



# Biogas situation in Denmark with special focus on the transportation sector

**Tallin December 6. 2011**

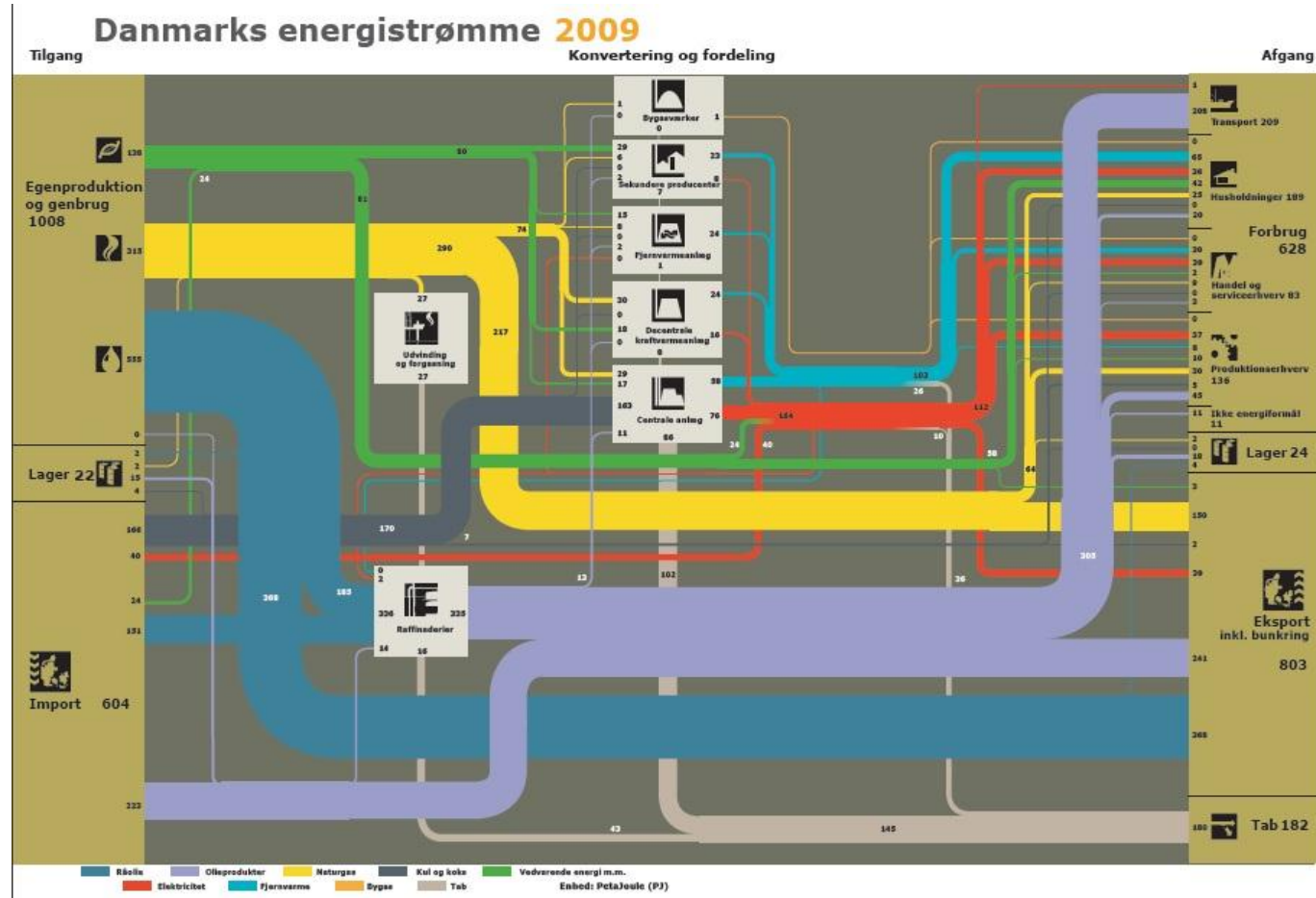
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Agro Food Park, Aarhus

Denmark

# Energy flow in Denmark



# Bio-energy in Denmark

PJ (Total 814 PJ)	Danish potential	Use of resource	Import
- Straw	55	18.6	0
- Wood chips	40	33.7	16.1
- <b>Biomass for biogas</b>	<b>40</b>	<b>4.2</b>	<b>0</b>
- Waste	30	30	0
<b>Total</b>	<b>165</b>	<b>87.5</b>	<b>16.1</b>
<b>Wind</b>		<b>30</b>	

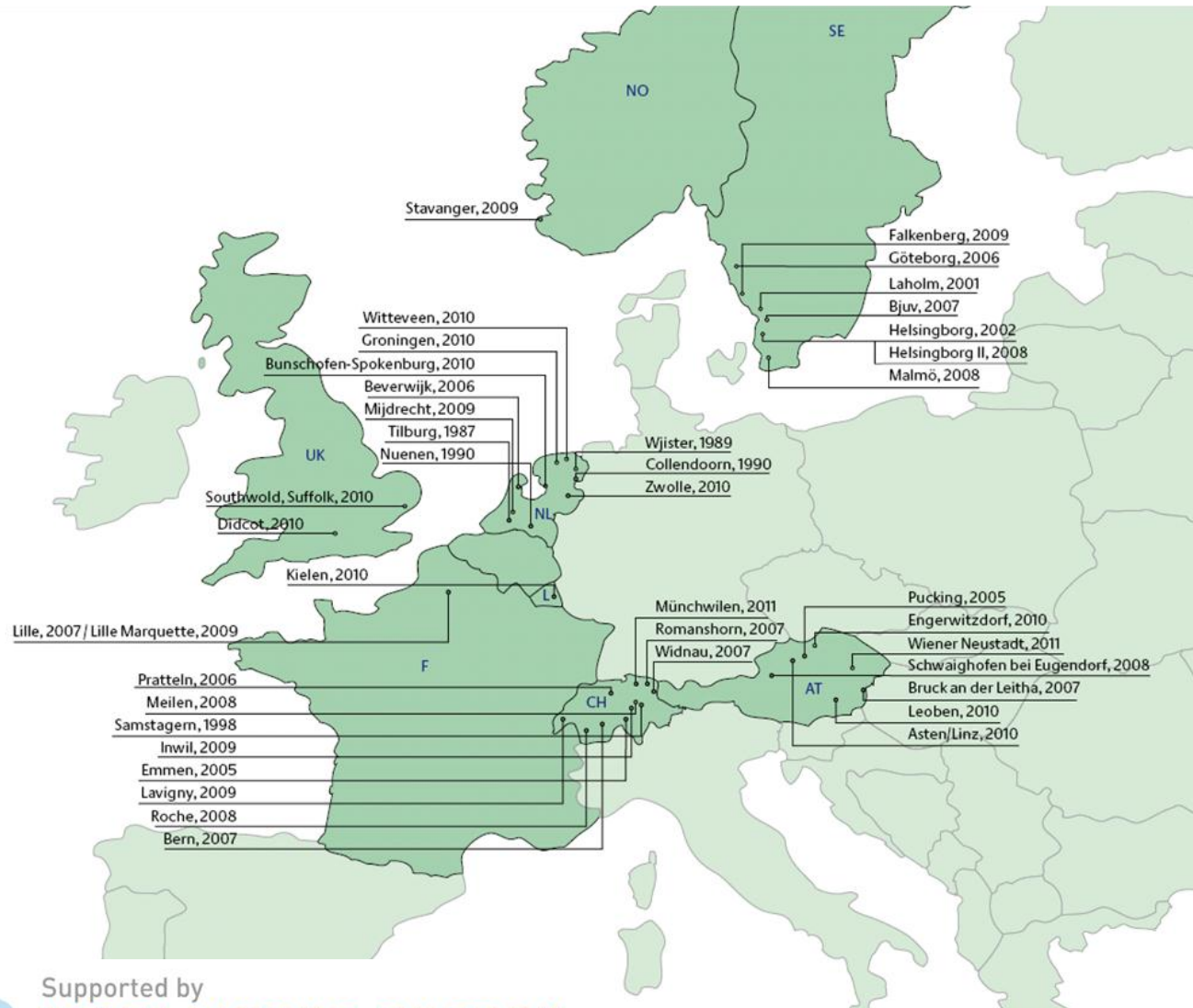
# Best practice - Biogas plants

- 24 industrialized plants
- 60 farm biogas plants
- Utilizing animal manure, waste and energy crops
- Producing electricity and utilizing the heat production
- Reducing Green House Gasses, waste disposal
- Benefits for farmers



*Photo: Knowledge Centre for Agriculture, Crop Production*

# Upgrading in Europe





# Upgrading in Germany



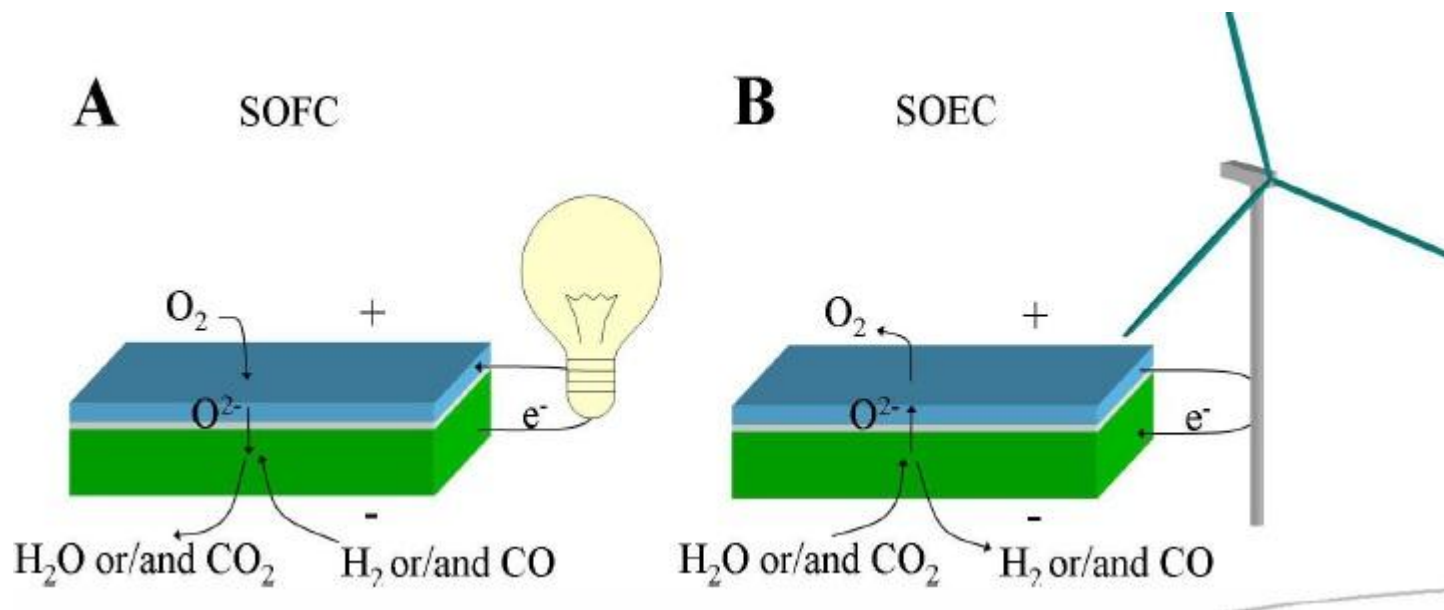
Abbildung: Geografische Verteilung von Biomethananlagen in Deutschland.

- |                              |                          |                           |                            |
|------------------------------|--------------------------|---------------------------|----------------------------|
| 1 Aiterhofen/Niederbayern    | 15 Forchheim im Breisgau | 29 Könnern 2              | 44 Ronnenberg              |
| 2 Altenstadt Schongau        | 16 Gütersloot            | 30 Lankens/Wotensen       | 45 Schwandorf III          |
| 3 Angermünde/Schmargendorf   | 17 Godenstedt            | 31 Lückow                 | 46 Schwedt                 |
| 4 Amstwang                   | 18 Graben/Lechfeld       | 32 Malsdorf               | 47 Send (Groß Umstadt)     |
| 5 Blaufelden - Emmertsbühl   | 19 Grabenleben           | 33 Mahlingen              | 48 Straelen                |
| 6 Bruchhausen-Vilsen         | 20 Güstrow               | 34 Metzitz                | 49 Tübingen                |
| 7 Burgrieden (bei Laupheim)  | 21 Hamburg               | 35 Mühlacker              | 50 Unleben                 |
| 8 Dannenberg                 | 22 Hardegen              | 36 Neukammer 2            | 51 Werthe                  |
| 9 Darmstadt-Wilshausen       | 23 Hornburg/Elze         | 37 Neuss am Niederrhein   | 52 Wetschen                |
| 10 Drögenindorf              | 24 Horn - Bad Meinberg   | 38 Niederndodeleben       | 53 Willingshausen/Randbach |
| 11 Eggertshofen bei Freising | 25 Kerpen                | 39 Palmersheim-Euskirchen | 54 Wriezen                 |
| 12 Eich in Kallmünz          | 26 Ketzin                | 40 Piening                | 55 Würzburg                |
| 13 Einbeck                   | 27 Killeberg-Rahmshaus   | 41 Pohlische Heide        | 56 Zeven                   |
| 14 Ettlingen                 | 28 Könnern I             | 42 Rathenow               | 57 Zörbig                  |
|                              |                          | 43 Rhede                  |                            |

# Upgrading in Denmark



# New SOEC upgrading technology



High operation efficiency  
Reduced upgrading costs  
Scaleability  
Reduced investment costs  
Demonstration project in 2012



# Naturgas Fyn - 14 Gas Cars



# European Bio-Methane Regions

- 1 Stimulate the market
- 2 Show Best Practice
- 3 Identify Barriers
- 4 Elements to a National Strategy
- 5 Support the establishing of biogas- and bio-methane plants
- 6 Present new technologies
- 7 Local, Regional and International lobby activities
- 8 <http://www.bio-methaneregions.eu>