REBUILT

RESULT 3 – A1 – TOTAL ENERGIES

Company Name:	TotalEnergies (https://totalenergies.com/)
Professional sector and company size:	Multi-energy company that produces and markets fuels, natural gas and electricity
Need/problem/challenge addressed:	1. Reducing direct CO2 carbon emissions 2. Use of fossil fuel oils
Short presentation of the company:	TotalEnergies is a global multi-energy company that produces and markets energies: oil and biofuels, natural gas and green gases, renewables and electricity. Their employees are committed to better energy that is more affordable, more reliable, cleaner and accessible to as many people as possible. Active in more than 130 countries, TotalEnergies' ambition is to become the responsible energy major. Created in 1924 to enable France to play a key role in the great oil and gas adventure. As for the Company's culture, it has been forged on the ground, underpinned by an unwavering commitment to safety and performance. Throughout its long history, TotalEnergies was to frequently cross paths with two other oil companies, one French – Elf Aquitaine – and the other Belgian – Petrofina. In 1999, they merged and gave rise to the fourth oil major, a group built on a wealth of expertise and experience. Some 20 years later, Total became TotalEnergies, driven by a powerful ambition: to be a world-class player in the energy transition and to achieve, together with society as a whole, carbon neutrality in all its global activities by 2050.
Initial Process and CO2 Emission Profile:	Initial process: no use of CCS (lack of knowledge concerning CCS)- use of fossil fuels

TOTAL's Upstream segment includes the activities of Exploration & Production and Gas. The Group has exploration and production activities in more than 50 countries and produces oil or gas in approximately 30 countries. Gas conducts activities downstream from production related to natural gas, liquefied natural gas (LNG) and liquefied petroleum gas (LPG), as well as power generation and trading, and other activities.

Energy consumption	Unit	2015	2019	2020	2021	2022
Net primary energy consumption(6)	TWh	153	160	147	148	166
Renewable energy consumption(6)	TWh	-	-	-	-	1
Global energy efficiency indicator (GEEI)	Base 100	90,8	88	90,2	87	85,1

References:
TotalEnergies_ESG_Databook_2022
https://totalenergies.com/sites/g/files/nytnzq121/files/documents/2023-03/TotalEnergies_ESG_Databook_2022.xlsx

Strategic Decision of the company:	In 2020, TotalEnergies unveiled its transformation strategy to become a multi-energy company, as well as its ambition to become a major player in the energy transition, committed to getting to net zero by 2050, together with society. This ambition took shape in 2021 through very significant progress: • TotalEnergies accelerated its development in renewables and electricity with more than 10 GW of gross installed capacity for renewable electricity generation and more than six million electricity customers at the end of 2021. Investments in renewables and electricity accounted for 25% of total investments, exceeding the initial target of 20% planned one year ago. • Regarding gas, the energy of the transition, TotalEnergies' liquefied natural gas (LNG) sales increased by 10% to reach 42 million tons, 99% of which went to countries with a net zero pledge. • TotalEnergies took strong action in 2021 to lower its Scope 1, 2 and 3 greenhouse gas emissions: TotalEnergies reduced the share of petroleum products in its sales mix to 44% (from 65% in 2015), lowering the greenhouse gas emissions related to petroleum products used by its customers (Scope 3) by 19%. • TotalEnergies also achieved a very significant 20% decrease in emissions from its operated facilities (Scope 1+2) compared to 2015 and a 14% reduction in the carbon footprint of the products sold in Europe (vs 2015). Today, all of these results allow the Company to deliver energy to its customers with a more carbon intensity lifecycle reduced by more than 10% compared to 2015.
Process reengineering on selected waste:	In Belgium 1st Best practice: Industrial sites and the use of CCS technology. Europe's largest refinery in terms of oil processing capacity in Belgium. Chemical refining is our biggest contributor to CO2 emissions, because TotalEnergies process oil to transform it into fuel, which is a major emitter of CO2. The Group's strategy is to drastically reduce direct CO2 emissions at these industrial sites. There's a research project underway on CCS (Carbon dioxide Capture & Storage) technology, so what's it all about? The idea behind CCS is to capture the CO2 generated by burning fossil fuels before it is released to the atmosphere. Most current CCS strategies call for the injection of CO2 deep underground. This forms a "closed loop", where the carbon is extracted from the Earth as fossil fuels and then is returned to the Earth as CO2. It's an industrial and commercial chain that includes CO2 capital, its collection around industrial hubs and transport by ship or pipeline, and its geological storage. The captured CO2 gas is then compressed so it becomes liquid-like and transported to a storage site, generally through a pipeline or ship transport. Once at the storage site, the CO2 is pumped more than 2,500 feet down wells into geological formations like used-up oil and gas reservoirs.

TotalEnergies aims to be carbon-neutral by 2050, as set out in the Paris Agreement. There's a lot of investment to be effectuated at this subject since we all should be able to capture 6gt CO2/year by 2050 and currently we capture just 50mt CO2/year.

2nd Best practice: construction of a HVO biofuel production unit

The construction of a HVO biofuel production unit on the Anvers (Antwerp) site. HVO biofuel stands for hydrotreated vegetable oil. 'This biofuel is a product of the ecological transition.' Biofuels are intended to partially or totally replace oil made from fossil fuels, in particular diesel. This biofuel is compatible with all diesel engines without modification, and it emits less CO2, because it's made from 100% bio-sourced sources, i.e. plants, animal fats, frying fats from McDonald's for example, all of which are transported to a unit that transforms them into this biofuel, and so in the gullet this fuel is CO2-neutral. The driver will still emit CO2 while driving, but it will be less than a fuel made from fossil fuels. And this biofuel is available for sale at TOTAL service stations in Belgium.

(Reference: Interview with TOTALEnergies and the official website of TotalEnergies.)

Emission profile after re-engineering:

Energy mix (sold products)	Unit	2015	2019	2020	2021	2022
Petroleum products(1)	%	65	53	47*	44*	41
Gas(2)	%	33	40	45*	48*	50
Low-carbon energies(3)	%	2	7	7*	8*	9
Petroleum products						
Petroleum products - sales	Mb/day	2,4	2,3	1,8	1,8	1,7
Gas						
LNG-Sales	Mt	13	34	38	42	48
Electricity						
Gross renewable electricity capacity(4)	GW	0	3	7	10	17

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Since late 2018, a dedicated team for reducing greenhouse gas emissions, known as the CO2 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 CO2 . 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 CO2 respectively.

In Belgium, the Company and its partners are studying the CO2 Anvers (Antwerp@C) project to collect and transport CO2 emissions from the Anvers (Antwerp) industrial port. The CO2 would be stored in depeleted reservoirs in the North Sea.

Please identify the sustainability goals (SDGs) and the specific targets achieved in the described case:

TotaEnergies identify the SDGs No7 Affordable and Clean Enegry, No9 Industry, Innovation and Infrastructure and No13 Climate Action, as well as the SDGs No6 Clean Water and sanitation and No12 Responsible Consumption and Production.