Biomethane Production and Utilization Pathways

Jan Stambasky – EBA President

EBA Biomethane Workshop

Brussels, 3.9.2015

EBA
European Biogas Association

European Biogas Association
25 countries – 34 National Organisations – 42 companies

www.european-biogas.eu
www.eu4biogas.eu

Biomethane Industry

- Including Anaerobic digestion ***followed by biogas upgrading***
- Including ***Gasification of renewable organic matter followed by syngas conversion to biomethane***
- Including other technologies ***producing methane fuel from biogenic carbon or utilizing biological pathways*** (Power-to-Gas)

EBA
European Biogas Association

Biomethane from Anaerobic Digestion

Biogas cleaning

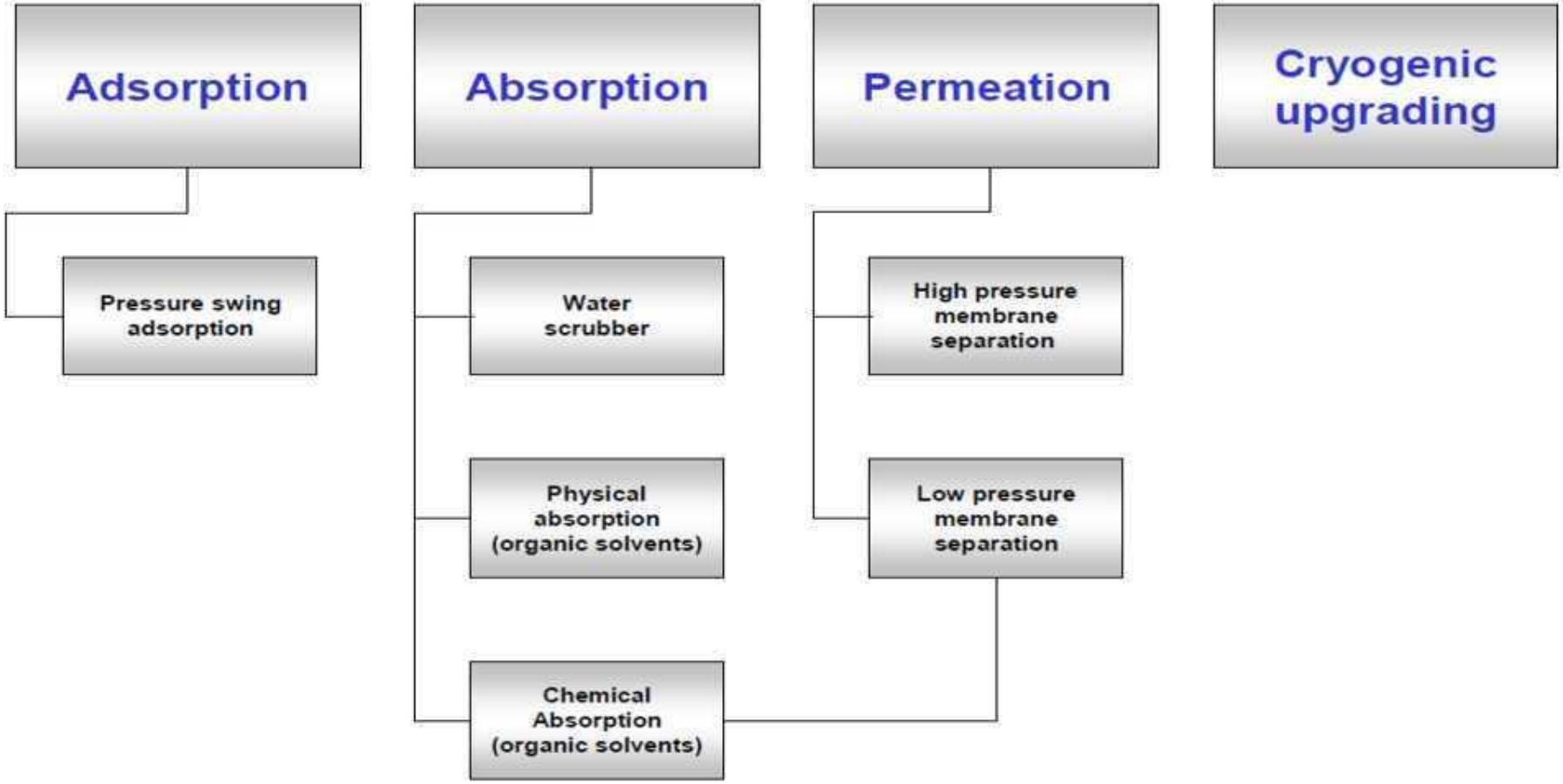
- Removal of trace impurities from the biogas like sulphane, ammonia, siloxanes etc.
- Removal of water droplets and moisture

Biogas upgrading

- Removal of carbon dioxide
- Removal of nitrogen in some special cases (landfill gas)

EBA
European Biogas Association

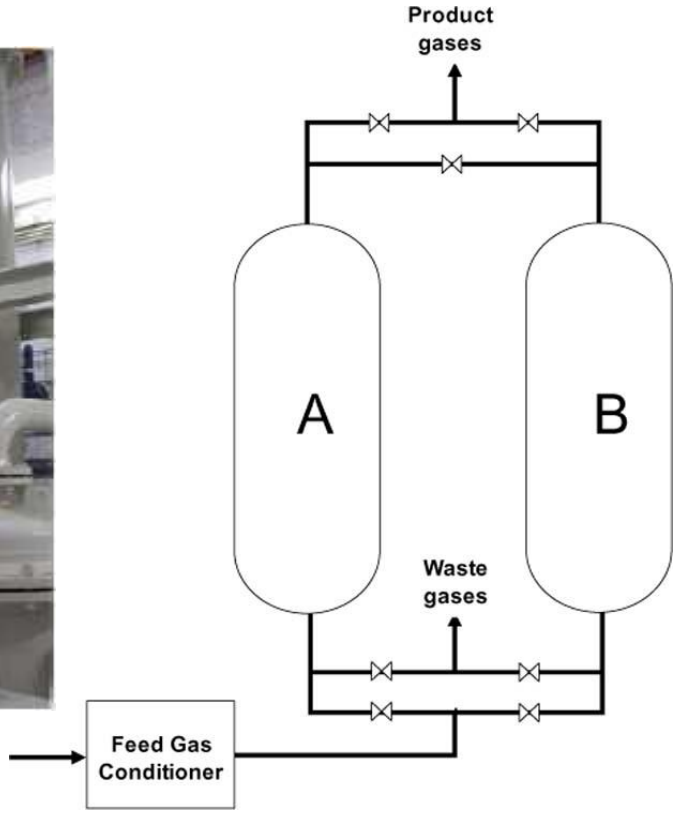
Biomethane from Anaerobic Digestion



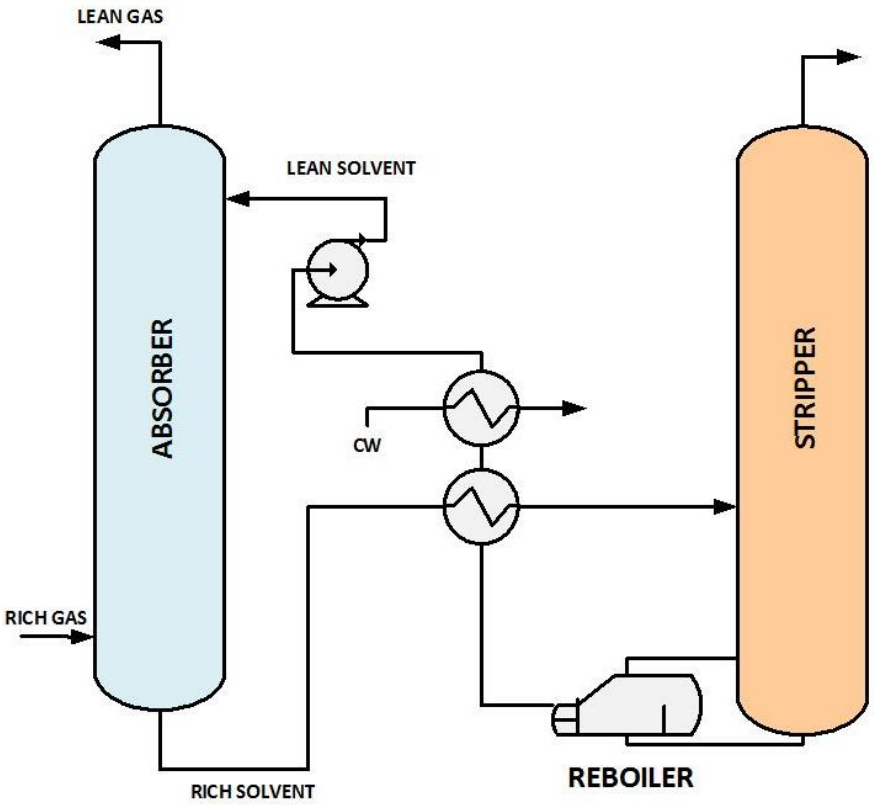
Source: www.biogasmax.eu

EBA
European Biogas Association

Adsorption Technology



Absorption Technologies

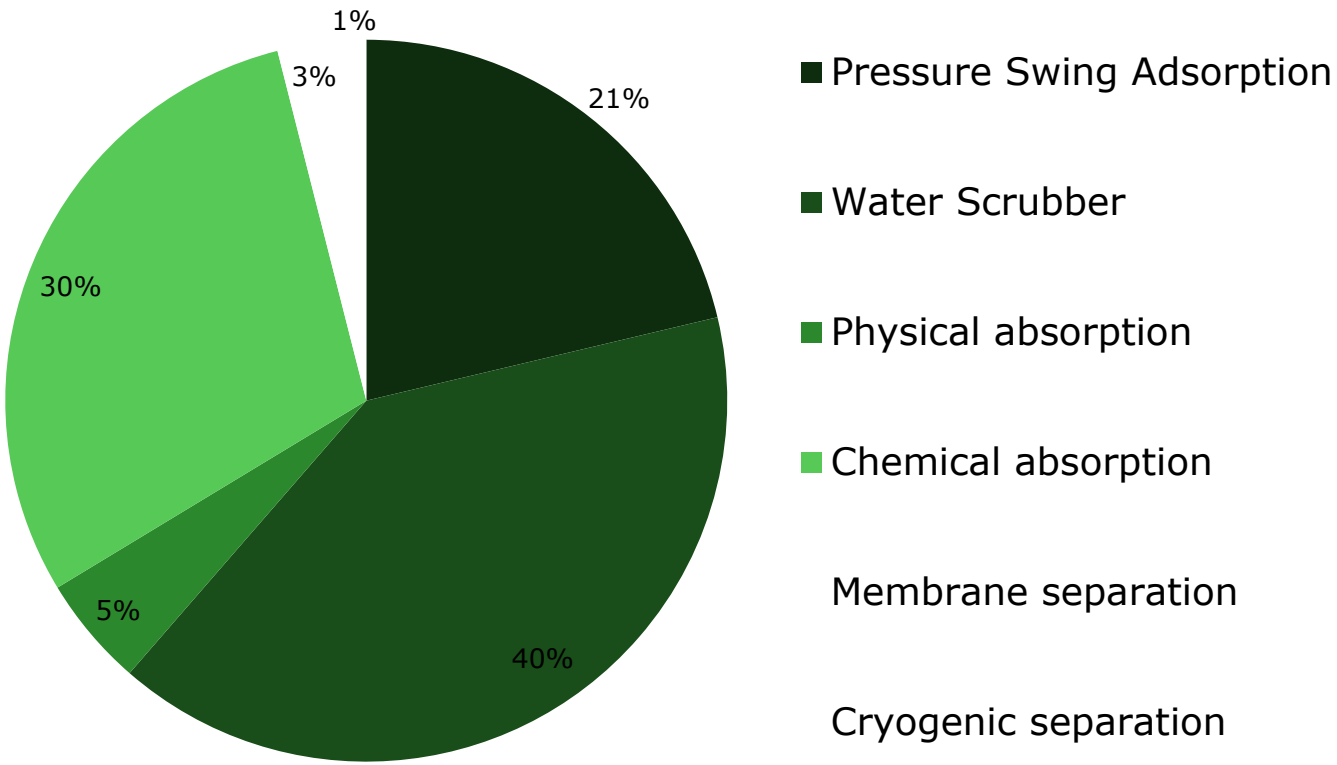


EBA
European Biogas Association

Membrane Separation

EBA
European Biogas Association

Biogas Upgrading to Biomethane

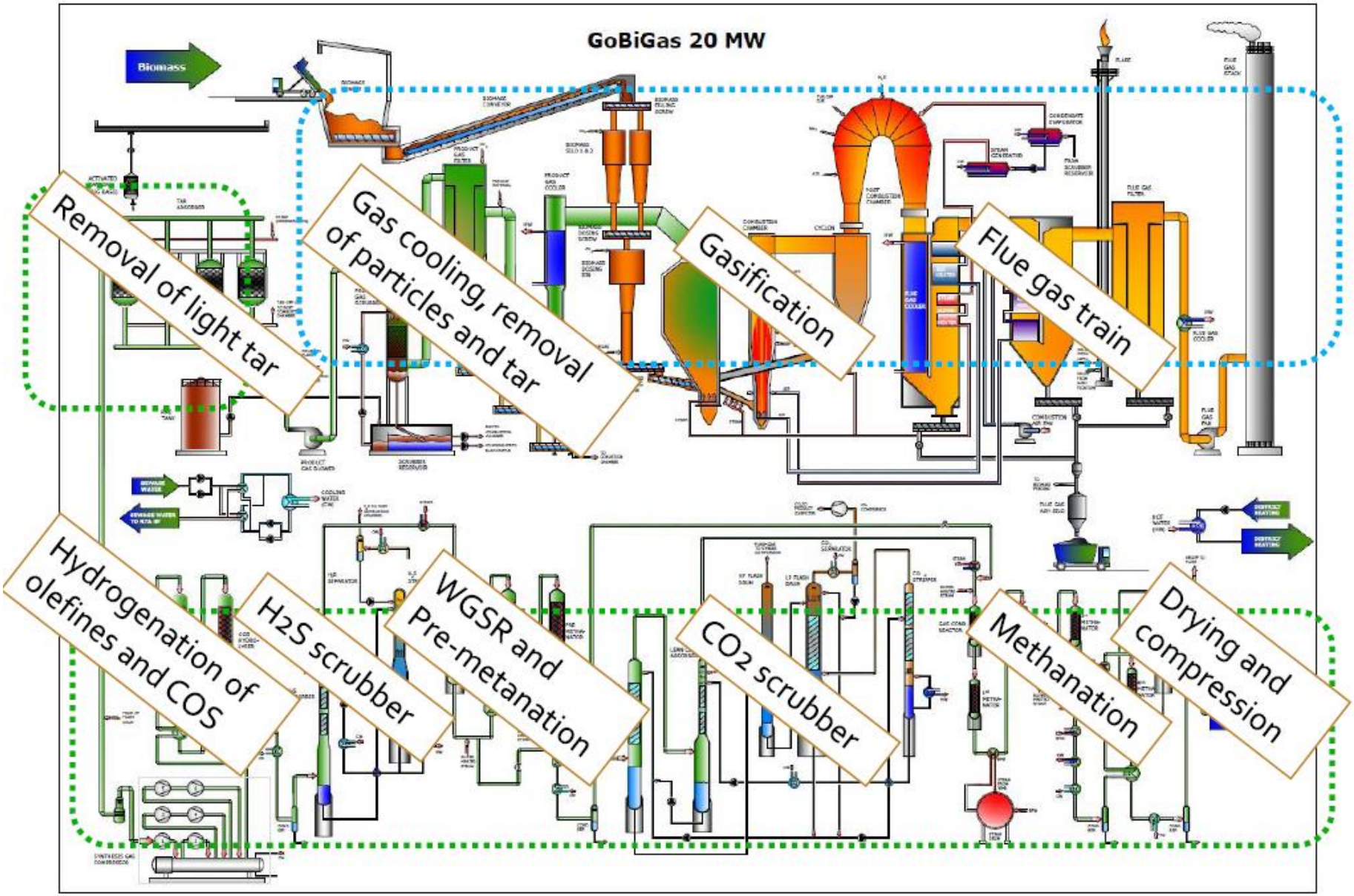


More in annual EBA Statistical Report…

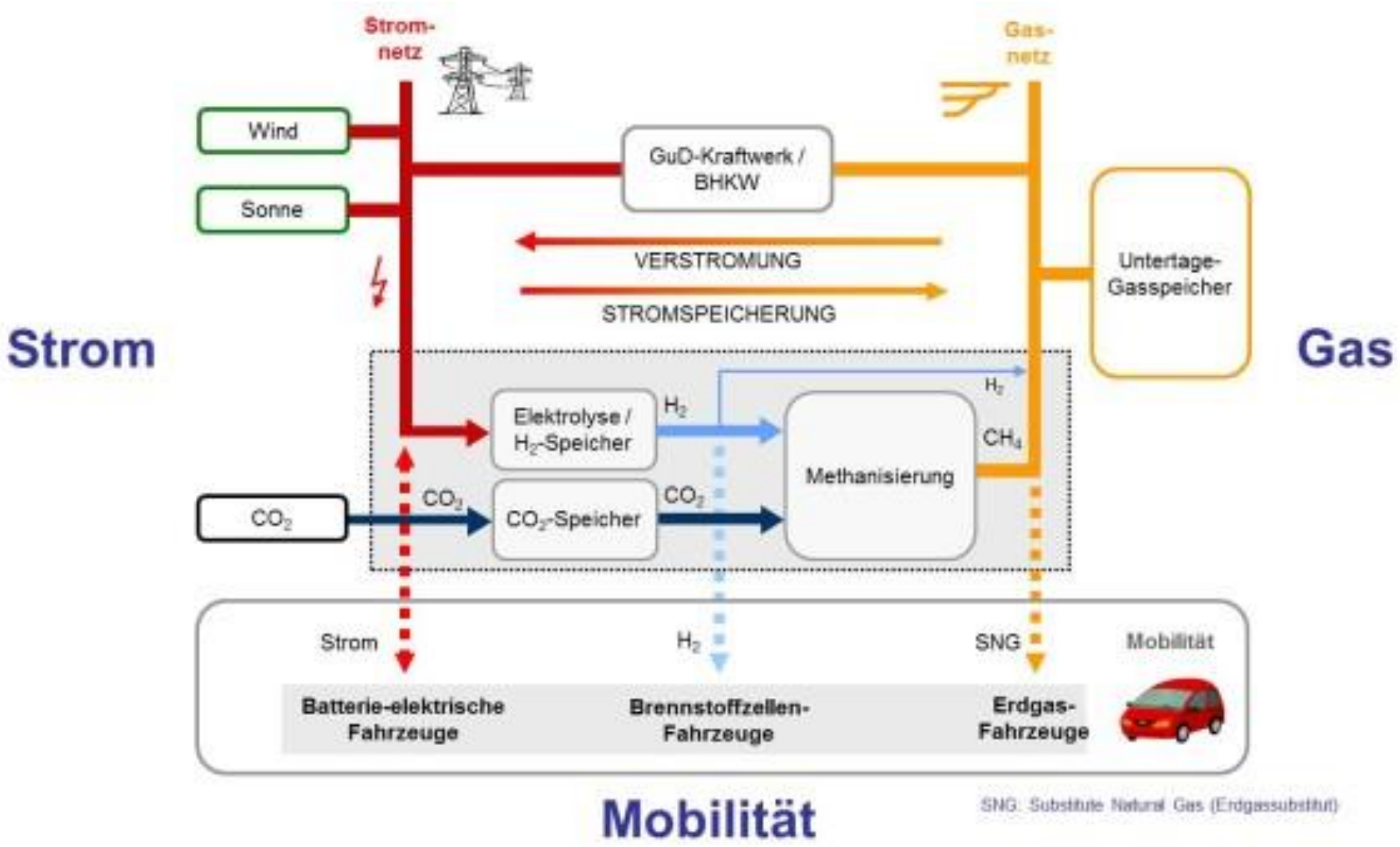
EBA
European Biogas Association

Biomethane from Gasification

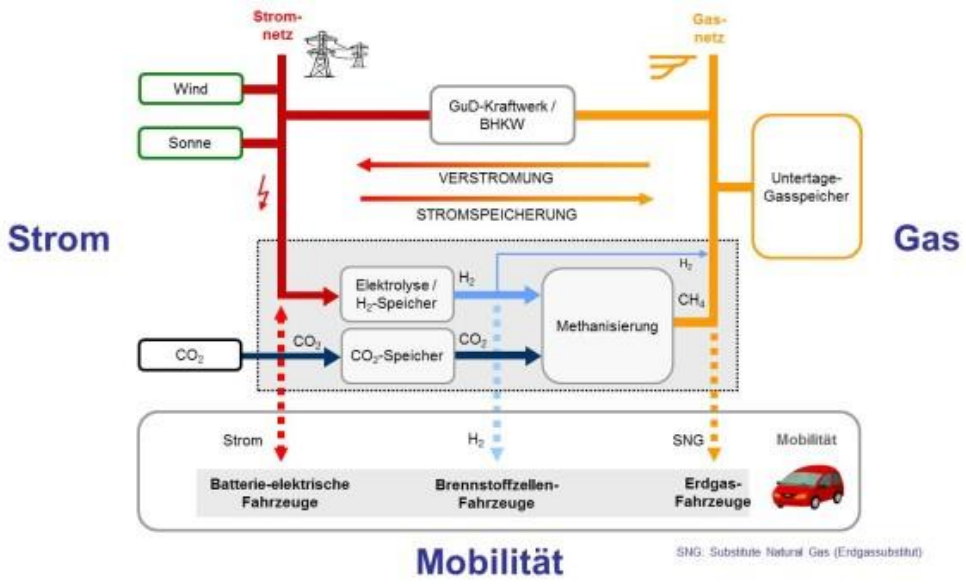
EBA
European Biogas Association


GoBiGas 20 MW
Biomass
Removal of light tar
Gas cooling, removal of particles and tar
Gasification
Flue gas train
Hydrogenation of olefines and COS
H2S scrubber
WGSR and Pre-metanation
CO2 scrubber
Methanation
Drying and compression

Biomethane from Other Sources



Biomethane from Other Sources



- SNG (Synthetic natural Gas) is not always equivalent to biomethane

- **ONLY if *producing methane fuel from biogenic carbon or utilizing biological pathways***

EBA
European Biogas Association

Biomethane Utilization

- ***Green fuel for GT/GTCC power plants***
  - Balancing power (combined power plants)
  - System services: frequency stability, voltage maintenance, etc.
- By far the ***easiest way of providing green heating*** for residential heating
- Transportation biofuel suitable for any desired blend
  - ***Can cope with future GHG limits in transportation (CO_2)***

EBA
European Biogas Association

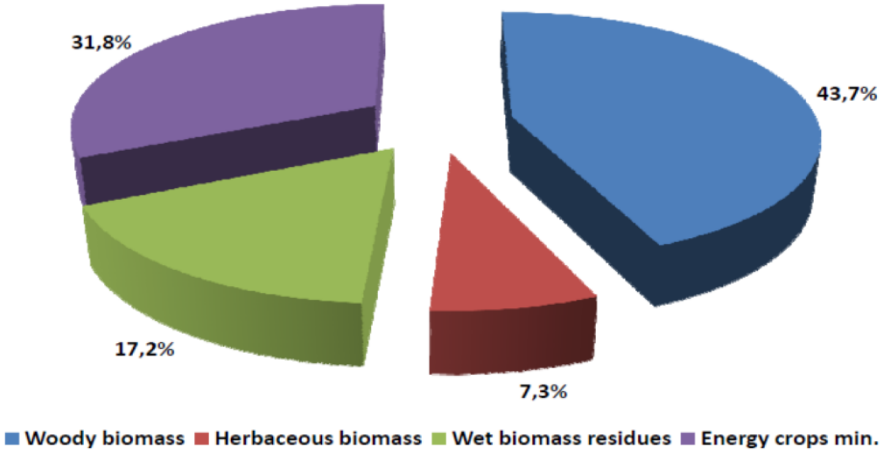
Biomethane Technical Potential

Resource	Potential [1×10^9 m^9]
Woody Biomass	66
Herbaceous Biomass	11
Wet biomass residues	26
Energy crops	48-143
Total	**151-246**

Green Gas Grid Project, 2013
European Biomethane Roadmap
Maximal technical potential

EU 28 NG consumption 2013
462×10^9 m^3 (2% down from 2012)

Graph 1. Biogas/biomethane technical potential - sources



Biomethane in Near Future

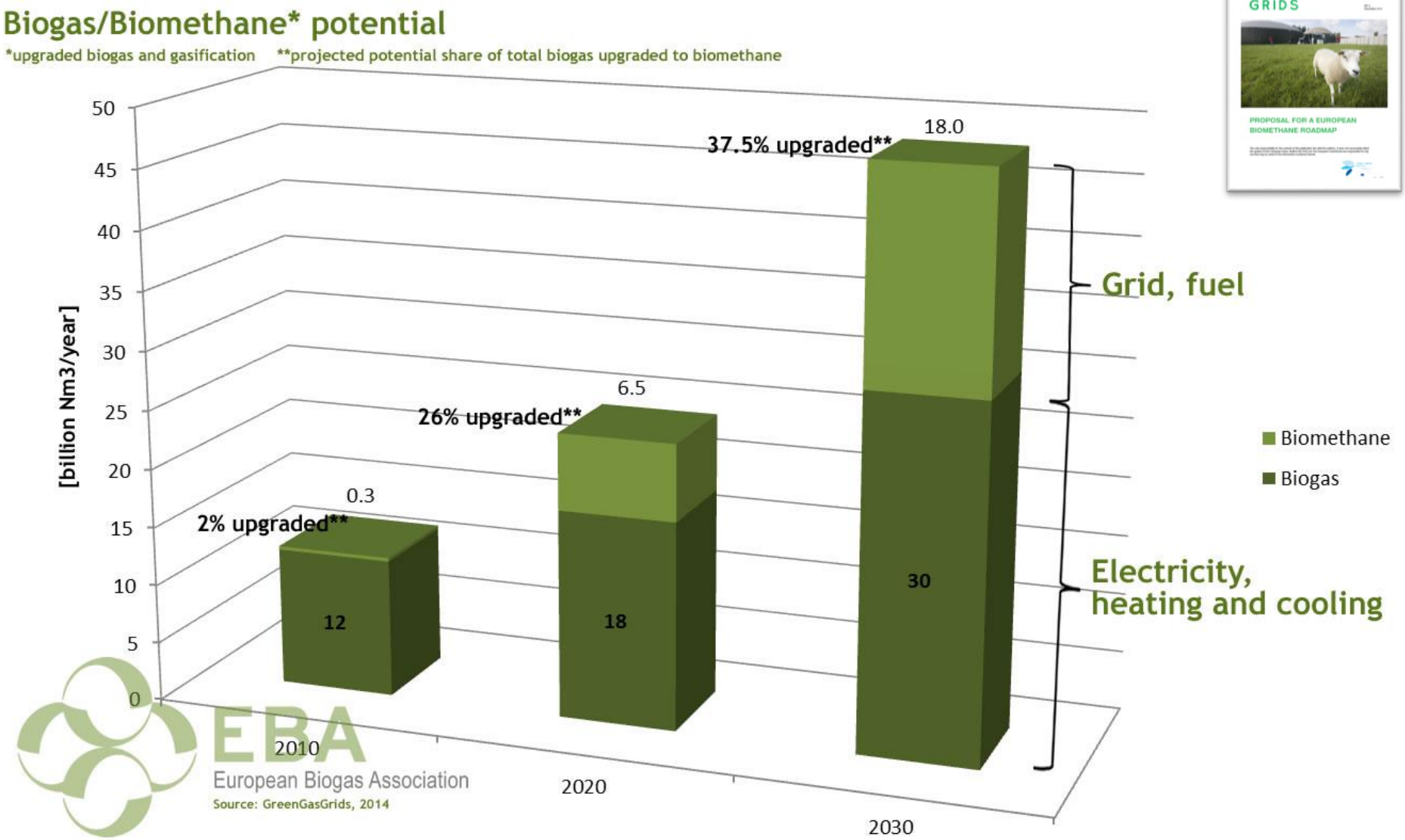
- ***We are convinced that 30% of the technical potential can be reached by 2030***

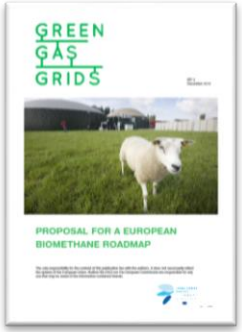
- ***Reasons to be optimistic?***
  - ***Keeping track with 2020 projection***
  - ***15% of the potential by 2020***
  - Following the NREAPs pathway
  - And still far off the maximal potential

Resource	Potential [1×10^9 m^9]
Woody Biomass	66
Herbaceous Biomass	11
Wet biomass residues	26
Energy crops	48-143
Total	**151-246**

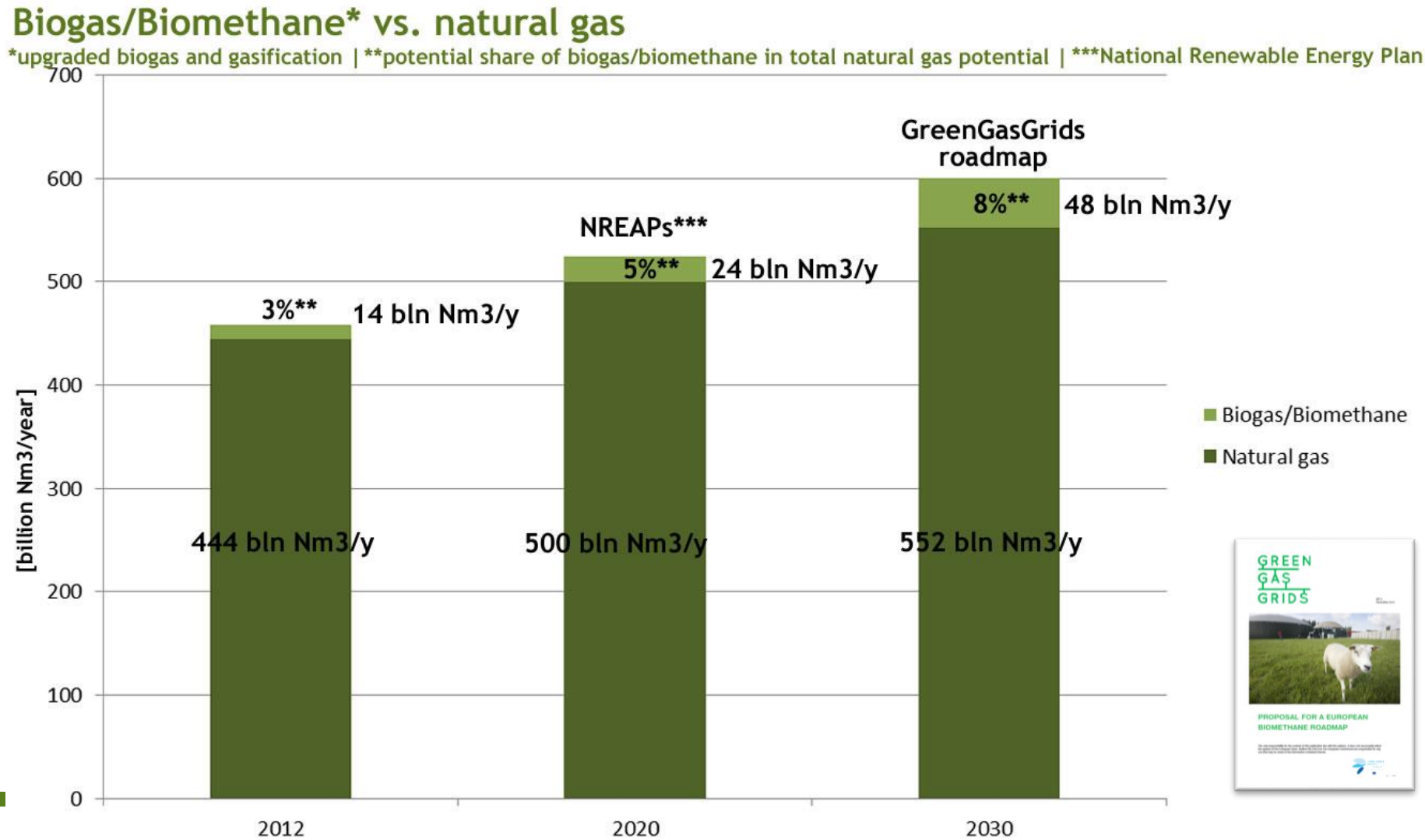
Green Gas Grid Project, 2013
European Biomethane Roadmap
Maximal technical potential

Biomethane Path to 2030





Biomethane Path to 2030



Strategy for Biomethane Industry

- **European Biogas Industry goes far beyond renewable electricity**
- ***Biomethane offers high GHG savings for natural gas blends, enabling gas greening***
- **Biomethane industry can be a pillar of EU energy**
  - Tremendous technical potential
  - Biomethane industry needs ***strong stakeholders***
  - Methane fuels ***must overcome coal and oil usage***

- ***Need for a strong biomethane push right now***

EBA
European Biogas Association

Biomethane Production and Utilization Pathways

Jan Stambasky
President
European Biogas Association
stambasky@european-biogas.eu
www.european-biogas.eu

EBA
European Biogas Association