
ENGIE ACCELERATES
TOWARDS
RENEWABLES
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ENGIE

Our vision of a diversified energy mix

Why have to choose between solar and wind power? At ENGIE, we are convinced that there is a place for all forms of renewable energy sources in the acceleration of the transition towards carbon neutrality.

This is why, from the very start, we have opted for an energy mix built on diversity and complementarity. As such, we can supply the right energy for the right use, while always having at least one available source to meet demand.

Be it solar power plants, onshore and offshore wind power farms, biomethane injection units, geothermal power plants, etc., renewable energy sources represented 72% of new capacities throughout the world in 2019. The acceleration is already underway, driven by technological improvements, lower costs, the introduction of new capacities and the development of energy carriers. This acceleration will take us to 58% of the Group's production capacity from renewables by 2030.

** Source: International Renewable Energy Agency (IRENA): "The production cost of renewable energies in 2019"*

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RENEWABLE ENERGIES: OUR VISION

Our key word: acceleration. At ENGIE, we are aiming for 9 GW of additional renewable energy capacity by the end of 2021. As pioneers in renewable energy, we benefit from a long history of experience in the technologies that drive this acceleration. Our first onshore wind power farms were already running 30 years ago! As we also turn our gaze to the future, we are not only counting in biomethane, but also the tremendous potential of green hydrogen; the missing link in carbon neutrality. To fully understand our vision of the renewable energy revolution, in this first chapter we invite you to look at:

- **The key facts on our renewable energies**
- **ENGIE, the renewables pioneer: proof in 9 facts and figures!**
- **5 reasons why green hydrogen will speed up the transition to carbon neutrality**

The key facts on our renewable energies*

We have doubled our installed solar and wind power capacity since 2016.

In 2020, we installed 3 GW of new renewable capacity, four times more than the previous year.

* on 31.12.2020

Biomethane

310 GWh annual installed production capacity from biomethane in France at the end of 2020.

Solar photovoltaic

3.1 GW annual installed electricity production capacity in the world.

Wind Power

First producer of electricity from wind power in France with a capacity of 2.6 GW.

Hydroelectric Power

17.7 GW of worldwide production capacity installed by ENGIE.

Green hydrogene

3 GW of installed capacity in 2030.

Geothermals

175 MW of geothermal heat production capacity in the world.

Biomass

2.5 millions tonnes of biomass sold by ENGIE every year.

WOULD YOU LIKE TO KNOW MORE? READ THE ARTICLE HERE

ENGIE, the renewables pioneer: proof in 9 facts and figures!

ENGIE, a pioneer in renewable energies, has a broad experience and a strong lead in renewable technologies. And we can prove it with these nine key figures and surprising facts.

The first onshore **wind power turbines** installed by ENGIE are now

30 years

96 %
of our wind turbine components are **recycled**.

Successful expansion of our **mini-grids**, which will go from 13 to

1,000
in 10 years!

Offshore wind got off to a good start with

+10 GW
planned over 10 years!

We will be able to **store** hydrogen

underground
by 2023.

The **Athlètes' Village of Paris** will be cooled and heated by ENGIE via **geothermal energy!**

More than

one century
of experience in **hydroelectricity** in France.

Biomethane:

4 TWh
of power by 2030.

Green hydrogen in

liquid
form will soon be a reality.

THESE SURPRISING (YET VERY REAL!) FACTS CAN BE FURTHER EXPLORED OVER HERE.

5 reasons

why green hydrogen will speed up the transition to carbon neutrality

Hydrogen is an ultra-light gas that can be used to fuel cars, trains and ships without producing any pollution at all. Could hydrogen be the missing link of carbon neutrality? At ENGIE, we are convinced that it is.

Because it has all the right elements: practical, clean, versatile, powerful

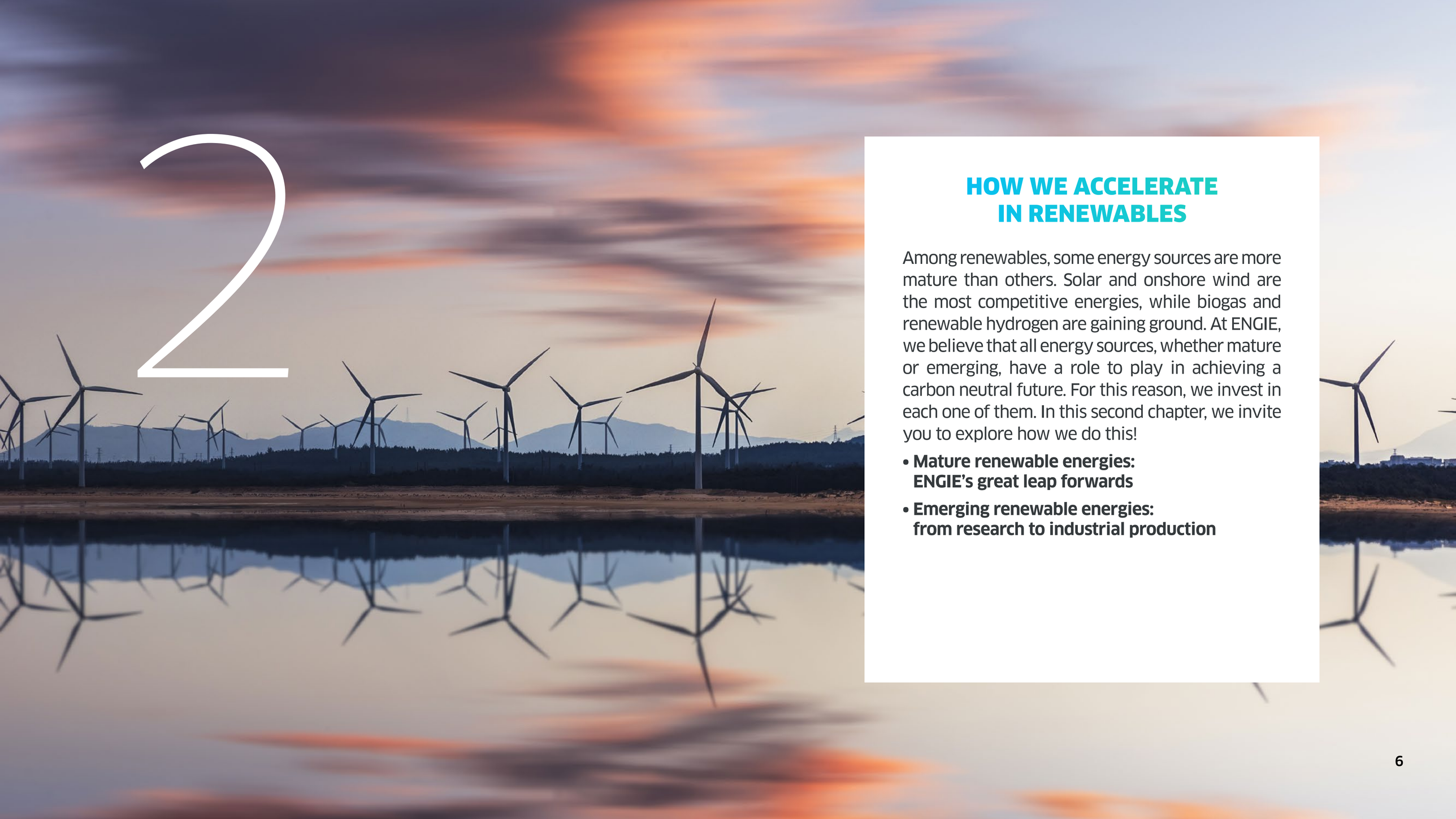
Because it perfectly supplements solar and wind energy

Because it will soon put an end to grey hydrogen

Because it is a sustainable and efficient fuel

Because it can even replace heavy fuel oil for shipping

RENEWABLE GREEN ENERGY IS SURE TO WIN YOU OVER AFTER READING OUR ARTICLE OVER HERE.



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HOW WE ACCELERATE IN RENEWABLES

Among renewables, some energy sources are more mature than others. Solar and onshore wind are the most competitive energies, while biogas and renewable hydrogen are gaining ground. At ENGIE, we believe that all energy sources, whether mature or emerging, have a role to play in achieving a carbon neutral future. For this reason, we invest in each one of them. In this second chapter, we invite you to explore how we do this!

- **Mature renewable energies: ENGIE's great leap forwards**
- **Emerging renewable energies: from research to industrial production**

Mature renewable energies: ENGIE's great leap forwards

In 10 years, between 2010 and mid-2020, ENGIE's installed renewable capacity has more than doubled, from 13 GW to 31.1 GW, not to mention the further 5.5 GW currently under construction. ENGIE has turned mature renewable energy sources into the driving force of the energy transition.

Two key words: innovation and power

X2

It is by constantly innovating technologies that we are deploying extremely efficient installations. The efficiency of photovoltaic cells has doubled over the last 20 years!

And in 2021, **Campo Largo**, our largest onshore wind farm in the world, will produce more than **680 MW** of green electricity **in Brazil!**

In **Portugal**, we have acquired the **2nd** largest hydroelectric portfolio.

In Kadapa, India, ENGIE has installed its largest solar photovoltaic farm in the world, which produces **338 MW** of renewable electricity.

These figure*s paint a clear picture

31.1 GW
OF INSTALLED RENEWABLE CAPACITY, OF WHICH **97%** HYDROELECTRICITY, WIND POWER AND SOLAR POWER

4.2 GW
UNDER CONSTRUCTION

9 GW
OF ADDITIONAL RENEWABLE CAPACITY DELIVERED BETWEEN 2019 AND 2021

1st
PRODUCER OF ONSHORE WIND POWER IN FRANCE

1st
PRODUCER OF SOLAR POWER IN FRANCE

2nd
PRODUCER OF HYDROELECTRIC POWER IN FRANCE

Competitive business models

Investment costs have considerably decreased over the last 10 years: **-82%** for photovoltaic solar power and **-39%** for onshore wind power**. In line with this trend, ENGIE is supporting the decarbonisation of its customers' facilities by offering solutions such as green PPAs (Power Purchase Agreements), which are long-term contracts for the purchase of renewable electricity.

* on 31.12.2020
** Source: The production cost of renewable energies in 2019, IRENA

DISCOVER THE UNIVERSE OF MATURE RENEWABLES OVER HERE
AND LEARN ABOUT 10 FLAGSHIP PROJECTS OVER HERE!

Emerging renewable energies: from research to industrial production

Biogas, biomethane, floating wind turbines, green hydrogen… The Group is investing heavily in the research and development of these emerging renewable energies in a drive to create channels of industrial production in line with its carbon neutrality targets.

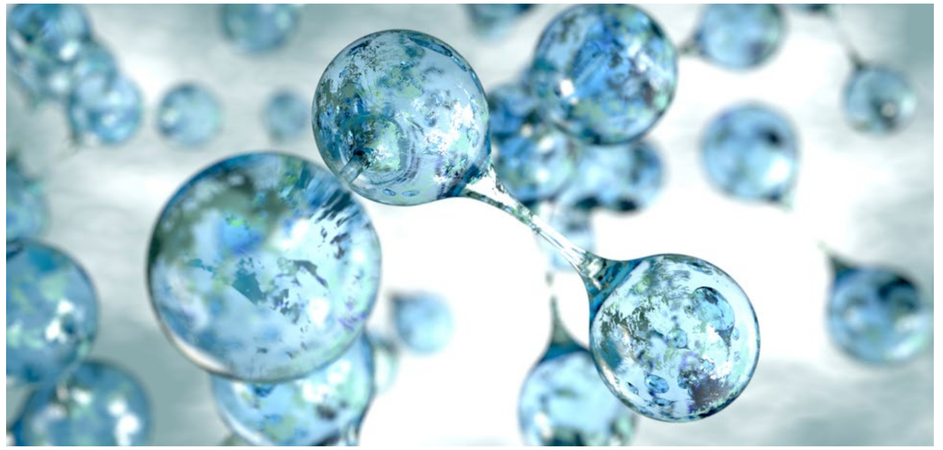
The best is yet to come

According to the International Energy Agency, three-quarters of the efforts made to cut greenhouse gas emissions will have to come from immature technologies.

R&D is playing a crucial role in the energetic transition.

The biogas and biomethane sectors are already being structured: in France, ENGIE's Terres de Montaigu biogas power plant produces 22 GWh/year of biomethane, which is equivalent to the gas consumption of 1,800 households.

Although floating offshore wind turbines are still in their infancy, the first wind farms are already appearing, such as the WindFloat Atlantic off the coast of Portugal. This first floating offshore wind farm in continental Europe will be able to power 60,000 households a year.



Green hydrogen: the key to carbon-free consumption

Its impressive decarbonisation potential makes it essential for the future. At ENGIE, we are already positioning ourselves to become THE leader in renewable hydrogen. How? By extensively investing to make it a competitive energy with a robust industrial sector. In Western Australia, we are supporting Yara's Yuri-Pilbara hydrogen hub in its conversion to green hydrogen by 2023. At the same time, via Storengy, we continue to develop Power-to-Gas technology, which consists of producing green hydrogen from surplus renewable electricity. Industry, transport, etc. – the large-scale deployment of renewable hydrogen is planned for 2025.

FIND OUT MORE ABOUT EMERGING RENEWABLES BY READING THIS ARTICLE OVER HERE AND THE PRESENTATION OF 7 EMBLEMATIC PROJECTS OVER HERE.

3

OUR COMMITMENTS TO MAKE RENEWABLES PROFITABLE FOR TERRITORIES

Renewable energy sources are not only positive for the planet, they also vitalise regions by promoting local resources and by creating jobs. This is what we invite you to explore in our third and final chapter of this file.

- **Fulfilling jobs of tomorrow in renewable energies**
- **Renewables are energising regions**
- **Green PPAs, a source of acceleration for renewables**

Fulfilling jobs of tomorrow in renewable energies

With the development of renewable energies, many new professions are appearing, evolving or will soon be created. For a company like ENGIE, it is essential to support the professional transition of all players in order to shape the world of tomorrow.

Bringing together the old and the new

"Green jobs", such as wind energy project managers, climate intervention engineers or wind meteorologists, have been emerging for several years. And, their success is growing. We also take part in the diversification of "traditional" jobs, such as farmers who contribute to greening through methanisation, or even electricians in the solar market. New technologies are not forgotten either: we will need an increasing amount of IT, data experts and operators specialised in renewables...

DID YOU KNOW?

24.4

MILLIONS OF DIRECT AND INDIRECT JOBS IN THE SECTOR WORLDWIDE BY 2030: THE ESTIMATION OF THE INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA).

"By taking part in a methanisation project, I transform waste into energy. What motivates me the most is the possibility I have to develop alongside new and clean energies that are eco-responsible."

Grégoire Cestre,
Operations Technician - ENGIE Solutions

At the heart of this dynamic, we find both women and men in search of meaning. This is particularly true of younger people: many are looking for professions that reflect their convictions. Approximatelytwo thirds of students and young graduates want to work in a profession that is useful to others and to society. At ENGIE, we have taken proactive steps in this regard by proposing personalised offers in the training of new professions in the energy transition. Our first Graduate Program, entirely dedicated to renewables, is a perfect illustration of this.

"In my opinion, this programme is perfectly in line with the world of tomorrow. I am learning a lot on project management in the solar energy sector. I am looking forward to carry out my mission with ENGIE SOLAR and to broaden my technical and managerial skills in renewable energies."

Baptiste Rabut,
Junior Project Manager at ENGIE SOLAR and Graduate of the Renewable Energy programme

WANT TO JOIN THE ADVENTURE?
FIND OUT MORE ABOUT THE SCOPE OF THESE NEW PROFESSIONS AND THE TESTIMONIALS OF THOSE WHO HAVE ALREADY ADOPTED THEM

Renewables are energising regions

Wind power, solar power, renewable gas… All these energies leverage the regions' local resources, which are sometimes untapped. For local authorities and companies, this also means the creation of jobs and income, thereby laying the foundations for more virtuous industrial and territorial ecosystems. It's official: regions are going green!

Renewable energy means

New infrastructures
Jobs that cannot be relocated
The development of SOHO businesses and SMEs

Among renewable gases, for example, biomethane represents both a source of revenue and energy. The production of biomethane from local resources (residues, waste) has significant economic benefits. In fact, this is why we have created ENGIE BiOZ, our in-house subsidiary specialising in supporting methanisation project developers.

Key biomethane figures in France:

76
NEW BIOMETHANE INJECTION UNITS COMMISSIONED IN 2020*

THE EARNINGS OF A METHANISATION INSTALLATION VARIES ON AVERAGE BETWEEN 100,000 AND
€150,000
PER YEAR**

TO
53,000
JOBS COULD BE CREATED IN FRANCE OVER THE NEXT 10 YEARS***

Sources : *GRTGaz biomethane data, on 4 January 2021. **SIA partners : IA partners: Quel modèle d'affaire pour le biométhane dans les exploitations agricoles ? (What business model for biomethane on farms?). *** Étude d'impact de la filière biogaz sur l'emploi en France de 2018 à 2030 (Study of the impact of the biogas sector on employment in France from 2018 to 2030), July 2019.

Green light on hydrogen

At ENGIE, we are looking towards a carbon-neutral future. This is why we are already anticipating the development of green hydrogen in the regions. How? By creating genuine industrial ecosystems around this energy of the future.
In this way, we are supporting the Auvergne-Rhône-Alpes region in the development of hydrogen-powered transport with the Zero Emission Valley (ZEV) project. The goal is to build 3 hydrogen refuelling facilities in order to supply more than 1,200 vehicles by 2023.

WOULD YOU LIKE TO KNOW MORE? GO STRAIGHT TO THE HEART OF LOCAL INITIATIVES AND DISCOVER FLAGSHIP PROJECTS OVER HERE!

Green PPAs, a source of acceleration for renewables

What is a “Green PPA”?

The Green Power Purchase Agreement (PPA) is a long-term infrastructure financing tool, which allows:
a supply of green electricity for consumers,
and **a secure sales price** for producers of renewable energy sources.

The figure that says it all

In 2020, ENGIE has signed

1.5 GW

of Green PPA contracts!

What do the members of the Executive Committee think of our Global Energy Management (GEM) Business Unit?

“ Our goal is to accelerate the energy transition for our clients by guaranteeing them the long-term supply of renewable electricity. ”

Alexandre Cosquer

What does a long period mean?

“ These contracts generally last between 5 to 25 years. ”

Jérôme Malka

What are the challenges of tomorrow?

“ The subject of traceability for green electricity purchased by consumers is very important, in particular for clients who have a more sophisticated purchasing strategy, with a 24 hour consumption need for renewables. ”

Vincent Verbeke

EXCLUSIVE INTERVIEW WITH ALEXANDRE, JÉRÔME AND VINCENT ON GREEN PPAS OVER HERE.

Acting responsibly together.

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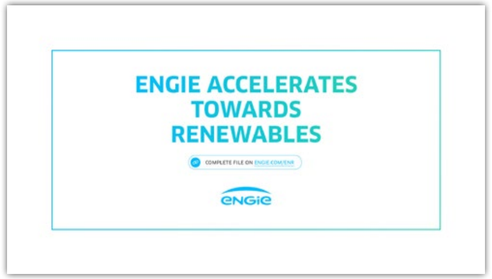

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