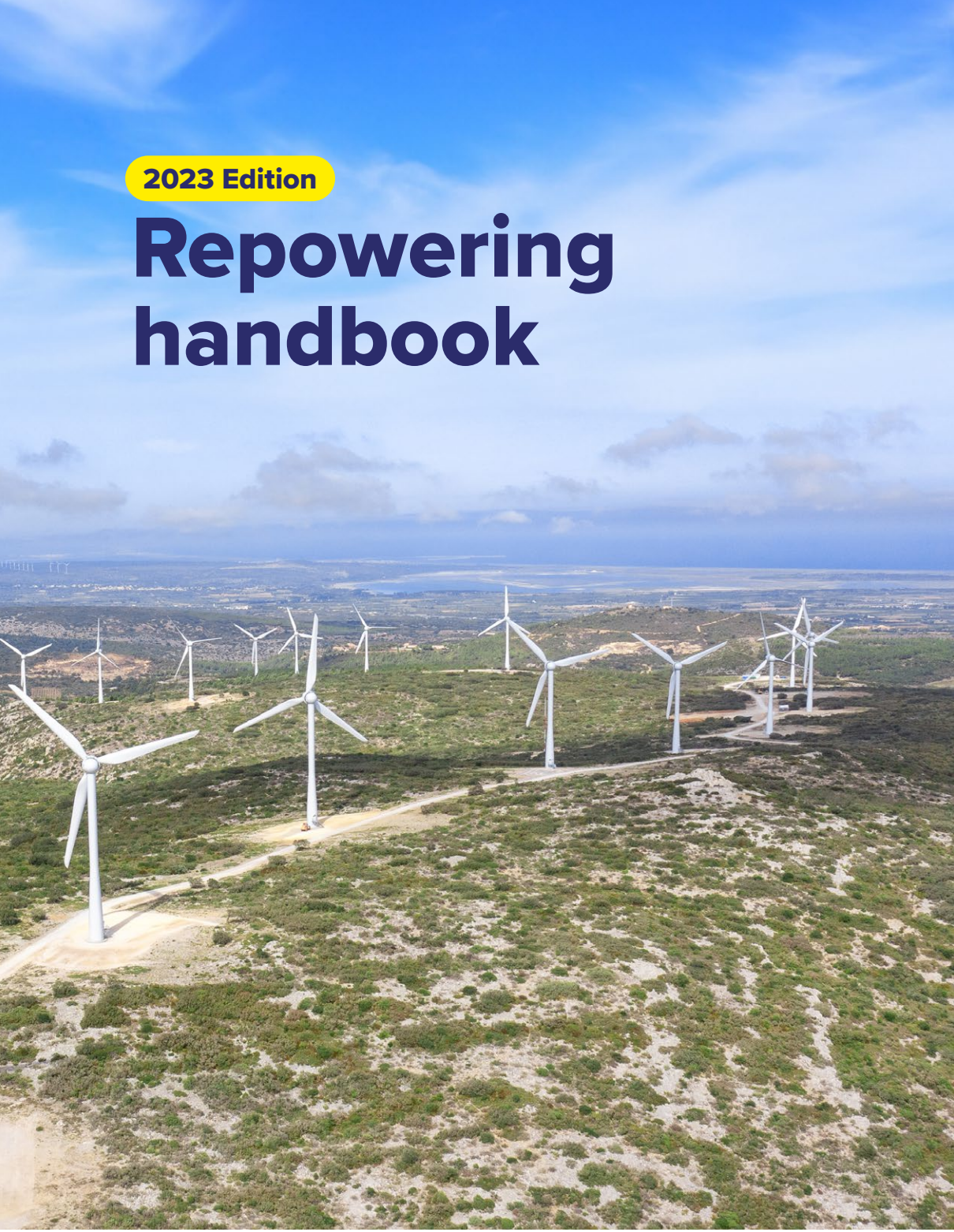
2023 Edition

Repowering handbook



Qenergy

Laurie Gilbert
Head of Repowering
QENERGY

Convinced that repowering plays and will continue to play a major role in electricity decarbonisation and energy independence in France, QENERGY decided at an early stage to play a leading role in its deployment in France.

Thus, in 2016, even before the French administration had defined the framework governing the renewal of wind farms, we decided to start repowering the first wind farm we had developed and built: Souleilla-Corbières.

With 8 repowering authorisations now obtained, 9 repowering projects under development and 5 partnerships signed with different asset owners, we are proud to be the 3rd most active developer in this market in France and the first on behalf of third parties.

As pioneers in repowering, we pay particular attention to cultivating and sharing our expertise through the publication of white papers, as well as articles and organisation of conferences. We are also delighted to lead a cross-industry working group within France Renouvelables dedicated to the development of this activity in France.

With this in mind, we have been publishing our Repowering Guide every Autumn since 2021. We hope this tool will help you become familiar with wind farm repowering, its particularities, news and challenges.

Enjoy your reading.

Contents

Cerisou wind farm
Photo : ©*CAMEO*

What is repowering and why do it?

“Repowering” refers to the renewal of renewable energy infrastructures at the end of their life, such as wind farms or photovoltaic plants.

Unlike “revamping”, which involves replacing only some components (generators, gearboxes, blades, etc.), “repowering” involves a **complete upgrade** of the installation **(blades, nacelles and towers)**.

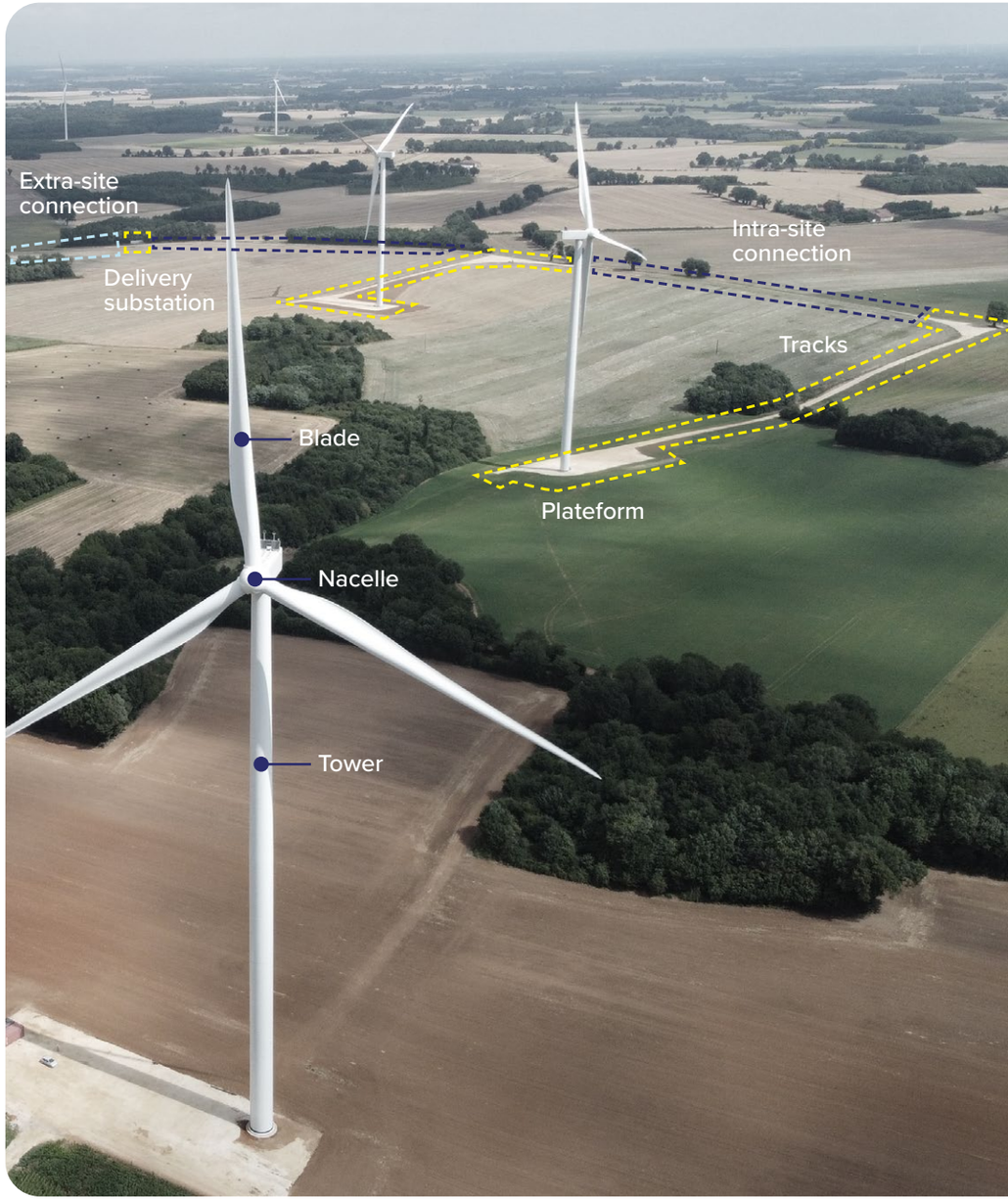
For a repowering project, wind turbine **foundations** can be **dismantled** and **replaced** or simply **reused** if technically feasible.

In this case, **appropriate maintenance** will be carried out to guarantee their reliability for the entire life of the new windfarm.

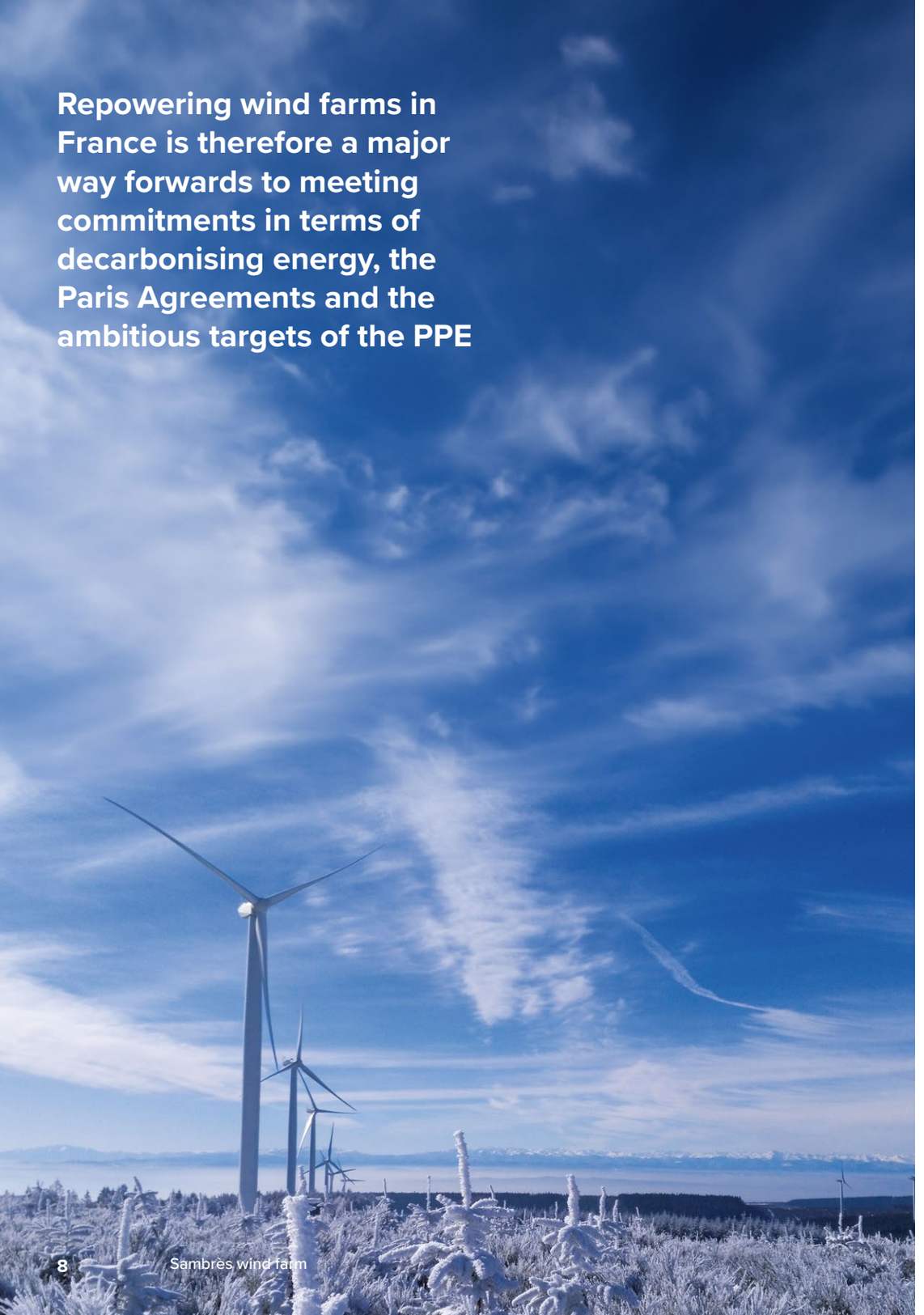
However, it is very rare not to replace **foundations**, as most repowering projects involve changes to the location of the turbines.

The **intra-site electrical network** (between wind turbines) is systematically **replaced** by new cables.

The **extra-site electricity network** (between the wind farm delivery substation and the ENEDIS substation) is **never removed**, even if wind farm capacity is drastically increased.



Repowering wind farms in France is therefore a major way forwards to meeting commitments in terms of decarbonising energy, the Paris Agreements and the ambitious targets of the PPE



Sambrès wind farm

Repowering boosts electricity production

The first wind farms were installed in areas with excellent wind yields and obviously best suited to wind energy development.

When wind farms come to the end of their shelf-life, these areas retain their advantages and offer significant potential to increase carbon-free electricity production.

Did you know ?

Defined in article 176 of the French Energy Transition Act (TECV), the Multiannual Energy Programme (PPE in french) is a strategic document designed to steer the energy transition in France. The PPE lays down a trajectory for the energy mix, as well as “properties for action management of all forms of energy in mainland France, in order to achieve national objectives established by laws”.

Source : FEE Wind Observatory 2021.

Combined with technologic improvements, repowering is therefore an effective way of decarbonising energy[1] :

+ 10%
tip height
=
+ 55%
households
provided

+ 20%
tip height
=
+ 75%
households
provided

+ 30%
tip height
=
+ 100%
households
provided

(1) Estimation based on 150m height wind turbines with a per turbine capacity of 2MW (standard characteristics of wind turbines studied for repowering).

A way of increasing local revenue

In May 2021, the French Energy Transition Ministry estimated that communities with wind farms **earned** about **15 000€** per turbine and per year, of local taxes.

As contributions are directly linked to installed capacity, an increase in dimensions will lead to an increase in revenue[2] :

+ 10%
tip height
=
+ 50%
local revenues

+ 20%
tip height
=
+ 80%
local revenues

+ 30%
tip height
=
+ 95%
local revenues

A wind farm contributes financially to the area in which it is located in **3 different ways**:

- The **Imposition Forfaitaire sur les Entreprises de Réseau (IFER)** is proportional to the installed capacity. Its value is fixed annually by the Ministry of the Economy and Finance.
- **Property tax on constructed properties (TFPB)** is comprised of the rental value of components permanently fixed to the ground, such as foundations, substations, etc. Applicable rates are voted by local authorities.
- The **Cotisation Foncière des Entreprises (CFE)** is similar to the TFPB, but only concerns businesses. Once again, rates are set by local authorities.

(1) Estimate based on 150m tip height wind turbines with a per turbine capacity of 2MW (standard characteristics of wind turbines studied for repowering).

On average, a wind farm repowering doubles local revenues and, above all, improves distribution between local actors

Soulelilla-Corbières wind farm repowering
Photo : © *Absoludrones*

Wind farm repowering leads to an improved use of available land, by using less space for an important increase in electricity production

A way of reducing land take

To enable wind farm construction and operation, **4 types of land surface** must be used:

- Turbine bases to build the **foundations**
- **Plateforms** for storing components during the construction phase
- **Tracks** to access each wind turbine
- Land required to install substation(s) **delivery station(s)**

Thus, optimising wind farm dimensions enables a better use of lands since, for an almost similar surface, energy produced will be drastically higher[1] :

+ 10%
tip height
=
+ 5%
land take

+ 20%
tip height
=
+ 10%
land take

+ 30%
tip height
=
+ 15%
land take

Reminder of the Zero Net Artificialisation (ZAN) objective:
Initially defined in 2018 in the **Biodiversity Plan** and confirmed two years later in the **Citizens' Climate Convention** (2020), this commitment aims to:

- To reduce **land take rate** and use of natural, agricultural and forestry areas by **50%** by 2030 compared with use measured between 2011 and 2020
- Achieve **zero** annual **net land take** by 2050

(1) Estimate based on 150m tip height wind turbines with a per turbine capacity of 2MW (standard characteristics of wind turbines studied for repowering).

Wind farm repowering can be an advantage for many

For landowners and farmers

- It ensures land lease **extension** and an **increase** in annual revenue.
- It offers opportunity to **rethink wind farm layout** and its integration into the surrounding context, which could be very different from the one initially observed.

For local authorities

- This will enable landscape and environmental compensatory measures to be **scaled down**.
- It ensures an **increase** in tax revenues.
- It proposes to **renew** infrastructures by newer and more efficient technologies.

For private individuals and public authorities

- It **increases** wind farm capacity in order to help meet new PPE targets.
- It enables new installations to be built **with the hindsight from many years of operation**.
- It guarantees that new installations **comply with current regulations**.

For wind farm owners

- It reduces maintenance and operating costs while **increasing** availability of wind turbines.
- It **guarantees** the long-term profitability of an asset.

Did you know?

In its report entitled « *Wind farm repowering: what strategies are possible and feasible for onshore wind farms at the end of their life* » published in 2020, **ADEME identified repowering as one of the key solutions** that would make it possible to meet our commitments in terms of emissions reduction and energy mix.

Cerisou wind farm
Photo : © *CAMEO*

French regulations in force

Types of repowering

According to the **11th July 2018** instruction defining onshore wind farm repowering legislation in France (aslo called Instruction Lecornu), there are **3 types of repowering projects:**

Identical or «Notable» repowering
Permit application is made through a notification to the Prefect as impact of the repowering project is assumed to be similar to that of the current wind farm.

Substantial repowering (S)
Permit application is made through a full Environmental Authorisation permit application, as for a Greenfield project*.

Non-Substantial repowering (NS)
Permit application is made through a report justifying absence of additional impacts, in comparison to ones of the operational wind farm. Content of studies are up to developers (acoustic, landscape, hazard study...).

Only less than 3 years old environmental monitoring studies should be submitted to the administration.

*See Glossary (p.50)

Cerisou wind farm
Photo : ©*CAMEO*

Souleilla repowering wind farm
Photo : ©*Absoludrones*

Wind farm layout modification criterion

Identical layout to current wind farm one
Notable

Slightly modified layout
Case by case
(Non-substantial or Substantial)

Drastically different layout
Substantial

Wind farm dimensions modification criteria

Tip height increased by less than 10%
Non-substantial

Tip height increased by 10% to 50%
Case by case
(Non-substantial or Substantial)

Tip height increased by more than 50%
Substantial

Duration of each kind of repowering project

Complexity and **duration** of the repowering process depend on how different the repowering project characteristics are in comparison to the operational wind farm:

Identical or significant repowering [1][2]

Time required to develop and file this type of repowering **will be considerably reduced** due to the nature of the application (reduced reporting requirements) and the slight changes in impact. **Acceptance by the administration will be much easier.**

Non-Substantial repowering [1][2]

It **will be less time-consuming than a Substantial repowering** or a greenfield project (no full environmental studies are required and the application is made via a «Porter à Connaissance»), but its development and appraisal require particular attention to the future impact to ensure the local and administrative acceptability of the repowering. **Co-construction with local actors is thus necessary.**

Substantial repowering [1]

Due to the nature of the environmental studies and the application for permission, it is similar in many ways to a greenfield development. Duration and costs of development are therefore not significantly reduced. The repowering mainly reduces the consultation phase, as the wind technology is already known by local stakeholders.

(1) Estimated average duration between the launch of the repowering studies and the commissioning of the repowered farm

(2) Provided that the last mortality monitoring was carried out less than 3 years ago at the date of submission of the application

*See Glossary (p.50)

Pays de Saint-Seine wind farm
Photo : © *Vestas*

Repowering of the Souleilla wind farm
Photo : © *Absoludrones*

Repowering in France

The lifetime of a wind turbine varies between **20 and 25 years**

The first repowering authorisation was delivered in **2015**

In 2023, it is estimated that **230 MW**, or almost **200 wind turbines**, will have celebrated their 20th anniversary

Since 2020, some **fifteen repowering authorisations** have been granted each year

Around **80 repowering authorisations** have been granted by the French authorities (**700 MW**)

90% of authorised repowering projects were considered non-substantial

Did you know?
By mid-2023, **21.4 GW** of wind power had been connected to the French grid, with more than **8,500 wind turbines** spread out over less than **2,000 wind farms**.

A simplified process to be conducted with care

French regulations on wind power development have evolved over the years as technologies have improved and the number of wind farms has increased.

The majority of wind farms being considered for do not comply with one or more of the standards in force (distance from dwellings, Météo France recommendations, aeronautical constraints and civil or military radars, technical easements, etc.).

At the same time, even if local authorities and stakeholders are familiar with this technology, the process must be carefully managed if the repowering is to be successful, whatever the type envisaged (identical, non-substantial or substantial).

Bricqueville wind farm

Particular attention must be paid to all the stakeholders involved in the repowering project

Administrations

The repowering project must be discussed as early as possible to **ensure its feasibility and acceptability.** The aim is to confirm that studies carried out and methodology applied to demonstrate lack of impact increase is in accordance with administration expectancies.

Local authorities and residents

Local actors perception current operational wind farm must be carefully considered to identifiy any opposition or comments. The aim is to reassure them that there will be no increase in impacts.

Landowners and farmers

As with local authorities and residents, it is essential to take into consideration landowners and farmers feedback. On top of that, it is important that compensatory measurements are drafted in accordance with those local actors.

Aware of the important role played by these three target groups, QENERGY is committed to devoting a significant amount of time to **support its repowering projects** and to ensure that the necessary human and financial resources are in place to bring them to fruition.

Dismantling and recycling standards

Decommissioning and legislation

According to Article 28 of 26th August 2011 decree wind farm dismantling must include :

- Decommissioning of **wind turbines**, **substations** and **electrical cables** within a **10m** radius of the wind turbines and substations.
- Excavation or removal **of foundations** with the exception of any piles.
- Restoration of the site, with **crane areas** and **tracks lowered** to a minimum depth of **40cm**, unless the owner of the land on which the wind turbine is located wishes to keep these infrastructures as they are for his/her personal use.
- Excavated foundations, platforms and tracks will be replaced with **soil** of **similar characteristics** to that surrounding the site.

Recycling and legislation

Since 22nd June 2020, regulations on waste recycling and recovery have also been added to the 26th August 2011 decree mentioned above, in accordance with the following standards :

- At least **90% of the wind farm overall weight** must be recycled or reused (including the foundations).
- At least **35% of the rotor weight** (nacelle and blades) must be recycled or reused.

Did you know?

By way of derogation, the **lower part** of the foundations may be left in the ground on the basis of a study addressed to the Prefect demonstrating that the **environmental impact** of the total decommissioning is **unfavourable**, i.e., that the impact on the environment and the carbon footprint of excavation is more important than leaving the land as it is.

Decommissioning is financed by the owner of the wind farm. Neither the wind farm operator, the local community nor the landowners would be asked to finance the dismantling of the wind farm on their land

Cerisou wind farm
Photo : ©*CAMEO*

Recycling in practice

Wind turbine blades

Aware of low recycling rate for blades, more and more manufacturers are taking an interest in this issue and trying to find **solutions** to **increase recyclability of infrastructures.**

The following solutions are currently being considered:

- **Reuse** for other purposes such as street furniture
- **Transformation into fibre-reinforced concrete** by chemical or mechanical treatment (to separate composite sheets), among other means, for use in wind turbine foundations.

Numerous **Research and Development projects** are also underway to develop fully recyclable blades. These are often carried out in partnership with the maritime industry, which faces similar problems with boat hulls.

Berceronne wind farm
Photo : © *CAMEO*

Wind turbine foundations

Excavation or removal of the foundations **is not necessarily needed** in the case of a repowering. Depending on the technical conditions of the soil, planned modifications (dimensions and positions) and costs involved, two alternatives may be considered :

- **Strengthening** existing structures
- A complete **excavation** and construction of new foundations

The complexity of the first option lies in the low level of knowledge of soil conditions, as the necessary geotechnical studies may not have been carried out at the time of initial development or relevant documents may no longer be available.

QENERGY France

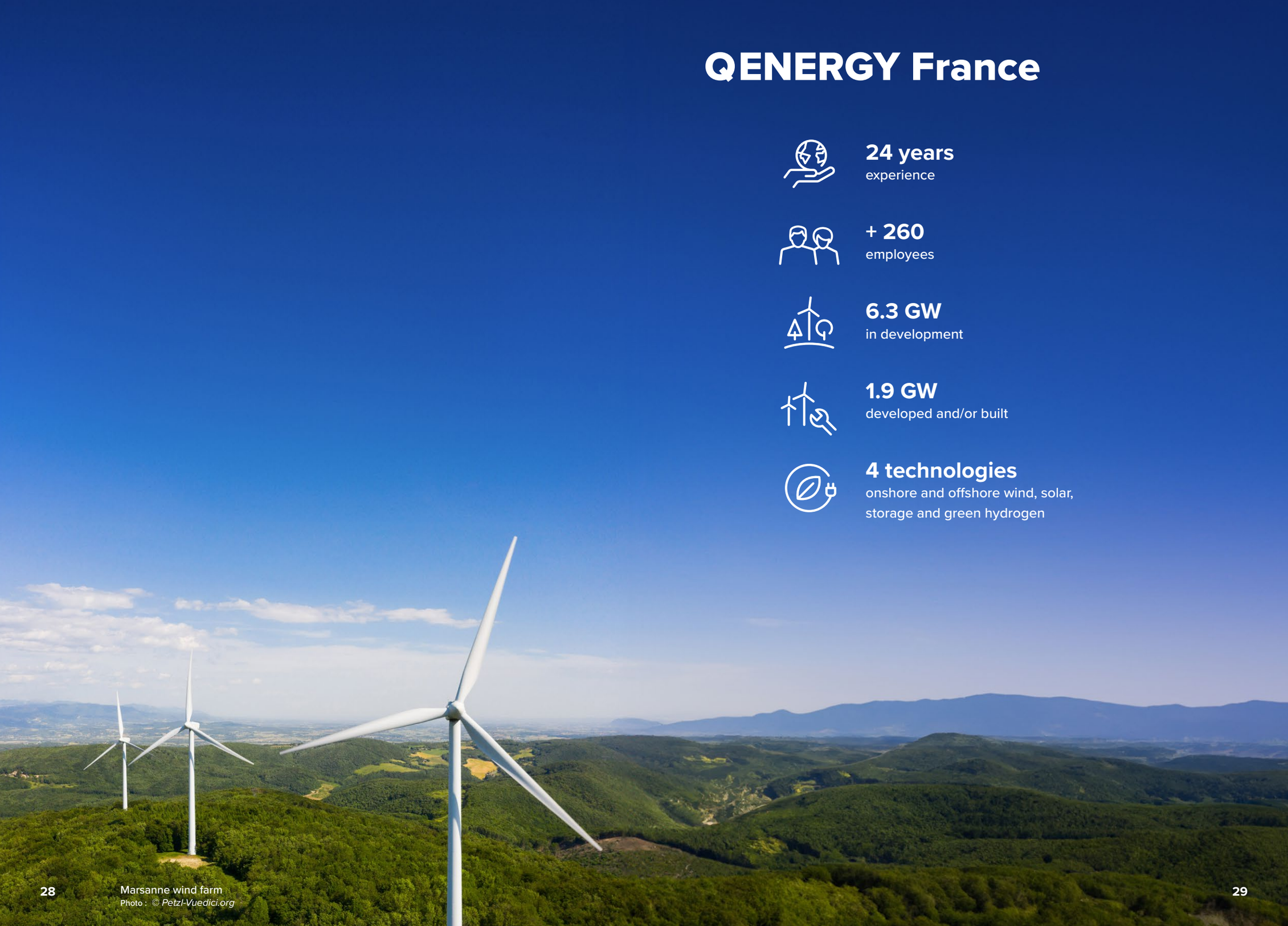
24 years
experience

+ 260
employees

6.3 GW
in development

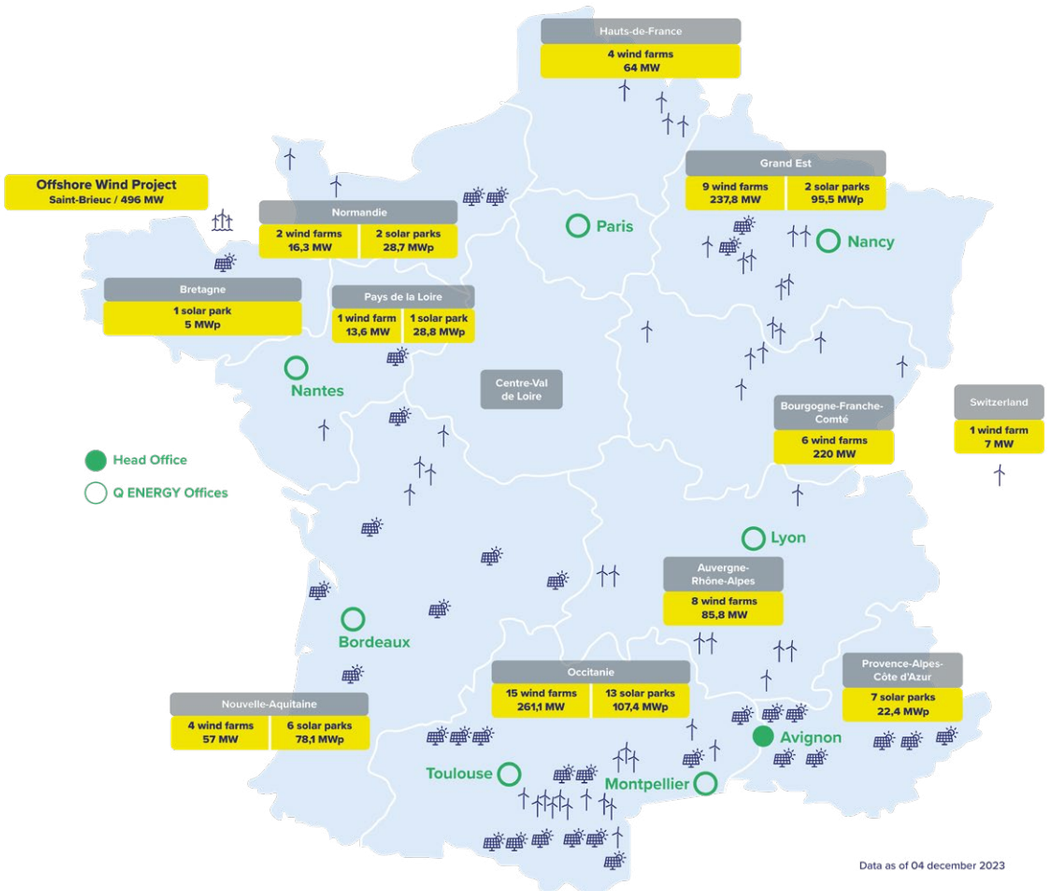
1.9 GW
developed and/or built

4 technologies
onshore and offshore wind, solar, storage and green hydrogen



Marsanne wind farm
Photo : © *Petzl-Vuedici.org*

QENERGY France, a global player and a local partner



Present all across the territory thanks to a network of branches throughout France, we draw on our experience as a pioneer in renewable energies. Thanks to the **reputation we've built since 1999**, QENERGY France is ideally placed in an ideal position **to pursue growth and expansion into new new fields** such as green hydrogen **and agrivoltaics**.

QENERGY France repowering history

2016

- 1st **investigations** on repowering projects interest and advantages

2018

- 1st **authorisation** for a repowering project
- 1st **tariff secured** for a repowering project

2019

- **7 repowering contracts** signed with 3 different asset owners (100MW)

2020

- 1st **acquisition** of a wind farm to work on its repowering
- **6 repowering authorisations** submitted (130 MW)

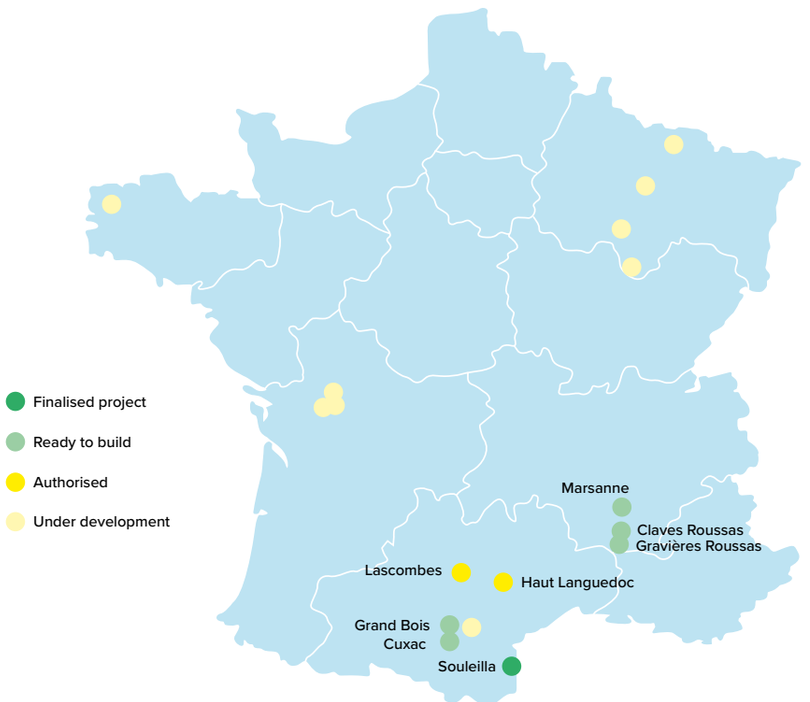
2021

- **8 repowering contracts** signed with a 4th partner (230MW)
- **4 authorisations obtained** for a repowering project (56 MW)
- **2 repowering authorisations** submitted (130 MW)

2022

- **1 application** submitted (10MW)
- 1st **authorisation** for a substantial repowering project (25MW)
- 1st **dismantling** of a wind farm (24MW)

Our experience in renewal



9 projects
in dévelopment
400 MW

5 projects
ready to be built
81 MW

2 projects
authorised
37 MW

1 project
under construction
24 MW

Our repowering projects are listed below, along with their location, tip height increase percentage increase and type:

FINALISED PROJECT

Souleilla Corbières	Treilles	Aude	+ 0%	Identical

READY TO BE BUILT

Cuxac	Cuxac-Cabardès	Aude	+ 27%	Non-substantial
Grand Bois	Caudebronde	Aude	+ 27%	Non-substantial
Roussas Claves	Roussas	Drôme	+ 30%	Non-substantial
Roussas Gravières	Roussas	Drôme	+ 30%	Non-substantial
Marsanne	Marsanne	Drôme	+ 34%	Substantial

AUTHORISED

Haut Languedoc	Murat-sur-Vèbre, Cambon et Salvergues	Hérault	+ 26%	Non-substantial
Lascombes	Broquiès	Aveyron	+ 49%	Non-substantial

IN DEVELOPMENT

9 projects

Recognised expertise

France Energie Eolienne	**GT REPOWERING PILOT**
13e Colloque National Eolien — 4 et 5 OCTOBRE 2023 - PARC FLORAL DE PARIS	**SPEAKER AT THE NATIONAL WIND ENERGY CONFERENCE** Paris - France Edition 2023
Wind EUROPE EoLIS 2022 1-2 DECEMBER GHENT	**SPONSOR AND SPEAKER AT EoLIS** Brussels - Belgium Since its creation (2019-2023)
RE:WIND 2022	**SPEAKER AT RE:WIND 2022** Berlin - Germany First session in 2022
enerGaia — Forum Européen des énergies renouvelables	**SPEAKER AT ENERGAÏA** Montpellier - France Editions 2019 and 2022
Office franco-allemand pour la transition énergétique (OFATE)	**SPEAKER AT THE OFATE** Berlin - Germany Edition 2023
ACTU ENVIRONNEMENT .com	**AUTHOR ARTICLE REPOWERING** Special November 2022

Souleilla-Corbières : Our first repowering project

QENERGY started working on wind farm repowering in **2017**, with the repowering of **Souleilla-Corbières**, the first wind farm it developed and built in **1999**.

Located in the weather radar protection zone, which restricts layout and dimensions of the **16 wind turbines** QENERGY opted for an **«identical»** repowering, (i.e., no dimensions change but requested a capacity increase from 20.8MW initially to **24MW**). This change will result an annual energy yield increase of almost **20%** (11.5 GWh/year).

After just three months of permitting, the project was officially **authorised** by the administration in early **2018**. Free of claim 4 months after and winner of a **CRE call for tenders at the end of 2018**, QENERGY started work on the dismantling of current wind farm in summer 2022, and plans to commission future turbines **by the end of 2023**.

Characteristics of the project after repowering

16	24 MW	80 m	71 GWh/year
wind turbines	installed	total height	produced
Identical	+ 15%	Identical	+ 18%

Gérard LUCIEN, Mayor of Treilles (Souleilla wind farm)

" New-generation wind turbines that benefit from the latest technological advances will replace the current wind turbines at the end of their service life, thereby ensuring better electricity production. As a result, this site will be able to make a more effective contribution to national targets for renewable energy production. For our municipality, repowering will make it possible to maintain a certain level of financial comfort, thus contributing to « the good life in Treilles» through investments that continue to focus on its population, across all generations."

Repowering of Souleilla wind farm
Photo : © *Absoludrones*

And our first dismantling

Wind turbines

- The best components have been **sold** as **spare parts**
- **Metal parts** (tower, nacelle…) have been **recycled**
- Some of the blade tips have been **donated** to a local artist to create **works of art**
- The remaining blade sections were **sold** to create **furniture** (tables, chairs, lighting…)

The foundations

- The foundations have been **completely dismantled**
- **100%** of the steel extracted has been sold for **processing and reuse**
- **26%** of the concrete extracted was used in the repowering project **foundations**
- The remaining **74%** was sold to a local construction company for **re-use near the site**.

99,4%

of the overall wind farm weight was recycled or reused

The electricity network

- **55%** of the electrical network was removed and recycled
- Only cables under the tracks have been left because removing them would have a **negative environmental impact**
- QENERGY went beyond legislation requirements since 1.9km were removed compared with the **0.3km** required by the regulations (10m around wind turbines).

Vidéos :

Dismantling of the Souleilla wind farm

Repowering of the Souleilla wind farm

Lascombes : Our most ambitious repowering project

QENERGY began to working on **Lascombes** wind farm repowering project in **2019**, once its 2 turbines were celebrating their 15th anniversary. After some discussions, the wind farm's historical owner did not want to repower the site. So QENERGY offered to buy the wind farm to perform the repowering project itself.

Since wind turbines are located within a weather radar coordination area, the repowering project couldn't be considered as «**substantial**». Nevertheless, local actors and administrations **support was strong** and both confirmed their willingness to install a larger wind farm on their territory. That leads QENERGY to consider the most ambitious «non-substantial» repowering project presenting a tip height **increase of about 49%**.

With an authorisation obtained in March 2023 and free of claim in July 2023, this project is considered as a **model by the wind industry** since it is **the most ambitious** «non-substantial» repowering project in France.

Optimisation will not stop at 49%, as a recent change in weather radar regulation allows the number and size of wind turbines to be increased. In agreement with the region, a repowering project for 4 turbines with a tip-height of 150 m was submitted in Summer 2023.

Characteristics of the project after repowering

2	7.2 MW	140 m	15 GWh/year
wind turbines	installed	tip height	produced
Identical	+ 225%	+49%	+ 275%

Lascombes wind farm

Marsanne wind farm
Photo : © *Petzl-Vuedici.org*

Marsanne : Our most collaborative repowering project

The **first substantial project** submitted by QENERGY in 2021, the repowering of this wind farm has received a **very strong support** from local authorities.

This support is widely due to the **communication and consultation efforts** made throughout the life of the wind farm but also during the repowering project's development phase. **Consultation** workshops, information meetings, a fund-raising campaign to which even the local council subscribed, meetings with the mayors and representatives of neighbouring towns, visits to the wind farm by schoolchildren... These are all ways in which the **wind farm has become part of the local community**. Nevertheless, the repowering project has had to overcome several challenges as turbines were located close to a **Defence radar** and a **VOR***, location of turbines have been challenged. As a result, 3 of the 6 wind turbines have to be moved several dozen metres to create a second line of wind turbines.

In addition to an impact on the repowering project typology, this layout modification also **required actions to be made on the urban planning aspect**, as the 3 shifted wind turbines were after that located in a natural zone and an EBC* zone, both of which prohibit installation of wind turbines.

Therefore, QENERGY **had to issue a Déclaration Préalable Emportant Mise en Compatibilité** du PLU* in partnership with the municipality and the Communauté d'Agglomération, which is in charge of urban planning. This first Preliminary Declaration for the Montélimar CA was **unanimously approved by the board members**, thanks to the QENERGY team's educational and communication efforts.

Characteristics of the project after repowering

6	25 MW	150 m	82 GWh/year
wind turbines	installed	tip height	produced
Identical	**+ 110%**	**+40%**	**+ 100%**

*See Glossary (p.50)

Claves and Gravières : Our most tailor-made repowering project

The Claves and Gravières wind farms are **the first projects** QENERGY developed in the Drôme county, and therefore our **first repowering projects** in the same area. They are also the first projects we will repower for a **third party**, as the farms are no longer owned by QENERGY.

Located in the coordination area of a VOR*, a weather radar and a defence radar and also being within a biotop protection area, **non-compliant with a repowering project**, theses two wind farms faced numerous constraints, which all had impacts of the repowering project characteristics. Thus, QENERGY had to deal with each constraints to make the repowering project feasible and obtain a permit **end of 2021** for a repowering project made up of 12 turbines presenting **4 different tip heights**: 93m, 98m, 100m, and 120.5m. This modification will however **enable both a wind farm capacity rise and an annual yield increase of about 30%**.

With a permit free of claim within the four months following the authorisation, QENERGY teams are now working on the **pre-construction phase** and aim to comission the new wind farm in **2025**.

*See Glossary (p.50)

Characteristics of the project after repowering

12	27.6 MW	93 - 120 m	72.8 GWh/year
wind turbines	installed	tip height	produced
Identical	+ 31%	+ 0 à 29%	+ 30%

Roussas wind farm

Berceronne wind farm

Questions / Answers

Why repower a wind farm?

Generally speaking, the renewal of a wind farm increases the power and productivity of a site by replacing older-generation wind turbines with more mature and, above all, more efficient technologies.

Why are we renewing it now?

The duration of a repowering (development, authorisation and construction) depends on the type of modification (identical, non-substantial or substantial). However, it is estimated that between 4 and 7 years are needed to complete this type of project. Initiating the process in the 15th year of the wind farm's life therefore enables its owner to ensure that it is replaced before the 25th year of operation.

How long does a repowering project last?

As with a Greenfield* project, the duration of a repowering project depends on the size of the wind farm and the location of the turbines. However, it is reasonable to estimate that, whatever the size of the wind farm, the construction phase (deconstruction and construction) may not be less than one year, even if the construction and deconstruction work is carried out in parallel.

Are all the components dismantled?

In accordance with article 28 of the decree of 26th August 2011, the deconstruction of a wind farm necessarily includes dismantling the wind turbines, delivery stations and electrical cables within a 10m radius of the installations, removing all the foundations and excavating the crane areas and access roads to a minimum depth of 40cm.

Can the original foundations be re-used for the repowering project?

Provided that the wind turbines are renewed in exactly the same locations, that their dimensions are not significantly different and that appropriate maintenance guarantees their reliability throughout the new lifetime of the wind farm, the original foundations can be reused as part of the repowering project. Given these conditions, this is not the most common option.

*See Glossary (p.50)

Can the electricity grid be maintained as part of repowering?

The answer depends on the type of network:

- The intra-site electrical network (between the wind turbines) is systematically replaced.
- The extra-site electricity network (between the wind farm's delivery substation and the ENEDIS source substation) is never removed, even if the wind farm's capacity is drastically increased.

How far can the layout of the wind farm be modified?

The 2018 instruction defining the criteria for assessing the nature of the renewal (identical, non-substantial or substantial) is based on 2 factors: the change in dimensions and the change in location. For a renewal to be considered «non-substantial», and therefore for the project owner to avoid having to submit a new application for authorisation, the changes to the site must be limited or, failing that, the change must have a positive impact on the local environment (distance from woodland, dwellings, reduction in risks).

Monts de l'Ain wind farm

Glossary

Supplementary Prefectoral Order (APC)	Order issued by the Prefect amending the authorisation for the initial wind farm to allow its repowering
CFE	Business property tax
EBC	Protected wooded areas
GW	GigaWatts
IFER	Flat-rate tax on grid companies
Lifetime Extension (LE)	Process for operating a wind farm with extension of the technical life of the turbines by changing major or minor components to improve their performance
MW	MegaWatts
Wind farm platform	Space used during the construction phase to store wind farm components
PLU	Local urban planning
Porter à Connaissance (PAC)	Repowering authorisation application file informing the authorities of the potential impact of the planned project
PPE	Multiannual Energy Programme
Greenfield project	Project to create renewable energy generating facilities
Repowering	Renewal of end-of-life energy-producing infrastructure
Extra-site electricity network	Electrical cables linking the wind farm delivery substation(s) to the source substation owned by the local network operator (ENEDIS or others)
Intra-site electrical network	Electrical cables linking the wind turbines to the wind farm delivery station(s)
Revamping	Replacement of certain major components
Run To Destruction (RTD)	Process of operating a wind farm without heavy preventive or corrective maintenance until the end of the technical life of the turbines
TFPB	Property tax on constructed properties
VOR	Omnidirectional range used by the air navigation (comparable to radar)
ZAN	Net Zero Artificialisation (no land take)

Do you have any questions ?
Contact us at :
qef-repowering.france@qenergy.eu

www.qenergy.eu

Soulella wind farm
Photo : ©*Absoludrones*

QENERGY France SAS
330 rue du Mourelet
84000 Avignon, France
T +33 4 32 76 03 00
qef-info@qenergy.eu