

Danish Technology Center for Biogas - role objectives and activities.

(Current developments in the Danish biogas sector)

v. Jakob Lorenzen, head of DFFB



Today's program

- DFFB – Danish technology centre for Biogas
 - Vision
 - Objectives
 - Effects
 - Status – incl. activities and projects
- Current development within the Danish biogas sector
 - What is Danish biogas
 - New national association
 - Danish biogas – now and in the future

What is Danish Technology Center for Biogas?

Vision:

Danish Technology Center for Biogas is a national non profit association, that supports the development of biogas in Denmark, so it is characterized by successful and professional biogas plants, for the benefit of climate, environment, growth and employment.

Objectives

- To increase the competencies at the biogas plants.
- To build up biogas process and operating knowledge of plants in operation and under construction / upgrading and ensuring the dissemination of knowledge and experience.
- To ensure coordination between the biogas industry, municipalities, government and knowledge centers.
- To contribute to the development of business and export potential in biogas (not in progress at the time)

Why Danish Technology Center for Biogas?

- Challengers in the Danish biogas sector
 - Relatively new sector – from the 90ties
 - Self taught – no public education related to biogas
 - Relative small plants with skilled or unskilled workers.
 - New possibilities – new actors – bigger actors – a challenge for both old and new plants. (See current trends and the biogas business in Denmark)
 - Improved prices for biogas due to changed focus on renewable energy – “now it is the time to make money”
 - Increased demand for biomass

- Established in August 2014 by Linkogas, Blåbjerg Biogas, UdviklingVejen, Triangle Region Denmark and some private persons.
- Board: 6 members:
 - Aksel Buchholt (Chairman and chairman at Linkogas and others),
 - John Pedersen (chairman at Blåbjerg Biogas),
 - Thorbjørn Sørensen (Technical director at Municipality of Middelfart),
 - Preben Friis-Hauge (Councilor, Municipality of Varde),
 - Henrik Laursen (director at Bigadan) and
 - Martin Fey (director and daily operator at Linkogas).
- First employee 1. January 2015
- Economy: How are DFFB financed?
 - Triangle Region Denmark (2014: working hour and financial support)
 - UdviklingVejen (local development agency (office facilities and administration))
 - Municipality of Vejen (75.000 dkr. pr. year the next 3 years)
 - Linkogas (50.000 dkr. pr year the next 3 years.)
 - The association for biogas industries (100.000 in 2015)
 - BiogasAction – EU project
 - Member payment
 - Payment from different activities – e.g. courses,

Status (2)

- The first years:
 - Administrative set-up. (Rødding and UdviklingVejen)
 - Homepage, news letters, networking,
 - First courses in the summer 2015 held by a vocational school and specialists from the biogas sector (maintenance of pumps and economy at biogas plans)
 - Participated in a project for Biogas Task Force – a task force established by the Danish government in order to promote biogas
 - Courses for board members, general maintenance, safety etc. in 2016 and 2017
 - Established contact with educational institutions and established an ordinary education for biogas, that will start due to the work DFFB have done.
 - Established a cooperation with the biogas business to run the knowledge sharing activities within the business (from 2017).
 - Projects: pretreatment plants, biogas plants in early stage, handling degassed biomass (phosphor challenge)

BiogasAction

- An EU project with 13 partners from Europe. Mainly regional and national energy offices and also the European Biogas Association
- Different intervention activities in different regions/countries
- Based on 6 tasks with different purposes
 - State of departure and interventions strategy (the foundation for the intervention)
 - Institutional building (establish or consolidate platform for biogas development)
 - Strengthening the biogas sector framework (Improve conditions for biogas development – involvement of policy/decision makers)
 - Optimizing business models and financing of biogas projects (go into dialog with upcoming biogas projects in order to optimize business and financing models)
 - Optimizing biogas production (training and capacity training among biogas plants)
 - Assistance to high quality biogas projects (to help entrepreneurs to define their projects)
- From 2016 to the end of 2018

Current developments in the Danish biogas sector

- What is biogas in Danish context
- New association
- What is the situation now
 - Incl. current trends
- What will the future bring?



What is biogas in the Danish context?

Livestock manure
Liquid slurry/Deep litter
Organic catch crops

Organic residues
Agriculture, households,
industry, service sector



Improved fertilizer & environment
Recirculation; N, P, K and carbon
Nutrient supply (organic)

Renewable energy
Stabilising energy system
Supplementing wind power

What is biogas in the Danish context? (2)

- Historically, the industry has functioned as a service for agriculture and delivered energy for district heating plants under the Heat Supply Act.
- Small business – everybody knew every one
- Since the energy agreement from 2012, we have seen a paradigm shift in biogas – from agriculture focus to energy focus!
- Consequences (both positive and negative – depending on the view): new actors, more and bigger plants, new ways to organize, new possibilities, raising prices on other biomass, new “climate” – from “friends” to “competitors”, employees?
- What will the future bring for biogas?

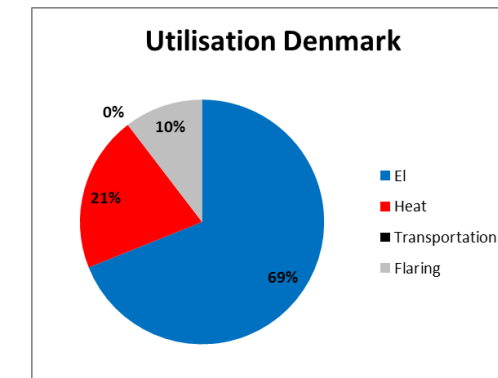
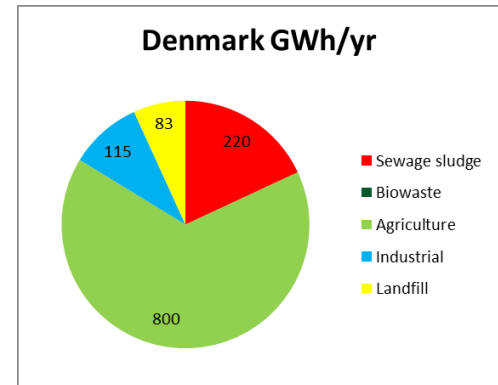
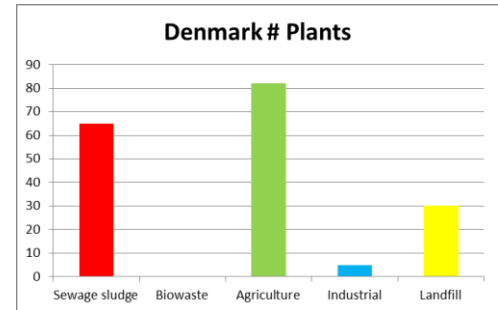
New association

- Historically 2 associations:
 - Industry association for biogas (Brancheforeningen for Biogas) and
 - Association for Danish Biogas plants (Foreningen for Danske Biogasanlæg).
- Since 28th. of March 2017 one association:
 - Association biogas business (Foreningen Biogasbranchen).
 - New and bigger actors – more focus on energy and energy prices. Less focus on the agriculture business

- **Green growth agreement 2009**
 - 50% manure in biogas in 2020 (now: 7 %)
 - 20% investment grant (increased to 30% in 2012)

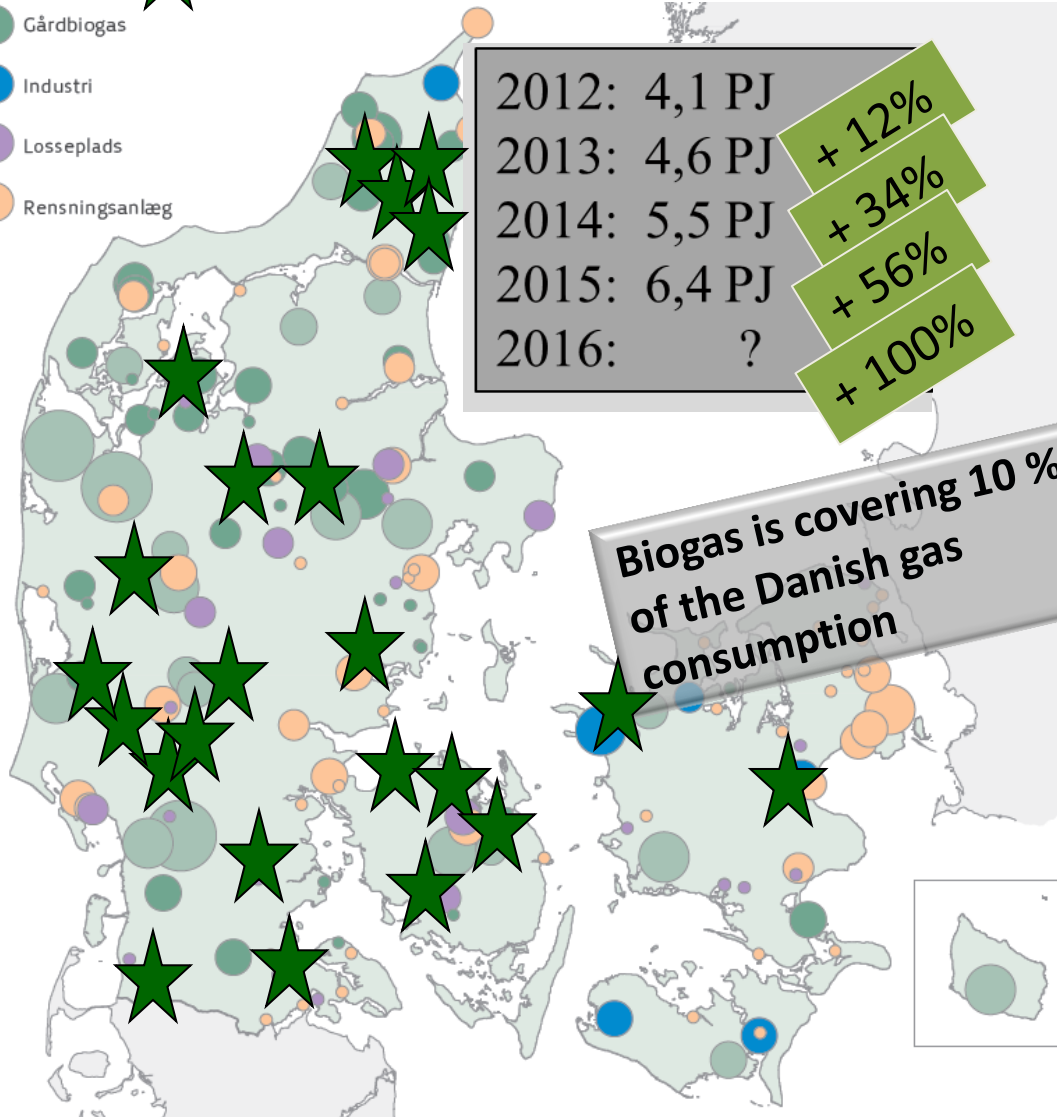
- **Energy agreement in march 2012: Feed in tariffs**
 1. *Improved*: electricity from 79 to 115 DKK/GJ
 2. *New*: biomethane in grid: 115 DKK/GJ (56€/MWh)
 3. *New*: transport and industry: 75 DKK/GJ (37€/MWh)

- **Ressource strategy 2013**
 - 50 % of household waste reused in 2023
 - Organic fraction from household waste
 - From incineration to biogas
 - Up from 18 % to 60 % in 2018



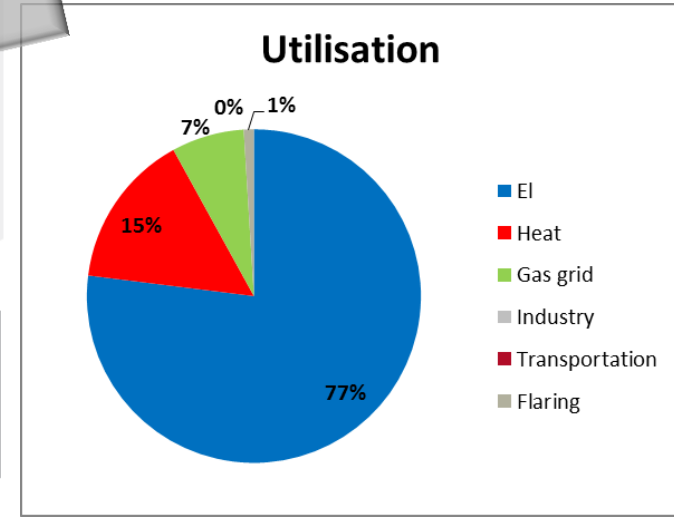
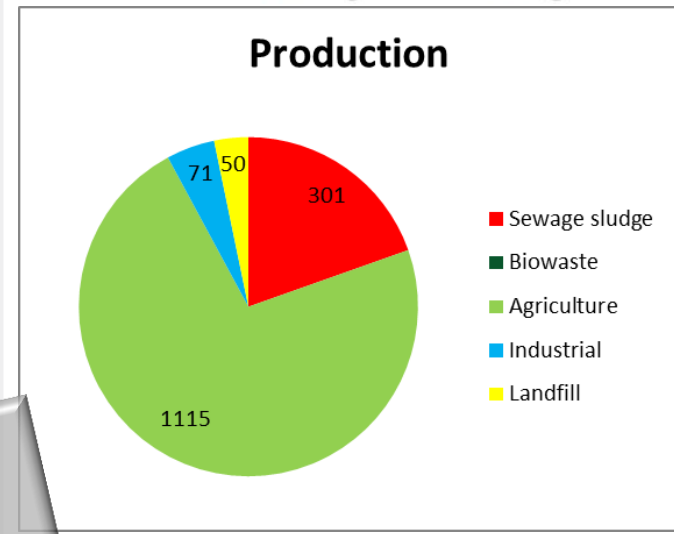
- Fællesanlæg
- Gårdbiogas
- Industri
- Losseplads
- Rensningsanlæg

New since the energy agreement 2012



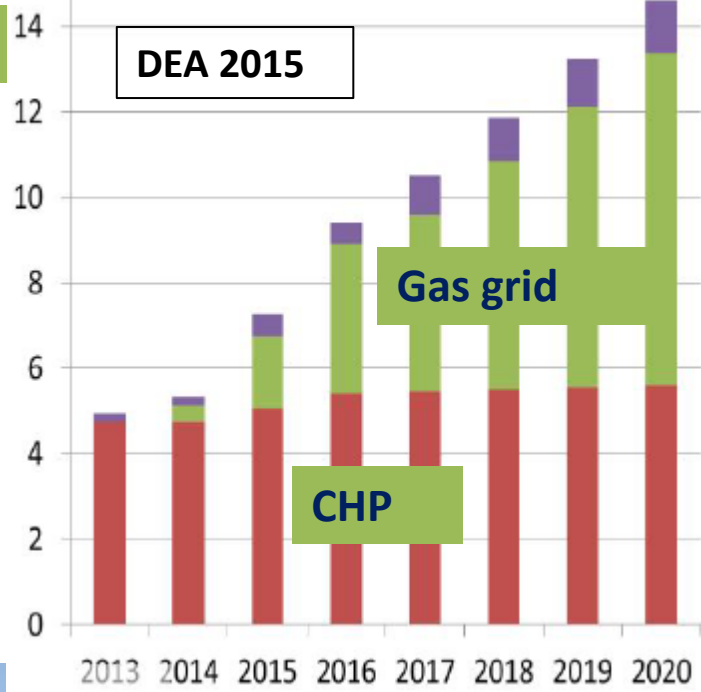
2012:	4,1 PJ	+ 12%
2013:	4,6 PJ	+ 34%
2014:	5,5 PJ	+ 56%
2015:	6,4 PJ	+ 100%
2016:	?	

Biogas is covering 10 % of the Danish gas consumption



New markets

PJ



Gas grid

CHP

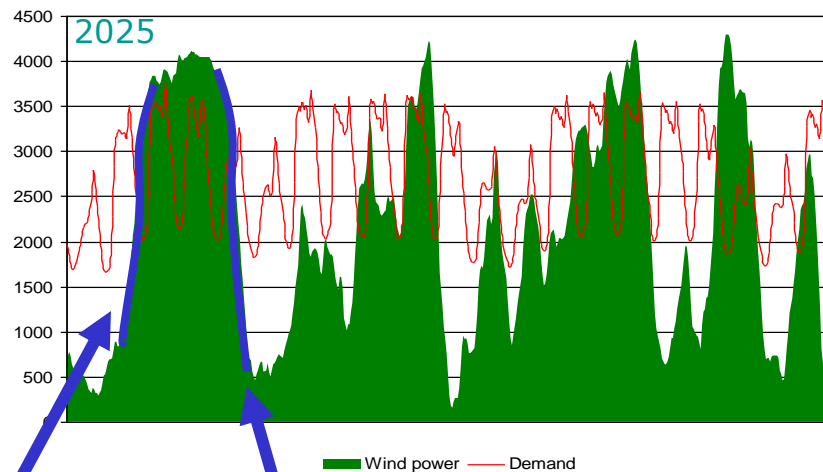
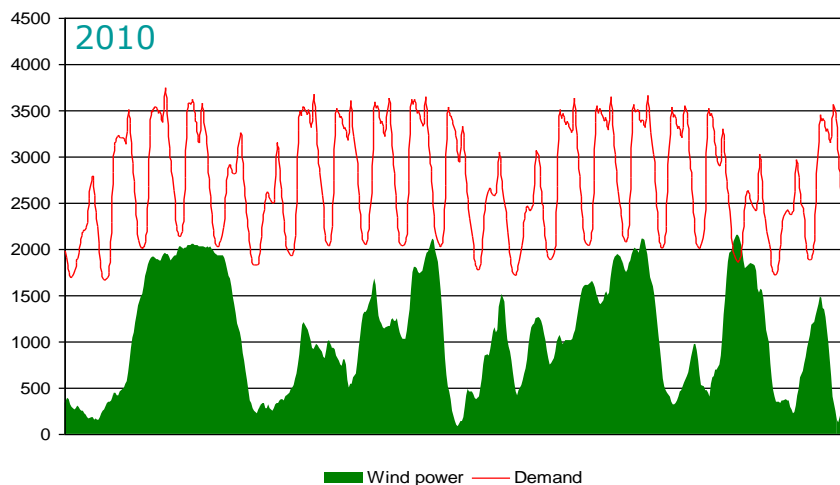
Industry

Transport

Heat



... increasing towards 2025



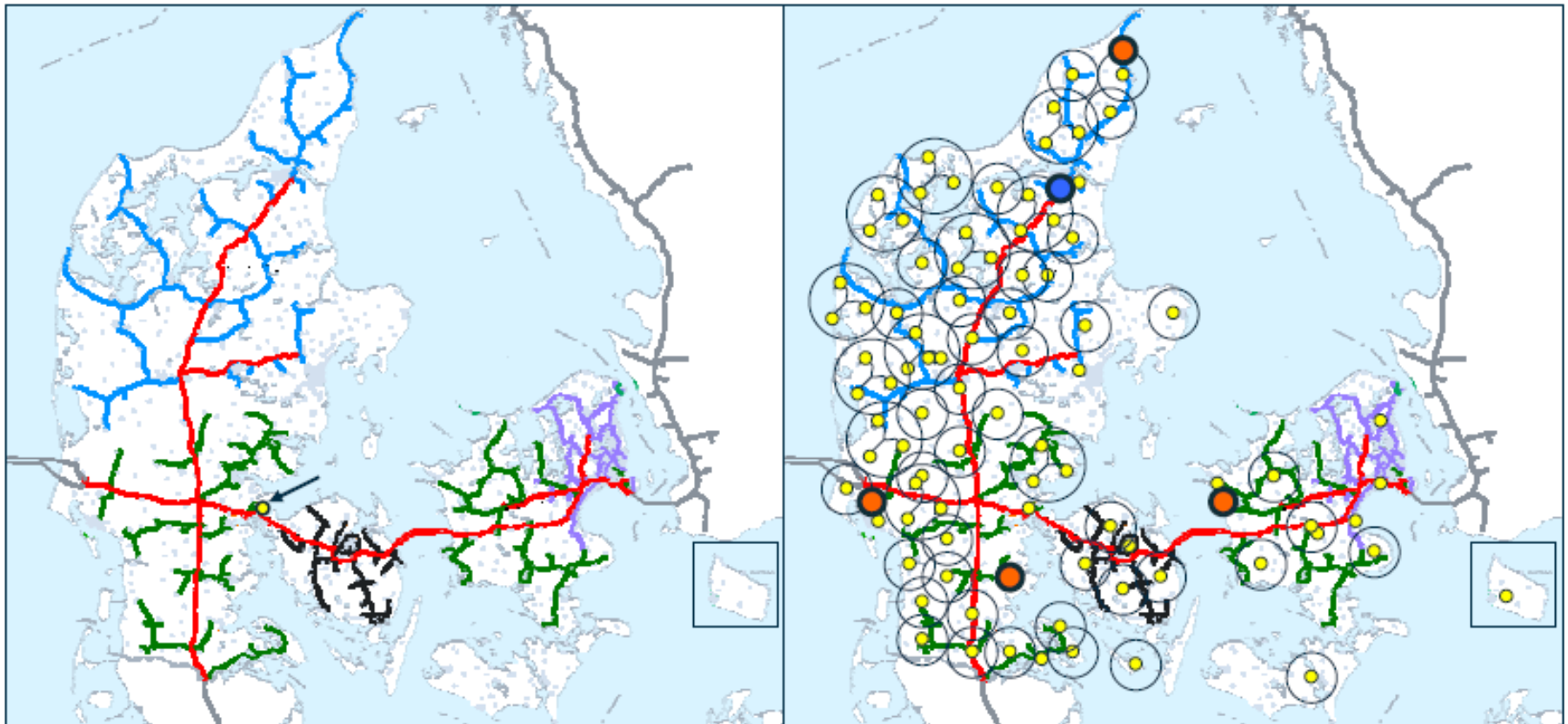
Need for up/down grading of production within hours/minutes/seconds



Future role: Green gas supply?

2011

2025 ?



Biogas

● Termisk forgasning

● Elektrolyse

Tentativ illustrativ – ingen overvejelser om konkrete anlæg



What will the future bring?

- New markets?
- New products?
- New actors?
- Bigger plants?
- More competition?
- We don't know!