

French Report

IEA TF 37



Julien THUAL - Biogas and anaerobic digestion coordinator

French agency of the ecologic transition

julien.thual@ademe.fr 02 41 20 74 15

Plan

1. L'ADEME

2. Historical of biogas model in France

3. Trends of biogas plants in France

4. Politic and economy: what is hot today !?

5. Research and innovation

Rôle and actions of ADEME about the biogas and anaerobic digestion

« *developp the biogas market and reach its autonomy* »

- 1- With the Professional members

Club biogaz, Asso AAMF, Amorce, FNE, APCA, Coop de France, GRDF etc.

- 2- sensibilize and communicate

Technical guides, financement, grand public, biodéchets etc.

- 3- innovation and research

Call for tenders, studies and biomass, energy and waste prospective works

- 4- Different studies

Benchmarks, economy, monitoring studies

- 5- Finance the operations

Mainly subsidies– 1400 operations – 480 M€ subs – 3,7 billion € investmt

ADEME: french
agency depends on
the environnement
ministry and
education ministry.

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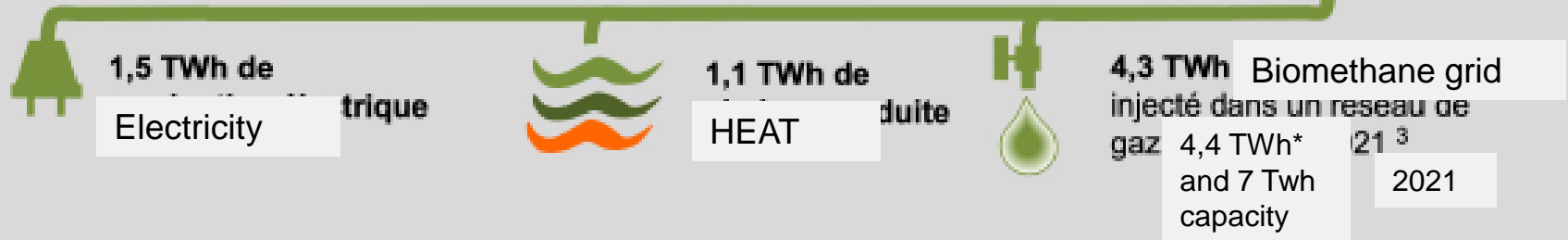
4. Politic and economy : what is hot at the moment !?

5. Research and innovation

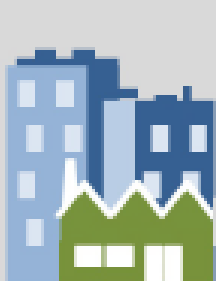
Biogas production in France



Les valorisations



DES ENTREPRISES COMPÉTENTES



500

ENTREPRISES

Qui ont largement développé leur savoir faire au cours des 10 dernières années



4 000

EMPLOIS IDENTIFIÉS

Dans le secteur du biogaz en 2020 ²



1 177 M€

CHIFFRE D'AFFAIRES

du secteur en 2021 ²

* 1^{er} janv 2022

French biogas model evolution and historical (1/2)

- 1980: average 80 agricultural plants → just 1 survived unit !
- Historical plants in industry and sewage sludge plants.
- 2006: from the very virtuous french model ...

- CHP plants and maximized heat valorisation (Heat bonus in the electricity feed-in tariff)
- Systematic biowaste integration in agriculture
- Territory integration with all the actors
- agricultural diversification
- Large subsidies to limit the financial risk about the first/young plants
- No food energy crops and limit the environmental cover crops (total < 25% energy total)



French biogas model evolution and historical (2/2)

... today, the need to decrease the costs and have less complex model

- Biomethane upgrading into the grid: a success to multiply. Upgrading first.
- Master and reduce the costs
- **Standardization and industrialization as possible**
- Limit the subsidies and feed in tariffs and keep the trust with private founders
- **Quality and serious mark about building actors**
- Succeeding the energy cover crops mobilization only with exemplary agronomy practices
- Succeeding the local plant integration with the populations.

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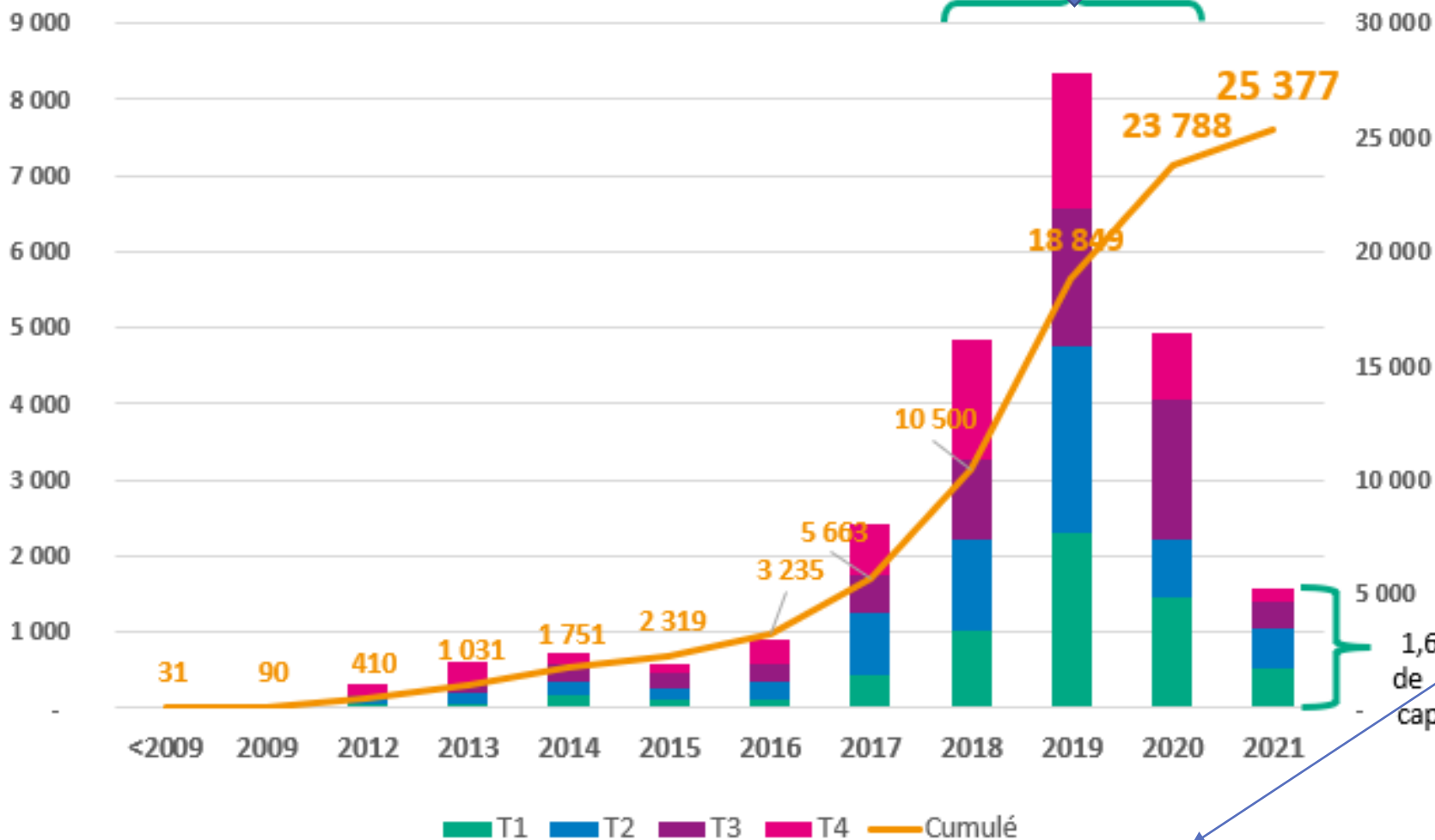
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Dynamic of biomethane upgrading plants projects (source Grtgaz)

ADEME thinks that only 60% Project plants are mature

GWh / year



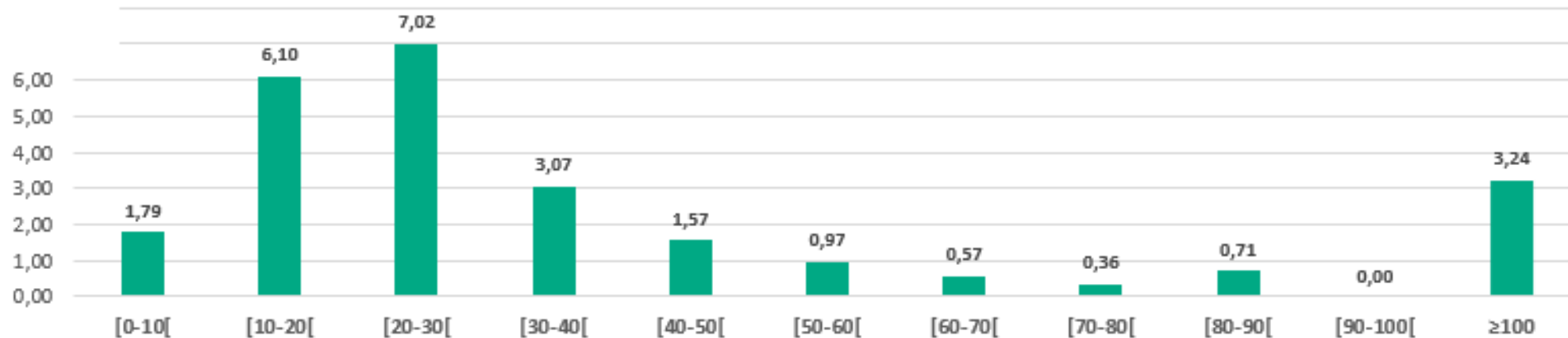
GWh cumulation

New and reduced tariff

Different sizes of the biomethane upgrading plants (source Grtgaz) (Projects on the grid paper registry)

Répartition des capacités d'injection réservées par taille de projet
(Export du registre de gestion des capacités du 31/12/2021)

Total TWh
/year

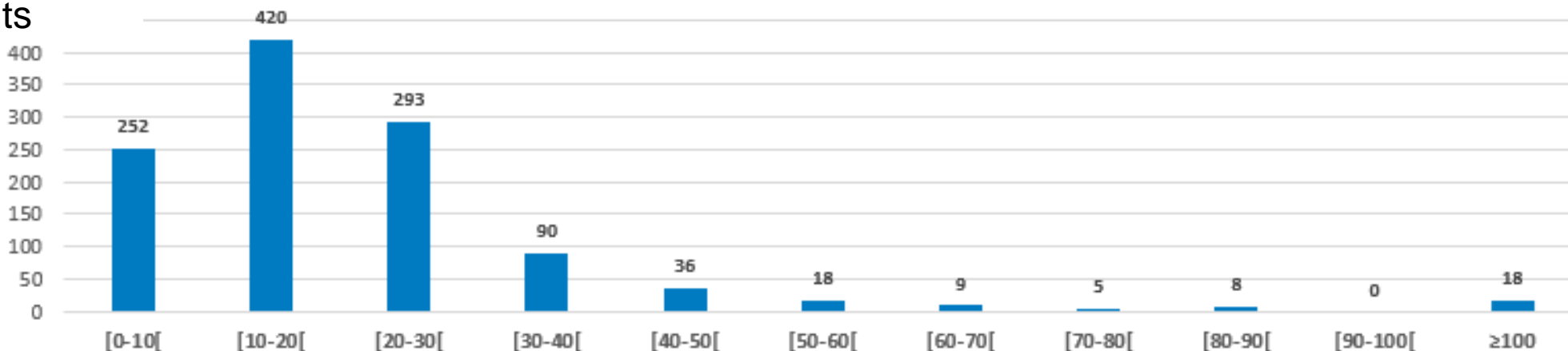


1149 projets
-
25,4 TWh/an

Plant's
capacity
Gwh/year

Répartition du nombre de projets par taille de projet
(Export du registre de gestion des capacités du 31/12/2021)

Number
plants



Plant's
capacity
Gwh/year

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Biogas politic strategy: the PPE (Programmation Pluriannuelle de l'Énergie)

- Euros budget is associated with the energy goals.
- Reduced cost of biomethane goal 75 €/MWh in 2023 and 60 €/MWh 2028

| | En service | Objectif PPE 2023 | Objectif PPE 2028 |
|---|---|---|--|
| Electricité Équivalence en nombre d'unité | 209 MWe 642 unités (01/01/2021) | 237 à 300 MWe 720 à 910 unités (<u>moy.</u> 330 kWe) | 340 MWe (Hypothèse. Basse) |
| Chaleur | | 700 à 900 ktep | |
| Injection Équivalence en nombre d'unité | 5,8 TWh (Cap. Installée) 318 unités 30/09/2021 | 6 TWh 400 (<u>moy.</u> 15 GWh) | 14 TWh (Hypothèse Basse) 22 TWh (Hypothèse Haute) |

→ These strategy goals could be more ambitious

Today: 7,2
TWh capacity
operationnal
and 400 plants

Biogas economy: what is hot ?

Before Ukraine war

- The plants buildings could be late regarding to time limit regulations
- Decreased and evolution of the feed in tariff and subsidies = less plants projects
- If more plants = more competition about the biowaste substrate market.

After Ukraine war

- Investment costs increase 15% / Operating loads electricity increase 50% /
Substrates loads increase 20%
- Speed the biogas production : the government plan is expected : TWh goals ?
Tariff valorisation ?

Biogas economy: what is hot ?

Economic solutions

- Electric tariff and biométhane tariff
- Subsidies (Not systematic)
- Bank loan without a financial guarantee/mort guage (Max 1 M€) (Not systematic)
- 0% bank loans (max 400k€) (Not systematic)
- Specific tariff with a call for tenders (AO CRE) - > 25GWh plants projects
- « Guarantees of Origin (GO)» or « biomethane traceability « in the view to sell the biomethane everywhere in France.
- **And the CPB (Biogas Production certificates) ---- NEW ----**
(big natural gas suppliers will have to buy / include 15% biomethane) =
dvlpmt of the sector without public aid.

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Research Activities and studies

- Call for tenders / year to select and finance the best research projects
- 3 days biogas research national event: big date for all the parts.
- Call for tenders /year: “investments for the future : between Research and Market, Program “investments for the future”

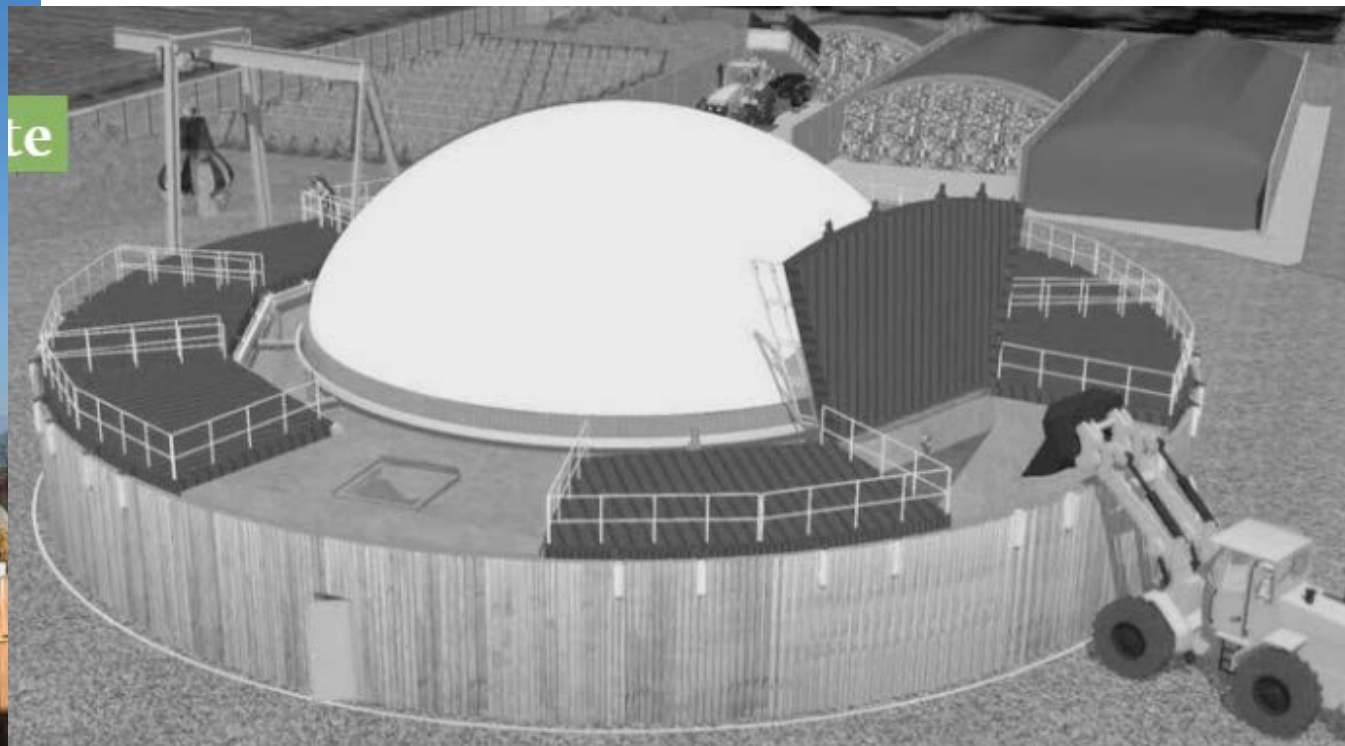
Another studies

- Economy data of 30 in operation biomethan plants and 60 Co Heat Power plants (2022)
- Studies about the biogas leaks on the biogas plants (Trackyleaks, Feleaks etc.)
- Prospective Works about Energy in 2050

Innovation example: Dual metha

- Dry anaerobic digestion with liquid digestate recirculation
- Limit the fonctionnal laods (mixing plugging, biogas stop, maintenance...)
- Adapt all the substrates

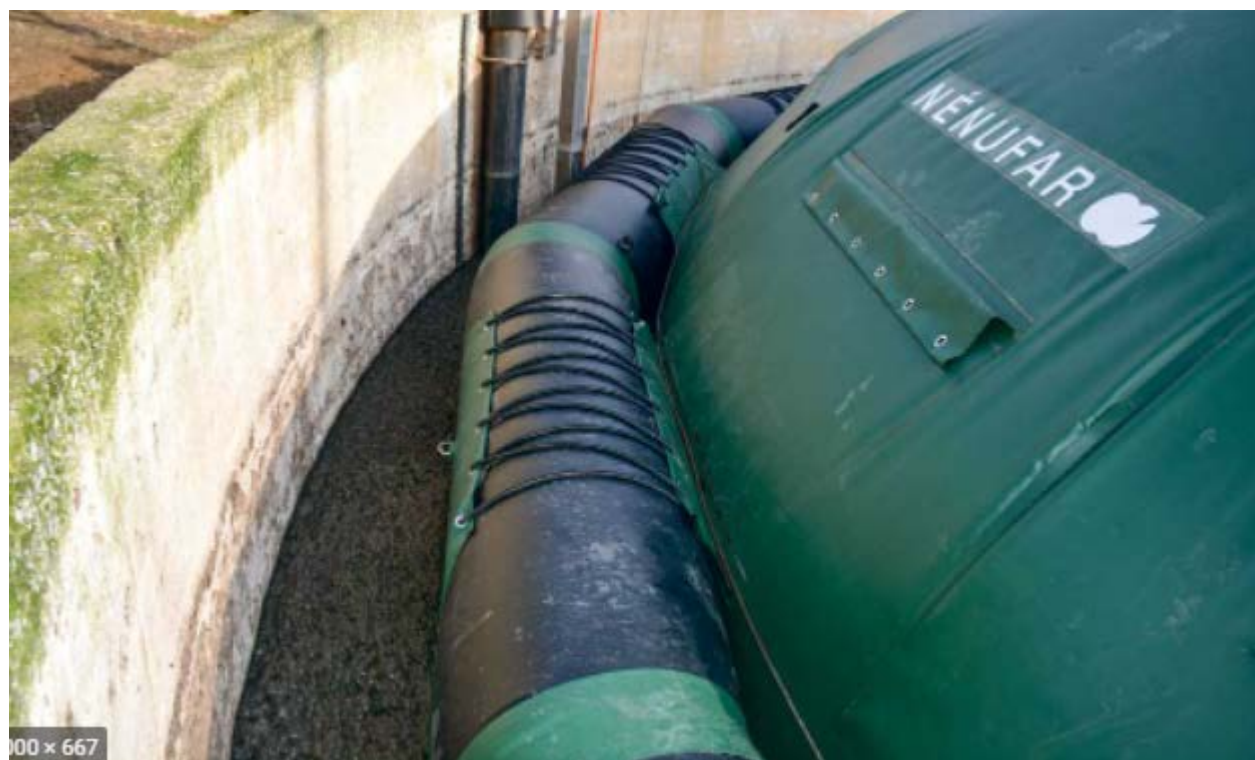
Only one first unit
and performances
are expected in
2022



Innovation example: Nenufar

- Small scale agricultural biogas production,
- 1- Cold digestion manure plants
- 2- Or second digester cover on classic anaerobic digestion

More of 45 in
operation plants





RÉPUBLIQUE
FRANÇAISE

*Liberté
Égalité
Fraternité*

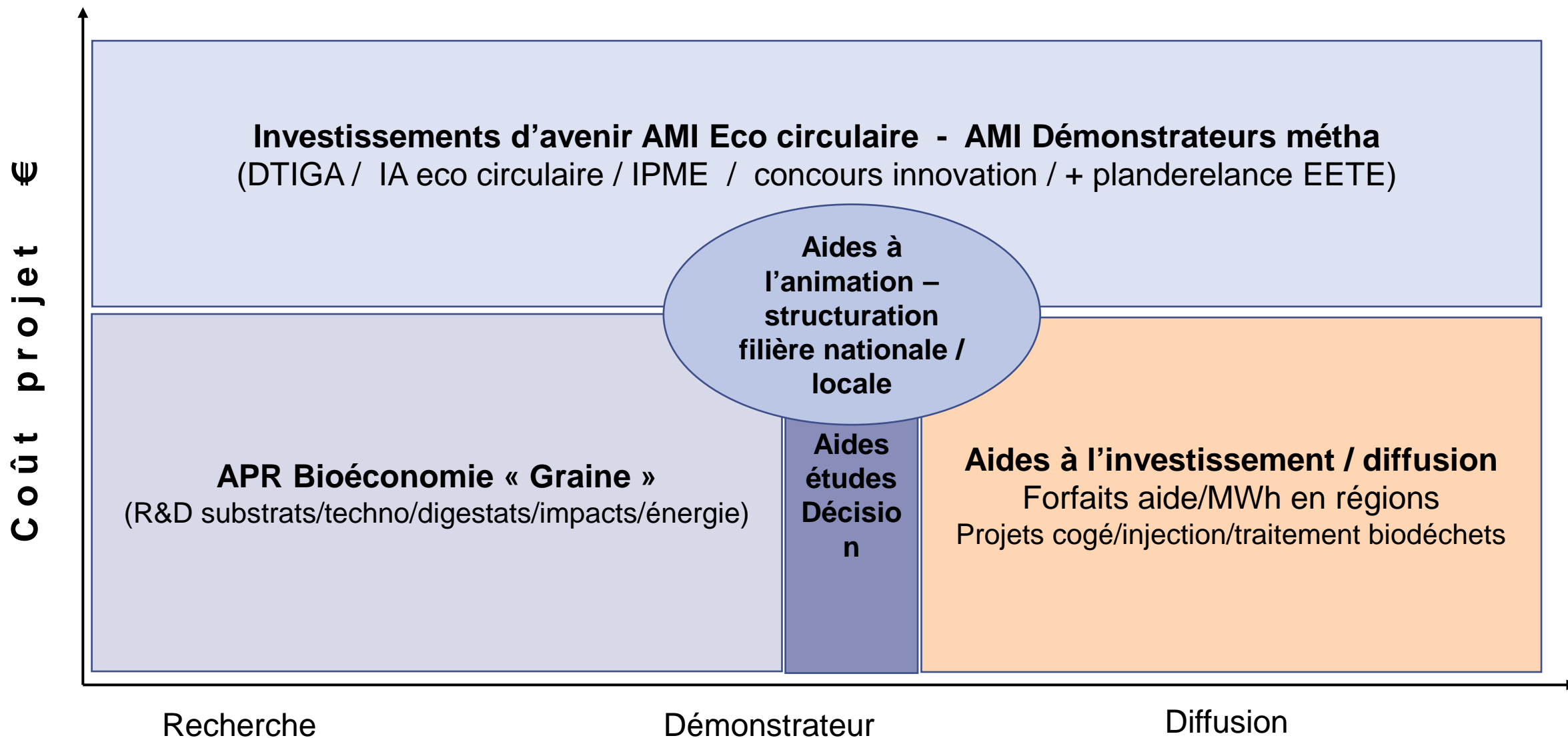
Thanks !



Julien THUAL

Agence de la Transition Ecologique
Service Mobilisation et Valorisation des Déchets
julien.thual@ademe.fr 02 41 20 74 15

1- Les aides ADEME à la méthanisation



Dynamique des projets de méthanisation en 2021

Dynamique 2021 des projets aidés par l'ADEME.

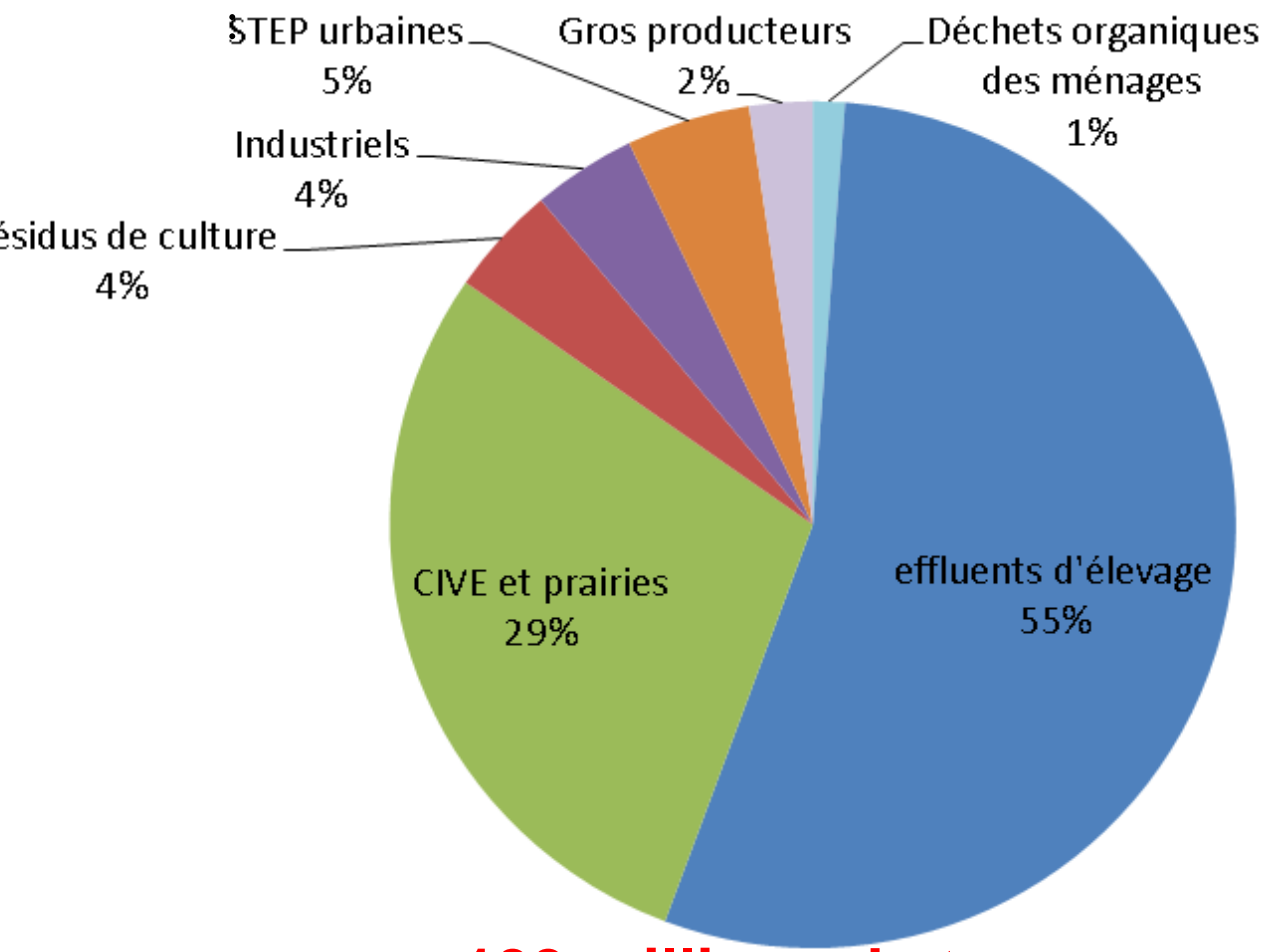
- 108 projets injection
- 12 projets cogénération
- 44,8 M€ d'aides = 41,8 M€ Injection + 3,2 M€ Cogénération
- 770 M€ d'investissements générés
- 2 420 000 t de substrats traités
- 1 520 GWh de capacité annuelle en injection
- 40 GWh de capacité annuelle en cogénération
- env. 330 000 t éq CO₂ évitées

Depuis 15 ans
1400 projets / 480 M€
aides
Soit **3,7 milliards**
d'inv. levés

Env. 1100 projets ? / 26
TWh ? en injection en
capacité réservée sur les
réseaux

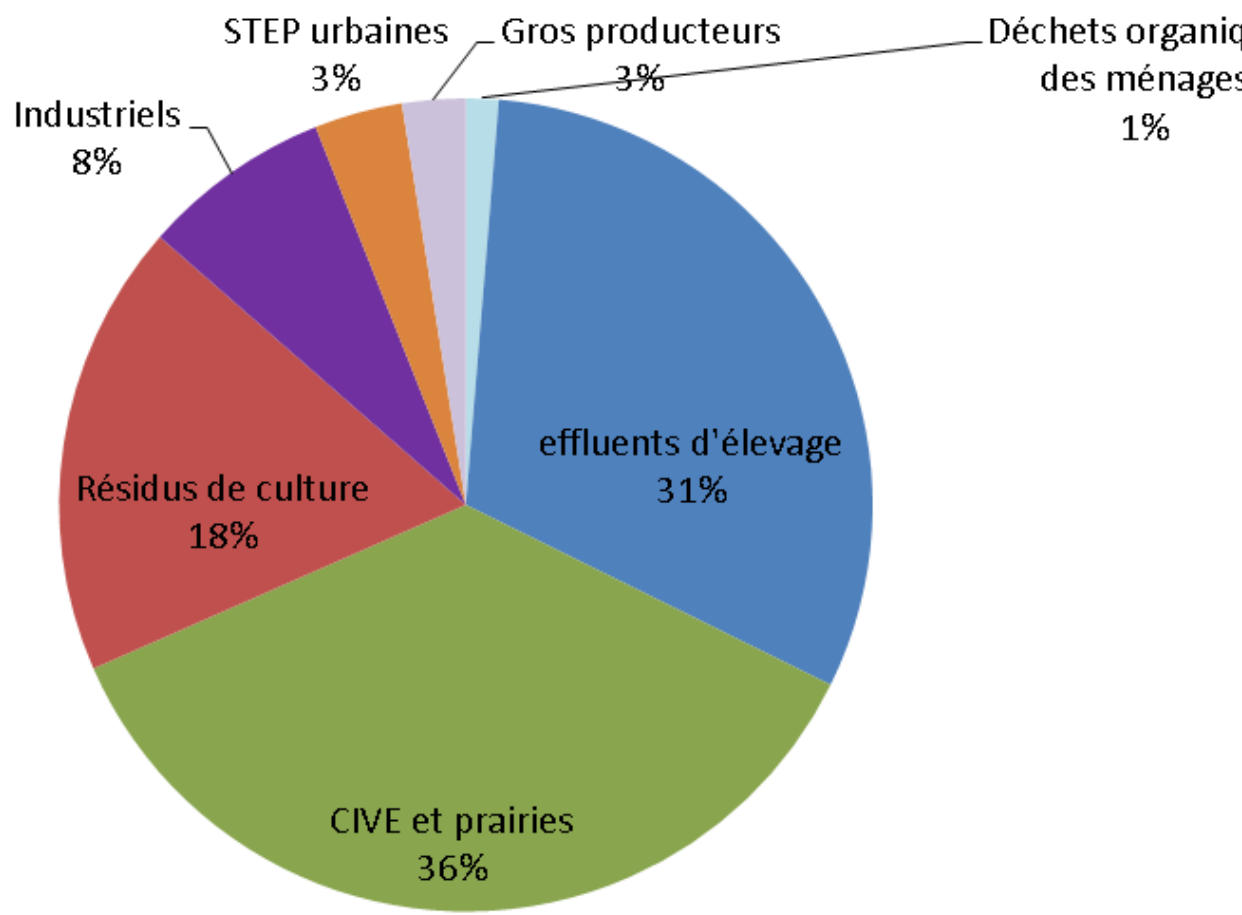
Les gisements et les perspectives à horizon 2030 *

... en tonnages



133 millions de tonnes de substrats

... en % énergie produite:



70 000 GWh d'énergie primaire