OCTOBER 2023

NZBA PROGRESS REPORT 2023

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WITH COMMERCIAL REAL ESTATE

THE FUTURE IS YOU

SOCIETE GENERALE

PROGRESS REPORT NZBA

INTRODUCTION

This document constitutes a progress report on alignment metrics and targets and describe the actions we took. Societe Generale has been at the forefront of sustainable and positive impact finance since 2001, developing a strong renewable energy franchise, while contributing to the UNEP "Positive Impact Finance Initiative" as a Founding Member. We have since then developed an extended technical expertise, with teams contributing actively to the environmental transition.

HACINA PY
GROUP CHIEF SUSTAINABILITY OFFICER

"The decarbonisation objectives derived from the Paris Agreement call for investments of a magnitude hardly observed before. We are facing a complete change of paradigm, which requires to rethink the way we produce, consume and interact.

This is a significant opportunity but also a major source of disruption if we do not engage collectively and act proactively"

The COP 21 summit in Paris in 2015 marked a turning point, ushering in a new era of heightened environmental awareness and commitment to addressing climate change on a global scale. It acted as a catalyst, creating unprecedented global cooperation and action on climate issues. This is when Societe Generale announced its first objectives to restrict coal business and to step up on renewables energies.

We have not stopped since then to reinforce our ambition and to tackle other fossil energies.

We started to work on aligning our credit portfolios with the goals of the Paris Agreement and published a common alignment methodology in 2020 together with other international banks. In 2021, we went one step further by joining the Net Zero Banking Alliance as a Founding Partner. This decision marked the determination to accelerate the transition by aligning our lending portfolios for the most emissive sectors with net-zero emission pathways by 2050, consistent with a maximum temperature rise of 1.5°C above pre-industrial levels by 2100.

Conscious that decarbonisation is a global challenge that needs to be addressed collectively, we are working with our clients and with our peers to accelerate the transition. In order to develop transparency and accountability, we contribute to many working groups alongside our peers in various sectors to support research and development in the area of sustainable finance and decarbonisation – developing partnerships and entering alliances with expert organizations such as the Poseidon Principles, the Hydrogen Council or more recently in sectors such as steel, aviation and aluminium with a goal to develop common standards and comparability across industries.

We are committed to demonstrate progress toward net zero and work is on-going. We realize that this is going to be an iterative process, requiring to adapt and improve our framework, as data availability progresses, low carbon technology becomes available, and, last but certainly not least, as demand, driven by regulation and incentives, starts to align with the goals of the Paris Agreement.

We expect governments, policy makers and other key stakeholders to help accelerate some of the trends we start to observe, and some technologies will only reach scale and risk-acceptance with strong incentives of any kind. We regularly share our expertise and views on how policies should support and help the decarbonisation.

We cannot wait for all stars to align and are happy to share in this report our first decisive steps in a number of highly carbon intensive sectors. For each sector analyzed, we have defined the main decarbonisation challenges and the key drivers, having previously engaged into technical discussions with our clients to understand their own vision and decarbonisation strategy. This field-based knowledge, coupled with science-based input and collective works with our peers to define relevant alignment methodologies have enabled us to set our alignment objectives.

INTRODUCTION

Our strategy for this first wave of alignment work has been twofold:

- Reduction of our fossil fuel CO_2 footprint in absolute terms, by stopping certain activities and terminating some relationships;
- Reduction of the carbon intensity of our portfolios in the other sectors, by reducing our support to the most carbon intensive activities while growing our financing for low carbon solutions;
- Some technologies that will allow sectors to get to net zero are not yet mature and could be available at scale only after 2030 or even after 2040. This explains why we have started on the most carbon intensive sectors to set 2030 intermediate targets that represent the necessary steps and efforts required on the path to net zero by 2050 based on current knowledge.

For each sector, our alignment objectives come along with the development of new solutions to finance the growing capex needs for the transition. Working with our experts, with industrials and engineers, it became obvious that the transition requires a major transformation, implying to work across traditional sectors silos. To adapt to this new paradigm, we launched early 2021 a major transition programme called “the shift”, for which we provide some detail in this report. This is a great move for the bank, enabling us to design relevant decarbonisation or low carbon solutions throughout the different value chains.
The first concrete realizations are promising, and we share some of them in the various sectoral pages. Our ambition is to grow this innovation capability at the service of the transition and accompany our clients as a key partner in their transitions. Furthermore, we believe that part of the solutions will be coming from new actors, developing new technologies, and have decided to allocate 1bn€ to invest in the future leaders of the transition, but also nature-based solutions and impact-based projects.

The path to decarbonisation embarks the whole bank, from business units to service units. We have been investing significant time and effort in the training of our staff, through different channels, and we have been developing tools at the service of innovation. We have collectively learned a lot and strive to continue progressing, with the ambition to contribute very concretely to the environmental transition.

With this report, we aim at sharing some of this knowledge with our stakeholders, and we are open to exchanging views and ideas!

For each sector, our alignment objectives come along with the development of new solutions to finance the growing capex needs for the transition.

WORKING WITH POLICY MAKERS TO UNLOCK THE TRANSITION

As the consequences of climate change and nature degradation are accelerating, it is vital that we continue to act collectively in mainstreaming sustainability into each aspect of the real economy. Financial institutions can play a key role in channeling capital flows towards sustainability goals, and it is critical that conditions are in place to enable the real economy to transition, including supportive measures from policymakers.

Societe Generale has been actively engaging since 2018 with policymakers to contribute to their efforts in enabling a policy environment incentivising the real economy transition.

The challenges for banks in scaling sustainable finance and aligning their portfolios with trajectories compatible with 1.5°C scenarios are huge in an economy heading to well above +2°C. Cancelling financed emissions through immediate withdrawals of high-emitting assets or termination of relationships with high-emitting corporate clients would be inefficient to reach the vital decarbonisation of the real economy globally. Hence, Societe Generale's engagement with policymakers is performed with the objective of promoting the establishment of a policy framework where banks should not only be incentivised to gradually "reduce their financed emissions", especially on emitting sectors where alignment targets are necessary, but also to "finance emissions reduction" (i.e., net-zero technologies and infrastructures).

Financing capacities are abundant, but we observe that bankable low carbon projects are missing. This starts with the need to change demand, to progress to an economy of usage, to switch to more electrification, which implies new public infrastructures, capacity building and skills development.

Public policies have a role to play to facilitate corporates' preference for investing in low-carbon solutions over existing technologies. Some regions have already begun to apply such measures, such as the Inflation Reduction Act in the United States of America which pulled forward and derisked investment across sectors to ease decarbonisation financing. We do also welcome in the EU the European Climate Law, the EU's Fit for 55 package and the European Commission's proposal on the Net Zero Industry Act. From this perspective, any incentives for companies that would ensure a minimum and predictable rate of return on investment over the economic life of the projects would give banks greater visibility over the long-term viability of projects, while limiting technological risk.

Global international banks can play a role to finance real economy transition both regionally and globally, including in emerging and developing countries. Supporting emerging and developing countries in their transition requires an ecosystem of public, multilateral and catalytic funding partners to design blended finance transactions. It is also important that policymakers continue efforts to thrive for interoperability of sustainability norms globally, to ensure a level playing field for international banks active in emerging and developing countries.

WORKING WITH OUR PEERS AND INDUSTRIES TO DEVELOP COMMON STANDARDS

HADJIRA HAMDAOUI
HEAD OF CLIMATE QUANTITATIVE STRATEGY TEAM

"In the pursuit of a sustainable future, it is imperative for us banks to join forces with companies, uniting our financial and industrial innovation capabilities, to lead the way toward decarbonising our economy.

In recognition of the pressing need for action, the shared vision and collaborative spirit will be the key to our success in creating a greener, more sustainable world"

Steering lending portfolios through trajectories compatible with the goals of the Paris Agreement requires methodologies and metrics. We were part of the first banks to join forces to work collectively on developing these methodologies.

Since 2018, we have contributed to the development of the PACTA methodology[1] and collaborated with BBVA, BNP Paribas, ING and Standard Chartered (also known as the Katowice Banks) and 2DII to make this methodology applicable to banking portfolios and providing recommendations for improving it.

We joined as a founding member the Net-Zero Banking Alliance (NZBA) in 2021 that brings together many banks around the objective of aligning their portfolios and activities with pathways consistent with a maximum temperature rise of 1.5 °C. We are active in different working groups organised by NZBA and GFANZ[2] with other banks. By working with our peers, we aim to adopt common and widely recognised methods.

We also joined several working groups gathering financial institutions and major players of the industries to combine our expertise and work collectively on the sectors transition.

We are a founding member of the Aviation Climate-Aligned Finance (CAF) Working Group and the Aluminum Climate-Aligned Finance Working Group. We have joined the Steel Climate-Aligned Finance Working Group as co-leader, alongside five other leading lenders of the steel industry to set the standards paving the way for decarbonisation of the sector. The Working Group has published Sustainable Steel Principles (SSP), the first Climate-Aligned Finance (CAF) agreement for lenders to the steel industry. The SSP are the turn-key solution for measuring and disclosing the 1.5°C alignment of steel lending portfolios. Designed to support the practical achievement of net-zero emissions in the steel industry, they also provide the tools necessary for client engagement and advocacy.

In close collaboration with the principal actors of these sectors, the aim is to define common methodologies to help our clients decarbonise their activities and properly address these sectors' specific challenges.

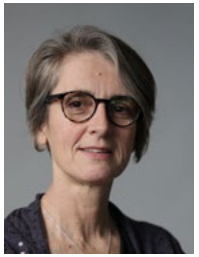
The Group was the first European bank joining the Hydrogen Council, which brings together more than 120 members contributing to the roll-out of hydrogen as part of the energy transition. The bank aims to bring its expertise in innovative financing and energy advisory to help develop the "low carbon" hydrogen solutions of tomorrow.

As a founding signatory of the Poseidon Principles, alongside ten other banks, the Group supports players in the global shipping sector in their energy transition. The Poseidon Principles aim to promote a low-carbon future for the global shipping industry by integrating climate decision-making into portfolio management and lending decisions regarding ship financing.

2022	Sustainable Steel Principles	Founding signatory to sign the **Sustainable Steel Principles**, the first Climate-Aligned Finance agreement for lenders to the steel industry
	Center for Climate Aligned Finance	**Co-founder** of the **Aviation Climate-Aligned Working Group** and co-founder and **co-lead of the Aluminium Climate-Aligned Working Group**
	Science Based Targets	Member of the **Science Based Targets Network for Climate and Nature**
2021	UNEP Finance Initiative	Founding member of the **UNEP-FI Net-Zero Banking Alliance,** committing to align its portfolios with trajectories aiming at **carbon neutrality by 2050**
	Center for Climate Aligned Finance	**Co-lead** of the working group defining **decarbonisation standards for the steel sector**
2020	Hydrogen Council	**First bank to join the Investor Group of the Hydrogen Council,** committing its expertise in innovative financing and energy advisory
	PACTA	**PACTA for Banks:** joint publication of a methodology with the Katowice Banks
2019	UNEP Finance Initiative	**Founding bank for UN Principles for Responsible Banking** and member of the **Collective Commitment on Climate Action**
		Signatory of **Katowice Agreement and pledge to align portfolio with Paris Agreement**
		Founding signatory of the Poseidon Principles, aiming at decarbonising the shipping industry
2018	Climate Bonds	**First French bank** to join the **Climate Bond Initiative** Partnership programme
		Member of the **ICMA Green Bond Principles**
2001-2017	IMPACT	Founding member of the **Positive Impact Initiative** within the UNEP-FI
		Signatory of the **CDP, Equator Principles and the Soft Commodities Compact**

(1) *PACTA (Paris Agreement Capital Transition Assessment) is a methodology developed by the 2° Investing Initiative (2DII) to help investors analyse the extent to which corporate capital expenditures and industrial assets behind financial instruments and portfolios in emissions-intensive industries are aligned with various climate scenarios.*
(2) *GFANZ: Glasgow Financial Alliance for Net-Zero*

TRANSFORMING TO SHIFT OUR BUSINESS MODEL



SANDRINE ENGUEHARD
HEAD OF SUSTAINABLE AND POSITIVE IMPACT FINANCE SOLUTIONS

"To accompany our clients driving their transition throughout an increasingly complex environment, we launched "the Shift", as an accelerator of our own transformation.

We are fostering collective intelligence on selected key topics to develop new advisory and financing approaches and co-construct solutions with our clients."

Supporting our clients in the transition and encouraging their transition strategy is a fundamental part of our banking business. To keep pace with our customers' changing needs, **we are rethinking our business models** and integrating innovative solutions from our ecosystem of stakeholders.

On our wholesale business, we have decided to **put collective intelligence and cross-sectoral expertise into motion to offer a holistic approach to our clients through a programme, called "the Shift".**

To support our client's transformation, more than **400 staff** from various key regions and business lines are working together on **12 strategic activities** articulated around three thematics to:

- **Create synergies and develop expertise;**
- **Onboard and engage staff on ESG challenges.**

1. STRATEGIC VALUE CHAINS

Using a cross-sectorial approach and life cycle analysis, we take a holistic view of our clients' business

1. **Air transportation**
2. **Maritime industries**
3. **Rail and road mobility**
4. **Sustainable food & agribusiness**

2. NEW BUSINESSES

We support emerging leaders and create new products offers for small scale asset financing and nature-based solutions

5. **Emerging leaders**
6. **Small scale asset financing and access to energy**
7. **Biodiversity, nature-based solutions and carbon credits**

3. CROSS FERTILISATION

We share our knowhow and raise awareness so as to be early movers on less mature technologies and markets

8. **Hydrogen**
9. **Circular economy**
10. **Decarbonisation solutions**
11. **Real estate**
12. **Healthcare**

To support new businesses, **Societe Generale is launching a EUR 1bn Transition Investment Fund to be invested in debt and equity to support emerging players and new solutions,** with a positive impact finance component, to foster a fair transition and contribute to the financing of the Sustainable Development Goals.

NB ON P20 IT IS REFERRED TO AS TRANSITION INVESTMENT

- **EUR 1bn** Societe Generale commitment
  - **EUR 0.7bn** equity component
  - **EUR 0.3bn** debt component for Energy Transition
- In partnership with **well-established managers of alternative investments** and standalone

EUR 0.7bn Equity Investment Focus

Emerging Leaders of the energy transition
(low carbon solutions, renewables, carbon capture and storage, hydrogen…)
Investment in VC or Growth companies

Nature-based solutions with positive contributions to the protection and restoration of biodiversity

Impact-driven investments contributing to the UN SDGs

FOSTER CLIENT ENGAGEMENT AND SUPPORT TRANSITION STRATEGIES

To ensure that our clients' transition strategies are coherent with our own sectoral pathways, we engage with them.

Through client engagement, we:

- Better understand and exchange with our clients on their climate transition strategies;
- Feed our assessment of clients' climate-related risks and impacts and understand how clients mitigate them;
- Structure and propose adequate and innovative financing, advisory and partnership solutions for clients' transformations.

Client engagement is even more important in a context where risk and business profiles of corporates are evolving rapidly.
It requires co-construction with clients, expertise, continuous training, and high involvement of our teams to identify key risk drivers and opportunities.

To foster client engagement, we capitalize on our internal expertise, put collective intelligence into motion and partner with transition and impact specialists to deliver a constructive dialogue, adapted to each client specifics.

We need to have top skills and tools to be the most relevant partners to our clients. Various levers are made available to senior bankers and relationship managers to grow their expertise and understand both the transformation challenges of the sectors they cover and the specific risks and opportunities for their clients:

- **Sectoral dynamics and challenges:**
  - **Sectorial packs:** material and online presentations explaining the main ESG trends of each sector and how the market may be driven due to ESG constraints or opportunities. They have been co-constructed by relationship managers and ESG experts;
  - **Specific presentations on decarbonisation challenges and levers sector by sector;**
  - **The Industry Climate Vulnerability Indicator (ICVI),** developed by the Economic and Sector Studies Department, a risk tool enabling bankers to understand the level of transition risks of a specific industry;
  - **Webcast conferences called "Business hours"** where sectoral experts from businesses are confronting their views on sector's challenges and opportunities linked to transition. Aviation, Shipping, Automotive, etc. each sector has been scrutinized, and outlooks from experts shared with the staff;
  - **The Climate Energy Club:** a club with more than 700 members where analysis on the economic impact of climate and environmental issues on sectors and countries are shared through notes and conferences (an average of 180 participants per meeting). Topics include the financial needs for the EU, the US 2050 net zero transition and the IPCC report.
- **Client' Sustainability profile and strategy:**
  - **The Corporate Climate Vulnerability Indicator (CCVI)**, developed by the Economic and Sector Studies Department, enables bankers to understand the level of transition risk of corporate clients;
  - **The environmental and social analysis of corporates clients** enables bankers to understand clients' main environmental and social impacts and how they mitigate them. This analysis also includes the alignment status of clients with our sectoral policies, leading to specific client discussions;
  - **The Transition Opportunities Potential ("TOP") tool developed to assess clients' climate transition strategies.** The tool is adapted to each sector specifics and based on a transparent methodology. It helps senior bankers and relationship managers to structure and strengthen strategic discussions with clients and better support their transition strategies with adequate, innovative or sustainability-linked solutions.

To foster open dialogue and experience sharing, we organise each year an international and broadcasted event: the **Positive Impact Week** embarking renowned guests and Societe Generale's experts in insightful discussions on transition.

OUR FLAGSHIP EVENT: THE POSITIVE IMPACT WEEK

For 8 years, Societe Generale has been holding an annual **Positive Impact Week** conference that gathers a large community of professionals, industry leaders and decision makers, coming together to delve deep into actionable ideas to accelerate the transition.

This annual event aims to share insight gain valuable insights from renowned experts, and from industry leaders who are fostering positive change and enabling a faster transition.

The 2023 edition is taking place on 27-28 November, online and in-person across selected locations, with more than **80 speakers,** mostly C-suite guests and international experts, discussing with Societe Generale specialists and top executives.

This year's programme is focused on **the deep transformation of industries, sectors, value chains, and investment** to not only facilitate the transition, but also to speed it up.

It covers a large spectrum of the transition: business transformation, electric mobility, critical minerals, circular economy, sustainable agriculture, aviation, emerging leaders, just transition and much more…

Almost **650 clients** attended the **2022 edition** listening to more than **100 speakers** across **48 sessions** and **14 locations.**

METHODOLOGIES AND SCENARIOS SUPPORTING SOCIETE GENERALE TARGET SETTING

MICHALA MARCUSSEN
GROUP CHIEF ECONOMIST AND HEAD OF ECONOMIC AND SECTOR STUDIES

"More than just informing targets, scenarios help us work with our clients to set in motion tangible actions on the road to net zero"

Societe Generale's major steps in fighting climate change

Since 2018, we have contributed to the development of the PACTA methodology[(1)] and collaborated with BBVA, BNP Paribas, ING and Standard Chartered (also known as the Katowice Banks) and the 2° Investing Initiative[(1)] (2DII) to make the PACTA methodology applicable to banking portfolios, providing recommendations for improving the methodology.

Societe Generale joined NZBA in 2021 as founding member. The Net-Zero Banking Alliance (NZBA) and its members are committed to align the banking sector with the Paris Agreement climate goals. These goals include the strengthening of the global response to the threat of climate change by pursuing efforts to limit the temperature increase to 1.5°C. The financial flows would play a key role.

The Group has developed a strategic approach to climate change based on three pillars: addressing risks induced by climate change, managing the impact of its activities on climate and supporting clients in their environmental transition, notably by developing financial and advisory solutions aligned to this objective.

The Net Zero concept and the temperature objective

Carbon Neutrality, or Net Zero, is defined at global level as a balance between emissions and removals. According to the IPCC, 'Net zero carbon dioxide (CO_2) emissions are achieved when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period.'

The Paris Agreement introduces the link between a temperature objective and the Carbon Neutrality target: *'in order to achieve the long-term temperature goal [well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C], […] so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century'.*

As a result, Carbon Neutrality is the point in time where emissions and removals are in balance at global level, whereas the temperature increase depends on cumulative emissions, over time.

The objective, as part of the Net-Zero Banking Alliance, is to combine a Carbon Neutrality goal for CO_2 emissions at global level, consistent with a maximum temperature rise of 1.5°C above pre-industrial levels by 2100.

Climate scenarios are required to implement these objectives

Performing an exercise of forward-looking target setting requires a projection into decarbonisation pathways laid out in temperature scenarios. These scenarios provide insights of the potential impacts of different policy choices and technological developments on energy systems and greenhouse gas emissions while respecting global carbon budgets. Their aim is to indicate potential pathways for transforming the global energy system to mitigate climate change and achieve sustainable, low-carbon economies.

The IEA Net Zero Emissions Scenario by 2050 stands out as a reference scenario to these ends

The IEA Net Zero Emissions (NZE) by 2050 Scenario outlines a pathway to achieve global net-zero greenhouse gas emissions by 2050. This scenario is an energy model, as the energy sector is a major contributor to global greenhouse gas emissions across all sectors of the economy. The IEA Net Zero Emissions by 2050 Scenario outlines one possible pathway detailing the actions and timelines that could be engaged by different sectors and stakeholders and that would achieve global net-zero CO_2 emissions from energy combustion and industrial processes by 2050. It also considers other energy-related sustainable development goals, such as energy access for all, or air pollution.

The IEA NZ Emissions by 2050 Scenario respects a carbon budget (or cumulative future emissions) associated with a temperature increase limited to 1.5°C by 2100, with a 50% probability and makes it one of the most prominent scenarios to use as part of an alignment methodology used to set and monitor specific targets.

Yet, in some instances, the IEA NZE scenario lacks granularity which is key when setting targets and trying to translate those targets into concrete actions.

Other sector-specific and reliable scenarios exist and are more relevant for target setting.

The targets are being set using the most relevant scenario depending on the sector.

Societe Generale is influenced by the most robust frameworks for carbon accounting, targets setting, alignment methodologies and disclosure

PACTA · TCFD · GFANZ · GREENHOUSE GAS PROTOCOL · SCIENCE BASED TARGETS · CDP · PCAF

(1) PACTA (Paris Agreement Capital Transition Assessment) is a methodology developed by the 2° Investing Initiative (2DII) to help investors analyse the extent to which corporate capital expenditures and industrial assets behind financial instruments and portfolios in emissions-intensive industries are aligned with various climate scenarios.

REDUCING THE GHG EMISSIONS FROM OUR OWN OPERATIONS

Our objective is to reduce our internal carbon footprint by 50% between 2019 and 2030

We have been working on steering the GHG emissions linked to our own operations since 2014. In 2021, we went one step further and announced our objective to **reduce our internal carbon footprint by 50% between 2019 and 2030.**

At the end of 2022, the Group had reduced its direct carbon footprint by 35% compared to 2019, in line with this target.

Led by the Chief Operating Office and the Sustainable Development Department, a multi year programme is rolled out within and by the whole Group to identify and implement reduction levers, mainly on:

- **Air travel** and **car fleet** by reducing the frequency of business travel (travelling less) and using cleaner solutions (travelling better) such as an electric car fleet or carefully selected travel options.
- **IT systems:** we keep a very sharp eye on our IT carbon footprint and have a special programme in place to reduce it.
- **Real estate:** by using more renewable energies, coupled with a reduction in energy use thanks to energy-saving measures and optimisation of our building surfaces in connection with changes in ways of working.

Our employees are actors of our decarbonisation

Alongside the close monitoring of our internal carbon footprint and the follow-up of clear action plans to reduce it, we are encouraging employees to take actions using different approaches.

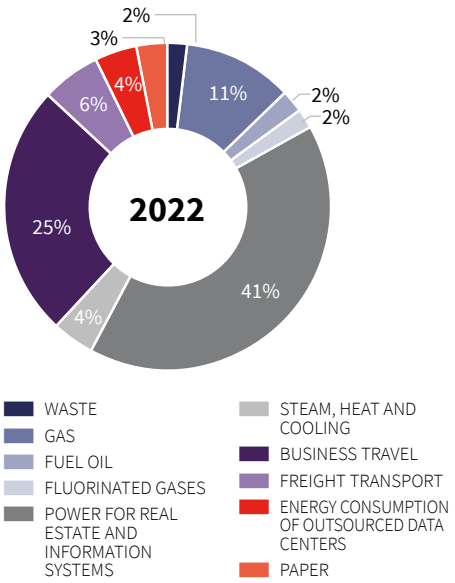
For the last 10 years, we host an **Environment & Energy Efficiency Awards,** which encourages our employees to come up with innovative environmental initiatives, awarding the best of them grants funded by the Group's internal carbon tax. These grants are spent on initiatives that have not only reduced the Group's environmental impact but also generated financial savings. In taxing our entities' carbon emissions (at EUR 25/tCO_2e since 2022), we hope to encourage greener habits and efforts to make our buildings more efficient, stimulate low-carbon investment, identify and seize low-carbon opportunities and reduce the environmental impact of our sourcing. The 2022 awards recognised initiatives representing efficiency gains for the Group of EUR 1 million and saving 4,300 tons of CO_2. Since its creation, it is more than 50 thousands tons that have been avoided thanks to almost 1 thousand initiatives coming from more than 20 countries.

Societe Generale has been engaging with its employees and stakeholders about Green IT for a number of years. Following on from its signature of the Sustainable IT Charter and a series of masterclasses run by experts in the field, it has now turned to gaming as a way of communicating on sustainable IT and helping the Group towards its goal of a 50% reduction in its digital carbon footprint by 2025.

Developers are invited to take part in the **International Green Circle challenge:** a serious game developed by Societe Generale together with CodinGame. The idea behind the game is to get participants thinking about how they can adapt the way they code to reduce their environmental impact. Some 7,300 people representing around a hundred different nationalities took part, with the final leaderboard featuring 61 company teams and 67 university teams.

In 2023, we have launched **a large awareness campaign** on eco-actions and how the Group is acting in reducing its own carbon footprint so our employees can understand what the Group is doing and how they can also act.

BREAKDOWN OF THE GROUP'S DIRECT CO_2 EMISSIONS IN 2022



	Unit	2019 Location-based	2022 Location-based
Overall Group carbon footprint	tCO_2e	257,353	167,998
Carbon footprint per occupant	tCO_2e/occ.	2.11	1.43
Scope 1	tCO_2e	26,824	24,777
Scope 2	tCO_2e	113,792	75,743
Scope 3	tCO_2e	116,737	67,478

Scope 1 covers direct emissions related to energy consumption and fugitive emissions of fluorinated gases.

Scope 2 covers indirect emissions related to energy consumption (external electricity, steam and chilled water).

Scope 3 covers GHG emissions from all office paper consumption, business travel, waste, transport of goods and energy consumption of data centres hosted since 2017.

CLIMATE ALIGNMENT DASHBOARD: OVERVIEW OF TARGETS SET

ALIGNING OUR PORTFOLIOS AND ACTIVITIES WITH PATHWAYS CONSISTENT WITH A MAXIMUM TEMPERATURE RISE OF 1.5 °C

Prior to joining the Net-Zero Banking Alliance in April 2021, Societe Generale initiated the work of aligning its credit portfolios with the goals of the Paris Agreement and contributed to build (with other banks) the PACTA methodology which helps banks steer their lending portfolios.

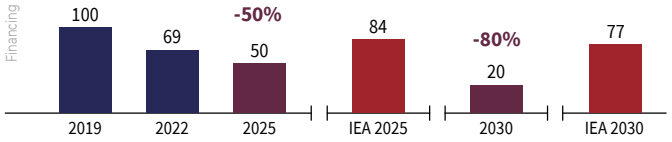
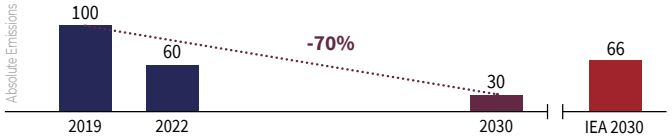
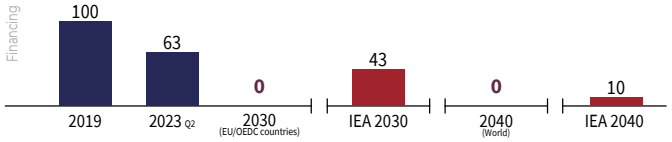
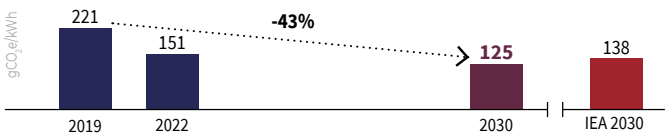
The PACTA methodology identifies "priority sectors" to align and within those sectors, it identifies the parts of the value chains (called "segments") to be addressed first:

- Oil & Gas: Upstream;
- Coal: Mining;
- Power: Generation;
- Automotive: Manufacturing;
- Steel: Manufacturing;
- Cement: Manufacturing;
- Shipping: Ship owners & operators;
- Aviation: Owners.

Societe Generale's alignment approach has focused on defining a strategy on the most emissive sectors following the PACTA methodology.

In 2021, NZBA generalized this way of aligning credit portfolios and confirmed which sectors to address (same sectors as the ones identified by PACTA, adding Real Estate and Agriculture).

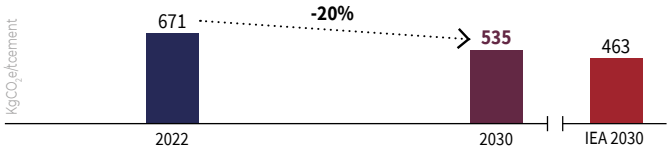
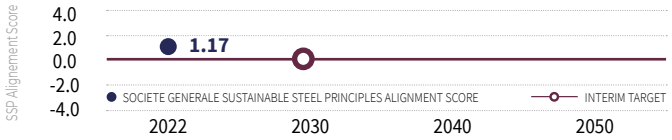
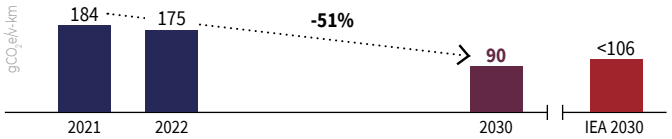
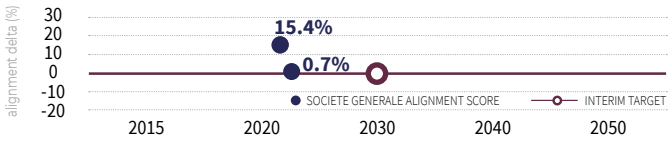
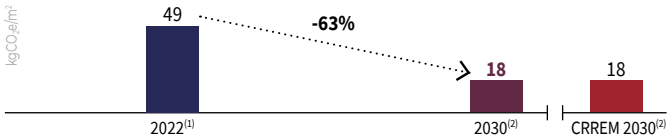
Societe Generale's alignment targets are presented in more detail in the following pages, sector by sector.

SECTOR & SCOPE	METRICS	EMISSIONS SCOPE	SCENARIO	BASELINE & TARGET
Oil & Gas UPSTREAM · MID AND DOWNSTREAM · TRADING	Financing	Upstream	IEA's NZE2050 scenario	
Oil & Gas UPSTREAM · MID AND DOWNSTREAM · TRADING	Absolute emissions in Mt CO_2e (index base 100)	Scope 1&2 + scope 3 upstream end-use	IEA's NZE2050 scenario	
Thermal Coal MINING · SEPARATION & PREPARATION · STORAGE · TRADE	Financing	Entire value chain	IEA's NZE2050 scenario	
Power GENERATION · TRANSFORMATION · TRANSMISSION · DISTRIBUTION	gCO_2e/kWh	Scope 1	IEA's NZE2050 scenario	

TARGETS ARE DISPLAYED IN PURPLE

CLIMATE ALIGNMENT DASHBOARD: OVERVIEW OF TARGETS SET

ALIGNING OUR PORTFOLIOS AND ACTIVITIES WITH PATHWAYS CONSISTENT WITH A MAXIMUM TEMPERATURE RISE OF 1.5 °C

SECTOR & SCOPE	METRICS	EMISSIONS SCOPE	SCENARIO	BASELINE & TARGET
Cement LIMESTONE QUARRYING → **MANUFACTURING** → CONCRETES → CONSTRUCTION INDUSTRY	$kgCO_2e/t$ cement	Scopes 1 & 2	IEA's NZE2050 scenario	
Steel IRON ORE MINING → **MANUFACTURING** → END PRODUCTS	SSP Alignment score	Scopes 1 & 2	IEA's NZE2050 scenario	
Automotive SUPPLIERS, CONTRACTORS → **CAR MANUFACTURING** → PARTS DISTRIBUTORS & DEALERSHIPS → WORKSHOPS	$gCO_2e/v\text{-}km$	Scope 3 end -use	IEA's NZE2050 scenario	
Shipping SUPPLIERS → SHIP MANUFACTURER → **SHIP OWNERS & OPERATORS**	Alignment delta	Scope 1	2018 IMO scenario	
Commercial Real Estate BUILDINGS MATERIALS AND CONSTRUCTION → **OPERATIONS** → END OF LIFE	$kgCO_2e/m^2$	Scope 1 & 2	CRREM v2.02	

TARGETS ARE DISPLAYED IN PURPLE

(1) 2022 baseline was estimated based on proxies applied to Societe Generale portfolio distribution by country and asset type. **(2)** *2030 target is reliant on portfolio mix and shall be adapted accordingly with the corresponding CRREM targets in case of change of the mix. Based on the current portfolio mix (asset type and country), it translates into a target of 18 $kgCO_2$ e/m^2.*

1. SECTOR DYNAMIC

Coal is the largest emitter of energy-related CO_2(*), accounting for 42% of emissions in 2022(1), and the largest source of electricity generation worldwide, accounting for 36% of global generation in 2022(2). Reaching the IEA's Net Zero objectives implies a drastic reduction in coal consumption by 2050.

Sector dynamics

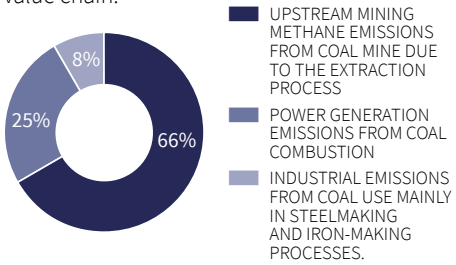
Coal supplied 36% of global electricity generation in 2022 (thermal coal) and plays a crucial role in iron and steel production industries (metallurgical coal).

The IEA's NZE scenario forecasts a sharp decrease in coal use, with a 44% reduction between 2022 and 2030 driven by the transition of power generation systems (increasing renewable power outputs) and an additional 85% reduction between 2030 and 2050 driven by low-carbon technology deployment in the industry and faster coal-to-power displacement(3)(4).

However, coal consumption increased in 2021 and 2022(5), due to strong demand for power generation in developing economies and the switch from gas to coal in the context of the global energy crisis.

Emission sources(5)(6)

CO_2 emissions are spread across the coal value chain:

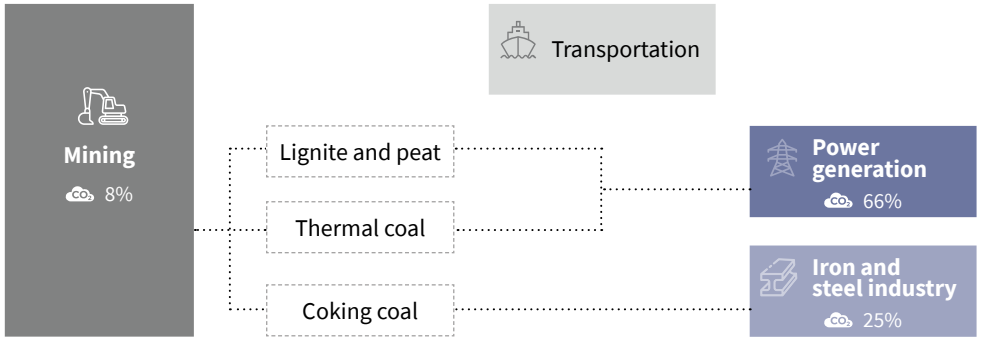


Decarbonisation levers(7)

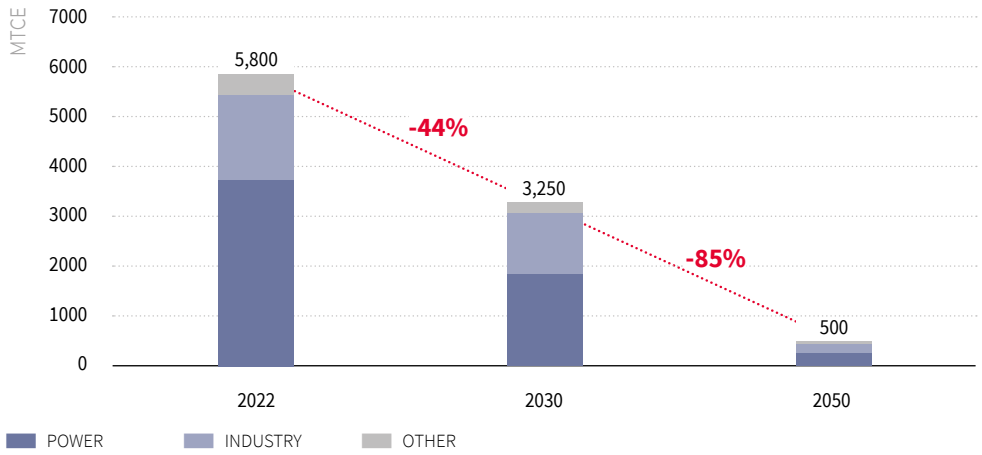
Closure and exit: power generation emissions can be reduced by using mature low-carbon alternatives(**), and gradually displacing baseload coal-fired power plants. According to the IEA's NZE scenario, coal demand for power generation could be reduced by 92% between 2022 and 2050. However, this incurs multiple socio-economic challenges for coal-dependent economies. As there are limited alternatives to coal in iron and steel processes for the moment, coal demand from the industry is forecast to fall from 2030 onwards, when less mature technologies are scaled in the industrial processes of the steel and iron industries. Thermal coal demand will thus decrease by 50% by 2030 while metallurgical coal demand will decrease by 30% in IEA's NZE scenario.

CCUS: the IEA estimates that half of coal mine methane emissions could be abated with existing technologies. On-site capture and use of methane via degasification or ventilation systems could additionally increase energy recovery for heat production or small-scale power generation. Residual emissions in the steel & iron industry can be addressed with CCUS technologies. However, the installation of CCUS units on coal-fired power plants can be challenged by comparison with low-carbon solutions in the power sector.

GLOBAL COAL EMISSIONS ALONG THE VALUE CHAIN (% OF TOTAL COAL EMISSIONS, 2021)



THERMAL AND METALLURGICAL COAL DEMAND BY SECTOR IN IEA'S NET ZERO SCENARIO(5)



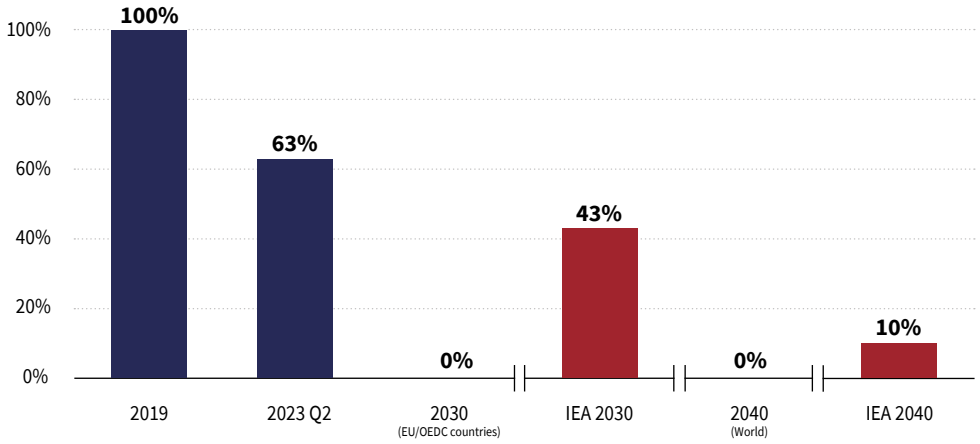
(1) IEA, CO_2 emissions in 2022. (2) IEA, Coal. (3) IEA, Net Zero by 2050. (4) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach. (5) IEA, Coal in Net Zero Transitions. (6) IEA, World Energy Outlook 2022. (7) IEA, Strategies to reduce emissions from coal supply. (*) Energy-related emissions refer to emissions from energy combustion and industrial processes. (**) Solar, Wind, Hydro…

2. TAKING ACTION TO PHASE OUT THERMAL COAL

Thermal coal policy

- Back in 2016, Societe Generale announced that it would not provide any new financing dedicated to coal mining or coal-fired power plant projects.
- In 2019, Societe Generale published a long-term objective to progressively reduce to zero its exposure to thermal coal in 2030 in EU or OECD countries and in 2040 elsewhere.
- In 2020, the Group published an updated thermal coal sector policy[1], detailing concrete actions taken to reach its long-term objective:
  - First, the Group began by disengaging from the most exposed companies (i.e. for which thermal coal accounts for more than 25% of revenue), which have not made commitments to exit the thermal coal sector. The Group has also strengthened the criteria for all other clients and prospects;
  - Second, from end of 2021, Societe Generale decided to stop providing new financial products and services to any company with mining or power thermal coal assets which is a thermal coal developing company or has not communicated a transition plan aligned with the 2030/2040 thermal coal phase out objectives of Societe Generale.
- For clients that have a transition plan and are still active in the sector, the Group has been engaging with them to ensure their exit from thermal coal is ongoing. The Group wants to accompany those clients who are diversifying into renewables energies (power companies) or the critical minerals in the energy transition (mining companies).

FINANCING TO THERMAL COAL (INDEX BASE 100)



(1) *Societe Generale, Thermal Coal sector policy.*

1. SECTOR DYNAMIC

The Oil & Gas sector accounts for more than 50% of energy-related GHG emissions[1]. 75% of these emissions are indirect emissions from the end use of oil and gas products, in such way that oil & gas companies should review their entire business strategy.

Sector dynamics[2][3][4][5]

The Oil & Gas (O&G) sector faces a strategic challenge as energy transition and economic development create a simultaneous need to supply both low-carbon and affordable energy. The IEA forecasts two phases in oil and gas production evolution:

- Before 2030: consumption increases, supported by strong energy demand of emerging economies and increasing; use for non-energy purposes (e.g. in the petrochemical industry)[6];
- After 2030: oil and gas production decreases as energy generation processes switch to renewable sources and high-cost projects close sometime before the end of their technical lifetimes, with remaining oil & gas demand being driven by their use for non-energy purposes and with CCUS.

Oil & gas companies face increasing transition risks: more competitive alternative low-carbon technologies, clients' preference and higher willingness to pay for low-carbon energies, growing political and regulatory pressure, and stricter climate-related expectations from investors and lenders. In the mid- to long-term, some O&G projects could become stranded assets. Anticipating the sector's transition is necessary for oil and gas companies and investors to reduce their risks and ensure a just transition for the workers and communities relying on these activities.

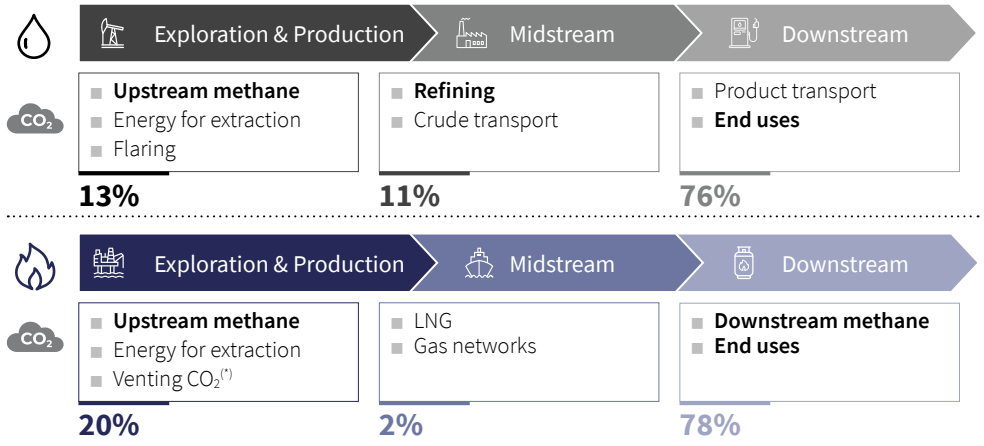
Facing those risks, O&G companies can leverage their know-how to seize energy transition opportunities in other sectors (e.g. power, transportation), and direct their fossil fuel production towards non-energy uses (e.g. petrochemical industry). In 2018, around 14% of oil production and 8% of gas production was used as petrochemical feedstock[8]. With economic development, demand for petrochemical products increases, creating a shift in refinery outputs from energy products such as gasoline and diesel towards petrochemical feedstock such as naphtha or ethane. IEA's NZE scenario forecasts an increase in petroleum feedstock production share in refineries from 20% in 2020 to almost 60% in 2050[2].

Emissions breakdown[2][8][10]

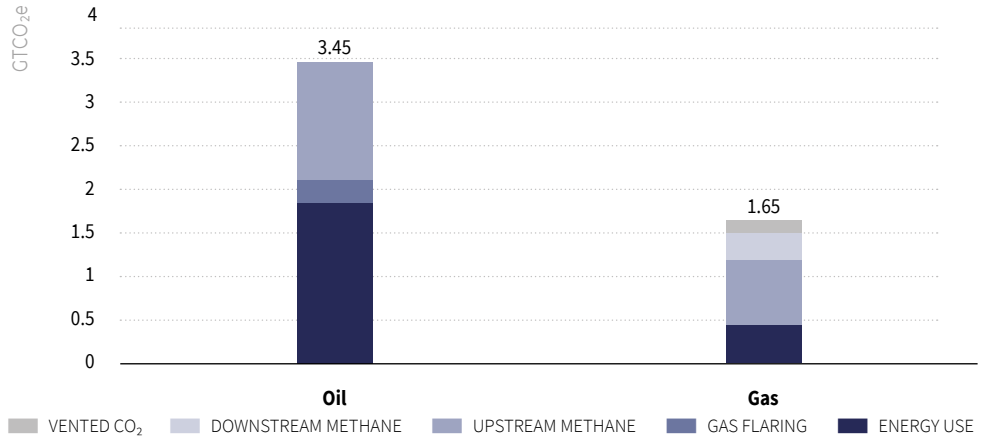
Around 75% of the oil and gas industry emissions come from end uses downstream of the value chain such as passenger cars, aviation and industry (scope 3 emissions).

The remaining 25% come from upstream exploration and production activities, industrial processes and logistics (scope 1 & 2 emissions). They are linked to methane emissions from production and transportation, flaring, operation of upstream facilities, and CO_2 emissions from gas liquefaction. Methane emissions from oil and gas operation accounted for 47% of total oil and gas operations' emissions in 2022[5].

DISTRIBUTION OF GHG EMISSIONS ALONG THE OIL & GAS VALUE CHAINS[5]



SPECTRUM OF GLOBAL SCOPE 1 AND 2 EMISSIONS FROM OIL & GAS OPERATIONS (2022)[10]



(1) IEA, Oil Report, 2023. (2) IEA, Net Zero by 2050 report. (3) IEA, World Energy Outlook, 2022. (4) UNEP, Sectoral risks for the Oil and Gas sector, 2023. (5) IEA, The Oil and Gas Industry in Energy Transitions, 2020. (6) S&P, Petrochemical Feedstocks, 2022. (7) IEA, CO_2 emissions in 2022. (8) IEA, World Energy Outlook, 2018. (9) IPCC guidelines for GHG inventories, 2019. (10) IEA, Emissions from oil and gas operations in Net Zero Transitions, 2023. (*) Venting CO_2: CO_2 removed from gas to avoid its solidification during gas liquefaction.

1. SECTOR DYNAMIC

The transition of oil & gas companies will mostly be related to their capacity to progressively switch from oil & gas to low-carbon energy-based business activities. Many of them have potential synergies to leverage to diversify their activities.

Decarbonisation levers[1][2][3]

Oil & gas companies can act on different levers:

Energy efficiency: direct GHG emissions (scope 1 & 2) can be reduced through specific actions:

- Tackling methane emissions and stopping routine gas flaring;
- Implementing energy efficiency measures for oil & gas extraction, refining and logistics.

Diversification: the reduction of their scope 3 emissions (larger scope) will mean the development of low-carbon energy/power products and solutions to their final clients.

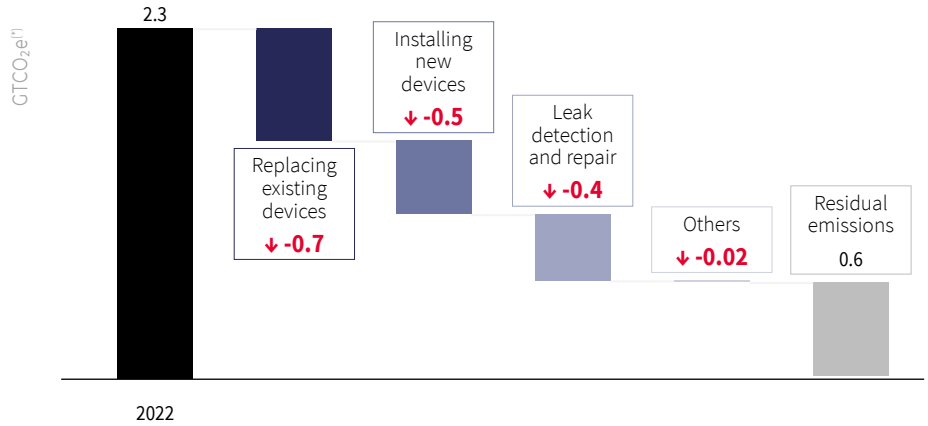
- Renewable fuels like biofuels, biogas and low-carbon hydrogen to address the low-carbon energy needs of their clients.
- Diversification across the power value chain to seize the electrification megatrend. It involves the development of both large-scale power assets (on/offshore wind, solar) and distributed power generation.
- Some companies have started to work on carbon capture technologies, leveraging their industrial know-how and financial capabilities.

Oil & gas companies can participate in the energy transition, leveraging their energy market expertise, existing client portfolio and financial capacity to develop low-carbon energies and carbon/energy services offers for their end clients[4].

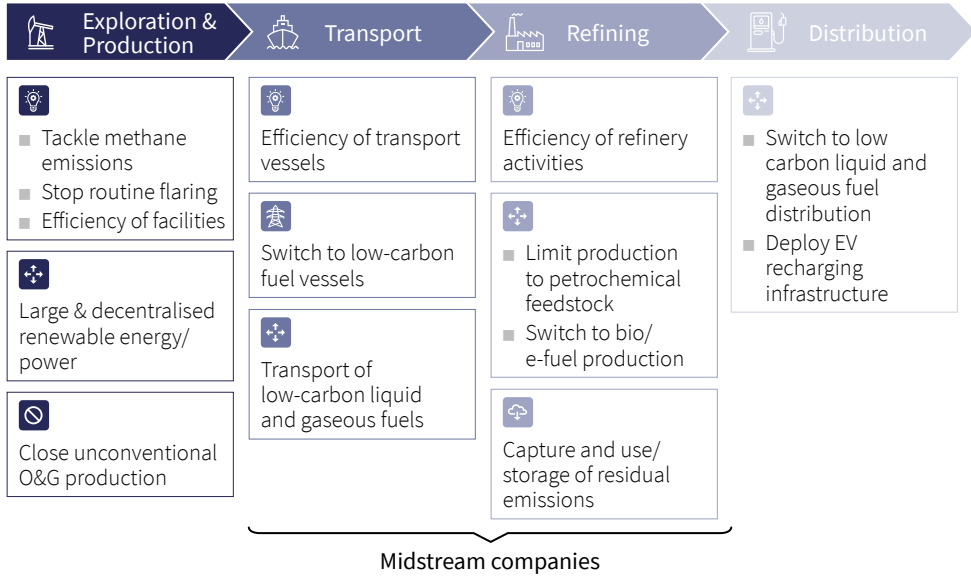
Along the oil & gas value chain, companies have specific decarbonisation levers and synergies they can leverage to reduce their scope 3 emissions:

- Upstream exploration and production companies possess infrastructure and engineering capabilities to develop offshore wind power generation capacity;
- Midstream and distribution companies can leverage their transport infrastructure to distribute low-carbon liquid and gaseous fuels such as biomethane and hydrogen;
- Refining companies can use biofeedstock and waste to produce biofuels and petrochemical products. They can also take energy efficiency measures to reduce their operational emissions and potentially integrate CCUS capacities to tackle residual emissions.

GLOBAL METHANE EMISSIONS AND POTENTIAL SAVINGS BY OPERATIONS



DECARBONISATION LEVERS FOR OIL & GAS COMPANIES ALONG THE VALUE CHAIN



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(1) *IEA, Net Zero by 2050 report.* ***(2)*** *IEA, World Energy Outlook, 2022.* ***(3)*** *IEA, World Energy Outlook, 2018.*
(4) *IEA, The Oil and Gas Industry in Energy Transitions, 2020.* ***(5)*** *IPCC guidelines for GHG inventories, 2019.*
(6) *IEA, Marginal abatement cost curve for Oil and Gas-related methane emissions.*
(7) *IEA, Methane emissions from Oil & Gas operations.* ***(*)*** *Global Warming potential (100-year horizon) = 29.8 taken from the IPCC Sixth Assessment Report.*

2. ALIGNING OIL & GAS ABSOLUTE EMISSIONS

The O&G production is expected to reduce in an NZE economy; using an intensity metric for aligning our portfolio can be misleading as it can improve while actual emissions will rise as O&G production increases. Using an absolute metric (scope 1, 2 and 3 end-use) on the other hand, provides a clear ambition to reduce the total carbon output on the entire value chain.

Scope

BOUNDARY

Upstream, midstream and downstream O&G companies

Upstream refers to exploration, development and production. Midstream activities relate to transport, storage, liquefaction and export terminals of oil, natural gas or LNG. Downstream generally consists in the refining and distribution activity.

EMISSIONS

Scope 1 – CO_2e for Upstream, Midstream and downstream.
Scope 2 – CO_2e for Upstream, Midstream and downstream.
Scope 3 – CO_2e for Upstream.

FINANCING ACTIVITIES

All loan-related products are included General. Purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

PCAF

SCENARIO

IEA Net Zero by 2050

METRICS

Absolute emission metric: tCO_2e

$$\textit{Scope 1 emission } (tCO_2e) + \textit{Scope 2 emissions } (tCO_2e) + (tCO_2e)$$

$$\textit{Scope x portfolio emissions } (tCO_2e) = \sum_{Compagny} \left(\textit{Compagny emissions } (tCO_2e) \times \frac{\textit{Bank financing } (€)}{\textit{EVIC or Compagny debt + equity } (€)} \right)$$

KEY ASSUMPTIONS AND LIMITATIONS

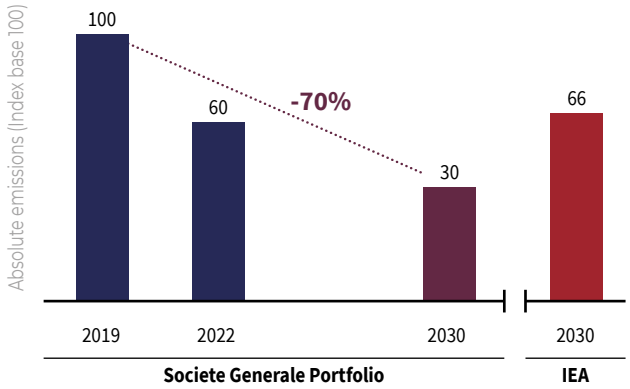
Inconsistency of data availability of Methane (CH_4) emissions within operational scopes.

Target & Progress

BASELINE & TARGET (INDEX BASE 100)

Absolute Emissions (Index base 100)	2019 Q4	2030	% reduction
Societe Generale Portfolio	100	30	70%

PROGRESS



DATA PROVIDERS

IEA World Energy Outlook, S&P IHS Markit

3. DECREASING EXPOSURE ON UPSTREAM OIL & GAS

The amount of financing granted to one sector remains the easiest metric to understand. To tackle quickly and effectively the O&G sector, we decided to gradually reduce the exposure on the sector, with an intermediary milestone in 2025, showing we are acting now, irrespective of the energy source (oil or gas).

Scope

BOUNDARY

Oil & gas Producers (Upstream)

EMISSIONS

N.A.

FINANCING ACTIVITIES

All loan-related products are included General purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

PACTA methodology for Banks

SCENARIO

IEA Net Zero by 2050

METRICS

Exposure

KEY ASSUMPTIONS AND LIMITATIONS

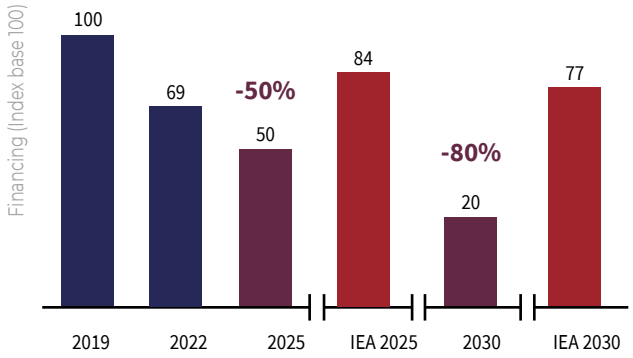
Floating Production Storage and Offloading (FPSOs) are out of scope since they have marginal influence over investment decisions to exploit new resources or pursue new strategic options.

Target & Progress

BASELINE & TARGET (INDEX BASE 100)

Financing (Index base 100)	2019	2025	2030
Societe Generale Portfolio	100	50	20

PROGRESS (INDEX BASE 100)



DATA PROVIDERS

Company reporting

4. TAKING ACTION TO SHIFT

Clients and assets

- Since 2018, Societe Generale no longer finances the production of oil from oil sands and any type of oil production in the Arctic
- In 2020, Societe Generale was one of the first global banks to commit to a short-term objective of reducing its exposure to upstream oil & gas by 20% by 2025, which was achieved in advance.
- In 2023, the Group reinforced its ambition by announcing a new objective of **reduction of its upstream oil & gas exposure by 80% by 2030 and announced concrete and immediate actions:**
  - Stop providing financial products and services dedicated to upstream Oil & Gas greenfield projects;
  - Phase-out its exposure on upstream Oil & Gas private pure players;
  - Reinforced climate strategy assessment and engagement with clients with upstream activities;
  - Systematic attention on methane emissions reduction target and routine flaring elimination for companies active in upstream.
- **The Group developed a corporate transition assessment tool for the oil & gas sector.** This assessment includes a client's carbon footprint, climate commitments, diversification of activities, the level of investments devoted to activities in support of the energy transition and the governance put in place to implement climate ambition. This tool helps bankers to have a **constructive dialogue with oil & gas clients around their decarbonisation and diversification plans.** The Group wants to accompany the most advanced players from the sector who will be key in new energy sources, such as hydrogen and renewable energies, low carbon mobility, and CCUS.

Industry and peers

- Societe Generale joined the Hydrogen Council, which brings together more than 120 member companies from across the various industrial and energy sectors involved in the hydrogen value chain: energy, oil and gas, chemicals, commodities, metals and mining, equipment manufacturers, cars and trucks, and other forms of transport (air, rail, shipping). Societe Generale intends to play an active role developing its clients through financial and advisory support.
- Societe Generale is part of the NZBA oil & gas working group.

OLIVIER MUSSET
GLOBAL HEAD
OF ENERGY

"The Energy Group at Societe Generale is committed to reaching carbon neutrality vis-a-vis the indirect emissions of our oil & gas credit portfolio by 2050. We are well on track with achieving the ambitious intermediary targets we put in place for reducing our indirect carbon footprint and will continue accompanying our oil & gas clients in helping them transition to a low carbon economy."

Flagship deals

Societe Generale supports the decarbonisation and diversification of its clients in advanced economies and emerging countries through advisory and financing solutions.

Societe Generale is acting as exclusive financial advisor the **Northern Endurance Partnership** that will use innovative carbon capture technology and subsea CO_2 storage to power the UK's first zero-carbon industrial cluster. The Northern Endurance Partnership is a collaboration amongst three international energy companies – **bp, Equinor** and **Total Energies**.

Societe Generale advised and arranged financing for the development of the Rangebank Battery Energy Storage System project. This 200 MW/400 MWh battery energy storage system will be built by **Shell Energy Australia** and **Eku Energy** to provide enough storage capacity to power 80,000 homes for an hour during peak periods.

Societe Generale also supports emerging leaders in developing alternative solutions to fossil fuels.

Societe Generale was mandated to provide advisory services for the development and financing of pioneering e-fuels installations for **HIF Global in Chile**, Uruguay and the United States.

1. SECTOR DYNAMIC

Power generation accounts for 42% of energy-related global CO_2 emissions[1]. With electrification a major decarbonisation lever for multiple energy-intensive sectors, the decarbonisation of power generation and the transformation of power systems are crucial to meet net-zero objectives.

Sector dynamics

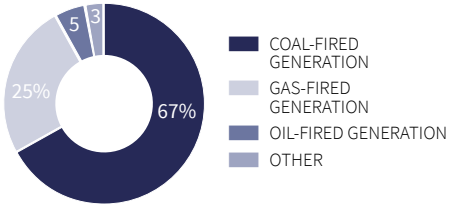
Electrification is undoubtedly a major trend in the energy transition. It will gradually become the backbone of our energy systems, as it is a powerful lever for decarbonisation in all sectors (transport, building and industry). The IEA's NZE scenario forecasts global electricity generation to increase two-and-a-half-times from 2022 to 2050[2], driven by several factors:

- Population and economic growth;
- Electrification of end uses especially in the industry (e.g. use of electric arc furnaces for steel manufacturing), and transport (EVs);
- Expansion of hydrogen production via electrolysis (renewable power + water).

This increase in power consumption includes energy efficiency improvements, limiting the final energy consumption to 53% of what it would be without energy efficiency measures in 2050[3].

Emissions breakdown[5][6][7]

In 2022, electricity generation accounted for 42% of energy-related emissions, among which:



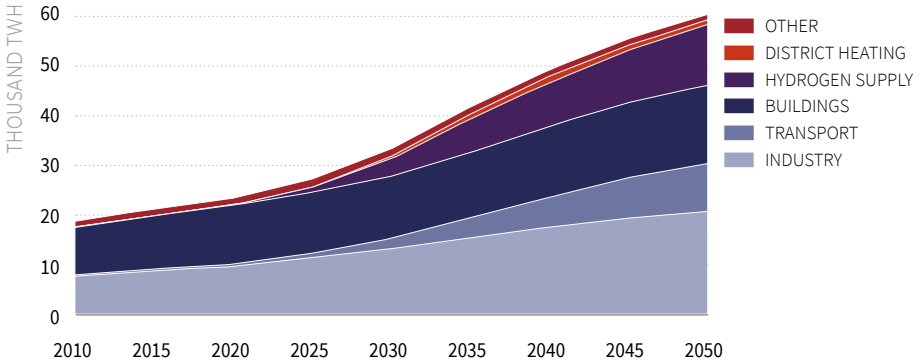
Emissions from the power sector have increased between 2020 and 2022 due to power demand rise in developing countries and gas-to-coal switching. However, the emission intensity of electricity decreased by 6% between 2000 and 2022. Also, wind and solar generation growth met 80% of global electricity demand growth in 2022. EMBER, an energy think tank, projects clean power generation growth to exceed demand growth in 2023, resulting in a fall in fossil generation, with new production capacity being used for peak production, and a decrease in global power generation emissions.

Decarbonisation levers

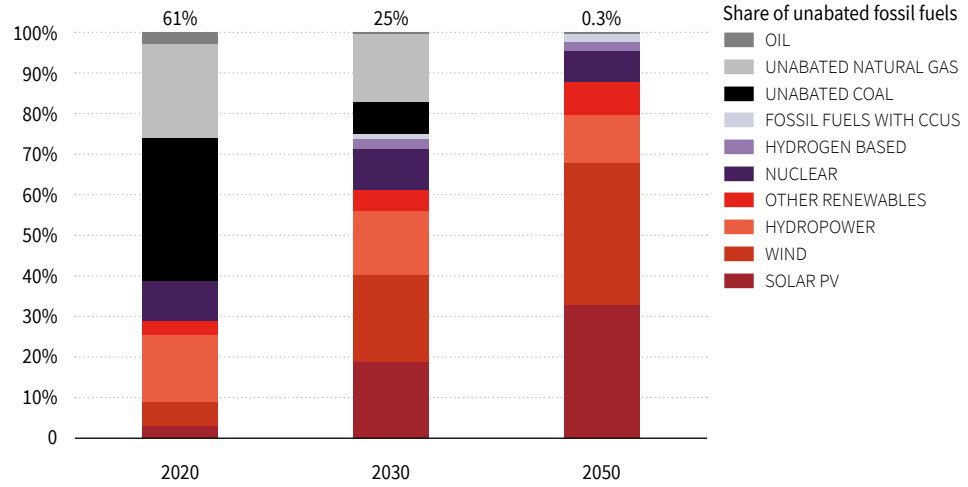
Wind and Solar generation: wind and solar share in global electricity production increased by 2% in 2022, reaching 12% of global production[5]. IEA's NZE scenario forecasts electricity production from wind and solar technologies around 70% of global production in 2050[3]. These renewables offer low-cost electricity production alternatives. Therefore, they benefit from broad political support and strong momentum in the installation of renewable capacity (+9% per year between 2015 and 2022)[7][8].

Low carbon generation and infrastructure development: IEA's NZE scenario relies on additional production capacities from nuclear and hydropower, as well as storage capacity development and infrastructure modernisation to support the electrification of end uses and related electricity demand growth while ensuring grid stability and flexibility[9].

ELECTRICITY DEMAND BY SECTOR IN IEA'S NZE SCENARIO



DISTRIBUTION OF POWER GENERATION TECHNOLOGIES IN GLOBAL PRODUCTION IN IEA'S NZE SCENARIO (%)



(1) IEA, CO_2 emissions in 2022. (2) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach. (3) IEA, Net Zero by 2050. (4) EMBER, Global Electricity Review, 2023. (5) EMBER, Electricity Data Explorer. (6) Our World in Data, Global CO_2 emissions. (7) IEA, World Energy Outlook, 2022. (8) IRENA, Renewable Energy Capacity Statistics, 2023. (9) IEA, Tracking clean energy progress, 2023.

1. SECTOR DYNAMIC

The decarbonisation of the power generation mix poses multiple challenges, including the intermittency of renewable power generation and the availability of critical minerals necessary to the scale up of low-carbon technologies.

Challenges

Electricity is a major pillar in IEA's NZE scenario, and decarbonising the power sector is necessary to significantly reduce emissions. This relies principally on the displacement of fossil fuel power generation and low-carbon generation, mostly renewable, in parallel to addressing the strong demand growth for electricity[1].

However, the deployment of low-carbon power generation capacities comes with challenges:

- The intermittency of renewables, with impact on energy security and power grid balance;
- The development of supply chains for renewable power generation technologies.

This increase in power consumption includes energy efficiency improvements, limiting the final energy consumption to 53% of what it would be without energy efficiency measures in 2050[3].

Renewable intermittency: diversification of the power mix, with network and interconnection development the main lever of electricity security and grid stability in a fast-growing renewable electricity mix. To address electricity demand growth and align with the IEA's NZE scenario, annual investment in power grids must double by 2030 to reach over USD 700 bn[2].

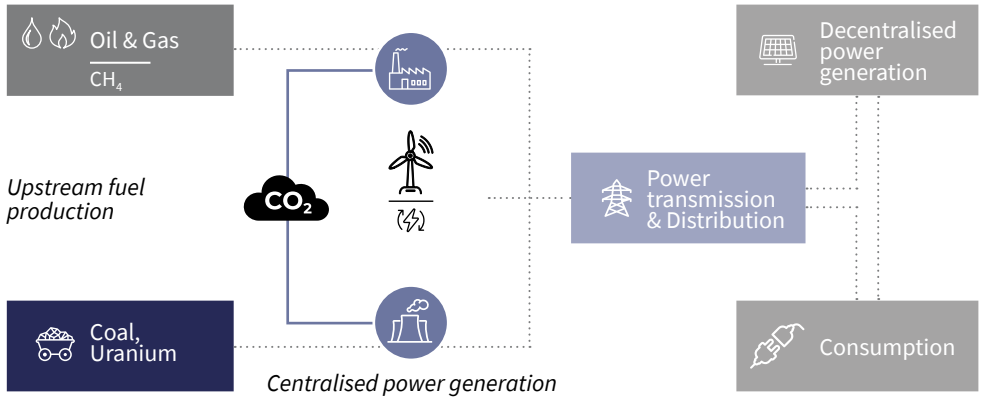
The IEA's NZE scenario identifies two additional levers to reduce disruption risks to the power system and grid unbalance:

- Pairing renewable power generation assets with short – and long-term stationary storage systems (battery, hydropower/ hydrogen). Battery systems must be scaled up to align with the massive deployment of renewables and electrification in the NZE scenario;
- Supporting behavioural change and demand side response to smooth peaks in electricity demand. Public policies must be adapted to enable the introduction of such measures.

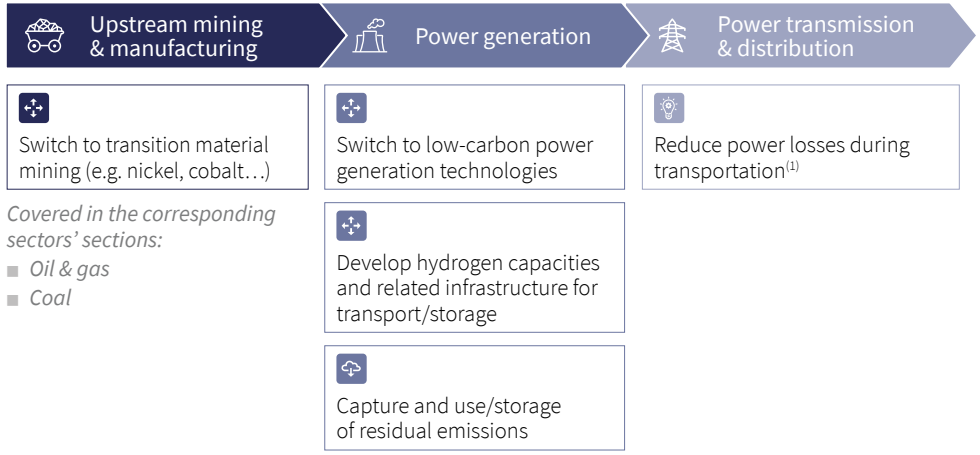
Supply chain development: the growth of low-carbon power generation technologies will put a strain on the entire supply chain, with knock-on effects up to the extraction of raw materials (e.g. copper), limited access to their reserves, and competition among end uses (e.g. electric mobility). This will create challenges for the energy transition[3].

The concentration of equipment manufacturing (e.g. solar modules) amid growing geopolitical tension increases the risk of supply chain disruption. Upstream suppliers and power generation companies are expected to support the development of sustainable and reliable supply chains for low-carbon generation equipment to ensure the continuous growth encompasses IEA's NZE scenario[4].

POWER SECTOR VALUE CHAIN AND EMISSIONS MATERIALITY



DECARBONISATION LEVERS FOR POWER COMPANIES ALONG THE VALUE CHAIN



The power transmission and distribution segment is not responsible for high quantities of emissions. Its players can act on reducing power demand by optimising their activities and limiting losses.

(1) *IEA, Net Zero by 2050.* ***(2)*** *IEA, Tracking clean energy progress, 2023.* ***(3)*** *IEA, Mineral requirements for clean energy transition, 2021.* ***(4)*** *IEA, Special report on Solar PV global supply chain, 2022.*

2. ALIGNING POWER

As power generation is expected to grow while shifting from fossil fuel generation to low-carbon sources, a target in intensity has been set to accompany the decarbonisation of this sector.

Scope

BOUNDARY

The scope of this portfolio focuses on counterparties active in the power generation segment as it represents most emissions within the power sector. The list is based on sectoral classification and internal knowledge.

EMISSIONS

The indicator covers Scope 1 and 2 GHG emissions, resulting from 1) the combustion of fossil fuels to produce electricity and 2) the purchase of electricity, heat and cold for the counterparty's own needs. Scope 3 emissions are not included as they are minimal in the overall power generation lifecycle.

FINANCING ACTIVITIES

All loan-related products are included. General purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

PACTA methodology for Banks

SCENARIO

IEA Net Zero by 2050

METRICS

The indicator is based on an emissions intensity metric which allows to monitor GHG emissions per unit of electricity generated expressed in gCO_2e/kWh.

$$\frac{\textit{Scope 1 \& Scope 2 emissions } (gCO_2e)}{\textit{Power production (kWh)}}$$

KEY ASSUMPTIONS AND LIMITATIONS

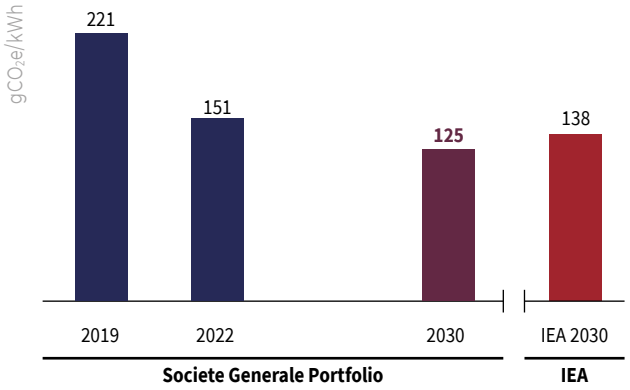
Model focused on three most CO_2 emitting technologies: Coal, Oil and Gas. Renewable energies and nuclear are considered as Zero-CO_2 emitters.

Target & Progress

BASELINE & TARGET

gCO_2e/kWh	2019	2030	% reduction
Societe Generale Portfolio	221	125	43%
IEA NZE 2050	468	138	71%

PROGRESS



DATA PROVIDERS

IEA World Energy Outlook, S&P IHS Markit

3. TAKING ACTION TO SHIFT

Clients and assets

- Back in 2016, Societe Generale announced that it would not provide any new financing dedicated to coal-fired power plant projects.
- In 2019, Societe Generale published a long-term objective to progressively reduce to zero its exposure to thermal coal power in 2030 in EU or OECD countries and in 2040 elsewhere.
- Under **"the Shift"** initiative, bankers from different business lines and geographies have been working together to:
  - Build further expertise on renewables (onshore, offshore, floating), hydrogen, storage, transmission and distribution networks, small scale power assets and decentralizsed energy;
  - Identify the **emerging leaders of tomorrow** that are developing new power technologies, biogas and biomethane, and providing innovative products or services or developing pipelines of clean energy projects;
- To support all energy transitions makers at each of their development stages, **Societe Generale has decided to launch a EUR 1 billion transition investment initiative which is two-fold:**
  - EUR 0.3 billion debt,
  - EUR 0.7 billion equity component

  for which investment focus is Energy Transition, nature-based solutions and impact driven investments.
- The Group is developing a corporate transition assessment tool (TOP) for the power sector, helping bankers have a constructive dialogue with clients around their decarbonisation and diversification plans.

Industry and peers

- Societe Generale is historically an **active member of French Wind Association, Syndicat des Energies Renouvelables and of the Hydrogen Council.**

JÉRÔME DEFLESSELLES
HEAD OF ENERGY BUSINESS INITIATIVES

"As energy bankers, our objective at Societe Generale is to support our clients as energy transition makers to help them grow and go through their own challenges.

Societe Generale has supported the energy transition early on and is recognised for its expertise and its continuous support of the sector.

2023 is another year of innovation with many initiatives that represent a strong testimony of Societe Generale's commitment to sustainable finance and the low carbon economy."

3. TAKING ACTION TO SHIFT

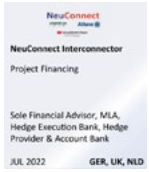
Flagship deals

Societe Generale supports the transition of the power sector along the value chain:

In 2022, Societe Generale US acted as Joint Lead Arranger and Hedge Provider for the financing of a **335 MW residential solar portfolio for the solar and storage developer Sunrun** (USD 600 million).

In August 2022, Societe Generale was the Mandated Lead Arranger & Hedge Provider for the **Ishikari Offshore wind** (112 MW) & **battery storage** (100 MW/180 MWhr) project in Japan developed by Pattern and Green Power.

Societe Generale acted as sole Financial Advisor, MLA, Sole Hedge Execution Bank, Hedge Provider and Account Bank in the financing to support the construction of the **NeuConnect Interconnector** between Germany and the UK. The project (EUR 2.8 billion investment) will have a triple impact supporting the energy transition, increasing competition among generators for the benefit of end consumers and strengthening security of supply across Germany and the UK.



Societe Generale acted as Green Loan Coordinator, Agent Mandated Lead Arranger and Lender for the EUR 133 million loan in coordination with **Senegal's Agence Nationale des Energies Renouvelables** for the **installation of 100,000 solar-powered streetlights across Senegal**. This transaction will foster renewable integration in Senegal's public services.

Societe Generale is making direct investments in funds supporting energy and ecological transition

- In 2023, participating in the last EUR 140 million private placement round, **Societe Generale became a strategic investor in EIT Inno Energy**. Through this strategic partnership, Societe Generale will support the development of InnoEnergy's current portfolio of 200 startups and support its strategy of large industrial actors by providing valuable access to its full range of financing and advisory services and to its own eco-system of clients and investors.
- In 2023, Societe Generale joined a consortium of multiple international investors such as the European Investment Bank and Proparco in the EUR 87.5 million closing of the **Afrigreen Debt Impact Fund**. Afrigreen will finance on-and off-grid solar power plants for small and medium-sized commercial and industrial consumers in Africa and help bridge the funding gap through direct lending and asset-based debt facilities for regional and international developers.

Lumo embarked in an ambitious scale-up

- **Lumo, a fully-owned subsidiary,** is an online crowdfunding platform which **has supported more than 200 energy transition projects in France** since its creation. The strategy has been widened in 2023 to **support any type of project having a Positive Impact**, be it energy transition, circular economy, smart mobility, etc.
- Lumo is providing sponsors with senior, mezzanine, convertible debt or with equity.
- Lumo will extend its activities **outside France in 2024**, thanks to a **European Agreement** which is expected to be reached before YE23.

Pack Solaire, a solution to facilitate solar panel installation relying on an ecosystem of key partners

In 2023, the French retail network of Societe Generale launched the **'Pack Solaire'.** This solution targets corporates, association and local authority clients to help them install solar panels. The bank has set up a diagnosis tool in partnership with NamR, a startup specialised in the analysis of building data and developed an expert network to realise detailed assessments of its clients' needs. Eventually Societe Generale facilitates the realisation of the works and operations by providing financing to the clients.

1. SECTOR DYNAMIC

The cement sector accounts for 7% of global anthropogenic CO_2 emissions, emission levels comparable to those of India[1]. The cement sector's direct carbon intensity should decrease from 0.58 tCO_2 per ton in 2022 to 0.47 tCO_2 per ton produced by 2030, in line with the IEA NZE scenario[2].

Sector dynamics

Cement is one of the main constituents of concrete, with a few substitutes.
With demand driven by urbanisation and infrastructure development (mainly in developing countries), cement demand is set to increase by 45% by 2050[3]. This makes it all the more important to decarbonise its production.

Emissions breakdown[3]

Cement is a hard-to-abate sector, with around 90% of the cement industry's emissions being direct, linked to the production of clinker.

- 50% – 60% of emissions are inextricably linked to cement manufacturing.
  The chemical reaction of limestone decomposition used to produce clinker, the main component of cement, results in the production of CO_2 during the process. These emissions are hard to abate as there is no viable alternative to the calcination of limestone for clinker production.
- 30% – 40% come from the combustion of fossil fuels to reach the temperature needed for this reaction to occur (> 1,400 °C).
- The remaining emissions come directly or indirectly from other activities including quarrying & transport, grinding & preparation of raw materials, cooling and mixing and construction.

Decarbonisation levers[1][2][4]

The IEA NZE scenario identified several decarbonisation levers for the cement sector:

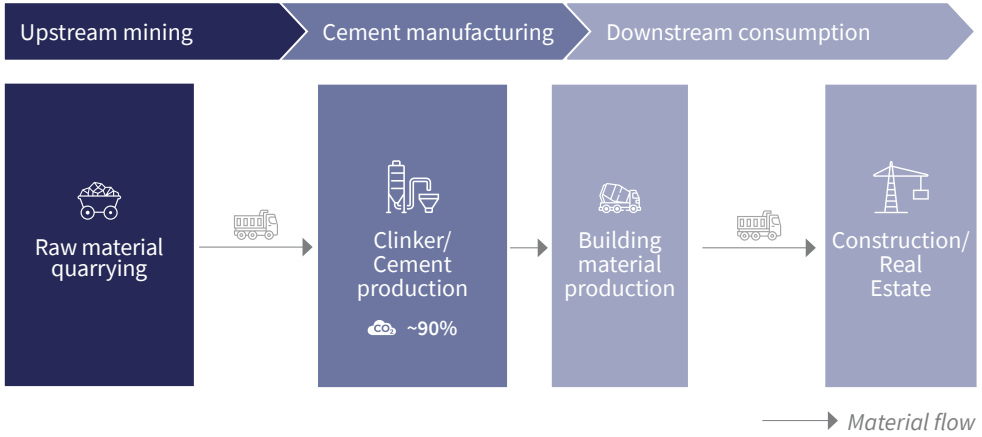
- Efficiency in construction and concrete manufacturing, limiting the demand for cement production;
- Efficiency in the cement production and reduction of the clinker/cement ratio, reducing emissions intrinsic to production;
- Use of alternative fuels[*] in cement production, reducing fossil-fuel combustion;
- Use of CCUS technologies to abate the remaining emissions.

The remaining emissions are tackled through global decarbonisation of the power sector, and CO_2 recarbonation[**] according to various sectoral scenarios.

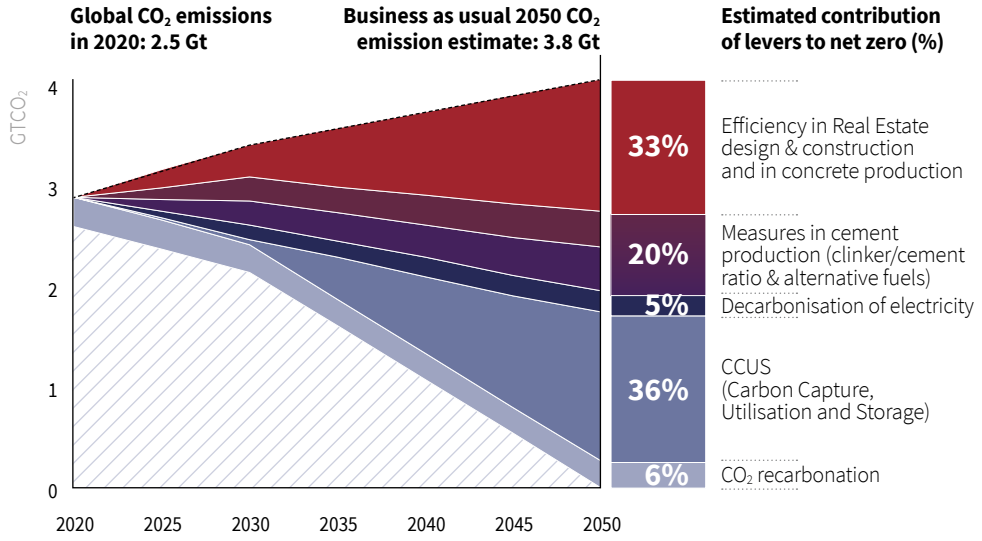
Due to technology maturity levels, net zero scenarios define a decarbonisation timeline relying on evolving technologies[4]:

- By 2030, production processes, energy efficiency improvement, fossil fuels reduction and clinker/cement ratio reduction will be critical;
- By 2050, CCUS will be essential for reducing emissions intrinsic to cement production. CCUS will require R&D investment before being deployed commercially after 2030.

CEMENT SECTOR'S VALUE CHAIN AND EMISSIONS MATERIALITY



CONTRIBUTION OF DECARBONISATION LEVERS TO MEET NET-ZERO OBJECTIVES[***][4] (2020–2050)



(1) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach. (2) IEA, Net Zero by 2050 report. (3) World Economic Forum, Net-Zero Industry Tracker, 2022. (4) Global Cement and Concrete Association, Getting to net zero.
(*) Alternative fuels are derived from non-primary materials i.e. waste or by-products; it can be biomass, fossil or mixed (fossil and biomass) alternative fuels. (**) Recarbonation is the process of CO_2 uptake by concrete. (***) GCCA decarbonisation pathway also considers the concrete sector, which represents a minor share of the cement/concrete sector.

2. ALIGNING CEMENT

As cement production will still be necessary despite concentrating most emissions from the sector, an intensity target has been set on manufacturers

Scope

BOUNDARY

Cement manufacturing companies
The scope of this portfolio focuses on counterparties active in the cement manufacturing segment as it represents the most emissions within the cement value chain.

EMISSIONS

CO_2e emissions from:
— Gross scope 1 emissions: Gross emissions are the total Scope 1 emissions from a cement plant, including (i) fossil fuel combustion and (ii) use of substitution fuels such as different types of waste (old tires, grease, organic solvent, painted wood…)
and;
— Scope 2 emissions cover the emissions from electricity consumption.

FINANCING ACTIVITIES

All loan-related products are included.
General purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

PACTA methodology for Banks

SCENARIO

IEA Net Zero by 2050
As the IEA Net Zero by 2050 scenario does not provide sector-specific scope 2 pathways, the Group uses the scope 2 decarbonisation pathway developed by SBTi in consultation with the IEA.

METRICS

Emission intensity metric: kg CO_2e/t cement

$$\frac{\textit{Scope 1 \& Scope 2 emissions } (kgCO_2e)}{\textit{Cement production (tcement)}}$$

KEY ASSUMPTIONS AND LIMITATIONS

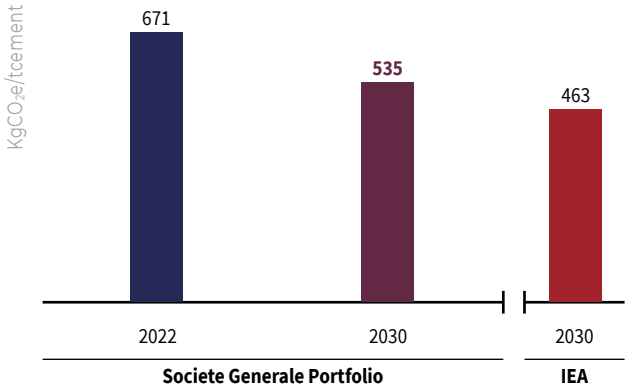
The IEA NZE2050 scenario and data from Asset Resolution are expressed in tons of cement produced. However, company-reported data is mostly in terms of cementitious products, thus including production from cement substitutes such as slag.
The difference is likely to be small: in the order of 1% according to 2018 data from the GCCA Getting the Numbers Right project.

Target & Progress

BASELINE & TARGET

$kgCO_2e/t$ cement	2022	2030	% reduction
Societe Generale Portfolio	671	535	20%
IEA NZE 2050	580	463	19%

PROGRESS



DATA PROVIDERS

Company reporting, Asset Resolution

3. TAKING ACTION TO SHIFT

Clients and assets

- Under **"the Shift"** initiative, bankers from different business lines and geographies have been working together to:
  - Build expertise on cement's decarbonisation challenges and new industrial processes, energy efficiency and technologies (CCUS, Hydrogen…) to decarbonise the sector;
  - Identify the **emerging leaders of tomorrow** that are developing low-carbon cement and innovative building material solutions that can reduce the carbon footprint of the real estate & infrastructure sectors.
- Societe Generale's clients are major cement manufacturers that have, for most of them, defined CO_2 emissions targets and are already engaged in their decarbonisation journey. Bankers maintain a close dialogue with them on their transition strategy to understand their needs and challenges.
- The **Group plans to develop a corporate transition assessment tool** for the construction and building materials sector, including cement, to further help bankers to have a constructive dialogue with clients around their decarbonisation strategy.
- Working on corporate and/or project finance, we structure **'brown-to-green' financing solutions** to support corporate or site-level decarbonisation of key cement clients as well as large-scale brownfield retrofits, greenfield zero emissions. We structure Sustainability-linked bonds or loans with incentives based on ambitious transition indicators (carbon intensity, absolute emissions, etc.), as well as green use-of-proceeds financing.

Flagship deals

Societe Generale acted as ESG Structuring Advisor and Active Bookrunner on the first Sustainability-linked bond in the building materials industry for EUR 850 million which was issued by **HOLCIM**. The bond's coupon was linked to a target to reduce emissions to 475 kgCO_2 per ton of cementitious material by 2030. Since then, Societe Generale has assisted LafargeHolcim in updating the framework on several occasions, most recently in August 2023, to reflect the latest sustainability targets and expand the framework to also cover green use of proceeds financing, aligned with the EU taxonomy's criteria for manufacturing of cement.

Societe Generale has a historical presence in some emerging markets such as in Africa, where the infrastructure deficit remains a challenge.

Financing the development of such infrastructure and the production of critical building materials like cement is an integral part of Societe Generale's commercial and impact strategies in the continent.

In April 2022, Societe Generale acted as arranger and lender for a EUR 52 million loan to **CBI Ghana** to finance the construction of the first African clay calciner to partially substitute clinker Cement, leading to a significant reduction of the CO_2 intensity. Societe Generale's support will enable CBI Ghana's cement production to achieve levels of sustainability in line with EU Taxonomy requirements.

In February 2023, Societe Generale was one of the banks in the financing (EUR 242 million facility) arranged by the IFC to finance **Sococim Industries** – the largest integrated cement producer in Senegal and a subsidiary of the French group Vicat – in the construction of a more performant production line. Societe Generale Senegal will act as administrative agent to manage the local currency financing with the other lenders.

GREGORY GOSSE
CO-HEAD OF DIVERSIFIED INDUSTRIES

"Cement being critical in the construction industry but also one of the most emitting building materials, industry players have had to massively invest in the reduction of their environmental footprint over the past few years. Most of our clients have set 2030 objectives for the emissions intensity of their cement production activities. Two strategies - often combined - have been followed to date:

- *Organically through investments reducing the emissions intensity of cement (e.g. reduction of the clinker-to-cement ratio, substitution of fossil fuels with alternative fuels, increased usage of alternative raw materials, renewable energy, as well as new technologies such as carbon capture or electrification solutions);*
- *Through product portfolio rebalancing by acquiring companies active in light materials (insulation, waterproofing, wood-based materials) or recycling, and selling certain cement operations.*

We have supported our clients on both strategic avenues with a recognised deep understanding of the industry reshaping that is accelerating."

1. SECTOR DYNAMIC

The steel sector represents 7% of energy-related CO_2 emissions[1]. According to the IEA's Net Zero scenario[2], the carbon intensity of the sector must decrease by 24% before 2030 compared to 2022.

Sector dynamics

Steel is an essential resource in many sectors, including construction, automotive, shipping, aviation, machinery and consumer goods. Population growth and economic development in emerging countries drive steel demand. The World Economic Forum projects global steel demand to rise by 30%(*) by 2050[3]. Steel is also a key component of low-carbon technologies (e.g. wind turbines).

Emission sources

Steelmaking emissions are linked to fuel consumption and iron reduction processes. Three production routes exist and present different emission profiles:

- Blast Furnace – Basic Oxygen Furnace (BF-BOF), relying on coal and coke for energy and process purposes;
- Direct Reduced Iron – Electric Arc Furnace (DRI-EAF), relying on natural gas or coal and electricity;
- EAF-Scrap, a secondary EAF production route using scrap metal as an input relying on electricity.

Decarbonisation levers[4][5][6][7][8]

The IEA's NZE and industrial roadmaps identify three levers to reduce steel industry's emissions:

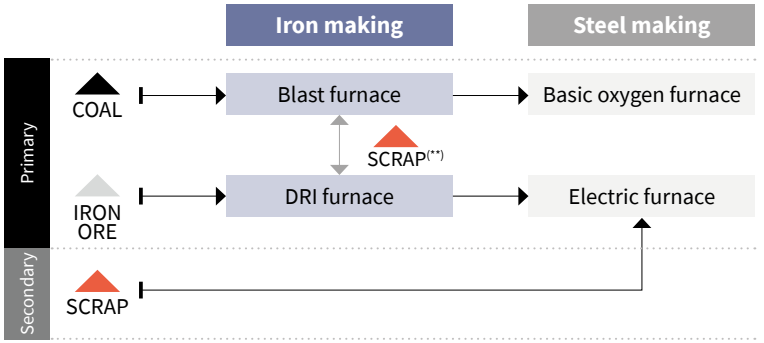
- Reduction of steel primary production through material efficiency and scrap use;
- Diversification of production processes towards less CO_2-intensive routes;
- Scaling of carbon capture technologies to tackle residual emissions.

Resource efficiency and circularity/Energy efficiency: the IEA forecasts that material efficiency in steel-dependent sectors (e.g. manufacturing of lighter vehicles in the automotive industry) could reduce demand by around 20% by 2050[4]. Change in material inputs with scrap use and secondary steel production are thus essential for the transition of steel-consuming industries.

Fuel or process switch: primary steel production will be required to meet 60% of steel needs by 2050[3]. Diversification of production routes towards less carbon-intensive ones, switching from coal to other reducting agents such as hydrogen can reduce the steel's industry carbon footprint. However, the limited commercial viability of low-carbon production routes hinders the potential deployment of low-carbon steel today. Technological innovation and hydrogen-based production routes, for which project announcements are increasing, will be crucial to unlock the potential of so-called'green steel'.

CCUS: as a complement to the deployment of low-carbon production routes, the IEA envisages CCUS technologies. However, they will play a small role in decarbonising the steel sector and will be scaled up from 2030 onwards.

STEELMAKING PROCESSES AND ASSOCIATED CO_2 EMISSIONS



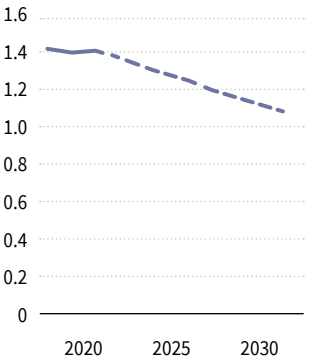
BF-BOF: 70% of global production *2.3 tCO_2e/t steel*

DRI-EAF: 5% of global production *1.4 tCO_2e/t steel*

Scrap EAF: 20% of global production *0.6 tCO_2e/t steel*

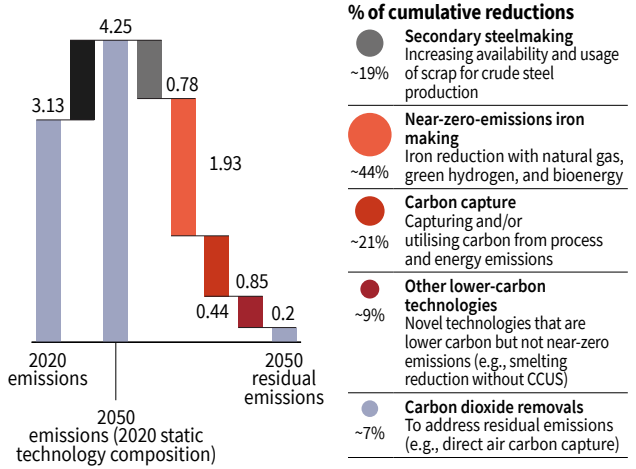
DIRECT CO_2 INTENSITY ($tCO_2/tSTEEL$)

OF THE IRON AND STEEL SECTOR IN THE IEA NET ZERO SCENARIO, 2020-2030



ANNUAL CO_2 EMISSIONS (SCOPE 1 & 2)

REDUCTION PER DECARBONISATION LEVER (GT CO_2) IN THE MISSION POSSIBLE PARTNERSHIP STEEL SCENARIO, 2020 - 2050[6]



(1) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach. (2) IEA, Iron and Steel report, 2022. (3) World Economic Forum, Net-Zero Industry Tracker, 2022. (4) IEA, Net Zero by 2050, 2021. (5) IEA, Iron and Steel Technology Roadmap, 2020. (6) Mission Possible Partnership – Making Net-Zero Steel Possible. (7) OECD, Assessing steel decarbonisation progress, 2022. (8) IEA, Energy Technology Perspectives, 2020. (*) In the IEA's NZE scenario, considering material efficiency measures, steel demand grows by 12% by 2050. (**) Scrap represents 15–25% of metallic input for primary path production.

2. ALIGNING STEEL

Given the various decarbonisation levers on this sector, we chose the SSP score to adequately address primary and secondary steel pathways.

Scope

BOUNDARY

Steel manufacturing companies
The Sustainable STEEL Principles (SSP) define an in-scope counterparty as an entity that (i) produces a minimum of 250 kilotons p.a. of crude steel at the group-level and (ii) generates 20% or more of total revenue through crude steelmaking activities at the group-level.

Societe Generale applied the thresholds recommended by the SSPs. In addition, eligibility of a client and its inclusion in the alignment score calculation was ultimately confirmed by its presence in the CRU database and the availability of data for that client.

EMISSIONS

Fixed-boundary system as per the SSP. The scope is centered on crude steel manufacturing and excludes upstream (from iron and coal mining) and downstream emissions (beyond coating).

FINANCING ACTIVITIES

All loan-related products are included. General purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

Sustainable STEEL Principles (recognised as a valid methodological framework by NZBA).

SCENARIO

IEA Net Zero by 2050

METRICS

Portfolio Alignment Score as defined by the SSP.
The alignment score distinguishes the primary and the secondary steel pathways and evaluates a borrower's alignment against two 1.5°C scenarios (the IEA NZE and the Mission Possible Partnership's Technology Moratorium scenario - MPP TM).

- A score of zero or below zero means that a company is aligned with the IEA NZE and MPP scenarios;
- A score between zero and one means that it is aligned with the MPP TM scenario only; and
- A score above one means that it is misaligned with a 1.5°C scenario.

KEY ASSUMPTIONS AND LIMITATIONS

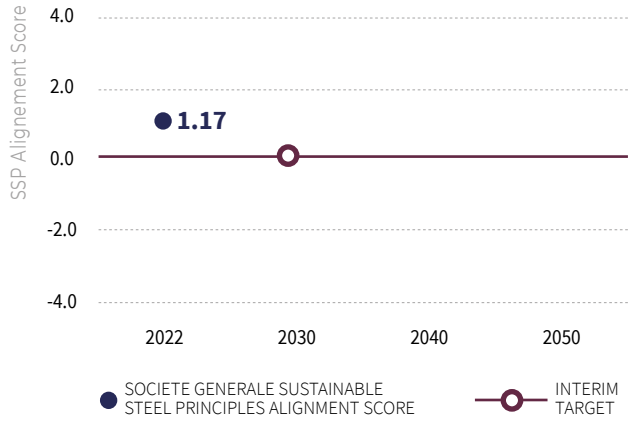
The definition of the client scope is complex as identifying clients which actually produce crude steel is not trivial given the varying degrees of integration and diversification of players along the value chain.
The data quality remains a challenge and the calculation of the score is very sensitive to the scrap share and intensity assumptions. As such, restatements might be necessary in the coming years to refine the scope, data and calculations.

Target & Progress

BASELINE & TARGET

Alignment score	Baseline NA	Target 2030
Societe Generale Portfolio	NA	0

PROGRESS



DATA PROVIDERS

CRU for 2022 with the aim to collect data directly from clients starting 2023

3. TAKING ACTION TO SHIFT

Clients and assets

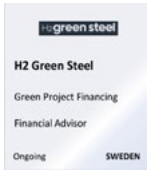
- Under **"the Shift"** initiative, bankers from different business lines and geographies have been working together to:
  - Build expertise on steel decarbonisation levers such hydrogen based and DRI solutions;
  - Identify the **emerging leaders of tomorrow** that are developing new low carbon solutions for the steel sector.
- Leveraging on the expertise built, bankers maintain a close dialogue with clients on their transition strategy, to understand their needs and challenges in order to accompany them in their transition.
- The Group plans to develop a corporate transition assessment tool (TOP) for the metals and mining sector, including steel, to further help bankers have a constructive dialogue with clients around their decarbonisation strategy.

Industry and peers

- The Group joined the Sustainable STEEL Principles as a vice-chair and founding member in collaboration with the Rocky Mountain Institute and five other major lenders in the global steel industry. Under the Sustainable STEEL Principles framework, the Group has committed to disclosing the carbon emissions of its lending portfolio, and taking a leadership role in supporting its clients with net-zero transition plans and financial advisory.
- Societe Generale has been engaged in the NZBA steel sector working group as co-chair to define guidelines for the financial sector alignment with climate objectives regarding their steel industry lending portfolio. This working group plans to consider the Sustainable STEEL Principles as one avenue for achieving banks' NZBA commitments for the steel sector.

Flagship deals

In 2021, the Group acted as Financial Advisor for the EUR 3.3 billion financing of the **H2 Green Steel** project, aiming **to produce 2.5 mt of low-carbon steel starting from 2025/2026. This project will rely on green hydrogen generated from renewable power to reduce the carbon emissions of the steel manufacturing process**.



In 2022, Societe Generale acted as Exclusive Financial Advisor for the acquisition of **John Lawrie Metals by ArcelorMittal**. John Lawrie Metals has **access to diversified sources of high-quality scrap steel from the UK's oil and gas industry**. ArcelorMittal acquisition of John Lawrie Metals is part of its strategy to increase the **use of scrap steel in both its electric arc furnace and blast furnace routes of steelmaking to lower CO_2 emissions**.

LENAIG TRENAUX
GLOBAL HEAD
OF METALS, MINING
AND INDUSTRIES

"As a founding member of the SSP and the NZBA (Net-Zero Banking Alliance), Societe Generale is committed to the decarbonisation of the steel industry.

Our ambition is to accompany our existing clients as they implement their transition strategies while also delivering tailor-made financing solutions to low-carbon ventures.

H2 Green Steel is the emblematic example of how we support innovative emerging leaders to achieve this purpose.

The work we have done together to structure the debt package over the past years illustrates very well how we collaborate with our clients to achieve our common ambition for a low carbon steel industry."

1. SECTOR DYNAMIC

The automotive sector (cars and vans) represented 10% of energy-related global CO_2 emissions in 2022[1].
Alignment with climate objectives requires a swift reduction of 40% – 50% of the sector's CO_2 emissions by 2030.

Sector dynamics

The IEA's NZE scenario forecasts an increase in the global passenger car fleet by more than 60% by 2050, reaching close to 2 billion vehicles[2].

Public policies to phase out internal combustion engines in Europe, Canada and California by 2040 create a policy pressure on automotive markets to develop the manufacturing of low-carbon technology (BEV, PHEV, FCEV(*)) vehicles[3]. The IEA's NZE scenario forecasts a 100% share of low-carbon technology(**) vehicles in new vehicle sales by 2050[2], while in Europe the Parliament has voted a plan to ban petrol and diesel engine cars by 2035.

Emission sources[4][5][6]

Light-duty vehicle emissions comprise:

- 'Well-to-Wheel' emissions including:
  - 'Well-to-tank' emissions linked to upstream fuel production – Fuel Supply;
  - 'Tank-to-wheel' emissions linked to fossil fuel combustion – Tailpipe.
- Manufacturing emissions linked to the material production and manufacture of vehicles.

'Well-to-Wheel' emissions: internal combustion engine vehicles' emissions mostly come from fuel supply and combustion, accounting for 65%-80% of total life-cycle emissions ('Well-to-Wheel' emissions).

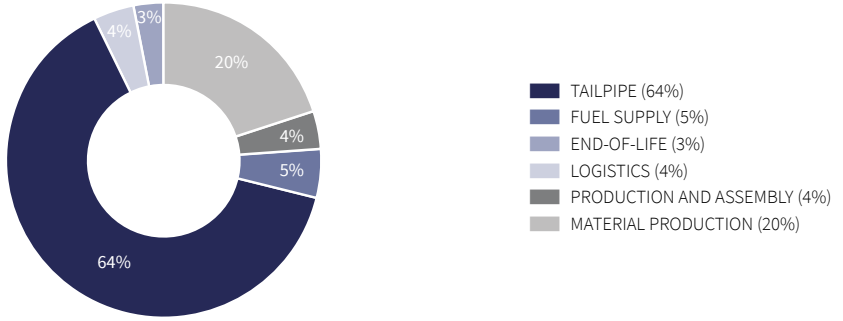
Battery and fuel cell electric vehicles have different emission profiles, as they have no 'tank-to-wheel' emissions linked to fuel combustion. However, they present indirect emissions linked to the generation of electricity that will power the vehicle. Thus, their carbon footprint varies depending on their geography and the decarbonisation of the electricity generation mix of the EV recharging infrastructure, which is necessary to limit 'well-to-tank' emissions of electric vehicles by 2050.

Manufacturing emissions: the remaining emissions from the automotive sector are linked to the production and maintenance of the vehicles themselves. This encompasses the manufacturing of vehicles by car manufacturers and the manufacturing of batteries in giga factories. These emissions represent a varied share of the global carbon footprint of vehicles depending on their propulsion technology:

- For internal combustion engine vehicles, they represent around 10% of total life-cycle emissions;
- For electric vehicles, they represent around 50% of total life-cycle emissions.

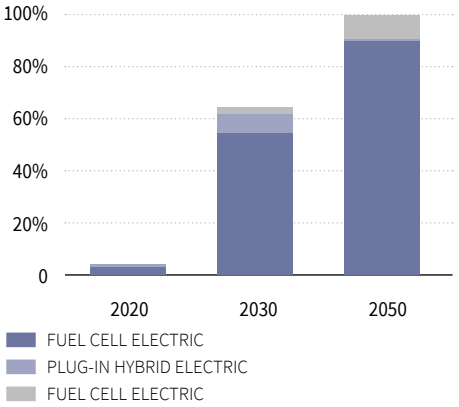
These emissions come from the production of manufacturing materials (e.g. steel, aluminium) and as such, reducing the carbon footprint of the automotive sector's supply chain is key to further reducing light-duty vehicles' emissions by 2050.

BREAKDOWN OF INTERNAL COMBUSTION ENGINE VEHICLES' EMISSIONS[4] (%)

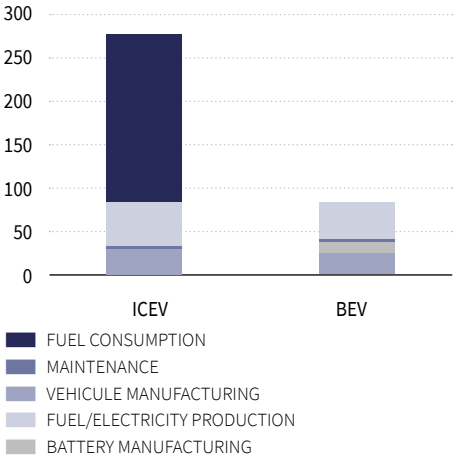


BREAKDOWN OF INTERNAL COMBUSTION ENGINE AND BATTERY ELECTRIC VEHICLES' EMISSIONS AND SHARE OF LOW-CARBON VEHICLES SALES EVOLUTION IN THE NZE SCENARIO[2]

Share of low-carbon technology vehicles sales (% of total sales)[5]



Emission intensity of ICEV(***) and BEV[6] (2021, gCO_2e/km)



(1) IEA, Cars and Vans. (2) IEA, Net Zero by 2050. (3) IEA, EV outlook 2023. (4) McKinsey, The zero-carbon car. (5) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach.
(6) International council on clean transportation. (*) BEV: Battery Electric Vehicle// PHEV: Plug-in Hybrid Electric Vehicle// FCEV: Fuel Cell Electric Vehicle. (**) Low-carbon technology vehicles are defined as vehicles with low to zero tank-to-wheel emissions. They rely on electric propulsion. (***) ICEV: Internal Combustion Engine Vehicle.

1. SECTOR DYNAMIC

Transition towards electric vehicles will be key to reducing the automotive sector's carbon footprint.
Due to their positioning along the value chain, car manufacturers must adapt their production to support the sector's evolution.

Decarbonisation levers[1][2][3][4][5]

The IEA's NZE scenario relies on three main decarbonisation levers for the automotive sector:

- Technology transition towards electric mobility (EVs, FCEVs);
- Improvements in energy efficiency;
- Modal shifts.

Fuel switch: technology transition towards electric mobility reduces demand for fossil fuels from the automotive sector. In the IEA's NZE scenario, the share of EVs in total vehicle' sales reaches 100% in 2050[1]. Nevertheless, this transition must be supported by the decarbonisation of the power generation system via a massive deployment of renewable generation sources. Additionally, charging infrastructure development is necessary to foster e-mobility – particularly for light-passenger vehicles. Globally, the stock of new charging points has been growing at a 47% rate per year[2].

The IEA's 2023 scenario update upgrades the role of EVs, reflecting the significant increase of EV sales pushed by policy support and scaling up manufacturing supply chains. However, biogas and low-carbon hydrogen will play smaller roles in the near and longer terms due to a limited resource base and end use competition[3].

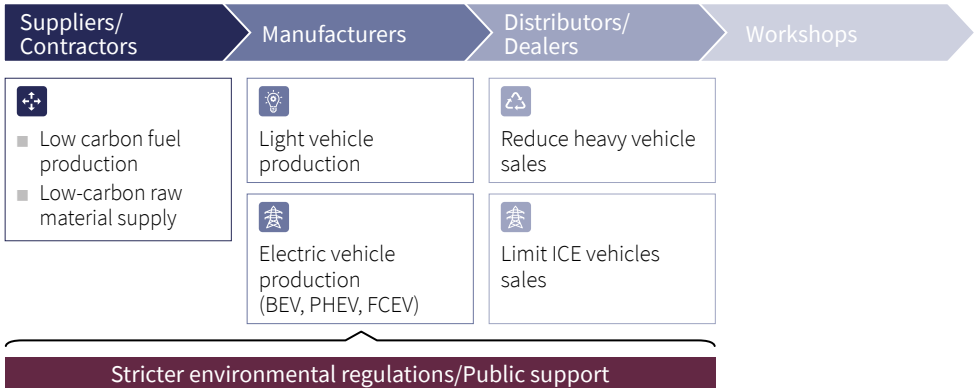
Energy efficiency: lighter vehicles consume less fuel or electricity over the same distance, improving the fuel efficiency. In the IEA's NZE scenario, fuel efficiency represents a 41% energy consumption reduction lever between 2020 and 2050. However, the share of heavy vehicles and SUV in total sales continues increasing in Europe by around 2% per year[4].

Sobriety and circularity: behavioural shifts such as car sharing, switch from ownership to usage, phasing out polluting cars from large cities or reducing speed limits, and modal changes from cars to public transport or other low-carbon transport connects decarbonisation of the transport sector with urban and public initiatives.

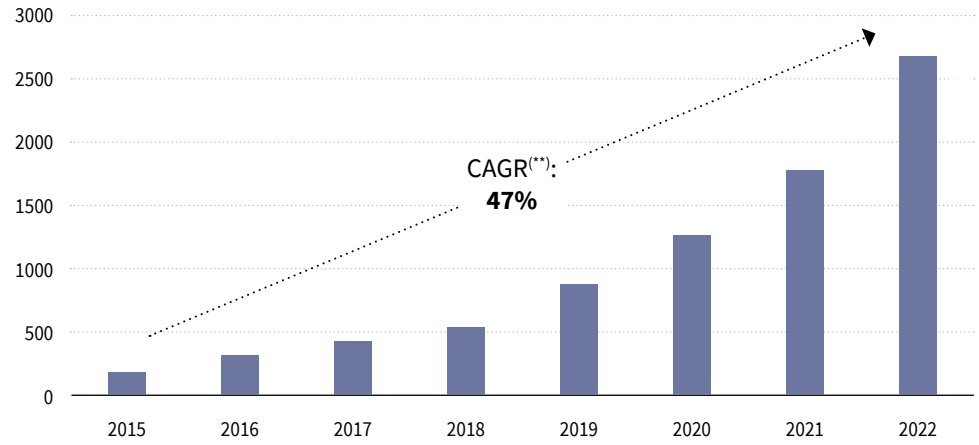
Among the automotive value chain, companies have specific levers to reduce their carbon intensity:

- Car manufacturers are expected to adapt their production chains to produce EV and H_2 vehicles. They have a specific role to play as changes in car production will have a knock-on effect up and down the value chain, increasing demand for low-carbon fuels and reducing the share of ICEV in total sales. They can also increase the energy efficiency of the sector with lighter vehicles (design optimisation, switch from steel to aluminium);
- Fuel suppliers should produce low-carbon liquid fuels and the supply infrastructure. They also can contribute to the large-scale deployment of EV recharging infrastructure and even renewable energy generation capacity to power the infrastructure.

DECARBONISATION LEVERS FOR AUTOMOTIVE PLAYERS ALONG THE VALUE CHAIN



PUBLICLY AVAILABLE LIGHT-DUTY VEHICLE CHARGING POINTS[4] (GLOBAL, THOUSANDS, 2015–2022)(*)



(1) IEA, Net Zero by 2050. (2) IEA, EV outlook 2023. (3) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach. (4) IEA, Cars and Vans. (5) International council on clean transportation, 2021. (*) Based on IEA's country submission. (**) CAGR: Compound Annual Growth Rate.

2. ALIGNING AUTOMOTIVE

Societe Generale's strategy focuses, for the time being, on the use phase of internal combustion engines, which represents more than two thirds of the greenhouse gases emitted over the vehicle life-cycle. This scope will likely evolve in the coming years to encompass upstream emissions as the materiality of these sources increases and dedicated pathways become available.

Scope

BOUNDARY

Car manufacturers, including their financial captives, but excluding the value chain upstream (auto manufacturers' suppliers, …) and downstream (car dealer, …).

Consumer Finance and Ayvens will be treated separately and are not included in the boundary.

EMISSIONS

Average CO_2e Scope 3 end-use emissions intensity (in gCO_2/vehicle-kilometer of new cars put on the market)
The metric focuses, to date, on tank-to-wheel emissions which excludes:

- Scope 1 & 2 emissions from clients;
- Upstream Scope 3 emissions of the supply chain;
- Well-to-tank emissions.

The metric coverage might evolve should data and pathways become available for these emission sources.

FINANCING ACTIVITIES

All loan-related products are included.
General purpose and dedicated loans are included.

Methodology

CALCULATION METHODOLOGY

PACTA methodology for Banks

SCENARIO

IEA Net Zero by 2050 provides net-zero emission pathways for tailpipe emissions intensities (in gCO_2e/km). However, the IEA intensity projections are based on the stock of vehicles, i.e., the average intensity of all the vehicles on the road in 2030. Societe Generale's target is based on a different metric, the average intensity of new cars sold in a given year by their clients. In the absence of a similar metric provided by the IEA to benchmark our target, we compared our target with the IEA trajectory between 2020 and 2030 (-47% vs. -51% for Societe Generale's target). We will review our target in the coming years, should the IEA disclose a benchmark based on annual vehicle sales.

METRICS

Emission intensity metric: gCO_2e/v-km

$$\frac{\textit{Scope 3 emissions } (gCO_2e)}{\textit{Vehicle — kilometers } (v — km)}$$

KEY ASSUMPTIONS AND LIMITATIONS

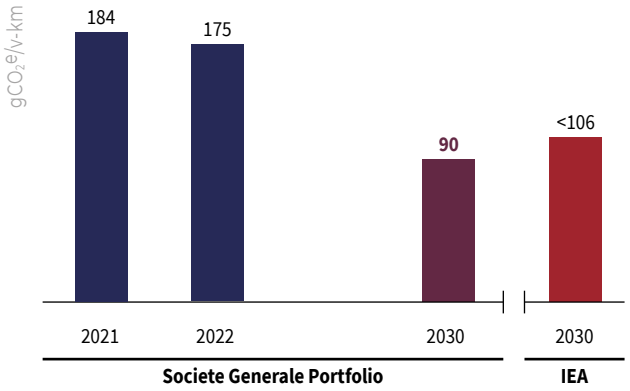
Finding reliable data on car manufacturers' average fleet intensity is key to this exercise. A comparative review of different data providers and company disclosure showed that emission intensity figures can vary by 20-30% depending on the source. The local norms and calculation methods specific to each market make it difficult to have a transparent and homogenous assessment. Societe Generale will aim to collect the average intensity directly from car manufacturers themselves moving forward to improve accuracy.

Target & Progress

BASELINE & TARGET

gCO_2e/v-km	2021	2030	% reduction
Societe Generale Portfolio	184	90	51%
IEA NZE 2050		<106	50%

PROGRESS



DATA PROVIDERS

Asset Impact

3. TAKING ACTION TO SHIFT

Clients and assets

- Under **"the Shift"** initiative, bankers from different business lines and geographies have been working together to:
  - Build expertise on critical raw material mining, active materials for batteries, gigafactories, battery technologies, electric and hydrogen charging stations and infrastructure, assistance driving system and battery recycling;
  - Identify **Emerging Leaders** developing low-carbon solutions for the sector such as Fuel Cell Hydrogen and electric batteries.
- We structure equity and debt financing solutions for our clients active in the sector.
- The Group is **developing a corporate transition assessment tool (TOP)** for the automotive sector, further helping bankers to have a **constructive dialogue with clients around their journey toward electrification and digital transition.**

Industry and peers

Societe Generale joined the Hydrogen Council, which brings together more than 120 member companies from across the various industrial and energy sectors involved in the hydrogen value chain: energy, oil and gas, chemicals, commodities, metals and mining, equipment manufacturers, cars and trucks, and other forms of transport (air, rail, shipping). Societe Generale intends to play an active role developing its clients through financial and advisory support.

Nicolas Sanson
MANAGING DIRECTOR HEAD OF AUTOMOTIVE & MOBILITY

"Transaction after transaction, our clients appreciate (i) our access to a global investor base for hydrogen and battery opportunities, (ii) our structuring expertise in negotiating the best contractual terms for governance and liquidity and (iii) our experience in assessing the validity of business plans, now under increasing scrutiny.
Investor committees are indeed more and more selective and focused on the short-term ability of a company to deliver a breakeven EBITDA or even cash flow, even in fast growing industries such as hydrogen or battery technology."

NB HYDROGEN IS VERY UNDERPLAYED IN THE SECTION 'FUEL SWITCH' ON P29.

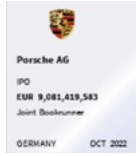
Flagship deals

Societe Generale is acting as Exclusive Financial Advisor to Meridiam on its EUR 200 million **equity investment** in Verkor C. EUR 850 million series C. The financing will fund the construction of **Vektor's first gigafactory in France** with an initial capacity of 16 GWh p. a..

Societe Generale has been mandated by Verkor SAS as **Lead Debt Financial Advisor** in order to advise and assist the company in securing a project debt finance solution to finance the development of their flagship 16GWh electric vehicle ("EV") battery manufacturing plant in Dunkirk, France, and which aims at supplying EV batteries to Renault.

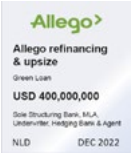
Societe Generale has been mandated by Envision AESC as Debt Financial Advisor in order to advise and assist the company in securing a project debt finance solution to finance the development of their 9GWh electric **vehicle battery ("EV") manufacturing plant** in Douai, France, and which aims at supplying EV batteries to Renault.

The Group acted in 2023 as Sole Financial Advisor for Stellantis, in its acquisition of a 33.3% stake in Symbio based on a EUR 900 million enterprise value , leader of **low-carbon hydrogen mobility**.



Societe Generale acted as Joint Bookrunner for Porsche AG, on track to achieve their **ambitious roadmap of 80% electrified vehicles** by 2030. This IPO was the largest in Europe since the beginning of the century.

The Group acted as a Sole Structuring Bank, Mandated Lead Arranger, Underwriter, Hedging Bank and Agent **on a EUR 400 million Green Loan financing package for the electric vehicle charging infrastructure company Allego**. This deal was the largest senior debt financing in the electric vehicle charging infrastructure segment and **supports Allego in building a pan-European charging network for electric vehicles.**



1. SECTOR DYNAMIC

Accounting for over 80% of the world's trade(*), the shipping sector contributes to 2–3% of global emissions(1). A shift to alternative fuels will be necessary to fully decarbonise the sector. It should achieve a 7% annual decline of emissions between 2022 and 2050 to be in line with IEA's NZE(5), on the entire value chain.

Sector dynamics(1)(3)(4)

The shipping sector's emissions could more than double by 2050 as globalisation continues to drive shipping demand, reaching 1.7 $GtCO_2$ in 2050 in IEA's Reference Technology Scenario. The former International Maritime Organisation (IMO) strategy has been strengthened in July 2023: reduction of the international shipping well-to-wake emissions by at least 70% and strive for 80% by 2040, compared to 2008's emission levels, and a strengthening of the requirements on ships'efficiency design and fuel use. Shipping, as an efficient freight transport mode with low carbon intensity at 5 gCO_2/ton-km(***), also holds potential to contribute to decarbonising the overall transportation sector and reducing the logistics-related emissions of multiple sectors.

Emissions breakdown(1)(2)

International shipping of commercial ships including bulk carriers, container ships and tankers are the key carbon emitters in the sector given its scale of operations accounts for approximately 85% of the global fleet. The sector's carbon footprint is materially tied to its reliance on carbon intensity oil-based marine fuels (e.g. heavy/light fuel oil, diesel/ gas oil) and other fossil fuels which covers more than 99% of its total energy demand.

Decarbonisation levers(4)(5)(6)

The shipping sector is a hard-to-abate sector that faces long lifetime of vessels and a lack of commercially available low-carbon fuel options considering it needs a high energy density fuel. Electricity, for instance, plays a smaller role being only suitable for short-distance shipping routes (~200 km).

From now to 2030:

- Optimisation of operational and energy efficiency is the most mature decarbonisation solution (e.g. high efficiency propeller, waste-heat recovery system, route and loading optimisation, etc.);
- Switch to low-carbon fuel such as ammonia as primary low-emissions fuel, biofuels and hydrogen with limited parts due to their relatively high costs contributes to major emissions reduction, with potential for scaling up(**).

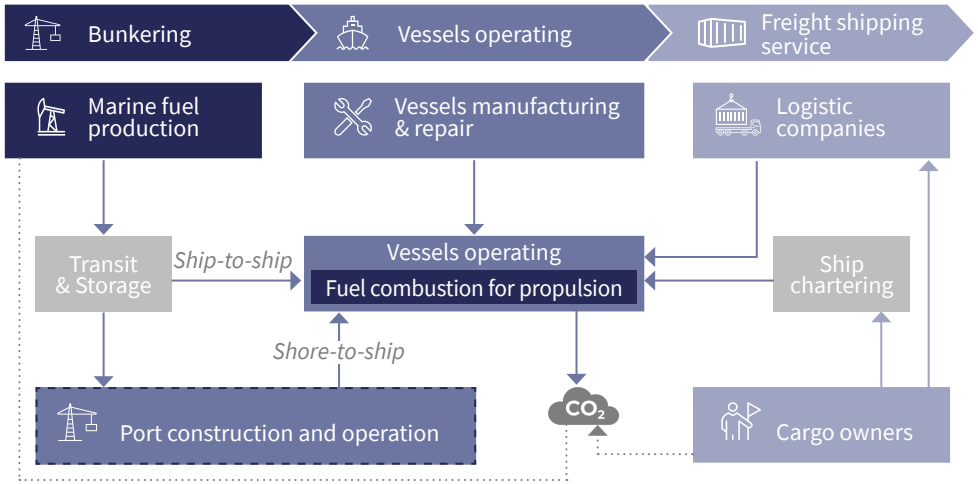
From 2030 and after:

Two candidates could account for 60% of the shipping energy use in 2050 in the NZE:

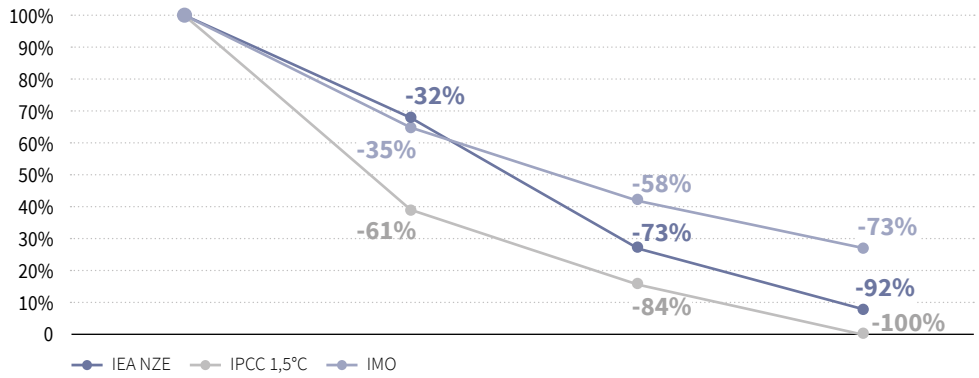
- Green ammonia produced from the Haber Bosch process using hydrogen and nitrogen;
- Hydrogen derived from several processes including electrolysis using renewable power.

Scaling-up low-carbon fuels production and infrastructure faces challenges as competition with other sectors (e.g. aviation) is likely. Due to a limited number of low-carbon solutions, this sector is the only one that does not achieve zero emissions by 2050 in the NZE.

SHIPPING SECTOR'S VALUE CHAIN



CARBON INTENSITY REDUCTION RATE OF WELL BELOW 2°C AND 1.5°C CO_2E EMISSION TRAJECTORIES (RELATIVE TO 2020 BASELINE, SBTI CALCULATIONS)(7)



(1) IEA, International Shipping. (2) IEA, Net Zero By 2050. (3) IMO, Revised GHG reduction strategy for global shipping adopted, 2023. (4) IMO, Energy Efficiency of Ships, Fuel Report, 2022. (5) IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach, 2023. (6) SBTi, Science Based Target Setting for the Maritime Transport Sector, 2023. (7) IMO, Energy Efficiency of Ships, Fuel Report, 2022. (*) In terms of freight transport volume. (**) Other low-carbon production means are under development such as wind propulsion. (***) Relative to aviation at 435 gCO_2/ton-km and road freight at 80 gCO_2/ton-km.

2. ALIGNING SHIPPING

As a signatory of the Poseidon Principles, Societe Generale is committed to implement a trajectory aligned with net-zero GHG emissions by 2050.

Scope

BOUNDARY

The Poseidon Principles apply to dedicated financings of vessels only and do not include corporate loans:

- Included: Cargo and Passenger vessels;
- Excluded: Military ships, submarines, Inland waterway and vessels used for production as well as construction.

EMISSIONS

Direct emissions from the shipping industry (or the **"tank-to-wake"** approach) as per the IMO 2018 scenario.

*The **"well-to-wake"** approach refers to the entire process of fuel production, delivery and use onboard ships (scope 1), and all emissions produced when the fuel is burned (scope 3).*

FINANCING ACTIVITIES

- **Included:** exposure dedicated to vessel's financing (secured with mortgage and unsecured for cruise);
- **Excluded:** general corporate propose loans.

Methodology

CALCULATION METHODOLOGY

Poseidon Principles (recognised as a valid methodological framework by NZBA) that uses a carbon intensity metric known as the **Annual Efficiency Ratio ("AER")**, using the parameters of fuel consumption, distance travelled, and deadweight at maximum summer draught ("DWT"). AER is reported in unit **grams of CO_2 per tonne-mile** (gCO_2/dwt-nm).

SCENARIO

2018 International Maritime Organisation (IMO) [1].

METRICS

Portfolio Alignment Score as defined by the Poseidon Principles: the alignment score compares the annual carbon intensity of a vessel with the decarbonisation trajectory at the same point in time defined by the IMO scenario:

- A positive alignment score means a vessel is misaligned (above the decarbonisation trajectory);
- A negative or zero score means a vessel is aligned (on or below the decarbonisation trajectory).

KEY ASSUMPTIONS AND LIMITATIONS

The annual efficiency ratio (AER) is highly influenced by the operations of the vessels which may negatively impact cruise alignment. The 2018 IMO scenario is not a net-zero scenario. The Poseidon Principles committed to implement a trajectory aligned with net-zero GHG emissions by 2050, consistent with a maximum temperature rise of 1.5C above pre-industrial levels by 2100. As a signatory of the Poseidon Principles, we are engaged in discussions with the association and we aim to align our portfolio with a net-zero pathway by 2050. A new IMO scenario (net-zero), based on a well-to-wake swapproach, was just released and is under study.

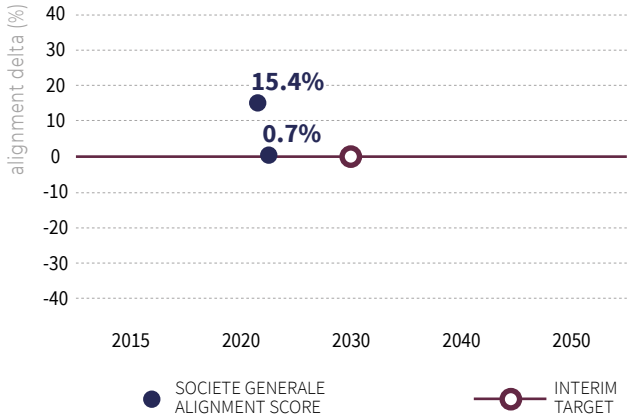
Target & Progress

BASELINE & TARGET

Alignment score	Baseline NA	Target 2030
Societe Generale Portfolio	NA	0

PROGRESS

Cargo vessels climate alignment score in 2022: -2,7%
Passenger vessels climate alignment score in 2022: 6.9%



DATA PROVIDERS

- Manual collection of data from customers Clients (Data concerned are fuel type used, distance traveled and vessel gross tonnage)
- IMO provides the carbon factors

(1) *The Poseidon Principles committed to implement a trajectory aligned with net-zero GHG emissions by 2050, consistent with a maximum temperature rise of 1.5C above pre-industrial levels by 2100. As a signatory of the Poseidon Principles, we are engaged in discussions with the association, and we aim to align our portfolio with a net-zero pathway by 2050.*

3. TAKING ACTION TO SHIFT

Clients and assets

- In September 2023, Societe Generale announced that the Group will not provide dedicated financial products and services to Floating Production Storage and Offloading ("FPSOs") associated with Greenfield upstream oil and gas fields anymore. After 2025, this exclusion will be extended to any new FPSOs financing.
- Under **"the Shift"** initiative, bankers from different business lines and geographies have been working together to:
  - Build expertise on new shipping segments such as transport of captured CO_2 via ships, offshore wind farm installation as well as ammonia and methanol cargo shipping;
  - Identify the **emerging leaders of tomorrow** that are developing new onboard carbon capture, wind powered ships, Hydrogen Fuel Cells and other low-carbon solutions for the sector.
- We are helping clients to secure zero carbon fuel supply, identifying opportunities for procurement of ammonia, methanol and biofuels.
- The Group is developing a corporate transition assessment tool (TOP) for the shipping sector, helping bankers have a constructive dialogue with clients around their decarbonisation and transition journey.
- We prioritize zero-carbon, zero-carbon-ready or low-carbon vessels and the refinancing of vessels whose operational efficiency is in alignment with Poseidon Principles.

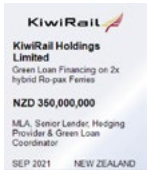
Industry and peers

- **Societe Generale is one of the founding signatories of the Poseidon Principles,** launched in 2019 together with other banks financing the shipping industry and in collaboration with the Global Maritime Forum. The Poseidon Principles aim to promote a low-carbon future for the global shipping industry by integrating climate decision-making into portfolio management and lending decisions regarding ship financing.
- Societe Generale **has also announced that it has joined the Getting to Zero coalition, which aims to develop and deploy commercially viable deep-sea zero-emission vessels by 2030**.

Flagship deals

In 2023, Societe Generale signed an agreement to support Eurazeo as sole advisor with the fundraising and deployment of capital of its new initiative, Eurazeo Maritime Upgrade Fund. This new financing vehicle, in the form of private debt fund, is dedicated to supporting the transition towards a more sustainable maritime sector. The objective is to enable shipowners to transition towards a greener future through a sale and leaseback scheme that will target both new vessels with alternative propulsion systems and existing on-the-water fleet upgrades.

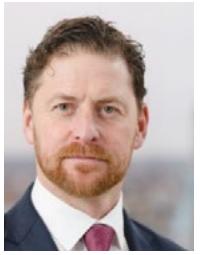
In 2022, Societe Generale acted as Green Loan Coordinator, NZD interest rate swap arranger and lender in the NZD 350 million (approximately EUR 210 million) **financing of two rail-enabled diesel-electric hybrid ferries**. These ferries, equipped with hybrid electric battery/ diesel-powered engine, are anticipated to achieve 40% reduction in CO_2-e emissions vs. the FY12 baseline emissions from the existing vessels. The new ferries link road and rail networks between the North and South islands, hence being part of the infrastructure project crucial to the local community. KiwiRail plans to switch to fully electric engines in the future to ensure the vessels stay below the trajectory for net-zero emissions by 2050.



In 2020, Societe Generale acted as a MLA, Bookrunner, Underwriter, Sustainability-linked Swap provider and Sustainability coordinator in the USD 250 million portfolio refinancing of **Seaspan. This transaction was the first sustainability-linked loan and sustainability-linked swap in the containership leasing industry**.

The loan's coupon is linked to environmental KPIs:

- Vessels' performance: alignment of the carbon intensity of the collateral vessels with the IMO 2050 decarbonisation trajectory;
- Sustainability-linked chartering: % of the sustainability-linked charters entered within a year.



PAUL TAYLOR
GLOBAL HEAD OF MARITIME INDUSTRIES

"Just as the entire ecosystem bears shared responsibility for emissions, so the burden of the investment to come will be shared.

In line with Societe Generale's own internal 'big shift' to focus on the energy transition's value chains, the bank has built the expertise to provide finance and the strategic and capital advisory services which are now required across the entire maritime ecosystem."

1. SECTOR DYNAMIC

CO_2 emissions from buildings operations reached an all-time high of around 10 $GtCO_2$ in 2021. Aligning with the 1.5°C scenario requires deep systemic changes including stronger energy efficiency policies and building codes as well as an investment scale-up in the sector.

Sector trends

The building sector was responsible for ~37% of CO_2 emissions and 34% of energy demand globally in 2021.

Global floor area in the building sector is expected to increase by 55% between 2022 and 2050 according to IEA's NZE scenario. 80% of floor area development will take place in emerging economies.[1]

The building sector is currently "not on-track" with the NZE scenario, according to the IEA, as building operational emissions reached an all-time high in 2021, 5% above the 2020 levels and 2% above the 2019 pre-pandemic levels. To get on track with the NZE scenario, Emissions are expected to fall by 9% per year on average until 2030, more than halving by the end of the decade. Reaching the 2030 global annual investment levels needed in NZE Scenario will require a cumulated investment in energy efficiency of at least USD 3.8 trillion between 2023 to 2030.

Regulatory landscape

Energy efficiency and clean buildings policies continue to expand globally but they remain insufficient to meet the IEA NZE Scenario. In the EU in particular, the Renovation Wave[2] strategy was published in 2020 as part of the European Green Deal. It contains regulatory, financing and enabling measures to double the annual energy renovation rate of buildings by 2030 and to foster deep renovation. It includes in particular a revision of the Energy Performance of Buildings Directive (EPBD) which is currently undergoing interinstitutional negotiations. Under the EPBD, Member States are mandated to define energy performance standards and a long-term renovation strategy to support the renovation of residential and non-residential buildings in their country. The EPBD also encompasses the gradual introduction of minimum energy performance standards to trigger renovation of the worst performing buildings.[3]

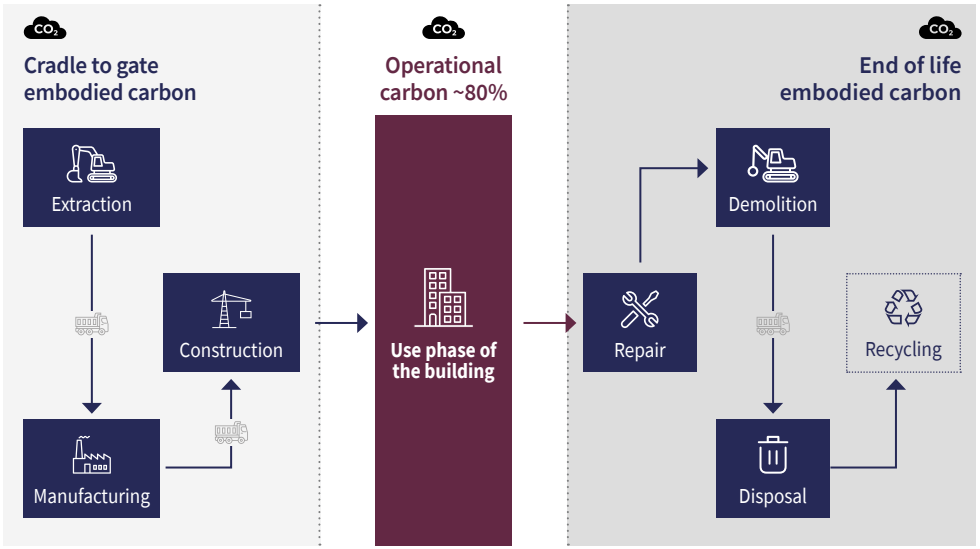
While EU is at the forefront in terms of ESG regulation, in the US, cities and states are also active; in Asia, we observe national strategies rather than a coordinated regional strategy. Australia is currently working on a local taxonomy.

Emission sources

Around 80% of the building sector's emissions are operational emissions from energy consumption for space heating, water heating, cooking, cooling, electric appliances. The remaining 22% are embodied emissions which represent upstream emissions linked to building materials and construction.

In the commercial real estate sector, the emission intensity and breakdown is highly dependent on the type of commercial activities undertaken (office, retail, etc.).

BUILDINGS' LIFE CYCLE EMISSIONS



(1) *IEA, Buildings*. **(2)** *European Commission, Renovation Wave*. **(3)** *European Commission, EPBD*.

1. SECTOR DYNAMIC

This decade is crucial for implementing the measures required to achieve the NZE Scenario. Energy efficiency and phasing out fossil fuels are key drivers to decarbonise buildings.

Decarbonisation levers[1][2][3][4]

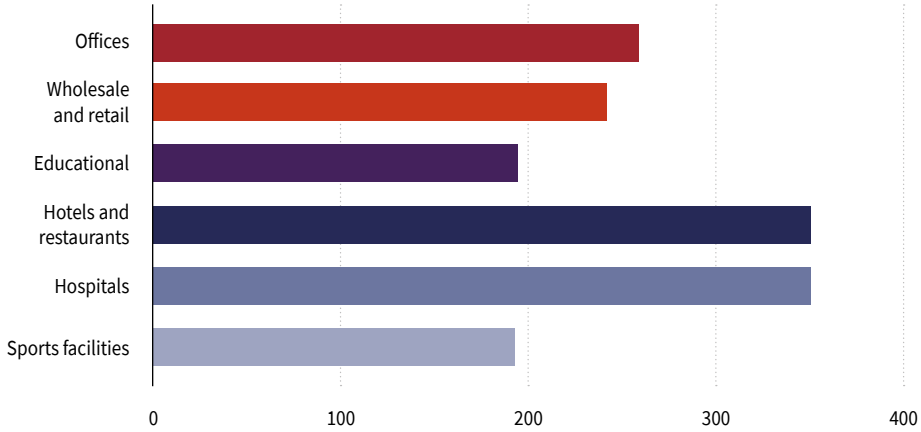
Four main challenges lie ahead for decarbonising the commercial real estate sector:

- **Deploying massively best-in-class building management practices.** Building management practices and technologies such as building automation and smart energy management systems can lead to up to 35% of energy savings at a very competitive cost;
- **Increasing the pace of the energy renovation of the existing building stock**. Since today's buildings will represent around 80% of the total building stock in 2050, ramping up the renovation rate is essential to reach net zero by 2050;
- **Scaling-up deep renovation.** The IEA estimates that retrofitting 20% of the existing building stock to a zero-carbon-ready level by 2030, through deep renovation, is necessary to reach the NZE scenario. This means achieving an annual deep renovation rate of 2.5% from now to 2030 and beyond. Currently, the annual renovation rate is of 1% and most of these are shallow renovations;
- **Ensuring new buildings are as energy efficient as possible.** New buildings will be operating in the next decades and will likely not undergo significant renovation before 2050. They therefore need to be already aligned with net-zero scenario requirements. Minimum performance standards and building energy codes therefore need to be implemented and strengthened across countries.

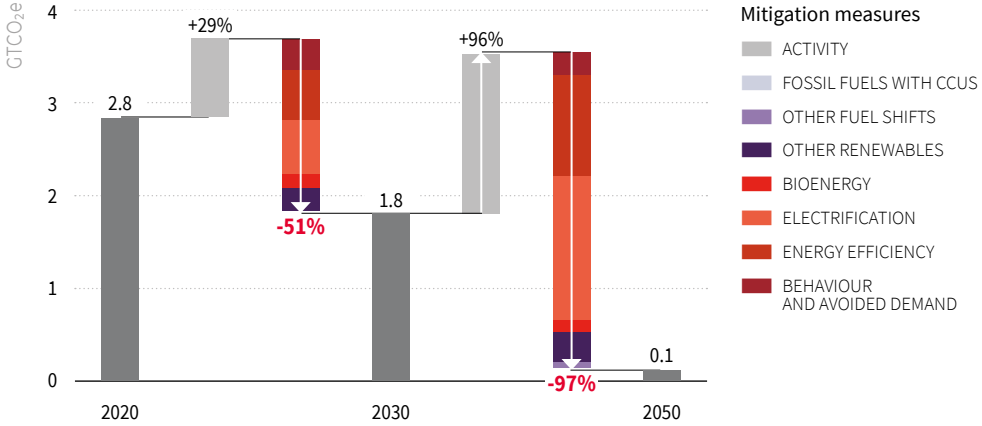
Two main levers are identified in the NZE scenario to reduce the building sector's operational emissions:

- **Energy efficiency** which includes behavioural changes, improved building envelope, energy-efficient appliances and material-efficient building design but also digitalisation and efficient energy management;
- **Fuel switch** which includes electrification (e.g. through heat pumps) and the switch to renewable sources. In the NZE scenario, fossil fuels reach 2% of final energy consumption in 2050 while the consumption's share increases to 66%.

ENERGY INTENSITY OF COMMERCIAL BUILDING BY BUILDING TYPE[5] (KWH/M²/Y)



DIRECT CO_2 EMISSIONS REDUCTIONS BY MITIGATION MEASURE IN BUILDINGS IN IEA'S NZE SCENARIO[1]



(1) *IEA, Net Zero by 2050*. (2) *IEA, Buildings*. (3) *WBCSD, Net-Zero Buildings*.
(4) *IEA, Net Zero Roadmap: A global Pathway to Keep the 1.5°C Goal in Reach*.
(5) *UNEP, Global status report for building and construction, 2022*.

2. ALIGNING COMMERCIAL REAL ESTATE

With renovation and energy efficiency being the major levers to reduce emissions in the real estate sector, allocating more financings and services to the decarbonisation of the sector will be key to reach the net-zero objectives.

Scope

BOUNDARY

Societe Generale activities encompass many types of commercial real estate financing, asset classes, geographies and clients. The initial scope for portfolio alignment is limited to the financing of real estate for professional investors as identified by the Q4 2022 ACPR Survey of Real Estate Professionals.

Are included in the boundary buildings used for commercial purposes where the building owner / investor leases, uses, or operates the property to conduct income generating activities. This includes offices, warehouses, industrial buildings, hotel, retail, healthcare, student accomodations as well as residential multifamily properties.

EMISSIONS

The scope is limited to the operational phase of the building i.e. scope 1 emissions (e.g., use of natural gas or heating oil for heating purposes) and indirect Scope 2 emissions (linked to electricity usage or district heating). Emissions are based on a whole building approach i.e. including tenants consumption. Embodied emissions released during the lifecycle of building materials (including extraction, manufacturing, transport, construction, and disposal) are excluded due to limited data availability.

FINANCING ACTIVITIES

All loan-related products are included.

General purpose and dedicated loans are included.

Market products, in particular CMBS are excluded.

Methodology

CALCULATION METHODOLOGY

Portfolio weight approach:

$$\textit{Portfolio Emission Intensity} = \frac{\sum_n \textit{Emission Intensity}_n \times \textit{Financing}_n}{\sum_n \textit{Financing}_n}$$

Where n stands for credit loan wheter secured or unsecured

SCENARIO

CRREM v2.02

The Carbon Risk Real Estate Monitor's Second Version provides geographical and asset level scenarios.

As the IEA Net Zero by 2050 scenario does not provide country and asset type specific pathways, the Group decided to select CRREM V2.02 as the reference scenario. The CRREM is based on the IEA's estimations for global pathways and is consistent with the IEA NZE scenario.

METRICS

Emission intensity metric: $kgCO_2e/m^2$

$$\frac{\textit{Scope 1 \& Scope 2 emissions (kgCO}_2\textit{e)}}{\textit{Surface area (m}^2\textit{)}}$$

KEY ASSUMPTIONS AND LIMITATIONS

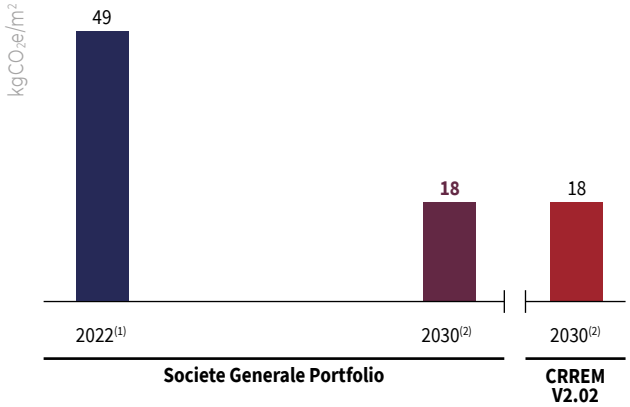
Limited data is currently available on the actual energy and emission performance of assets and clients in Societe Generale's portfolio. Energy Performance Certificates are currently being collected; however, in the meantime, and in the absence of a mature data provider for this sector, proxies from CRREM were used to estimate Societe Generale's baseline. The proxies are calculated based on country and asset type distribution.

Target & Progress

BASELINE & TARGET

$kgCO_2e/m^2$	2022(1)	2030(2)	% reduction
Societe Generale Portfolio	49	18	63%

PROGRESS



DATA PROVIDERS

CRREM: Carbon Risk Real Estate Monitor V2 (2023) intensity emissions

(1) *2022 baseline was estimated based on proxies applied to Societe Generale portfolio distribution by country and asset type.* **(2)** *2030 target is reliant on portfolio mix and shall be adapted accordingly with the corresponding CRREM targets in case of change of the mix. Based on the current portfolio mix (asset type and country), it translates into a target of 18 $kgCO_2$ e/m^2.*

3. TAKING ACTION TO SHIFT

Clients and assets

- Under the **Shift initiative**, bankers from different business lines and geographies have been working together to:
  - Build expertise around energy efficiency buildings and related topics: from optimised asset management, to building retrofits in a view to help real estate clients implementing new business models regarding energy sourcing/ production, energy efficiency and EV charging stations;
  - Understand challenges faced by the industry in their decarbonisation journey: the ability to collect usage data at scale, the necessity of tenants' engagement, the lack of consistent framework among jurisdictions (etc.);
  - Identify concrete levers/solutions to contribute to the decarbonisation of Commercial Real Estate sector, including through value-added partnerships when relevant.
- Leveraging on the expertise built, bankers will accompany the transition on Commercial Real Estate sector through a comprehensive view on clients' decarbonisation pathway while offering relevant innovative solutions. Societe Generale structures Green, Social, Sustainability-Linked Loans / Bonds, supported by ambitious transition indicators.
  We are also planning to structure Transition and Brown-to-Green financings.

Industry and peers

- Societe Generale has been engaged in the NZBA real estate sector through a leading role.
- The Group also acts as member of some sector initiatives with initiatives such as Observatoire de l'Immobilier Durable, IFPImm, AFREXIM.

Flagship deals

Societe Generale supports the transition of the real estate sector and the improvement of construction and renovation practices, designing financial support for public institutions and private companies.

In 2023, Societe Generale supported the real estate company **FREY** for its EUR 80 million Sustainability Linked Loan based on three environmental indicators:
- Certification of its asset portfolio: attaining the BREEAM[1] certification level Very Good for the assets under construction and BREEAM In-Use certification for the assets in operation;
- Installation of electric vehicle charging infrastructure to reduce its users' carbon footprint;
- Reduction of its CO_2e emissions (including all scopes, in validation process by SBTi.

FREY
Sustainability-Linked Loan
EUR 80,000,000
Co-arranger
FRANCE 2023

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(1) *BREEAM In-use certification is a performance standard assessing the asset and management performance of a building.* **(2)** *LEED certification provides a framework for healthy, highly efficient and cost-saving green buildings based on social, environmental and governance indicators.*

JÉRÔME GATIPON BACHETTE
GLOBAL HEAD OF REAL ESTATE STRUCTURED FINANCE

"While a quarter of the building sector emissions stems from Commercial Real Estate, our priority within Societe Generale is to pro-actively engage our clients in their transition and decarbonisation strategy by 2030 while addressing their needs through tailored financing and adapted sustainable solutions to preserve the financed assets' cashflow and value. In a fast-evolving Real Estate market, the collective involvement and commitment of all real estate players, including lenders, will be essential to further support the Net-Zero transition of the sector."

In 2021, Societe Generale acted as a Co-ESG Coordinator, Bookrunner & Mandated Lead Arranger for a EUR 3 billion Sustainability-Linked revolving credit facility for **Unibail-Rodamco-Westfield** to support their CSR strategy. Through this facility, Unibail-Rodamco-Westfield draws a connection between its cost of borrowing and the achievement of environmental Key performance indicators covering, among others, carbon emissions, energy intensity, environmental performance of assets and employee training.

UNIBAIL-RODAMCO-WESTFIELD
Sustainability-Linked Revolving Credit Facility
EUR 3,000,000,000
Co-ESG Coordinator, Bookrunner & MLA
FRANCE APR 2021

In 2022, the Group acted as Mandated Lead Arranger, underwriter and Senior Lender and Green Advisor of a EUR 69.5 million non-recourse mortgage-backed Green financing provided to **Investcorp** to acquire a LEED platinum[2] building to accommodate the International Fund for Agricultural Development.

INVESTCORP
Project Grain Headquarter – IFAD
Non-recourse Mortgage-backed Real Estate Green Financing
EUR 69,500,000
MLA, Underwriter, Senior Lender, Green advisor, Agent and Hedge
ITALY MAR 2022

In addition, Societe Generale helps its real estate clients in pursuing their climate engagements. For example, in 2022, the Group supported **INEA** in its EUR 120 million Sustainability Linked Loan based on two indicators:
- Reduction of its portfolio's energy consumption, to align with the 'Dispositif Eco-énergie tertiaire' 2030 objectives;
- Reduction of the non-recycled waste share in its assets under exploitation.

INEA
Sustainability-Linked Loan
EUR 120,000,000
Co-arranger
FRANCE 2022

Through innovative financing project, with a positive impact, both socially and environmentally, Societe Generale acted, in 2022, as sole mandated lead arranger, sole underwriter and green structuring agent for a 7-year EUR 185 million non-recourse mortgage-backed Green financing to accompany EQT Exeter and Mobicap for the development of a portfolio of 50 Mobicap residences specially designed for people with reduced mobility, with high ESG standards.

Logement Accessible Français
Non-recourse Mortgage-backed Green Loan Financing
EUR 185,000,000
Sole MLA, Underwriter, Hedge Provider, Lender, Facility & Green Structuring Agent
JAN 2022 FRANCE

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Targets and forward-looking statements

This document contains climate metrics, targets, and forward-looking statements that require special attention about their use in decision-making. They are based on the current beliefs and expectations of the management of the Group and are subject to significant risks and uncertainties, many of which are beyond the Group's control. There is no assurance that expected results or actions be in line with the targets and forward-looking statements contained in this document. These targets and forward-looking statements are expressed as of the date of the document and the Group undertakes no obligation to publicly revise or update them in light of new information or future events.

Cautionary information on data & methodology

The data and any statements made are not guarantees or promises that any metrics, targets, or commitments will be met, and are based on current targets, commitments, estimates, assumptions, developing standard and methodologies and currently available data, which continue to evolve and develop. Some of the information included in this document have been or may have been obtained from public and other sources and the Group has not independently verified it. The Group makes no representation or warranty regarding its completeness, accuracy, particularly since figures included in this document have not been audited.

Data quality is subject to improvements

Indicators presented in the document are calculated based on multiple internal and external data and information that are subject to measurement uncertainties. As of today, climate-related data is neither exhaustive nor broadly available while also subject to inconsistencies as is does not follow global standards. Yet, as clients increasingly adopt climate disclosure framework and reporting, the Group expects the accessibility and reliability of external data on emissions will improve over time. The indicators communicated in this document are subject to data uncertainties. Limitations in data collection, verification, and reporting as well as lack of reliable and standardised measurement techniques across the industry impede data consistency. Although improving, this situation represents a key concern for stakeholders engaged in more transparency.

Methodologies used are still under stabilisation

Existing calculation methodology present significant challenges in terms of consistency, adoptability by industry players, and replicability across sectors. In an effort to tend towards a more market-accepted and consistent way of measuring and reporting emissions, regulatory guidance and requirements have evolved in recent years. These guidance and requirements are still under development and are expected to stabilise over time. As methodologies evolve and data improve, the Group will continue to review the impact on reported baseline which may lead to refining of calculations over time. Any opinions and estimates should thus be regarded as indicative and preliminary.

Definitions

The definitions and technical terms used and not defined herein have the meanings assigned to them in the universal registration document of Societe Generale.

SOCIETE GENERALE

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