France Report

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French Environment and Energy Management Agency
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Regulations, incentives, action plans : what news?

→ Decree WWTP sludge published in June 2014

- Possibility to feed-in the biomethane from WWTP sludge is open
- Tariff calculated as following :
  - Basis : 6,4 to 9,3 c€/kWh
  - + Bonus (flow rate) : 0,1 to 3,9
  - + The year of start of the AD plant

→ "Energy, Anaerobic Digestion and Nitrogen" Action Plan,
Still in operation with target of 1000 units built in 2020
another new target is "1 500 projects of AD plant in 3 years"

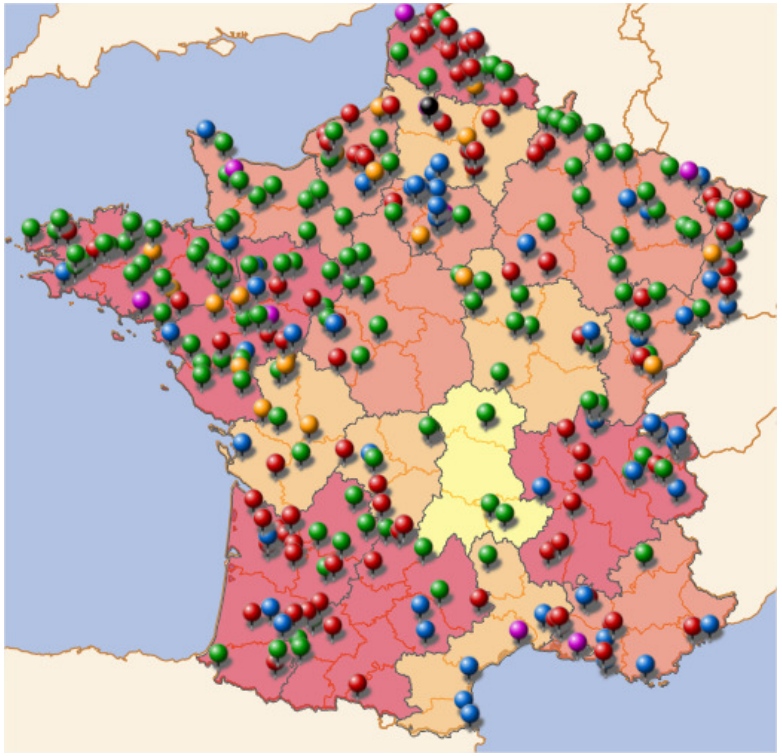
Status quo of biogas

AD plants in operation (estimated by ADEME, December 2013) :

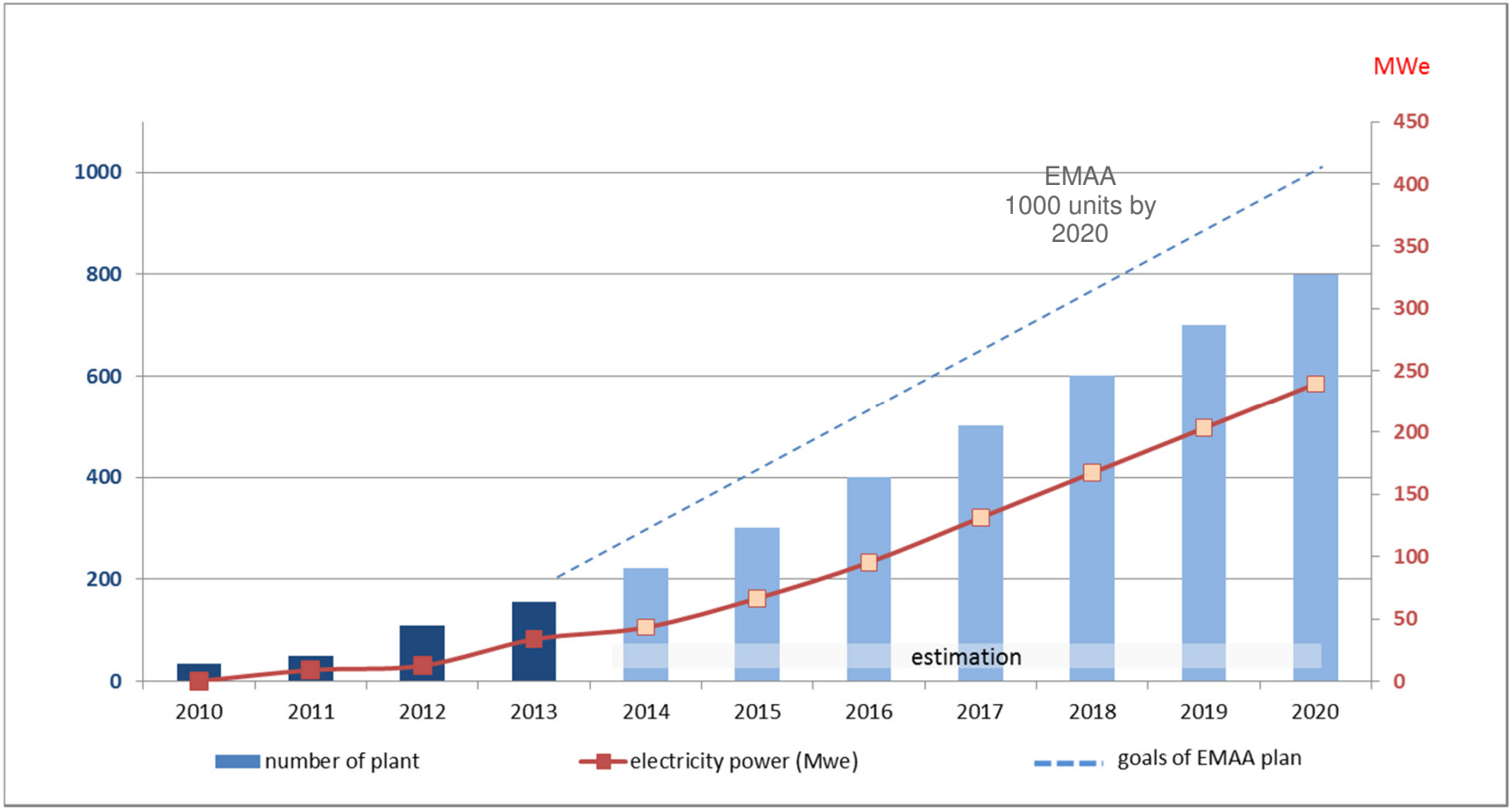
- On-farm ≈ 140 (average of 190 kWe)
- Centralized ≈ 20 (av. of 1,2 MWe)
- Industrial ≈ 80
- WWTP ≈ 85
- MSW : 11 (4 biowaste & 7 grey waste)
- Landfill ≈ 245 including 110 with energy recovery

Different biogas plants in France (2013)

Source : http://carto.sinoe.org/carto/methanisation/flash/



On-farm and centralized AD plant development forecast until 2020



→ AD Investment costs (2012)

- on-farm : 5 610 €/kWe
- centralized : 6520 €/kWe

→ results of studies

- technical, economical and environmental monitoring of 10 plants (on farm, centralized, industrial, and WWTP production (2011-2013)
- economics data for 50 plants : investment, benefits and costs (2014)
- estimation of the biomethane potential from WWTP sludge

→ studies in progress

- technical, economical and environmental monitoring of biomethane production and injection facilities (2013-2016)
- technical, economical and environmental monitoring of small scale and innovative on-farm AD plants (2013-2015)
- Estimation of different Emissions from AD Plants
- Benchmark on European biogas production and policy

Upgrading plants in operation (oct, 2014)

2009 - Claye-Souilly (MSW, landfill)
V = 60 Nm^3/h
PSA + membranes (Cirmac)

2010 – Labessière-Candeil (MSW, landfill)
V = 40 Nm^3/h
PSA (VerdeMobil - Xebec)

2011 – Lille (biowaste, 108,000 T/y)
V = 700 Nm^3/h
water scrubber (Greenlane-Flotech)

2013 – Morsbach (biowaste, 45,000 T/y)
V = 50 Nm^3/h (→ 100)
membranes (Air Liquide)

2013 – Chaumes-en-Brie (on-farm, 12,000 T/y)
V = 100 Nm^3/h
membranes (Air Liquide)

2014 – Mortagne-sur-Sèvre (agro waste, centralized, 21,000 T/y)
V = 65 Nm^3/h
PSA (VerdeMobil - Xebec)

2014 – La Roche-sur-Foron (WWTP, 5,000m^3/d)
V = 60 Nm^3/h
membranes (Evonik)

2014 – Sourdun (intermediate crops, 10,500 T/y)
V = 120 Nm^3/h
membranes (Evonik)

2014 – Ussy-sur-Marne (intermediate crops, 10,500 T/y)
V = 120 Nm^3/h
membranes (Evonik)






Studies in progress

- Technical, economical and environmental monitoring of biomethane production and injection facilities (2013-2016)
  - Started in October, 2013 – end in December, 2016
  - Feed-back on the first 10 biomethane injection units (technical parameters, costs, recommendations for construction and upgrading/injection)
- Evaluation of biomethane potential from WWTP sludge
  - Completed in September, 2014
  - 85 WWTP with DA / 19,521
  - Potential 2020: 0,4 TWh
  - Potential 2050: 1,8 TWh