



ENGIE



**GREEN GAS IN FRANCE**



# ENGIE'S AMBITION FOR BIOMETHANE DEVELOPMENT IN EUROPE

## State of play

### PRODUCTION

 **32 SITES & 670 GWh/y**

 **4 SITES & 217 GWh/y**

 **2 SITES & 140 GWh/y**

Units certified **RED II**

## ENGIE Ambitions 2030

### PRODUCTION

**10 TWh per year**

### COMMERCIALIZATION

**30 TWh per year** worldwide via GEMS

## Growth



Constructions



Acquisitions



Partnerships

## ENGIE Production sites in UK



Condote Biogas (South Molton, Devon)



Gorst Energy (Clyst St Mary, outskirts of Exeter)



Sustainable Energy Generation (South Somerset)

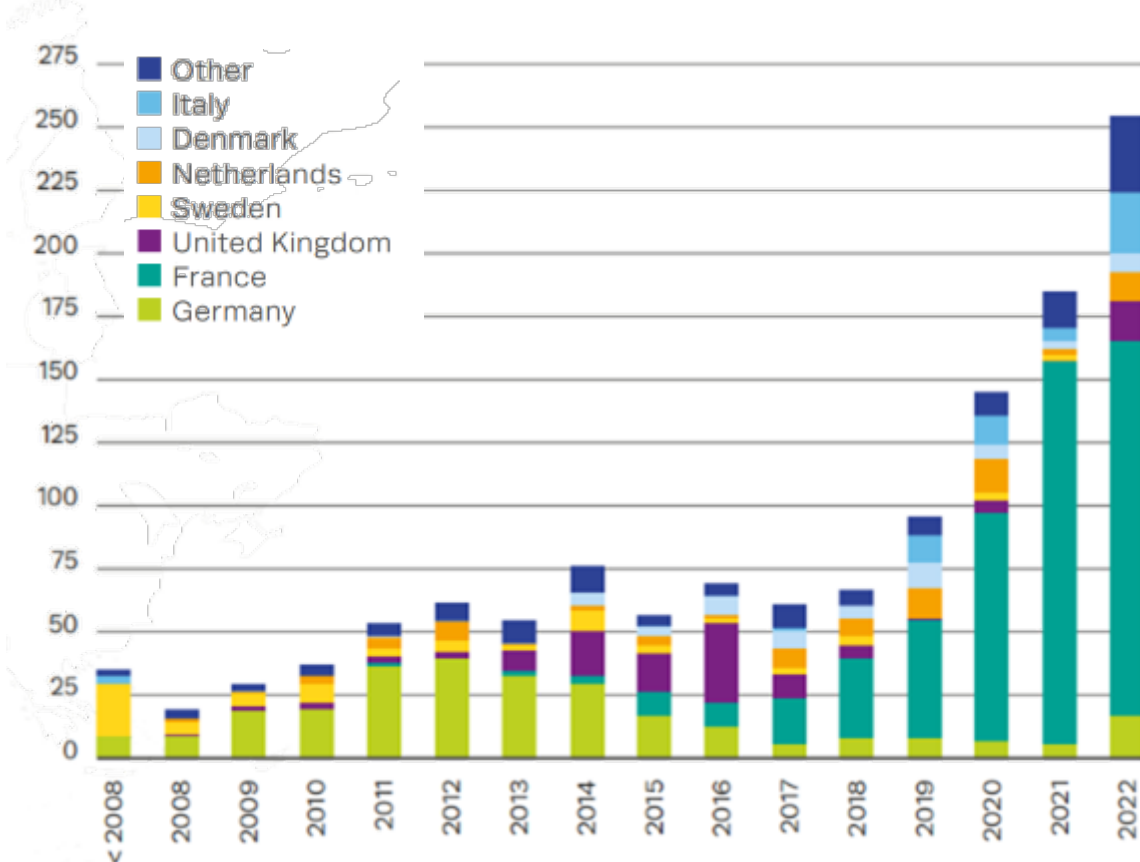


Rainbarrow farm (Dorset)

# FRANCE IS A MAJOR DRIVING FORCE ON THE EUROPEAN BIOMETHANE MARKET

Number of new **biomethane** plants in Europe per country

Source: EBA Statistical Report 2023



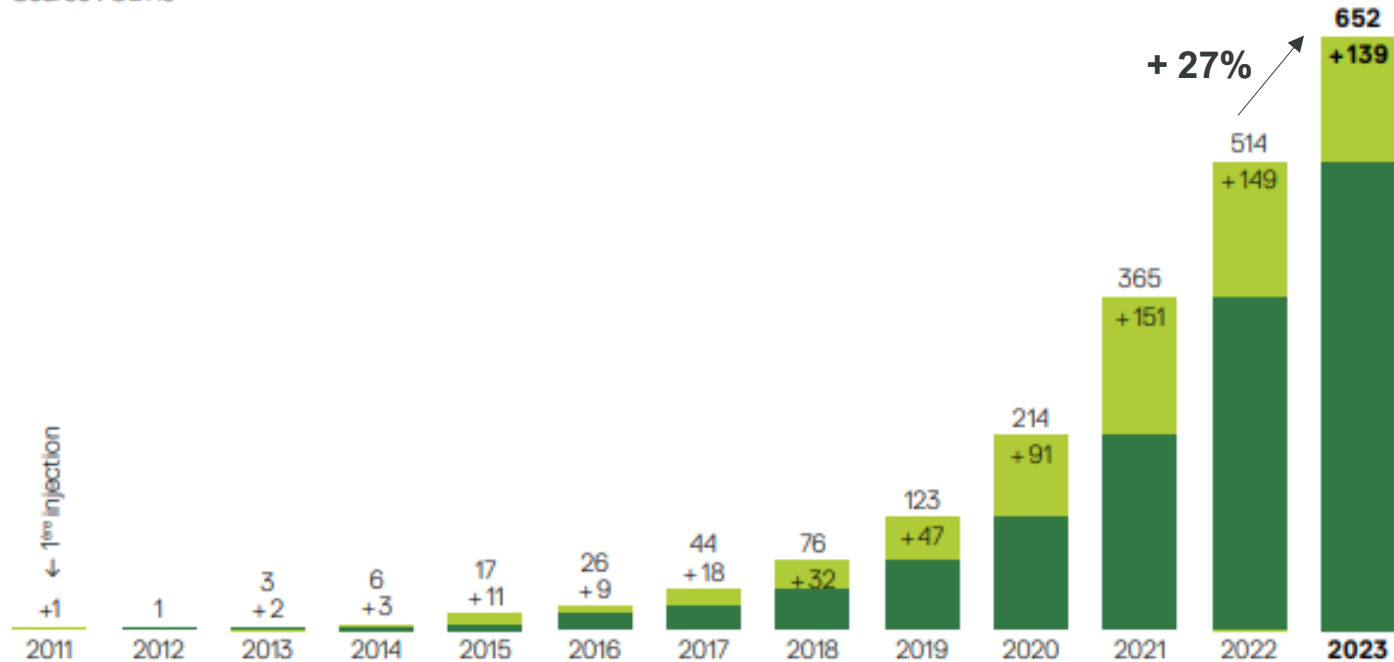
## Thanks to:

- National renewable gas objectives:
  - 14-22 TWh by 2028 (PPE)
  - 50 TWh (thereof 44 TWh injected) by 2030\*
- Production support for grid-injected biomethane since 2011
- Favorable framework for grid integration (“Right to inject”) since 2018
- Agricultural eco-system interested in biomethane and partnerships

\* NECP – National Energy and Climate Plan communicated to EU Commission

# BIOMETHANE HAS GROWN VERY DYNAMICALLY IN THE PAST YEARS

Source : ODRe<sup>10</sup>



## Types of plants\*

### 596 Agricultural plants

- 454 Autonomous – 65%
- 142 Territorial – 21%

48 Wastewater treatment plants – 7%

22 Industrial installations – 3%

22 Landfills – 3%

7 Waste treatment plants – 1%



**~13 TWh / year\***  
Capacity connected  
to the grid



**695\***  
Units injecting  
in the grid



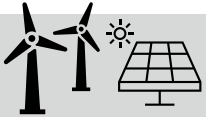


**9.1 TWh in 2023**  
Biomethane  
production

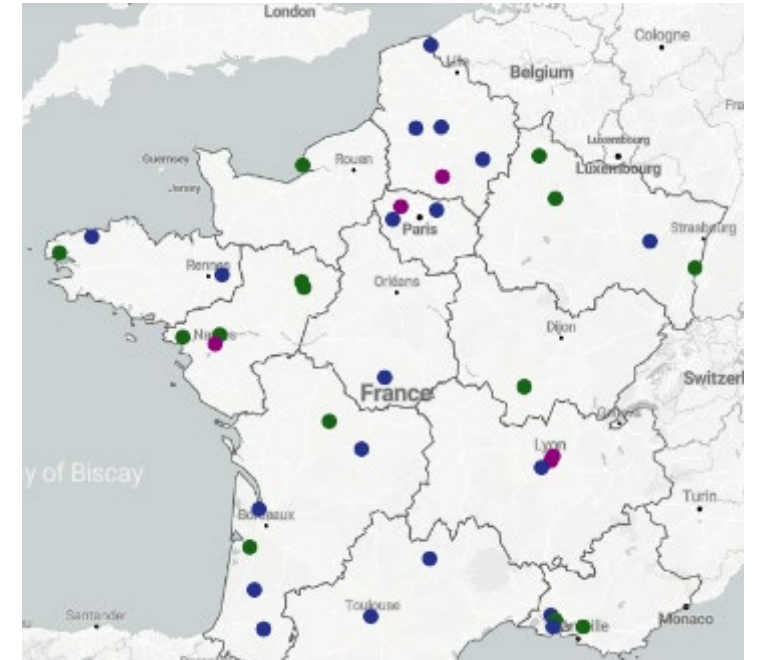


**2.4 %**  
Of natural gas  
consumption

# NEW TECHNOLOGIES ARE IN THE STARTING BLOCK

	Technologies	Feedstocks	Maturity
	<b>Hydrothermal gasification</b>	Wet biomass, liquid manure, sludge	Industrial pilot project in NL, Industrial projects under study in FR
	<b>Pyro-gasification</b>	Dry / woody biomass, refuse derived fuel (RDF) and solid recovered fuels (SRF)	Industrial projects under development in FR
	<b>Power-to-methane</b>	Renewable power Biogenic CO2	Projects under development

Pyrogasification projects in France  
Source: OpenData Réseaux-Energie



Projets de pyrogazéification pour injection

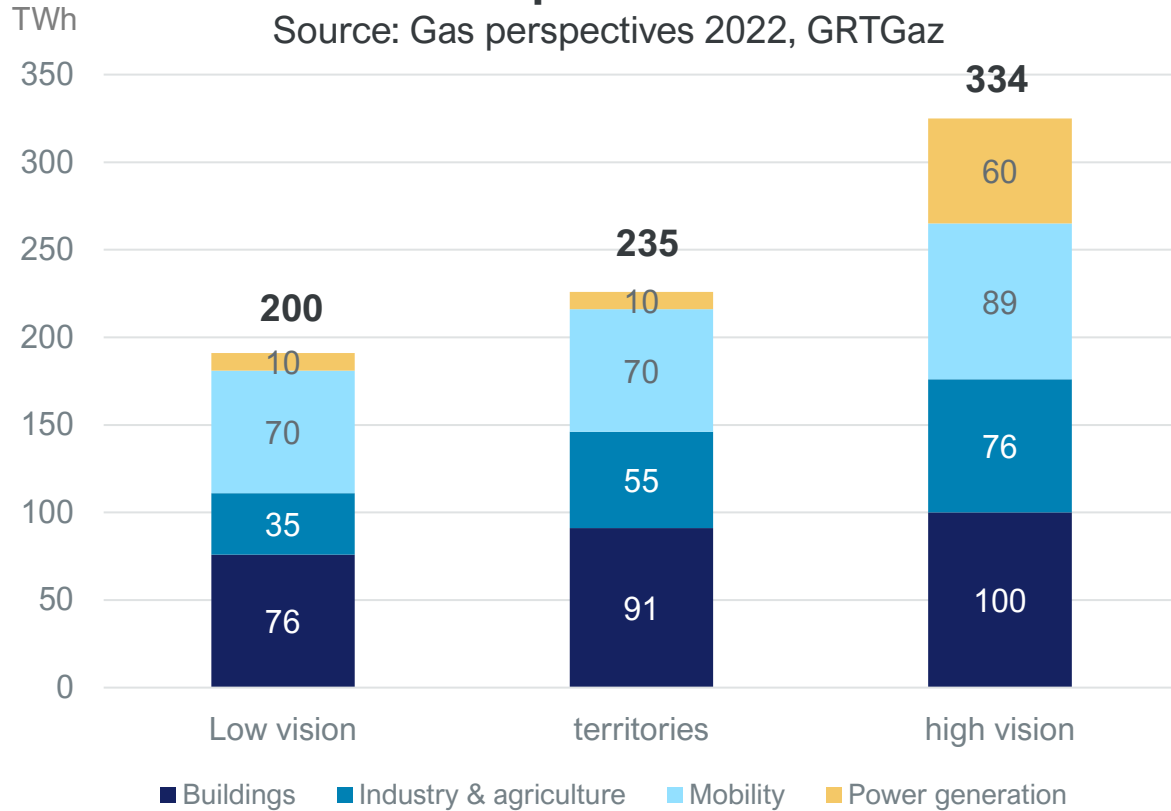
Statut

- 0. Démonstrateur
- 1. En étude préliminaire
- 2. Etudes en développement

# FRANCE HAS SUFFICIENT GREEN GAS POTENTIAL TO MEET ITS 2050 DEMAND

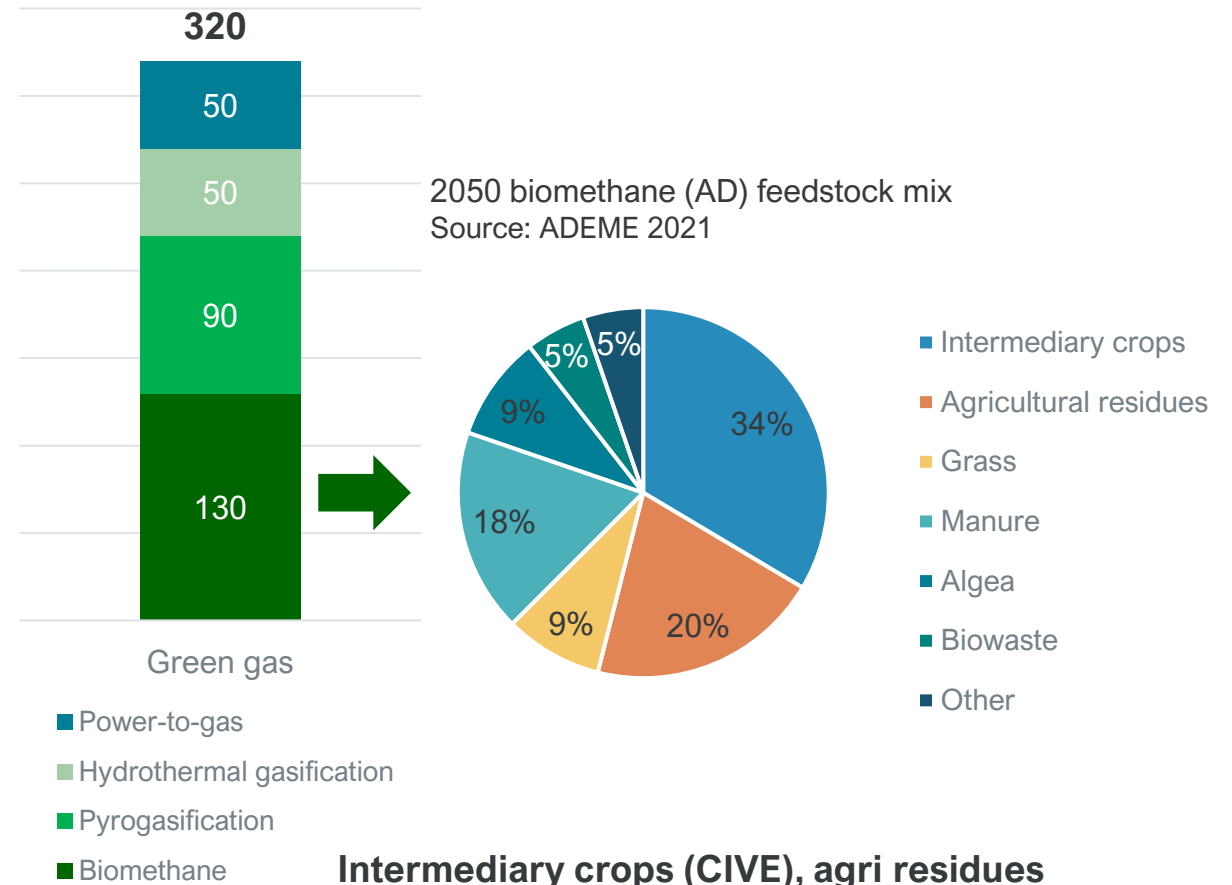
## CH4 Consumption scenarios 2050

Source: Gas perspectives 2022, GRTGaz



## CH4 Supply 2050

Source: Gas perspectives 2022, GRTGaz; ADEME



**Intermediary crops (CIVE), agri residues and manure as main feedstocks**

# GRIDS: THE “RIGHT TO INJECT” GUARANTEES CONNECTION AND ACCESS

- Established by law in 2018
- **Guarantees the connection** of biomethane producers even outside gas-served zones
- Joint optimal network planning exercise by grid operators (“**zoning**”) based on local biomethane potential
  - **323 zones / 1.1 bn EUR investment** validated by the Regulator
- **Financing of necessary reinforcement** based on technical-economic criteria ( $I / V$ )
  - **27 reverse flow mechanisms in operation, 14 under construction**
- **Connection cost** remain to be paid by biomethane operator but:
  - ✓ Rebate: 40% paid by producers – 60% by grid operator
  - ✓ Framework for shared connection facilities to avoid “first come, pay all”
- **Cost of network use covered by injection fee** – “timbre d’injection” (0.4-0.7 €/MWh)

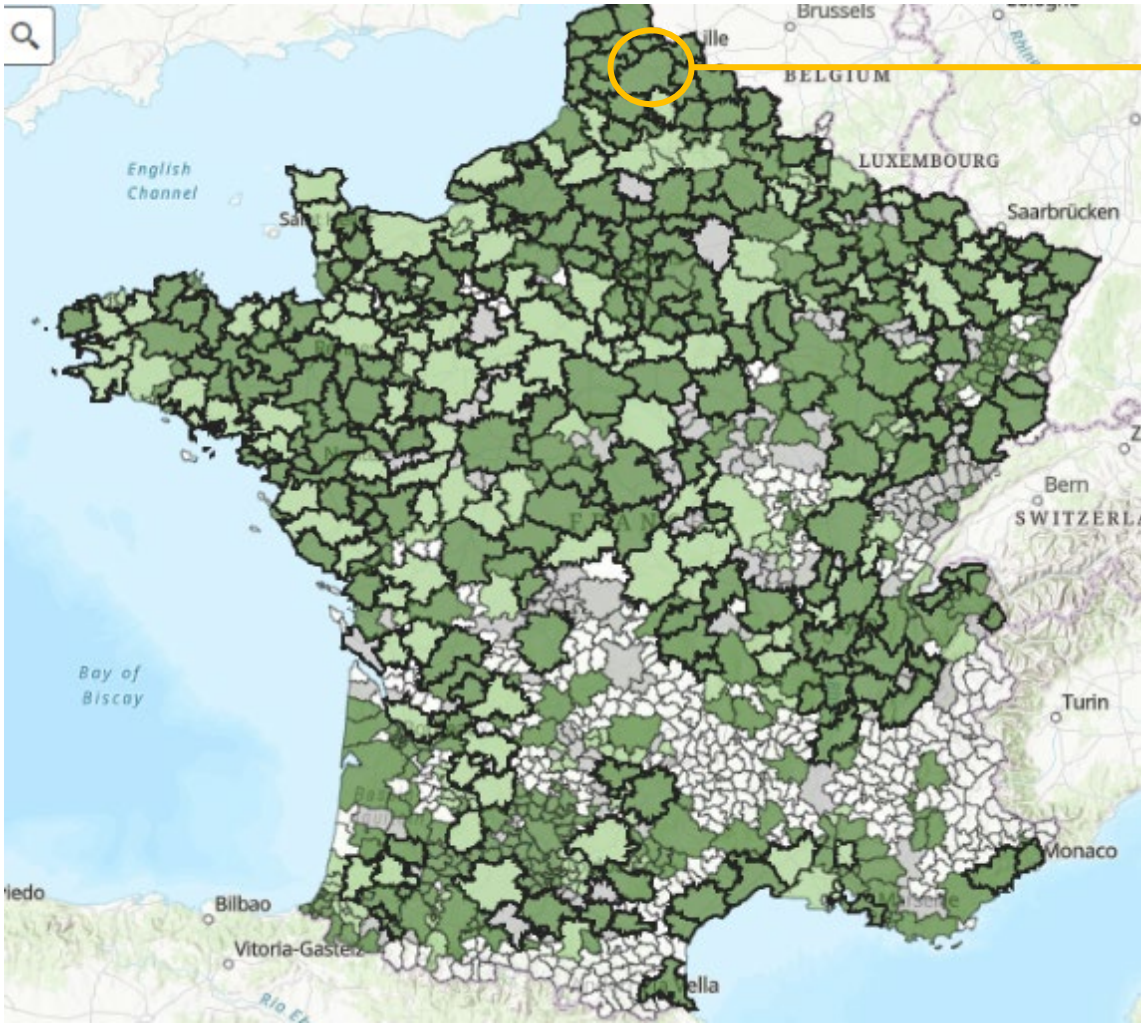


$$\frac{I}{V} = \frac{\text{Investments}}{\text{Volumes}}$$

- $I / V \leq 4700$  EUR/mn<sup>3</sup>/h  
→ cost socialization via network tariffs
- $I / V > 4700$  EUR/mn<sup>3</sup>/h  
→ reduced investment program or third-party financial participation



# GRIDS: ZONING EXERCISE BY GRID OPERATORS



Example (zone “Bethune”)

(1 of 2) ▶ □ ×

**Critère technico-économique [€/Nm<sup>3</sup>/h]**

Capacité d'injection dans le registre (01/02/2024) [Nm <sup>3</sup> /h]	1895
Capacité d'accueil après renforcement [Nm <sup>3</sup> /h]	5,587
Nom de la zone	BETHUNE
Maturité de la zone	Prescriptif
Montant estimé des investissements de raccordement [M€]	2.9
Montant estimé des investissements de renforcement [M€]	3.5
Montant de la participation tiers (zones grises) [k€]	0
Nombre de projets en cours	12
Potentiel méthanisable identifié	12.689

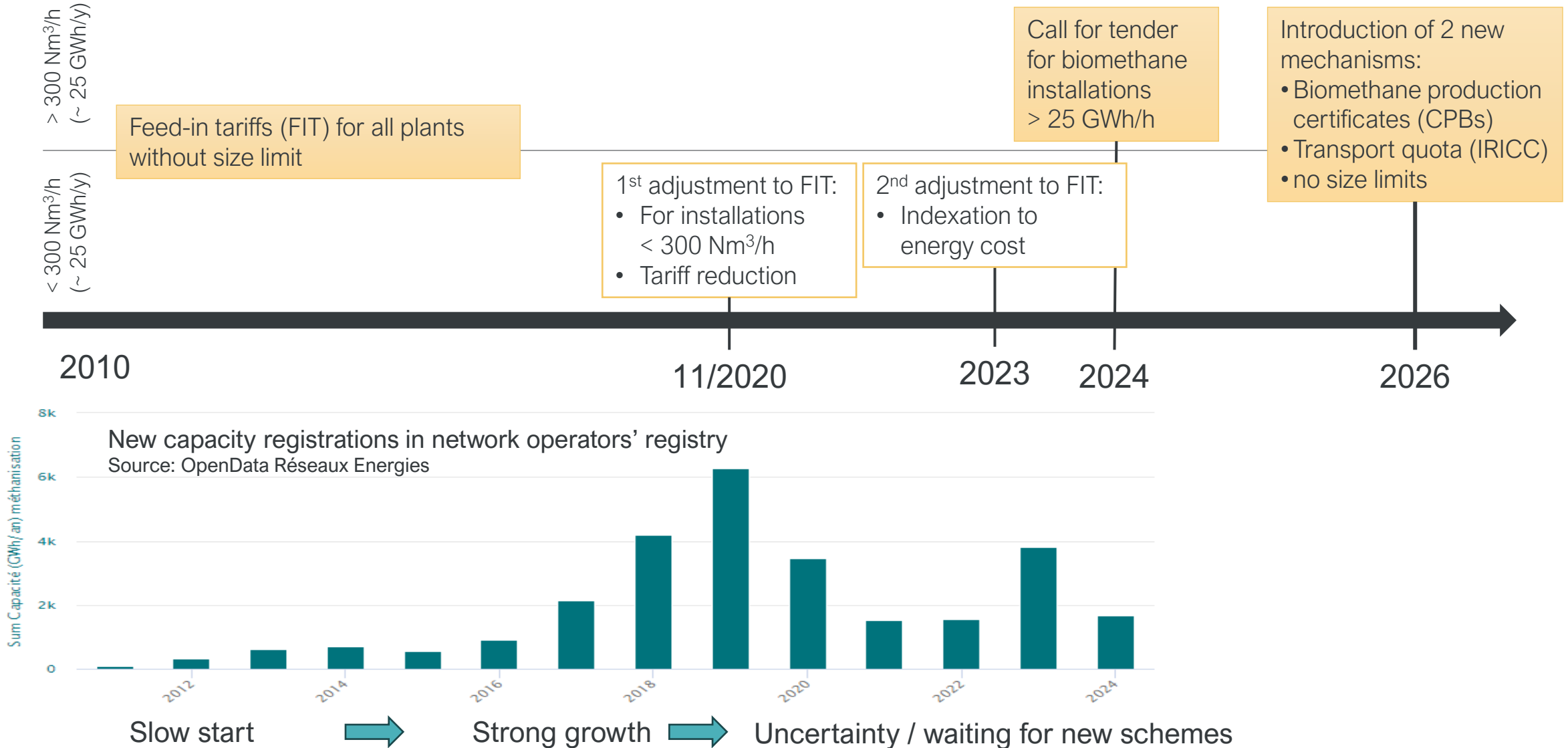
[Zoom to](#) ...

Couleur de la zone	Ratio-technico économique
	$I/V > 4\,700 \text{ €/nm}^3/\text{h}$ (soit 3,2€/MWh)
	$3\,300 \text{ €/nm}^3/\text{h} < I/V \leq 4\,700 \text{ €/nm}^3/\text{h}$ (soit 2,2 €/ MWh < $I/V < 3,2\text{€/MWh}$ )
	$I/V \leq 3\,300 \text{ €/nm}^3/\text{h}$ (soit 2,2 €/MWh)

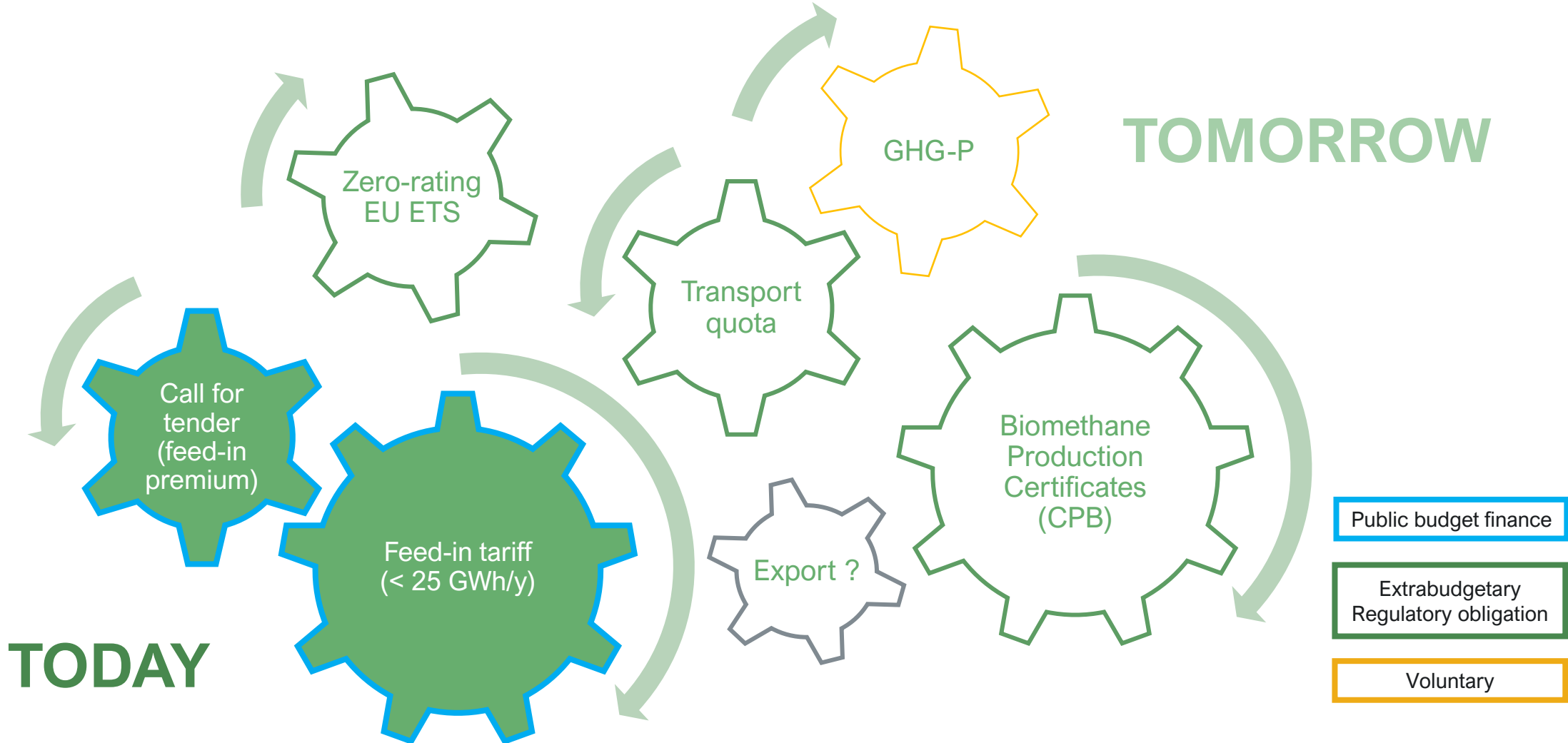
GRDF - Projet Méthanisation | Droit à l'injection - carte de zonage indicative



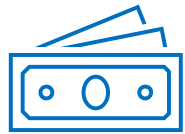
# SUPPORT MECHANISMS: STABILITY VS STOP & GO



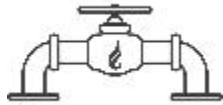
# MOVING TOWARDS DEMAND-DRIVEN, EXTRABUDGETETARY INCENTIVES



# CURRENT AND FUTURE TRENDS AND CHALLENGES



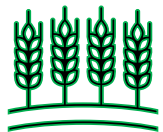
Support mechanisms



Grid injection framework



Voluntary market (BPA, GHG-P!)



Feedstock mobilization  
(intermediary crops, ...)



Valorization of byproducts  
(digestate, CO<sub>2</sub>)



Permitting and public  
acceptance



Access to sites



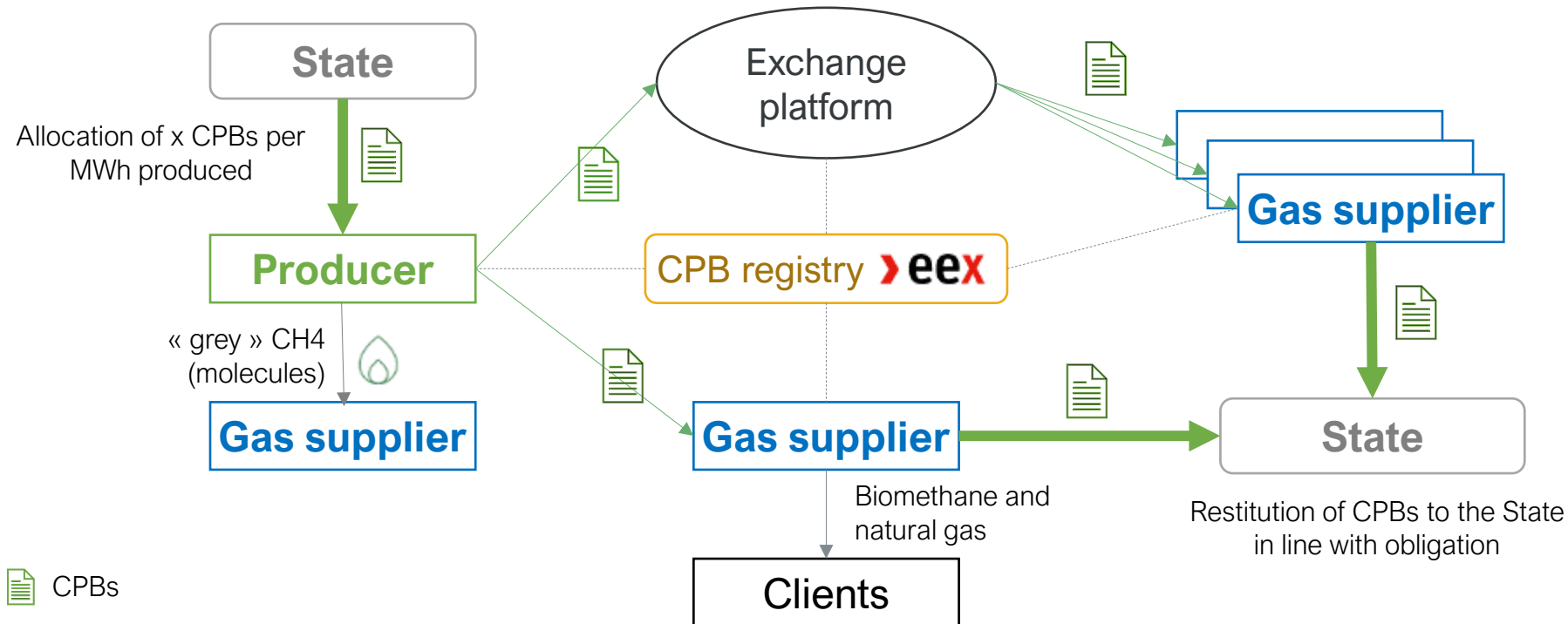
# CONCLUSIONS

- **Long-term visibility and stability** are key (targets, support mechanisms, ...)!
- Focus on **biomethane grid injection** rather than biogas for power/heat production to make use of flexibility provided by networks.
- Feed-in tariff has helped to launch the sector and gain acceptance, but **mechanisms supporting larger installations** are needed to accelerate growth.
- **Grid connection framework** (“right to inject”) is a powerful mechanism!
- **Length and complexity of permitting process** remain a key challenge.



Thank you for your attention !

# ZOOM IN: BIOMETHANE PRODUCTION CERTIFICATES (CPB)



## Determined by the State:

- Trajectory of the obligation:
  - 2026 0.8 TWh
  - 2027 3.1 TWh
  - 2028 6.5 TWh
- Penalty / buy-out price (100 €/MWh)
- Number of CPB per MWh produced

- ✓ Extrabudgetary mechanism
- ✓ Incentivizing larger installations

✗ Long-term visibility beyond 2028?



# ZOOM IN: CALL FOR TENDERS & GHG QUOTA IN TRANSPORT



## Call for tenders

- **FIT over 15 years** allocated via competitive tender
- Installations > 25 GWh/y, priority for installations < 50 GWh/y
- **3 bidding periods in 2024**, tendering out 500 – 550 GWh/y each
- **Permit** required (except for the 1<sup>st</sup> bidding period)
- **Max bid price** = 65 EUR/MWh for CH<sub>4</sub> from landfills and **120 EUR/MWh** for other biomethane
- 1<sup>st</sup> call for tender held in Q1/2024 was **undersubscribed!**



## GHG quota in transport (IRICC) as from 2026

- Obligation on transport fuel suppliers to **reduce the carbon-intensity** of their fuels
- Biomethane eligible among other fuels and electricity
- Advantage for biomethane with **very low or negative carbon intensity** (manure-based)
- Specific sub-targets for “**advanced biomethane**” (from wastes and residues Annex IX RED)
- No subsidies
- Details (targets, trajectory, penalty, ...) remain to be defined