CLIMATE DISCLOSURE

Societe Generale's Task Force on Climate-related Financial Disclosures Report

June 2019

THE FUTURE IS YOU

SOCIETE GENERALE

TABLE OF CONTENTS

1. INTRODUCTION 4

2. GOVERNANCE 5

2.1. Presentation of the organization 5

2.2. Board of directors' oversight 6

2.3. General management's role 6

2.3.1 Group Management Committee members responsible for climate-related issues 6

2.3.2 A transversal oversight of financial impact of climate-related risks by the General Management's Risk Committee (CORISQ) 7

2.3.3 Risk appetite setting on sectors sensitive to climate issues 8

2.3.4 Remuneration of the Chief Executive Officers 8

2.4. Business units and service units' roles 8

2.4.1 The responsibilities of CSR and of business and service units 8

2.4.2 Remuneration of the other members of the Management Committee who are not Chief Executive Officers 9

2.4.3 Remuneration of employees 9

3. STRATEGY 10

3.1. Climate-related risks identified 10

3.1.1 Risk terminology used 10

3.1.2 Time horizons being considered 10

3.1.3 Climate-related credit risks identified 11

3.2. Climate-related opportunities identified 12

3.2.1 Process to determine climate opportunities and their materiality 12

3.2.2 Climate-related opportunities identified 13

3.3. Impact on societe generale's strategy 14

3.3.1 Societe Generale's overall strategy 14

3.3.2 How climate change is integrated into this strategy 14

3.4. Impacts on societe generale's businesses 15

3.4.1 Products and services for Societe Generale's value chain 15

3.4.2 Adaptation and mitigation activities 16

3.4.3 Investment in research and development 16

3.4.4 Operations (including types of operations and location of facilities) 17

3.5. Impacts on societe generale's financial planning 17

3.5.1 Operating costs and revenues 17
3.5.2 Capital allocation 18
3.5.3 Acquisitions or divestments 18
3.5.4 Access to capital 19
3.6. Resilience of societe generale's strategy 19
3.6.1 Measure of strategic resilience against a 2°C scenario 19
3.6.2 How Societe Generale's strategies might change to address such potential risks and opportunities? 19
3.6.3 Climate scenario and time horizons used 20

4. RISK MANAGEMENT 21
4.1. Processes for identifying and assessing climate-related risks 21
4.1.1 Relative significance of climate-related risks in relation to other risks 21
4.1.2 Overall process to determine potential size and scope of identified climate-related risks 22
4.2. Focus: climate-related transition risk methodology 23
4.2.1 Approach 23
4.2.2 Methodology 23
4.2.3 Details on the 2°C scenario used 26
4.3. Processes for managing climate-related risks 26
4.3.1 Climate-related sector E&S policies 27
4.3.2 E&S evaluation procedures for clients 27
4.3.3 E&S evaluation procedures for transactions 28

5. METRICS AND TARGETS 29
5.1. Public engagements 29
5.1.1 Commitment to align the lending portfolios with the goals of the Paris Agreement 29
5.1.2 Commitment to steer its policy in line with the IEA's scenarios 29
5.1.3 Pro-energy transition commitments 29
5.1.4 Commitment to reduce activities involving fossil fuels 29
5.1.5 Commitment to reduce the carbon footprint of its own activities 29
5.1.6 Commitment to monitor emissions from shipping finance 30
5.2. Metrics on climate-related risks and opportunities 30
5.2.1 Climate-related risks 30
5.2.2 Climate-related opportunities 31
5.3. Metrics on greenhouse gas emissions and related risks 32
5.3.1 GHG emissions Scope 1, 2 and 3 32
5.3.2 Internal carbon tax 32

5.3.3 Carbon targets 33
5.3.4 Financed emissions 33
5.4. Targets on climate-related risks and opportunities 33
5.4.1 Financing of low-carbon activities 33
5.4.2 Reduction in financing of high-carbon activities 34

ANNEX A – GLOSSARY OF MAIN TECHNICAL TERMS 35

ANNEX B – SUSTAINABLE AND POSITIVE IMPACT FINANCE 36

LIST OF TABLES

Table 1: Summary of roles & headcount 9
Table 2: Time horizon considered for credit analysis 11
Table 3: Climate-related credit risks identified 11
Table 4: Climate-related opportunities identified 13
Table 5: Complementary information on the climate scenarios used 20
Table 6: Relative significance of climate-related risks in relation to other risks 21
Table 7: Overall process to determine potential size and scope of identified climate-related risks 22
Table 8: Electricity mix financed by Societe Generale 31
Table 9: Climate-related financing (production) 31
Table 10: Ranking in emissions dealing and renewable energy financing 31
Table 11: GHG emissions Scope 1, 2 and 3 indicators 32
Table 12: Internal carbon tax indicators 32
Table 13: Carbon targets indicators ed emissions indicators 33
Table 14: Financed emissions indicators 33
Table 15: Target financing of low-carbon activities 33
Table 16: Targets reduction in financing of high-carbon activities 34

LIST OF FIGURES

Figure 1: Societe Generale's organigram 5
Figure 2: Overview of Societe Generale's climate strategy 14
Figure 3: Overview of Societe Generale's sustainable finance solution offering 16
Figure 4: Approach for assessing transition risks on the credit portfolio 23
Figure 5: Methodology for assessing transition risks on the credit portfolio 24
Figure 6: Vulnerability assessment scale 25
Figure 7: Sector breakdown of Group corporate exposure (Basel Portfolio) 30

1. INTRODUCTION

Climate change is one of the most defining issue of this century, alongside poverty, requiring urgent and unprecedented action. Societe Generale is engaged in contributing to this action by increasing its support and financing towards a decarbonised and more resilient economy. This report represents an additional step towards enhancing transparency and engagement with Societe Generale's stakeholders as the Group experiments with approaches to evaluating climate-related risks and opportunities.

The last report of the Intergovernmental Panel on Climate Change (IPCC) released in October 2018[1], has warned that there is less than a decade for global warming to be kept to a maximum of 1.5°C, beyond which the risks of extreme weather events and harm for millions of people will significantly worsen.

Urgent and unprecedented changes are needed to realise this transformation, which is affordable and feasible although it lies at the most ambitious end of the Paris Agreement (Article 2)[2] pledge to keep the increase in the global average temperature to 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

One of the core aims of the Paris Agreement is also to make financial flows consistent with a pathway towards low-emissions with the objective of a climate-resilient development. It requires that all finance - both public and private - adopt a new alignment strategy as regards to the mitigation and adaptation efforts.

As Mark Carney, the governor of the Bank of England, has warned, climate change is the Tragedy of the Horizon: the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors (business cycles, political cycles, credit policy, etc.), which is at the very most a decade. Nevertheless, actions must be started without delay to avoid the most severe financial consequences in the future.

Having been appointed by the G20 in April 2015 to investigate how the financial sector could take climate matters into consideration, Mark Carney suggested in November 2015 that a task force be established: The Task Force on Climate-related Financial Disclosures (TCFD).

The TCFD did not recommend imposing rules on the financial sector. Instead, it suggested increasing and improving the relevance of climate-related information disclosed voluntarily by corporations, to enable financial market players and the authorities to better understand and manage the risks they represent. The goal was to make this information consistent (i.e. comparable between companies and sectors over time), reliable, clear and efficient.

The TCFD findings, published in a report, recommend that companies disclose their internal processes with respect to four core elements: governance, strategy, risk management, and metrics and targets. The report also recommends for firms to use scenario analysis to assess climate risks and opportunities, that could be based on available scenarios such as the International Energy Agency (IEA)'s, or on Nationally Determined Contribution (NDCs), etc.

Societe Generale supports the recommendations of the TCFD[3], adopts the definition of transition and physical risks, and this report presents Societe Generale's best efforts towards implementing these recommendations**.**

During COP21, Societe Generale committed to explore ways to progressively steer financial flows through our core lending towards the goals of the Paris Agreement. In 2018, Frédéric Oudéa, Societe Generale's CEO stated: "we are fully committed to contributing to the positive transformations of our economies and societies. […] Societe Generale has accordingly committed to align, by 2020, its strategy for each sector vital to the success of the energy transition." With this commitment, the Group aims to put in place by 2020 governance tools, risk management and monitoring to provide the best responses to the decarbonization of the economy.

[1] *IPCC (2018)* https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_version_stand_alone_LR.pdf

[2] *Paris Agreement (2015)* https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf

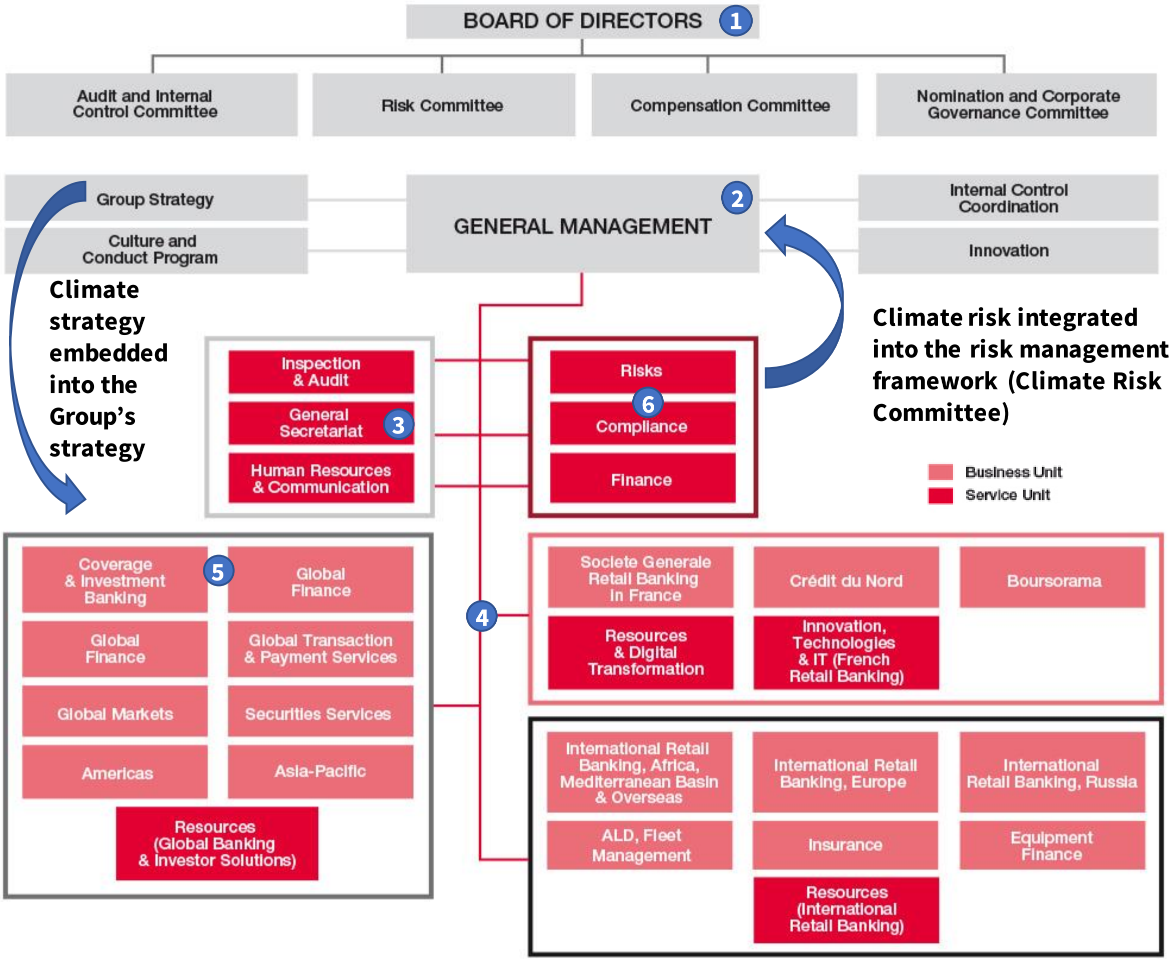
[3] *Recommendations of the TCFD (2017)* https://www.fsb-tcfd.org/publications/final-recommendations-report/

2. GOVERNANCE

The Board of Directors monitors Societe Generale's climate strategy annually while the General Management submits the company's overall strategy to the Board of Directors and oversees its implementation. Climate-related impacts on credit, market and operational risks are reviewed by the General Management's risk committee (CORISQ) when setting the Group's Risk Appetite. In October 2018, the CORISQ has adopted a framework that requires the systematic evaluation of transition risks, through a "climate vulnerability" indicator for clients active in sectors most exposed to climate risks.

2.1. Presentation of the organization

Figure 1: Societe Generale's organigram



1. The Board of Directors is responsible for approving the CSR strategy (including climate strategy).
2. The General Management reviews the CSR strategy and climate-related risks and opportunities.
3. The CSR department is responsible for supporting the deployment of SG's climate strategy.
4. Business / Service units are responsible for the deployment of the CSR strategy (LOD1)
5. A dedicated team offers sustainable finance solutions and products to wholesale clients.
6. The Risk and Compliance departments monitor climate-related risks. (LOD2 – KYC & credit decision)

2.2. Board of directors' oversight

The Board of Directors approves the Group's strategic orientations, oversees their implementation and reviews them at least once a year. As regards to climate-related risks and opportunities, in 2017, the Corporate Social Responsibility (CSR) policy, including Societe Generale's climate strategy, underwent a strategic review by General Management and was presented to the Board of Directors. The Board of Directors validated the 2017-2020 CSR ambition, which is aligned with the overall strategy of the Group for 2020. The CSR policy was included in the documentation supplied for the Investor Day[4] on 28th November 2017, which enabled the priorities to be shared. The CSR policy is reviewed and presented to the board on an annual basis.

The Board also approves the global strategy and the Risk appetite and verifies their implementation. The risk appetite is determined at Group level and is cascaded under the supervision of the LOD2 to the Business Units and main subsidiaries. The Board of Directors approves, every year, the Group Risk Appetite proposed by General Management in the form of a Group Risk Appetite Statement which sets the main strategic CSR orientations. As regards to climate related risks, the Risk Committee of the board has been informed of the analysis and orientations taken by the CORISQ of January 2017 and October 2018.

2.3. General management's role

2.3.1 Group Management Committees and roles related to climate issues

The duties of General Management are performed by the Chief Executive Officer, assisted by four Deputy Chief Executive Officers. The Chief Executive Officer is vested with the broadest powers to act in the Company's name in all circumstances, within the confines laid down by the applicable legislation and regulations, the by-laws, the Internal Rules of the Board of Directors and the objectives approved by the Board of Directors. The Deputy Chief Executive Officers have the same powers as the Chief Executive Officer. General Management submits the company's overall strategy to the Board of Directors and oversees its implementation.

The Chief Executive Officer is responsible for managing the Bank, and is assisted in such role by the Group's Management bodies and cross-business Oversight Committees:

- **General Management Committee**: Comprising the Chief Executive Officer and Deputy Chief Executive Officers, the Group General Management Committee meets every week. Reporting to the Chief Executive Officer, the Committee submits the Group's overall strategy to the Board of Directors and oversees its implementation.
- **Group Strategy Committee**: Comprising the Chief Executive Officer, the Deputy Chief Executive Officers, some Heads of Business Unit and Service Unit, and the Head of Strategy, the Group Strategy Committee meets on a bi-monthly basis and ensures that the Group strategy is properly implemented. It dedicates its meetings to reviewing the Group's portfolio of activities. The committee is also competent on matters related to CSR affairs.
- **Strategic Management Committee of the Business Units and Service Units**: Comprising the General Management, the Head of the Business Unit or Service Unit in question, the Head of Strategy, and the Heads of some Business Units and Service Units, the Strategic Management Committee of the Business Units and Service Units meets at least once a year for each Business Unit and Service Unit. Committee meetings are dedicated to the strategic management of the Business Unit or Service Unit in question. The Committee's agenda may cover CSR goals.

In addition to these executive committees, Societe Generale has a consultative committee for communicating and debating strategy and issues of general interest to the Group: **Group Management Committee**. Comprising around 60 executives appointed by the Chief Executive Officer, the Group Management Committee meets at least once per quarter. The Group Management Committee is a body for communicating and debating strategy and issues of general interest to the Group. It is through such Committee that the Generale Management submits the company's overall strategy to the Board of Directors and oversees its implementation. Four individuals in the Group Management Committee have dedicated responsibilities as regards to climate-related affairs.

[4] *Societe Generale presented its 2020 Strategic and Financial Plan at an Investor Day held in Paris.*

- A dedicated Deputy CEO (Diony Lebot) who has overall responsibility for CSR affairs and is responsible for supervising the control functions (Risks, Finance and Compliance).
- A Head of Global Finance & Advisory who is also lead sponsor of the sustainable and positive impact finance offering for SG's wholesale businesses (Pierre Palmieri). The "sustainable and positive impact finance" offering is part of the Bank's Global Banking and Investor Solutions businesses and integrates the environmental and social (E&S) expertise across a broad range of innovative financial solutions.
- The Group's General Secretary (Gilles Briatta) has the mission of protecting the bank to further its development. It devises and oversees the development of corporate social responsibility and public affairs and institutional relations/advocacy initiatives within the Societe Generale group.
- A Group's Director of CSR (Sylvie Préa) whom the CEO appointed to the Group Management Committee with effect from 1st January 2017.

2.3.2 A transversal oversight of financial impact of climate-related risks by the General Management's Risk Committee (CORISQ)

In January 2017, following a specific request from the Board of directors, a Group Risk Committee (CORISQ)[5] reviewed for the first time the risks associated to climate change. From this date, the CORISQ on climate-related risks is reviewing at least annually the evolution of such risks.

The 2017 transversal analysis on the Group's activities presented to the CORISQ has:

- clarified the definition of the risks associated with climate change;
- ranked the impacts on operational risks, credit risks, market risks and insurance risks, and
- validated an action plan to integrate the analysis of the financial impacts of the climate change into the risk management framework in the medium term.

In October 2018, the CORISQ has validated the LOD2 proposal to reinforce the Credit Risk policy and the credit granting governance in order to improve the capacity of the credit granting process to take into account the increasing impact of transition risks. The CORISQ has also been informed of the various climate-related macro-economic scenarios which are currently available and discussed among experts. The Group has decided to adopt a reference climate scenario allowing for a better evaluation of impacts across credit portfolios. The definition and annual review of the climate related macro-economic scenario of reference is under the responsibility of the Chief Economist of the Group.

Using a "reference climate-related macro-economic scenario", a "climate vulnerability" assessment will be evaluated during the internal rating process of clients (and project finance deals), and during annual internal rating reviews. This evaluation is mandatory for the most impacted sectors; i.e. the oil & gas, metals & mining, transport, power utilities sectors. Considering the "climate vulnerability" and the capacity of clients to adapt, this assessment may lead to a modification of the internal rating.

The Climate CORISQ once a year reviews the "reference climate-related macro-economic scenario" and its main macroeconomic and climatic components, and the portion of the credit portfolio exposed to climate-related risks. This annual review also mandates a continuous improvement of methodologies and a follow-up of the regulatory banking environment.

---

[5] *The CORISQ is not a new committee, but climate-related risks have been a new subject of the CORISQ. Chaired by the Chief Executive Officer, the Group Risk Committee comprises the Deputy Chief Executive Officers, the Heads of Risk Department, Financial Department, Generale Secretariat and Compliance Department, and, depending on the agenda, the Heads of the business division concerned. The Risk Division acts as secretary to the CORISQ.*

2.3.3 Risk appetite setting on sectors sensitive to climate issues

The CORISQ reviews the main credit portfolios and those which present concentration risk characteristics and defines the risk appetite on these portfolios. Since 2017 the RISQ Department in its secretary role for the CORISQ, systematically requires the opinion of the CSR department on environmental issues when the credit portfolio is concerned. Since November 2017, the CSR Department has attended and expressed its opinion on metals & mining, automotive, oil & gas sector, renewable energy and real estate sectors.

2.3.4 Remuneration of the Chief Executive Officers

The remuneration of Chief Executive Officers is broken down into three components: a fixed remuneration, an annual variable remuneration, and long-term incentives.

CSR objectives are a part of the evaluation criteria for the CEO's annual variable remuneration determination. This annual variable remuneration is based for 60% on quantitative criteria and for 40% on qualitative criteria. The qualitative criteria include the CSR targets, reflected in particular by Societe Generale's positioning objective in the extra-financial ratings.

As for the long-term incentives, vesting is a function for 20% to CSR targets.

- 10% is based on SG's positioning within RobecoSAM (in the 1st quartile), Sustainalytics (in the 1st quartile) and MSCI (Rating >= BBB);
- and 10% based on the achievement of SG's commitments in terms of financing the energy transition (100% vesting if the target is achieved in 2023. If the target is not met, there will be no vesting).

In its 2019 questionnaire, RobecoSAM applies a 15% weighting to climate-related issues.

2.4. Business units and service units' roles

2.4.1 The responsibilities of CSR and of business and service units

The Group CSR Division is in charge of defining and proposing a policy to promote CSR within the Group. Furthermore, the CSR Division is in charge of monitoring CSR actions, the BUs/SUs and Group entities themselves being responsible for implementation of the Group's CSR policy and the corresponding alignment of their actions.

As regards to risks, as the first line of defence (LOD1), the Business Units and Service Units (for their own activities) bear primary responsibility for assessing, managing and monitoring their risk levels in all risk categories, including climate-related risks.

A second line of defence (LOD2) is constituted by the RISQ, CPLE and DFIN SUs, and is entirely separate from the operational activities (in accordance with the French Order of 3rd November 2014).

The main role of the Risk Division (RISQ) is to support the development of the Group's activities and profitability by defining the Group's risk appetite (allocated between the Group's different business lines) in collaboration with DFIN and the BUs/SUs and establishing a risk management and monitoring system as a second line of defence. In performing its work, the RISQ SU reconciles independence from the businesses with a close working relationship with the BUs, which are responsible in the first instance for the transactions they initiate.

The Group Compliance SU (CPLE) is responsible for the definition and consistency of the compliance risk prevention and control framework, and for coordinating the framework aimed at preventing, identifying, assessing and controlling reputational risk across the entire Group.

The Group has a central CSR team with 15 head counts (~8 Full Time Employees working on environmental issues). This team is split into 4 teams, reporting, opportunity identification, climate impact and E&S risk management. The CSR Director convenes a Committee on a fortnightly basis, which includes the CSR team and strategic partners across the entire Group. An additional 15 head counts are spread into the Group's business units acting as entry points for CSR issues across the Group’s 3 pillars of Global Banking and Investor Solutions, French Retail Banking, and International Retail Banking and Financial Services. On wholesale activities, the Group has a dedicated business solutions team with 20 headcounts working on sustainable finance offering, including the Group’s Positive Impact Finance. There is also a full-time headcount in both the Communications and Investor Relations departments dedicated to ESG matters. The Risk department (RISQ) accounts 10 headcounts working on the development of climate-related risk methodologies (reference climate-related macro-economic scenario, climate vulnerability indicator).

Table 1: Summary of roles & headcount

Department	Role & responsibility	Headcount (approximation)
CSR	• Defining strategy & policies, • Deployment of CSR strategy into the Group • Monitoring action	15
CSR deployed in Business units	• Deployment of CSR strategy into the Group	15
Dedicated wholesale sustainable finance	• ESG rating • Sustainable finance offering	20
Risk	• Management of climate-related risks	10
Communication & investor relations	• Relationship with external stakeholders	2

2.4.2 Remuneration of the other members of the Management Committee who are not Chief Executive Officers

Variable remuneration of the Management Committee, comprising sixty or so managers, complies with the CRD4 Directive and is dependent on the achievement of collective and individual targets.

The collective targets are common to all members of the Management Committee and reflect the Group's collective performance including Societe Generale’s positioning within the upper quartile of RobecoSAM’s bank ratings. As mentioned previously, RobecoSAM applies a 15% weighting to climate-related issues.

2.4.3 Remuneration of employees

Remuneration of employees is split into fixed remuneration and an annual variable remuneration, though these are not tied to climate objectives.

However, in France, employees are involved in the Bank’s long-term development through profit-sharing and/or incentive schemes. They are linked to the Company’s overall performance (financial and non-financial) and regulated by Societe Generale agreements signed with the trade unions every three years. For Societe Generale SA in France, out of the total amount of profit-sharing and incentives paid in 2018 for the financial year 2017, 4% was relating to CSR objectives.

3. STRATEGY

Societe Generale identifies that physical and transition risks do not represent a major risk on a 5-year horizon. However, such risks could impact materially in the long-term. Likewise, the Group has identified a range of climate-related opportunities for a variety of sectors, financial products and geographies. Over the years, this has led the Group to define a climate strategy articulated around three axes:

- Managing climate-related risks (transition and physical);
- Seizing climate-related opportunities and supporting Societe Generale's clients; and
- Managing the bank's impact on climate (via its own activities and that of the clients it finances).

To deliver this strategy, the Group has developed in-depth environmental expertise across the whole value chain: from research and advisory, to financing and capital markets, as well as investor solutions and services. Finally, the Bank has started shifting its capital allocation towards greener sources of energy and away from the most emission-intensive ones; i.e. more renewables and less coal.

3.1. Climate-related risks identified

3.1.1 Risk terminology used

Financial risks from climate change arise from three primary channels or 'risk factors': transition, physical and liability risks

- **Transition risks:** Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations.[6]
- **Physical risks:** Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.
- **Liability risks**: These risks can arise if parties who have suffered losses from physical and transition risk factors seek to recover these losses from those they view as responsible. Specific mechanisms include a failure to disclose financial risks, a failure to adapt to their foreseeable nature, and a failure to take the short-term action required to mitigate future financial risks[7].

3.1.2 Time horizons being considered

Societe Generale considers short- and medium-term for credit horizons that range between 1 and 5 years. Longer term horizon Societe Generale considers extend to 2040 typically, sometimes 2050 when assessing climate-related risks and opportunity. Even if these horizons do not match Societe Generale's immediate decision-making, they may have an influence on Societe Generale's long-term strategy.

6 TCFD (2017) Recommendations of the Task Force on Climate-related Financial Disclosure https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf

[7] Bank of England (2018) Transition in thinking: The impact of climate change on the UK banking sector https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/report/transition-in-thinking-the-impact-of-climate-change-on-the-uk-banking-sector.pdf

Table 2: Time horizon considered for credit analysis

	From (years)	To (years)
Short-term	0	1
Medium-term	1	5
Long-term	5	Up to 2050

3.1.3 Climate-related credit risks identified

Risks associated with climate change, both physical (increased frequency of extreme weather events) and transition-related (new carbon regulations, technological and market changes), have been identified as factors that could aggravate the Group's existing risks.

Societe Generale has identified a variety of physical and transition risks that could result in financial impact on the Group. A description of the processes used to determine which risks could have a material financial impact on Societe Generale is provided in Section 4.

- In the short term, reputational risks (e.g. increased stakeholder concern or negative stakeholder feedback) could have a financial impact on Societe Generale's direct operation and through its clients. This could materialize through a shift in consumer preference and decreased demand for goods/services leading to a reduction in revenue for Societe Generale and/or its clients.
- Other transition risks are expected to emerge in the long term: Increased policy and regulatory costs, risks associated with technological changes and changing market equilibriums. This is likely to affect mostly Societe Generale's customers in the most carbon intensive sectors financed by the bank: energy, transport, building, metals & mining.
- Societe Generale also sees physical risks materializing in the long-term through increased frequency and severity of extreme weather events, or gradual changes in weather patterns. Societe Generale's own operation either on its sites and its supply chain, or on Societe Generale clients' activities and their supply chain could be impacted. This would affect operations and clients across the globe.
- As for liability risks, the Group has not conducted analysis of the climate-related legal risks of its clients and its impact on portfolio in the long-term.

Table 3: Climate-related credit risks identified

	Risk driver	Financial impact identified	Horizon
	Policy and regulation Increased pricing of GHG emissions Enhanced emissions-reporting obligations Mandates on and regulation of existing products and services	• Higher operating costs for most carbon intensive customers • Article 173 of the French Energy Transition for Green Growth Act requires greenhouse gas emissions generated by the company's businesses, particularly using the goods and services that it produces, to be reported via significant balance sheet items. This is expected to impact Societe Generale's customers & direct operations in the transport, metals & mining, power generation and oil & gas globally.	MT-LT
	Technology Substitution of existing products and services with lower GHG options Unsuccessful investment in new technologies	• Capital investments in technology development: Power generators customers with a high share of fossil fuel generation are expected to experience high capital expenditure requirements to decarbonize their mixes.	MT-LT

	Costs to transition to lower emissions technology	• Write-offs and early retirement of existing assets due to technology changes: Decommissioning costs and stranded assets in the power sector and oil & gas sector. This is expected to impact Societe Generale's customers in the transport, metals & mining, power generation and oil & gas globally.	
Transition	**Market** Changing customer behaviour Uncertainty in market signals Increased cost of raw materials	• Reduced demand for goods and/or services due to shift in consumer preferences: Decrease in oil demand due to increase uptake of electric vehicles or decrease demand in combustion engines. • Change in revenue mix and sources resulting in decreased revenues: Shift in revenue from oil supply to gas supply for customers in the Oil & Gas sector • Abrupt and unexpected shifts in energy costs: Decrease in electricity wholesale prices resulting from large deployment of intermittent power generation technologies Re-pricing of assets (e.g., fossil fuel reserves, land valuations, securities valuations): Increased liquidity risks for coal power assets	MT-LT
	Reputation Shifts in consumer preferences Stigmatization of sector Increased stakeholder concern or negative stakeholder feedback	• Reduced revenue from decreased demand for goods/services: Reduced share prices and increased financing costs resulting from reputation risk. This is expected to impact Societe Generale's customers & direct operations in the most carbon intensive sector and demand for banking products globally.	ST
Mixed	**Legal** Exposure to litigation	Not assessed at this stage	-
	Acute Increased severity of extreme weather events	• Increased capital costs (e.g., damage to facilities): Increased reparation costs on damaged dwellings. Change in dwelling value.	MT-LT
Physical	**Chronic** Changes in extreme variability in weather patterns Rising mean temperatures Rising sea levels	• The Risks mainly concern the Group's buildings and data centres, which may lead to business disruption. Disruption of activity would lead to a loss of income for the Group. • Disruption of supply chain affecting Societe Generale's own activities and that of its clients. • This is expected to impact Societe Generale's customers & direct operations in the real estate sector.	MT-LT

3.2. Climate-related opportunities identified

3.2.1 Process to determine climate opportunities and their materiality

Up until now, the identification of climate-related opportunity has only focused on the transition-related opportunities.

- *Expert judgement*: The determination of opportunities has been conducted by Societe Generale's sector experts who offer their vision on the development of the market and business lines as part of their commercial strategy.

- *Internal taxonomies*: Societe Generale has adopted a framework of internal definitions to facilitate the dissemination of commitments throughout all activities. This framework is aligned with the United Nations Sustainable Development Goals and include (1) Sustainable and Positive Impact Finance (SPIF) to monitor credit, leasing and customer support in growing positive impact activities and (2) Sustainable and Positive Investments (SPI) for wealth and asset management activities, including the structuring of products aimed at institutional and individual investors.
- *2°C alignment tools*: In addition, the Group is developing and testing tools for measuring the alignment of its credit portfolio with the objectives of the Paris Agreement.

3.2.2 Climate-related opportunities identified

Sector-wise, Societe Generale sees a wide range of opportunities arising from the energy transition across all sectors in the economy. Annex B offers an overview of opportunities in these sectors. Sectors that will require the most financing include :

Table 4: Climate-related opportunities identified

Sector	Opportunities	Horizon
Construction	Refurbishment of old buildings	ST
Power	Deployment of renewable capacity, electricity storage Energy efficiency services and CCS in the longer term	ST-LT
Oil & Gas	Carbon Capture & Storage Liquefied Natural Gas	ST-LT
Chemistry	Manufacturing of biodegradable and recyclable plastic	MT-LT
Transport	Low-carbon and energy efficient transport means (electricity, hydrogen, LNG) Mobility services and battery storage, rail	ST-LT
Metals & mining	Production of metals for electric vehicles (aluminum, coper, lithium, rare earth, cobalt, nickel).	ST-LT
Infrastructure	Smart electricity grid, smart mobility networks Charging infrastructure for electric vehicle	ST-LT
Agriculture	Efficient irrigation systems, aero/aquaponic, drought resistant seeds, biogas.	ST-LT
Other sectors	Circular processes, waste recovery	ST-LT

Product-wise, Socially Responsible and Impact investing (SRI) issues, as well as Environmental, Social & Governance (ESG) factors, have become important performance drivers. Societe Generale's dedicated ESG research team has helped investors and asset managers to integrate these criteria into investment decisions.

Geographically, Societe Generale has also placed the sustainable development of the African continent at the heart of its strategic priorities. The Group is committed to playing a leading role with private and public-sector players in Africa's low-carbon development, particularly in energy infrastructure, which is essential for sustainable economic growth in these countries.

3.3. Impact on Societe Generale's strategy

3.3.1 Societe Generale's overall strategy

Societe Generale is one of the leading European financial services groups. Active in the real economy for over 150 years, with a solid position in Europe and connected to the rest of the world, Societe Generale employs over 149,000[8] members of staff in 67 countries and supports 31 million individual clients, businesses and institutional investors[9].

Societe Generale follows a strategy of responsible growth, fully integrating its CSR engagements and commitments to all its stakeholders: clients, staff members, investors, suppliers, regulators, supervisors and representatives from civil society. Societe Generale is committed to be a trusted partner helping our clients realize their goals, supporting our employees and being at the forefront of positive transformations in today's evolving society: seizing the opportunities that these positive transformations present and contributing to their development. The Group seeks to respect the cultures and environment of all the countries where it operates.

The Group is built on three complementary core businesses:

- French Retail Banking, which encompasses the Societe Generale, Crédit du Nord and Boursorama brands. Each offers a full range of financial services with products at the cutting edge of digital innovation;
- International Retail Banking, Insurance and Financial Services to Corporates, with networks in Africa, Russia, Central and Eastern Europe and specialized businesses that are leaders in their markets;
- Global Banking and Investor Solutions, which offers recognized expertise, key international locations and integrated solutions.

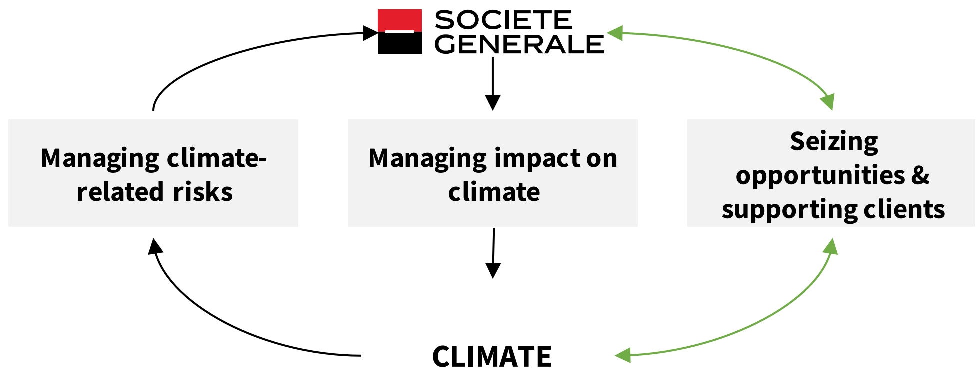
3.3.2 How climate change is integrated into this strategy

Increasing awareness and understanding about climate-related risks and opportunities has had influence on Societe Generale's strategic decisions.

Societe Generale seeks sustainable development based on a diversified and balanced banking model with a strong European anchor and a targeted global presence in selected areas of strong business expertise; the Group also strives to maintain long-term relationships with its clients built on the confidence it has earned and to meet the expectations of its stakeholders. The inclusion of CSR issues is at the heart of its strategy and in its relationships with stakeholders.

In 2017, Societe Generale presented its strategic plan for 2020, Transform to Grow, which set out a CSR ambition for all the Group's activities. To define it, the Bank consulted extensively with its stakeholders, both internal and external. It then established a materiality matrix of stakeholder expectations, ranking sustainable development issues according to the priorities expressed. Climate change became one of the 6 strategic pillars of sustainable development priorities.

Figure 2: Overview of Societe Generale's climate strategy



8 *Headcount at end of period excluding temporary staff.*

9 *Excluding insurance policyholders*

This climate strategy for 2017-2020, which was reviewed by General Management and validated by the Board of Directors, is aligned with the overall strategy of the Group for 2020, has been articulated around three axes:

- **Managing climate-related risk:** Societe Generale is putting in place a risk management process to evaluate and control climate-related risks. Beyond the measurable impacts for the Bank, this approach involves providing expertise and advice to its clients by anticipating the changes associated with a low-carbon economy and assisting them with their transition.
- **Seizing opportunity by supporting and financing the low-carbon transition and supporting Societe Generale's clients:** In 2017, Societe Generale pledged to help commit €100 billion in supporting the energy transition between 2016 and 2020 and to report regularly on achievements. This amount consists of €15bn for renewable energy financing and consultancy, and €85bn for green bond issues arranged or jointly-arranged by Societe Generale. To support Societe Generale's clients' transformation – corporates and investors alike -, Societe Generale has launched a dedicated offering bringing together all its environmental & social expertise across the full spectrum of investment and financing solutions.
- **Managing the bank's impact on climate (via the financing provided and on Societe Generale's own activities):** Managing impact via the activities financed is done by scaling back carbon-heavy investments. Societe Generale has stopped financing the development of coal mines, coal-fired plants and associated infrastructure around the world. Societe Generale also decided to no longer finance production of oil sands and Arctic oil drilling.

In the oil and gas sector, Societe Generale requires its clients to apply the best practices in order to limit greenhouse gas emissions (methane and carbon dioxide) and other environmental impacts associated with production activities. Societe Generale has established publicly-available sector policies and eligibility criteria for doing business with certain clients as well as financing for sensitive industries.

Managing the impact of Societe Generale's own operations on the climate is done in particular through an internal "carbon tax" that is levied on based on their greenhouse gas emissions of each of the Group's entities. The sums collected are then redistributed in the form of rewards for the best internal environmental efficiency initiatives. Moreover, the Group has environmental strategies for its real estate, IT, sourcing (paper, water) and travel centred on continuous improvements in energy performance and optimizing consumption and waste.

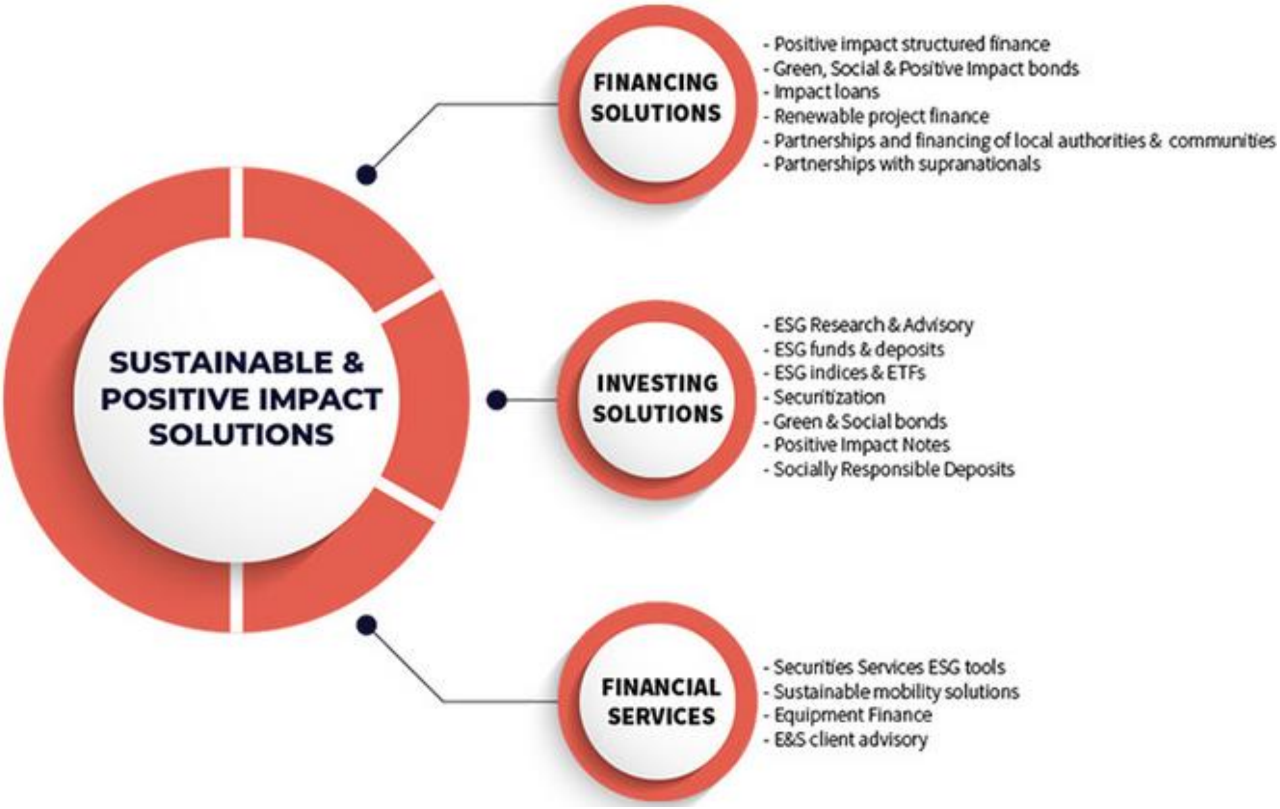
3.4. Impacts on societe generale's businesses

3.4.1 Products and services for Societe Generale's value chain

Recognizing the significance of climate-related opportunities, Societe Generale has pioneered in the creation of the UN's Positive Impact initiative[10] which seeks to foster the business and financial ecosystem Societe Generale needs to achieve a sustainable world. Societe Generale is now co-chair of the initiative. Inspired by the spirit of Positive Impact Finance, Societe Generale has developed a full range of solutions to support its clients' transformation. To support Societe Generale's clients' transformation –corporates and investors alike-, Societe Generale has launched a dedicated offering bringing together all its environmental & social expertise across the full spectrum of investment and financing solutions. The full spectrum of investment and financing solutions is shown in the following figure and summarized in an Annex.

[10] *The Positive Impact initiative is based on the idea that addressing global economic, social & environmental issues is both an imperative and a massive business opportunity for the private sector once an impact-based approach is implemented. The Positive Impact Finance Initiative* aims at providing a common language and developing new solutions to finance the Sustainable Development Goals along with its clients;* http://www.unepfi.org/positive-impact/positive-impact/

Figure 3: Overview of Societe Generale's sustainable finance solution offering



3.4.2 Adaptation and mitigation activities

The Bank has been a long-standing player in the carbon market. Through its trading desk dedicated to carbon markets, Societe Generale has been engaged in intermediating, negotiating and facilitating emissions trading within the EU ETS scheme. It was ranked No. 2 by Energy Risk as *Emissions dealers* and No. 1 for its research on the subject in 2018[11]. This capability has enabled Societe Generale to assist its clients in managing issues related to climate change and the energy transition, in meeting their compliance needs via procurement schemes, monetizing their excess balance of quotas, provide hedging services for the cost of EUAs or on a wider scale addressing the carbon component of their energy assets management.

3.4.3 Investment in research and development

Societe Generale has engaged substantially in R&D activities in the last couple of years:

- *Climate-related risks*: Within the UNEP-FI, the Group has contributed to developing a market-wide methodology enabling financial institutions to better understand the climate change risks of their activities.

[11] *Energy Risk Commodity Rankings 2018 (2018) Societe Generale voted best overall dealer 2018 – Six years in a row* *https://cib.societegenerale.com/fileadmin/user_upload/SGCIB/pdf/MARK/Societe_Generale_Energy_Risk_Commodity_Rankings_2018.pdf*

- *Climate-related opportunities*: Socially Responsible and Impact investing (SRI) issues, as well as Environmental, Social & Governance (ESG) factors, have become important performance drivers. Sitting alongside financial and macroeconomic considerations, ESG factors have become easier to quantify and should be considered when assessing any company. Since 2016, Societe Generale's dedicated ESG research team has helped investors and asset managers to integrate these criteria into investment decisions[12]. Societe Generale has notably pioneered the creation of the UN's Positive Impact initiative which seeks to provide a common language and developing new solutions to finance the Sustainable Development Goals along with its clients.
- *Managing impact*: Following Societe Generale's 2015's COP 21 commitment to reduce "Group activities in the coal sector with a view to being in line with the International Energy Agency (IEA) degrees scenario (2DS) by 2020", Societe Generale has developed an in-house methodology for tracking the Mining and Coal-Fuelled Power Plants and these changes have been incorporated into the Group's sector policies. This methodology was developed in 2017. Societe Generale has also tested a credit portfolio alignment methodology developed by the 2°C Investing Initiative (2DII).
- *Other subjects*: The Group is also participating in a study by the French Association of Private Companies (AFEP) on the comparison of 2°C scenarios and in a different study by Entreprises pour l'Environnement (EpE) ZEN 2050 on the decarbonisation of the French economy by 2050.

3.4.4 Operations (including types of operations and location of facilities)

The Bank also generates environmental impacts through its business activities. Aware of its responsibilities, Societe Generale continues to apply its environmental policy to its proprietary activities; such policies involve the control and improvement of its direct impact on the environment, in association with its various stakeholders.

As part of this proactive approach, six years ago the Group introduced an "internal carbon tax", a mechanism that it has built on and expanded in the intervening period. Each year, a carbon tax is levied on each of the Group's entities, based on their greenhouse gas emissions (€10/tonne CO2 equivalent) and the sums collected are then redistributed in the form of rewards for the best internal environmental efficiency initiatives, through the "Environmental Efficiency Awards". Over the past six years, internal carbon tax revenues have benefitted 305 initiatives in 32 participating countries over four continents.

3.5. Impacts on societe generale's financial planning

3.5.1 Operating costs and revenues

The deployment of climate-related product and services, investment in research and development as well as operational changes has led to changes in revenue and operational costs for Societe Generale, although we expect these changes are marginal.

Indeed, the Group has drawn revenue from its increasing range of investment and financing solutions, though this has not been quantified at this stage. The internal carbon tax revenues have benefitted 305 initiatives in 32 participating countries over four continents. Average annual allocations total EUR 3 million and have led to EUR 126 million in recurring savings.

The Group has teams dedicated to deploying climate tools and methodology for monitoring its impact on its operations and financing. There are also team in E&G policy, SRI/ESG Research, Green, social and Positive Impact bonds, Sustainable & Positive Impact Products as well as specialists in ESG factors in Asset Management and Securities Services. The Group has also built capacity climate-related risks management. All of this staff and associated expenses have had an impact on the Group's operating cost, though not quantified.

[12] *Societe Generale (2018) Sustainable and positive impact finance* https://wholesale.banking.societegenerale.com/en/solutions-services/sustainable-and-positive-impact-finance/

3.5.2 Capital allocation

Over the past few years the Bank has started shifting its capital allocation towards greener sources of energy and away from the most emission-intensive ones. Although this has focused mainly on increasing the renewable portfolio and reducing the coal one, which represent only a small share of the overall climate-related exposure.

Societe Generale's leading position in the renewable market is confirmed by the recently issued Dealogic league tables for 2018, in which the Group was ranked N°2 for both Lending and Financial Advisory in the EMEA renewable market. In 2018, the Bank advised clients on transactions with a total value of USD 4.1bn and acted as Mandated Lead Arranger for 20 transactions with a total debt value of USD 2.1bn. These rankings were established through the analysis of 105 international banks[13].

To transform these opportunities into financial impact, in December 2017, Societe Generale committed to raising EUR 100 billion in financing earmarked for the energy transition. Between 2016 and 2020, the bank has set itself the target to raise a nominal amount of EUR 85 billion in green bonds issuances lead or co-lead by the Bank. And EUR 15 billion in the form of consulting and/or financing mandates dedicated to the renewable energies sector.

In 2015, the Bank committed to reducing its coal-related activities and to bringing its exposures to this energy in line with a strategy compatible with a temperature rise not exceeding 2°C by 2020 (the 2°C scenario of the International Energy Agency (IEA)). Accordingly, as at 30th June 2018, the Bank :

- reduced its outstanding credit (exposure) related to coal mining by more than 10%; the aim being to achieve a 14% reduction between 2016 and 2020;
- limited the proportion of coal (installed capacity) in the energy mix of financed electricity production. The commitment has nearly been achieved, with a 19.3% proportion of carbon (aim of achieving less than 19% in 2020).

Societe Generale has not participated in any dedicated financing for coal-fired power plants or related infrastructures anywhere in the world since 1st January 2017. Moreover, it has not been involved in any dedicated financing for the development of coal mines and related infrastructures since 2015. In addition, specific criteria for establishing new relationships with companies that operate in the coal sector have been defined in dedicated sector policies.

Moreover, since May 2019, Societe General will not provide new services or products to companies (customers and prospects):

- whose activity in coal-power generation is greater than 50% (in terms of turnover);
- whose activity in the coal-power generation is between 30% and 50% (in terms of turnover), and that have no strategy to reduce it to 30% by 2025, or that have planned expansion of their capacities in thermal coal (extraction or production of electricity).

In 2018, the Oil and Gas policy was updated. The Group committed to finance only those activities in the oil and gas sector that have a mitigated impact on the climate. In particular, Societe Generale will no longer finance activities relating to the production of oil from oil sands anywhere in the world or to the production of oil in the Arctic. These commitments also target the implementation or commitment to implement measures to limit continuous flaring and methane emissions. For companies using fracking techniques, they also include the implementation of best E&S practices in line with the Golden Rules of the IEA.

3.5.3 Acquisitions or divestments

Lumo is a French Fintech that combines strong skills in participatory finance and renewable energies and accelerates the energy transition since 2012. The platform offers local communities, individuals and businesses to participate in financing a selection of local projects supporting renewable energies in France.

[13] *Societe Generale (2019) Press release on Societe Generale's leadership position in renewable energies* https://wholesale.banking.societegenerale.com/uploads/tx_bisgnews/20190408_Press_Release_Societe_Generale_renewables_Energies.pdf

With this acquisition, Societe Generale, one of the leaders in the financing of renewable energies, strengthens its capacity to serve its major energy customers by offering them a solution of recourse to crowdfunding for the development of their projects, as required by the "Plan of the Renewable Energies Release "of the French Government in the framework of the" Climate Plan ".[14]

3.5.4 Access to capital

Societe General has not identified any impact on its capacity to access capital.

3.6. Resilience of societe generale's strategy

The Group's strategic plan for 2017-2020 *Transform to Grow* is based around 5 strategic objectives: (1) Transform, including the French retail relationship model and adapting the strategy of Global Markets; (2) Deliver on Costs, with efficiency programmes and cost reduction plans; (3) Complete Refocusing, including disposals; (4) Foster Responsibility, including the further deployment of the Culture & Conduct programme and the integration of CSR and climate strategy; and (5) Grow, delivering on key revenue initiatives.

This strategic plan is based on a number of assumptions, in particular relating to the macroeconomic environment and the development of activities. Failure to achieve these objectives or the occurrence of unexpected events could compromise the achievement of the strategic plan and have a material adverse effect on the Group's business, results of operations and financial position.

3.6.1 Measure of strategic resilience against a 2°C scenario

Societe Generale's strategy is reflected in its portfolio allocation, and therefore a measure of the strategic resilience of the Group against a 2°C scenario is a measure of the portfolio allocation against a 2°C scenario. Over the last few years, the portfolio[15] allocation has been evaluated against 2°C scenarios in three ways:

- As part of Societe Generale's work on climate-related risks, a 2040 scenario analysis was conducted on the lending portfolio under an assumption of the identical extension of the loans and the non-adaptation of borrowers. The impact of a 2°C transition scenario compared with a scenario of no transition measures shows a low impact overall, but a concentrated impact on segments producing particularly high carbon emissions. These results are in line with those shared with other European and American banks. The Group also participated in works by the UNEP-FI to identify "physical" climate change risks. Contrary to transition risks, the methodology is not sufficiently developed to enable a valuation.
- Societe Generale has developed an in-house methodology for tracking the Mining and Coal-Fuelled Power Plants. This methodology is forward-looking and uses the IEA's 2°C scenario. This has allowed the Group to set target and transition away from coal power generation and extraction. Output from this analysis shows that the credit portfolio in these two sectors is aligned and below a 2°C scenario.
- Societe Generale has also tested a credit portfolio alignment methodology developed by the 2°C Investing Initiative (2DII). This tool has been applied on the Oil & Gas, Power, Coal mining, Auto, Shipping, Airlines, Cement and Steel sectors. Development is still ongoing at this stage.

3.6.2 How Societe Generale's strategies might change to address such potential risks and opportunities?

Societe Generale's strategy is set to be reviewed in 2020. By then, the Group is considering taking more ambitious engagements, which are likely to be informed by 2°C scenario.

[14] *Societe Generale (2019) Press release on the acquisition of Lumo https://www.societegenerale.com/en/content/Societe-Generale-is-pleased-to-announce-the-acquisition-of-Lumo-the-pioneering-renewable-energy-crowdfunding-platform*

[15] Only the corporate credit portfolio has been evaluated. The Sovereign, Retail, Institutional and other portfolios have not.

3.6.3 Climate scenario and time horizons used

In order to measure the alignment with a 2°C scenario for its coal portfolios, Societe Generale relied on the IEA's 2DS scenario.

Within its Energy Technology Perspectives annual publication, IEA defines the 2°C Scenario (2DS) as follows: "The 2DS lays out an energy system deployment pathway and an emissions trajectory consistent with at least a 50% chance of limiting the average global temperature increase to 2°C. The 2DS limits the total remaining cumulative energy-related CO_2 emissions between 2015 and 2100 to 1 000 $GtCO_2$. The 2DS reduces CO_2 emissions (including emissions from fuel combustion and process and feedstock emissions in industry) by almost 60% by 2050 (compared with 2013), with carbon emissions being projected to decline after 2050 until carbon neutrality is reached."[16] This scenario is also consistent with the 450 Scenario declined in the IEA World Energy Outlook and defined as "an energy pathway consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2." [17] As a consequence, Societe Generale's alignment on IEA 2 degrees scenario refers to both the 2DS and the 450 Scenario.

For its coal portfolio, Societe Generale decided to exclude the Chinese contribution from the considered scenarios to take into account the fact that China is currently representing 51% of the world's coal demand for primary energy and 42% of the world's coal power capacity, whereas Societe Generale is not significantly active in financing Chinese coal extraction and power generation assets.

Additionally, IEA scenarios provide a 2050 timeframe but considering the average transaction profile timeline, a shorter timeframe had to be considered when defining operational targets for the Bank. This timeframe should be short enough to allow the monitoring of the Bank portfolio and long enough to absorb short term evolutions. This timeframe should also allow readapting the Bank's targets to updated or new IEA scenarios to come.

For its assessment of transition risks, Societe Generale has used in depth output data of the REMIND and MESSAGE models, respectively developed by the Potsdam Institut für Klimafolgenforschung (PIK) and Applied Systems Analysis (IIASA). These are integrated assessment model (IAMs) for medium- to long-term energy system planning, energy policy analysis, and scenario development. Societe Generale also uses the IEA detailed output data for analyses. Societe Generale also relies on ad-hoc studies (with both qualitative and quantitative projections) for specific pieces of analysis.

Table 5: Complementary information on the climate scenarios used

Strategic exercise	Scenario	Geographical coverage	Horizon
Coal exposure target	Consistent with IEA 2DS and IEA 450 scenarios	excludes China's contribution	timeframe limited to 2020
Transition risks	REMIND SSP2 (2°C)	global coverage	timeframe up to 2050

[16] *IEA (undated) ETP 2017 data visualization https://www.iea.org/etp/explore/*

[17] IEA (undated) ETP 2017 data visualization https://www.iea.org/etp/explore/

4. RISK MANAGEMENT

Risks associated with climate change (physical, transition and liability risks) do not represent a new risk category, but rather an aggravating factor for the types of risks already managed through the risk management framework of the bank; i.e. credit risk, market risk, operational risks (including reputational risk) and risk related to insurance activities. As a result, the integration of climate-related risks in the risk management framework relies on existing governance and processes. Thus, the management of climate-related risks follows a classical approach (identify, define risk appetite, control and mitigate).

The identification of activities exposed to climate-related risk has been realised, but measurement of financial possible impacts is still incomplete for all perimeters. The most important exposure lies with credit risks. A methodology has been defined to evaluate the impact of transition risk as an incremental (positive or negative) impact on credit quality at borrower level. This "climate vulnerability" indicator is to be set alongside the internal rating. Societe Generale also identifies the risk of an impact of banking regulation introducing new rules on solvency and risk governance.

4.1. Processes for identifying and assessing climate-related risks

4.1.1 Relative significance of climate-related risks in relation to other risks

As detailed in Section 3, the Bank has adopted the risk terminology presented by the TCFD; i.e. physical and transition risks. For Societe Generale, climate-related risks do not form a new category of risks that would be added to the risks already identified in Pillar 1 and Pillar 2 of the Basel regulations. They constitute a factor aggravating credit, market, operational and insurance risks:

- **Credit and counterparty risk**: risk of losses arising from the inability of the Group's customers, issuers or other counterparties to meet their financial commitments. Credit risk includes the counterparty risk linked to market transactions and securitization activities. In addition, credit risk may be further amplified by individual, country and sector concentration risk.
- **Market risk**: risk of a loss of value on financial instruments arising from changes in market parameters, the volatility of these parameters and correlations between them. These parameters include but are not limited to exchange rates, interest rates, the price of securities (equity, bonds), commodities, derivatives and other assets.
- **Operational risk**: risk of losses resulting from inadequacies or failures in processes, personnel or information systems, or from external events.
- **Risk related to insurance activities**: through its insurance subsidiaries, the Group is also exposed to a variety of risks linked to this business. In addition to balance sheet management risks (interest rate, valuation, counterparty and exchange rate risk), these risks include premium pricing risk, mortality risk and the risk of an increase in claims.

The following table presents the sensitivity of these risk types against physical and transition risks. In doing so, climate-related risks are therefore integrated into the existing risk management framework.

Table 6: Relative significance of climate-related risks in relation to other risks

Risk	Physical	Transition
Credit	Indirectly if customers are located in affected areas, and not covered by insurance	For sectors affected by low carbon transition policies (significant exposure)
Market	Indirect exposure through price effects.	Focused on the carbon rights market (weak exposure)

Operational	Direct exposure on Societe Generale's own sites. Insurance coverage of the Group's operating resources as well as physically held assets	Direct in case of no compliance with disclosure obligations.
Insurance	For the IARD activity of which it is the object.	Would concern invested assets sensitive to climate change

4.1.2 Overall process to determine potential size and scope of identified climate-related risks

Several tools and processes are in place for identifying the risk factors associated with climate change across the Basel risks categories. They are summarised in the following table.

Table 7: Overall process to determine potential size and scope of identified climate-related risks

	Physical	Transition
Credit	For Sovereign clients, Societe Generale uses the *ND-GAIN Country Index*, which summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience, in order to identify the sections its portfolio (corporate and sovereign) that are vulnerable to physical risks. Together with UNEP-FI, Societe Generale has co-developed a qualitative approach for assessing physical risks for corporate loans.	Societe Generale bases the transition risk identification on a range of macro and micro tools approaches: Societe Generale conducts *macro-economic and macro-sectoral studies* that help define the risk appetite of the Group for certain sectors presented to the CORISQ for Risk appetite definition; this includes the metals & mining, power, renewable energy, automotive and oil & gas sectors. Societe Generale has developed a methodology together with UNEP-FI for assessing transition risks for credit (more on that in the section below). For reputational risks linked to the energy transition, *sectoral and cross-sectoral E&S policies* are in place. ALD, Societe Generale's vehicle leasing subsidiary, *monitors* the types of brands, engines (internal combustion, hybrid, electric) and fuels used (diesel, gasoline) for its fleet to assess the vulnerability to transition risks.
Market	No other process in place than taking into account volatility on commodities	On underlying commodities traded, historical and hypothetical stress tests are conducted. Exposure due to client activity on carbon allowances is also supervised.
Operational	Scenario analyses takes into account in the internal capital. Business Continuity management	Not applicable
Insurance	Monitored and controlled through the underwriting / pricing policy, the provisioning policy and the reinsurance policy, approved by the SOGESSUR Board of Directors.	SOGECAP monitors the share of assets invested in bonds and equity.

4.2. Focus: climate-related transition risk methodology

The approach adopted to measure the additional credit risk due to the transition risk corresponds to a "climate vulnerability" indicator defined during the annual renewal of internal ratings. The quantification method is inspired by that developed by the United Nations Environment Programme Finance Initiative (UNEP-FI)[18], to which Societe Generale has contributed alongside 15 international banks.

4.2.1 Approach

The diagram below offers an overview of the approach Societe Generale will adopt for measuring transition risks. In a nutshell, this approach aims to assess transition risks by quantifying the marginal impact of a 2°C scenario on the credit rating of a representative sample of borrowers for a set of priority sectors, under the assumption that the borrower does not adapt to this 2°C scenario. Results from the sample are extended to the sector which allows to quantify the Expected Loss.

Figure 1: Approach for assessing transition risks on the credit portfolio

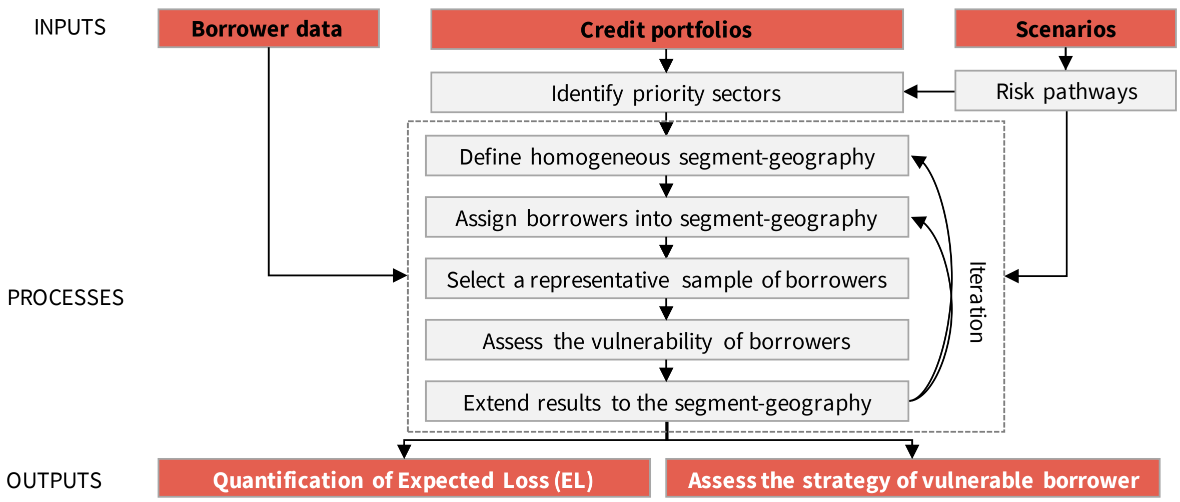
	Define climate scenarios	Assess borrower impact	Assess portolio impact
Objectives	**Define relevant and plausible climate scenarios and identify key risk drivers**	**Assess the marginal impact of the scenario's variables on the credit rating of a representative sample of borrowers**	**The vulnerability of borrowers can be translated into the quantified impact of expected losses on the credit portfolio**
Activities	-Identify priority sectors -Review and understand the range of published scenarios that exist -Define scenarios appropriate to our portfolio -Identify quantifiable risk factor pathways showing how scenarios affect sector performance	-Define homogeneous segments/geography within the sectors -Allocate borrowers into each segment/geography -Identify representative borrowers -Assess the marginal impact of the scenario's variables on the financial and PD TTC of these borrowers	-Extend the results of the sample to the sector or segment/geography -Quantify the Expected Loss on the portfolio for the priority sectors -For vulnerable borrowers, formalize an opinion on adaptation strategy

[18] UNEP-FI (2018) Extending our horizons: http://www.unepfi.org/news/themes/climate-change/extending-our-horizons/

4.2.2 Methodology

The diagram below offers an illustrative summary of the methodology, with each step detailed below.

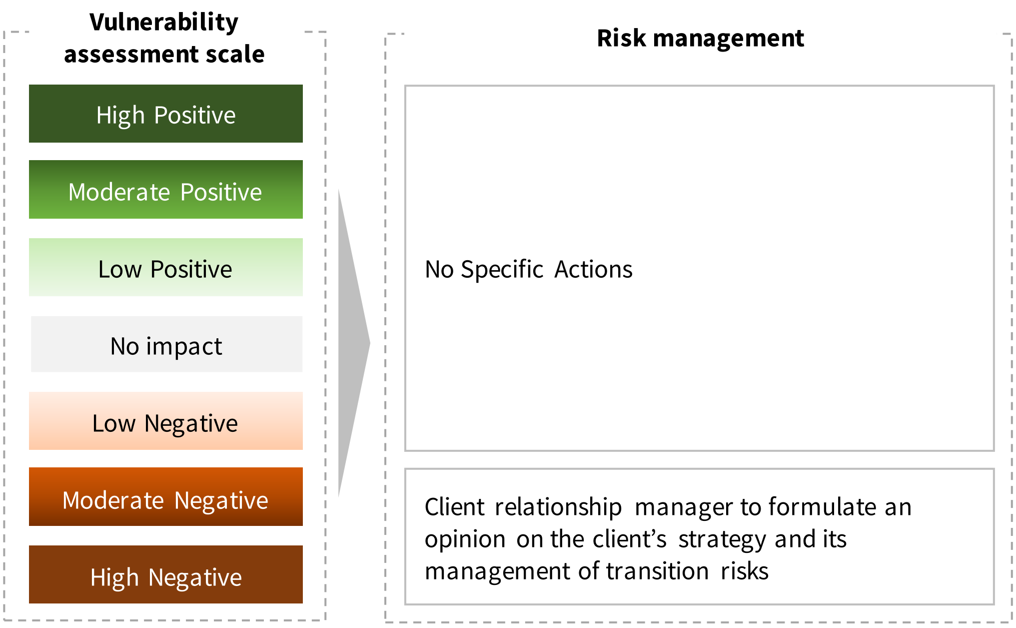
Figure 5: Methodology for assessing transition risks on the credit portfolio



1. **Identify priority sectors**: Given Societe Generale's exposure, the sectors affected by the transition risk identified as priorities include: Oil & Gas, Power Utilities, Metals & Mining, Transportation (including Automotive, Shipping, Airlines). This selection was limited to sectors for which climate scenarios data was available.
2. **Choice of climate scenarios**: Climate scenarios are selected and provide a coherent framework for formalizing the reasoning on possible futures reflecting the effects of policy measures to limit global warming below a certain threshold. The scenario focuses on clarifying the evolution of certain variables (e.g. carbon tax, investments in new technologies, changes in energy prices) which are detailed at the level of each activity sector in an associated geographical area.
3. **Risk factor pathways**: In a second stage, Societe Generale identifies quantifiable risk factor pathways showing how scenarios affect sector performance. These risks factors pathways offer a view on how a given sector's revenue, cost and capital expenditure could be impact:
   - Incremental emissions costs: impact of carbon price on the sector's direct and indirect emissions relative to baseline.
   - Incremental revenue: impact of changes in prices and demand for goods and services relative to baseline.
   - Incremental capital expenditure: Additional capital expenditure borne by the sector to transition to a low carbon economy.
4. **Define homogeneous segments-geographies**: The sectors are then segmented into homogeneous groups. Homogeneity is defined by experts in relation to the main transition risk factors given by the scenario based on objective sectoral and regional criteria (e.g. energy mix for electricity producers, US and EU utility regulatory differences). For that step, complementary corporate and sector data is necessary.
5. **Assign borrowers into segments-geographies**: Most borrowers in the most exposed sectors are then assigned into a segment-geography. Here again, corporate data is necessary to conduct this allocation.
6. **Select a representative sample of borrowers**: Key representative borrower, based on size, business model, or simply corporates for which data is easily available are sampled from each segment-geography.

7. **Assess the "climate vulnerability" of borrowers** : The climate experts directly assessed the vulnerability of the segments based on the scenario and corporate data. The result is an individual assessment of the "climate vulnerability indicator" of each corporate. At the corporate and segment level, the vulnerability assessment should be understood as the marginal impact of a 2°C scenario on the through-the-cycle (TTC) Probability of Default (PD) compared to the current risk of loss currently measured, under the assumption that the borrower does not adapt to this 2°C scenario. Annex E offers a detailed overview of the segment and vulnerability levels of segments for the priority sectors. To represent this vulnerability, a scale was chosen declined in 7 nuances as shown on the figure below.
8. **Extend results to the segment-geography**: Results from the vulnerability assessment are then extended to the whole segment-geography. If the vulnerability assessments of corporates within a same segment-geography shows large differences, this may lead to the review of the segmentation and/or the allocation of borrowers into segment-geographies. Processes 4 to 8 are iterative.
9. **Quantification of Expected Loss**: At portfolio level, the expected loss can be calculated. The vulnerability of borrowers can be translated into the quantified impact of expected losses on the credit portfolio. This impact valuation on the credit portfolio is dependent on the expert opinion on the vulnerability identified on the various sectors (expressed in average rating degradation). This assessment essentially gives a reference point to date. The vulnerability of a corporate exposed to climate transition risk is a complementary indication of the internal rating. It represents a marginal impact of risk of loss in a hypothetical scenario, compared to the risk already measured by Probability of Default and Loss Given Default values.
10. **Examine the strategy of vulnerable clients:** For borrowers that are identified as vulnerable or highly vulnerable, the client relationship manager formalizes an opinion on the risk adaptation strategy of the corporate. Vigilance should be paid to the rate of change announced by the corporate in relation to the rate of transition anticipated by the scenario developed internally. Indeed, in the case of a slow adaptation, the borrower could find itself in difficulty to raise the liquidity needed to finance its transformation plans.

Figure 6: Vulnerability assessment scale



4.2.3 Details on the 2°C scenario used

Assessing transition risks requires the use of forward-looking scenarios. The materiality and timing of climate-related transition risks are uncertain and long-term. Any forecasting exercise, as the bank usually does to predict the evolution of its portfolio is impossible. Traditional macroeconomic models do not allow this type of analysis and relying on expert judgment would expose the analysis to implicit biases. It is therefore necessary to consider how risks can evolve under different conditions.

One way to do this is to analyse scenarios. Not designed to provide forecasts, they are a means of exploring a series of plausible future states if certain trends continue or if certain conditions are met. Scenarios, of course, have limitations and suffer from an inability to represent complex long-term interactions; including shocks, irreversibility and changes in social norms. Nevertheless, they provide a coherent framework for formalizing the reasoning on possible futures.

In 2018, Societe Generale used the Potsdam Institute for Climate Impact Research's (PIK) REMIND scenario SSP2. This scenario was selected by the UNEP-FI working group. It describes a world where social, economic and technological trends do not differ significantly from historical trends. From 2020 a global carbon price is applied in the energy-producing and energy-consuming sectors so that the warming does not exceed 2 degrees. The use of fossil fuels continues until 2040, but a decreasing rate, especially for coal. The use of renewable energies is increasing, accelerating rapidly after 2030 thanks to significant investments in the distribution and storage of electricity.

In 2019, the Group aims to define and maintain baseline climate projection scenarios (a reference scenario for credit transition risk, supplemented if necessary by specific scenarios for certain sectors). The Group's Economic Studies Department oversees the definition of these scenarios with the support of CSR concerning the climate hypotheses. Business Units are set to use this scenario in their vulnerability analysis of customers and transactions in the most exposed sectors.

4.3. Processes for managing climate-related risks

As detailed previously, climate-related risks constitute a factor aggravating credit, market, operational and insurance risks. As a result, the integration of climate-related risks in the risk management framework relies on existing governance and processes. Thus, the management of climate-related risks follows a classical approach (identify, define risk appetite, control and mitigate).

The "climate vulnerability" indicator presented above is still in deployment as of the time of writing of this report. It is planned that this indicator will sit alongside the internal rating. As a result, it will become an input of the mainstream risk appetite framework[19], helping assess the material risks to which the Group is exposed. And subsequently, will influence the allocation of the risk appetite within the Group, down to the appropriate level, taking into account the risk/profitability profile of the business lines and their growth prospects. For more information on the standard risk management approach of Societe Generale, refer to the registration document 2019.[20]

In addition to this existing risk management framework, the Group had previously adopted a range of E&S guidelines and policies that are implemented operationally on clients and transaction by a dedicated team. This is described in the following sections.

[19] *The risk appetite is defined as the level of risk that the Group is prepared to accept to achieve its strategic goals.*

[20] *https://www.societegenerale.com/sites/default/files/documents/Document%20de%20r%C3%A9f%C3%A9rence/2019/ddr-2019_societe-generale_eng_version.pdf*

4.3.1 Climate-related sector E&S policies

The Group has adopted procedures to implement its E&S commitments (E&S General Guidelines and policies and the Equator Principles). These procedures aim at managing the E&S issues associated with transactions and clients to which the Bank provides banking and financial services. Initially only applicable to the activities of Corporate and Investment Banking, they are now being developed and gradually rolled out to cover all of the Group's financing and investment activities. In addition to facilitating the identification, assessment and appropriate management of potentially negative E&S impacts, these procedures also enable the identification of transactions and clients having a positive impact in relation to sustainable development.

Developed by cross-business line working groups under the supervision of the Groupe SCR Department, the E&S policies are approved by General Management. They detail the main E&S challenges and risks of the sectors covered, identify international standards for such sectors, and propose an analytical framework applied to the evaluations of clients and dedicated transactions. As part of the Group's commitment to ongoing improvement, sector watch allows to assess the need to update existing policies. Energy and mining are covered by a number of sector-specific policies due to their importance for the economy and for the Group, their potentially significant impact in terms of atmospheric emissions (including greenhouse gas emissions), as well as their impact on the natural environment and local communities (dams and hydroelectric energy, power plants, coal-fired power plants, mines, civil nuclear power, and oil and gas).

In 2018, the Oil and Gas policy was updated. The Group committed to finance only those activities in the oil and gas sector that have a mitigated impact on the climate. In particular, Societe Generale will no longer finance activities relating to the production of oil from oil sands anywhere in the world or to the production of oil in the Arctic. These commitments also target the implementation or commitment to implement measures to limit continuous flaring and methane emissions. For companies using fracking techniques, they also include the implementation of best E&S practices in line with the Golden Rules of the IEA (including limitation of methane leakages).

In order to facilitate E&S risk management, an E&S watch list and exclusion list are compiled and updated quarterly by internal experts. It lists any projects, companies or sectors/countries, irrespective of whether they are financed by Societe Generale, that are the subject of controversy or public campaigns on the part of civil society for E&S reasons.

4.3.2 E&S evaluation procedures for clients

Societe Generale is continuing to roll out measures for the E&S analysis of its clients in the Business Units based on the shared principles of E&S risk identification, assessment and management. At the same time, the Group has initiated a review of governance and the related controls.

Working with a dedicated team of experts supporting the sales teams, Corporate and Investment Banking has been analysing the E&S risk posed by its clients for several years. It seeks to identify the E&S challenges arising from the sectors and the location of their activities or from controversies, and then, for the riskiest ones, to assess the clients' ability to manage these risks (CSR organisation, practices and maturity, management of E&S controversies, and dialogue with stakeholders). This assessment may give rise to specific actions (for instance, not establishing a relationship with a prospect, imposing restrictions on an existing relationship, or entering into a specific commitment with an existing client with the aim of convincing it to improve its E&S practices). The E&S analysis is underpinned by a risk-based approach with an in-depth E&S assessment and an annual review of the priority client groups.

In French Retail Banking (Societe Generale network), no material E&S-related reputational risks was identified. For some of these client groups, the assessment led to discussions with the company in question. Deployment efforts also concerned the Crédit du Nord network (client on-boarding and transactions), following the identification of E&S risks specifically in the Coal and Waste Management sectors.

Within International Retail Banking, Societe Generale is also continuing to roll out measures for the E&S analysis of its corporate clients. In some cases, these assessments led to restricting or even refusing new relationships. In addition to these analyses, E&S assessments were conducted when making significant transactions. Within this scope, a project aimed at improving the deployment of an E&S risk management system (including the strengthening of expertise, training, the formalisation of procedures and implementation tools) was launched in 2018 and will be completed in 2019.

4.3.3 E&S evaluation procedures for transactions

The evaluation of the E&S risks and impacts of transactions constitutes the operational implementation of the Equator Principles (EP) within the scope covered by this initiative. Moreover, Societe Generale has voluntarily expanded the scope of application of the EP to include a range of transactions likely to present E&S challenges, such as equity capital market transactions, debt capital market transactions, mergers and acquisitions, and acquisition financing. Even beyond this scope, any financial transaction entered into by Corporate and Investment Banking involves the identification of any E&S risks relating to the client, other than financial institutions.

The main stages for the assessment of transactions at the Bank are the identification stage, followed by the E&S evaluation stage and the action stage. Overall in 2018, total new funding for the dedicated transactions that underwent an E&S review within the EP scope amounted to EUR 3.4 billion, and EUR 3.7 billion fell outside the scope of the EP (Societe Generale's voluntary scope of application). A dedicated team of experts lends support to the sales managers when assessing and understanding the E&S impact of transactions and clients.

In 2018, the Group continued to roll out the E&S training programme. Face-to-face training, which includes the E&S evaluation procedures for transactions and clients, was provided to 240 employees. In addition, a micro-learning platform can now be accessed.

5. METRICS AND TARGETS

5.1. Public engagements

Over the last few years, Societe Generale has made a number of public commitments to demonstrate its resolve to partake in the fight against climate change. These commitments are listed below.

5.1.1 Commitment to align the lending portfolios with the goals of the Paris Agreement

On the occasion of the COP 21 meeting and the Paris Agreement in 2015, Societe Generale made stringent commitments to align its activities by 2020 with the International Energy Agency's (IEA) trajectory to limit global warming to 2°C.

This commitment was supplemented in December 2018 by the Katowice commitment, signed jointly with four other banks. By signing the Katowice commitment, Societe Generale committed to measure the climate alignment of its lending portfolio (through developing opensource methods and tools), and to lead the implementation of these methodologies and tools to actually align its lending portfolios with the goals of the Paris Agreement and thereby contributing to the ultimate goal of climate neutrality.[21]

5.1.2 Commitment to steer its policy in line with the IEA's scenarios

In 2016, the Bank implemented a robust methodology to steer the monitoring of our coal financing with the objective of reducing the share of coal in the electricity production financed by the Bank to 19% by the end of 2020, in line with the IEA's two-degree scenario. Our achievements by mid-2018:

- the Group is very close to its 2020 target with the share of coal in the energy mix of electricity production being financed reduced to 19.3%
- the share of low-carbon energies in this mix is 48.7%, of which nearly 42% are renewable energies

5.1.3 Pro-energy transition commitments

In 2017, Societe Generale pledged to help raise €100 billion in financing for the energy transition between 2016 and 2020 and to report regularly on its achievements. Societe Generale announced it had achieved 58% of this target at Q3-2018:

- EUR 42 billion in green bonds issuances lead or co-lead by the Bank, representing 50 transactions worldwide
- EUR 16 billion in advisory and financing services in the renewable energies sector

Societe Generale has been supporting renewable energy financing activities for more than 10 years, and today is one of the world's leaders in this domain.

5.1.4 Commitment to reduce activities involving fossil fuels

In 2016, Societe Generale was one of the first international banks to scale-back its support for the coal sector (extraction and electricity production).

The Bank has stopped all coal-dedicated financing worldwide.

The Group also adopted in 2018 exclusion policies for oil sands and Arctic oil exploration and extraction activities.

5.1.5 Commitment to reduce the carbon footprint of its own activities

In 2017, Societe Generale decided to accelerate its 2014-2020 carbon reduction programme, and therefore strengthened its objective to reduce its carbon footprint by cutting its CO_2 emissions per employee by 25% by 2020.

[21] https://www.societegenerale.com/sites/default/files/documents/Document%20RSE/the_katowice_commitment.pdf

5.1.6 Commitment to monitor emissions from shipping finance

Societe Generale is one of the founding signatories to the Poseidon Principles in collaboration with the Global Maritime Forum, and in league with a significant number of the shipping industry's leading banks. The Poseidon Principles promote a low carbon future for the global shipping industry by integrating climate considerations into bank portfolios and credit decisions. The Poseidon Principles are consistent with the International Maritime Organisation's (IMO) ambition to reduce shipping's greenhouse emissions by at least 50% by 2050.

5.2. Metrics on climate-related risks and opportunities

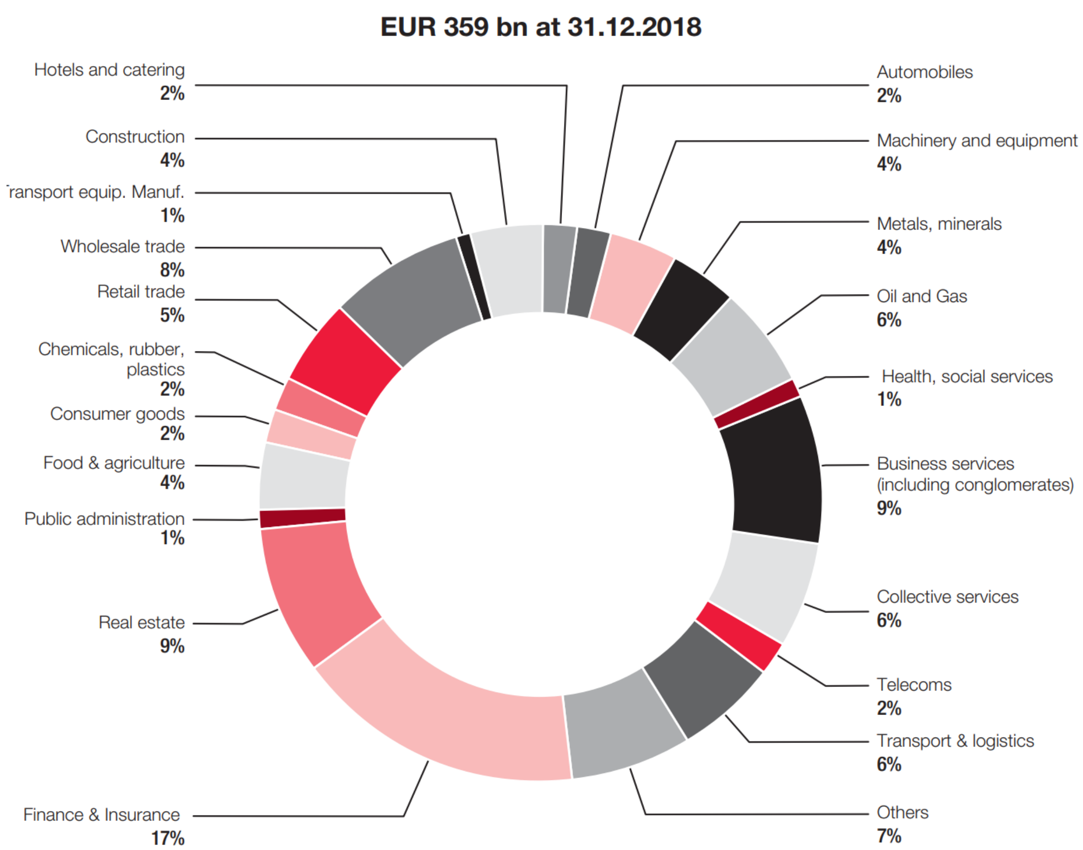
5.2.1 Climate-related risks

Societe Generale has identified the sectors exposed positively or negatively to transition risks and prioritized further research on 23% of the total exposure to Corporates.

- Automobiles (2%)
- Metals & minerals (4%)
- Oil & Gas (6%)
- Electric and gas utilities (5%) (included in collective services)
- Transport and logistics (6%)

Within each sectors, segments and business models are expected to be unevenly affected by transition risk. For example, within the electric utility segment, the corporates active in the renewables space are thought to benefit from the transition. This is shown in the figure below.

Figure 7: Sector breakdown of Group corporate exposure (Basel Portfolio)



For the power sector, Societe Generale has also identified its composition for corporates involved in power generation. The table below shows the electricity mix financed by Societe Generale.

Table 8: Electricity mix financed by Societe Generale

	Scope	Unit	2015	2016	2017	Mid-2018
Coal	Corporate credit portfolio	%	-	-	20.4	19.3
Oil	Corporate credit portfolio	%	-	-	1.5	*1.6*
Gas	Corporate credit portfolio	%	-	-	31.4	*30.4*
Nuclear	Corporate credit portfolio	%	-	-	5.3	*6.8*
Hydro	Corporate credit portfolio	%	-	-	6.0	*6.2*
Renewables	Corporate credit portfolio	%	-	-	35.3	*35.7*

5.2.2 Climate-related opportunities

Finally, the Transform to Grow strategic plan includes a CSR ambition, is reflected in the Group's commercial momentum through sustainable and Positive Impact Finance (SPIF) to monitor credit, leasing and customer support in the growing of their positive impact activities. As per the Registration Document[22], at the end of 2018, the Group had achieved 69% of its commitment (EUR 21.4 billion for the renewable energies sector and EUR 47.6 billion for green bonds). This figure is a mix of advisory and/or financing mandates dedicated to the renewable energies sector. The figure reported below is solely for the financing mandates; not advisory.

Table 9: Climate-related financing (production)

	Scope	Unit	2015	2016	2017	2018
Wind	Corporate credit portfolio	EUR m	656	1006	828	1,779
Solar	Corporate credit portfolio	EUR m	441	264	686	912
Public transport	Corporate credit portfolio	EUR m	588	277	373	881
Other renewables	Corporate credit portfolio	EUR m	94	81	73	258
Energy efficiency	Corporate credit portfolio	EUR m	132	591	503	211
T&D and energy storage	Corporate credit portfolio	EUR m	0	0	0	116
Energy savings	Corporate credit portfolio	EUR m	12	62	150	44
Total climate financing	Corporate credit portfolio	EUR m	1,923	2,280	2,613	4,201
Other environmental projects	Corporate credit portfolio	EUR m	44	912	279	2,034
Water treatment	Corporate credit portfolio	EUR m	0	0	0	185
Waste management	Corporate credit portfolio	EUR m	0	0	0	80
Forest and biodiversity	Corporate credit portfolio	EUR m	0	0	0	9
Cleanup	Corporate credit portfolio	EUR m	0	0	0	1
Total other environmental financing	Corporate credit portfolio	EUR m	44	912	279	2,308
Total green financing	Corporate credit portfolio	EUR m	1,967	3,192	2,892	6,509

Moreover, the Bank is a long-standing player in the carbon market, ranked No. 2 by Energy Risk as *Emissions dealers* and No. 1 for its research on the subject in 2018[23]. It is also a leading financer of renewable energy as shown in the table below.

Table 10: Ranking in emissions dealing and renewable energy financing

[22] *Societe Generale (2019) Registration Document – annual financial report 2018 https://www.societegenerale.com/sites/default/files/documents/Document%20de%20r%C3%A9f%C3%A9rence/2019/ddr-2019_societe-generale_eng_version.pdf*

[23] Energy Risk Commodity Rankings 2018 (2018) Societe Generale voted best overall dealer 2018 – Six years in a row https://cib.societegenerale.com/fileadmin/user_upload/SGCIB/pdf/MARK/Societe_Generale_Energy_Risk_Commodity_Rankings_2018.pdf

	Scope	Unit	2015	2016	2017	2018
Emissions dealers (Energy Risk ranking)	Group	Ranking	-	-	-	2
Research in emissions (Energy Risk ranking)	Group	Ranking	-	-	2	1
Renewable Energy Project Finance Volume by MLA (Dealogic) World	Group	Ranking	-	-	-	4
Renewable Energy Project Finance Volume by MLA (Dealogic) EMEA	Group	Ranking	-	-	-	2
Renewable Energy Project Finance Volume by MLA (Dealogic) Europe	Group	Ranking	-	-	-	1

5.3. Metrics on greenhouse gas emissions and related risks

5.3.1 GHG emissions Scope 1, 2 and 3

Calculation of the Group's CO2 emissions is broken down into three categories:

- 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, transport of goods and energy consumption of data centres hosted in France since 2012.

The scope was extended to include waste in 2017. CO2 emissions are calculated according to the GHG Protocol method. The table below offers the Group's GHG emissions from 2014 to 2018.

Table 11: GHG emissions Scope 1, 2 and 3 indicators

	Scope	Unit	2015	2016	2017	2018
Carbon footprint	Group	TCo2e	342,629	328,425	321,306	308,529
Scope 1	Group	TCo2e	40,611	35,416	34,324	29,983
Scope 2	Group	TCo2e	190,873	183,356	179,408	172,772
Scope 3	Group	TCo2e	110,196	108,203	106,311	104,153
Carbon footprint, per occupant	Group	TCo2e /Occupant	2.42	2.31	2.15	2.04
Group-level carbon price	Group	EUR / TCo2e	10	10	10	10

5.3.2 Internal carbon tax

The Group introduced an "internal carbon tax" levied on each of the Group's entities, based on their greenhouse gas emissions (€10/tonne CO2 equivalent) and the sums collected are then redistributed in the form of rewards for the best internal environmental efficiency initiatives, through the "Environmental Efficiency Awards". The table below gives an overview of the performance of this programme. Over the past six years, internal carbon tax revenues have benefitted 305 initiatives in 32 participating countries over four continents.

Table 12: Internal carbon tax indicators

	Scope	Unit	2015	2016	2017	2018
Group-level carbon price	Group	EUR / TCo2e	10	10	10	10
Amount of internal carbon tax collected	Group	EUR m	3.4	3.1	3.1	3.0
Number of initiatives rewarded as part of the internal carbon tax process since 2012	Group	Number	119	185	240	305
Savings on overheads via the internal "carbon tax" process since 2012	Group	EUR m	13	26	95	126
Savings on avoided GHG (greenhouse gas) emissions via the internal "carbon tax" process since 2012	Group	Tons	4,700	11,000	38,000	56,000

Energy savings via the internal "carbon tax" process since 2012	Group	GWh	30	58	220	298

5.3.3 Carbon targets

Finally, as part of its 2014-2020 carbon reduction programme, Societe Generale has undertaken to cut its greenhouse gas emissions by 25% per occupant and to improve the energy performance per occupant of the Group's buildings by 20% by 2020 as compared to 2014 levels (where emissions were of 2.52 TCo2e /Occupant).

Table 13: Carbon targets indicators ed emissions indicators

	Scope	Unit	2015	2016	2017	2018
Target: to reduce GHG emissions in 2020 compared with 2014	Group	%	-	-20	-25	-25
Achievement: reduction of GHG emissions in 2020 compared with 2014	Group	%	-	-9.0	-13.3	-19.0
Target: to increase the buildings' energy performance in 2020 compared with 2014	Group	%	-	20	20	20
Achievement: Energy performance compared with 2014	Group	%	-	9	12	22

5.3.4 Financed emissions

Among other methodologies, Societe Generale uses P9XCA methodology[24] for assessing the emissions arising from its financing; i.e. financed emissions. In short, this methodology involves allocating all GHG emissions to sources of finance (through bank debts, bond debt and equity) based on their market share by economic sector and geographies. The figure that follows shows the historical emissions reported on the corporate credit portfolio.

Table 14: Financed emissions indicators

	Scope	Unit	2015	2016	2017	2018
Transport	Corporate credit portfolio	MTCo2e	31	42	42	**45**
Energy	Corporate credit portfolio	MTCo2e	33	38	36	**37**
Manufacturing industries	Corporate credit portfolio	MTCo2e	16	17	18	**18**
Process industries	Corporate credit portfolio	MTCo2e	10	12	13	**14**
Waste Management	Corporate credit portfolio	MTCo2e	7	7	7	**7**
Agriculture & land use	Corporate credit portfolio	MTCo2e	-13	-13	-14	-17
Total	Corporate credit portfolio	MTCo2e	84	104	101	103

5.4. Targets on climate-related risks and opportunities

5.4.1 Financing of low-carbon activities

In 2017, Societe Generale pledged to help raise €100 billion in financing for the energy transition between 2016 and 2020 and to report regularly on achievements.

Table 15: Target financing of low-carbon activities

[24] *For a detailed account of the methodology refer to:*
https://www.banktrack.org/download/understanding_the_issues_around_quantifying_ghg_emissions_in_the_financial_sector_3/fichier_v_3_eng_understanding_the_issues_around_quantifying_ghg_emissions_in_the_financial_sector.pdf

	Scope	Unit	2015	2016	2017	2018
Target 2020: amounts contributed to Energy Transition consulting and financing between 2016 and 2020	Group	EUR bn	-	-	100	100
of which: amounts contributed to consulting and financing for renewable energy projects between 2016 and 2020	Group	EUR bn	10	10	15	15
of which: nominal amounts of led or co-led green bond issues between 2016 and 2020	Group	EUR bn	-	-	85	85
Achievement at end of year for consulting and financing for renewable	Group	EUR bn	-	-	-	21.4
Achievement at end of year for consulting and financing for green bonds	Group	EUR bn				47.6
Achievement	Group	%				69

5.4.2 Reduction in financing of high-carbon activities

In 2016, the Bank implemented a robust methodology to steer the monitoring of our coal financing with the objective of reducing the share of coal in the electricity production and coal mining in line with the IEA's two-degree scenario. Below are the precise indicators.

Table 16: Targets reduction in financing of high-carbon activities

	Scope	Unit	2015	2016	2017	2018[25]
Target 2020: to achieve a 14% reduction of outstanding credit (exposure) related to coal mining (between 2016 and 2020)	Corporate credit portfolio	%	-	14	14	14
Achievement: Distance between Societe Generale portfolio and 2°C scenario, outstanding credit drawn from coal mining (negative numbers indicate that the target is met)	Corporate credit portfolio	%	-	-	-7	-10
Target 2020: to achieve in 2020 less than 19% the share of coal in the energy mix of electricity generation funded	Corporate credit portfolio	%	-	19	19	19
Achievement: Share of coal in the electricity generation energy mix financed	Corporate credit portfolio	%	-	-	22.4	19.3

[25] Values are for mid-2018

ANNEX A – GLOSSARY OF MAIN TECHNICAL TERMS

CORISQ: Group Risk Committee. The role of this Committee is to define the Group's key priorities in terms of risk, within the framework of the risk appetite and the financial targets set by the Group Strategy Committee, and to monitor compliance in such respect. Subject to the powers attributed to the Board of Directors, the CORISQ, based on proposals from the Risk Division, takes the main decisions relating to the management of various risks (credit risks, country risks, market and operational risks).

Expected Loss (EL): losses that may occur given the quality of a transaction's structuring and all measures taken to reduce risk, such as collateral.

Liability risks: These risks can arise if parties who have suffered losses from physical and transition risk factors seek to recover these losses from those they view as responsible. Specific mechanisms include a failure to disclose financial risks, a failure to adapt to their foreseeable nature, and a failure to take the short-term action required to mitigate future financial risks.

Loss Given Default (LGD): ratio between the loss incurred from exposure to default by a counterparty and the amount of the exposure at the time of default.

Physical risks: Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organisations, such as direct damage to assets and indirect impacts from supply chain disruption. Organisations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organisations' premises, operations, supply chain, transport needs, and employee safety.

Probability of Default (PD): likelihood that a counterparty of the bank will default within one year.

Risk appetite: level of risk, by type and by business line, that the Group is prepared to take on with regard to its strategic objectives. Risk appetite is derived using both quantitative and qualitative criteria. The Risk Appetite exercise is one of the strategic steering tools available to the Group's decision-making bodies.

Through-the-cycle (TTC): TTC PDs give an average default rate performance for a particular customer over an economic cycle and ignore short run changes to a customer's PD.

Transition risks: Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organisations.

Climate vulnerability indicator: should be understood as the marginal impact of a 2°C scenario on the through-the-cycle (TTC) Probability of Default (PD) compared to the current risk of loss currently measured, under the assumption that the borrower does not adapt to this 2°C scenario. Annex E offers a detailed overview of the segment and vulnerability levels of segments for the priority sectors. To represent this vulnerability, a scale was chosen declined in 7 nuances as shown on the figure below.

Definitions

Acronym	Definition
CSR	Corporate Social Responsibility
EAD	Exposure at default

EL	Expected Loss
LGD	Loss Given Default

ANNEX B – SUSTAINABLE AND POSITIVE IMPACT FINANCE

Societe Generale was a pioneer in the creation of the UN's Positive Impact initiative[26] which seeks to foster the business and financial ecosystem Societe Generale needs to achieve a sustainable world. Societe Generale is now co-chair of the initiative. Inspired by the spirit of Positive Impact Finance, Societe Generale has developed a full range of solutions to support its clients' transformation. To support its clients' transformation –corporates and investors alike-, Societe Generale has launched a dedicated offering bringing together all its environmental & social expertise across the full spectrum of investment and financing solutions.

Financing products and services

Building on Societe Generale's historical skills in environmental and social risk management, structured finance and capital markets, Societe Generale has developed an expertise that is essential for meeting the increasing demand of its clients for financial solutions that match their sustainability agenda. Financing solutions include:

- **Renewable Energy:** With a global presence and acknowledged energy sector expertise, Societe Generale is also fast becoming a leader in renewable energy (solar, wind and biomass energy, etc.). Societe Generale has more than doubled its funding to renewable energy projects in less than two years, reaching up to EUR 15 billion in 2018, and Societe Generale is committed to do more.
- **Impact loans:** As an innovative way to value client's sustainability performance, Societe Generale has developed an Impact Loan offer, linking the financing structure to the client's achievements in terms of corporate and social responsibility (CSR) targets. Defined on a case by case basis, the targets are discussed with its clients and supported by an incentivised mechanism. With this tailormade structured offer, Societe Generale intends to work with its clients towards their sustainability ambition and CSR achievements.
- **Green, social and Positive Impact bonds:** Societe Generale's unique platform combines its longstanding environmental, social and impact structuring expertise with its leading debt capital markets structuring and distribution platform. Following the successful issuance of two EUR 500 million Positive Impact bonds by Societe Generale in 2015 and 2016, ALD Automotive, a leading global player in fleet management & mobility solutions, issued in October 2018 its inaugural EUR 500 million Positive Impact Bond. In order for the bond to qualify as having a Positive Impact, ALD Automotive developed a life-cycle-assessment approach based on robust and transparent impact measurement of the fleet at all stages of the life of the vehicles.

Societe Generale continuously accompanies its clients in the sustainable bond market, and more than ever since 2016 with the lead management of over 50 green, social and sustainability bonds amounting to a total exceeding EUR 46 billion equivalent.

In addition, Societe Generale acted as structuring advisor for highly visible inaugural green and social bonds for key clients in all asset classes – corporates, financial institutions, SSA – in Europe and Asia, highlighting the bank's strong advisory capabilities in the sustainable and positive impact finance field.

In a drive to support the further development of the sustainable bond market globally, Societe Generale is taking an active part in several initiatives, such as being a member of the ICMA Green and Social Bond Principles and being the first French bank joining in 2018 the Climate Bond Initiative's Partnership Programme :

[26] *The Positive Impact initiative is based on the idea that addressing global economic, social & environmental issues is both an imperative and a massive business opportunity for the private sector once an impact-based approach is implemented. The Positive Impact Finance Initiative* aims at providing a common language and developing new solutions to finance the Sustainable Development Goals along with its clients;* http://www.unepfi.org/positive-impact/positive-impact/

- **Partnerships with supranational, multilateral and development finance institutions (MDFIs):** Societe Generale develops partnerships with multilaterals and development finance institutions through co-financing, co-investment and risk-sharing deals, including:
  - Projects in the commodity sector or commodity trade finance programs, infrastructure projects in Western Europe and emerging countries, Positive Impact Financing in emerging countries;
  - Originate-to-distribute transactions, with multilaterals and development finance institutions acting as investors in the whole range of securities, from debt to mezzanine and equity.
- **Equipment Finance:** Working with manufacturers, energy service companies, installers and specialist financial intermediaries, Societe Generale funds their customers' investments in clean and/or renewable energy technologies in a cost-effective way.
- **Sustainable Cities:** In June 2018, Societe Generale joined the "Smart Cities Accelerator Program" launched by NetExplo, in the frame of the Group's Sustainable Cities Initiative, which aims to develop solutions for smart & sustainable cities, in all its markets.

Investment products and services

With a top-ranked ESG Research team, performing index solutions and a broad socially responsible product offer - ranging from the most vanilla to the most customized proposal - the aim is to deliver sustainable investment solutions that fit the diverse ESG & SRI strategies of Societe Generale's clients.

SRI/ESG Research

Socially Responsible and Impact investing (SRI) issues, as well as Environmental, Social & Governance (ESG) factors, have become important performance drivers. Sitting alongside financial and macroeconomic considerations, ESG factors have become easier to quantify and should be considered when assessing any company. Since 2016, Societe Generale's dedicated ESG research team has helped investors and asset managers to integrate these criteria into investment decisions.

Innovative Sustainable & Positive Impact Products

From vanilla to customized solutions, Societe Generale links a wide range of issuers (sovereigns, supras, agencies, corporates) and investors (insurance companies, asset managers...) through green bonds or social bonds.

- **Performing index solutions:** The Societe Generale Index range covers a wide scope of assets, including Environment, Social and Governance (ESG) indices based on its ESG research or comprehensive network of ESG partners. Wide range of formats are available: ETFs, Funds, Certificates, Structured products etc. Societe Generale also engineers custom indices. Whether derived from a flagship index or created at the client's request, these are developed to precisely match investors' objectives and constraints.
- **Tailored 'green' or 'positive impact' structured solutions**: Societe Generale has been issuing structured notes for more than 20 years, including ESG index-linked structured notes. The latest structured solutions package green or sustainable investments into four main formats:
  - *Positive Impact Notes*: Societe Generale has created a range of products to allow clients to invest in a structured note while promoting Positive Impact Finance. Positive Impact Structured Notes are linked to a SRI index. The bank commits to hold in its books an amount in Positive Impact Finance assets equivalent to 100% of the nominal amount of Positive Impact notes.
  - *Repack of a Green Bond*: Societe Generale issues a bond-repacked note for which the yield of a third-party bond (the reference bond) is used as a funding source.
  - *Green Notes issued by an external issuer*: the issuer tracks the investment of the note's proceeds in green projects or is a recognized 'pure player' which exclusively funds green projects.

- *Socially Responsible Deposits*: Societe Generale uses funds collected through the deposit to finance short-term loans to corporates that have received the highest extra-financial rating, and to finance commodity transactions selected for their high standard of responsible practice. This offer allows its corporate clients to contribute to a new responsible lending approach.

ESG innovation in Asset Management

Lyxor Asset Management is addressing within its active and passive solutions the challenges of climate transition and the growing demand for responsible investments.

As a pioneer of ETFs in Europe, Lyxor has leveraged on its strong ability to innovate in order to present investors with a comprehensive ESG offering. As such, Lyxor provides ETF-based thematic solutions aligned with four Sustainable Development Goals - Water, New Energy, Climate Action and Gender Equality- with which Lyxor has pioneered the European ETF market. In 2018, Lyxor broke new ground with the first ESG ETFs to include ESG trend scores for company selection.

In parallel, Lyxor has gradually integrated ESG rating and risks both in its active equity strategies and in unlisted vehicles for institutional mandates. Moreover, after nearly 20 years in the vanguard of multi-management, Societe Generale now has recognized know-how in providing transparent frameworks and consolidated reporting. Drawing on its expertise and partnerships with management industry leaders, Societe Generale offers clients a cutting-edge proprietary method enabling in-depth assessment of their portfolios' ESG metrics and carbon footprint.

Securities Services integrates ESG factors

Societe Generale Securities Services is fully committed to support its clients in their sustainable finance practice - whether they are issuers or institutional investors - helping them to solve various technical challenges related to the integration of ESG factors. Societe Generale Securities Services’ modular offer includes:

- Portfolio analysis based on various ESG metrics, including carbon footprint, benefitting from independent calculation capabilities;
- A proxy voting service through a single platform covering 36 markets and connected to 16 proxy advisers;
- A General Meeting organisation service, selected by 150 listed companies.