

## Barometer of companies in the renewable gas sector

## Summary

EDITO – Frédéric Martin, President of France Gaz

**Why publish this barometer of the renewable gas sector?**

*Faced with environmental, economic and geostrategic challenges, France has embarked on an energy transition based on low-carbon, local, sustainable and innovative solutions. In the coming years, players in the renewable and low-carbon gas sectors will play an increasingly vital role in helping France and Europe achieve the carbon neutrality targets set by the Paris Agreement in 2015. Tomorrow's gas mix will be 20% decarbonised by 2030 and 100% decarbonised by 2050, thanks to the development of methanisation and new production methods such as pyrogasification, hydrothermal gasification and power-to-methane.*

*The renewable gas sector has been on the rise in France for more than fifteen years and is a source of value creation as close to home as possible. In addition to the many studies that monitor the development of production assets and capacity, France Gaz and a number of major players in the sector have decided to use this barometer to measure objectively, for the first time, the contribution of these sectors to the French economy in terms of employment, activity and taxation.*

**What is the barometer?**

*The purpose of the Renewable Gas Business Barometer, from which this summary is drawn, is to provide a regular assessment of this contribution through a twice-yearly survey of companies in this sector.*

*The emergence of the renewable gas sector is, of course, visibly driven by the construction of methanisation units throughout the country, as well as by the capacity for innovation of major internationally-recognised groups, but also increasingly by the hundreds of start-ups and very small to medium-sized enterprises that are emerging in our regions and are often less well known. First and foremost, it is these local industrial businesses, more or less specialised in renewable gases, whose role and dynamics we have tried to capture.*

*For this first edition, the barometer focuses on a limited number of players in the industry, in order to highlight their role and the value that they create in France. Their growth demonstrates that the energy transition can both generate wealth at home and help to re-industrialise our regions. The barometer focuses on the most specialised companies that are in direct contact with production units: constructors, prime contractors, OEMs, maintenance companies and so on.*

**What are your conclusions from this first edition?**

*First of all, I would like to thank all the players in the industry who have worked so hard to make it possible to publish this first barometer. We were able to gather feedback from 145 players, mainly manufacturers of production infrastructure and OEMs, giving us very good coverage of the most specialised players. In all, nearly 600 companies operating in the sector were identified, including more than 300 in the core survey area. This is a very good starting point from which to move forward in the next edition and to continue to unravel the industrial fabric mobilised around these projects.*

*In recent years, these companies have experienced significant growth, enabling the creation of a genuine "made in France" green industry. In 2023, the sector contributed more than €3 billion to the French economy and led to the direct creation of several thousand jobs. Above all, most of the production and value created remains in France, helping to weave a local economic fabric. Even if the last few years of regulatory instability have led to a slight slowdown in the commissioning of new projects, the industry remains optimistic about its growth, both in France and increasingly through international exports. However, this ramp-up in production must be supported by stabilising the regulatory framework and creating dedicated training courses to enable the industry to achieve the ambitious targets that have been set.*

*A number of other measures will also be needed to allow France to maintain its position as one of the leaders of decarbonisation in Europe, as well as strengthening a green, local, attractive and competitive French industry:*

- *Facilitating access to land, in particular under the Zero Net Artificialisation (ZAN) law*

- *Rapidly defining a post-2028 trajectory for Biogas Production Certificates (CPB) to ensure stability and visibility for industry players*
- *Simplifying permit procedures, which generate major additional costs during project development*
- *Encourage the development and use of biogenic CO<sub>2</sub>, a by-product of methanisation.*

## THE RISE OF RENEWABLE GASES, A KEY SOLUTION FOR THE ENERGY TRANSITION AND THE DECARBONISATION OF INDUSTRIES

Four technologies (methanisation, pyrogasification, hydrothermal gasification and power-to-methane) are currently used to produce renewable, low-carbon methane from local resources such as organic waste, crop residues and surplus renewable electricity.

There are already several hundred methanisation units operating in France. Historically used to produce biogas for heat and electricity (a third of respondents have been in existence for more than ten years), today the biogas sector is the focus of strong momentum and has become increasingly attractive in recent years, thanks to the deployment of biomethane production capacity for grid injection. The dynamism and attractiveness of the sector is confirmed by the results of the barometer: more than a third of the companies surveyed are less than three years old.

The other three are in a phase of industrialisation. They will make it possible to extract value from resources that cannot currently be used for methanisation, and will be a real growth driver for the industry. These sectors are the focus of major R&D efforts, and now need a clear regulatory framework and public support if they are to reach industrial maturity<sup>1</sup> quickly. A quarter of the companies surveyed as part of the barometer are already involved in these developments, illustrating the natural synergy between these pathways.

There are a number of key strategic challenges that these renewable, low-carbon gases can address:

- offering a solution to fossil gas decarbonisation, thereby reducing greenhouse gas (GHG) emissions from the most difficult to decarbonise use cases
- strengthening France's energy sovereignty by reducing its dependence on imported fossil gas, the cost and availability of which are subject to dramatic fluctuations,
- extracting value from local resources and encouraging the development of a local and resilient economy throughout the region,
- making the most of existing gas infrastructure (transportation, distribution, consumption), some of which is owned by local authorities,
- diversifying the income of farmers and local players, and boosting the region as a whole through job creation and new cooperation between actors
- offering a virtuous solution for the treatment of organic waste, as an alternative to traditional methods (incineration, landfill),
- strengthening France's food sovereignty and sustainable agriculture by replacing imported synthetic fertilisers with digestate.

The success of France's methanisation sector illustrates the dynamism of renewable gases. At the end of 2024, there were 731 injection sites with 13.9 TWh of installed capacity. This capacity places France

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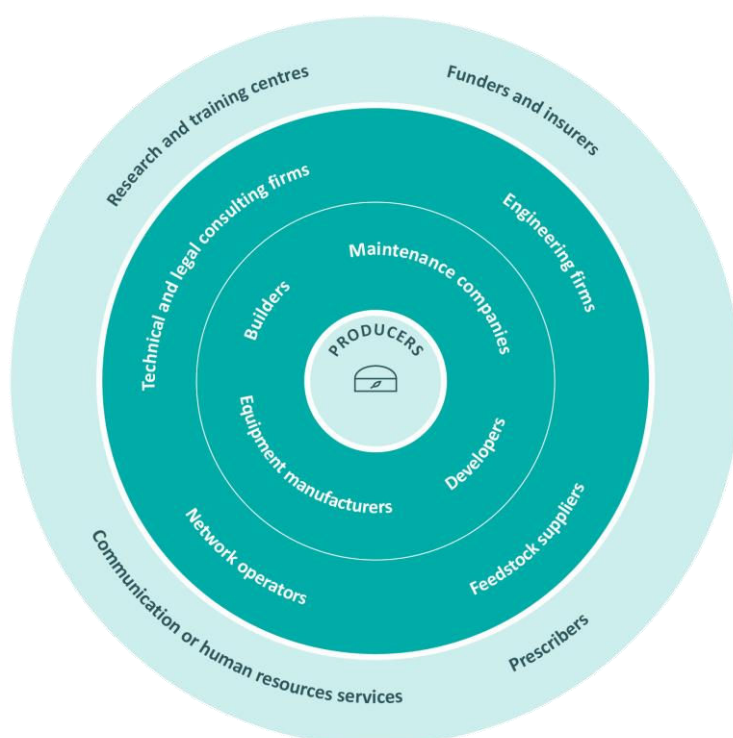
<sup>1</sup> The first demonstrators deployed in France, as well as calls for expressions of interest led by the “New Energy Systems - Sector Strategic Committee”, have already produced encouraging results (49 and 24 projects respectively have been identified for pyrogasification and hydrothermal gasification).

among Europe's top leaders in the production of renewable, low-carbon gas. This national success is due both to strong economic support for the sector and to the combined efforts of numerous local players and major national companies linked to France's agricultural and industrial fabric.

For one molecule of renewable methane to be able to power industrial, commercial or residential boilers, heating networks or even vehicles, an entire ecosystem needs to be mobilised, from the collection and pre-treatment of inputs to the recovery of gas and co-products.

**Figure 1:** Representation of the "renewable gas" ecosystem and the barometer's target area

Gas production is at the core of renewable gas systems, but other businesses also contribute to the development and operation of production units and to the recovery of gas and co-products. These businesses have been shown in circles according to their proximity to production. The first edition of the barometer focused on businesses in direct contact with the units (dark green circles).



To complement the studies monitoring changes in production capacity, this first edition of the barometer was designed to highlight a base of mainly local companies that are in direct contact with production players: OEMs, constructors, design offices, network operators, etc.<sup>2</sup> In all, more than 145 companies, most of them specialising exclusively or almost exclusively in renewable gases, took part in this first study. Future editions will broaden the base consulted, so that we will eventually have a full picture of the dynamics of the renewable gas sector.

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<sup>2</sup> The survey collected data from these 145 companies, supplemented by a few targeted additions (companies that are 100% dedicated to renewable gases and whose sales figures are publicly available) to reconstruct the reported sales figures.

## RENEWABLE GAS: A MAJOR AND GROWING CONTRIBUTION TO THE FRENCH ECONOMY

The methanisation sector now accounts for the vast majority of installed renewable and low-carbon gas production capacity. Revenue is largely linked to energy production, <sup>3</sup>estimated at around €2.2 billion in 2023<sup>4</sup>, but also includes all the companies involved in this production, which are at the heart of this barometer. For the time being, the activities associated with new processes (pyrogasification, hydrothermal gasification, power-to-methane) mainly concern R&D and the development of future pilot projects. In 2023, they naturally had fewer employees and lower sales than the methanisation sector.

### **Companies in direct contact with production units, creating value: more than €1.1 billion in sales, and more than 2,100 FTEs**

These highly specialised companies, which are directly involved with gas producers, generated sales of more than €1.1 billion in 2023. OEMs (who manufacture and supply essential equipment for gas production, processing and use, and provide their expertise to optimise infrastructure design) and constructors (who are responsible for the design, construction and implementation of production infrastructure) account for a significant proportion of this figure. Most of this (90%) is generated domestically, but French OEMs are also doing well internationally, generating an average of 17.5% of their revenue abroad.

In 2023, more than 2,100 employees were directly employed<sup>5</sup> by the companies included in the barometer. This figure, which does not include the work of project promoters - who may themselves represent several FTE in certain units - or all of the companies operating in the sector, is in line with the assessments made by the ADEME (c. 4800-6800 jobs in 2022<sup>6</sup>). If indirect jobs are taken into account, in particular those linked to the fabric of generally less specialised businesses but those which are mobilised on a large scale around projects (earth-moving machinery, agricultural equipment, automation, etc.), the results can be significantly higher, as some studies have shown.<sup>7</sup>

Finally, the barometer reveals that in 2023, the companies in question contributed more than €20 million in tax to France (an average of 1.8% of their turnover).

### **With 91% of production and 85% of added value being realised in France, the companies directly in contact with the production units represent a major driving force for the local economic and industrial fabric.**

The production of renewable and low-carbon gases is essentially a local industry, structured around resources collected in their region. This anchorage is a major asset for strengthening the economic fabric of their region.

The spread of anaerobic digestion plants and the fact that the various players in the value chain are located throughout the country means that renewable gas production has a local presence. In total, the companies surveyed had more than 1,200 facilities<sup>8</sup> in France in 2023, of which 36% were located in towns with fewer than 10,000 inhabitants. The companies in direct contact with the units are still largely made up of a dense network of primarily local, small and medium-sized businesses.

As a result, the bulk of production and added value remains in France. According to the survey:

- 70% of the equipment used is of French origin,

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<sup>3</sup> i.e. the operation of units

<sup>4</sup> estimated sales from biogas and biomethane production in 2023

<sup>5</sup> Full-time equivalent (FTE)

<sup>6</sup> ADEME - Markets and employment study - Dashboard

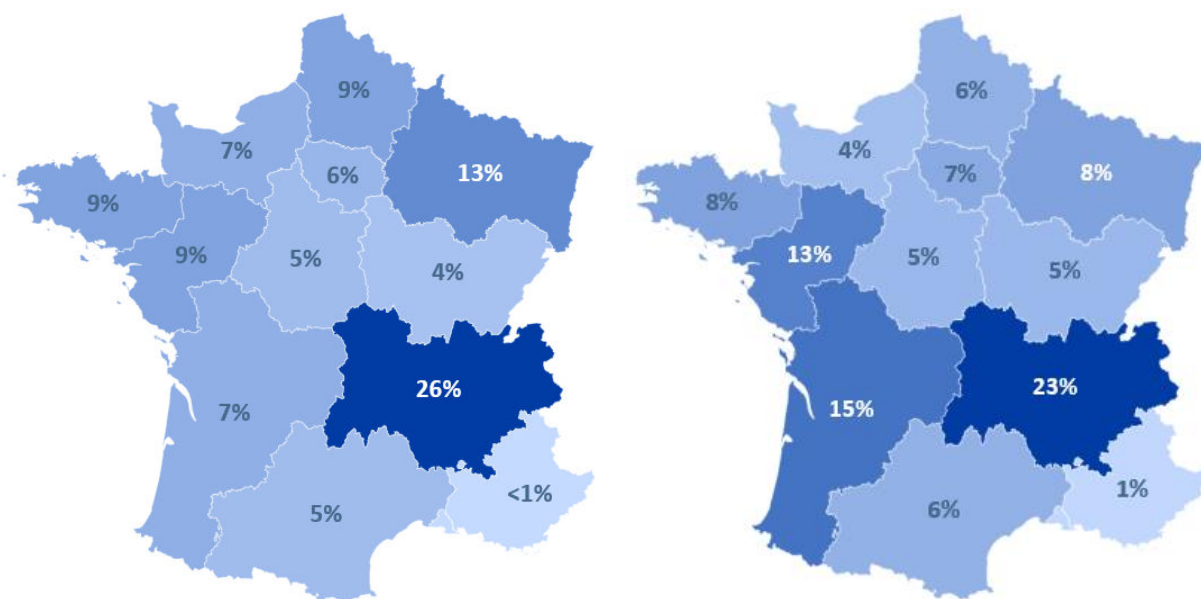
<sup>7</sup> TRANSITIONS - Study of the impact of the biogas sector on employment in France from 2018 to 2030

<sup>8</sup> head offices and secondary facilities

- 91% of production and 85% of added value is generated in France,<sup>9</sup>
- 88% of declared funding comes from national players.

There are some regions that are particularly busy. This is the case, for example, of the Auvergne-Rhône-Alpes region, which accounts for more than 15% of the facilities, 26% of the turnover and 23% of the jobs of the companies surveyed, thanks in particular to a proactive policy and a high concentration of leading players, particularly OEMs.

**Figure 2:** Geographical breakdown of turnover (left) and jobs (right) for the renewable gas companies surveyed



French companies are making an increasing contribution to the development of foreign markets, thanks to their internationally recognised expertise developed at home: more than 20% of these companies plan to recruit abroad over the next three years.

France is one of the world's pioneering and most dynamic countries in the development of biomethane, with over 40% of the methanisation units for grid injection currently in operation in Europe<sup>10</sup>.

At the same time, low-carbon renewable gases are also being deployed in other parts of the world (e.g. the United States, China and Canada). Their development is particularly accelerating in Europe, thanks to a growing awareness of the strategic interest of biomethane, both in the regions that have historically been favourable to the sector (Germany, Italy and Denmark) and also in new regions (Spain, Portugal, Poland, etc.). The RePowerEU programme has set an ambitious production target of 35 billion <sup>m</sup>3 of biomethane by 2030 (almost ten times more than current output) across the continent.

While the development of the biomethane sector has historically been built around local players, the rapid internationalisation of markets represents a major strategic opportunity to export from France, whose specialised companies have recognised expertise. These companies have the opportunity to capitalise on the expertise they have acquired at home, to consolidate their know-how through contact with mature foreign markets, and to acquire strong positions in markets with high growth potential that are still relatively unstructured.

<sup>9</sup> Nearly a quarter of respondents reported subcontracting some of their activities to other European Union countries, mainly Germany and Italy, which are pioneers in methanisation.

<sup>10</sup> European Biogas Association, *Statistical Report 2024*, 2024

Although the majority of French renewable and low-carbon gas companies operate in France, they are increasingly linked to foreign markets, particularly European and cross-border markets:

- 11% of respondents' sales were generated outside France in 2023
- 11% of companies directly employed staff abroad.

This trend is set to accelerate, with 21% of companies surveyed planning to recruit new employees abroad between 2023 and 2026.

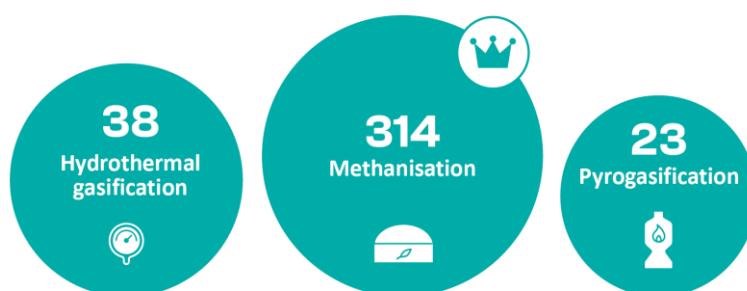
### An industry focused on innovation

This leading position in a fast-growing international market is underpinned by the ongoing commitment to research and innovation of French renewable gas companies, which is helping to optimise energy systems, create skilled jobs and develop new production methods.

France is home to world-renowned research and innovation centres for renewable gases (including CEA, IFPEN, CRIGEN, LRGP, etc.) and in 2023, companies in the sector spent 1.4% of their turnover (around €15.4 million) and 9% of their workforce on R&D dedicated to renewable gases.

This commitment to innovation takes a number of concrete forms, starting with a large number of patents: 34% of respondents have filed at least one patent since their company was founded.

Figure 3: Number of patents filed by sector over the period 2011-2023 (INPI)



*From 2011 to 2023, more than 80% of patents filed were for methanisation*

The funding of thesis work and the development of public-private partnerships are other means favoured by the respondents. More than a third of the companies surveyed reported partnerships with research centres.

### RENEWABLE GAS INDUSTRIES ARE OPTIMISTIC ABOUT THEIR FUTURE, BUT EXPRESS THE NEED FOR A STABLE ENVIRONMENT TO HELP THEM ACHIEVE THEIR NATIONAL TARGETS

**Specialist players in the renewable gas sector are optimistic about their future growth, forecasting their sales to increase by almost 20% between 2023 and 2026.**

The contribution of low-carbon renewable gases to reducing national emissions and creating local value is now widely recognised, allowing French companies in these sectors to be optimistic about the future. Thanks to their dynamism and proven expertise, they have significant growth prospects over the coming years.



85% of the players surveyed anticipate an increase in their sales in France between 2023 and 2026, driven on the one hand by the continued deployment of methanisation, and on the other by the gradual industrialisation of alternative technologies. Over this period, the respondents expect an average increase in sales of nearly 20% (+19.8% between now and 2026, or 6.2% per year).

**The creation of training programmes, the result of partnerships between research centres, universities and industrial players, must be supported to help develop talent in the sector**

This expected growth in renewable gas activity, particularly in the Île-de-France, Auvergne-Rhône-Alpes and Nouvelle-Aquitaine regions, will naturally be accompanied by recruitment targets of the same order (+18.4%). Most of the jobs concerned are technical and managerial positions (63%).

Due to the cross-disciplinary nature of the skills required for these industries (at the interface of several sectors: agriculture, energy, waste management, etc.) and their rapid growth, the sector is already facing increasing pressure on human resources. A great deal of effort has been put into training in recent years. Club Biogaz lists nearly one hundred training courses for methanisation, and 85% of respondents say they have links to these courses. These efforts will need to be stepped up and supported for the effective development of renewable gases.

**The sectors need to stabilise the regulatory framework and support schemes if they are to accelerate their deployment even further and hope to meet the ambitious national targets**

Recent political announcements promoting renewable gases reflect a strong ambition for these sectors, which are now fully at the heart of the country's energy transition strategy. In its draft multiannual energy plan (MEP), the French government aims to produce 44 TWh of injectable renewable gas by 2030, which represents a more than threefold increase in installed capacity compared to current levels.

Although significant, the level of growth forecast by renewable gas players is still insufficient to achieve this target. This comes in the wake of a slowdown in the commissioning of new units in recent years, with companies in these sectors concerned about the gap between their ambitions and the economic and regulatory environment.

To date, the development of renewable gas in France has been largely supported by public schemes, from which more than two-thirds of companies claim to have benefited: aid for training and recruitment, direct subsidies for R&D, tax credits, low-interest loans, etc.

However, the complexity and uncertainty of the regulatory framework is now cited by companies as being the main obstacle to accelerating their business, ahead of financial uncertainty. 65% of these companies see regulations as a grey area in the renewable gas sector: the complexity and length of time it takes to obtain support, frequent and unpredictable changes in support schemes, lack of clarity, etc.

In recent years, the renewable gas industry has demonstrated its ability to mobilise, meet and even exceed the targets set for it. All the companies involved in this ecosystem are now expressing their need for a stable environment in order to meet the 2030 targets, maintain France's position as a leader in the renewable gas sector, and optimally exploit the opportunities offered by the export market.