

Biomass feedstocks

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Green Molecules Collective Methane meeting



Methaan productie: Vegisting en vergassing

- Natte biomassa → Vergisting → biogas → methaan (opwerken)
- Lignocellulose biomassa → Vergassing → Syngas → methaan

Welke grondstoffen?

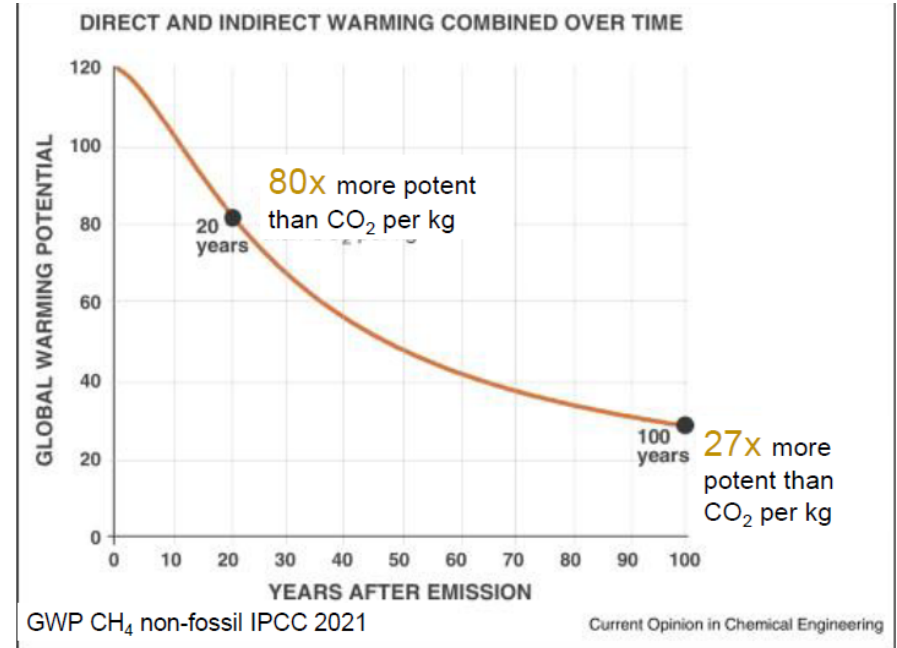
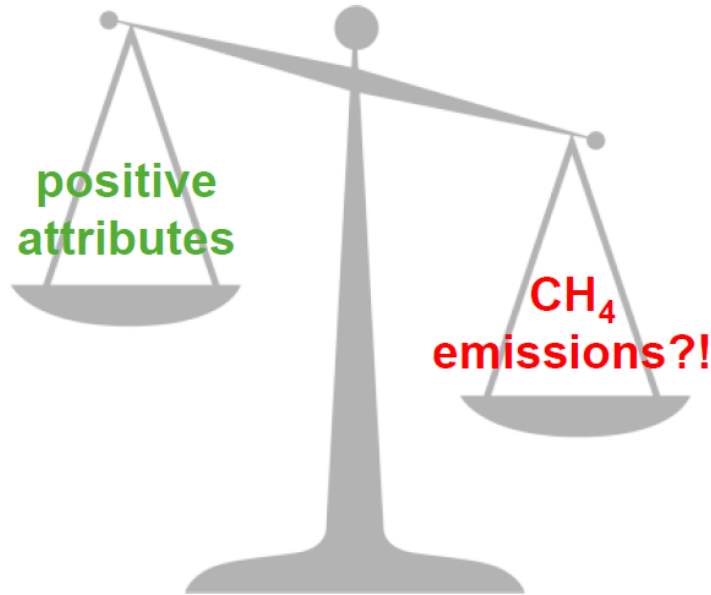
Natte grondstoffen voor biogas.....

1. Mest! → 20 a 40 m³ biogas per m³ mest

Direct benutten of aanzuren tot het wordt vergist → geen methaan lekkage en meer biogas opbrengst

Bijproducten en gewassen vergisten leiden snel tot grotere methaan lekkage en tot problemen met afzet van digestaat.

Methane leakage is problematic!



Vergassing naar methaan?

→ Grootschalig lignocellulose

→ Nederlandse havens ideale locatie **als** we lignocellulose biomassa als we **commodities** kunnen aanvoeren

Where should a lignocellulose conversion plant / biorefinery be located?

Factor	Location: Near the biomass	At a large logistical center (i.e. harbour)
Cost of biomass	+	
Security of supply		+
Availability of infrastructure		+
Economy of scale		+
Availability of personnel / expertise		+
Value of residues		+
Sum	1	5



A real commodity is

1. Easy to store and transport = high energy density, dry, low volume, low ash, nutrient depleted
2. Fungible = is “exchangeable”, standard quality
3. Standardization of transport, contracting, insurance, conversion systems
4. Functioning markets = trade systems, financial instruments (futures, etc.), high tradability
5. Sustainability standardized = sustainability certification systems

Commodities

- Maximize circular use of biomass: use stranded biomass + use total potential
 - Give small producers a market → mobilizes more biomass – stranded biomass -
 - Avoid risk of one-on-one relationships
 - Many applications per commodity
 - Solve issue of scale differences between supply and demand
- Wood chips
 - Wood pellets
 - Torrefied pellets
 - Pyrolysis oil
 - Herbaceous pellets
 - Bio-crude
 - ?

Lignocellulosic Biomass
such as rice, wheat, corn, sugar
cane, oil palm hard wood, soft wood

Field Residue
such as straw, trunks

Processing Residue
such as oil palm residues,
empty fruit bunch, wood residue

Commodity Production
20 - 100 kton/y
such as pyrolysis oil, wood pellet,
torrefied pellet, herbaceous pellet,
green pellet

Secondary Production
> 500 kton/y
such as biorefinery, fisher tropesch
(future), powerplant, pellet stove
(domestic)

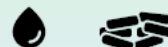
**Applications & Final
Biobased Products**
such as food & feed, materials,
chemicals, fuel, electricity, heat



local transport



local factories



transport to port/hub



Pretreatment to
remove water,
increase quality and
recycle minerals

How to get there?

Local hubs produce lignocellulosic commodity at rel. small scale (25.000 ton per year?) = remove nutrients, water, uniform/fungible, densification

Define **only a few** biomass commodities that cover:

- All lignocellulosic biomass types: wood, grass, straw, bagasse, etc.
- All applications: heat, electricity and chemicals, transport fuels, jetfuel, etc.
- Set **wide standards** and avoid frivolous demands

- Involve all players in the production chain (biomass producers, machine builders, regulators, insurers, financing, transport, final users)
- Allow markets to agree on limited number of commodities
- At what volume a commodity is a commodity?
- Implement worldwide?
- ?

Thank you!

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Ref:

Wolter Elbersen, Iris Vural Gursel, Juliën Voogt, Koen Meesters, and Biljana Kulisic. 2022. To be or not to be a biobased commodity. Assessing requirements and candidates for lignocellulosic based commodities. IEA Bioenergy: Task 43. WFB Report 2242. DOI 10.18174/562461.

