More energy.
Less emissions.

How we're reducing the environmental impact of our **UK oil & gas operations**

TotalEnergies

SECTION 1

Making change happen.

Towards a multi-energy tomorrow

Nicolas Payer
UK Country Chair, TotalEnergies

It's our ambition to be a major player in the energy transition and to work with society to achieve carbon neutrality by 2050.

To reach these goals, we've committed to profoundly transforming our business while we continue to meet the energy needs of a growing global population.

Here in the UK, we're reinventing and diversifying our energy offering to deliver renewable and decarbonised energies to our customers, while still providing the oil & gas they need.

We've already taken tangible actions to help meet the North Sea Transition Deal (NSTD) emissions target agreed as part of our national quest for a just energy transition. The deal targets a 25% reduction across the basin by 2027. TotalEnergies has already reduced emissions from its UK production operations by 24% and we're on track to exceed the 2030 target to half our emissions against the 2018 baseline.

Our efforts are focused on operations, maintenance and energy efficiency to drive reductions in fuel consumption, flaring and venting. We've made progress because we've developed a culture that creates pioneers: people who think differently and have the tools and training at their disposal to make change happen. To reduce emissions, we're tackling projects at both ends of the scale – large, complex projects with investment to match, as well as small adjustments to how we work. It all adds up.

And while we're decarbonising oil & gas operations, we're also building the renewable energy sources of the future. That's because the people, skills and experiences borne of the oil & gas industry will build the renewable one.

We're investing in both.

KEY FIGURES

24%

The reduction in emissions from TotalEnergies' UK oil & gas operations since **2018**

397

The number of kilotonnes of CO_2e we've removed from our UK oil & gas operations since **2018**

A measured approach

Actions speak louder than words. That's why we're acting on ours. Taking decisive action today by setting hard targets and meticulously measuring our progress. Leading the way in the energy transition.

Understanding our impact is paramount – it drives improvement. That's why we measure our emissions to the atmosphere and convert the data to the carbon dioxide equivalent.

Our focus on research and development has delivered tangible and pioneering technical advancements. Robotic, autonomous and digital developments can not only help us deliver on our ambition but can support emission measurement across the industry.

We're certified to the international standard for environmental management ISO14001:2015. And we were the first major operator in the North Sea to achieve energy management ISO 50001:2018 certification.

On methane, we work to the OGMP 2.0 Gold Standard – the UN's Oil & Gas Methane Partnership's flagship reporting programme. We're aiming to reduce our methane emissions in the UK by 80% by 2030. This commitment has driven us to develop pioneering technology like our aerial sensor AUSEA (Aerial Ultralight Spectrometer for Environmental Applications).

We monitor methane in other ways too. Stack testing, fugitive surveys and Combustor flare modelling – an industry first. Our Combustor tool provides real-time combustion efficiency data for the flare on Culzean, our high pressure high temperature gas installation in the North Sea. Data gathered significantly improves our CO_2 and CH_4 emissions reporting accuracy.

Data is nothing without action. These standards, our people and pioneering technology help us drive continuous improvement throughout our business.

80%

The methane emissions reduction we're aiming for by 2030, compared to 2020

Making progress

By bringing together global innovators and pioneering technology, we're making progress. We listen, collaborate, ideate and quickly deliver ground-breaking solutions that will drive tangible change for us, and in time, the whole industry.

Reducing our emissions is a commitment that runs through all our teams and sites, both on and offshore. We know that operational stability and reliable equipment are the fastest routes to lowering our emissions.

However, to meet our targets, we need to think differently and design pioneering approaches.

90 kt CO_2e

Per year reduction in emissions achieved by scaling back our use of power generators

FUEL GAS

By optimising power demand across our sites, we've been able to reduce the equipment running at any one time.

We've scaled back the number of power generators in use on Alwyn, at Shetland Gas Plant and on Elgin Franklin where we've cut back to just one. The result is a combined emissions reduction of 90 kt CO_2e per year.

On Elgin Franklin, we've optimised the number of seawater lift pumps in use to realise an annual saving of 4.1 kt CO_2e. We also reduced the number of export compression trains running on Elgin Franklin, resulting in an annual saving of 41 kt CO_2e.

No project is too big or too small – on one asset we reduced fuel gas use by around 3.6 kt CO_2e per year when we upgraded to HEPA filters on the air inlets to the turbines and compressors.

What's next?

More innovation. The Culzean floating wind pilot is a project aimed at proving the concept of hybrid power generation on an offshore oil & gas facility. Here, we're integrating renewable electricity from a floating wind turbine with existing power generation from gas turbines. When it comes online in late 2025, the 3MW wind turbine will generate around 20% of Culzean's power requirement, helping to cut emissions.

FLARING

Site studies identified sources to the flare and how these can be reduced. As a result, we've optimised purge gas types and rates, reducing emissions by 5 kt CO_2e. Our surveys allowed us to identify processes we could optimise and modify. By addressing these we were able to remove an additional 35 tonnes of CO_2e per day from our flare emissions.

What's next?

Recovering flare gas. Elgin Franklin is one of the UK's largest-producing installations. In 2025, it will be the first in our UK portfolio to implement a flare gas recovery system (FGRS). This involves capturing gas from the low-pressure flare and compressing it, allowing the gas to be recovered, processed and exported to market while reducing emissions. The FGRS will stop routine gas flaring on Elgin, and most methane venting, reducing overall flaring by 35%. The project is predicted to save around 40 kt of CO_2e each year.

VENTING

Venting releases waste hydrocarbon gas to the atmosphere. We modified operations on our Elgin Franklin gas production platform by re-routing the waste gases from the gas dehydration process to be combusted in the low-pressure flare system. This delivered an annual reduction of 85 kt of CO_2e.

We also adapted the Amine contactor system, which absorbs emissions from the venting process, and achieved a further reduction of 16 kt CO_2e per year.

On Ailsa, our Central North Sea Floating Storage and Offloading vessel, we saved a further 7.6 kt CO_2e per year by making adjustments that allowed engines to operate without fired heaters.

What's next?

Aerial surveys. Following successful surveys at Shetland Gas Plant and Elgin Franklin in 2023, we're actively continuing our aerial surveys with AUSEA, giving us better estimation of on-site fugitive emissions.

On Ailsa, we're studying a fuel gas superheater to reduce emissions by a further 2.4 kt CO_2e per year. And on Elgin we'll continue to optimise sour vent purging for a further 1 kt CO_2e reduction.

We'll install flare and vent meters on Elgin Franklin to further improve our emissions measurement.

LIQUID FUEL

Gryphon, a Floating Production, Storage and Offloading vessel, has been producing oil & gas in the North Sea for more than three decades and will be decommissioned in 2025. Utilising a 10-point mooring system, it required up to five diesel thrusters to maintain its position. We developed a power management philosophy for thruster use – identifying when thrusters can be switched off. This reduced the power required for thrusters and in turn the use of diesel generators, leading to an annual reduction of 4.3 kt CO_2e per year.

By optimising seat management on our core crew flights, we reduced CO_2 emissions by 1.1 kt CO_2e per year. With an active approach to our emergency response and rescue vessels (ERRV), we've been able to reduce emissions by 1.0 kt CO_2e per year. This was helped by upgrading anti-collision monitoring systems and installing equipment on Alwyn and Dunbar, our Northern North Sea installations, allowing these assets to share one ERRV.

We also reduced the size of our production support vessel (PSV) fleet by one, bringing a reduction of 7 kt CO_2e per year. We switched to using PSVs with smaller deck areas, which save us around 3.4 kt CO_2e per year, when compared to a larger vessel.

What's next?

Reducing and optimising. With our PSVs, we've found opportunities to share among our own assets and also through a trial in collaboration with another operator. This reduced the number of voyages by optimising journeys to geographical clusters. Both initiatives are currently being trialled and if fully adopted, they have the potential to deliver in the region of 5 kt of CO_2e savings annually.

↓ 40 kt CO_2e

Expected annual reduction in emissions from Elgin's Flare Gas Recovery System

85 kt CO_2e

Reduction from re-routing Elgin's waste gases to the low-pressure flare system

↙ 3.4 kt CO_2e

Saved by switching to using PSVs with smaller deck areas

SECTION 2

A people-powered culture.

Our people are the difference. They're leading the charge for change. They have the ambition for a better world and the energy to deliver it.

The people working with and for TotalEnergies are also citizens of the world. They care deeply about the effect of our operations on the environment and they are motivated to act. We encourage and support this approach, empowering people to challenge the status quo and do things differently.

Through the creation of a dedicated digital team, people can progress their own ideas to fruition. And comprehensive training on the energy transition ensures we all understand the issues at stake. We've also created asset roadmaps and dedicated roles focused on emissions reduction, all to build a positive proactive culture that's reducing our scope 1 and 2 emissions.

DIGITAL DEVELOPMENT IN REAL-TIME

We use digital tools to drive operational efficiency, enabling our decarbonisation culture. Our asset teams come up with the ideas and are seconded to, or work alongside our digital specialists to make them a reality.

The CO_2e Optimised Day tool puts emissions front and centre for our SMART and Control Room teams. The sophisticated dashboard shows the team – in real-time - what equipment adjustments can be made to reduce emissions. This tool has driven a change in behaviour because emissions data is right in front of us, constantly.

Other products developed by our in-house team include the Start-Up Tool, which has benchmarked the start-up process to better understand restart issues and optimise them. By using Industrial Internet of Things thermosensor technology, we can track and address passing valves that are emitting gas.

TRANSFORMATION THROUGH TRAINING

The TotalEnergies Visa training programme is helping to upskill all employees. It offers participants in-depth information on climate change and the challenges and opportunities of the energy transition. The fundamentals of electricity, including how it is generated, are covered alongside its economics and the market in which it is traded.

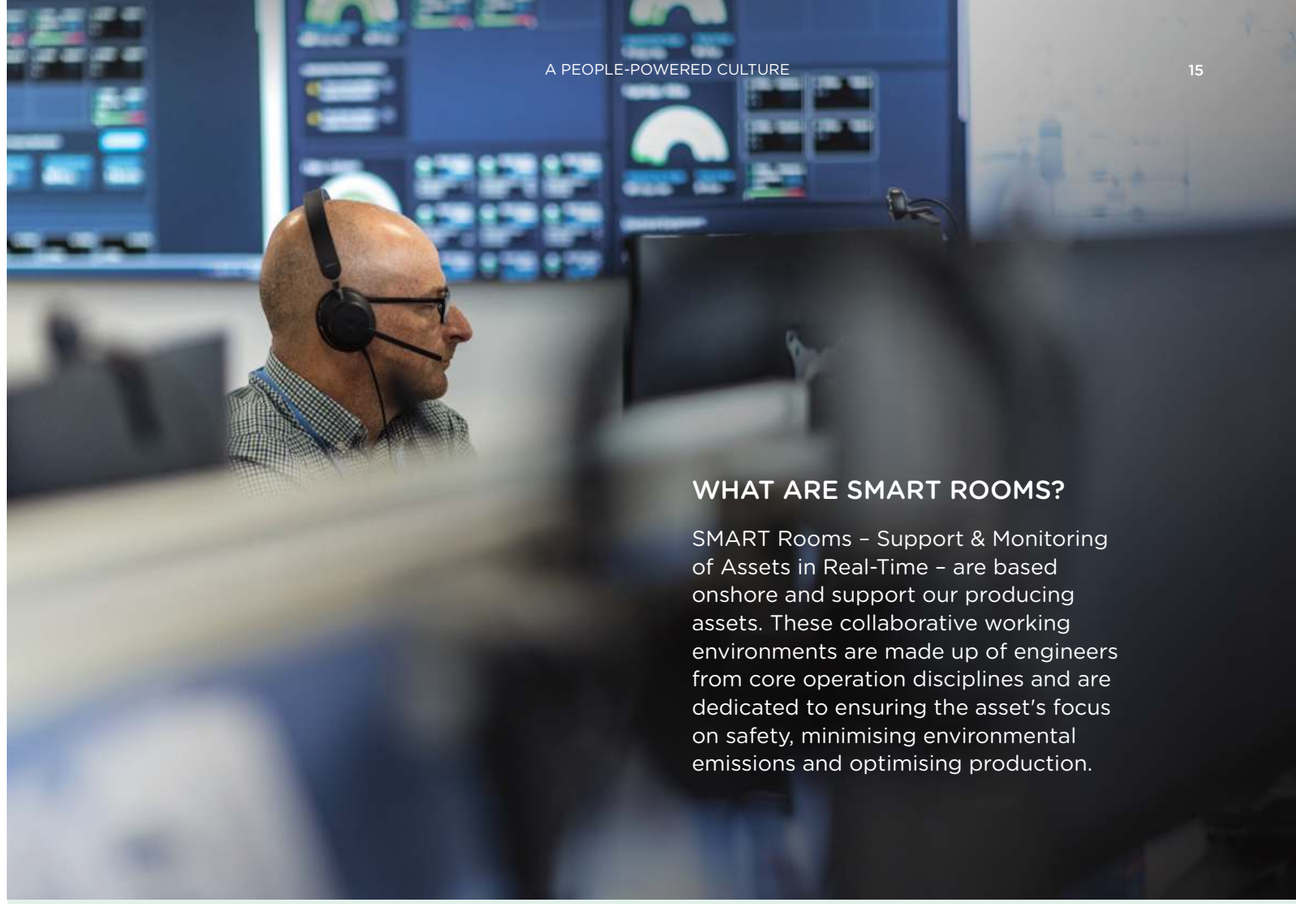
These are the topics that are transforming our business for the future. More than 1000 people across the UK have participated since the programme was established in 2022.

ROADMAPS FOR EVERY ASSET

Every site has its own dedicated emissions reduction roadmap, built by the asset team, with support from the Environment & Emissions team. Roadmaps differ for the age and stage of each asset and focus on the highest source of emissions, including flaring, venting and fuel gas consumption. The asset team analyses viability and develops a business case for an emissions reduction project which could be anything from a large-scale CAPEX investment to a small change in operating practices.

1K+

People participated in the TotalEnergies Visa training programme since 2022



WHAT ARE SMART ROOMS?

SMART Rooms – Support & Monitoring of Assets in Real-Time – are based onshore and support our producing assets. These collaborative working environments are made up of engineers from core operation disciplines and are dedicated to ensuring the asset's focus on safety, minimising environmental emissions and optimising production.

Meet our people making decarbonisation happen

RICHARD BARRETT

Carbon Footprint Reduction Lead, Northern North Sea

"Emissions data is now more visible than ever and we're backing up our reduction efforts with sizeable budgets. I'm most proud of the work we did to reduce the number of generators on Alwyn. It marked a step change in our emissions, but also a big change in mindset. I've seen that the momentum is there – from site to senior management – but there's still lots for us to do. We're encouraged to participate in the process and we share, we learn, we train. This is creating the culture required to decarbonise our assets."

JADE LEASK

Production Optimisation Leader, Central North Sea

"I helped develop the Start-up Optimisation Tool as part of the Digital Solutions team and I am now back in Field Operations using this tool whenever Elgin has a shutdown. It's used to monitor and benchmark flaring during pressurised and depressurised start-ups. Since the tool was introduced, the team has challenged and reduced their emissions targets, striving to be even better. Flaring events are now considered like production shortfalls, where there is a rigorous root-cause analysis to confirm reasons for increased flaring, even in the dynamic mode of operation during a site restart."

SECTION 3

A multi-energy approach.

Our strategy for a multi-energy future is already paying off. The complementary mix of renewables and existing energy models are driving the transition.

Building our multi-energy business in the UK

While we continue to produce oil & gas, we're also making major investments in electricity from renewable sources to meet the UK's increasing energy demand.

This two-pillar strategy is the energy transition in action and we've been transforming our business to become a multi-energy company since the beginning of the decade.

IN THE UK THIS MEANS:

30%

Of UKCS gas production is operated by TotalEnergies

5GW

Of offshore wind power planned by 2030

1.1GW

Of offshore wind capacity already installed

1.3GW

Of flexible power generation already installed

Offshore wind

Continued investment in wind is vital to meeting carbon emissions targets in the coming decades. We have invested in several offshore wind developments in the UK which will have the capacity to deliver over 5 GW of renewable power this decade.

Seagreen is located 27km off the coast of Angus. It's Scotland's largest offshore wind farm (1.1 GW) and the world's deepest fixed-bottom wind farm. Built in partnership with SSE Renewables, it can deliver enough renewable energy to power more than 1.6 million UK homes and became fully operational in October 2023.

Outer Dowsing is a 1.5 GW fixed-bottom wind farm in development off the coast of Lincolnshire. The project, being developed in conjunction with partners Corio Generation and Gulf Energy, is expected to displace the equivalent of nearly 2 million tonnes of CO_2 emissions per year of operation.

West of Orkney off the north coast of Scotland, is a 2 GW fixed-bottom project being developed alongside Corio Generation and RIDG. The lease was secured as part of ScotWind in 2022 and the project was the first from that cohort to receive onshore planning consent in June 2024.

Solar

We're developing several solar projects across the UK amounting to 500 MW of power.

The Staveley Solar Farm is a 40 MW project based in Rutland, England. It will supply enough energy to power Anglian Water's Wing Water Treatment Works and its wider estate and is part of their plan to decarbonise operations. Planning consents have been sought and if they're successful, the solar farm is expected to be fully operational by the end of 2025.

500MW

Of solar power projects in development in the UK

Carbon Capture & Storage (CCS)

We're a partner in Northern Endurance, a CCS project with the potential to store 450 million tonnes of CO_2 from emitters in the Teesside and Humber areas of Northeast England. Nearly half of carbon emissions from UK industrial clusters come from this region.

Flexible energy generation

To combat the issues of intermittency – when the sun doesn't shine, and the wind doesn't blow – we require flexible sources of energy generation that are quick to respond to energy demand. In 2024, we acquired the West Burton B gas-fired power plant in Nottinghamshire. The 1.3 GW plant includes a 49 MW battery storage system and can power 1.8 million homes. Combined-cycle gas turbine plants such as this one can be mobilised to generate energy within one hour and are essential in supporting the UK's transition to a low-carbon economy.

Meet our people building a renewable future

STUART MCAULEY

Project Director, West of Orkney wind farm

“After twenty-years in oil & gas, I moved into renewables. Personally, it’s a great challenge and opportunity for me to work on such a significant project as West of Orkney. It’s also an example of the transition we need to make from a fossil-fuel based electricity system to a renewable one. The experience we gained and the lessons we learned in the oil & gas sector are an advantage and we must use them to accelerate renewables projects. The quicker we can get projects like this one online, the quicker we can make the transition.”

RHONDA MILLER

Societal Lead

“I’ve been working in the communities where we're bringing energy developments since 2010. The only thing that’s different today is the energy source. First, it was the building of Shetland Gas Plant, then to the north of England to engage with communities on energy projects there. Today, it’s offshore wind with landfall sites at the coast, or solar farms. While the energy might be different, the need for communities to be engaged, informed and have their say on what’s happening in their local areas isn't.”

CHETNA SAPRU

Senior Project Engineer, Outer Dowsing Offshore wind farm

“There are similarities between my previous role as a well intervention engineer in Exploration & Production and my role today, where I provide comprehensive project, engineering and interface management support. I’m leaning on the skills and knowledge I developed in Drilling & Wells, such as understanding complex engineering operations both on and offshore, working effectively in a multi-disciplinary team and delivering in a fast-paced environment with tight deadlines and high expectations. And just like my last role, every day is different!”

We know that our past will inform our future. The skills we have acquired over decades can now be repurposed for a more sustainable future. We have the drive, commitment and – most importantly – the people to succeed. Tomorrow is what we make it, together.

The journey continues

totalenergies.co.uk

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