

# To all our Stakeholders

In 2021, Total became TotalEnergies: A new name for a new ambition to become a major player in the energy transition, engaged towards getting to net zero by 2050, together with society. This choice stems from a deeply-held conviction that everyone on the planet has the right to have access to energy – reliable, affordable energy that is a source of economic and social development. At the same time, people expect a clear and responsible commitment from businesses to preserve the climate for future generations. The energy transition is under way. Our Company is transforming to provide tangible, sustainable solutions to the dual challenge of more energies, less emissions.

## Two objectives: reporting on our progress and expanding on our ambition

In 2021, our shareholders broadly supported this ambition through their vote at the Annual Shareholders' Meeting. One year later, we are publishing this Sustainability & Climate – 2022 Progress Report to show how our ambition is reflected in the deployment of our strategy and in our investment decisions, as well as to share our 2021 achievements, which demonstrate and stake out the path of our transformation for meeting our 2030 objectives and our ambition of getting to net zero by 2050, together with society.

This report also provides an opportunity for us to explain even more clearly and transparently our climate ambition, our progress, the pertinence of our 2030 objectives and our ability to meet or exceed them, and in so doing, show our stakeholders that we are already on the right track. As we promised, each year the TotalEnergies Board of Directors reviews the relevance of its ambitions, as well as the appropriateness of its strategy and targets for reducing greenhouse gas emissions in the light of progress in international and national policies, new scenarios concerning decarbonization trajectories, advances in low carbon technologies, action taken by other sectors, including its customers, and other changes in society in terms of energy transition and sustainable development.



That is why, through this report, we are expanding on the ambition we submitted to our shareholders in 2021.

For the first time, we describe our 2050 vision of a net zero TotalEnergies, together with society. Renewable electricity will account for half of its production; new decarbonized molecules from biomass (biofuels and biogas) or from renewable electricity (hydrogen and e-fuels) will represent a quarter; and hydrocarbons (oil and gas) the remaining quarter, with their residual emissions fully captured, recycled or offset.

This vision is not a mirage or greenwashing. It is based on measurable objectives to reduce our greenhouse gas emissions in the short (2025), medium (2030) and long (2050) term, covering our industrial operations (Scope 1+2) and the emissions generated by our customers' use of our energy products (Scope 3). We affirm our ambitious target of a more than 30% reduction in greenhouse gas emissions related to sales of petroleum products (Scope 3 Oil) by 2030 compared to 2015.

To that, we add phased targets for reducing methane emissions (50% from 2020 levels by 2025 and 80% from 2020 levels by 2030) to move towards zero methane and an objective of less than 0.1 million cubic meters per day for routine gas flaring at our operated assets by 2025, before eliminating flaring completely by 2030.

## Objectives aligned with society's net zero ambition

According to assessments by respected independent third parties, our target of a 40% reduction by 2030 in our net Scope 1+2 emissions compared to 2015 is in line with the commitments made by countries with a net zero pledge, including the European Union with its "Fit for 55" package. I am also pleased that Transition Pathway Initiative (TPI) announced that TotalEnergies is one of three oil and gas firms that "have set emissions reduction targets that are ambitious enough to reach net zero by 2050 and to align with TPI's 1.5°C benchmark."

This report also includes our analysis of the International Energy Agency's normative Net Zero Emissions scenario, which some observers are now using as guidance. Even though we do not think that our societies can match the scenario's trend in the short term, we do share the 2050 end-point described by the IEA for carbon neutrality. For this reason, we have decided to take the scenario into account, for testing the resilience of our portfolio and projects and ensuring the strength of our balance sheet.

Our contribution to the development of renewable energies, as called for in the Net Zero Emissions scenario, accelerated in 2021. Our investments in renewables and electricity accounted for 25% of total investments, which is more than the 20% we forecast one year ago. Combined with our investments in new molecules, this means that soon more than 30% of our investments will be devoted to decarbonized energy. In the interests of full disclosure, we are including the taxonomy of our operations for the first time, ahead of the new European regulations. Our ambition is backed by a clear and disciplined investment strategy, with the objective of channeling half of our future investments to growing renewable energies, gas and new decarbonized molecules. The other half will be used to maintain our traditional production base. In this way, we will be able to gradually build up an integrated portfolio of multi-energy assets that all share two crucial criteria for ensuring a commodity-producing company's sustainable profitability in a period of energy transition: low production costs and low CO<sub>2</sub> emissions.

The results obtained in 2021 back up our ambition. We installed 10 GW of renewable electricity capacity, increased our LNG sales to 42 Mt (99% of which sold to net zero countries), reduced the share of our sales from petroleum products to 44% of the total from 65% in 2015, lowered emissions from our operated facilities (Scope 1+2) by 20% from 2015 and reduced the carbon footprint of our products sold in Europe by 14% compared to 2015. All of these results allow us to deliver energy to our customers that has a more than 10% lower life-cycle carbon intensity than in 2015. In this report, you will also find, for the first time, an assessment of the Scope 1+2 emissions of our non-operated assets and our emissions on an

equity share basis, as well as the geographic spread of our Scope 1, 2 and 3 emissions by region. In carrying out our transformation and advancing on the path to net zero, we are not alone. We are working to engage customers, suppliers, researchers, start-ups and others. In 2021, we multiplied our low-carbon collaborations and partnerships and we intend to drive further progress with all the players in our value chain, especially in new mobilities.

## Working for a just transition, together with our stakeholders

Since our climate ambition is intrinsically linked to our sustainable development ambition, you will also find a discussion of our efforts to have a positive impact, initiated with our stakeholders, based on dialogue and transparency. We affirm our commitment to offering our employees around the world a safe, inclusive and stimulating work environment where they can make the most of future-oriented skills. I would like to salute their engagement: we have them to thank for allowing us to achieve the best accident rate in our sector in 2021. We developed this new ambition together – in the midst of the Covid-19 pandemic – and we are deploying it together within the framework of a just transition.

Respect for Each Other, and therefore for human rights, is a cornerstone of our Code of Conduct. In this report, we give tangible examples to describe how we ensure respect for human rights in all our operations and how we work with communities to create value in our host territories.

Care for the environment is also a key focus of our sustainable development approach. This report details our environmental requirements and our new objectives for biodiversity, for managing scarce water resources and for the circular economy.

As I write this, two realities are unfolding. On the one hand, Russia's armed aggression against Ukraine threatens people, European stability and the energy market's equilibrium. On the other, the Intergovernmental Panel on Climate Change's new report powerfully reminds us of the climate emergency. In this environment, explaining our ambition and showing how it is being put in place takes on its full meaning. Guided by our values and backed by our talents, I am confident in our ability to keep moving forward, to resolutely drive the transformation of our industrial model and to help, with our stakeholders, shape the just transition to which our societies aspire.



Patrick Pouyanné

# Governance: A Board of Directors on the Front Line

C orporate stakeholders have increasingly high expectations concerning sustainable development. For TotalEnergies, this is an opportunity more than a constraint, and that's why we have put sustainability at the heart of our strategy. I'm not just talking about climate, which is the main driver of our transformation, but also about people's well-being, care for the environment and creating value for society. Our business strategy, like our net zero ambition, is part of a transition dynamic that involves society as a whole. We are delighted that businesses, governments, consumers and citizens have grasped the scale of the sustainability challenges.

TotalEnergies' mission is to meet people's growing need for energy, and its ambition is to produce increasingly low-carbon energies that remain affordable and reliable. The Company is undergoing a profound transformation to get to net zero by 2050, together with society. We are on the right track to meet our objectives for 2030, not only for renewable electricity (35 GW in 2025, 100 GW in 2030), but also more broadly for all our operations. The entire Company is working to develop new energies and reduce the lifecycle carbon intensity of the products we provide to our customers. The Company supports its employees by giving them the resources they need to make this transformation an opportunity for their own development.



## A board actively involved in the transformation

The Board of Directors challenges and approves the strategy proposed by the Company's management. It plays a front-line role in supporting and accompanying the transformation. The Board's make-up illustrates TotalEnergies' convictions concerning openness and diversity. We have five different nationalities represented among our 14 Directors, six women and nine members who have specific competencies on climate/sustainable development issues.

As Lead Independent Director, I meet with investor groups on a regular basis. The debate over climate and energy sometimes inspires contradictory demands. We need to listen carefully and understand those demands to determine the best balance in terms of needs and timing. The sudden end to oil that some dream of would not be possible or desirable given the current state of demand. My monthly conversations with Patrick Pouyanné give me a close-up view of how the Company and the markets are evolving and insights to share with our Directors and stakeholders.

## A governance focused on creating long-term value

In 2021, the Board of Directors defined TotalEnergies' ambition and 2030 objectives for sustainable development and the energy transition toward net zero, together with society, and presented them to our shareholders so they could voice their opinion. This ambition has received massive support from shareholders, with 92% favorable. After talking to Christiana Figueres in 2020, the Board invited Fatih Birol, Executive Director of the International Energy Agency (IEA), in 2021, in order to get a better view of the underlying factors in the IEA's Net Zero scenario.

In 2021, we added climate-target-related performance criteria to other sustainable development criteria (HSE, CSR, HR and diversity) in the determination of the Chairman and CEO's variable compensation. The Oil & Gas growth criterion in this calculation was replaced by two criteria concerning his steering of the transformation and profitable growth in renewables and electricity. The granting of performance shares includes a criterion relating to the decline in indirect (Scope 3) emissions from the end use of energy products by TotalEnergies customers.

This multi-energy strategy requires a long-term view, and it will take time for TotalEnergies' new strategic direction to produce its full effects. During its annual strategic reviews, the Board will examine the appropriateness of this strategy and its targets for reducing greenhouse gas emissions in the light of progress in international and national policies, new decarbonization scenarios, advances in low carbon technologies, action taken by other sectors – including our customers with our active support – and other changes in society concerning the energy transition.

This Sustainability & Climate 2022 Progress Report, which follows the TCFD<sup>1</sup> recommendations, is designed to inform the Shareholders' Meeting of the progress made in 2021 in implementing our ambition. It rounds out our ambition, notably concerning methane emissions. The transformation is under way, and our governance promotes and supports it!

## SPECIALIZED COMMITTEES FOR ADDRESSING OUR STRATEGIC PRIORITIES

**9** meetings of the Board of Directors  
99.2% attendance rate

**1** executive session chaired by the Lead Independent Director

**7** meetings of the Audit Committee  
100% attendance rate

**4** meetings of the Governance & Ethics Committee  
100% attendance rate

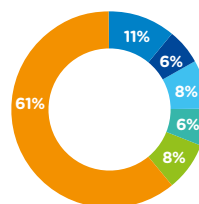
**3** meetings of the Compensation Committee  
100% attendance rate

**4** meetings of the Strategy & CSR Committee  
100% attendance rate

## VARIABLE COMPENSATION ALIGNED WITH THE COMPANY'S STRATEGIC OBJECTIVES

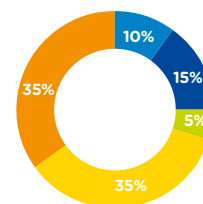
### ANNUAL VARIABLE PORTION

Chairman & CEO  
ESG criteria account for 39%



- Safety performance<sup>2</sup>
- Scope 1&2 performance<sup>2</sup>
- Supervision of the transformation strategy<sup>2</sup>
- Profitability of renewables<sup>2</sup>
- CSR performance<sup>2</sup>
- Financial performance<sup>2</sup>

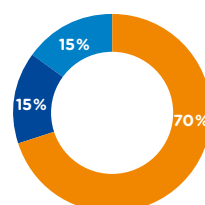
Senior Executives:  
ESG criteria account for 30%



- Safety
- GHG reduction - New in 2022
- Diversity - New in 2022
- Individual performance<sup>3</sup>
- Financial performance

### PERFORMANCE SHARE RECIPIENTS

From the Chairman and CEO to all beneficiary employees<sup>4</sup>:  
ESG criteria account for 30%



- Financial performance
- Scope 1&2 GHG reduction
- Scope 3 GHG reduction - New criterion introduced in 2021

1. The Task Force on Climate-Related Financial Disclosure created by the Financial Stability Board. 2. Maximum percentage. 3. According to the role. 4. 11,700 employees in 2022.

# What Will Demand for Energy be Tomorrow? Our Analysis of the IEA's NZE Scenario

The IEA's Net Zero Emissions (NZE) Scenario is a “normative” scenario that describes a changing world energy demand that would be consistent with limiting the global temperature rise to 1.5°C “without overshooting the related carbon budget”.

## **The NZE Scenario's vision for 2050 features the following:**

- Electrification of final demand would rise to 49% from 20% today, with 88% decarbonized electricity versus 28% in 2020. The use of coal would be virtually eliminated in 2050 and capacity for renewables would rise eightfold (20 for solar and wind, 2.7 for hydroelectricity).
- Demand for oil would stand at 24 Mb/day, down 75% from 2019. The 2030 crossing point corresponds roughly to linearization of the decline between now and 2050, i.e., a 25 Mb/day decrease every ten years (very sharp immediate fall with no further acceleration).
- Demand for natural gas would stand at 29 Mboe/day, down 57% from 2019. In 2050, green gas (decarbonized hydrogen, ammonia and biogas) would account for 10% of the global energy mix versus 6% for natural gas.
- Net zero would be achieved thanks to 7.6 Gt of CO<sub>2</sub> storage per year by 2050.

## **This “normative” scenario requires a drastic change in energy demand between 2020 and 2030:**

- In the NZE Scenario, demand would drop by around 0.7% a year between 2020 and 2030 (even though the global population and GDP continue to rise) in order to immediately bend the trajectory of global CO<sub>2</sub> emissions.
- That would involve a massive, concerted effort with regard to energy efficiency, which would improve by a spectacular 4.2% a year between 2020 and 2030; this compares to 1.5% a year on average over the last 20 years.
- Demand for oil would decline by 26% over the decade to 72 Mb/day.
- Demand for natural gas would level out between 2019 and 2025 and then decline to 62 Mboe/day in 2030 versus 68 Mboe/day in 2019 (down 0.9% per year).

As this is a “normative” scenario, the IEA does not present it as a forecast of changes in energy demand, but rather as a blueprint that would need to be followed to achieve the 2050 objective. The IEA specifies that the NZE Scenario is shaped by numerous “uncertainties”, including the speed with which demand and behaviors adapt, the real level of energy efficiency, the pace at which new decarbonization technologies such as hydrogen and CCS scale up, etc.

While we share the “normative” scenario's vision for the energy mix in 2050, the trajectory mapped out for demand between 2020 and 2030 is undeniably at odds with current trends. This applies to demand for energy overall, and to demand for oil, gas and coal. The IEA's own short- and long-term forecasts, published since May 2021, do not in any way support the assumptions of the NZE scenario. Demand for coal in 2021 exceeded 2019 levels, and the IEA expects an increase of 0.5% a year between now and 2024. According to its latest forecasts, demand for oil should be higher in 2022 than in 2019. And worldwide gas demand increased by 4% in 2021, with the IEA expecting a 2% rise in 2022. The NZE Scenario requires more than 1000 GW of new solar and wind capacity to be deployed each year between 2020 and 2030, which is four times as much as the 250 GW added in 2020.

This only makes a collective effort to change the global energy mix, still over 80% fossil-based, even more urgent and essential.

The highly demanding assumptions used for the trend in energy demand up to 2030 have led the IEA to affirm that the world no longer needs any new oil and gas projects because the natural field depletion of around 4% a year is in line with the modeled decline in oil consumption.

Conversely, an excessively sharp decline in oil and gas supply in an environment where demand is not adjusted accordingly would, of course, lead to higher prices. With this in mind, it should be noted that the current level of investment in upstream oil and gas is below the level modeled by the IEA in the NZE Scenario for 2022-2030 (\$320 billion and \$350 billion in 2020 and 2021 versus \$366 billion a year in the NZE Scenario).





# 1

## Transforming to Reinvent Energy

In affirming its ambition to be a world-class player in the energy transition and to get to net zero by 2050, together with society, TotalEnergies has committed to profoundly transforming its production and sales while continuing to meet the energy needs of a growing population. The Company is developing a wide range of energies in an integrated approach (from production to distribution to the end user) in order to decarbonize its energy offering and generate a competitive advantage that will create long-term value for its shareholders and stakeholders and secure its future.





On one hand, the energy transition depends on the development of new molecules (biofuels and biogas, clean hydrogen, and synthetic fuels combining hydrogen and carbon) that TotalEnergies has the core skills to produce. It is expanding in these markets with a focus on circular resource management. On the other hand, the energy transition involves electrifying energy uses, which requires a massive increase in the supply of green electrons. TotalEnergies is deploying across the entire renewable electricity value chain, from production and storage to trading and sales, in accordance with a selective, profitable approach. Its goal is to rank among the top five global producers of solar- and wind-generated electricity by 2030.

Concerning gas, which is a transition fuel, TotalEnergies is pursuing its development across the liquefied natural gas (LNG) value chain to strengthen its position as the world's third-largest LNG company. LNG plays a key role in the net zero roadmaps of numerous coal-consuming countries and is the ideal partner to intermittent renewable energies.

As for oil, the Company is very selective and focuses its investments on low breakeven, low emissions projects.

As they evolve, energy markets are becoming increasingly interconnected and interdependent, particularly since electricity – the energy at the center of the transition – is a secondary energy, meaning that it depends on other energies and markets. What's more, electricity will be increasingly produced from intermittent sources that depend on weather factors that cannot be controlled. Our integrated multi-energy strategy, combined with its solid financial base, are strengths and sources of resilience that will allow us to be a major provider of the sustainable energy the world needs and make the most of these changes, including the potential price volatility they may cause.



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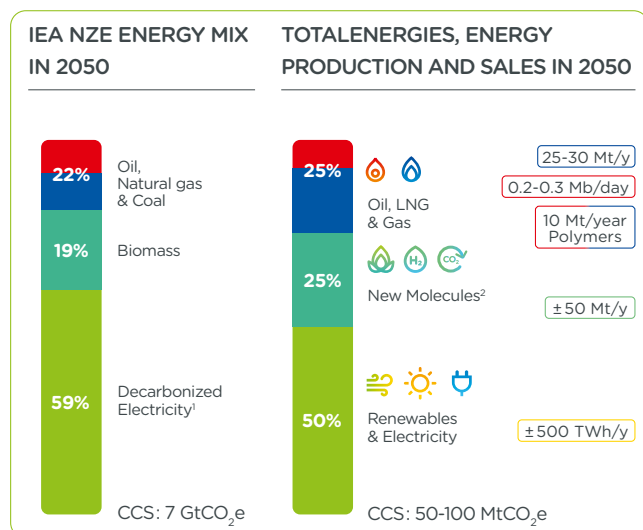
## Transition Pathway Initiative

In November 2021, **Transition Pathway Initiative** (TPI) announced that “three oil and gas firms – Occidental Petroleum, TotalEnergies and Eni – have set emissions reduction targets that are ambitious enough to reach net zero by 2050 and to align with TPI’s 1.5°C benchmark.”

## 1. Transforming to Reinvent Energy

# A Vision of a Net Zero TotalEnergies in 2050, Together with Society

The work carried out over the last year has produced a clearer picture, inspired by the IEA's Net Zero vision, of what TotalEnergies would look like, at Net Zero in 2050, together with society, an energy transition leader.



Reinventing a net zero energy system means producing decarbonized electrons and molecules and developing carbon sinks to absorb CO<sub>2</sub> from residual hydrocarbons (for producing chemicals, for example). This introduction rounds out the ambition presented to shareholders in May 2021.

### In 2050:

- Around half of the energy produced by TotalEnergies would be renewable electricity with corresponding storage capacity, or around 500 TWh/year. This would require developing around 400 GW of renewable capacity [2030 target: 100 GW in 10 years and 120 TWh/year].
- New molecules would account for around 25% of the energy produced by Total Energies, equivalent to 50 Mt/year, in the form of biogas, hydrogen, or synthetic liquid fuels from the following circular reaction:  $H_2 + CO_2 \rightarrow e\text{-fuels}$ .
- TotalEnergies would produce around 1 Mb/day of hydrocarbons (or close to four times less than in 2030, in line with the reduction outlined in the IEA's Net Zero scenario) made up primarily of liquefied natural gas (around 0.7 Mboe/d). Very low-cost oil would account for the rest. This oil would be used, in particular, by the petrochemicals industry to produce around 10 Mt/year of polymers, of which two-thirds from the circular economy.

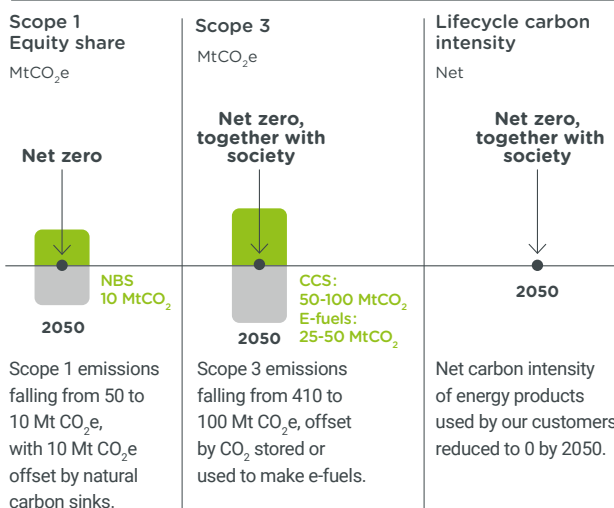
• These hydrocarbons would represent around 10 Mt/year of residual Scope 1 emissions, including methane emissions close to zero (below 0.1 MtCO<sub>2</sub>e/year), which would be fully off-set by nature-based carbon sink solutions.

• These hydrocarbons would represent Scope 3 emissions of around 100 Mt/year. To get to net zero together with society, TotalEnergies would help "eliminate" the equivalent of 100 Mt of CO<sub>2</sub> a year produced by its customers by developing:

- A carbon storage service for customers that would store 50 to 100 Mt/year of CO<sub>2</sub>.
- An industrial e-fuels activity that would avoid 25 to 50 Mt/year of CO<sub>2</sub> for our customers through production with 100% green hydrogen while making up for the intermittence of renewable energies to replace fossil fuels.

In short, the Company will spend the next ten years building the projects and skills needed to make TotalEnergies a net zero energy company by 2050.

### NET ZERO IN 2050



(1) Hydropower, solar, wind and nuclear. (2) Biofuels, biogas, hydrogen and e-fuel/e-gas.



# Our Multi-Energy Offer: Ambition 2030 and Progress 2021

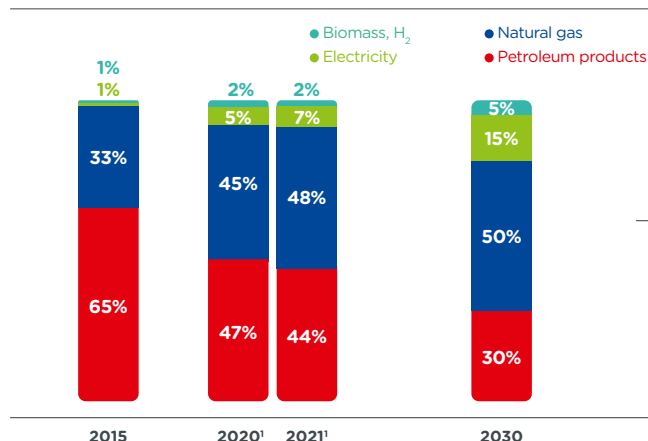
To achieve carbon neutrality, the global energy mix will have to change considerably. Today, fossil energies still account for more than 80% of the mix.

The markets for low carbon electricity and gas (natural gas, bio-gas and hydrogen) will need to expand, while coal will have to be eliminated and demand for oil will need to stabilize and then decline. TotalEnergies is already carving out a position in this energy offering of the future and diversifying its energy mix by reducing the share of petroleum products and increasing natural gas, as a transition fuel, and renewable electricity. >>

>> The energy mix of the Company's sales will shift significantly as well, and could stand at 50% gas, 30% petroleum products, 15% majority-renewable electricity and 5% biomass and hydrogen by 2030.

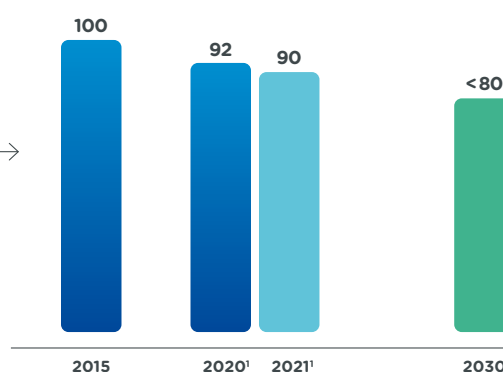
The shift towards lower carbon products will allow us to reduce the lifecycle carbon intensity of energy products sold by at least 20% by 2030.

## SALES MIX



## NET LIFECYCLE CARBON INTENSITY OF PRODUCTS SOLD

Base 100 in 2015



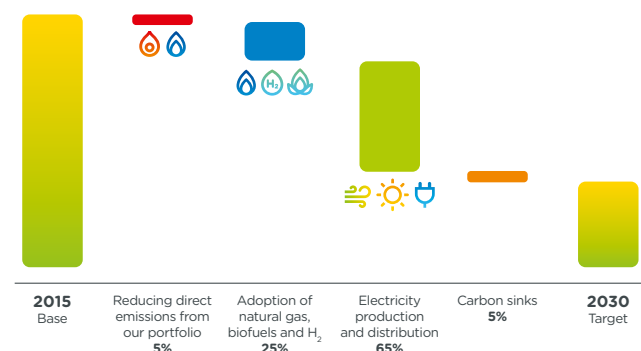
## Our products' lifecycle carbon intensity

In 2021, we continued to reshape our mix thanks to increased sales of LNG (up 10% from 2021 to 42 Mt in 2021) and electricity (up 20% from 2020 at 57 TWh) and a 10% decrease in petroleum product sales. The carbon intensity of products sold continued to improve with a 2% decline (excluding the impact of Covid-19).

Growth in electricity will account for nearly two-thirds of the decrease in lifecycle carbon intensity between 2015 and 2030. The second lever involves reducing sales of petroleum products and increasing production of gas (especially LNG) and sales of products based on biomass. Lastly, carbon sinks and lower emissions from our facilities will each contribute around 5% of the decrease in carbon intensity.

The levers for decarbonizing our mix are as follows:

## LEVERS FOR CARBON INTENSITY REDUCTION (2015-2030)



1. Excluding the impact of Covid-19.

## Our production

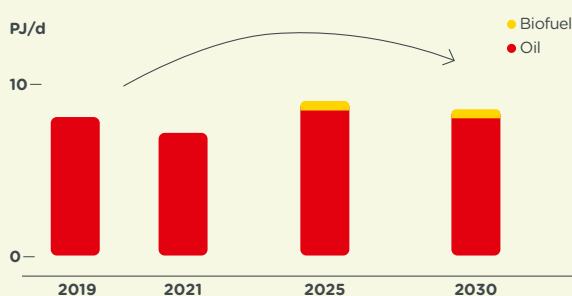
TotalEnergies foresees oil production peaking this decade and then decreasing to around 1.4 Mb/d in 2030. It aims to increase gas production by around 50% between 2015 and 2030 (from 1.3 Mboe/d to 2 Mboe/d) and raise electricity generation to 120 TWh in 2030 from 1.7 TWh in 2015.

In 2021, the Company's energy production increased by nearly a quarter compared to 2015.

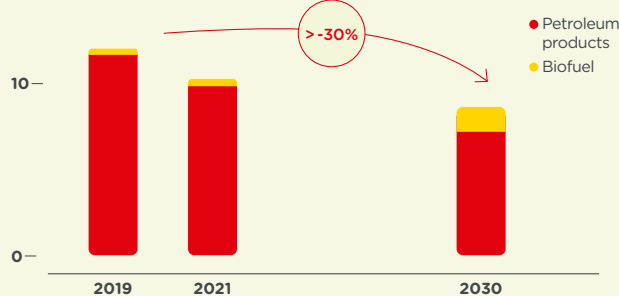
## Our sales

The Company is reducing its sales of petroleum products to align with production by 2030, around 1.4 Mb/d. Sales of gas and electricity will rise sharply, increasing by a factor of 2 for gas and by a factor of 20 for electricity over the 2015-2030 period.

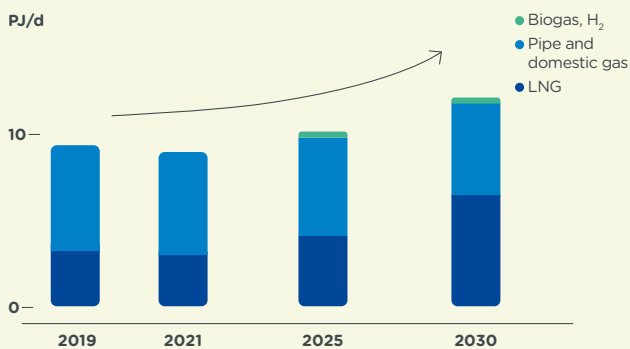
### OIL PRODUCTION PEAKING THIS DECADE



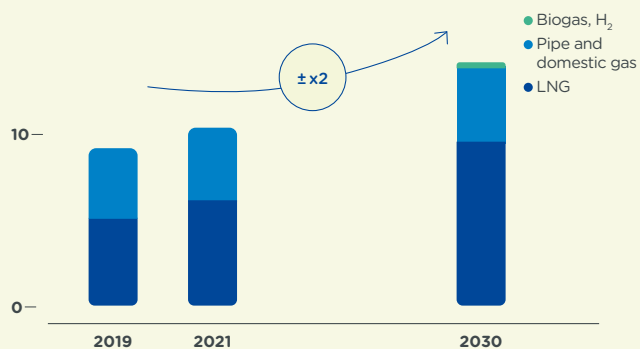
### LIQUIDS



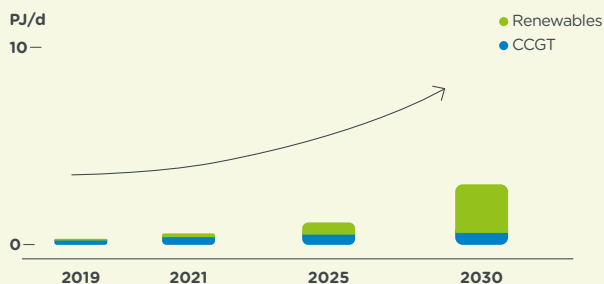
### KEY ROLE OF GAS IN THE ENERGY TRANSITION



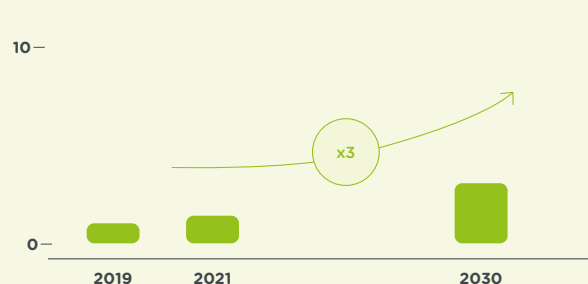
### GAS



### GROWTH OF RENEWABLES-BASED ELECTRICITY



### ELECTRICITY



# Becoming a World Leader in Renewable Electricity by Integrating the Value Chain from Production to Sales

**T**otalEnergies wants to become one of the top five worldwide producers of renewable electricity. In five years, the Company has invested more than \$10 billion, primarily in photovoltaic electricity and offshore wind, for an average of \$2 billion per year. In 2021, TotalEnergies lifted its investments in electricity and renewables to more than \$3 billion, or 25% of its net investments. It intends to finance **investments of more than \$60 billion** in renewable power generation capacity by 2030. The Company makes profitable investments, meaning projects with a return of more than 10%. The mix combines regulated markets with deregulated markets integrated across the entire electricity value chain. As a result, the Power & Renewables business's EBITDA exceeded \$1 billion in 2021.

In the past four years, the Company's gross installed capacity for renewable power grew from 0.7 GW in 2017 to more than 10 GW in 2021. The objective is to have **35 GW of gross capacity in 2025** and **100 GW in 2030**. The 2025 figure is based on identified projects in development. The Company's goal is to increase electricity production from 21 TWh in 2021 to 120 TWh in 2030.

TotalEnergies' broad international footprint gives it a competitive advantage for identifying and developing profitable renewables projects. For that reason, it created a Renewable Explorers network in 2021 in some 60 host countries.

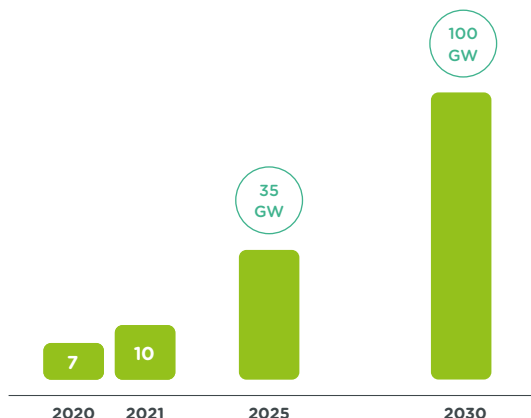
Since 2015, TotalEnergies has been building a portfolio of flexible power generation using combined-cycle gas turbine (CCGT) plants, with a capacity of 4 GW at end-2021. These plants complement the development of renewables by supporting the grid during periods of peak demand or when there is not enough sunshine or wind. Ultimately, the CCGT units are targeted for decarbonization, either by changing from gas to biomethane or hydrogen or by sequestering their emissions through carbon capture and storage (CCS).

## Further accelerating our positions in photovoltaic solar energy in 2021

TotalEnergies' solar portfolio expanded rapidly in 2020 and again in 2021, notably in India and the United States. This growth will continue, as solar energy accounts for three-quarters of the 35 GW the Company wants to develop by 2025.

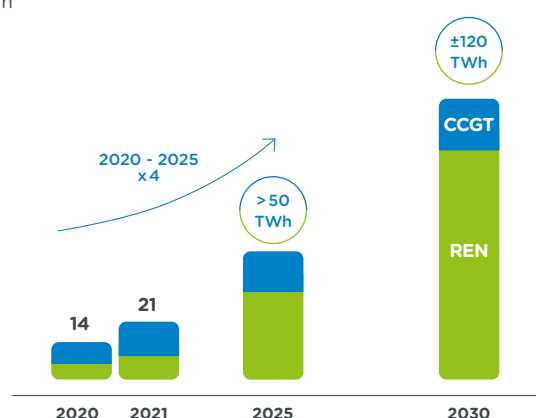
RENEWABLE ELECTRICITY INSTALLED CAPACITY (100%)

GW

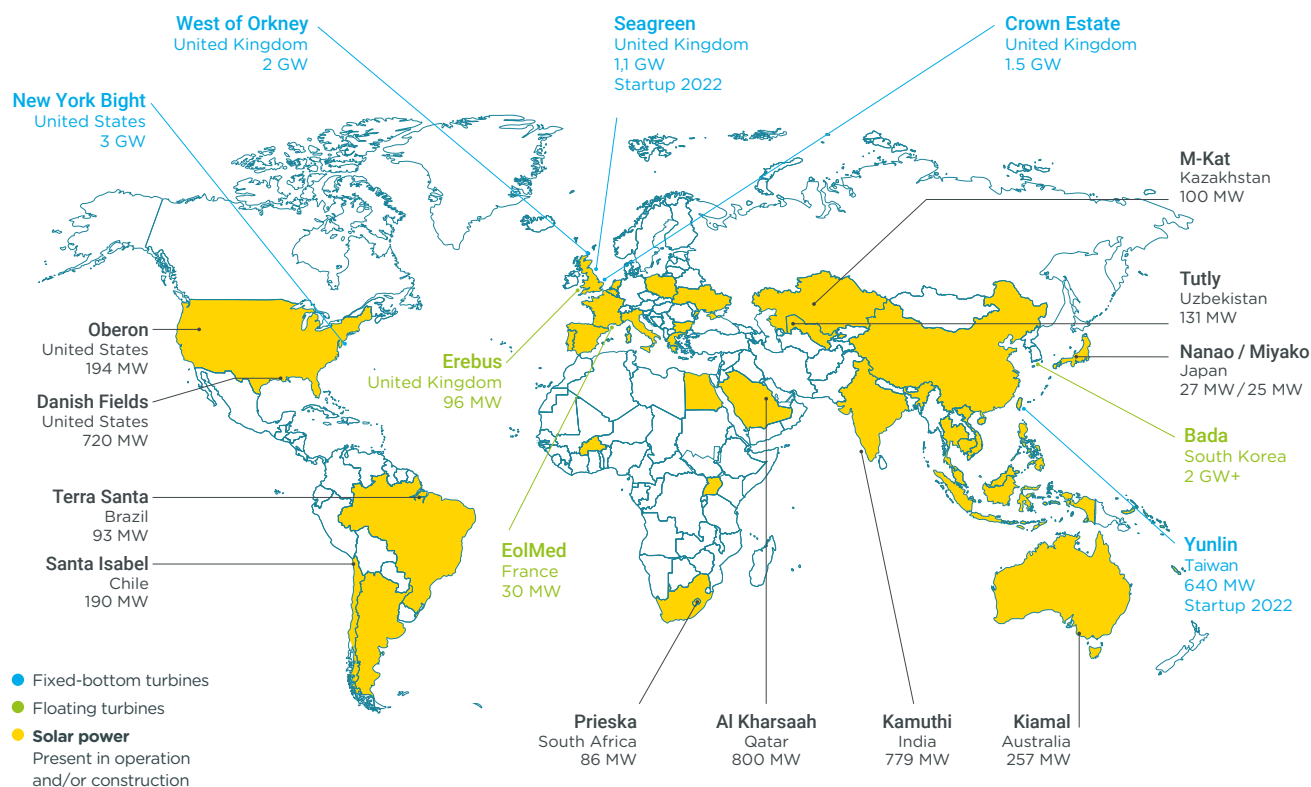


POWER GENERATION (COMPANY SHARE)

TWh



## SOLAR POWER AND OFFSHORE WIND PROJECTS



### Continued scaling up in offshore wind in 2021

Offshore wind offers high utilization rates with significant development potential and better acceptability than onshore wind, particularly in Europe. TotalEnergies sees strong growth potential in offshore wind energy, especially since it can leverage its teams' expertise in managing and operating offshore megaprojects.

The offshore wind portfolio's total capacity exceeds 10 GW, of which two-thirds fixed-bottom and one-third floating.

### Launch in 2021 of several stationary electricity storage projects to support renewables

Electricity storage solutions are necessary to offset the intermittence of solar and wind projects, make the most of daily volatility in the electricity markets and ensure grid stability. In this segment, TotalEnergies benefits from the technological expertise of Saft, which also aims to make the most of this fast-growing market.

## 2021 HIGHLIGHTS

### India

Partnership with Adani (January 2021): Acquisition of a 20% interest in Adani Green Energy Limited (AGEL), a subsidiary of Adani, the largest private energy and infrastructure conglomerate in India. AGEL is the world's largest solar developer, with contracted renewable capacity of more than 20 GW.

### United States

Purchased from SunChase Power and MAP RE/ES (February 2021): Four solar projects totaling 2.2 GW and 600 MW of battery storage to come on stream between 2023 and 2024. Creation of a 50-50 joint venture with 174 Power Global, a subsidiary of Hanwha (January 2021): 12 projects with an

aggregate capacity of 1.6 GW, including electricity storage.

### France

Commissioning by TotalEnergies of France's largest battery storage site (61 MWh) in Dunkirk in December 2021. Other sites are planned to come on stream at Grandpuits (43 MWh) and Carling (25 MWh) in 2022.



# Natural Gas, Fueling the Transition

For TotalEnergies, natural gas is a key transition fuel. It plays a major role in power generation thanks to its flexibility and capacity for responding to the strong growth in demand fueled by the electrification of uses.

Natural gas emits half the greenhouse gas emissions of coal in power generation and, when used as a substitute, makes it possible to achieve substantial reductions, as is already in the case in the United States and United Kingdom. Obviously, for gas to play this role, all the participants in the value chain – businesses and States – must pull together to fight methane emissions, as was underlined at the COP26 meeting in Glasgow with the commitment from 105 States to reduce methane emissions by 30% by 2030. TotalEnergies' new objective is to reduce methane emissions by 80% by 2030 (see p.34).

## Main strengths

- Widely available resources, well redistributed worldwide thanks to LNG.
- A simple and immediate solution for decarbonizing electricity and industry, especially in high energy consuming sectors like steel and cement manufacturing.
- An ideal partner for renewables, which are intermittent and seasonal by nature.
- A core component of numerous coal-consuming countries' roadmaps for getting to net zero.
- A source for massively developing blue hydrogen with carbon capture and storage (CCS) technologies.

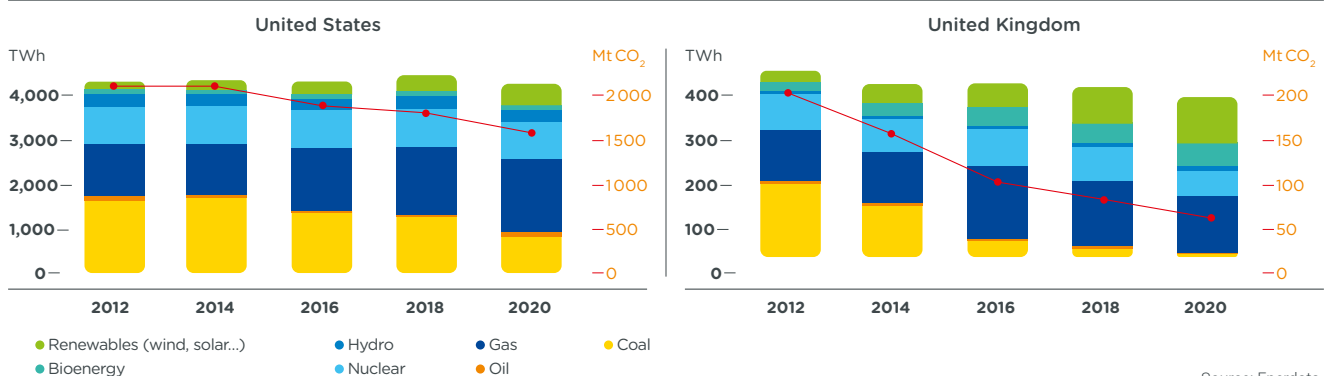
## TotalEnergies' strategy

- Increase the share of natural gas in the sales mix to 50% by 2030;
- Strengthen the Company's position among the top 3 in LNG.
- Cover the entire gas value chain, from production and trading to gas-fired power plants and retailing;
- Reduce the gas value chain's emissions and eliminate methane emissions (see p.34);
- Work with local partners to promote the shift to natural gas.

## Trends that back up our view

The United States and United Kingdom have reduced their greenhouse gas emissions by replacing coal-fired power plants with gas-fired units. Similarly, numerous countries' carbon neutrality commitments are based on the development of natural gas as a replacement for coal. LNG's strong growth since 2015 in Asia (8% a year), Latin America (4% a year) and Europe (14% a year) supports these ambitions. Lastly, in 2021, higher demand for gas related to difficulties in producing electricity, notably from renewables because of the weather, created substantial price pressures. Certain countries went back to coal for generating electricity, with a heavy impact on their emissions. These tensions illustrate the importance of investing in developing the gas value chain, a major plank in TotalEnergies' strategy.

## ENERGY MIX FOR POWER GENERATION AND RELATED EMISSIONS



Source: Enerdata.

## Ranking among the top three worldwide in low carbon LNG by 2030

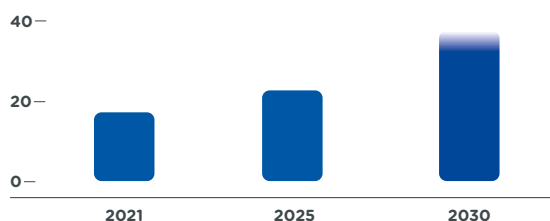
Once liquefied, natural gas can be transported and delivered to places of use. Global demand for liquefied natural gas (LNG) has seen strong growth, rising by 9% a year between 2015 and 2021. With 42 Mt sold in 2021, TotalEnergies is the world's third largest LNG company. It aims to sell 50 Mt per year by 2025, corresponding to a stable global market share of 10%. In 2021, 99% of the Company's LNG sales went to countries that have committed to carbon neutrality. TotalEnergies is developing several large-scale projects to support this growth: Energia Costa Azul (ECA) in Mexico, a seventh LNG train in Nigeria, a fourth train at Cameron LNG in the United States, Mozambique LNG, Papua LNG and Artic LNG 2 in Russia.

## Reducing the TotalEnergies LNG value chain's emissions intensity

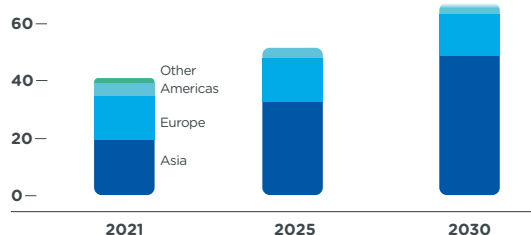
This growth requires an exemplary strategy for greenhouse gas emissions. In reducing emissions across the LNG chain, the priority is on methane (see p. 34). The Company is also working on improving liquefaction plant performance, notably in Qatar, Russia and the United States, with energy efficiency projects, electrification using renewable solar and wind energy, and native carbon capture and storage. Lastly, TotalEnergies is renewing its fleet of LNG carriers with new vessels that emit on average 40% less CO<sub>2</sub> than older ships.

### ONE OF THE TOP THREE LOW-CARBON LNG COMPANIES IN 2030

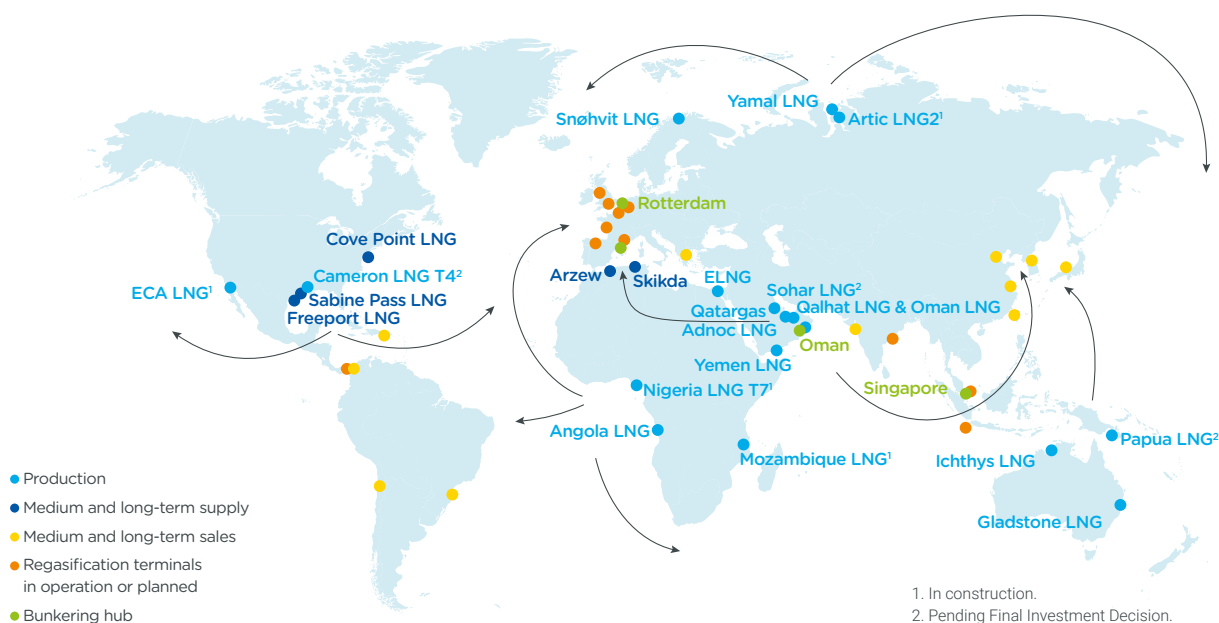
LNG Production (Mt/year)



LNG Sales (Mt/year)



### LNG PROJECTS



## 2021 HIGHLIGHTS

### Supplying gas to the Indian and Chinese markets

TotalEnergies has signed agreements to supply LNG to India (up to 3 Mt per year with partner Adani) and China (up to 1.4 Mt per year via a contract with Shenergy Group).

# Petroleum Products: Adapting to Demand

Demand for petroleum products is expected to stagnate and then decline between now and 2030 thanks to technological progress and evolving uses. By 2050, demand will have dropped significantly. Petroleum products will have to meet increasingly stringent requirements on limiting the emissions related to their extraction and use.

TotalEnergies is reducing the share of petroleum products in its sales mix, from 65% in 2015 to 44% in 2021 (excluding the impact of Covid-19), and a targeted 30% in 2030. The objective is for the Company's petroleum product sales not to exceed its oil production, which itself will peak during the decade before declining, at around 1.4 Mb/d in 2030. Investments remain necessary to satisfy demand, given the natural decline in field output. The Company gives priority to oil projects with low technical costs (typically below \$20/b) and a low breakeven point (typically below \$30/b). All new projects are assessed for their contribution to the average carbon intensity of their category in the Upstream portfolio. All approved projects must help reduce this intensity (see p.24). New hydrocarbon developments are limited to the least emitting fields. In 2021, for example, TotalEnergies decided to exit Venezuela, considering that production of the Orinoco Belt's heavy oils did not meet its greenhouse gas emissions objectives.

The Tilenga and EACOP projects in Uganda were approved with a low technical cost of \$11 per barrel and CO<sub>2</sub> emissions significantly below those of the current portfolio (13 kg CO<sub>2</sub> per barrel vs. 18 kg CO<sub>2</sub> per barrel).

In end-2021, the Company broadened its presence in Brazil's offshore Atapu and Sepia fields, which represent low-cost, low-emissions reserves.

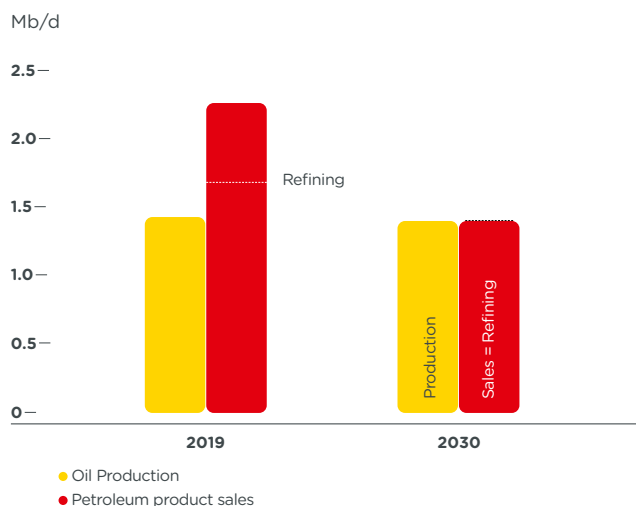
In addition, we respect exclusion zones and good environmental practices (see p. 60). TotalEnergies will not explore for oil in the Arctic Sea ice and will not approve any capacity increases in Canada's oil sands.



Grandpuits Refinery

In September 2021, TotalEnergies signed major multi-energy agreements in Iraq covering the construction of a new gas network and treatment units, the construction of a large-scale seawater treatment unit and the construction of a 1 GW photovoltaic power plant.

## OIL PRODUCTION AND PETROLEUM PRODUCT SALES



# Promoting Circular Management of Resources

TotalEnergies joined the Platform for Accelerating the Circular Economy (PACE) in 2022. This initiative launched by the World Economic Forum and now hosted by the World Resources Institute aims to speed the transition to a more circular economy.

The Company pledges to **double the circularity of its businesses within the next ten years**. It contributes to the circular economy at different points in the value chain: through purchasing, sales and production, as well as through the management of its own waste (see p. 64).

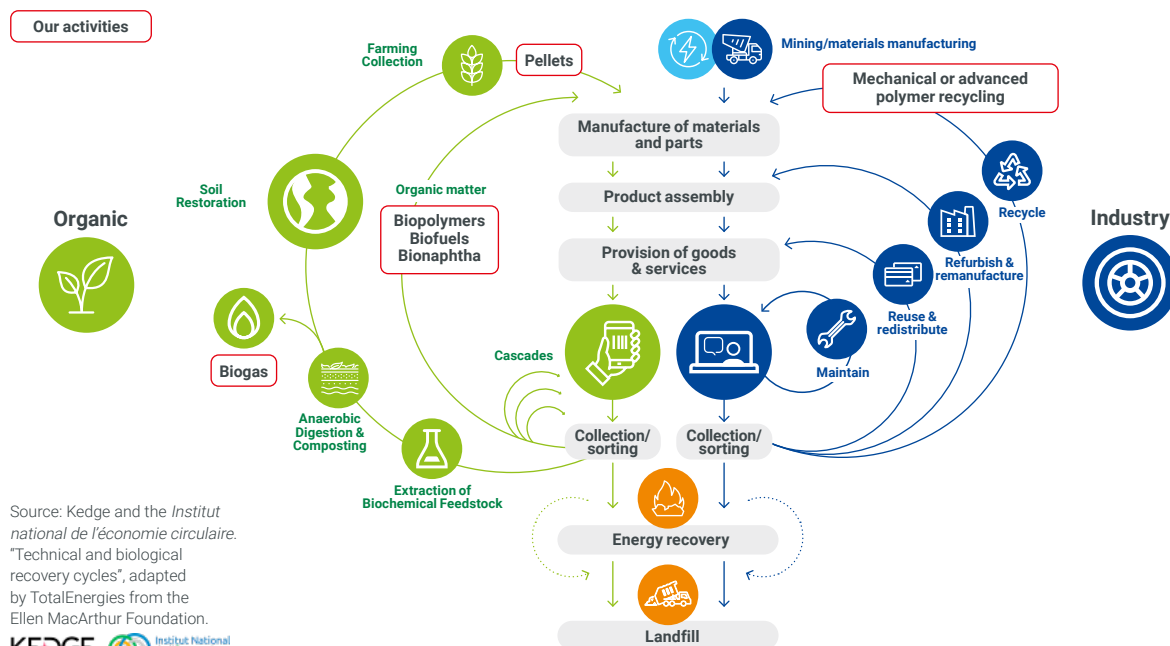
## Biofuels

Over their lifecycle, biofuels emit over 50% less CO<sub>2</sub>e than their fossil equivalents (in accordance with European standards), making them a tool in the decarbonization of liquid fuels. TotalEnergies currently has a biofuel production capacity of 500 kt per year, primarily at the La Mède refinery in France. Its goal is to increase that to 2 Mt by 2025 and 5 Mt by 2030, sustainably produced.

## New generation biofuels

Today, more than 90% of the biofuels in the market are first generation, meaning they are made from virgin vegetable oils or sugar. TotalEnergies is investing in advanced biofuels projects based on animal fat or used oils, thereby limiting the competition for and impact on arable land. These advanced biofuels will add to the range of first-generation biofuels. Looking further out, the Company is investing in R&D into so-called second- and third-generation biofuels based on micro-algae, but they still raise numerous technological challenges.

## PROMOTING THE CIRCULAR ECONOMY



Source: Kedge and the Institut national de l'économie circulaire. "Technical and biological recovery cycles", adapted by TotalEnergies from the Ellen MacArthur Foundation.



### Biogas

Biogas, produced from the decomposition of organic waste, is a renewable gas consisting primarily of methane. Compatible with existing transportation and storage infrastructure, it has a key role to play in decarbonizing gas products and reducing greenhouse gas emissions through the development of a circular economy. The Company aims to produce 2 TWh per year of biomethane starting in 2025 and over 5 TWh per year by 2030 worldwide.

### Hydrogen

Hydrogen is an energy carrier between primary energy source and final application that does not generate any CO<sub>2</sub> during its lifecycle if produced in a decarbonized process. Growing generation of decarbonized electricity is creating opportunities to produce green hydrogen via electrolysis of water using decarbonized electricity. In addition, the development of carbon storage is paving the way for the development of blue hydrogen using natural gas (see p. 36).

The European Union's objectives of installing more than 40 GW of electrolyzers powered by renewable electricity to produce 10 Mt of renewable hydrogen a year by 2030 will help accelerate decarbonized hydrogen projects, particularly for industries where decarbonization and/or electrification are difficult. TotalEnergies is working with its suppliers and partners to decarbonize all the hydrogen used in its European refineries

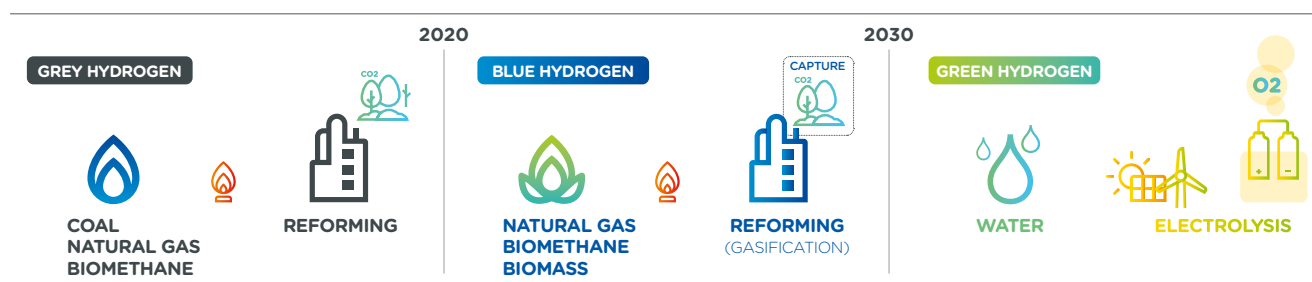
### Development of two biorefineries in France

TotalEnergies has converted its La Mède refinery in France into a world-class biorefinery to meet its ambition of being a biofuel market leader.

The facility produces hydrotreated vegetable oil (HVO - a precursor for renewable diesel and sustainable aviation fuel), bionaphtha (a precursor for renewable polymers) and bioLPG (renewable liquefied gas) for use in mobility or heating.

The agricultural feedstock used to make these products complies with sustainability and traceability requirements concerning carbon footprint, non-deforestation and land use. The Company has made a commitment to stop sourcing palm oil in 2023 and aims to increase the share of used cooking oil and animal fat in feedstock to 50% by 2025. TotalEnergies' future Grandpuits zero-crude complex will also produce biofuel (see p. 22).

by 2030. This represents a reduction in CO<sub>2</sub> emissions of 3 Mt per year. Further out, the Company's ambition is to pioneer mass production of clean and low carbon hydrogen to serve demand for hydrogen fuel as soon as the market takes off.



### 2021 HIGHLIGHTS

#### Growing presence in biogas

- In early 2021, TotalEnergies became a major player in biogas in France by acquiring Fonroche Biogaz, with 500 GWh of installed capacity.
- In late 2021, TotalEnergies and Clean Energy broke ground for their first biomethane production unit in Friona, Texas. The output

will be used as an alternative fuel for mobility, thereby helping to decarbonize road transportation. The facility will use livestock manure from dairy farms to produce more than 40 GWh per year of biomethane; as a result, 45 kt of CO<sub>2</sub>e emissions will be avoided each year.

- In early 2022, TotalEnergies and Veolia

joined forces to produce biomethane from Veolia waste and water treatment facilities operating in more than 15 countries, with the goal of producing up to 1.5 TWh of biomethane a year by 2025.

## E-fuels

The production of e-fuels from renewable hydrogen and captured CO<sub>2</sub> is a promising avenue for decarbonizing transportation. The pace at which these e-fuels scale up will depend on the development of green hydrogen. Besides being low carbon themselves, they offer the considerable advantage of recycling CO<sub>2</sub>. E-fuels are one of the solutions for getting to net zero via carbon capture and utilization technologies.

TotalEnergies is staking out a position in this market, notably to help decarbonize the aviation industry with sustainable liquid fuels.

## Green hydrogen projects

- TotalEnergies, working with Engie, is developing the MassHylia green hydrogen project at the La Mède biorefinery. It will be supplied by solar and wind farms with capacity of almost 300 MW. The 125 MW electrolyzer will produce over 10,000 tons of green hydrogen a year, meeting the needs of the biorefinery and reducing its emissions by 140,000 tCO<sub>2</sub>/year.
- At the Zeeland refinery, the Company plans to capture carbon from the steam methane reforming unit (SMR<sup>1</sup>) that produces hydrogen from natural gas. It is also developing a 150 MW electrolyzer intended to be linked to an offshore wind field. In all the Company has six projects in progress in Europe.

## Bioplastics and recycled plastics

The circular economy for plastics is based on:

**Mechanical recycling**, which is the most mature technology in the market. Mechanical recycling processes materials from selective sorting and collection centers and is suited to the needs of industries such as automobile manufacturing and construction. The Company's Synova affiliate, with a production capacity of 45 kt at end-2021, is involved in this part of the value chain. It aims to produce 100 kt as from 2025.

**Advanced recycling**, which can process waste that cannot be recycled mechanically and serve other markets, such as food-grade plastics. The Company currently produces polymers from advanced recycling at the Antwerp complex using TACOIL produced by partner Plastic Energy, with which it has joined forces to build a production unit at Grandpuits. TotalEnergies is also partnering with Honeywell to promote advanced recycling of plastics in Europe and the United States.

**Bioplastics.** The Company provides customers with biopolymers made from biofeedstocks based on vegetable oils or used cooking oils processed at the La Mède biorefinery (and soon Grandpuits), as well as polylactic acid (PLA), a fully recyclable and compostable bioplastic based on starch or sugar produced by its joint venture with Corbion at the PLA plant in Rayong, Thailand, and future unit at Grandpuits in France.

In 2021, the Company produced 60,000 tons of recycled and bioplastic. It aims to produce 30% recycled and biopolymers by 2030, or one million tons.

1. Steam Methane Reformer.

# 30%

recycled and biopolymers by 2030.

## 2022 HIGHLIGHTS

In the United Arab Emirates, TotalEnergies has joined the Masdar and Siemens Energy

initiative to build a pilot unit for the production of green hydrogen to be used to convert CO<sub>2</sub> into sustainable aviation fuel.

# Grandpuits: A Transformation based on Sustainable Development

In September 2020, TotalEnergies announced the project to transform its Grandpuits refinery southeast of Paris into a zero-crude complex. Thanks to a more than €500 million investment, by 2024 the complex will be organized around four new industrial activities producing new molecules for transportation and plastics from biomass and recycled materials.

**This project illustrates our strategy and encompasses the four dimensions of TotalEnergies' sustainable development strategy.**

### Climate and sustainable energy, with:

- A unit to produce sustainable aviation fuels that emit less than half the CO<sub>2</sub> of their fossil equivalents and incorporate over 90% waste materials.
  - Europe's first unit to produce polylactic acid (PLA), a biodegradable and recyclable plastic made from grain that offers the same performance as fossil-based plastics for numerous industrial applications with a third of the CO<sub>2</sub> emissions.
  - A recycling unit for the pyrolysis of mixed, soiled plastics, for TotalEnergies' European crackers to turn into virgin plastic for medical use and food contact.
- Two 25 MW photovoltaic power plants, equivalent to the electric power needs of 30,000 people.

### People's well-being with:

- A responsible industrial redeployment, without any layoffs, thanks to early retirement and internal mobility to other sites, ensuring that all employees are offered a solution adapted to their situation. Of the 400 positions at Grandpuits and the associated Gargenville depot, 250 will be maintained. The worksites related to the different industrial investments will create up to 1,000 jobs over three years to build the new units.

### Care for the environment:

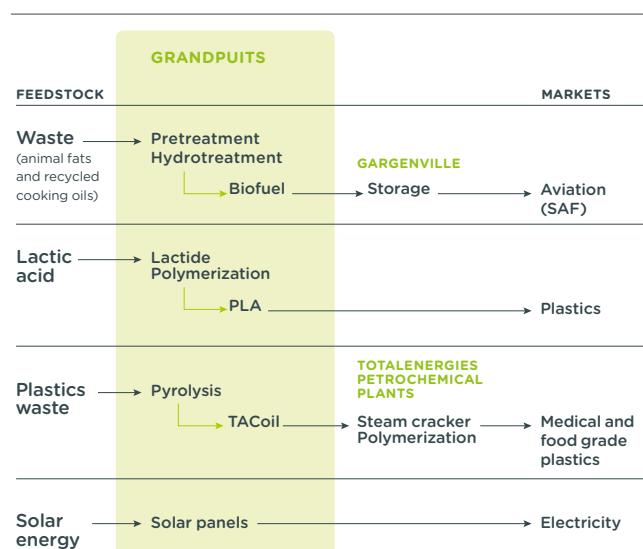
- The future units are located on industrial-zoned land already used by the refinery.
- A biodiversity inventory conducted before work started that revealed the presence of protected species; the new units are being built at a distance from these species' habitats.

### Creating value for society:

- In-depth concertation and public debate that brought together numerous local residents, local officials and non-profits. This process allowed TotalEnergies to establish a meaningful dialogue on the project with its stakeholders.
- A commitment to support partner companies concerned by the site's conversion, representing the equivalent of 200 full-time jobs. In its new configuration, the Grandpuits complex will continue to work first and foremost with its partner companies and will continue to use these competencies until the project's completion.

The Grandpuits complex's conversion will allow it to remain a major industrial facility rooted in the local community and play a role in TotalEnergies' strategy and ambition to get to net zero, together with society.

### GRANDPUITS - GARGENVILLE FOUR DECARBONIZED INDUSTRIAL ACTIVITIES



# R&D at the Forefront of our Transformation

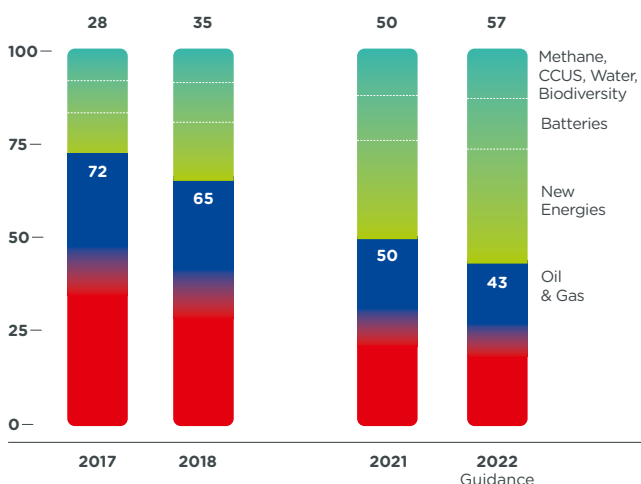
In addition to deploying current technologies that can further the energy transition, a worldwide innovation drive is needed to achieve the global objective of carbon neutrality.

Each year TotalEnergies devotes over \$1 billion to R&D and mobilizes more than 4,000 employees. To support its transformation strategy, the Company has substantially re-oriented its R&D since 2021; today, more than 50% of its R&D focuses on new energies (renewables, biomass, batteries, etc.) and to reducing its environmental footprint (methane, CCUS, water, biodiversity, etc.), compared to less than 30% five years ago. This move towards new energies points to the Company's future.

To accelerate this transformation in its R&D, TotalEnergies forges partnerships with industrial firms and academic researchers. The Company also invests in digital and artificial intelligence (AI) expertise to develop internal solutions for accelerating its energy transition and that of its customers (see p. 33/Digital factory).

## BUDGET EVOLUTION

In %.



## One Tech: bringing our multi-energy technical skills together in one place

In September 2021, 3,400 engineers, scientists and technicians were brought together in a new segment to enhance the Company's innovation capacity and ability to design and lead large integrated industrial projects by leveraging the teams' operational excellence. One Tech is home to all of headquarters' technical skills, all energies combined.

## CCU<sup>1</sup>: using CO<sub>2</sub> to make aviation fuel

TotalEnergies is developing pilot units near its Leuna refinery in Germany to make molecules that can be converted into sustainable aviation fuel using green hydrogen and captured CO<sub>2</sub>.

The CO<sub>2</sub> will be captured in the refinery's emissions, and the hydrogen will be produced by a 1 MWe high temperature electrolyzer (more efficient than a low-temperature electrolyzer).

The hydrogen reacts with the CO<sub>2</sub> to produce methanol, a synthetic fuel. The Company anticipates an energy efficiency gain of around 30% across the pilot unit's production chain.

1. Carbon Capture and Use.

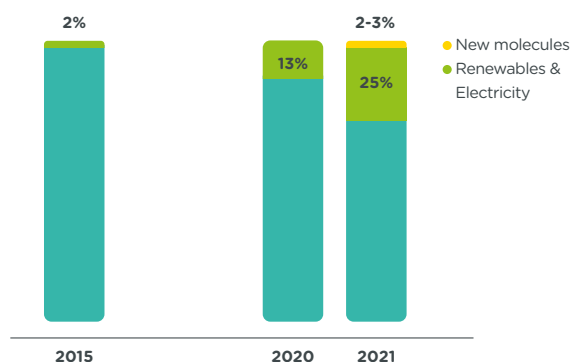


# Investing to Build a Sustainable Multi-Energy Company

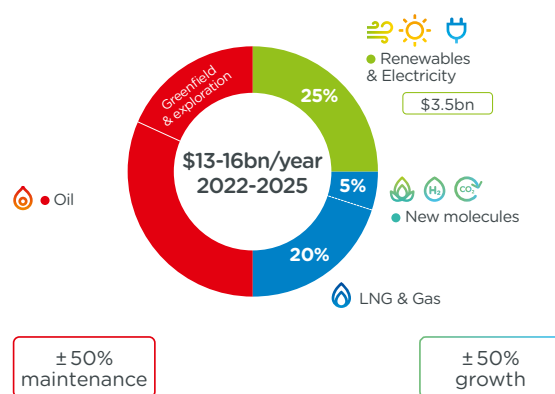
## A capital allocation strategy aligned with the transformation strategy

In 2021, TotalEnergies outlined its capital allocation strategy for 2022-2025, a period during which it plans to make net investments of **\$13 to \$16 billion a year**. The Company will devote half of its investments to maintaining and adapting its upstream and downstream oil operations and the other half to growth in production and energy sales: 20% for LNG, 25% for renewables and electricity and 5% for new molecules (biofuels, biogas, hydrogen and e-fuels). In **2021**, investments in renewables and electricity represented **25%** of total investments, or more than \$3 billion, versus less than 5% in 2015. In 2022, they will increase to \$3.5 billion. This amount is higher than investment in new oil and gas projects, which come to less than 20% of the total (including \$500 million invested in exploration).

## STRONG GROWTH IN INVESTMENTS IN ELECTRICITY AND RENEWABLES



## 50% OF INVESTMENTS DEVOTED TO GROWTH



## Our investment criteria

Each material investment project is evaluated in relation to the Paris Agreement's objectives and on the basis of the following criteria:

- Project cost is analyzed in a hydrocarbon price scenario compatible with the Paris Agreement (Brent at \$50 per barrel according to the IEA SDS scenario and Henry Hub at \$2.5 per Mbtu) and with a carbon price of \$100 per ton in 2030 and beyond.
- For new oil and gas projects (greenfield and acquisitions), the intensity of Scope 1+2 greenhouse gas emissions is compared, depending on their nature, to the intensity of the average greenhouse gas emissions of upstream production assets or that of various downstream units (LNG plants, refineries). For additional investments in existing assets (brown-field projects), the investment will have to lower the Scope 1+2 emissions intensity of the asset in question. The goal is for each new investment to contribute to lowering the average intensity of the Company's Scope 1+2 greenhouse gas emissions in its category.
- for projects involving other energies and technologies (biofuels, biogas, CCS, etc.), GHG emissions reductions are assessed based on their contribution to reducing the Company's emissions.

In 2021, 12 material investments were evaluated on these criteria:

- oil and gas projects:
  - Greenfield projects: Mero-4 (Brazil) and Block 10 (Oman).
  - Brownfield projects: Tommeliten Alpha (Norway) and Al Shaheen Phase 2 (Qatar).
  - Acquisitions: Atapu (Brazil), Sepia (Brazil), Ratawi (Iraq) and Waha (Libya).
- New energies projects:
  - BioBéarn (France) and Del Rio biogas (United States).
- Carbon sink projects:
  - Batéké (Republic of the Congo) and Blue Mountain (Peru).

Several renewable electricity projects, which are compatible by nature with these criteria, were approved, such as off-shore wind projects Round 4 and ScotWind (United Kingdom), Yunlin (Taiwan), five onshore wind projects in France with a total gross capacity of nearly 200 MW, and several solar energy projects in France, Spain, Iraq and the US, with approximately 3 GW of gross capacity.

For projects greenlighted in 2021:

- Profitability exceeds the internally defined threshold, in a scenario compatible with the Paris Agreement's objectives, with the exception of natural carbon sink projects, which are evaluated on the basis of the actual cost of a ton of CO<sub>2</sub>.
- The Scope 1+2 greenhouse gas intensity is below the average intensity of their category for new oil and gas projects and reduced for brownfield projects, additional measures to control emissions will be needed since the emissions intensity of certain upstream projects increases over time as production declines.

Upstream gives precedence to value creation and cash generation over volume and puts a priority on developing low-cost (typically below \$20 per barrel for operating and investment costs) or low-breakeven and low-emissions projects (typically \$30 per barrel including tax and less than 20 kg/b).

In accordance with the Company's new biodiversity ambition (see p. 60), all new investment projects must also meet the zero net deforestation criterion.

## UPSTREAM OIL AND GAS PROJECTS

### Emissions intensity

% versus category average



### Technical costs

\$20/boe



1. Break-even point after taxes below \$20/boe.

## Portfolio Resilience

Very active management over the last few years has made the Company's portfolio more resilient. More than 35% of its future oil and gas production will come from low-breakeven assets that were not in the portfolio at the end of 2014.

**T**he portfolio benefits from a low breakeven point in line with the strategic objective of less than \$30/b (Company's organic breakeven point before dividend below \$25/b in 2021), ensuring competitive resources.

In particular, in the upstream segment, TotalEnergies has the lowest production cost per barrel and the lowest carbon intensity per barrel of oil equivalent (operated Scope 1+2) among its peers, at around \$5/boe and 17 kg CO<sub>2</sub>/boe, respectively. In addition, the average life of the Company's proved and probable oil and gas reserves is 18 years and the discounted value of its upstream assets beyond 2040 represents less than 15% of their total value. In June 2020, TotalEnergies also reviewed its upstream assets that can be qualified as "stranded", meaning with reserves beyond 20 years and high production costs, whose overall reserves may therefore not be produced by 2050. The only projects concerned are the Fort Hills and Surmont oil sands projects in Canada. TotalEnergies has decided to take only proved reserves into account for impairment testing on these two assets – contrary to general practice which considers proved and probable reserves – and to approve no new projects for increasing the capacity of these Canadian oil sand assets.

The Company's strategy of focusing new oil investments on low carbon intensity projects also led it to exit from extra heavy crude oil assets in Venezuela's Orinoco Belt in 2021.

The characteristics of TotalEnergies' portfolio cushion the risk of having stranded assets in the future if a structural decline in demand for hydrocarbons occurs due to stricter global environmental regulations and constraints and a resulting change in consumer preferences.

In addition, TotalEnergies assesses its portfolio's resilience, including for new material investments, on the basis of relevant scenarios and sensitivity tests. Each material investment – including in the exploration, acquisition and development of oil and gas resources, as well as in other energies and technologies – is reviewed in relation to the objectives of the Paris Agreement, as described above. In this way, each new investment enhances the resilience of the Company's portfolio.

- Even if carbon pricing does not currently apply in all of the Company's host countries, TotalEnergies includes, as a base case, a minimum carbon price of \$40/ton in its investment criteria (or the current price in a given country, if higher), with the assumption of a linear increase to \$100 per ton as from 2030. Beyond 2030, an annual increase of 2% is applied. Assuming a carbon price of \$200/ton as from 2030 and an annual increase of 2% thereafter (i.e., a \$100/ton increase from the base scenario), TotalEnergies estimates a negative impact of around 9% on the discounted present value of its assets (upstream and downstream).
- In relation to the scenario used to review investments (Brent at \$50/b), application of the IEA's NZE price scenario would lower the discounted present value of the Company's assets (upstream and downstream) by around 17%.

In addition, to ensure robust accounting of its assets in the balance sheet, the Company uses an oil price trajectory that converges in 2040 with the price in the IEA's SDS scenario (\$<sub>2022</sub>50/b) and that converges after 2040 with the price retained for 2050 in the IEA's NZE scenario (\$<sub>2022</sub>25/b) to calculate impairment of its upstream assets. The prices retained for gas stabilize between now and 2025 and until 2040 at lower levels than today and converge with the IEA's NZE scenario in 2050.

# Taxonomy of our Activities

For information purposes, and early compared to the implementation of the European regulation in the process of being approved<sup>1</sup>, the tables below present the proportion of the eligible activities and a preliminary assessment of the proportion of the aligned activities on the turnover and CapEx indicators, on the scope of the entities controlled by TotalEnergies, as well as a proportional view, proposed by the delegated regulation of July 6, 2021, including the contribution of joint ventures and associates in which TotalEnergies SE has significant influence, accounted for by the equity method. They take into account the draft delegated act on the activities related to natural gas. These data have been assessed on the basis of 2021 with a reminder of the estimate for 2020.

Given the size of the Company and the adopted development model using partnership to develop its strategy in the electricity and renewables sector, the proportional view is more relevant for TotalEnergies than the consolidated view. This classification, defined by the taxonomy, confirms the 2021 growth of the eligible and aligned CapEx of the Company, which represent about a quarter of the total investments.

## Our main eligible activities are as follows:

### — In renewables and electricity

- Activities related to renewable energies (wind, solar, bioenergy and hydropower), as well as the production of rechargeable and other batteries and accumulators.
- Activities related to new energy infrastructure for low carbon mobility (charge points for electric vehicles, hydrogen filling stations).
- Electricity generation from natural gas (combined-cycle gas turbine power plants).

### — In Refining and Chemicals

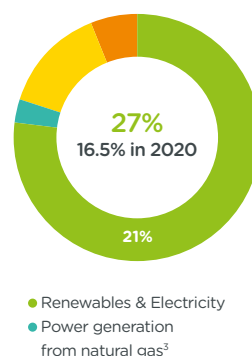
- Manufacture of biofuels for use in transport.
- Certain petrochemical activities, notably biopolymer production and mechanical or advanced recycling of plastics.

### Other eligible activities include:

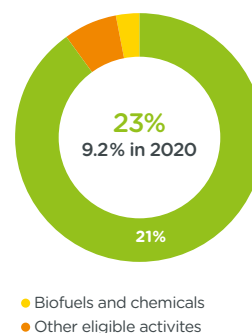
- Manufacture of biogas by anaerobic digestion of bio-waste.
- Activities related to carbon sinks (carbon capture and storage, natural carbon sinks).

## TAXONOMY

### 2021 Eligible CapEx<sup>2</sup>



### 2021 Aligned CapEx<sup>2</sup>



Controlled scope	Eligible activities		Aligned activities	
	Revenue	CapEx	Revenue	CapEx
<b>Renewables and electricity</b>	2.4%	8.9%	1.3%	8.0%
of which electricity generation from natural gas <sup>4</sup>	1.1%	0.9%	0.0%	0.0%
<b>Refining and chemicals</b>	7.4%	2.7%	0.1%	0.3%
<b>Other eligible activities</b>	0.1%	1.8%	0.1%	1.8%
<b>TOTAL 2021</b>	<b>9.9%</b>	<b>13.4%</b>	<b>1.5%</b>	<b>10.1%</b>
<b>TOTAL 2020</b>	<b>9.4%</b>	<b>13.1%</b>	<b>2.1%</b>	<b>5.1%</b>

Proportional view	Eligible activities		Aligned activities	
	Revenue	CapEx	Revenue	CapEx
<b>Renewables and electricity</b>	2.6%	21.7%	1.6%	21.1%
of which electricity generation from natural gas <sup>4</sup>	1.0%	0.6%	0.0%	0.0%
<b>Refining and chemicals</b>	8.4%	4.1%	0.2%	0.5%
<b>Other eligible activities</b>	0.1%	1.6%	0.1%	1.6%
<b>TOTAL 2021</b>	<b>11.2%</b>	<b>27.4%</b>	<b>1.9%</b>	<b>23.2%</b>
<b>TOTAL 2020</b>	<b>11.2%</b>	<b>16.5%</b>	<b>2.4%</b>	<b>9.2%</b>

1. Taxonomy Regulation (EU) 2020/852, based on Commission Delegated Regulation (EU) 2021/2139 of June 4, 2021, Commission Delegated Regulation (EU) 2021/2178 of July 6, 2021 and the additional delegated regulation on natural gas-related activities.

2. Proportional view (controlled perimeter disclosed in the 2021 Universal Registration Document). 3. According to the draft delegated act of December 2021. 4. As per the draft delegated regulation (applicable from January 1, 2023).



# Our ambition

## NET ZERO BY 2050, TOGETHER WITH SOCIETY

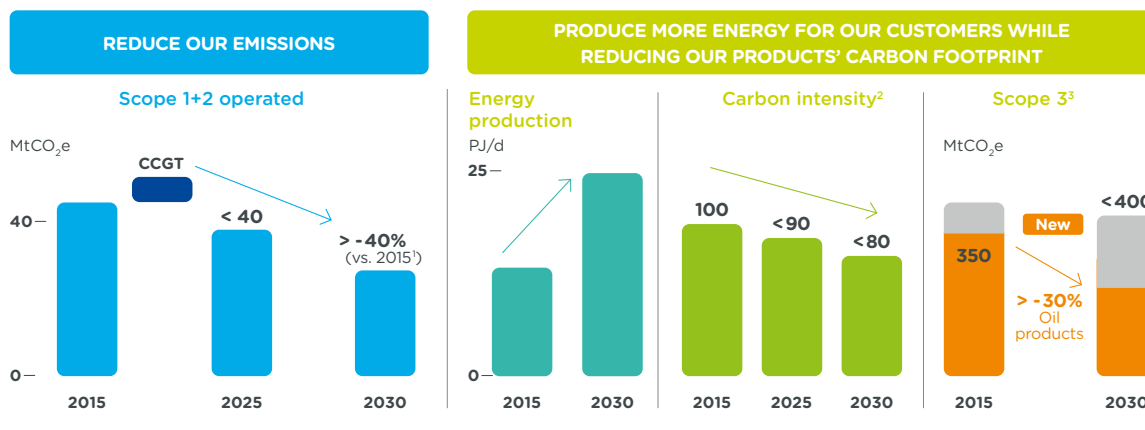
In line with the objectives of the Paris Agreement



Scope 1+2 – Net Zero by 2050

Scope 3 – Net Zero by 2050, together with society

## OUR OBJECTIVES FOR 2030



## OUR LEVERS

### REDUCE SCOPE 1+2

#### IMPROVE THE EFFICIENCY OF OUR FACILITIES

- Achieve zero routine flaring by 2030 and less than 0.1 Mm<sup>3</sup>/d by 2025.
- Invest in emissions-reduction projects (400 projects identified, \$450 million over 2018-2025 in Downstream).
- Decarbonize our electricity purchases in Europe and the United States (Scope 2) by 2025.

#### TOWARDS ZERO METHANE EMISSION

- Reduce emissions by 80% from 2020 levels by 2030.
- Maintain methane intensity of operated gas installations below 0.1%.

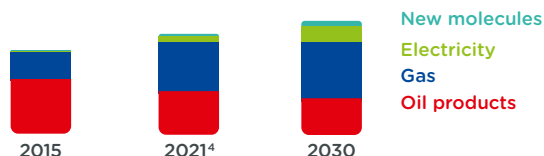
#### CAPTURE AND STORE CARBON FROM OUR FACILITIES

- Develop a CCS capacity of more than 10 Mt/y by 2030<sup>5</sup>.

#### OFFSET RESIDUAL EMISSIONS

- Invest \$100 million a year to develop natural carbon sink capacity of more than 5 Mt/y by 2030.

### DEVELOP A MULTI-ENERGY OFFER



#### Electricity

- Rank among the top 5 producers of renewable electricity (wind and solar).
- Achieve the same customer recognition in electric mobility tomorrow as we have in fuel retailing today.

#### Natural gas

- Cement our position among the top 3 in low carbon LNG.
- Set the standard for decarbonizing the gas value chains.

#### Oil products

- Focus on projects with low emissions and low technical costs.
- Set the standard for decarbonizing the oil value chains.

#### New molecules

- Develop production of biofuels and biogas.
- Become a major player in the production of clean H<sub>2</sub>.
- Become a producer of e-fuels.

### REDUCE SCOPE 3 EMISSIONS, TOGETHER WITH SOCIETY

- Guide our customers towards lower-carbon energies.
- Promote a circular economy approach in the use of biomass and plastics.
- Develop a carbon storage offer for our customers with capacity exceeding 10 Mt/year by 2030<sup>5</sup>.
- Forge partnerships with our top 1000 suppliers to reduce emissions from our purchasing.



1. Including carbon sinks. 2. Average net carbon intensity of energy products. 3. Indirect GHG emissions related to the use by customers of energy products sold.  
4. Excluding the impact of Covid-19. 5. Overall capacity that includes storage for our facilities as well as the storage offer for our customers.



# 2

## Climate and Sustainable Energy

To get to net zero by 2050, together with society, TotalEnergies is transforming into a multi-energy company and deploying specific action plans to reduce its emissions and achieve its short- and medium-term objectives.

The Company is taking action to:

- Reduce emissions from its operated industrial facilities (Scope 1+2) by over 40% by 2030 and disclose the progress made at its operated and non-operated facilities.
- Reduce the indirect emissions related to its products (Scope 3), together with society – i.e., its customers, its suppliers, its partners and public authorities – by helping to transform its customers' energy demand.



# Reducing our Scope 1+2 Emissions, using the best technologies available

## Our objectives

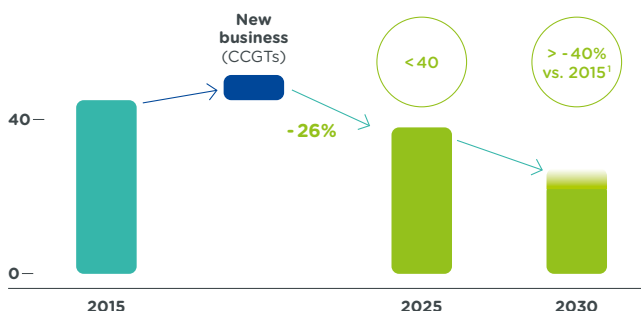
Our primary responsibility as an industrial operator is to reduce the emissions resulting from our operations.

In early 2019, TotalEnergies announced its aim to reduce emissions from its operated facilities to less than 40 Mt by 2025 and set itself the target of cutting Scope 1&2 net emissions (including carbon sinks) for its operated activities by **at least 40% in 2030 relative to 2015**.

These objectives for operated emissions include emissions related to the growth strategy in electricity deployed since 2015, which led to the development of a flexible power generation portfolio based on CCGT plants. These CCGT emissions, virtually nil in 2015, stood at 4 Mt in 2021 and could amount to more than 6.5 Mt in 2025.

### SCOPE 1 & 2 AT OPERATED FACILITIES

In MtCO<sub>2</sub>e/year

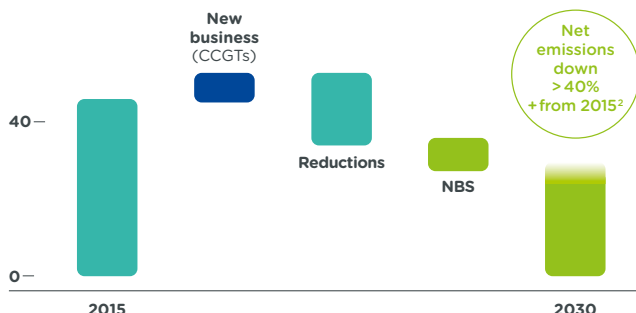


## Our levers

The main route to achieving these objectives is developing emissions reduction projects on our industrial sites, using the best technologies available: improving energy efficiency, reducing flaring, reducing methane emissions, supplying renewable electricity and using CCS for residual emissions. To reach our net emissions targets, nature based solutions (NBS) will, by 2030, offset some of our emissions (5 to 10 Mt/y).

### SCOPE 1 & 2 AT OPERATED FACILITIES - 100%

In MtCO<sub>2</sub>e/year



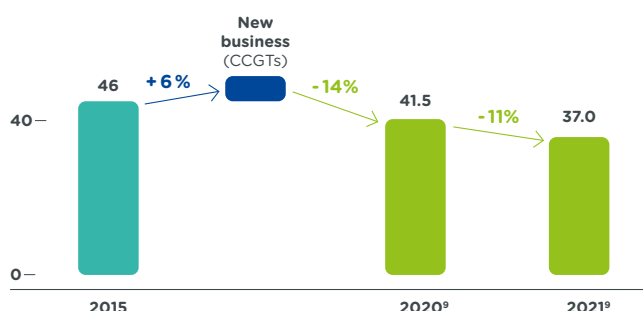
1. Nature Based Solutions. 2. Including carbon sinks. 3. NDC: Nationally Determined Contribution. 4. EU-27, United States, Japan, Canada, Australia, United Kingdom, South Korea, Argentina and South Africa. 5. Including sequestration capacity of forests. 6. Restricted scope + Brazil, Colombia, Israel, United Arab Emirates, Peru, Thailand, Malaysia and Vietnam. 7. "Tallying updated NDCs to gauge emissions reductions in 2030 and progress toward Net Zero" published on March 2, 2022. 8. EU-27. Adding in Norway, the United Kingdom and Switzerland, the reduction ambition is 39% between 2015 and 2030. 9. Excluding the impact of Covid-19.

## Our progress in 2021

Scope 1+2 emissions decreased from 41.5 Mt in 2020 to 37.0 Mt (excluding the impact of Covid) in 2021 thanks to 120 **emissions-reduction initiatives** carried out across the Company and portfolio management aligned with our strategy (divestment of the Lindsey refinery in the United Kingdom and the cessation of operations of Grandpuits in France). These data include the commissioning of two combined cycle gas turbine plants.

### SCOPE 1 & 2 AT OPERATED FACILITIES

In MtCO<sub>2</sub>e/year



# 20%

reduction in Scope1+2 operated emissions between 2015 and 2021 (excluding the impact of Covid-19).

## A reduction target for 2030 in step with the 2030 objectives of Net Zero 2050 countries

TotalEnergies set its target of a 40% reduction in net emissions (Scope 1+2) from its operated facilities between 2015 and 2030<sup>2</sup> with an eye to the European Union's objectives for 2030 and the objectives of countries with a net zero by 2050 pledge as part of the Paris Agreement.

To qualify the level of this ambition, the Company called on two independent third parties known for their expertise in energy and decarbonization to analyze the greenhouse gas emissions reduction objectives for 2030 of countries committed to net zero by 2050 as of COP26 in Glasgow: Carbone 4, a consultancy specialized in low-carbon strategy in France and the Center on Global Energy Policy at Columbia University in the United States.

These objectives, taken from each country's nationally determined contributions (NDCs)<sup>3</sup>, cover direct emissions on their territory, comparable to Scope 1 for businesses.

### Carbone 4 makes a distinction between two scopes:

- Countries that explicitly mention their net zero by 2050 ambition in their NDC, having set a 2030 target consistent with that ambition.

- All countries that have publically announced their net zero by 2050 ambition, notably at COP26, including those that have not updated their NDC since then. The more restricted perimeter includes the 35 most ambitious countries<sup>4</sup>, which have committed to reducing their net emissions<sup>5</sup> by 39 to 40% between 2015 and 2030. The broader perimeter includes 43 countries<sup>6</sup> committed to a 28 to 31% reduction over the same period.

In its study<sup>7</sup>, **Columbia University's Center on Global Energy Policy** puts the reduction commitment for all countries with a net zero by 2050 pledge at 27% between 2015 and 2030.

The European Union's "Fit for 55" objective of a 55% decrease between 1990 and 2030 corresponds to a 37% decrease between 2015 and 2030<sup>8</sup>.

## The IEA's NZE scenario

In its 1.5°C scenario, the IEA is aiming for carbon neutrality by 2050, which requires a 39% reduction in net emissions from energy between 2015 and 2030 (from 34 to 21 billion tons of CO<sub>2</sub>e).

# Improving The Efficiency of our Facilities

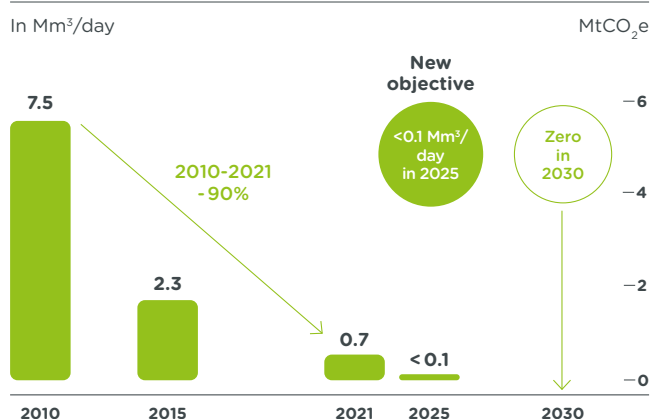


One part of the direct emissions from our facilities is caused by energy loss, flaring, venting and fugitive emissions. This is not the majority (around 15%) but should be reduced as a priority. The second, bigger, part (around 85%) corresponds to the use of energy, either by combustion to generate electricity, for example, or in industrial processes, and is the target of projects to improve our energy efficiency.

## Reducing flaring

Restricting routine flaring is a priority for reducing greenhouse gas emissions. Since 2000, TotalEnergies has made a commitment not to include any routine flaring on its new projects. As a founding member of the World Bank's "Zero Routine Flaring by 2030" initiative since 2014, the Company has pledged to end the practice altogether by 2030. Routine flaring has been reduced by 90% since 2010, and the Company has set a new target to bring the level **below 0.1 million cubic meters per day** as from 2025.

### ROUTINE FLARING



Occasional, or non-routine, flaring connected with operational issues or the start-up of facilities has also been addressed with action plans, as has safety flaring, which is used to protect facilities. In Argentina and Bolivia, for example, the Company has reduced safety flaring by half, thanks to continuous monitoring of gas flows and optimized flaring parameters.

## Using less energy

Improving energy efficiency means reducing the quantity of energy used to produce a given amount of energy, so emissions are reduced as well.

Exploration & Production is enhancing energy efficiency through projects to reduce the quantity of gas its facilities use to produce the energy they need.

Refining & Chemicals, for which energy consumption is a key factor in production costs, is continuing its efforts of recent years to improve energy efficiency as part of an investment plan totaling \$450 million over the period 2018-2025.

Improving energy efficiency also entails finding new ways to use waste heat from our units. Several refineries, including Leuna in Germany, have mapped and quantified their sources of waste heat. Research is underway to see how heat from nearby industrial and municipal ecosystems can be put to use. The Company has made a firm commitment to embracing digital technology at its sites as a driver in improving energy performance. As of the end of 2021, 27 of the 46 operated sites using more than 50,000 toe/year were equipped with an auditable energy management system, using the ISO 50001 energy management standard, for example.

### 2021 HIGHLIGHTS

**Nigeria:** An analysis of turbine energy consumption at one offshore production site led to a 30% reduction in the complex's fuel gas consumption during 2020.

**Refining:** SMART PM software makes it possible to track real-time energy losses on exchangers, assess their fouling rate and clean them at the appropriate time.

The software has been installed at six of the Company's complexes and is currently being rolled out at the other facilities.



## Our Digital Factory develops solutions to improve our energy performance

**TotalEnergies' Digital Factory**, which opened in 2020, brings together up to 300 developers and data scientists. Its mission is to develop the digital solutions the Company needs to improve its industrial operations, offer new services to customers (notably for managing energy consumption), develop in new energies and reduce its environmental impact. For example, the "E<sup>2</sup>" digital solution developed by our drillers at the Digital Factory provides a real-time estimation of energy consumption by the different equipment in a drilling rig, along with the related greenhouse gas emissions. The teams can directly access these data and integrate them seamlessly in operational decisions. E<sup>2</sup> was deployed on the Maersk Voyager<sup>1</sup> in 2020, resulting in fuel savings of around 7% and 1,000 tons of avoided CO<sub>2</sub> emissions over one year.

## A CO<sub>2</sub> Fighter Squad dedicated to emissions reduction

Since late 2018, a dedicated team for reducing greenhouse gas emissions, known as the CO<sub>2</sub> Fighters, has been tracking GHG emissions across the Company. It's tasked with encouraging a low-carbon mindset within the Company, initiating energy efficiency projects, accelerating the electrification process at facilities and helping to introduce greener forms of energy consumption. The team has overseen more than 400 emissions reduction projects, most of which have cost less than \$10 per ton of CO<sub>2</sub>. By 2025, 160 upstream projects and more than 200 downstream projects will yield reductions in Scope 1+2 emissions of 2.5 and 4.5 Mt of CO<sub>2</sub> respectively.

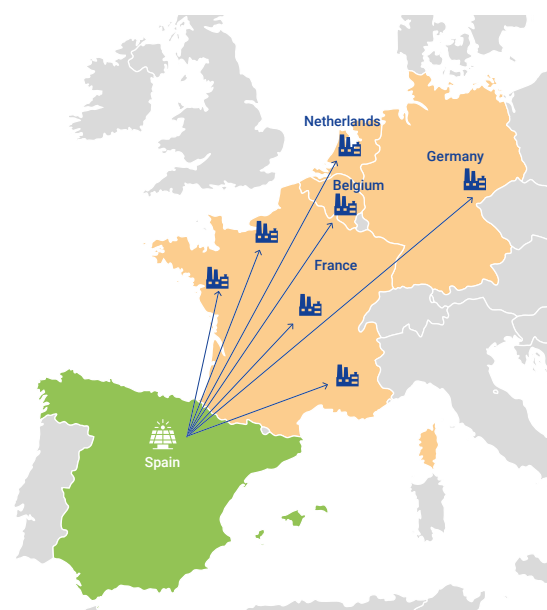
## Go Green Project: Reducing Scope 2 emissions from electricity purchases

In 2020, TotalEnergies decided to aim for net zero emissions for all electricity purchases at its operated sites in Europe by 2025. All electricity needs at the Company's industrial and commercial sites, as well as its offices, will be met by renewable power obtained through the Company's regional generation capacity in Europe; a similar strategy has been adopted in the United States. Taken together, this will represent around 7 TWh/year.

- In Europe, electricity will be provided by solar farms acquired in Spain in 2020, offering capacity of 5 GW and production of 10 TWh/year by 2025. Six TWh/year will be routed to European sites under a PPA<sup>2</sup>.

The Electricity Trading team will manage the contract with Refining & Chemicals and excess production will be sold to third parties.

- For the United States, in 2021 the Company acquired a portfolio of 2.2 GW in solar projects and 0.6 GW in battery storage projects to cover 100% of electricity needs at operated industrial sites, including the Port Arthur refining and petrochemical complex and the La Porte and Carville petrochemical sites. As a result, the Company is on track to reduce Scope 2 emissions across its operated scope by more than 2 Mt of carbon annually as of 2025.



1. Deepwater drillship.

2. Power Purchasing Agreement.

# Toward Zero Methane Emissions

**M**ethane is a greenhouse gas with a global warming potential 25 times higher than that of CO<sub>2</sub> over 100 years. In 2021, the IPCC assessed methane's contribution to current warming at 0.5°C since pre-industrial times. COP26 highlighted the major role that methane emissions reduction must play in limiting global warming, both in its final conclusion (the Glasgow Climate Pact) and through the Global Methane Pledge, a commitment by 105 countries, led by the United States and the European Union<sup>1</sup>, to reduce their methane emissions by 30% from 2020 levels by 2030.

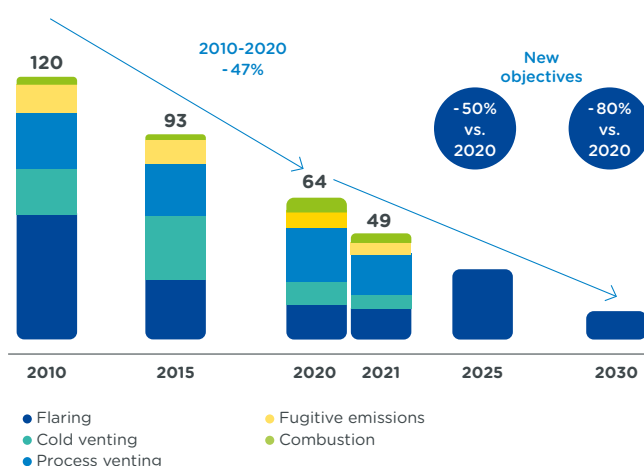
## New objectives

The Company has been working on reducing its methane emissions for several years. It halved its operated methane emissions between 2010 and 2020. In line with the Glasgow agreements, the Company is setting new targets for the current decade: reductions from 2020 levels of **50% by 2025** and **80% by 2030**. The Company is also maintaining its target of keeping methane intensity below 0.1% across its operated gas facilities.

Achieving those objectives requires improved measuring capability and redoubled efforts on emissions sources.

## METHANE EMISSIONS (OPERATED)

In kt CH<sub>4</sub>



## This target is in step with society and the IEA's Net Zero by 2050 scenario

- In December 2021, the **European Commission** proposed a new E.U. framework for decarbonizing gas markets and reducing methane emissions. E.U. Commissioner for Energy Kadri Simson said: *"We are also proposing strict rules on methane emissions from gas, oil and coal, to reduce emissions in these sectors by 80% by 2030 and to trigger action on methane outside the EU"*.
- In May 2021, the **IEA** published "Net Zero by 2050: A Roadmap for the Global Energy Sector," which outlines a scenario for achieving carbon neutrality by 2050. It includes a 75% reduction in methane emissions from the coal, oil and gas industries between 2020 and 2030.

## Measuring methane emissions more accurately

Methane emissions have numerous and dispersed sources. TotalEnergies is a pioneer in detecting and quantifying emissions across the entire value chain.

The Company operates a site for testing methane emissions measurement technology. Known as the TADI complex<sup>2</sup>, it is unparalleled in Europe; only one comparable site exists worldwide, in the United States<sup>3</sup>.

In addition, TotalEnergies is speeding up deployment of its drone-mounted methane detection technology, AUSEA<sup>4</sup>, at all of its operated sites starting in 2022 (see sidebar).

1. These countries represent 70% of the global economy and account for nearly half of the planet's anthropogenic methane emissions. 2. TotalEnergies Anomaly Detection Initiative. 3. METEC, Colorado State University. 4. Airborne Ultra-light Spectrometer for Environmental Applications. 5. International Methane Emissions Observatory (IMEO) report under OGMP2.0. 6. Emissions associated with incomplete gas combustion, based on a standardized estimate of 2% of volumes flared. 7. DEMocratized gEospatial inTElligence woRkspace.

The Company is also enhancing its reporting as part of OGMP 2.0, the second phase of the United Nations Environment Programme's Oil & Gas Methane Partnership. OGMP 2.0 outlines a reporting framework that encompasses the entire gas value chain and non-operated scope, including a breakdown of emissions by source, information on inventory methodologies and the use of airborne measurement campaigns. In late 2021, TotalEnergies was awarded Gold Standard<sup>5</sup> status. It will implement the necessary continuous improvement measures to maintain this level for methane emissions measurement and reporting.

### Abating our emissions at each source

Methane emissions are primarily attributable to venting (more than half the total) and flaring<sup>6</sup> (a quarter of the total); the rest are fugitive emissions (i.e., leaks at valves, flanges and couplings) or the product of incomplete gas combustion at our facilities (turbines, furnaces, boilers, etc.).

In order to reach zero methane emissions, stronger action will be taken on each of these emission sources:

- Reductions in venting: projects to reroute vents to the gas export system or the flare and to reduce instrument gas on producing assets. In 2021, the decline from the year before linked to reductions in venting came to 6 kt per year (projects in Gabon and the U.K.).
- Reductions in flaring: In 2021, the decrease in flaring from 2020 reduced emissions by 1.8 kt per year.
- Leak reduction: annual campaigns to identify and repair leaks at all operated sites will be deployed starting in 2022. In 2021, emissions declined by 4 kt as a result of leak reduction efforts, including a significant upgrade to the OML58 facility in Nigeria.

Moreover, all new projects include strict design criteria for preventing methane emissions: no instrument gas, no continuous cold venting and the systematic use of closed flares. All of these practices have been implemented at the CLOV site in Angola, Moho-Nord in the Republic of the Congo and Egina in Nigeria.



### Using drones to detect and measure methane emissions

**AUSEA** consists of a miniature sensor, weighing 1.4 kilograms and mounted on a drone, that quantifies emissions by measuring methane emissions in the plume and tracing them back to their source. It has proved more accurate than commercially available technology and has been successfully deployed in Nigeria, the Republic of the Congo and the Netherlands.

## 2021 HIGHLIGHTS

### R&D: Improving detection and measurement

- Satellites : TotalEnergies partnered with GHGSat in 2021 to quantify small leaks and develop satellite-based measurement technology suitable for offshore facilities, a world first.
- Demeter<sup>7</sup> platform: This project is automating

analysis of satellite data for reconciliation with data captured onsite by drone or ground-based sensors.

### Producing assets: examples of projects

- Venting has been restricted at the Anguille site in Gabon and Elgin-Franklin in the U.K.,

reducing emissions by about 6 kt/y.

- Instrument gas has been reduced at the sites in Argentina and the U.S. (Barnett) by replacing the use of methane for instrumentation with compressed air, thanks to Qnergy technology. By installing 400 units between now and 2024, emissions will be reduced by 7 kt annually.

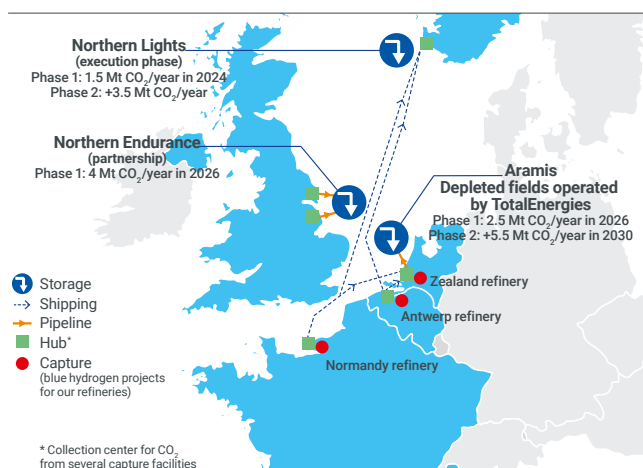
# Capturing and Storing Carbon at Our Facilities

Reducing emissions at the facilities also means developing industrial processes for carbon capture, transport and storage (CCS<sup>1</sup>), a field in which TotalEnergies wields critical expertise in large-scale project management, gas treatment and geoscience.

The Company has been contributing to the development of CCS solutions in the Norwegian Sea since 1996 to reduce emissions from the Sleipner<sup>2</sup> and Snøhvit natural gas fields. The CO<sub>2</sub> associated with that natural gas, known as native CO<sub>2</sub>, is isolated and injected into the subsurface. From 2010 to 2013, TotalEnergies developed a pilot project in Lacq, France, involving a complete CCS chain, in which carbon from a steam generator was captured using oxy-combustion technology (a European first) and then transported and stored in a depleted reservoir.

This experience in CCS opens the door to large-scale projects for reducing carbon emissions resulting from hydrogen production at the Company's refineries in Europe. Current CO<sub>2</sub> storage projects are located in the North Sea to take advantage of its significant potential, particularly in depleted fields operated by TotalEnergies. Moreover, the regulatory environment within the E.U. is favorable to such projects. Not only will they provide a way to reduce the Company's own emissions, but thanks to additional capacity, it can also offer CO<sub>2</sub> emissions storage to its customers to reduce their Scope 1 and our Scope 3 emissions (see p. 30-39). TotalEnergies allocated \$100 million to CCS research and projects in 2021, and by 2030 it expects to be expanding storage capacity by around **10 Mt annually**.

## CCS PROJECTS IN EUROPE



1. Carbon Capture and Storage  
2. TotalEnergies sold its interest in this field in 2016.

## Supplying blue hydrogen to our refineries

- **In the Netherlands**, the Company is studying a project to capture 900,000 tons/year of CO<sub>2</sub> generated by the Zeeland refinery's hydrogen plant as of 2026. The carbon would then be transported and stored as part of the Aramis project.
  - **In France**, in July 2021, TotalEnergies joined with four other industrial companies in the Seine basin to launch development studies for carbon capture and maritime export infrastructure.
  - **In Belgium**, the Company and its partners are studying the CO<sub>2</sub> Antwerp@C project to collect and transport CO<sub>2</sub> emissions from the Antwerp industrial port.
- In all three cases, the CO<sub>2</sub> would be stored in depleted reservoirs in the North Sea.

## Developing transport and storage projects

- **In Norway**, the Company, together with Equinor and Shell, launched Northern Lights, the first large-scale carbon transport and storage project. Approved by the Norwegian government in 2020, the project is currently in the construction phase. It will allow industrial emitters in Norway and elsewhere in Europe to store their emissions.
- **In the Netherlands**, TotalEnergies and its partners are studying the Aramis project designed to develop a logistics chain and hub in the port of Rotterdam to transport CO<sub>2</sub> to depleted offshore fields, some of which are operated by TotalEnergies.
- **In the United Kingdom**, the Company is working with its partners on the Northern Endurance Partnership transport and storage project, which aims to decarbonize the Teesside and Humberside industrial regions.

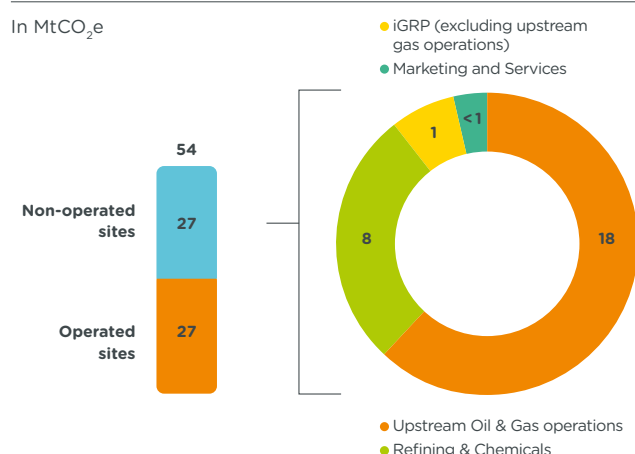
# Working With Our Partners on Non-Operated Assets

TotalEnergies' Scope 1+2 emissions based on equity share amounted to 54 Mt of CO<sub>2</sub>e in 2021. Half of those emissions were attributable to its interests in sites it operates<sup>1</sup>; interests in sites operated by its partners accounted for the other half.

For those non-operated assets, the Company acts by exerting its influence and by sharing best practices with its partners. In 2021 TotalEnergies helped to prepare action plans for reducing emissions at its non-operated Refining & Chemicals assets (notably Naphtachimie in France, HTC in South Korea and Satorp in Saudi Arabia). As with its operated assets, the Company takes steps to improve energy efficiency, electrify operations using green electricity, reduce flaring and manage methane emissions.

In 2021, TotalEnergies joined forces with Novatek to reduce the intensity of the LNG chain (see p. 17), and conducted an energy efficiency audit of the Lavéra petrochemical facility in France. In Norway, TotalEnergies is a partner in the Johan Sverdrup field, which came onstream in 2019 and has an emissions intensity of less than 2 kilograms of CO<sub>2</sub>e/boe thanks to the use of decarbonized electricity supplied from shore, and the Oseberg field, where an electrification project was initiated in 2021. It is also studying plans to electrify the Snøhvit LNG plant alongside the operator, Equinor. In the United Arab Emirates, where TotalEnergies is the biggest international operator, its non-operated onshore assets were powered with decarbonized electricity as of January 1, 2022, and with the partner, ADNOC, the Company is reviewing an electrification project for the offshore fields. Photovoltaic projects are also in the works at the non-operated Refining & Chemicals facilities in Saudi Arabia, Algeria and South Africa.

## SCOPE 1&2 BASED ON EQUITY SHARE IN 2021



For the first time in 2021, TotalEnergies released the methane emissions from its non-operated assets. The operators of those assets were each asked to provide their emissions data, itemized by source<sup>2</sup>. Those operators differ in their measuring and reporting capabilities, but the Company is working with them in a commitment to continuous improvement, with the aim of reaching the highest reporting level in the OGMP 2.0 framework (see p. 34).

## 2021 METHANE EMISSIONS

Operated sites (100%)	Operated sites and non-operated sites (based on equity share)
49 kt	51 kt
	Breakdown of responses from operators of non-operated assets (in % of non-operated Scope 1+2 on equity share basis):
	No response: 9%
	Partial response: 30%
	Detailed response <sup>3</sup> : 61%

1. 27 Mt on an equity share basis, 37 Mt of CO<sub>2</sub>e on a 100% share basis. 2. Thirteen sources using the methodology in the OGMP 2.0 reporting framework. 3. OGMP 2.0 standard not yet met.



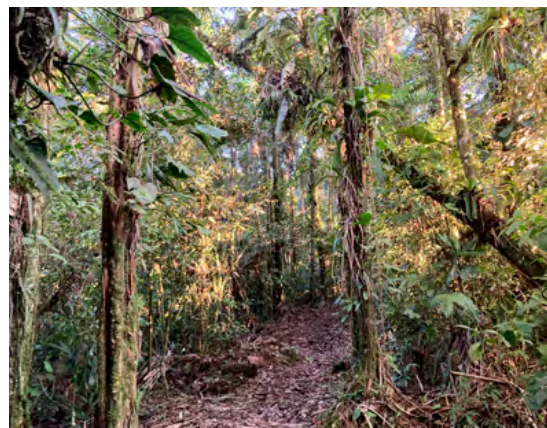
# Offsetting Residual Emissions with Natural Carbon Sinks

In addition to taking action to prevent and reduce GHG emissions, it will be necessary to offset residual carbon emissions for TotalEnergies to achieve net zero emissions together with society. For that reason, it is investing in natural carbon sinks, such as forests, regenerative agriculture and wetlands.

The model for land management areas must be integrated and shared with the local population. Within this framework, operations may comprise a variety of techniques (conservation, afforestation-reforestation, agroforestry, agricultural transition, blue carbon, etc.) and appropriate types of contracts (purchase contract, sustainable financing mechanism, impact funds, financed project, etc.). The goal is to combine and balance the value of agricultural and forestry revenues with the value of co-benefits for the population, soil, biodiversity, and the water cycle and that of carbon credits. When this is done, the local standard of living improves and the causes of land degradation and deforestation, which are major sources of GHG emissions, recede. The Company works with experienced partners to manage the long-term approach required and the risks involved in these complex projects. The projects are certified in accordance with the highest standards, including Vera VCS and CCB.

Backed by an average annual budget of \$100 million between 2020 and 2030, TotalEnergies aims to build up a **stock of 100 million credits<sup>1</sup>** and develop the annual capacity to produce at least **5 million credits a year as from 2030**.

The Company does not intend to trade these carbon credits but rather to gradually use its stock and annual production to neutralize its residual Scope 1+2 emissions as from 2030. As of end-2021, TotalEnergies' stock stood a little under **7 million certified credits**. The cumulative budget for all of the signed operations amounts to nearly \$350 million over their lifetime, for an anticipated cumulative volume of credits of 23 million in 2030 and 31 million in 2050.



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## Peru

Since 2021, TotalEnergies and CIMA (Centro de Conservación, Investigación y Manejo de Áreas Naturales), a Peru-based NGO, have been working together in the Peruvian Amazon to fund projects for preserving the primary forest in Cordillera Azul National Park, which spans 1.35 million hectares and is included on the IUCN Green List. These campaigns include efforts by forest rangers to monitor and prevent degradation and deforestation of park areas. They also include programs to develop sustainable economic activity in the buffer region surrounding the Park, such as sustainable agroforestry crops and their value chains, ecotourism and craft production. Under the agreement, more than 15 Mt of CO<sub>2</sub> equivalent will be prevented over ten years.

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## Republic of the Congo

In March 2021, TotalEnergies and Forêt Ressources Management signed a partnership agreement with the Republic of the Congo for a large-scale, inclusive agroforestry management project that will sequester more than 10 Mt of CO<sub>2</sub>. It calls for integrated management with the project partners of more than 50,000 hectares over a 35-year period, and includes the planting of a 38,000 hectare forest, 2,000 hectares of agroforestry projects and preservation of gallery forests. The project aims to develop agricultural production and sustainable wood energy in cooperation with the local population.

1. One credit corresponds to one tonne of sequestered CO<sub>2</sub>.

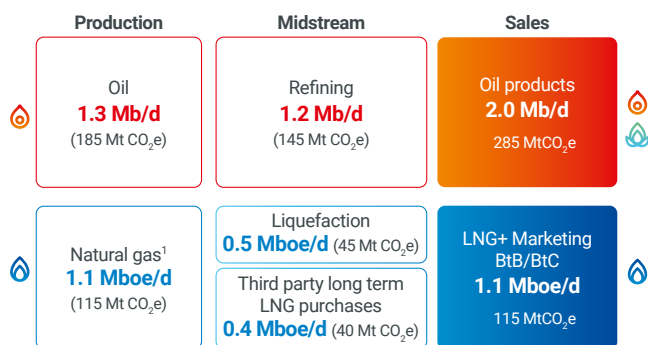
# Reducing Scope 3 Emissions, Together with Society

## The Scope 3 emissions of an integrated multi-energy company

A major focus of TotalEnergies' strategy is to work with our customers on their energy consumption patterns. About 90% of petroleum product emissions occur when those products are used (Scope 3), while only about 10% are generated in their production (Scope 1+2) – (see our methodology p.76).

### BASING CALCULATIONS ON THE LARGEST VOLUME IN EACH VALUE CHAIN

2021 - Scope 3 emissions: 400 Mt CO<sub>2</sub>e<sup>1</sup>

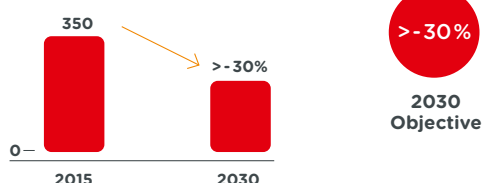


## Our objectives for 2030

TotalEnergies has set a target for 2030 of reducing its global Scope 3 emissions – i.e., those from the energy products used by our customers – to below 2015 levels, even though over the same period the Company plans to produce and sell 30% more energy products due, in particular, to growth in sales of electricity and LNG. Conversely, in order to prepare for the decline in demand for oil by the end of the decade, the Company has embarked on a voluntary strategy of adapting its Downstream activities in the refining and distribution of petroleum products to align them with its oil production, and it has set itself a new target of lowering Scope 3 emissions from petroleum products sold worldwide by **over 30% between 2015 and 2030**.

### SCOPE 3

#### Petroleum products



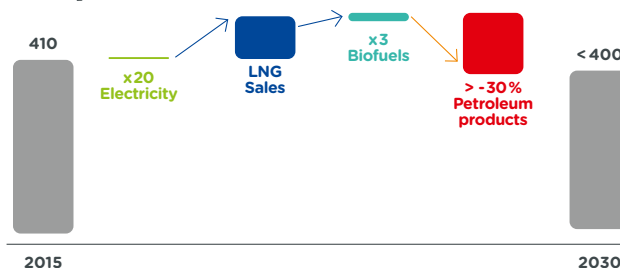
1. Excluding the impact of Covid-19. Petroleum products including bulk sales from refining and biomass and natural gas, excluding minority interests in listed companies.

The sharp rise in sales of electricity (a twentyfold increase over the 2015-2030 period) will make it possible to decarbonize the Company's energy mix without adding indirect Scope 3 emissions (Category 11). Gas is a transition fuel that allows customers to replace the higher emitting coal they use and that TotalEnergies does not produce or sell (the Company withdrew from coal in 2016). TotalEnergies will double its sales of LNG over the 2019-2030 period.

Reducing sales of petroleum products by more than 30% and boosting sales of biofuels to three times their current level will help reduce Scope 3 emissions in absolute terms over the 2015-2030 period.

### SCOPE 3 WORLD

In MtCO<sub>2</sub>e



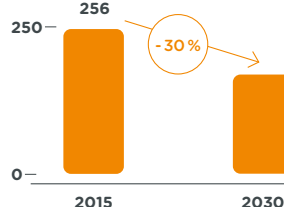
This Scope 3 trend varies by region, in line with evolving global energy demand, since TotalEnergies has a very small footprint in North America:

- In support of the European Union's ambitions on the path toward carbon neutrality and in light of Europe's weight in its Scope 3 emissions in 2015 (256 Mt out of 410 Mt), the Company has set a specific target of reducing its Scope 1+2+3 emissions in Europe by 30% in absolute terms over the same period, as the reduction in sales of petroleum products will focus particularly on Europe.
- At the same time, the Company intends to provide populations in developing countries with the energy they need to raise their living standards. It is increasing its energy supplies in these regions with a priority on natural gas and renewable energies.

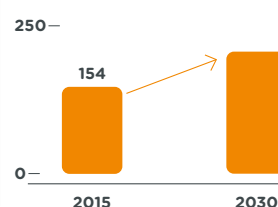
### SCOPE 3

#### Europe Emissions<sup>1</sup>

In MtCO<sub>2</sub>e



#### Rest of the world



# Mobility: Together With Our Customers

TotalEnergies is actively striving to make net zero emissions an ambition it shares with its customers. The primary lever for effectively advancing the energy transition is to gradually change the forms of energy its customers use.

With that in mind, the Company is pursuing a marketing strategy focused on the lowest-carbon products and scaling back its offerings for certain applications where competitive low-carbon alternatives are available. As of 2018, transportation generated approximately 17% of global GHG emissions. The Company's belief is that the mobility of the future does not call for a single solution, but an array of complementary solutions.

## Road transportation

Road transportation undoubtedly offers a wider range of solutions for decarbonization than any other form of transport. TotalEnergies' strategy is to establish operations in four major new types of road mobility:

### Winning recognition as a major force in electric mobility

As their driving range increases, electric vehicles (EVs) offer a future-oriented solution, accounting for 9% of total vehicle sales in 2021. TotalEnergies is acting on two key links in that value chain to spur adoption of EVs by its customers:

#### Deployment of charging infrastructure

- 150,000 charge points worldwide by 2025.
- 300 service stations on motorways and major roads and 600 urban service stations with high power chargers (HPC) by 2030 to support e-mobility travel in Europe. This works out to one HPC every 150 km, for optimal coverage on long-distance trips.
- TotalEnergies is transforming and adapting its presence in cities by developing an e-mobility network in Europe and Asia.

#### Production of affordable, high-performance batteries

- Automotive Cells Company (ACC), a joint venture founded by TotalEnergies and Stellantis in 2020, is set to emerge as a global player in the development and manufacture of automotive batteries beginning in 2023. With Saft, TotalEnergies is giving the new company the benefit of its expertise in R&D. The batteries produced by ACC will power nearly one million EVs a year, or 10% of the European market. Mercedes-Benz

joined ACC in September 2021. This is a major investment to contribute to the development of electric vehicles in Europe.

## A GOAL OF TARGETING MAJOR CITIES AND AGGLOMERATIONS WITH 150,000 OPERATED CHARGE POINTS<sup>1</sup> WORLDWIDE BY 2025



TotalEnergies charge points in major cities and agglomerations

2019	GREATER AMSTERDAM	20,000
2020	LONDON PARIS	1,700 2,300
2021	AMSTERDAM ANTWERP SINGAPORE HUBEI	2,000 3,000 1,500 > 11,000

## A STRATEGIC PRESENCE IN THE ELECTRIC BATTERY MANUFACTURING VALUE CHAIN

Via wholly owned affiliate Saft

### In Europe

#### WHO?

Automotive Cells Compagny  
(TotalEnergies 33%, Stellantis 33% and Mercedes-Benz 33%)

#### PRODUCTION CAPACITY > 120 GWh

by 2030, or approx. 2.5 million electric vehicles/year

### In China

#### WHO?

Tianneng Saft Energy  
(Saft 40%, Tianneng 60%)

#### PRODUCTION CAPACITY 5 GWh by 2023



1. Including service stations, B2B sites and government concessions. 2. Physical volume of biofuels in equivalent ethanol and esters according to the rules defined by the European Union's RED Directive, excluding volumes sold to third parties by Trading.

## Expanding the distribution of biofuels

At year-end 2021, internal combustion vehicles still accounted for more than 98% of the land vehicles on the road worldwide. Sustainable biofuels can reduce those vehicles' CO<sub>2</sub> emissions. In 2021, TotalEnergies distributed 3 Mt of sustainable biofuels<sup>2</sup> worldwide. Government policies to promote carbon neutrality are boosting demand for these renewable products, especially in Europe. The Company will be part of that change, and aims to sell 7 to 8 Mt in 2025.

## Supporting our customers' energy transition thanks to NGV

Natural gas vehicle (NGV) fuel, marketed in the form of compressed natural gas (CNG) or liquefied natural gas (LNG), offers a transitional pathway for reducing CO<sub>2</sub> emissions. This fuel is now available at 600 service stations in the TotalEnergies global network. The incorporation of biogas, if there is enough available production, may make it possible to decarbonize NGV, CNG and LNG in the future. In February 2021, TotalEnergies inaugurated France's largest NGV and bio-NGV service station in Gennevilliers.

## Promoting low-carbon solutions for trucks

Truck manufacturers are developing electric vehicles for daily journeys of less than 500 km and are also working on very high-power batteries that can extend these vehicles' driving range. TotalEnergies is supporting that process by expanding its network of high-power charge points. Its goal is to have a charging station every 150 kilometers throughout Western Europe, with charging solutions available to trucking professionals directly at their home site. In addition, several truck manufacturers are looking at hydrogen as an attractive alternative for longer trips. TotalEnergies entered into a partnership with Daimler Trucks in 2021 dedicated to hydrogen infrastructure for trucks in France, Germany and Benelux.

## Shipping

The maritime sector accounts for 90% of all goods transportation and 3% of global carbon emissions. Although heavy fuel oil remains the most common fuel for ship propulsion, the use of LNG, a transition fuel, can reduce CO<sub>2</sub> emissions by 20%. In the medium term, decarbonized liquid fuels (such as e-fuel or biofuels) and the use of hydrogen or ammonia will make it possible to reduce those emissions still further. TotalEnergies is working with major shipping companies to define the most appropriate fuels for achieving their decarbonization roadmaps.

## Aviation

TotalEnergies is developing sustainable aviation fuels (SAFs)- (see p. 19-21). SAFs include biofuel produced from waste and residues sourced from the circular economy (animal fats, used cooking oil, etc.) as well as synthetic e-jet fuel for aviation. SAFs will substantially reduce CO<sub>2</sub> emissions from air transportation. TotalEnergies is involved in many initiatives to produce and market sustainable aviation fuel in partnership with companies in the aviation industry. These biofuels can already be used as a drop-in fuel with standard jet fuel up to 50%, without any need to modify existing logistics infrastructure, aircraft or engines. With the start-up of production at La Mède in 2021 and Normandy in 2022, TotalEnergies is in a position to meet demand from its customers and the requirements of French legislation, which calls for aircraft to use at least 1% biojet fuel effective January 1, 2022.

## 2021 HIGHLIGHTS

### Supplying LNG to cruise ships and maritime transport

- March 2021: TotalEnergies signs an agreement with MSC Cruises to supply some 45,000 tons of LNG annually to future cruise ships.
- April 2021: TotalEnergies completes the first LNG bunkering of the CMA CGM Jacques Saadé, the world's largest container ship, at Dunkirk.
- July 2021: CMA CGM and TotalEnergies initiate a feasibility study for France's first bioLNG production project.

### Joining alliances to decarbonize the shipping industry

- June 2020: TotalEnergies joins the Getting to Zero Coalition to help contribute to the International Maritime Organization's goal of reducing emissions from shipping by at least 50% by 2050.
- February 2021: TotalEnergies joins the Copenhagen-based Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping, dedicated to innovation in decarbonizing the shipping industry

### A pilot flight powered by biofuels

May 2021: Air France-KLM, TotalEnergies, Groupe ADP and Airbus join forces to conduct the first long-haul flight with a 16% blend of SAF produced from cooking oil. The flight from Paris to Montreal reduced CO<sub>2</sub> emissions by 20 tons compared to conventional jet fuel.

# Residential, Commercial and Industrial Uses

**B**y the end of 2021, TotalEnergies sold electricity and natural gas to nine million residential and commercial customers in Europe. TotalEnergies is aiming for nearly 13 million sites (B2B and B2C) across every market segment in 2025.

The Company gives preference to power from renewable sources and has developed a range of differentiated offerings for residential and business customers.

- **For residential customers in Europe**, TotalEnergies offers tailored solutions with its Green renewable power service, with rates that are locked in for one year, alongside conventional service offerings. It also helps consumers to save energy with ConsoLive, a tool that lets them measure their electricity use in real time; ConsoLive's 40,000 current users have reduced their power consumption by an average of 13%.

- **For businesses**, since 2021, TotalEnergies has been signing a growing number of corporate power purchase agreements, or CPPAs, for renewable energy. The Company also offers customers the option of adding solar power to their sites. In France, TotalEnergies is the market leader in solar power on buildings, having been awarded projects totaling more than 250 MW in the French Energy Regulatory Commission's CRE 4 call for tenders since 2017.

## Portfolio management with a strong focus on low-carbon energy

TotalEnergies' marketing units now deploy a strategy designed to prioritize markets that offer the highest margins per ton of CO<sub>2</sub> emitted, and streamline their portfolios accordingly.

The Company emphasizes customized solutions that create a direct relationship with the customer, and aims to eliminate low-margin sales to resellers, an area in which it lacks a significant competitive advantage.

In the aviation industry, it is focusing on high-value-added airport facilities while maintaining its global presence. As of 2025, it will no longer be selling heavy fuel oil for power generation, and it is already steering its customers toward alternatives, such as natural gas, biofuels and renewable energies.

## One B2B Solutions A dedicated marketing organization to help our B2B customers decarbonize in their energy use

TotalEnergies' B2B industrial and commercial customers are increasingly requesting help in choosing energy sources that are aligned with their own efforts to decarbonize. The Company wields a major competitive advantage in responding to those requests, thanks to the wide spectrum of energies and products it offers. To assist those customers, the Company is rolling out a dedicated marketing organization in 2022, called One B2B Solutions. The new unit markets solutions in ten market segments with the highest potential and provides overall management of Key Accounts.

## Developing CO<sub>2</sub> storage services

Under the scenarios prepared by the IEA, the volume of CO<sub>2</sub> captured and stored using CCS processes could total 5 to 7 billion tons annually by 2050, compared to just 40 Mt today. Developing that business therefore represents a major challenge for the decades ahead to get to net zero by 2050. TotalEnergies' CCS projects are helping to reduce its own emissions, but via additional available capacity, they will also help it develop services for transporting and storing carbon on behalf of industrial customers intent on reducing their emissions. The North Sea is ideal setting for such projects, offering significant storage potential close to major industrial centers. TotalEnergies is taking part in several large-scale initiatives in the North Sea (see p. 36).

The Company's goal is to provide its customers with storage capacity of more than 10 Mt CO<sub>2</sub>/year by 2030, with the ambition of lifting capacity to **more than 50 Mt CO<sub>2</sub>/year by 2050**.

### 2021 HIGHLIGHTS

#### CPPAs: New agreements to supply solar power

**March 2021:** TotalEnergies signs CPPAs with Microsoft (47 MW) and Orange (100 GWh/year)

that include construction of dozens of solar power plants across France.

**July 2021:** The Company signs two CPPAs, one with Air Liquide (50 GWh/year of

renewable power over 15 years in Belgium) and the other with Amazon (474 MW of renewable power generation capacity in the U.S. and Europe).



# Together With Our Partners

Navigating the energy transition and capping global warming are global challenges. TotalEnergies can meet those challenges only by actively enlisting its partners, specifically governments and industry associations.

## Support for the “Fit for 55” package

TotalEnergies supports the pledges made by nations worldwide to combat global warming as part of the Paris Agreement. Within the European Union, TotalEnergies supports the “Fit for 55” package, and particularly some key components that are aligned with its strategy and positions:

- Broader use of carbon pricing.
- A massive expansion of renewable energies.
- The deployment of infrastructure (charging stations, hydrogen).
- The development of low-carbon and renewable fuels for the transportation industry.

In support of those commitments by the European Commission, it has set a target in Europe of reducing Scope 1+2+3 emissions by 30% between 2015 and 2030.

## Mobilization of industry organizations

TotalEnergies is a member of many industry associations and has published a list of its affiliations since 2016. The Company typically cooperates with these organizations on technical matters, but some take public stances on other issues, such as climate. The Company ensures that these organizations hold positions aligned with its own, and regularly reviews each organization's stance on the climate.

Since 2019, TotalEnergies has conducted an annual assessment of the climate-related public positions of the main professional associations of which it is a member. The Company examines whether they are aligned with its own, based on the six principles from its Advocacy Directive.

During the 2019 and 2020 reviews, the positions taken by the **American Petroleum Institute (API)** were deemed “partially aligned” with the Company's own positions. After voicing its points of disagreement with the API, and after continuing to promote its positions within the organization, in early 2021 TotalEnergies announced its decision not to renew its membership particularly because of continued divergences on the regulation of methane emissions.

TotalEnergies has likewise withdrawn from two other organizations whose positions were not aligned with its own: **American Fuel & Petrochemical Manufacturers (AFPM)** and the **Canadian Association of Petroleum Producers (CAPP)**.

Additionally, TotalEnergies participates in organizations and initiatives devoted specifically to the fight against climate change. In 2014, for example, it helped launch the **Oil & Gas Climate Initiative (OGCI)**. Comprising 12 major national and

## Review of affiliations based on six key principles

- **Scientific position:** TotalEnergies recognizes the link established by science between human activities, in particular the use of fossil fuels, and climate change.
- **The Paris Agreement:** TotalEnergies recognizes the Paris Agreement as a major step forward in the fight against global warming and supports the initiatives of the implementing States to achieve the objectives of this agreement.
- **Carbon pricing:** TotalEnergies supports the implementation of carbon pricing.
- **The development of renewable energies:** TotalEnergies supports policies, initiatives and technologies aimed at promoting the development of renewable energies and sustainable bioenergies (biofuels, biogas) as well as energies and technologies aimed at decarbonizing industrial processes and transport, such as hydrogen, carbon storage or the electric vehicle.
- **The role of natural gas:** TotalEnergies promotes the role of natural gas as a “transition fuel”, in particular as a replacement for coal. TotalEnergies supports policies aimed at measuring and reducing methane emissions to move towards the ambition of zero methane emissions.
- **Carbon offsetting:** TotalEnergies promotes an approach consisting first in the reduction of GHG emissions – by avoiding and then reducing emissions using the best available technologies – and then offsetting residual emissions. The Company supports carbon compensation mechanisms, which are necessary to reach net zero, when they are part of organized and certified markets in order to ensure the quality and sustainability of the carbon credits.





international energy operators, this global industry partnership is committed to developing solutions for a sustainable, low-carbon future. In 2021, the OGCI's members, which collectively account for more than one third of the world's oil and gas production, embarked on a new strategy for reaching net zero Scope 1+2 emissions by 2050. In addition, OGCI Climate Investments, a fund launched in 2017 to invest \$1 billion over 10 years, provides funding to tech start-ups connected with the energy transition.

The Company is also engaged in other international initiatives involving the private and public sectors:

- for stopping the routine flaring of gases associated with oil production, with the World Bank's **"Zero Routine Flaring by 2030"** initiative;
- for enhanced transparency, taking into account the recommendations of the G20 Financial Stability Board on climate, and of the **Task Force on Climate-related Financial Disclosures** (TCFD), or the investors' consortium Climate Action 100+ ;
- for the development of new energy start-ups, since 2017, within the Breakthrough Energy Coalition (BEC), a group of investors created by Bill Gates in 2015, and since 2016 within Breakthrough Energy Ventures, a \$1 billion fund created in 2016 by the BEC;
- to reduce methane emissions, as a member of the United Nations Development Programme's **Oil & Gas Methane Partnership** (OGMP) since 2014 (see p. 34).

### Support for carbon pricing

Carbon pricing is a major tool for reaching net zero. For more than a decade, TotalEnergies has advocated the adoption of carbon pricing, and applies an internal carbon price when evaluating its own projects (see p. 32-33).

By integrating an energy source's carbon content in its price, carbon pricing makes the most emission-intensive sources more expensive. In particular, putting a price on carbon gives all players an incentive to **shift faster from coal to renewable energies and natural gas** for electricity production. Over the long term, it also offers a way to channel investment to research into low-carbon technologies and carbon capture and storage. The launch of China's emissions trading scheme (ETS) in 2021, the increase in the price per ton of carbon following reforms to

### Preventing "carbon leakage"

TotalEnergies encourages the adoption of carbon pricing, but given the pricing disparities from country to country, the Company also supports the creation of **Carbon Border Adjustment Mechanisms** to prevent what is known as "carbon leakage." In Europe, for example, the price of carbon surpassed €80 per ton on the ETS market (industrial facilities and power generation) in 2021, whereas most industrial operators outside Europe are not exposed to such high carbon costs. As a result, there is a risk that production could relocate to regions with less ambitious climate objectives, which would not only penalize employment in Europe but also negate efforts to reduce emissions worldwide. Draft legislation to establish Carbon Border Adjustment Mechanisms is pending at the European Union, and proposals are also under consideration in the United States and Canada, among other countries. Any such legislation must ensure that the lowest-emitting facilities remain competitive while encouraging trade partners to establish their own carbon pricing systems.

the European ETS market and the return of the United States to discussions on climate all augur positively for the development of carbon pricing. According to the World Bank's Carbon Pricing Dashboard, more than 21% of global emissions are now covered by 64 carbon pricing systems worldwide. Since 2014 the Company has been supporting a range of international initiatives that call for the implementation of regulatory mechanisms tailored to local conditions. TotalEnergies is a founding member of the **Climate Leadership Council** (CLC), which promotes a balanced approach to carbon pricing in the United States in which the revenue is redistributed to the American people in the form of a Carbon Dividend. TotalEnergies also supports the World Bank's **Carbon Pricing Leadership Coalition** (CPLC).

### Reporting Climate Action 100+ Net-Zero

Indicators	TotalEnergies	Pages
Net Zero Ambition 2050	Vision of a net-zero company in 2050	9 to 11
Long-term Targets	Our climate ambition	12 to 21
Short- and Medium-term Targets	2025 and 2030 emissions reduction targets: Scope 1+2, Scope 3, methane, carbon intensity	12-13 / 45-46
Decarbonization strategy	How TotalEnergies is implementing its transformation strategy: decarbonization levers and targets	29 to 46
Capital allocation	Our investment strategy to fund the energy transition	24-25
Climate policy engagement	Our actions to align our advocacy activities with the Paris Agreement	43-44
Climate governance	How climate is integrated at all decision-making levels	6-7 URD 2021 5.4.1
TCFD reporting	Our TCFD correspondence table	URD 2021 5.4.5

## 2. Climate and Sustainable Energy

# Our Progress in 2021 and our Objectives for 2030

The credibility of the Company's ambition for 2050 hinges on its ability to show the progress it has made so far, and it is firmly committed to doing that by publishing its 2021 results, which are in line – and even often in advance – with its targets:

- Emissions from operated facilities **have declined by approximately 20% since 2015**. This includes 4 Mt of emissions from CCGT power plants following the implementation of the Company's new strategy in electricity to have flexible generation capacity; the decline for operated oil & gas activities actually came to 30%.

- For indirect emissions associated with customers' use of its products:

- Scope 3 emissions worldwide have fallen since 2015. In Europe, those emissions fell by 14% (excluding Covid). On oil products alone **emissions fell by 19%** (excluding Covid);
- The lifecycle carbon intensity indicator for the energy projects it sells **has fallen by 10 points since 2015** (excluding Covid), making TotalEnergies the leader among its peers in decarbonizing its energy mix.

### Our decarbonizing progress

			2015	2020	2021	2025	2030
Our emissions (Scope 1 + 2)	Scope 1+2 (operated)	Mt CO <sub>2</sub> e	46	41 <sup>1</sup> (38)	37 <sup>1</sup> (36)	< 40	25-30 <sup>2</sup>
		vs 2015	●		- 20 <sup>1</sup> (-22%)	> -15%	> -40%
	Methane - emissions (operated)	kt CH <sub>4</sub>	94	64	49		
		vs 2015			- 48 %		
		vs 2020			- 23 %	-50% <sup>5</sup>	-80% <sup>5</sup>
	Methane - intensity (operated oil & gas)	%	0.23	0.15	0.13	far below 0.2	
Carbon footprint of products sold	Methane - intensity (operated gas)	%	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Routine flaring (operated)	Mm <sup>3</sup> /d	2.3	0.6	0.7	< 0.1	0

Carbon footprint of products sold	Scope 3 Global <sup>3</sup>	Mt CO <sub>2</sub> e	410	400 <sup>1</sup> (350)	400 <sup>1</sup> (370)		< 400
	Scope 3 Global Oil <sup>3</sup>	Mt CO <sub>2</sub> e	350	320 <sup>1</sup> (270)	285 <sup>1</sup> (255)		
					-19% (-27%)		> -30% <sup>5</sup>
	Scope 1+2+3 Europe <sup>3</sup>	Mt CO <sub>2</sub> e	280	239 <sup>1</sup> (212)	241 <sup>1</sup> (222)		
		vs 2015	●		-14% <sup>1</sup> (- 21%)		> -30%
Carbon footprint of products sold	Carbon intensity <sup>4</sup>	vs 2015	-	-8% <sup>1</sup> (-10%)	-10% <sup>1</sup> (-11%)	> -10%	> -20%



1. Data Excluding impact of Covid-19. 2. Including carbon sinks. 3. Including bulk sales and biofuels. 4. Energy products. 5. Additional objectives in 2022.



# 4

## Care for the Environment

Our ambition is to place environmental performance at the heart of our projects and operations and pay particular attention to the use of the planet's natural resources.

TotalEnergies takes care to manage the environmental impacts of all its operations according to the Avoid - Reduce - Compensate principle. The first step is to avoid any impacts wherever possible. If an impact cannot be avoided, the Company uses best available technology to reduce it and, as a last resort, compensates any residual impacts. The Company has set three priorities to take care of the planet's resources: preserving biodiversity, protecting water resources and practicing circular resource management.

In 2022 the Company decided to renew, strengthen and expand the environmental objectives set for the previous decade, which had already been met. These objectives have been strengthened and expanded.



# Preserving Biodiversity

According to the IPBES<sup>1</sup>, more than a million species are currently threatened with extinction. Biodiversity, or the diversity of living things, is both a global and local concept. Global, because it includes all ecosystems and the way they interact; local, because it also implies an equilibrium at the regional or site level. TotalEnergies' actions address both of these dimensions.

## Biodiversity, a Global and Local Issue

In its Global Assessment Report on Biodiversity and Ecosystem Services<sup>2</sup>, the IPBES identified climate change as the third global driver of biodiversity loss after changes in land and sea use and direct exploitation of species. The Company is even more resolute in implementing the transformation and initiatives required to address the climate challenge (see p. 32). Locally, the Company deploys tailored and tangible solutions to manage the impacts of its operations on biodiversity, with a priority on avoidance. To do that, it renewed its ambition for biodiversity in 2021.

In 2018, TotalEnergies proactively joined Act4Nature International, an initiative<sup>3</sup> tailored for French multinationals with commitments<sup>4</sup> to promote biodiversity. Members adhere to ten common commitments, as well as individual SMART<sup>5</sup> company-specific commitments<sup>6</sup>. A report<sup>7</sup> on the implementation of TotalEnergies' commitments is publicly available. The Company's commitments frame its biodiversity ambition and have been posted on the Convention for Biological Diversity's Action Agenda<sup>8</sup> portal. They form TotalEnergies' contribution to the United Nations' Post-2020 Global Biodiversity Framework (GBF)<sup>9</sup>, which will set 2030 targets for the planet at the COP15 meeting in Kunming. The Convention for Biological Diversity recognizes corporate commitments as a key solution for dealing with the loss of biodiversity.

## Collaboration

Private-public sector collaboration is at the heart of our approach. TotalEnergies' partnership with the United Nations Environment Programme's World Conservation Monitoring Center (UNEP-WCMC) gives the Company access to geographical biodiversity data that are crucial to assessing project biodiversity risks. In addition, it has established local partnerships, such as with the Wildlife Conservation Society (WCS) in Uganda. The Company is also working with the IUCN on projects establishing good practices for managing the impacts of renewable energies on biodiversity. As a member of Ipieca, which has observer status at the United Nations, TotalEnergies has participated in the preparatory

work of the **Convention on Biological Diversity's Global Biodiversity Framework**. The Company is also a member of the **Taskforce on Nature-related Financial Disclosures** (TNFD) Forum created in 2021, which will define a framework for reporting and measuring corporate biodiversity impacts. Lastly, TotalEnergies takes part in the work of the EU Business@Biodiversity Platform.

## Evaluating Our Priorities and Setting Our Objectives

TotalEnergies assesses its impacts and stakeholders' expectations across the entire value chain, and takes suppliers into account as well (see p. 72).

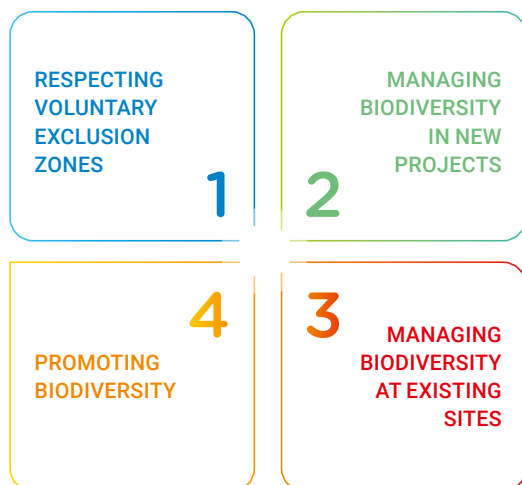
In particular, the Company has launched an analysis of its operations based the guidelines of the Science Based Targets Network (SBTN), which aims to limit the loss of biodiversity.

## Our Commitments & Progress

The Company's Act4Nature International commitments underpin the four pillars of its biodiversity ambition:

1. Respecting voluntary exclusion zones: TotalEnergies recognizes the value of UNESCO World Natural Heritage Sites and does not conduct any oil or gas operations in such areas. In addition, it does not carry out any oil field exploration in Arctic sea ice areas.
2. Managing biodiversity in new projects. Specific biodiversity action plans are deployed for projects located in an area of interest for biodiversity (IUCN Protected Area Categories I to IV<sup>10</sup> and Ramsar sites<sup>11</sup>) with the goal of producing a net positive impact in areas of priority interest for biodiversity (IUCN I & II and Ramsar sites). In 2021, eight biodiversity action plans (BAPs) were rolled out or under preparation. These plans take into account the ecosystem services provided to local communities. The Company's net positive impact plans include the Tilenga and EACOP projects, the La Perrière wind and solar site located on Reunion Island, Mozambique LNG and Papua LNG.





**3. Managing biodiversity at existing sites and sites that are ceasing operations.** At each environmentally significant site, the Company implements a biodiversity action plan. Five sites were assessed in 2021 and the full range of measures will be deployed by 2025. This approach enhances our teams' biodiversity awareness. When a site ceases operations, the Company looks at creating biodiversity zones as one of the rehabilitation options. In 2021, it studied the possibility of converting a dozen former sites into biodiversity zones.

**4. Promoting biodiversity.** TotalEnergies shares its biodiversity data with the scientific community on the Global Biodiversity Information Facility portal. TotalEnergies Foundation supports biodiversity awareness initiatives and research on coastal areas and oceans. Six projects received support in 2021. Lastly, TotalEnergies Foundation's Action! program, which promotes employees' civic engagement, recorded 1,815 initiatives in 28 countries in 2021. This new ambition has been integrated in the Company's One MAESTRO management system (see p. 50). The Company publicly discloses the implementation of these commitments (*for more details, see our Biodiversity Brochure*).

In January 2022, the Company rounded out its biodiversity commitments by setting a target of zero net deforestation for each of its new projects at new sites.



## Oceans

TotalEnergies takes the challenges of marine environments into account in its projects and operations.

The Company's offshore oil, gas and wind projects pay special attention to biodiversity, notably as concerns birds and mammals. The Company cooperates with its peers and leading academic institutions like the University of Oxford to develop tools for identifying the marine biodiversity issues related to wind projects.

TotalEnergies markets LNG, which emits less CO<sub>2</sub> and sulfur dioxide, for shipping. In France and around the world, the Company takes part in citizen initiatives to protect coastal ecosystems. In 2021, it joined the Ocean 100 initiative led by the World Resources Institute (WRI) and World Economic Forum (WEF) in order to coordinate and take action to promote sustainable oceans with the major multinationals that generate revenues from the ocean economy.

## New Energies, Bioenergies and Preserving Biodiversity

The urgency of the climate crisis is speeding the development of alternatives to fossil energies. Steps must be taken to manage the risk to biodiversity stemming from the development of renewables and biomass. The Company pays special attention to protecting marine habitats, notably for offshore wind projects, as well as terrestrial habitats for renewable and bioenergy projects. These issues are integrated in its investment criteria (see p. 24-25).

1. IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2. <https://www.ipbes.net/global-assessment> (2019). 3. Initiative launched by French business association Entreprises pour l'Environnement (EpE) and its partners. 4. [http://www.act4nature.com/wp-content/uploads/2020/11/act4nature-international\\_indications-fr.pdf](http://www.act4nature.com/wp-content/uploads/2020/11/act4nature-international_indications-fr.pdf). 5. SMART: Specific, Measurable, Additional, Realistic, Time-bound. 6. <http://www.act4nature.com/wp-content/uploads/2020/10/TOTAL-VF.pdf>. 7. [http://www.act4nature.com/wp-content/uploads/2021/08/Suivi-engagements-biodiversite-act4nature\\_TotalEnergies.pdf](http://www.act4nature.com/wp-content/uploads/2021/08/Suivi-engagements-biodiversite-act4nature_TotalEnergies.pdf). 8. <https://www.cbd.int/action-agenda/contributions/action/?action-id=601153635688490001e02f5e>. 9. <https://www.cbd.int/>. 10. IUCN areas: Ia (Strict Nature Reserve), Ib (Wilderness Area), II (National Park), III (Natural Monument or Feature), IV (Habitat/Species Management Area), V (Protected Landscape/Seascape), VI (Protected Area with Sustainable Use of Natural Resources). 11. Ramsar site: A wetland site designated to be of international importance under the Ramsar convention.

# Preserving Fresh Water, an Essential Resource

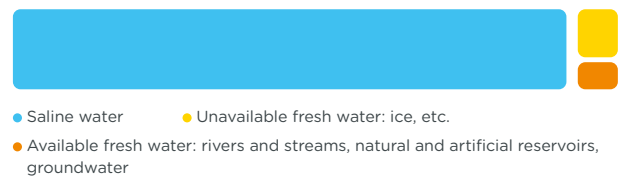
Water is an essential resource both for nature and for humankind. Because water is fully integrated in its strategy, TotalEnergies joined the UN Global Compact's CEO Water Mandate in 2022. This framework makes it possible to work together with other stakeholders to protect this resource.

The CEO Water Mandate establishes five principles for managing water that the Company already follows with several action plans and a commitment to transparency.

## Managing Water in Our Operations

In 2021, the Company's sites withdrew 101 million cubic meters of fresh water. Half of this was withdrawn in water-stressed areas according to the World Resources Institute's Baseline Water Stress indicator. A detailed risk analysis for these sites makes it possible to see if TotalEnergies' operations put other users at risk of a shortage. In early 2022, the Company set a target to **reduce fresh water withdrawals by 20% between 2021 and 2030 at sites in water stressed areas**. An action plan has been established for each site that addresses both operational excellence and specific projects. The Company also takes care to preserve water bodies from pollution, notably by limiting the hydrocarbon content of its aqueous waste. In January 2022, it lowered the maximum release target from 15 mg/L to 1 mg/L as an annual average

## WATER ON EARTH

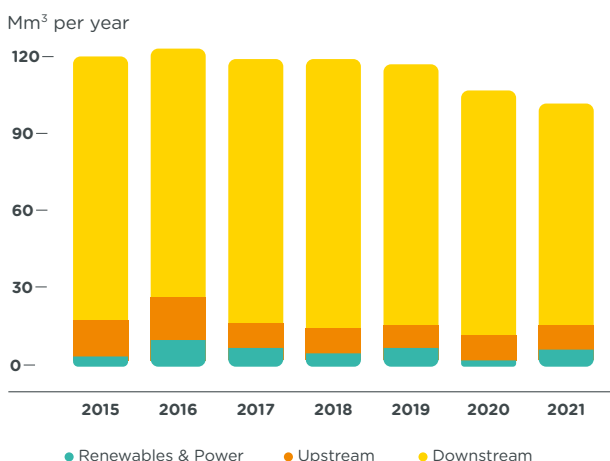


by 2030 at all onshore and coastal sites. The 2021 result stood at 2.6 mg/L, with 80% of sites in compliance with the new 1 mg/L target.

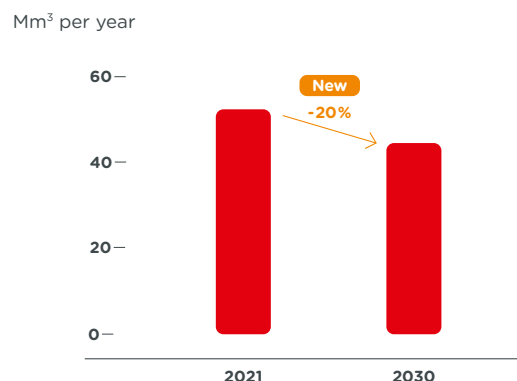
TotalEnergies conducts multiple R&D projects concerning water, such as the Sustainable Water Platform (SWAP), which aims to use renewable energy to treat and recycle rainwater and wastewater.

It has also developed dedicated tools to monitor water, such as "Wat-R-use", which calculates a site's water footprint and the associated cost and recommends measures to limit water use.

## TOTALENERGIES' WATER WITHDRAWALS BY BUSINESS



## WITHDRAWALS AT SITES LOCATED IN WATER-STRESSED AREAS<sup>1</sup>



1. According to the WRI Baseline Water Stress forecast for 2030.



## Managing Water in Our Supplies

Water pollution risks are among the parameters used by the Company to assess its suppliers. In particular, it identifies suppliers with production facilities located in Ramsar sites, which are of prime importance for recovery and natural water resources. Sourcing of chemical products must also focus on minimizing their toxicity, bioaccumulation and resistance to degradation in the environment in order to protect both the environment and human health.

In 2021, the Company launched a study on the water use intensity of its most impactful suppliers<sup>1</sup> to ensure that they respect best water use practices. It also shares its best practices guides with suppliers to help them in this process.

## Participating in Collective Water Management Initiatives

TotalEnergies participates in industrial working groups such as Concawe to identify and anticipate potentially hazardous substances in effluent through studies, in-depth analysis campaigns and site surveys to establish guideposts and compare site data. The Company has its own research center with pilot rivers and tests different methods for demonstrating the ecotoxicity of effluent.

TotalEnergies entered into a partnership with the International Office for Water (IOWater) in September 2020. In 2021, this partnership gave the Company access to data on the sensitivity of watersheds near its operations. TotalEnergies helps add to knowledge in professional organizations such as Ipieca and local groups like watershed committees in France. The Company is developing an international training module with Ipieca covering all water-related issues, from resources to releases. A first session will be held in 2022.

At certain sites, the Company participated in programs to clean waterways in 2021 with local organizations such as Waterways Watch Society (WWS) in Belgium or the Texas Conservation Fund Trash Bash in the United States.



1. Suppliers whose operations require substantial amounts of water.



## Supporting Public Water Resource Policies

In 2021, TotalEnergies' water experts took part in the work of high-level organizations such as France's national water council.

The Company's Marketing & Services affiliates deploy technical water substitution and recycling solutions in water-stressed regions in liaison with local officials, notably by installing modules to recycle car wash water from multi-program systems. In 2021, 22 car washes were equipped with a new steam cleaning system that uses just one liter of water per car.

## Engaging with Local Communities

TotalEnergies' sites or affiliates conduct water education and awareness campaigns in partnership with local stakeholders. They support the development of adequate water infrastructure, including water distribution and sanitation systems. The affiliates in Gabon, Mozambique and Uganda, for example, fostered the deployment of a community supply system for running water from wells drilled by the Company (includes a water reservoir, treatment facility and six public distribution points). In 2021, E&P's Bolivian affiliate helped improve and install additional catchment for the water system in the village of Caraparicito. Also in 2021, the affiliates in Singapore supported the Waterways Watch Society, which raises awareness about the importance of water for future generations and promotes water conservation.

# Promoting Circular Resource Management and Managing our Waste

In addition to the circular production processes being employed by TotalEnergies to decarbonize energy, the promotion of circular resource management requires responsible waste management.

The Company's four-pronged approach, by order of priority, calls for:

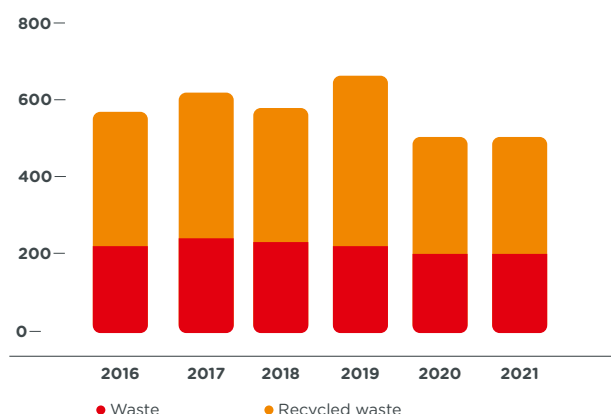
- Reducing waste at the source, in particular by designing products that generate the least waste possible, and more broadly by minimizing the amount of waste produced by the Company's operations.
- Re-employing products for similar uses so they do not become waste.
- Recycling residual waste.
- Reusing non-recycled products wherever possible.

In 2021, active sites operated by TotalEnergies affiliates generated 500 kt of waste, of which 61% was recovered. In early 2022, the Company set an objective to increase that by recovering, on average, **more than 70% of its waste by 2030**.

TotalEnergies' commitment goes beyond managing its own waste. It has, for example, been eliminating single-use plastic bags across its entire retail network. Similarly, it contributes to the Alliance to End Plastic Waste.

### OUR WASTE

kt/year



### The Alliance to End Plastic Waste

TotalEnergies is a founding member of the Alliance to End Plastic Waste created in 2019, which brings together 80 companies in the plastics and consumer goods value chain. The Alliance aims to devote \$1.5 billion over five years to financing the development of solutions to reduce and process (reuse, recycle and recover) plastic waste in the environment, particularly in the oceans. To date, 17 partnerships have been established.

In 2021, the Alliance supported the Coliba project to improve the collection, processing and sale of rigid plastic waste in Abidjan, Côte d'Ivoire by installing collection points in Shell and TotalEnergies service stations. The collected waste is baled and transferred to the Coliba plant for processing and then re-sale.

### Commitment to Eliminating Plastic Bags in Service Stations in Europe and Africa

Going beyond the obligation to stop distributing single-use plastic bags in Europe, the Marketing & Services' retail network department recommended applying this measure in all M&S affiliates worldwide in 2019. This objective implemented in Europe was achieved in Africa and Asia in 2021 and is continuing in the Americas.