2

RISK FACTORS

IN BRIEF

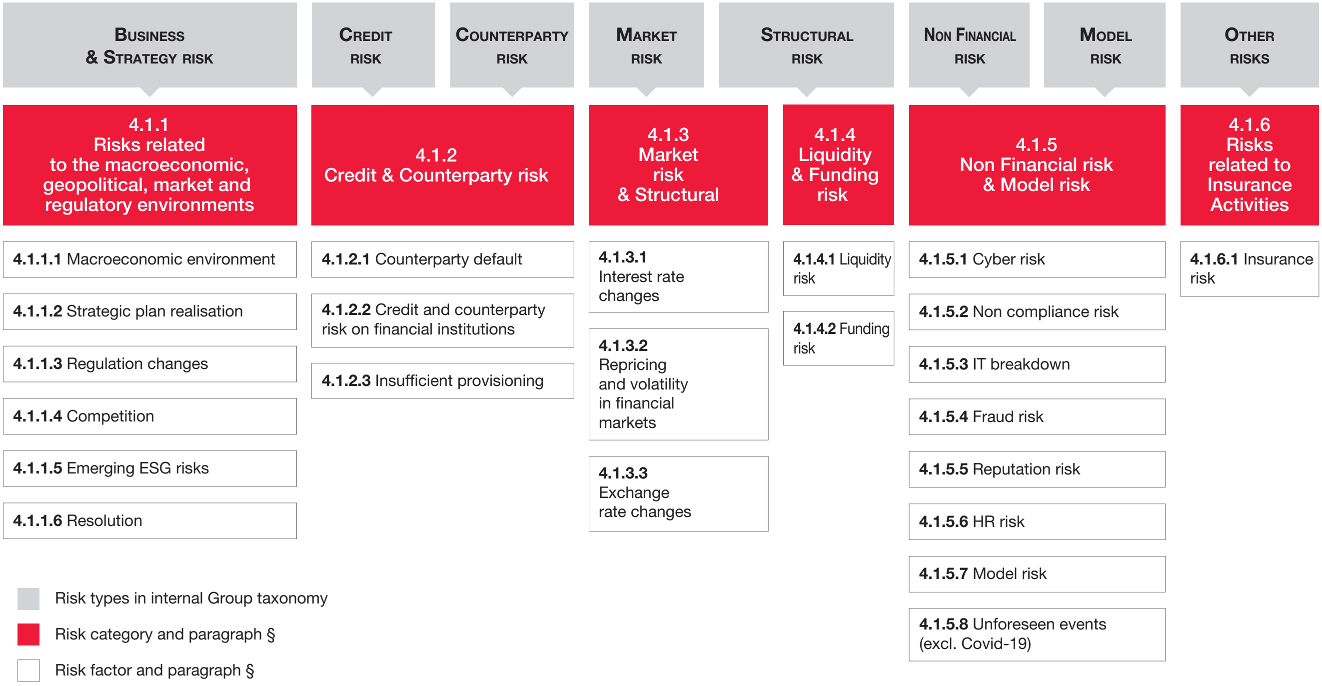
This section describes the various types of risks and the risks to which Societe Generale is exposed.

2.1 RISK FACTORS BY CATEGORY

This section identifies the main risk factors that the Group estimates could have a significant effect on its business, profitability, solvency or access to financing.

As part of its internal risk management, Societe Generale has updated its risk typology. For the purposes of this section, these different types of risks have been grouped into six main categories (4.1 to 4.1.6), in accordance with Article 16 of the Regulation (EU) 2017/1129, also known as "Prospectus 3" regulation of 14 June 2017, according to the main risk factors that the Group believes could impact the risk categories. Risk factors are presented based on an evaluation of their materiality, with the most material risks indicated first within each category.

The diagram below illustrates how the categories of risks identified in the risk typology have been grouped into the six categories and which risk factors principally impact them.



Note to the reader: the diagram illustrates how the types of risks identified in the Group's risk typology have been grouped into the six categories and which risk factors mainly impact them.

2.1.1 RISKS RELATED TO THE MACROECONOMIC, GEOPOLITICAL, MARKET AND REGULATORY ENVIRONMENTS

2.1.1.1 The global economic and financial context, geopolitical tensions, as well as the market environment in which the Group operates, may adversely affect its activities, financial position and results of operations.

As a global financial institution, the Group's activities are sensitive to changes in financial markets and economic conditions generally in Europe, the United States and elsewhere around the world. The Group generates 49% of its business in France (in terms of net banking income for the financial year ended 31 December 2022), 32% in Europe, 7% in the Americas and 12% in the rest of the world. The Group could face significant deteriorations in market and economic conditions resulting from, in particular, crises affecting capital or credit markets, liquidity constraints, regional or global recessions and fluctuations in commodity prices (notably oil and natural gas). Other factors could explain such deteriorations, such as variations in currency exchange rates or interest rates, inflation or deflation, rating downgrades, restructuring or defaults of sovereign or private debt, or adverse geopolitical events (including acts of terrorism and military conflicts). In addition, the Covid-19 crisis continues to have an impact mainly in China, where the so-called "Zero Covid" policy has begun to be relaxed. Such events, which can develop quickly and whose effects may not have been anticipated and hedged, could affect the Group's operating environment for short or extended periods and have a material adverse effect on its financial position, cost of risk and results of operations.

The economic and financial environment is exposed to intensifying geopolitical risks. The war in Ukraine which began in February 2022 has led to high tensions between Russia and Western countries, with significant impacts on global growth, energy and raw materials prices, as well as on a humanitarian level. The economic and financial sanctions imposed by a large number of countries, particularly in Europe and the United States, against Russia and Belarus could significantly affect operators with direct or indirect links to Russia, with a material impact on the Group's risks (credit and counterparty, market, reputation, compliance, legal, operational, etc.). The Group will continue to analyse in real time the global impact of this crisis and to take all necessary measures to comply with applicable regulations.

In Asia, US-China relations are fraught with trade tensions and the risk of technological fractures.

After a long period of low interest rates, the current inflationary environment is leading the major central banks to raise rates. The entire economy will need to adapt to a context of higher interest rates. In addition to the impact on the valuation of equities, interest rate-sensitive sectors such as real estate will have to adjust. The US Federal Reserve and the European Central Bank (ECB) are expected to continue to tighten monetary conditions in the first half of 2023 before taking a break as inflation recedes according to our predictions. In the meantime, inflation in the US and Europe continues to impact the price of services, food and energy.

This crisis could generate strong volatility on the financial markets and a significant drop in the price of certain financial assets, potentially leading to payment defaults, with consequences that are difficult to anticipate for the Group. In France, after the long period of low interest rates which fostered an upturn of the housing market, a reversal of activity in this area could have an adverse effect on the Group's asset value and on business, by decreasing demand for loans and resulting in higher rates of non-performing loans. More generally, the higher interest rates environment in a context where public and private debts have tended to increase is an additional source of risk.

Considering the uncertainty generated by this situation, both in terms of duration and scale, these disruptions could persist throughout 2023 and have a significant impact on the activity and profitability of certain Group counterparties.

Against the backdrop of the continuing war in Ukraine, the reduction in Russian gas imports and the introduction of an embargo on Russian oil on 5 December 2022, the European energy sector is facing a more difficult and uncertain situation. Gas prices have risen and remain highly volatile. A total halt in Russian gas supplies combined with a post-Covid-19 economic recovery in China could lead to a further spike in gas prices, affecting European economic growth.

In the longer term, the energy transition to a "low-carbon economy" could adversely affect fossil energy producers, energy-intensive sectors of activity and the countries that depend on them.

With regard to financial markets, in the context of Brexit, the topic of non-equivalence of clearing houses (central counterparties, or CCPs) remains a point of vigilance, with possible impacts on financial stability, notably in Europe, and therefore on the Group's business. In addition, capital markets (including foreign exchange activity) and securities trading activities in emerging markets may be more volatile than those in developed markets and may also be vulnerable to certain specific risks, such as political instability and currency volatility. These elements could negatively impact the Group's activity and results of operations.

On the mobility market, due to the shortage of new car supply, demand for used vehicles has risen, pushing up resale prices sharply. As a result, ALD has recorded a historically high result on used vehicle sales for the past year. The Group is exposed to a potential loss in a financial year from (i) resale of vehicles related to leases which expire during the period whose resale value is lower than their net carrying amount and (ii) additional impairment during the lease period if residual value drops below contractual residual value. Future sales and estimated losses are impacted by external factors such as macroeconomic conditions, government policies, tax and environmental regulations, consumer preferences, new vehicle prices, etc. The Group anticipates for 2023 that supply chains may not return to normal immediately, which could support the resale prices of used vehicles.

The Group's results are therefore exposed to the economic, financial, political and geopolitical conditions of the main markets in which the Group operates.

2.1.1.2 The Group's failure to achieve its strategic and financial objectives disclosed to the market could have an adverse effect on its business, results of operations and the value of its financial instruments.

The Group is fully on track to achieving its strategic milestones and has set targets for profitable and sustainable growth out to 2025 with:

- average annual revenue growth of 3% or greater over the 2021-2025 period by focusing on growth in the most profitable businesses;
- an improved cost to income ratio equal to or lower than 62% in 2025 and ROTE of 10% based on a targeted CET1 ratio of 12% in 2025;
- disciplined management of scarce resources, in addition to keeping a tight rein on risks, will help strengthen and improve the quality of the Bank's balance sheet;
- stringent loan portfolio management with cost of risk of around 30 basis points in 2025;
- increased use of new technologies and digital transformation;
- commitments in Environmental, Social and Governance areas.

More precisely, the Group's "Vision 2025" project anticipates the merger between the Retail Banking network of Societe Generale in France and Crédit du Nord. Although this project has been designed to achieve controlled execution, the merger could have a short-term material adverse effect on the Group's business, financial position and costs. System reconciliations could undergo delays, thereby postponing part of the expected merger benefits. The project could lead to some staff departures, requiring replacements and training efforts which could potentially generate additional costs. The merger could also lead to the departure of some of the Group's customers, resulting in loss of revenue. The legal and regulatory aspects of the transaction could prompt delays and additional costs.

Following ALD's announcement on 6 January 2022 of its plan to acquire LeasePlan, Societe Generale and ALD announced on 22 April 2022 the signing of a framework agreement, with the aim of creating a global leader in mobility solutions. The acquisition is subject to receiving certain regulatory approvals and to the performance of other standard conditions precedent.

The Group also announced in November 2022 the signing of a letter of intent with AllianceBernstein to combine the equity research and execution businesses in a joint venture to create a leading global franchise in these activities. This announcement was followed by the signature of an acquisition agreement in early February 2023.

The conclusion of final agreements on these strategic transactions depends on several stakeholders and, accordingly, is subject to a degree of uncertainty. The inability to close on the transactions would not have an immediate impact on the Group's activity, but could potentially weigh on the share price, at least temporarily.

Societe Generale has placed Environmental, Social and Governance (ESG) at the heart of its strategy in order to contribute to positive transformations in the environment and the development of local regions. In this respect, the Group has made a certain number of commitments (see Chapter 2, page 46 and following and Chapter 5, page 289 and following). Failure to comply with these commitments, and those that the Group may make in the future, could harm its reputation. Furthermore, the rollout of these commitments may have an impact on the Group's business model. Last, failure to make specific commitments could also generate reputation and strategic risk.

The Group may face execution risk on these strategic projects, which are to be carried out simultaneously. Any difficulty encountered during the process of integrating the activities (particularly from a human resources standpoint) is likely to generate higher integration costs and lower-than-anticipated savings, synergies and benefits. Moreover, the process of integrating the acquired operational businesses into the Group could disrupt the operations of one or more of its subsidiaries and divert General Management's attention, which could have a negative impact on the Group's business and results.

2.1.1.3 The Group is subject to an extended regulatory framework in each of the countries in which it operates and changes to this regulatory framework could have a negative effect on the Group's businesses, financial position and costs, as well as on the financial and economic environment in which it operates.

The Group is subject to the laws of the jurisdictions in which it operates. This includes French, European and US legislation as well as other local laws in light of the Group's cross-border activities, among other factors. The application of existing laws and the implementation of future legislation require significant resources that could affect the Group's performance. In addition, possible failure to compliance with laws could lead to fines, damage to the Group's reputation, force the suspension of its operations or, in extreme cases, the withdrawal of operating licences.

Among the laws that could have a significant influence on the Group:

- several regulatory changes are still likely to significantly alter the framework for Market activities: (i) the possible strengthening of transparency constraints related to the implementation of the new requirements and investor protection measures (review of MiFID II/MiFIR, IDD, ELTIF (European Long-Term Investment Fund Regulation)), (ii) the implementation of the fundamental review of the trading book, or FRTB, which may significantly increase requirements applicable to European banks and (iii) possible relocations of clearing activities could be requested, despite the European Commission's decision of 8 February 2022 to extend the equivalence granted to UK central counterparties until 30 June 2025;
- new requirements resulting from the EU banking regulation reform proposal presented on 27 October 2021 by the European Commission. The reform consists of several legislative instruments to amend the directive on capital requirements (European Parliament and EU Council, Directive 2013/36/EU, 26 June 2013) as well as the regulation on capital requirements (CRR) (European Parliament and EU Council, regulation (EU) No. 575/2013, 26 June 2013);
- in the United States, the implementation of the Dodd-Frank Act has almost been finalised. The Securities and Exchange Commission's (SEC) regulations relating to security-based swap dealers have been implemented and Societe Generale has been registered with the SEC as a Securities Based Swap Dealer;
- european measures aimed at restoring banks' balance sheets, especially through active management of non-performing loans ("**NPLs**"), which are leading to a rise of prudential requirements and an adaptation of the Group's strategy for managing NPLs. More generally, additional measures to define a framework of good practices for granting (*e.g.*, loan origination orientations published by the European Banking Authority) and monitoring loans could also have an impact on the Group;
- the strengthening of data quality and protection requirements and a future strengthening of cyber-resilience requirements in relation to the adoption by the Council on 28 November 2022, which completes the legislative process, of the European directive and regulation package on digital operational resilience for the financial sector;
- the implementation of the European sustainable finance regulatory framework, with an increase in non-financial reporting obligations, enhanced inclusion of environmental, social and governance issues in risk management activities and the inclusion of such risks in the supervisory review and assessment process (Supervisory Review and Evaluation Process, or SREP);
- the strengthening of the crisis prevention and resolution regime set out in the Bank Recovery and Resolution Directive of 15 May 2014 ("BRRD"), as revised, which gives the Single Resolution Board ("SRB") the power to initiate a resolution procedure towards a credit institution when the point of non-viability is considered reached. In this context, the SRB could, in order to limit the cost to the taxpayer, force some creditors and the shareholders of the Group to incur losses in priority. Should the resolution mechanism be triggered, the Group could, in particular, be forced to sell certain of its activities, modify the terms and conditions of the remuneration of its debt instruments, issue new debt instruments, accept a depreciation of its debt instruments or convert them into equity securities.

New legal and regulatory obligations could also be imposed on the Group in the future, such as:

  - the ongoing implementation in France of consumer-oriented measures affecting retail banking,
  - the potential requirement at the European level to open more access to banking data to third-party service providers,
  - new obligations arising from a package of proposed measures announced by the European Commission on 20 July 2021 aiming to strengthen the European supervisory framework around the fight against money laundering and terrorist financing, as well as the creation of a new European agency to fight money laundering;

- from 2023, new regulatory texts will enter into force concerning rate risk of Banking Book (stress on IM, caps on maturity of deposits flows, ...) and credit rate of banking portfolio. These new texts could constrain certain aspects of rate and credit risk monitoring.

The Group is also subject to complex tax rules in the countries where it operates. Changes in applicable tax rules, uncertainty regarding the interpretation of certain evolutions or their effects may have a negative impact on the Group's business, financial position and costs.

Moreover, as an international bank that handles transactions with US persons, denominated in US dollars, or involving US financial institutions, the Group is subject to US regulations relating in particular to compliance with economic sanctions, the fight against corruption and market abuse. More generally, in the context of agreements with US and French authorities, the Group largely implemented, through a dedicated programme and a specific organisation, corrective actions to address identified deficiencies and strengthen its compliance programme. In the event of a failure to comply with relevant US regulations, or a breach of the Group's commitments under these agreements, the Group could be exposed to the risk of (i) administrative sanctions, including fines, suspension of access to US markets, and even withdrawals of banking licences, (ii) criminal proceedings, and (iii) damage to its reputation.

2.1.1.4 Increased competition from banking and non-banking operators could have an adverse effect on the Group's business and results, both in its French domestic market and internationally.

Due to its international activity, the Group faces intense competition in the international and local markets in which it operates, whether from banking or non-banking actors. As such, the Group is exposed to the risk of not being able to maintain or develop its market share in its various activities. This competition may also lead to pressure on margins, which would be detrimental to the profitability of the Group's activities.

Consolidation in the financial services industry could result in the competitors benefiting from greater capital, resources and an ability to offer a broader range of financial services. In France and in the other main markets where the Group operates, the presence of major domestic banking and financial actors, as well as new market participants (notably neo-banks and online financial services providers), has increased competition for virtually all products and services offered by the Group. New market participants such as "fintechs" and new services that are automated, scalable and based on new technologies (such as blockchain) are developing rapidly and are fundamentally changing the relationship between consumers and financial services providers, as well as the function of traditional retail bank networks. Competition with these new actors could be exacerbated by the emergence of substitutes for central bank currency (crypto-currencies, digital central bank currency, etc.), which themselves carry risks.

Moreover, competition is also enhanced by the emergence of non-banking actors that, in some cases, may benefit from a regulatory framework that is more flexible and in particular less demanding in terms of equity capital requirements.

To address these challenges, the Group has implemented a strategy, in particular with regard to the development of digital technologies and the establishment of commercial or equity partnerships with these new actors (such as Lumo, the platform offering green investments, or Shine, the neobank for professionals). In this context, additional investments may be necessary for the Group to be able to offer new innovative services and to be competitive with these new actors. This intensification of competition could, however, adversely affect the Group's business and results, both on the French market and internationally.

2.1.1.5 Environmental, social and governance (ESG) risks, in particular related to climate change, could have an impact on the Group's activities, results and financial situation in the short-, medium- and long-term.

Environmental, social and governance (ESG) risks are defined as risks stemming from the current or prospective impacts of ESG factors on counterparties or invested assets of financial institutions. ESG risks are seen as aggravating factors to the traditional categories of risks (credit risks, counterparty risks, market risks, structural risks (including liquidity and funding risks), operational risks, reputational risks, compliance risks and risks related to insurance activities) and are likely to impact the Group's activities, results and financial position in the short, medium and long-term.

The Group is thus exposed to environmental risks, and in particular climate change risks through certain of its financing, investment and service activities. Concerning climate risks, a distinction is made between (i) physical risk, with a direct impact on entities, people and property stemming from climate change and the multiplication of extreme weather events; and (ii) transition risk, which results from the process of transitioning to a low-carbon economy, such as regulatory or technological disruptions or changes in consumer preferences.

The Group could be exposed to physical risk resulting from a deterioration in the credit quality of its counterparties whose activity could be negatively impacted by extreme climatic events or long-term gradual changes in climate, and through a decrease in the value of collateral received (particularly in the context of real estate financing in the absence of guarantee mechanisms provided by specialized financing companies).

Beyond the risks related to climate change, risks more generally related to environmental degradation (such as the risk of loss of biodiversity) are also aggravating factors to the Group's risks. The Group could notably be exposed to credit risk on a portion of its portfolio, linked to lower profitability of some of its counterparties due, for example, to increasing legal and operating costs (for instance due to the implementation of new environmental standards).

In addition, the Group is exposed to social risks, related for example to non-compliance by some of its counterparties with labour rights or workplace health and safety issues, which may trigger or aggravate reputational and credit risks for the Group.

Similarly, risks relating to governance of the Group's counterparties and stakeholders (suppliers, service providers, etc.), such as an inadequate management of environmental and social issues, could generate credit and reputational risks for the Group.

Beyond the risks related to its counterparties or invested assets, the Group could also be exposed to risks related to its own activities. Therefore, the Group is exposed to physical climate risk with respect to its ability to maintain its services in geographical areas impacted by extreme events (floods, etc.).

The Group also remains exposed to specific social and governance risks, relating for example to the operational cost of implementation of regulations related to labour laws and the management of its human resources.

All of these risks could have an impact on the Group's business, results and reputation in the short-, medium- and long-term.

2.1.1.6 The Group is subject to regulations relating to resolution procedures, which could have an adverse effect on its business and the value of its financial instruments.

The BRRD and Regulation (EU) No. 806/2014 of the European Parliament and of the Council of the European Union of 15 July 2014 (the Single Resolution Mechanism, or "SRM") define a European Union-wide framework for the recovery and resolution of credit institutions and investment firms. The BRRD provides the authorities with a set of tools to intervene early and quickly enough in an institution considered to be failing so as to ensure the continuity of the institution's essential financial and economic functions while reducing the impact of the failure of an institution on the economy and the financial system (including the exposure of taxpayers to the consequences of the failure). Under the SRM Regulation, a centralized resolution authority is established and entrusted to the SRB and national resolution authorities.

The powers granted to the resolution authority under the BRRD and the SRM Regulations include write-down/conversion powers to ensure that capital instruments and eligible liabilities absorb the Group's losses and recapitalize it in accordance with an established order of priority (the "Bail-in Tool"). Subject to certain exceptions, losses are borne first by the shareholders and then by the holders of additional Tier 1 and Tier 2 capital instruments, then by the non-preferred senior debt holders and finally by the senior preferred debt holders, all in the order of their claims in a normal insolvency proceeding. The conditions for resolution provided by the French Monetary and Financial Code implementing the BRRD are deemed to be met if: (i) the resolution authority or the competent supervisory authority determines that the institution is failing or likely to fail; (ii) there is no reasonable perspective that any measure other than a resolution measure could prevent the failure within a reasonable timeframe; and (iii) a resolution measure is necessary to achieve the resolutions' objectives (in particular, ensuring the continuity of critical functions, avoiding a significant negative effect on the financial system, protecting public funds by minimizing the recourse to extraordinary public financial support, and protecting customers' funds and assets) and the winding up of the institution under normal insolvency proceedings would not meet these objectives to the same extent.

The resolution authority could also, independently of a resolution measure or in combination with a resolution measure, proceed with the write-down or conversion of all or part of the Group's capital instruments (including subordinated debt instruments) into equity if it determines that the Group will no longer be viable unless it exercises this write-down or conversion power or if the Group requires extraordinary public financial support (except where the extraordinary public financial support is provided in the form defined in Article L. 613-48 III, 3° of the French Monetary and Financial Code).

The Bail-in Tool could result in the write-down or conversion of capital instruments in whole or in part into ordinary shares or other ownership instruments.

In addition to the Bail-in Tool, the BRRD provides the resolution authority with broader powers to implement other resolution measures with respect to institutions that meet the resolution requirements, which may include (without limitation) the sale of the institution's business segments, the establishment of a bridge institution, the split of assets, the replacement or substitution of the institution as debtor of debt securities, changing the terms of the debt securities (including changing the maturity and/or amount of interest payable and/or the imposition of a temporary suspension of payments), the dismissal of management, the appointment of a provisional administrator and the suspension of the listing and admission to trading of financial instruments.

Before taking any resolution action, including the implementation of the Bail-in Tool, or exercising the power to write down or convert relevant capital instruments, the resolution authority must ensure that a fair, prudent and realistic valuation of the institution's assets and liabilities is made by a third party independent of any public authority.

The application of any measure under the French implementing provisions of the BRRD or any suggestion of such application to the Group could have a material adverse effect on the Group's ability to meet its obligations under its financial instrument and, as a result, holders of these securities could lose their entire investment.

In addition, if the Group's financial condition deteriorates, the existence of the Bail-in Tool or the exercise of write-down or conversion powers or any other resolution tool by the resolution authority (independently of or in combination with a resolution) if it determines that Societe Generale or the Group will no longer be viable could result in a more rapid decline in the value of the Group's financial instruments than in the absence of such powers.

2.1.2 CREDIT AND COUNTERPARTY CREDIT RISKS

Weighted assets (RWA) in relation to credit and counterparty risks amounted to EUR 300.7 billion at 31 December 2022.

2.1.2.1 The Group is exposed to credit, counterparty and concentration risks, which may have a material adverse effect on the Group's business, results of operations and financial position.

Due to its Financing and Market activities, the Group is exposed to credit and counterparty risk. The Group may therefore incur losses in the event of default by one or more counterparties, particularly if the Group encounters legal or other difficulties in enforcing the collateral allocated to its exposures or if the value of this collateral is not sufficient to fully recover the exposure in the event of default. Despite the Group's efforts to limit the concentration effects of its credit portfolio exposure, it is possible that counterparty defaults could be amplified within the same economic sector or region of the world due to the interdependence of these counterparties.

Consequently, the default of one or more significant counterparties of the Group could have a material adverse effect on the Group's cost of risk, results of operations and financial position.

For information, as of 31 December 2022, the Group's exposure at default (EAD, excluding counterparty risk) was EUR 956 billion, with the following breakdown by type of counterparty: 29% on sovereigns, 31% on corporates, 23% on retail customers and 5% on credit institutions and similar. Risk-weighted assets (RWA) for credit risk totalled EUR 276 billion.

Regarding counterparty risks resulting from market transactions (excluding CVA), at the end of December 2022, the exposure value (EAD) was EUR 163 billion, mainly to corporates (36%) and credit institutions and similar entities (31%) and to a lesser extent to sovereign entities (29%). Risk-weighted assets (RWA) for counterparty risk amounted to EUR 21 billion.

At 31 December 2022, the main sectors to which the Group is exposed in its corporate portfolio included financial activities (accounting for 6.9% of total Group exposure), real estate (3.5%), social services (2.8%), manufacturing (2.2%), telecommunications, media and technology (2.0%), the agriculture sector and agri-food industries (1.8%) and the oil and gas sector (1.8%).

In terms of geographical concentration, the five main countries to which the Group is exposed as of 31 December 2022 were France (51% of the Group's total EAD, mainly related to Sovereigns and Retail customers), the United States (15% of EAD, mainly related to Corporates and sovereigns), the United Kingdom (4% of EAD, mainly related to corporates and credit institutions), Germany (4% of total Group EAD, mainly related to credit institutions and corporates) and the Czech Republic (3% of the Group's total EAD, mainly related to retail clients and corporates). Furthermore, the financial situation of certain counterparties could be affected by the geopolitical tensions mentioned in section 4.1.1.1 *"The global economic and financial context, geopolitical tensions, as well as the market environment in which the Group operates, may adversely affect its activities, financial position and results of operations"*.

For more detail on credit and counterparty risk, see sections 4.5.5 *"Quantitative information"* and 4.6.3 *"Counterparty credit risk measures"* of the 2023 Universal Registration Document.

2.1.2.2 The financial soundness and conduct of other financial institutions and market participants could have an adverse effect on the Group's business.

Financial institutions and other market players (commercial or investment banks, credit insurers, mutual funds, alternative funds, institutional clients, clearing houses, investment service providers, etc.) are important counterparties for the Group in capital or inter-bank markets. Financial services institutions and financial players are closely interrelated as a result of trading, clearing and funding relationships. In addition, there is a growing involvement in the financial markets of players with little or no regulation (hedge funds, for example). As a result, defaults by one or several actors in the sector or a crisis of confidence affecting one or more actors could result in market-wide liquidity scarcity or chain defaults, which would have an adverse effect on the Group's activity but which is subject to a specific framework. The situation in Ukraine and the consequences of, among other things, international sanctions and the evolution of the financial markets, in particular the rise in interest rates, could also weaken or even cause the default of a certain number of financial actors. In addition, certain financial actors could experience operational or legal difficulties in the unwinding or settlement of certain financial transactions.

The Group is exposed to clearing institutions and their members because of the increase in transactions traded through these institutions, induced in part by regulatory changes that require mandatory clearing for over-the-counter derivative instruments standardised by these clearing counterparties. The Group's exposure to clearing houses amounted to EUR 32,7 billion of EAD on 31 December 2022. The default of a clearing institution or one of its members could generate losses for the Group and have an adverse effect on the business and results of the Group. These risks are also subject to specific monitoring and supervision.

The Group is also exposed on assets held as collateral for credit or derivatives instruments, with the risk that, in the event of failure of the counterparty, some of these assets may not be sold or that their disposal price may not cover the entire exposure in credit and counterparty risks. These assets are subject to periodic monitoring and a specific management framework.

2.1.2.3 The Group's results of operations and financial position could be adversely affected by a late or insufficient provisioning of credit exposures.

The Group regularly records provisions for doubtful loans in connection with its lending activities in order to anticipate the occurrence of losses. The amount of provisions is based on the most accurate assessment at the time of the recoverability of the debts in question. This assessment, based notably on multi-scenario approaches, relies on an analysis of the current and prospective situation of the borrower as well as an analysis of the value and recovery prospects of the debt, taking into account any security interests. In some cases (loans to individual customers), the provisioning method may call for the use of statistical models based on the analysis of historical losses and recovery data. Since 1 January 2018, the Group has also been recording provisions on performing loans under the IFRS 9 accounting standard. This assessment is based on statistical models for assessing probabilities of default and potential losses in the event of default, which take into account a prospective analysis based on regularly updated macroeconomic scenarios.

IFRS 9 accounting standard principles and provisioning models could be pro-cyclical in the event of a sharp and sudden deterioration in the environment. A deterioration of the geopolitical and macroeconomic environment could lead to a significant and/or not-fully-anticipated variation in the cost of risk and therefore in the Group's results of operations.

At 31 December 2022, the stock of provisions relating to outstanding amounts (on- and off-balance sheet) amounted to EUR 3.8 billion on performing assets and EUR 8.2 billion on assets in default. Outstanding loans in default at amortised cost (stage 3 under IFRS 9) represented EUR 16.3 billion, including 49% in France, 24% in Africa and Middle East and 10% in Western Europe (excluding France). The gross ratio of doubtful loans on the balance sheet was 2.8% and the gross coverage ratio of these loans was approximately 48%. The cost of risk stood at 28 basis points in 2022, against a cost of risk of 13 basis points in 2021.

2.1.3 MARKET AND STRUCTURAL RISKS

Market risk corresponds to the risk of impairment of financial instruments resulting from changes in market parameters, the volatility of these parameters and the correlations between these parameters. The concerned parameters include exchange rates, interest rates, as well as the prices of securities (shares, bonds) and commodities, derivatives and any other assets.

2.1.3.1 Sharp changes in interest rates may adversely affect retail banking activities in France in the short term.

The Group generates a significant part of its income through net interest margins and, as such, remains exposed to interest-rate fluctuations in both absolute terms and with respect to the shape of the yield curve, particularly in its Retail Banking activities in France. The Group's results are influenced by changes in interest rates in Europe and in the other markets where it operates.

There is a risk of the Group's interest-rate margin narrowing when interest rates decline, due not only to lower remuneration from deposit replacement but also to a higher risk of mortgage loans being renegotiated in the French market.

A series of very rapid rate hikes also presents a risk to the Group's revenues. This scenario can materialise when central banks put a stop to accommodating monetary policies in response to economic recovery or spiking inflation. A sharp increase in key rates combined with a context of high inflation may have negative effects in the short- and medium-term, particularly in France, due to the upward interest-rate adjustment to the remuneration on certain savings products (the *Livret A* savings account, in particular) and the inability to fully pass on the increase to client rates for assets such as mortgage and consumer loans (in addition to the specific problems associated with the usury rate in the French market). Furthermore, changes in client behaviour in response to rising rates - notably for savings products - can call for adjustments to the interest-rate hedges in place which could dent Group revenues. Last, a potential decrease in value of assets measured at fair value could also negatively impact revenues.

For more information on structural interest-rate risks, see Chapter 4.8 "Structural risks, interest rate and exchange rate" and Note 8.1 "Segmented reporting" in Chapter 6 of the 2023 Universal Registration Document.

2.1.3.2 Changes and volatility in the financial markets may have a material adverse effect on the Group's business and the results of market activities.

In the course of its activities, the Group takes trading positions in the debt, currency, raw material and stock markets, as well as in unlisted shares, real estate assets and other types of assets including derivatives. The Group is thus exposed to "market risk". Volatility in the financial markets can have a material adverse effect on the Group's market activities. In particular:

- significant volatility over a long period of time could lead to corrections on risky financial assets (and especially on the riskiest assets) and generate losses for the Group;
- a sudden change in the levels of volatility and its structure, or alternative short-term sharp declines and fast rebounds in markets, could make it difficult or more costly to hedge certain structured products and thus increase the risk of loss for the Group.

Severe market disruptions and high market volatility have occurred in recent years and may occur again in the future, which could result in significant losses for the Group's markets activities. Such losses may extend to a broad range of trading and hedging products, notably on derivative instruments, both vanilla and structured.

In the event that a much lower-volatility environment emerges, reflecting a generally optimistic sentiment in the markets and/or the presence of systematic volatility sellers, increased risks of correction may also develop, particularly if the main market participants have similar positions (market positions) on certain products. Such corrections could result in significant losses for the Group's market activities. The volatility of the financial markets makes it difficult to predict trends and implement effective trading strategies; it also increases risk of losses from net long positions when prices decline and, conversely, from net short positions when prices rise. The realisation of any such losses could have a material adverse effect on the Group's results of operations and financial position.

Similarly, the sudden decrease in, or even the cancellation of, dividends, as experienced during the Covid-19 pandemic, and changes in the correlations of different assets of the same class, could affect the Group's performance, with many activities being sensitive to these risks.

A prolonged slowdown in financial markets or reduced liquidity in financial markets could make asset disposals or position manoeuvrability more difficult, leading to significant losses. In many of the Group's activity segments, a prolonged decline in financial markets, particularly asset prices, could reduce the level of activity in these markets or their liquidity. These variations could lead to significant losses if the Group were unable to quickly unwind the positions concerned, adjust the coverage of its positions, or if the assets held in collateral could not be divested, or if their selling prices did not cover the Group's entire exposure on defaulting loans or derivatives.

The assessment and management of the Group's market risks are based on a set of risk indicators that make it possible to evaluate the potential losses incurred at various time horizons and given probability levels, by defining various scenarios for changes in market parameters impacting the Group's positions. These scenarios are based on historical observations or are hypothetically defined. However, these risk management approaches are based on a set of assumptions and reasoning that could turn out to be inadequate in certain configurations or in the case of unexpected events, resulting in a potential underestimation of risks and a significant negative effect on the results of the Group's market activities.

Furthermore, in the event of a deterioration of the market situation, the Group could experience a decline in the volume of transactions carried out on behalf of its customers, leading to a decrease in the revenues generated from this activity and in particular in commissions received.

In 2022, the reduction in accommodative monetary policies led to significant corrections in certain markets or asset classes. The initiation of a monetary tightening cycle by a few central banks, in order to alleviate inflationary pressures, led to tensions and volatility in rates in the first quarter of 2022, reflected notably by an increase and a flattening of the main curves.

Hope for normalization in monetary policies in 2023 in the coming months has led to an improvement in overall sentiment of the financial markets and the appreciation of risky assets. However, the deterioration of certain macroeconomic and financial indicators suggests a possible recession in Europe and the US in the next year. This could have a significant negative impact on the Group's market activities and results. Finally, financial markets outlook remains uncertain due in part to inflationary pressures and to a turbulent geopolitical context.

For information purposes, Global Markets & Investor Services activities represented EUR 6.7 billion of net banking income in 2022, or 24% of the Group's total revenues. At 31 December 2022, risk-weighted assets (RWA) in relation to market risk represented EUR 13.7 billion (4% of the Group's total RWA).

2.1.3.3 Fluctuations in exchange rates could adversely affect the Group's results.

As a result of the Group's policy of desensitising the CET1 ratio to changes in the exchange rate of currencies against the euro, the Group's consolidated equity is favorably exposed in the event of currency appreciation against the euro.

Thus, in the event of an appreciation of the euro against foreign currencies, the Group's consolidated equity could be negatively impacted.

Because the Group publishes its consolidated financial statements in euros, which is the currency of most of its liabilities, it is also subject to translation risk for items recorded in other currencies, in the preparation of its consolidated financial statements. Exchange rate fluctuations of these currencies against the euro may adversely affect the Group's consolidated results, financial position and cash flows. Exchange rate fluctuations may also negatively affect the value (denominated in euros) of the Group's investments in its subsidiaries outside the Eurozone.

For more information of structural exchange rate risk, see Chapter 4.8 *"Structural risks, interest rate and exchange rate"* of the 2023 Universal Registration Document.

2.1.4 LIQUIDITY AND FUNDING RISKS

2.1.4.1 A downgrade in the Group's external rating or in the sovereign rating of the French state could have an adverse effect on the Group's cost of financing and its access to liquidity.

For the proper conduct of its activities, the Group depends on access to financing and other sources of liquidity. In the event of difficulties in accessing the secured or unsecured debt markets on terms it considers acceptable, due to market conditions or factors specific to the Group, or if it experiences unforeseen outflows of cash or collateral, including material decreases in customer deposits, its liquidity could be impaired. In addition, if the Group is unable to maintain a satisfactory level of customer deposits collection, it may be forced to turn to more expensive funding sources, which would reduce the Group's net interest margin and results.

The Group is exposed to the risk of an increase in credit spreads. The Group's medium and long-term financing cost is directly linked to the level of credit spreads which can fluctuate depending on general market conditions. These spreads can also be affected by an adverse change by the rating agencies in France's sovereign debt rating or countries rating where the Group operates as well as the Group's external ratings as described below.

The Group is currently monitored by four financial rating agencies: Fitch Ratings, Moody's, R&I and Standard & Poor's. The downgrading of the Group's credit ratings, by these or other agencies, could have a significant impact on the Group's access to funding, increase its cost of financing or reduce its ability to carry out certain types of transactions or activities with customers. This could also require the Group to provide additional collateral to certain counterparties, which could have an adverse effect on its business, financial position and results of operations.

Material events such as severe damage to the Group's reputation, the deterioration of the economic environment following the health crisis, France's sovereign downgrading or countries downgrading where the Group operates, or more recently as a result of the crisis in Ukraine and its impact on the Group, particularly in terms of profitability and cost of risk, could increase the risk of external rating downgrades. The Group's ratings could be placed under negative watch or be subject to a downgrade. In particular, France's sovereign ratings could also be downgraded due to an increase in its debt and deficits (further increased by the Covid-19 pandemic and the response measures taken by the French government) and the inability to pass structural reforms. These elements could have a negative impact on the Group's financing costs and its access to liquidity. The Group's ratings by Fitch Ratings, Moody's, R&I and Standard & Poor's are available on the Group's website (https://investors.societegenerale.com/en/financial-and-non-financial-information/ratings/credit-ratings).

Access to financing and liquidity constraints could have a material adverse effect on the Group's business, financial position, results of operations and ability to meet its obligations to its counterparties.

In 2022, the Group raised a total of EUR 46.7 billion of long-term funding (of which EUR 44.0 billion for the parent company and EUR 2.7 billion for its subsidiaries) comprising, at the parent company level, senior structured issues (EUR 23.7 billion), subordinated issues (EUR 2.5 billion), senior vanilla non-preferred issues (EUR 6.0 billion), unsecured senior vanilla preferred issues (EUR 6.4 billion) and secured issues (EUR 5.4 billion).

For 2023, the Group has planned a funding programme of approximately EUR 24 billion in vanilla long-term debt, in senior preferred and secured debt as well as in senior non-preferred debt and subordinated debt.

2.1.4.2 The Group's access to financing and the cost of this financing could be negatively affected in the event of a resurgence of financial crises or deteriorating economic conditions.

In past crises (such as the 2008 financial crisis, the Eurozone sovereign debt crisis, the tensions on the financial markets linked to the Covid-19 pandemic before the intervention of the central banks, or more recently the tensions linked to the crisis in Ukraine), access to financing from European banks was intermittently restricted or subject to less favorable conditions.

If unfavorable debt market conditions were to reappear following a new systemic or Group-specific crisis, the effect on the liquidity of the European financial sector in general and on the Group in particular could be very significantly unfavorable and could have an adverse impact on the Group's operating results as well as its financial position.

For several years, central banks have taken measures to facilitate financial institutions' access to liquidity, in particular by lowering interest rates to historical lows and by setting up TLTRO (Targeted Longer-Term Refinancing Operations) type facilities and by implementing asset purchase policies to keep long-term interest rates at very low levels. In a context of higher inflation, central banks (notably the ECB and the US Federal Reserve) have begun to phase out these accommodating policies. In this context, the Group could face an unfavorable evolution of its financing cost and access to liquidity.

In addition, if the Group were unable to maintain a satisfactory level of deposits from its customers, it could be forced to resort to more expensive financing, which would reduce its net interest margin as well as its results.

The Group's regulatory short-term *liquidity coverage ratio* (LCR) stood at 145% at 31 December 2022 and liquidity reserves amounted to EUR 279 billion at 31 December 2022.

2.1.5 EXTRA-FINANCIAL RISKS (INCLUDING OPERATIONAL RISKS) AND MODEL RISKS

At 31 December 2022, risk-weighted assets in relation to operational risk amounted to EUR 46 billion, or 13% of the Group's total RWA. These risk-weighted assets relate mainly to Global Markets & Investor Services (63% of total operational risk).

Between 2018 and 2022, the Group's operational risks were primarily concentrated in five risk categories, representing 94% of the Group's total operating losses observed over the period: fraud (mainly external frauds) and other criminal activities (33%), execution errors (24%), disputes with authorities (15%), errors in pricing or risk assessment, including model risk (13%) and commercial disputes (9%). The Group's other categories of operational risk (unauthorised activities in the markets, loss of operating resources and failure of information systems) remain minor, representing on average 6% of the Group's losses between 2018 and 2022.

See Chapter 4.10.3 "Operational risk measurement" of the 2023 Universal Registration Document for more information on the allocation of operating losses.

2.1.5.1 A breach of information systems, notably in the event of cyberattack, could have an adverse effect on the Group's business, results in losses and damage the Group's reputation.

The Group relies heavily on communication and information systems to conduct its business and this is reinforced by the widespread use of remote banking and the digitalization of processes. Any breach of its systems or the systems of its external partners could materially disrupt the Group's business. Such incidents could result in significant costs related to the recovery and verification of information, loss of revenues, customer attrition, disputes with counterparties or customers, difficulties in managing market operations and short-term refinancing operations, and ultimately damage the Group's reputation. Difficulties experienced by the Group's counterparties could also indirectly generate credit and/or reputational risks for the Group. The situation stemming from the conflict in Ukraine mentioned in section 4.1.1.1 "The global economic and financial context, geopolitical tensions, as well as the market environment in which the Group operates, may adversely affect its activities, financial position and results of operations" increases the risk of cyberattacks for the Group and its external partners.

Each year, the Group is subject to several cyberattacks on its systems or those of its clients, partners and suppliers. The Group could be subject to targeted and sophisticated attacks on its computer network, resulting in embezzlement, loss, theft or disclosure of confidential data or customer data (which could constitute violations of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data ("GDPR"). Such actions could result in operational losses and have an adverse effect on the Group's business, results and reputation with its customers.

2.1.5.2 The Group is exposed to legal risks that could have a material adverse effect on its financial position or results of operations.

In the case of non-compliance with applicable laws and regulations, the Group and certain of its former and current representatives may be involved in various types of litigation, including civil, administrative, tax, criminal and arbitration proceedings. The large majority of such proceedings arise from transactions or events that occur in the Group's ordinary course of business. There has been an increase in client, depositor, creditor and investor litigation and regulatory proceedings against intermediaries such as banks and investment advisors in recent years, in part due to the challenging market environment. This has increased the risk for the Group of losses or reputational harm arising from litigation and other proceedings. Such proceedings or regulatory enforcement actions could also lead to civil, administrative, tax or criminal penalties that could adversely affect the Group's business, financial position and results of operations. The situation generated by the conflict in Ukraine mentioned in 4.1.1.1 "The global economic and financial context, geopolitical tensions, as well as the market environment in which the Group operates, may adversely affect its activities, financial position and results of operations" could increase the Group's legal risk".

In preparing its financial statements, the Group makes estimates regarding the financial outcome of civil, administrative, tax, criminal and arbitration proceedings in which it is involved, and records a provision when losses with respect to such matters are probable and can be reasonably estimated. It is inherently difficult to predict the outcome of litigation and proceedings involving the Group's businesses, particularly those cases in which the matters are brought on behalf of various classes of claimants, cases where claims for damages are of unspecified or indeterminate amounts, or cases involving unprecedented legal claims. Should such estimates prove inaccurate or should the provisions set aside by the Group to cover such risks prove inadequate, the Group's financial position or results of operations could be adversely affected.

The provision recorded in the Group's financial statements for public rights disputes amounted to EUR 396 million on 31 December 2022.

For a description of the most significant ongoing proceedings, see section 4.11 *"Compliance "*, Note 8.3.2 *"Other provisions for risks and expenses"* and Note 9 *"Information on risks and litigation"* of Chapter 6 of the 2023 Universal Registration Document.

2.1.5.3 Operational failure, termination or capacity constraints affecting institutions the Group does business with, or failure of information technology systems could have an adverse effect on the Group's business and result in losses and damages to its the reputation.

Any dysfunction, failure or interruption of service of the Group's communication and information systems or the systems of its external partners, even brief and temporary, could result in significant disruptions to the Group's business. Such incidents could result in significant costs related to information retrieval and verification, loss of revenue, loss of customers, litigation with counterparties or customers, difficulties in managing market operations and short-term refinancing, and ultimately damage to the Group's reputation.

The Group is exposed to the risk of operational failure or capacity constraints in its own systems and in the systems of third parties, including those of financial intermediaries that it uses to facilitate cash settlement or securities transactions (such as clearing agents and houses and stock exchanges), as well as those of clients and other market participants.

The interconnections between various financial institutions, clearing houses, stock exchanges and service providers, including external cloud services, increase the risk that the operational failure of any one of them could lead to an operational failure of the entire sector, which could have an adverse impact on the Group's ability to conduct its business and could therefore result in losses. This risk is likely to be increased by industry concentration, whether among market participants or financial intermediaries, as complex and disparate systems need to be integrated, often on an accelerated basis.

The Group is also subject to various regulatory reforms and major internal strategic projects that may lead to operational disruptions and have an impact on the Group's operations, the accounting of transactions and their tax or prudential treatment, and on the Group's results in the event of poor project management and understanding of operational risks. Examples include the merger of the Societe Generale and Crédit du Nord retail networks, with the transfer of Crédit du Nord's information system to the Societe Generale information system, and important steps towards the transfer have already been taken. In addition, the ALD and LeasePlan merger is structured with large project teams to ensure proper execution and impacts for the Group.

2.1.5.4 The Group is exposed to fraud risk, which could result in losses and damage its reputation.

Fraud risk is defined as the intentional non-compliance with existing laws, regulations or procedures, which in most cases results in harm to the bank or its customers and provides the fraudster or his or her relatives with a direct or indirect material or moral benefit.

The risk of fraud increases intrinsically in a crisis context (financial pressure among clients, third parties or our employees) and in a remote working environment that may limit the capacity for monitoring and exchanges by or with the manager or other employees contributing to the prevention or detection of fraud risk. This risk mainly involves external fraud related to the Bank's credit activities and to the means of payment (electronic banking, transfers, and checks) made available to customers. Fraud schemes are changing rapidly in terms of volume and approach, in line with the security measures and countermeasures developed in the market and within the Group. Internal fraud is carried out through the misappropriation of funds and the granting of undue facilities and can be carried out with or without external collusion. Finally, unauthorized rogue trading, with or without circumvention of controls, could impact results and have a very significant negative impact on the Group's reputation.

Between 2018 and 2022, the risk of fraud represented 33% of the Group's total operating losses.

2.1.5.5 Reputational damage could harm the Group's competitive position, its activity and financial condition.

An organisation benefits from a good reputation when its activities and services meet or exceed the expectations of its stakeholders, both external (customers, investors, shareholders, regulators, supervisors, suppliers, opinion leaders such as NGOs, etc.) and internal (employees).

The Group's reputation for financial strength and integrity is critical to its ability to foster loyalty and develop its relationships with customers and other counterparties in a highly competitive environment. Any reputational damage could result in loss of activity with its customers or a loss of confidence on the part of its investors, which could affect the Group's competitive position, its business and its financial condition.

Financing extended by the bank that does not comply with regulations or its commitments, notably in terms of environmental and social responsibility, could affect the Group's reputation. Methods of distribution of products and services that do not provide sufficient information to customers, a lack of transparency in its communication (particularly financial communication) or internal management rules (including human resources management or relations with suppliers and service providers) that do not comply with regulatory obligations or the bank's commitments could affect the Group's reputation. In addition, the situation in Ukraine and the international sanctions put in place create an environment that is likely to increase the Group's reputational risk.

A corporate social responsibility strategy (in particular with regard to environmental issues) deemed insufficiently ambitious in relation to the expectations of external stakeholders or difficulties in implementing this strategy could also impact the Group's reputation.

As a result, negative comments regarding the Group, whether or not legitimate, and concerning events that may or may not be attributable to the Group, could deteriorate the Group's reputation and affect its competitive position.

The Group's reputation could also be adversely affected by a weakness in its internal control measures aimed at monitoring and preventing operational, compliance, credit and market risks, particularly with respect to monitoring inappropriate conduct of its employees (such as corruption, fraud, market abuse, tax evasion and money laundering). This risk may arise from the conduct itself as well as from administrative or criminal sanctions penalising an insufficiently effective control environment, such as the sanctions issued by the US and French authorities in 2018 relating to the Group's failure to comply with economic embargo measures.

As a result, a perceived lack of commitment to the Group's Code of Conduct, which aims to anchor the Group's values in terms of ethics and responsibility, could be detrimental to the Group's good reputation.

These various issues could also have a non-negligible impact on the Group's ability to attract and recruit younger talent or to retain talent within the Group.

The consequences of these events, which could potentially result in legal proceedings, may vary according to the extent of media coverage and the overall context and remain difficult to estimate.

For more information about reputation risk please see section 4.11 *"Compliance"* of the 2023 Universal Registration Document.

2.1.5.6 The Group's inability to attract and retain qualified employees may adversely affect its performance.

At 31 December 2022, the Group employs more than 117,000 people in 66 countries. Human resources are key assets of the Group, its business model and value proposition.

The emergence of new players and new technologies in the banking sector, as well as the consequences of the health crisis, have accelerated the transformation of the Bank, directly impacting the way the Company operates and the way employees work. Inadequate career and skills management (integration, career prospects, training, HR support, compensation levels in line with market practice, etc.), transformation projects, as well as a lack of attractiveness and poor working conditions could lead to a loss of resources, know-how and commitment. This would have a negative impact on individual and collective performance and the Group's competitiveness. The inability of Societe Generale to attract and retain employees, a high rate of turnover or the loss of strategic employees could adversely affect the performance of the Group, result in a loss of business, a deterioration in the quality of service (at the expense of client satisfaction) and a deterioration in the quality of working life (to the detriment of the employee experience).

For more information, see section 5.1.1 "Being a responsible employer" of the 2023 Universal Registration Document.

2.1.5.7 The models, in particular the Group's internal models, used in strategic decision-making and in risk management systems could fail, face delays in deployment or prove to be inadequate and result in financial losses for the Group.

Internal models used within the Group could prove to be deficient in terms of their conception, calibration, use or monitoring of performance over time in relation to operational risk and therefore could produce erroneous results, notably with financial consequences. The faulty use of so-called artificial intelligence techniques in the conception of these models could also lead to the production of erroneous results.

In particular:

- the valuation of certain financial instruments that are not traded on regulated markets or other trading platforms, such as OTC derivative contracts between banks, uses internal models that incorporate unobservable parameters. The unobservable nature of these parameters results in an additional degree of uncertainty as to the adequacy of the valuation of the positions. In the event that the relevant internal models prove unsuitable for changing market conditions, some of the instruments held by the Group could be misvalued and could generate losses for the Group. For illustrative purposes, financial assets and liabilities measured at fair value on the balance sheet categorised within level 3 (for which the valuation is not based on observed data) represented EUR 14.7 billion and EUR 43.4 billion, respectively, as of 31 December 2022 (see Note 3.4.1 and Note 3.4.2 of Chapter 6 of the consolidated financial statements included in the 2023 Universal Registration Document on financial assets and liabilities measured at fair value);
- the assessment of customer solvency and the Bank's exposure to credit risk and counterparty risk is generally based on historical assumptions and observations that may prove to be inappropriate in light of new economic conditions. It is based on economic scenarios and projections that may not adequately anticipate unfavorable economic conditions or the occurrence of unprecedented events. This miscalculation could, among other things, result in an under-valuation and an under-provisioning of risks and an incorrect assessment of capital requirements;
- hedging strategies used in market activities rely on models that include assumptions about the changes of market parameters and their correlation, partly inferred from historical data. These models could be inappropriate in certain market environments (in the event of a large-scale armed conflict, strong movements in volatility resulting, for example, from a pandemic, or tensions between the United States and China, in the Middle East or in Africa), leading to an ineffective hedging strategy, thus causing unanticipated losses that could have a material adverse effect on the Group's results and financial position;
- hedging strategies to manage the interest-rate and liquidity risks of retail banking activities, particularly those in France, use models that include behavioural assumptions. These models are partly based on historical observations the purpose of which is to predict client behaviour in the most likely scenarios. That said, they may be unsuitable for certain specific or new market configurations - for example, sharp increases and decreases - making the resulting hedging strategies inappropriate, thereby potentially harming bank revenues.

In addition, the Group has introduced changes to its internal credit risk model framework (dubbed the "Haussmann project"). These changes could have a significant impact on the calculation of its RWA credit and counterparty risk in the event of timetable delays when submitting its models to the supervisor or in the event of the late validation by the supervisor.

2.1.5.8 The Group may incur losses as a result of unforeseen or catastrophic events, including health crises, large-scale armed conflicts, terrorist attacks or natural disasters.

The Group remains dependent on its environment. The occurrence of a new epidemic or pandemic crisis (such as the Covid-19 pandemic) or a health crisis related to the pollution of the natural environment could have a significant impact on the Group's activities. Also, large-scale armed conflicts, terrorist attacks, natural disasters (including earthquakes, such as in Romania, and floods, such as the exceptional flooding of the Seine in Paris or the Chennai in India), extreme weather conditions (such as heatwaves) or major social unrest (such as the *"Gilets Jaunes"* movement in France) could affect the Group's activities.

Such events could create economic and financial disruptions or lead to operational difficulties (including travel limitations or relocation of affected employees) for the Group.

These events could impair the Group's ability to manage its businesses and also expose its insurance activities to significant losses and increased costs (such as higher re-insurance premiums). Upon the occurrence of such events, the Group could incur losses.

2.1.6 RISKS RELATED TO INSURANCE ACTIVITIES

4.1.6.1 A deterioration in market conditions, and in particular a significant increase or decrease in interest rates, could have a material adverse effect on the life insurance activities of the Group's Insurance business.

In 2022, the Group's insurance activities represented net banking income of EUR 1 billion, or 4% of the Group's consolidated net banking income. The Group's Insurance Division is mainly focused on life insurance. At 31 December 2022, life insurance contracts registered outstandings of EUR 132 billion, divided between euro-denominated contracts (64%) and unit-linked contracts (36%).

The Group's Insurance business is highly exposed to interest-rate risk due to the high proportion of bonds in the euro-denominated funds in its life insurance contracts. The level of and changes in interest rates may, in certain configurations, have a material adverse effect on the results and financial position of this business line.

With its impact on the yield of euro-denominated contracts, a prolonged outlook of low interest rates reduces the attractiveness of these products for investors, which can negatively affect fundraising and income from this segment of the life insurance business.

A sharp rise in interest rates could also degrade the competitiveness of the life insurance offerings in euros (compared with bank savings products, for example) and trigger significant repurchases and arbitrage operations by customers, in an unfavourable context of unrealised losses on bond holdings. This configuration could affect the revenues and profitability of the life insurance activity.

More generally, a pronounced widening of spreads and a decline in equity markets could also have a significant negative effect on the results of the Group's life insurance business.

In the event of a deterioration in market parameters, the Group could be required to strengthen the own funds of its insurance subsidiaries to enable them to continue meeting their regulatory requirements in this domain.