Biomethane development in France: perspectives and lesson learnt

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Agenda

GRDF’s vision of the future of the gas industry

Current and potential forecasted development in France

Biomethane is environmentally performant

Biomethane regulation in France

GRDF, main French natural gas distribution operator

200,000 km
of network

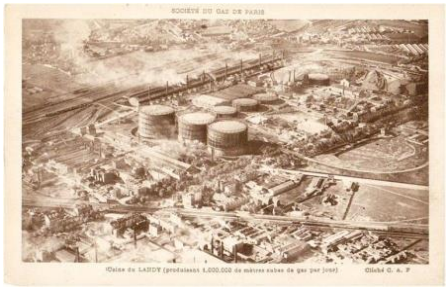
11 million
delivery points in France

A grid operator
committed to the development of biomethane and bioNGV

GRDF's vision of the future of the gas industry

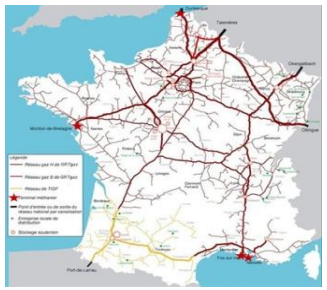
Manufactured gas
Local production and distribution

Lighting …. Cooking



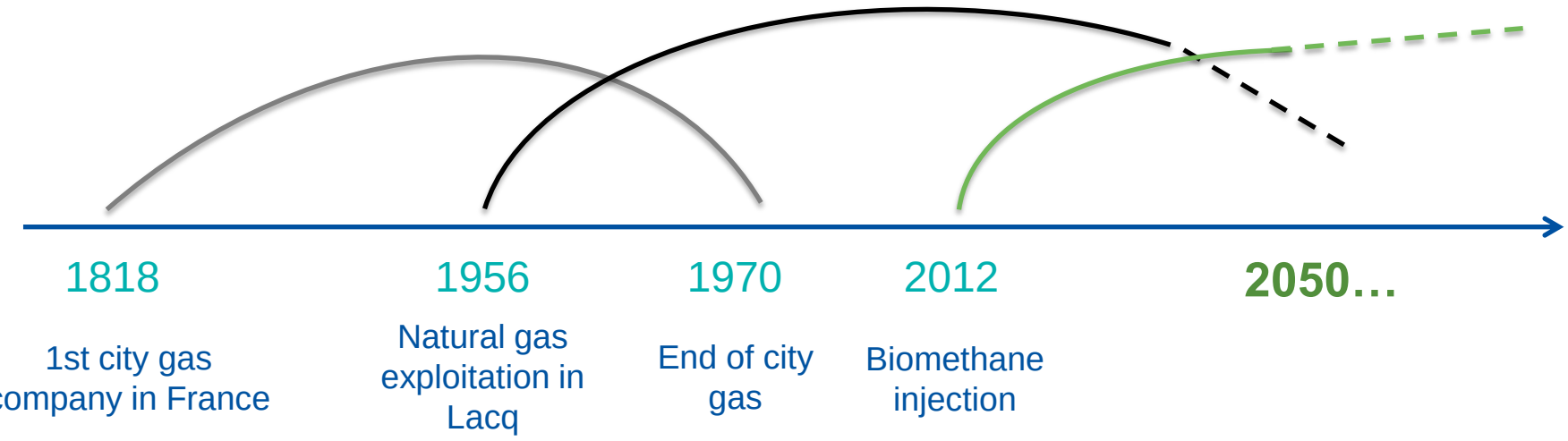
Natural gas
Centralised infrastructures

… Heating, Hot water…



Renewable gas
Decentralised and interconnected infrastructures

… Mobility, Power to gas, Fuel Cells…

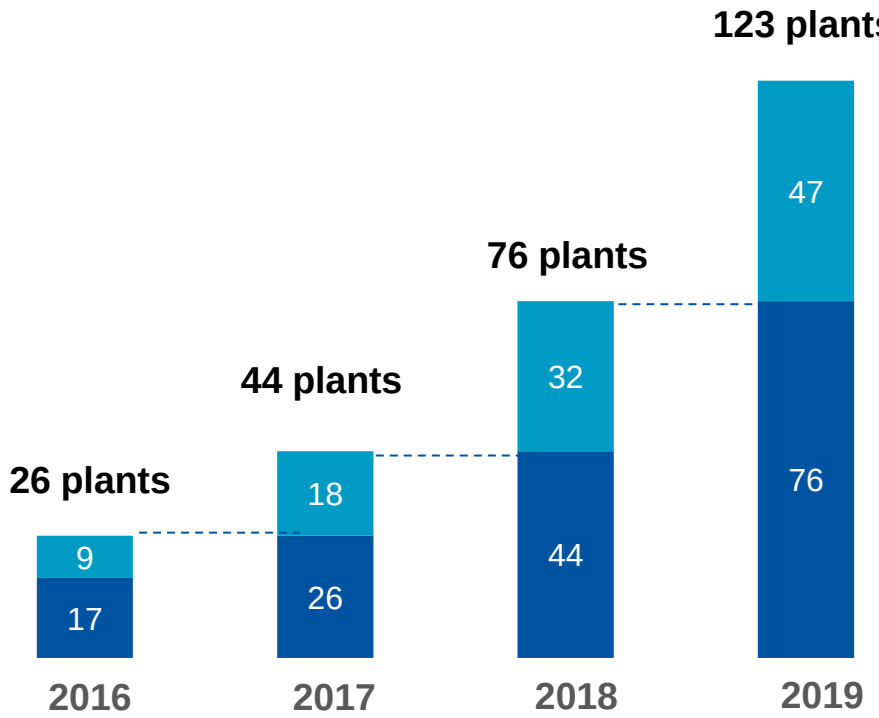


» A rapidly growing biomethane sector

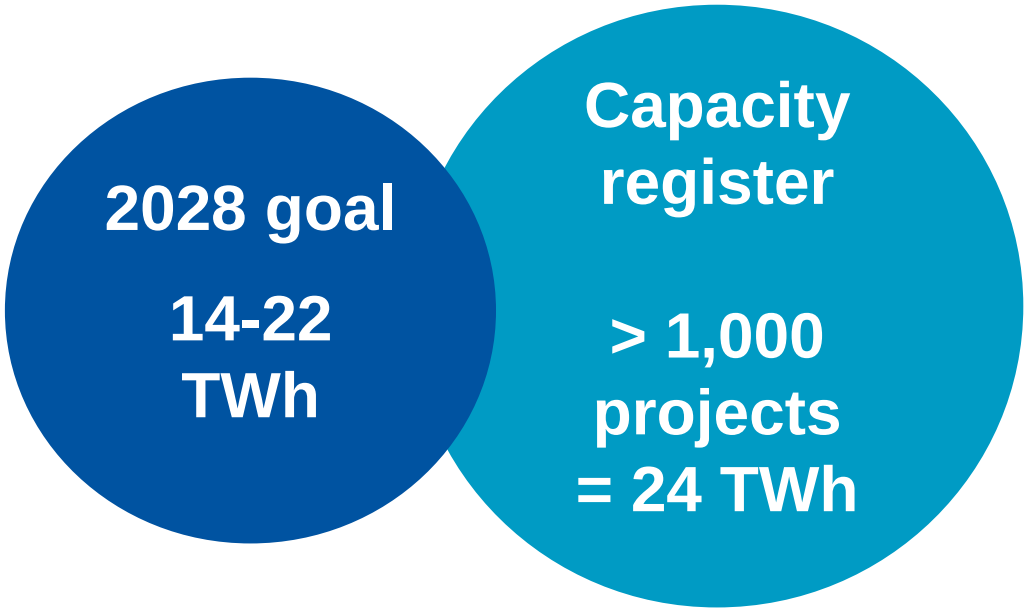
155

Biomethane sites injecting in the French gas grid today
Total capacity of 2.7 TWh/year

~ 1 new biomethane plant per week



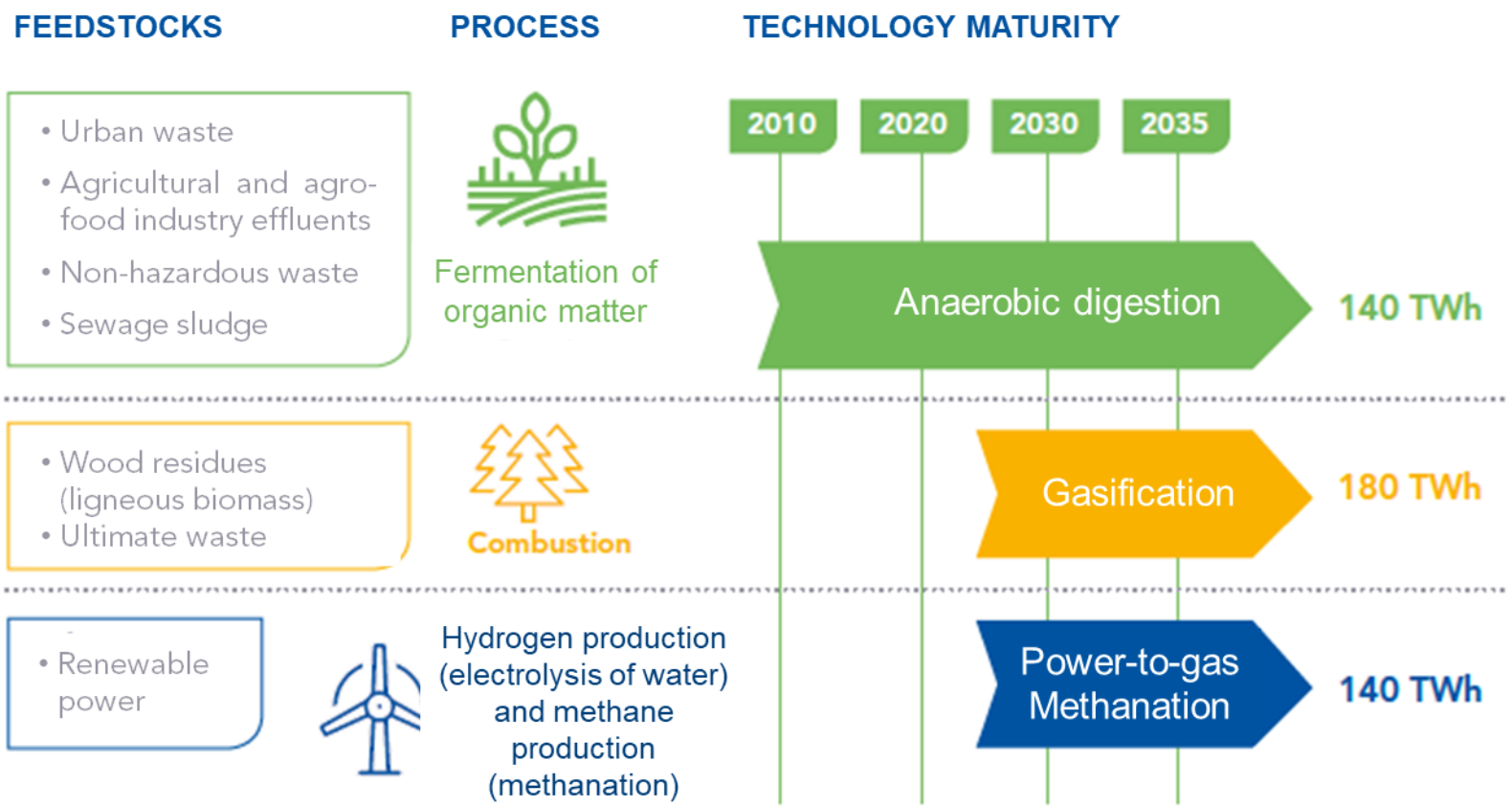
Source: open data



Source: Multi-Annual Energy Planning Scheme

» Long-term development in France

100% of the gas demand can be covered by renewable gas



460 TWh
Theoretical potential for renewable gas in France in 2050

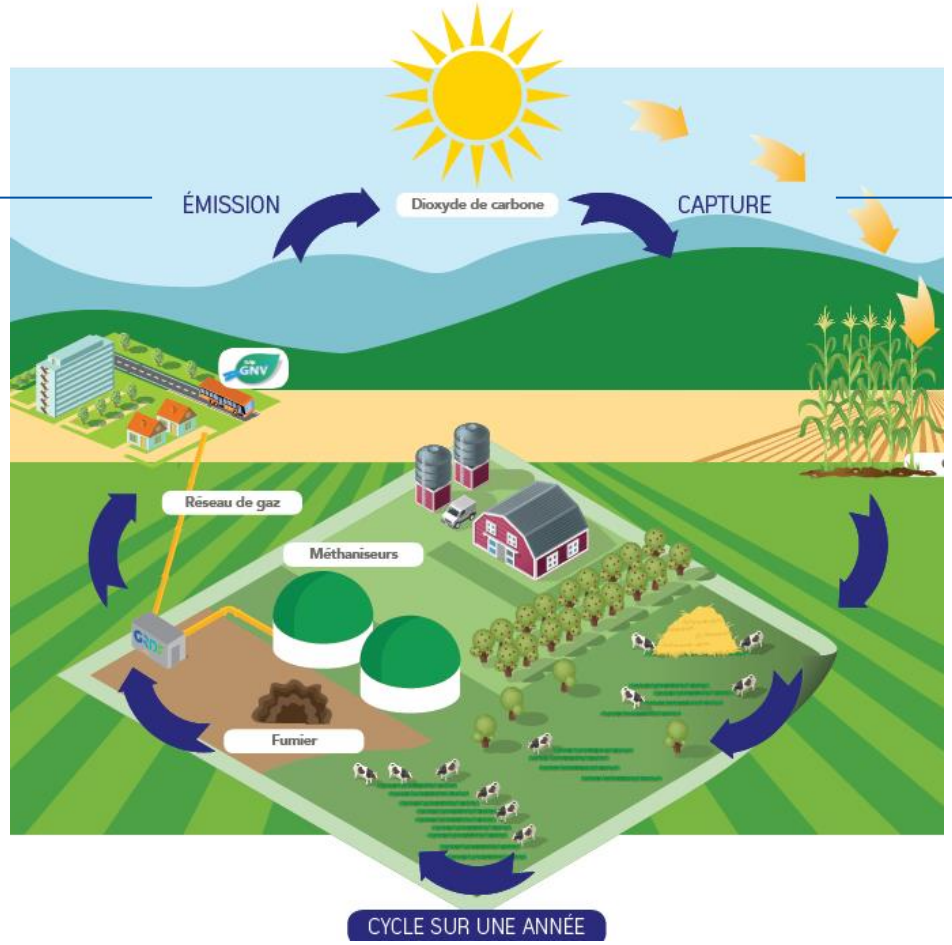
276 to 361 TWh
Gas demand in 2050 according to four scenarios

3 technologies:
- Anaerobic Digestion
- Gasification
- Power-to-H2/CH4

Study « A Renewable Gas mix in 2050 ? », ADEME, 2018

» Biomethane is climate neutral

Combustion of biomethane in boiler or vehicle produces « biogenic » CO_2 meaning coming from renewable organic material, not fossil



Organic material used for biomethane production has captured an equivalent amount of CO_2 to grow

This balance between emissions and capture is considered as Climate Neutral by the IPCC and ADEME

Source Base Carbone ®
http://www.bilans-ges.ademe.fr/documentation/UPLOAD_DOC_FR/index.htm?co2_biogenique.htm

» A biomethane sector dedicated to sustainable development

15 %	**Producers cannot use more than 15% of energy crops in their anaerobic digesters**
23.4 gCO2eq/kWh	**Average carbon footprint for 1 kWh of biomethane in France**
40 to 70 €/MWh	**The value of positive externalities generated by biomethane according to ENEA and the French Energy Regulator CRE (prospective committee)**

» Biomethane is more than energy

Cooperation WWF France - GRDF

Report ‘’Sustainability conditions of methanisation from agriculture’’ 03/2020

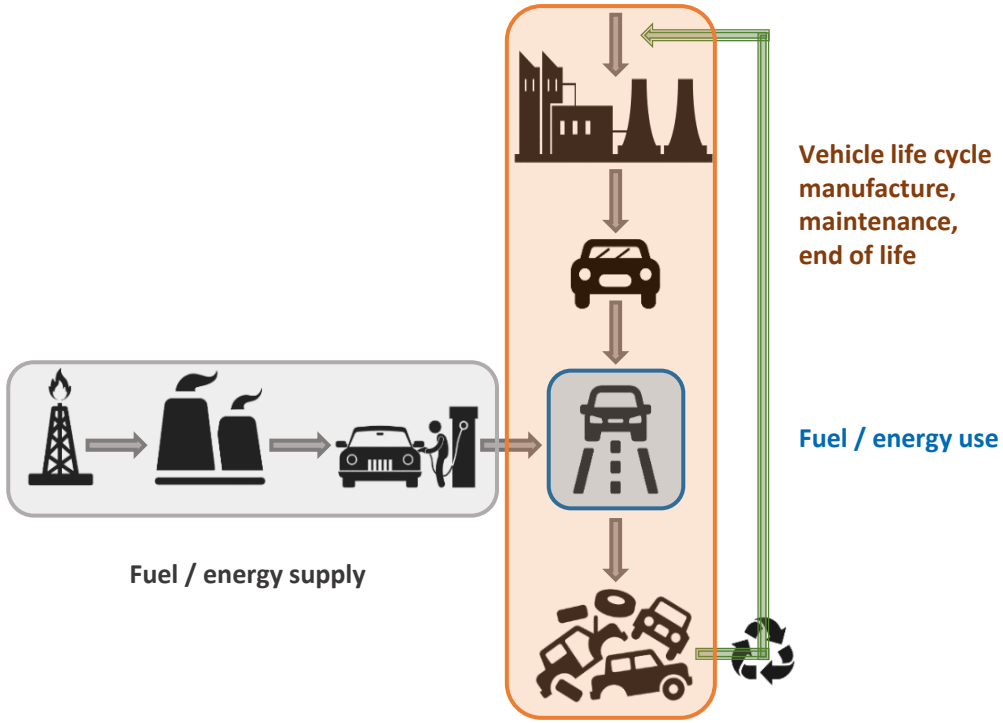
- 80% of biomethane in France will come from **agriculture** waste
- **Sequential crops** and **digestate** are key components of agroecology
- Challenge in terms of **agronomy, energy and environment** but biomethane can integrate all of them

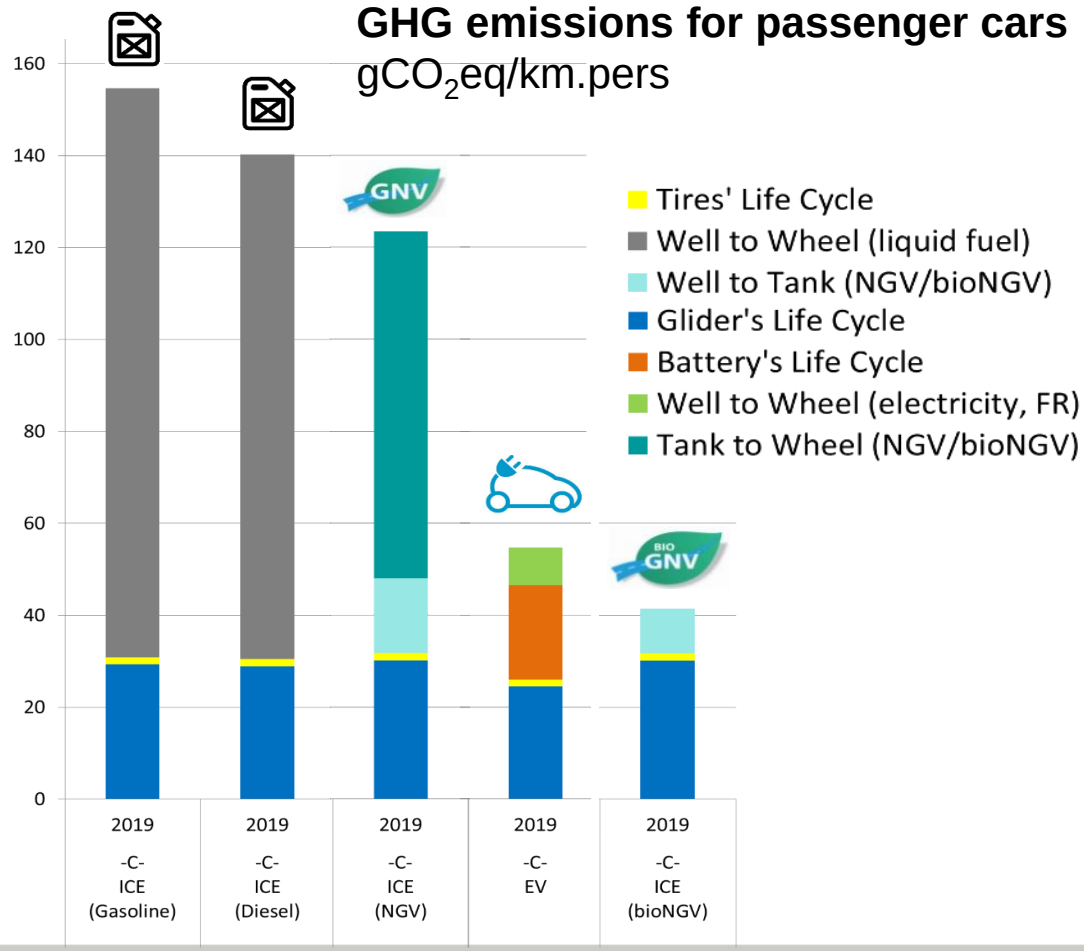
Partners:

» Biomethane: a carbon neutral fuel

BioNGV could present lower carbon emissions than Electric Vehicle in Life Cycle Analysis

(even in France with a low carbon electricity mix)

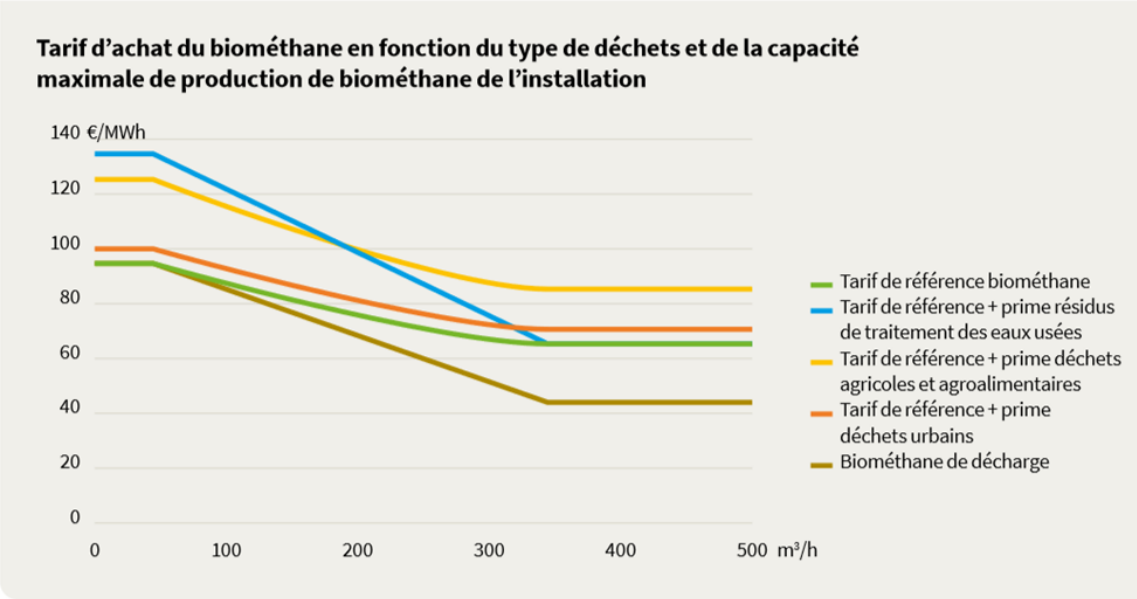




Source: IFPEN - bioCNG LCA Study – Sept.2019
Download here : http://bit.ly/LCA_study_bioCNG

» Support mechanisms

- Since 2011, a **feed-in-tariff** regulates and guarantees purchase price for 15 years to biomethane producers
- Since 2012, GRDF manages the register of **guarantees of origin** to ensures biomethane can be traced and to valorize in green offer for consumers
- In 2015, the Law establishes a **renewable gas production targets** at 10% of the gas consumption in 2030



The Feed-in-Tariff:

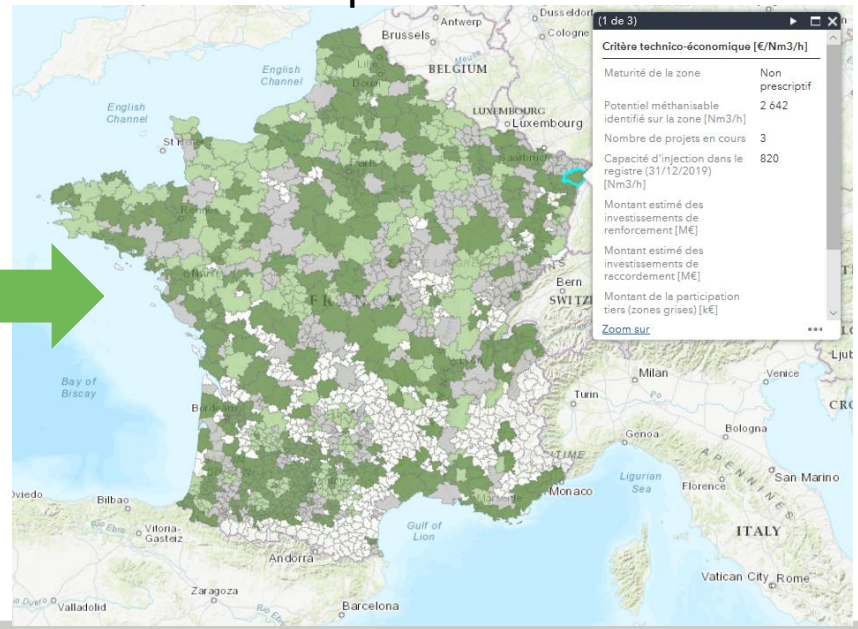
- decreases with the **size** of the plant
- adapts to **feedstock** (lower for landfill)
- remunerates services like urban waste or sewage treatment with a **premium**

» The “Right to Injection”

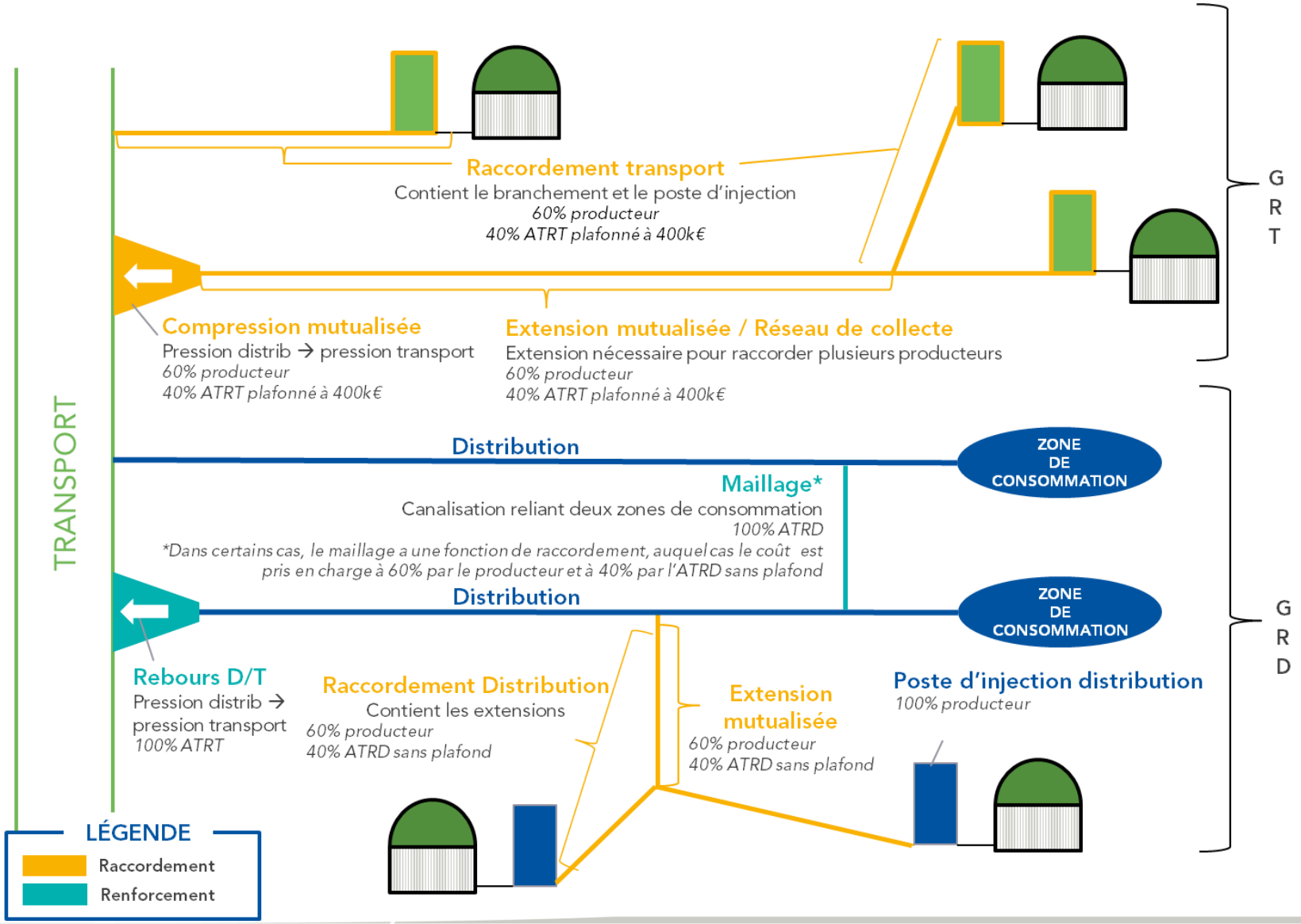
Established by Law in 2018 to **organise necessary infrastructure adaptation** for more biomethane injection

Some key principles:

- **Guarantee the connection** of a biomethane producer even if it is located outside a gas-served zone
- A **financing framework for the grid reinforcements**, specifying profitability criteria
- Procedures **enabling third parties** (particularly Regions) to support biomethane development
- Establish prescriptive **connection zoning**
- Treatment of **shared connections** (for several producers)
- Publication of a map indicating areas eligible for grid reinforcement measures



» Biomethane plant connection



I/V criteria

The financing of grid **reinforcement** of transmission (reverse flow) and distribution (meshing) works are included in the tariff of the operators (socialised to all users) if respecting the I/V (investment on volume) criteria defined by the National Regulation Agency.

Some elements of conclusion

- Biomethane is a relevant component of **a sustainable economy based on circular economy and sector integration principles => synergies between Agriculture - Energy - Waste Management**
- Biomethane projects should be conceived in a perspective of **regional/local development => an opportunity for Rural Development and Recovery Plan**
- What do we need?
  - Biomethane is developing well in France thanks to a **political commitment** associated to a target on production in the Law **=> binding EU renewable gas targets to get a trajectory of grid decarbonisation**
  - France has put in place a **consistent regulatory framework** given visibility to the market and operators **=> consistent EU regulation addressing biomethane through energy, agriculture and waste management regulations**
  - Allow fair comparisons of different energy transition technologies at an EU level **=> evaluate key technologies on full Life Cycle Assessment across all the sectors (mobility, heating…)**
  - Support mechanisms to allow innovation, demonstrations and maturity **=> combination of financial and non financial support**

Thank you for your attention

Contact details

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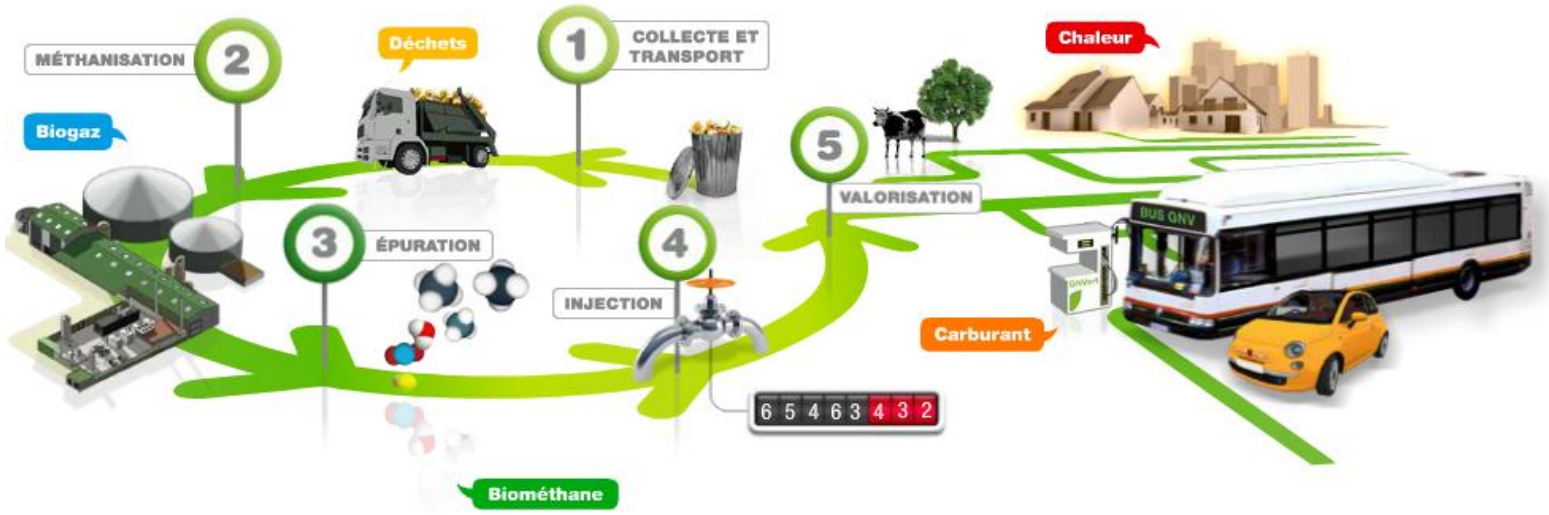
» Advantages of renewable gas

- Renewable gas participate to:
  - ✓ A **circular economy** with waste treatment and valorisation of co-products as energy, fuel and organic fertiliser (digestate)
  - ✓ A **local activity** with short loop of distribution for a local production (reduction of imports) and creating jobs
  - ✓ **Synergies with the agriculture**: carbon footprint reduction, diversified income for farmers
  - ✓ **Clean mobility** Natural Gas Vehicle (NGV) can be fueled with biomethane (bioNGV)



» CNG/bioCNG development in France

A market driven by Heavy Duty Vehicles

20,000
NG vehicles in France, half of them are Heavy Duty

12 %
of city buses are running on CNG
(3,350 buses)

10 %
of garbage trucks running on CNG
(1,870 trucks)

250 public refueling stations
by the end of 2020 (see map)

A growing share of biomethane in mobility

Biomethane share in CNG
17%

Development of NGV vehicle registration in France