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# German Roadmap for Biomethane.

Paris, February 26th 2015

# Agenda.

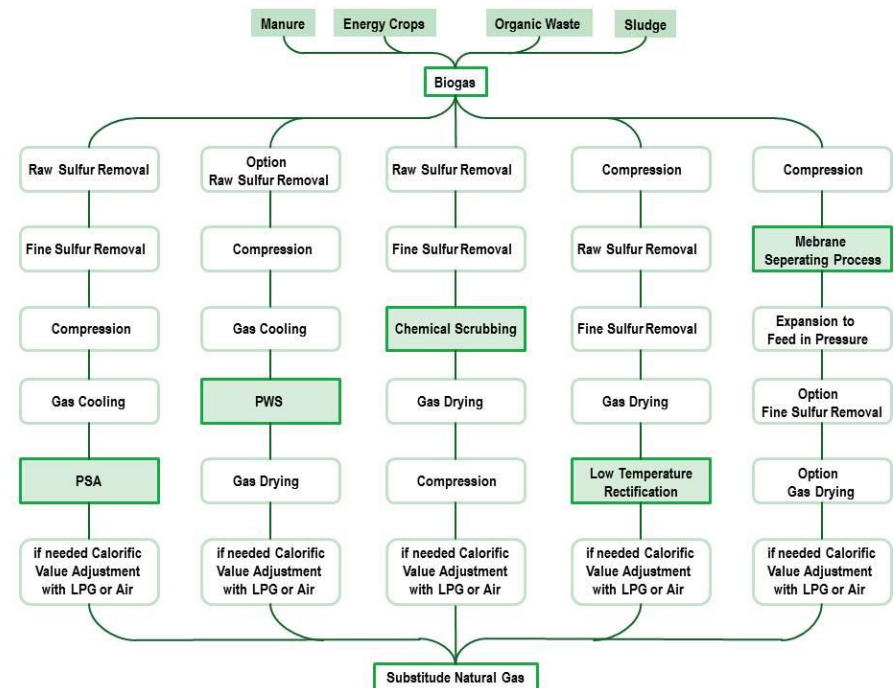
- Introduction
- Biomethane Potential
- Fields of Action
  - Power Market
  - Heat Market
  - Transportation Fuels
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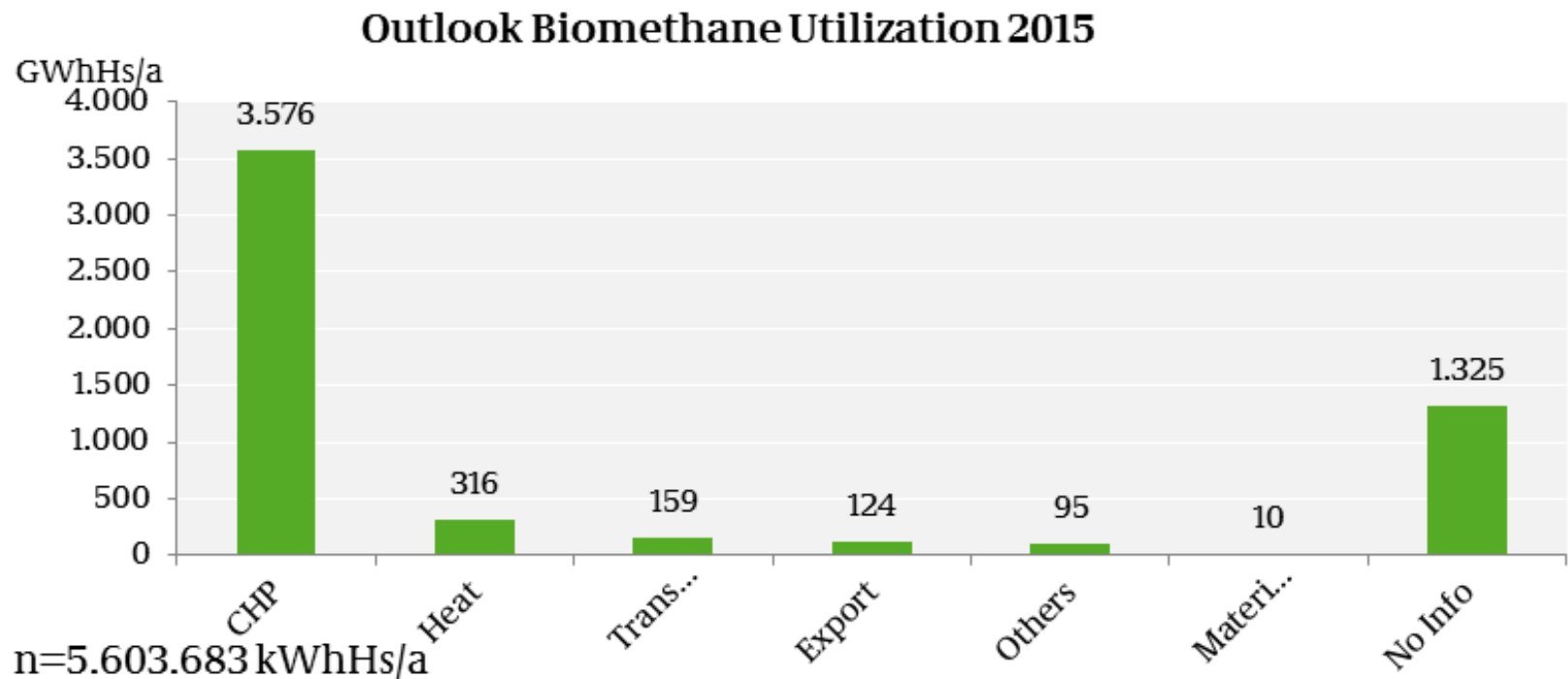
Introduction.

## Biomethane is Highly Innovative.

- There are many ways how to produce a substitute for natural gas
  - Biogas upgrading: PSA, PWS, Chemical Scrubbing, Low Temperature Rectification, Membrane Separating Process
  - Biological methanation in combination with Power-to-Gas
  - Bio – SNG (thermochemical)
- Market development creates innovation



## Outlook Biomethane Utilization 2015.



Source: dena 2014

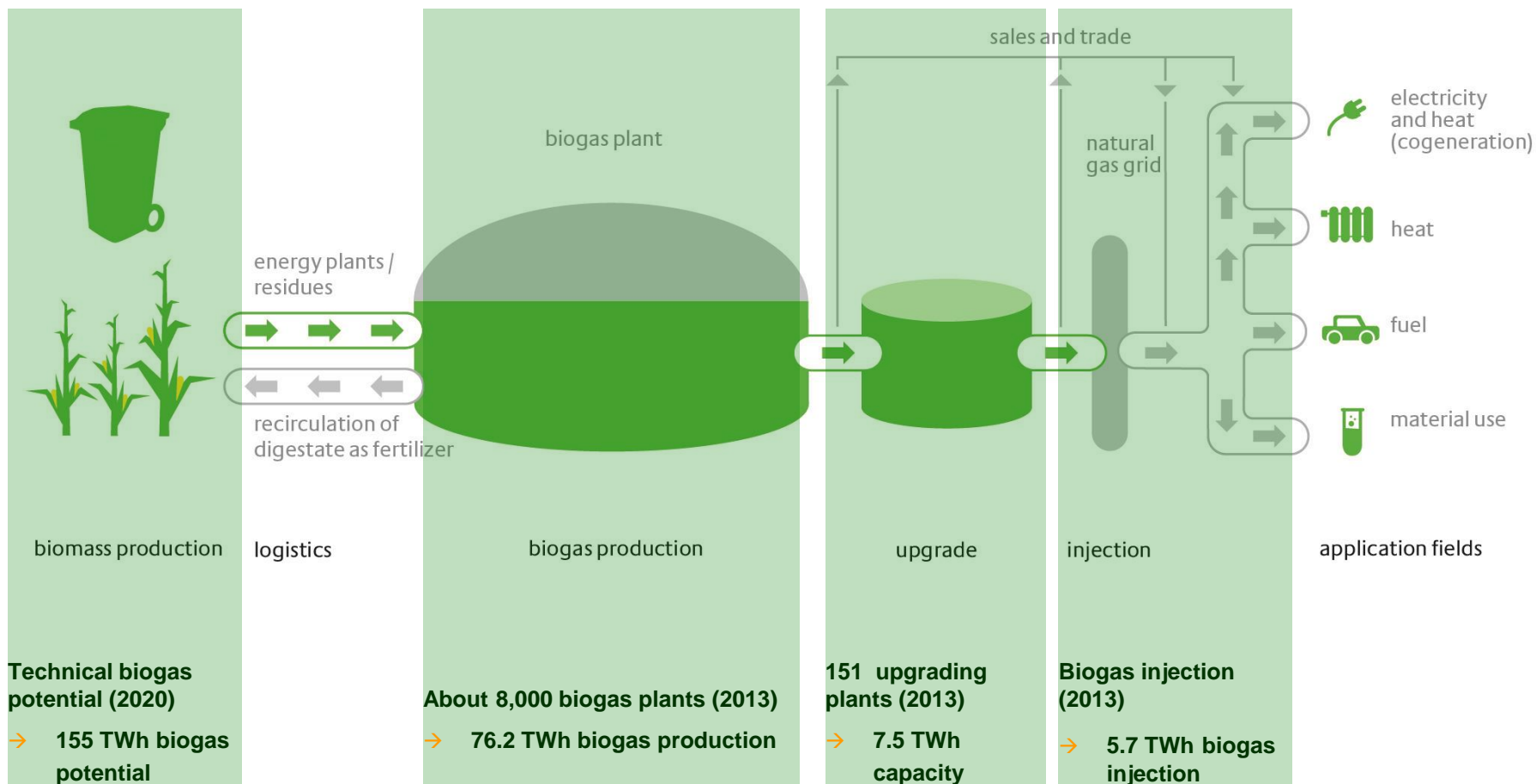
- CHP still dominates, but
- demand from heat market increases and new markets develop



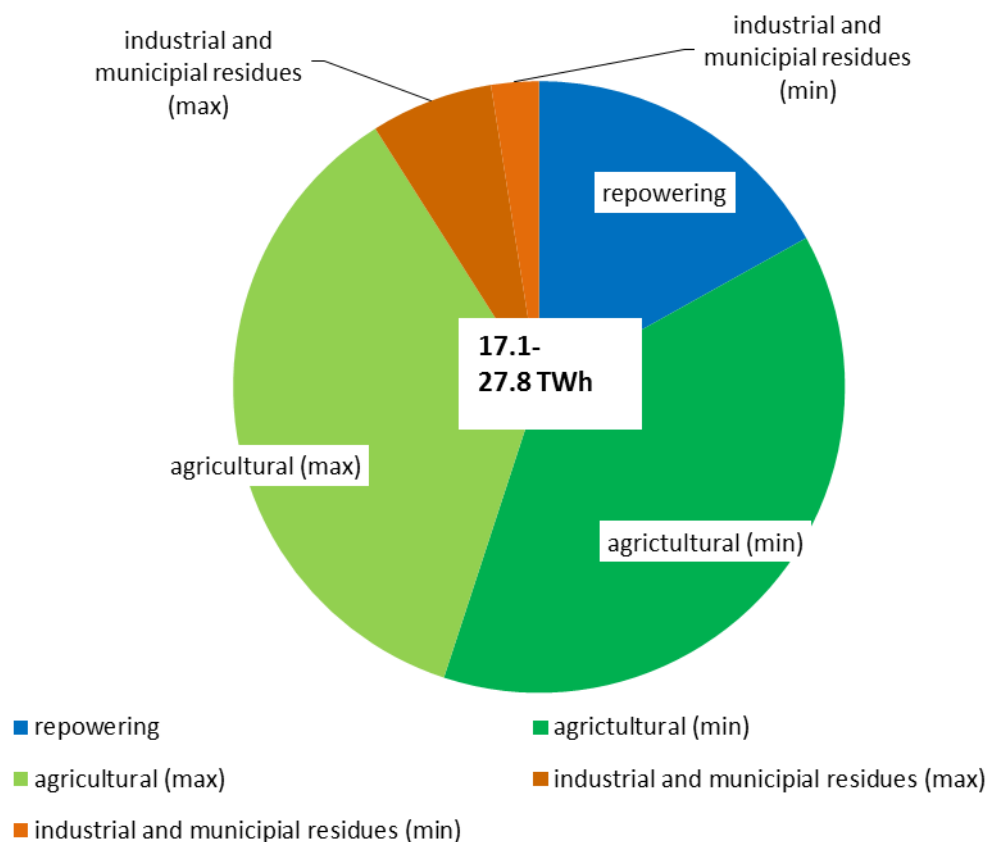
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# Biomethane Potential.

# Biogas - Technical Potential and Current Injection.



## Short-term Biomethane Potential.



- In short-term: biomethane production could be double to four times the 2013 production by means of
  - Repowering of existing (inefficient) biogas plants
  - Tapping the potential of municipal and industrial residues (in line with recycling management and waste law)
  - Tapping the potential of manure and energy crops (in a sustainable and environmental sound manner)

Source: Scholwin et al 2015



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Fields of Action.


## Power Market – Reliable and Renewable.

- Biomethane in CHP can provide important system services and reduce the amount of fossil must-run capacities:
  - renewable energy when there is only little wind or solar energy
  - reactive power for a stable voltage
  - balancing energy for a stable frequency
  - black start capacity
- Biogaspartnership proposal:
  - introduction of a climate bonus on top on the remuneration for fossil CHP plants (KWKG) if the measurements taken additionally reduce a certain amount of ghg emissions

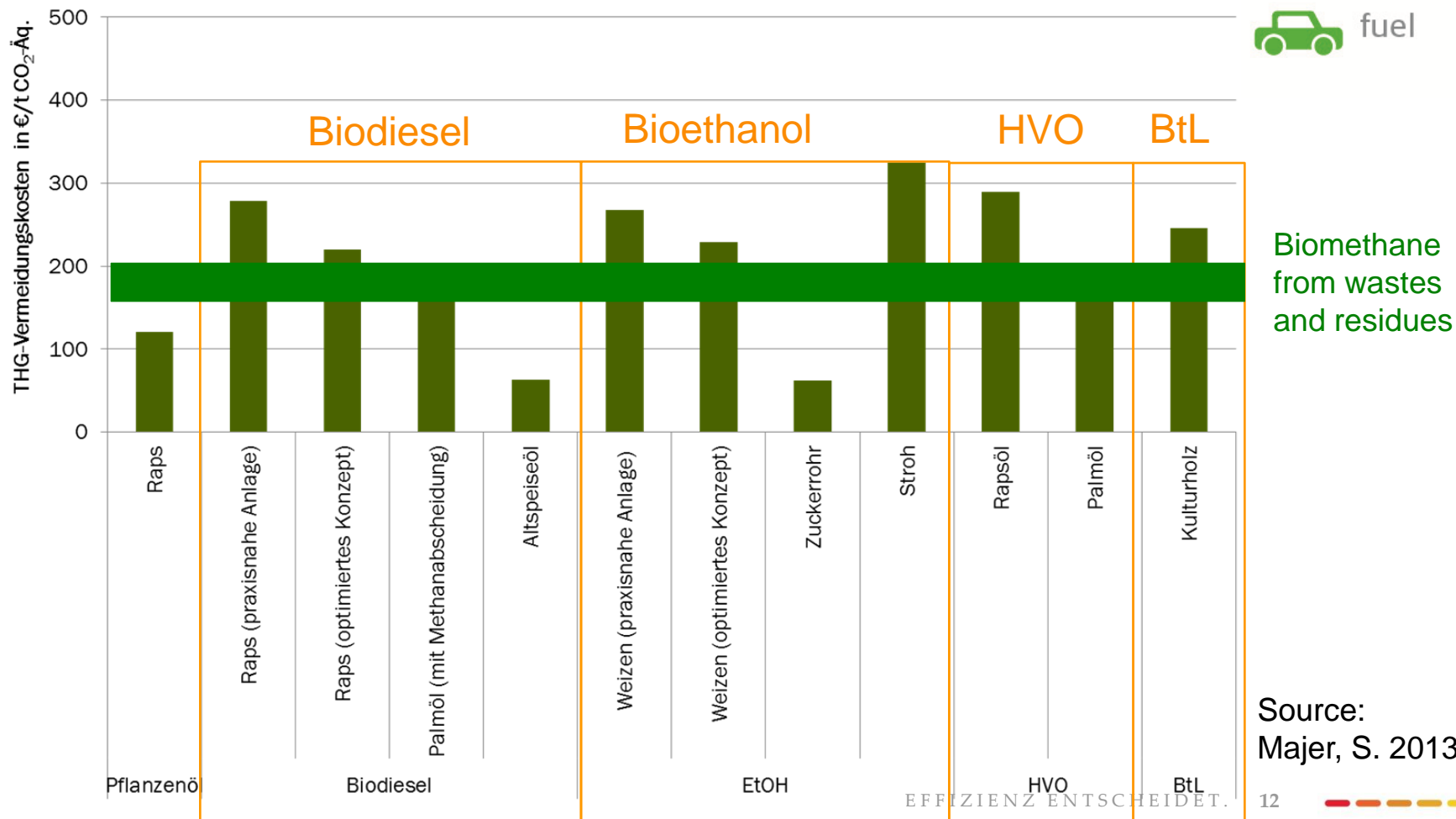


electricity  
and heat  
(cogeneration)

## Heat Market – Cost-Efficient Option.

- Biomethane in CHP is one of the most efficient and eco-friendly technologies to provide renewable heat
- Market for biomethane (5%; 10%; 20% and 100%) products is increasing; first label available (Grünes Gas Label)  heat
- Regarding the governments decision to decrease the feed-in tariffs for biomethane, biomethane in the heat market should be reconsidered
- When other renewable energies and high energy efficiency measurements cannot be applied to the extent required, biomethane in heat energy application can be an interesting alternative
- Biogaspartnership Proposal:
  - if CHP is not an option, accept biomethane in heat only applications as an option to fulfill the renewable obligation (EEWärmeG) in new buildings

# Transportation Fuel – Environmentally Friendly and Cost-efficient.



## Transportation Fuel – Environmentally Friendly and Cost-efficient.

- High ghg avoidance potential of biomethane from wastes and residues in comparison to other biofuels
- Ghg abatement costs of biomethane from waste and residues is about 200€/tCO<sub>2äq</sub> (80% ghg reduction potential, 7ct/kWh inclusive of certification costs)
- Biogaspartnership Proposal:
  - Tax reduction for natural gas and biomethane beyond 2018 in order to develop CNG fleet and gas pump infrastructure
  - A level playing field for all biofuels within the quota obligations is required in order to develop the advantages of biomethane, e.g. HHV vs. LHV, extent of verification



## Material Use – A Beginning has been Made.

- In Germany, the chemical industry consumes about 30TWh natural gas for material uses (not as fuel for energy) per year
- End-consumers are increasingly interested in products that are based on renewable feedstocks
- Biomethane can substitute fossil naphta and natural gas in chemical products without changing their functionality nor their quality
- Biogaspartnership proposal
  - Establishing a common understanding of the mass balancing approach for energy as well as material purposes



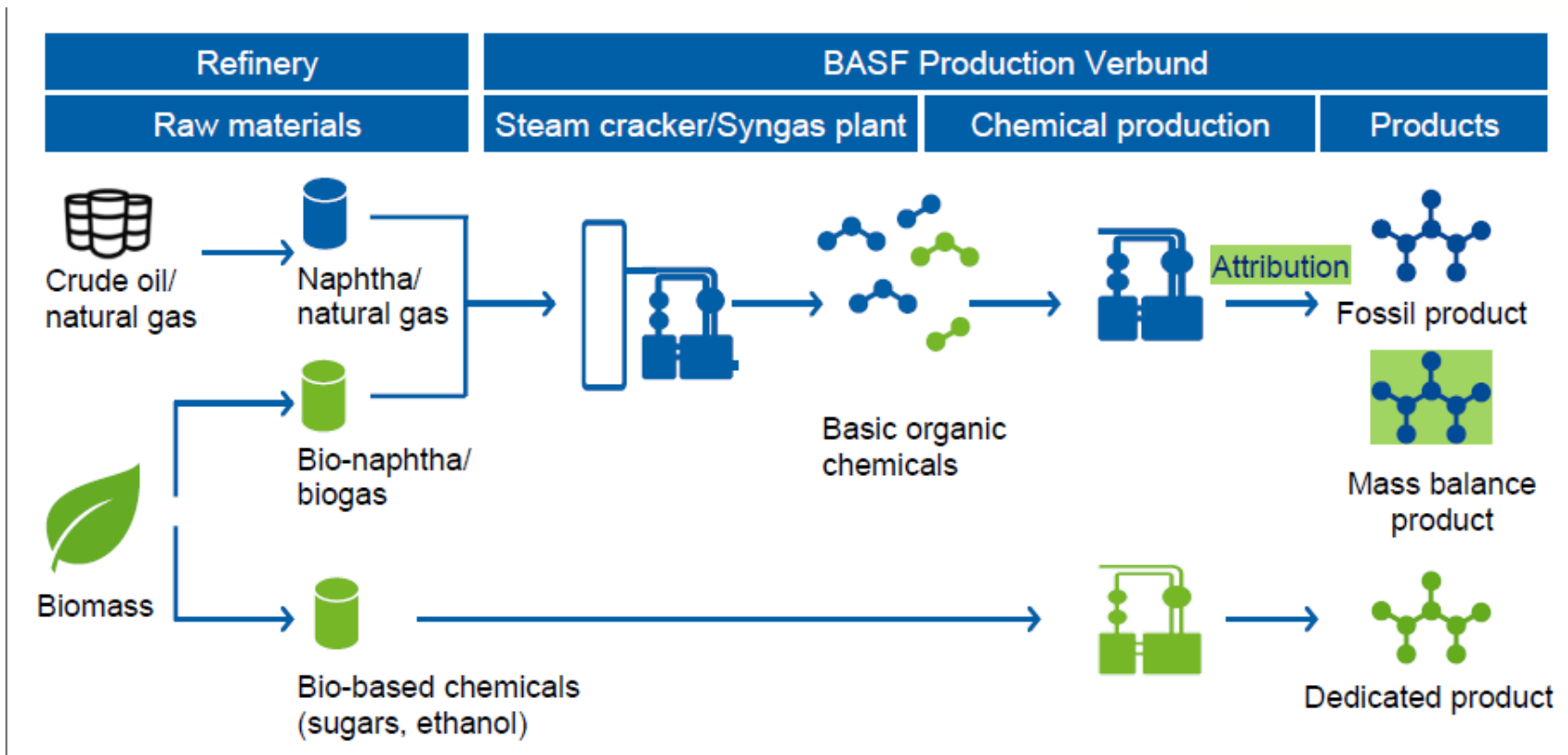
material use



# Material Use – A Beginning has been Made.



material use



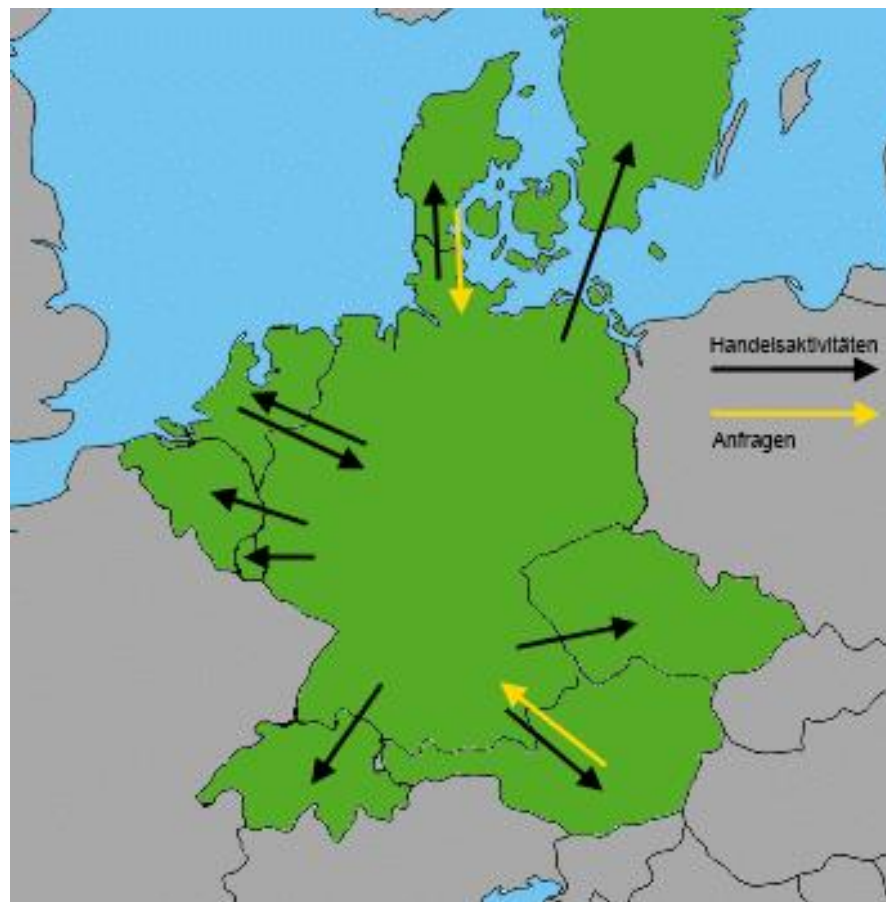
- The mass balancing approach allows to produce a large variety of chemical products that are based on biomethane

Source: BASF

## International Markets – The Way Forward to One European Market.

- International biomethane trade increases liquidity and can help to develop markets
- A common understanding of mass balancing is required
- Cooperation between European registries provides information exchange and remedies double counting
- Exchange of experience accelerates technological innovation

→ **European Biomethane Conference 12<sup>th</sup> October 2015 in Berlin**



Source: dena 2014

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Conclusion.

## Conclusion.

- Biomethane benefits from its diverse, flexible spectrum of applications
- The storage capacity of the natural gas grid in combination with the flexibility of chp-plants is a very important option for the restructuring of the energy system
- Biomethane reached a turning point from feed-in tariffs to more competition with other energy carriers, energy solutions and ghg reduction measurements
- Governmental support is still required in order to realize biomethane's potential for the restructuring of the energy system in the most efficient manner
- The European gas infrastructure paves the way for European solutions and markets

Efficiency – our focus.

Thank you.

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