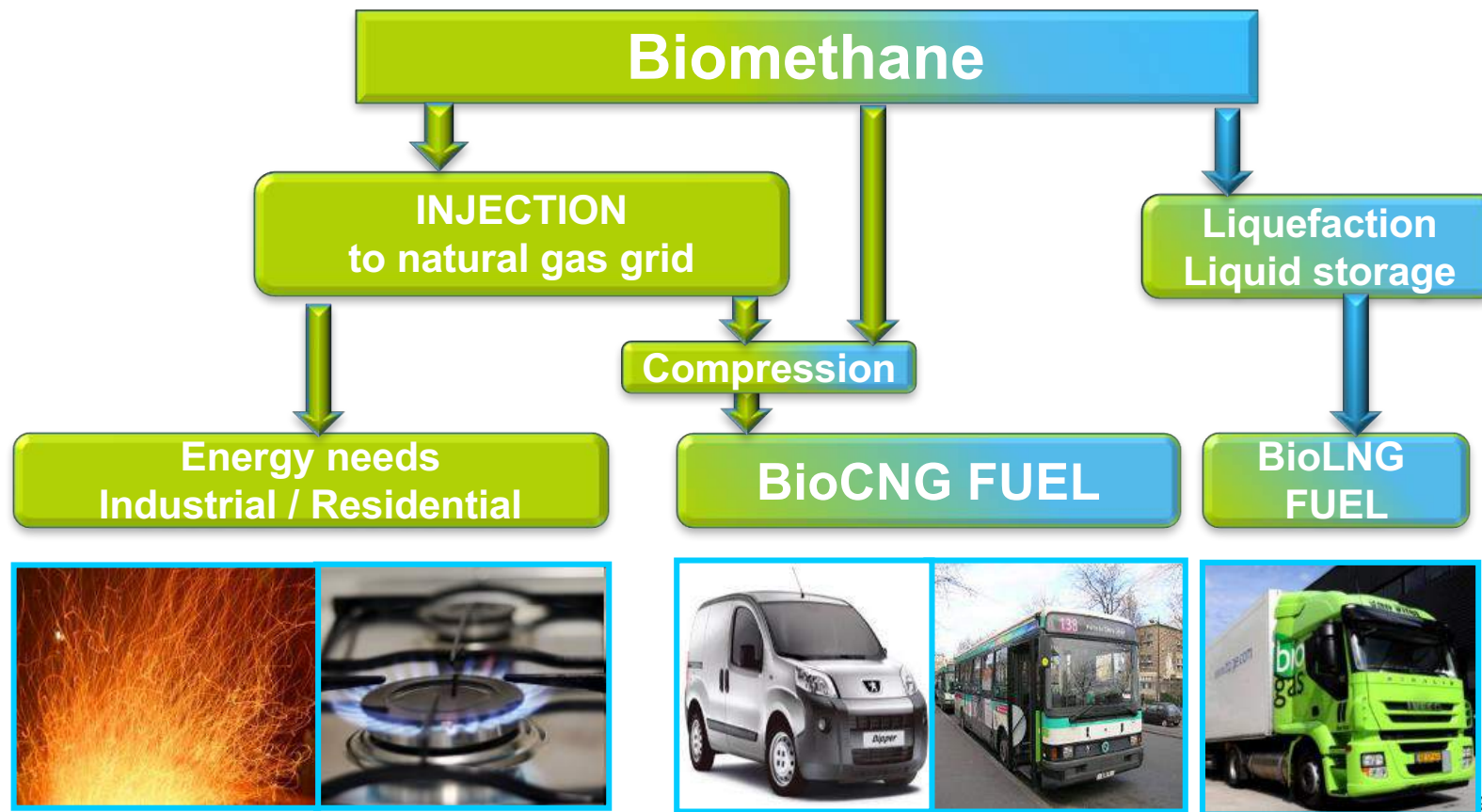


Benefits

- No electricity generation losses
- Low maintenance membrane process

ENERGY EFFICIENCY >99%

Biomethane utilisation channels



Biomethane In Australia

“Carbon Neutral”

1. Use of biomethane offsets fossil fuel use
2. A more efficient way of utilising biogas than electricity production
3. With similar credits to ‘green’ electricity production could be considered for Large Scale Generation Certificates (LGC’s).

Water for Victoria requires Victoria’s water corporations to be leaders in combatting climate change and find ways to reach **zero net emissions**, with metropolitan water authorities to achieve this goal by **2030**.

Biomethane In Australia

Recommendations

1. Compressed (BioCNG): Fuel for cars & buses
2. Liquefaction (BioLNG): 1000 x smaller storage, CO₂ recovery
3. Regulation to allow injection to gas network
4. Recognition as 'green' gas



La Roche sur Foron WWTP
BioCNG filling station

Water Authorities next marketing campaign???



**BE
SMART
CHOOSE
WASTE
WATER
NATURAL
GAS**

Supplied by your local
WW Recycling Plant



Thank you for your attention!

Rachael NUTTALL

Business Development Manager
Victoria, Tasmania & South Australia

SUEZ Water & Treatment Solutions

rachael.nuttall@suez.com

MOB : 0410 220 102

www.suez.com.au



Biomethane: Production at La Roche sur Foron



https://www.youtube.com/watch?v=WNw2VvI_ND8&t=0m46s