



**Pillar 3 - Disclosure Report 2022**  
Towards profitable capital generation

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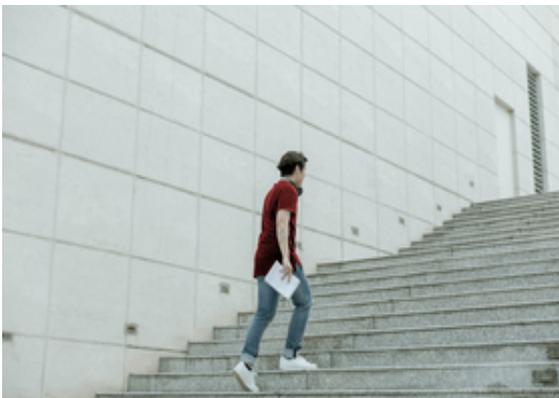
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[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)



# 1

## Introduction

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# 1. Introduction

## 1.1. Santander overview

Everything we do must be Simple, Personal & Fair

### Our aim and purpose

Santander is one of the largest banks in the eurozone. As of December 2022, we had EUR 1,734,659 million in assets and EUR 1,255,660 million in total funds. Our market capitalization reached EUR 47,066 million.

Santander aims to be the best open financial service platform, by acting responsibly and earning the lasting loyalty of our people, customers, shareholders and communities. Our purpose is to help people and businesses prosper.

### Our business model

#### 01. Customer focus

Digital bank with branches

 **Top 3 NPS<sup>1</sup>**  
in 8 markets

 **160 mn**  
total customers

Transform our business and operating model through global technology initiatives with the aim to build a Digital bank with branches which provides access to financial services for our customers through several channels.

1.NPS – internal benchmark of individual customers' satisfaction audited by Stiga/Deloitte H2'22.

#### 02. Our scale

Local and global scale

**Top 3 in lending<sup>2</sup>**

in 10 of our markets



In-market scale in each of our core markets in volumes in each of our core markets combine with our global capabilities drive in-market and Group profitable growth and provide a competitive advantage over local peers.

2. Market share data latest available. Spain includes Santander España + Hub Madrid + SCF España + Openbank and Other Resident sectors in deposits. The UK: includes mortgages and retail deposits. Poland: including SCF business in Poland. The US: retail auto loans includes Santander Consumer USA and Chrysler Capital combined. Deposits considering all states where Santander Bank operates. Brazil: deposits including debenture, LCA (agribusiness notes), LCI (real estate credit notes), financial bills (letras financeiras) and COE (certificates of structured operations).

#### 03. Diversification

Geographic and business diversification

Balanced profit distribution<sup>3</sup>



Our balanced diversification across developing and mature markets as well as for business and segments delivers recurrent pre-provision profit with low volatility.

3.2022 underlying attributable profit by region percentage of operating areas excluding Corporate Centre.

Our business model remains a source of great strength and resilience

## Economic and regulatory landscape

During 2022, Santander operated in an environment dominated by:

- 1 Global inflation accelerating to levels not seen in several decades
- 2 Major geopolitical tensions arising from the war in Ukraine
- 3 Persistent (although decreasing in recent months) bottlenecks and global supply chain disruptions resulting from the covid pandemic and geopolitical tensions

The world's major central banks have raised interest rates in an attempt to contain inflationary pressures. We expect the monetary normalisation to continue in certain countries during 2023, leading to a gradual slowdown in the level of global economic activity.

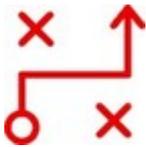
### Public policy

Santander has always supported the need for robust, high-quality regulation that reinforces the banking system strength and solvency, establishes strong consumer protection and market stability standards, and favours transparency regarding risk and resilience for investors and supervisors.

We are committed to engaging constructively and transparently with public policy makers and regulators on the aims, design and implementation of banking rules and policy frameworks that impact our banks' or our customers' interests.

### Capital and bank resilience

We believe that the reforms of the last decade have made financial institutions more robust in terms of capital. However, the covid crisis raised some issues regarding the functioning of the regulatory framework that need to be carefully assessed. Additionally, the EU still has work to do to build the foundations of a true banking union. We continue to advocate for:



An approach to continue working on the implementation of Basel III standards that does not materially increase new post-crisis capital requirements and takes into account the demands of digitalization, the green transformation and the post-covid recovery.



The need for a stable and predictable framework to facilitate management by institutions and investors' understanding of this agenda.



Banking regulation needs to recognize some of the realities of banks with a global footprint, such as the recognition of the Multiple Point of Entry resolution framework.



A common deposit insurance scheme for EU banks that breaks the bank/sovereign loop.

## Santander main results

## Strong operating performance in 2022: EUR 9,605 mn of underlying profit

2022 (vs. 2021)

GROWTH	PROFITABILITY	STRENGTH
Total customers	RoTE <sup>B</sup>	FL CET1 <sup>B</sup>
<b>160 mn</b> (+7mn)	<b>13.4%</b> (+141bps)	<b>12.04%</b> (+8ps)
Total revenue <sup>A</sup>	Efficiency ratio	Cost of risk <sup>C</sup>
<b>EUR 52.2 bn</b> (+12%)	<b>45.8%</b> (-40bps)	<b>0.99%</b> (+22bps)

2022 Shareholder value creation: +20%<sup>D</sup>

A. Changes in euros. Change in constant euros +6%.

B. Including acquisition of SC USA minority interest and the acquisition of Amherst Pierpont Securities in 2021.

C. Provisions to cover losses due to impairment of loans in the last 12 months / average customer loans and advances of the last 12 months.

D. Over 1st dividend; TNAV per share + cash DPS +6% vs. 2021.

## We achieved our Group financial targets set over the last three years

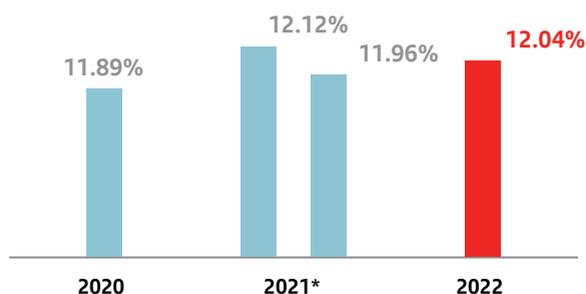
	2019 medium-term targets	2022 targets	2022 actual
Revenue		Mid-single digit growth <sup>A</sup>	+6%
Efficiency ratio	42-45%	~45%	45.80%
CoR		<1%	0.99%
RoTE	13-15%	>13%	13.40%
FL CET1	11-12%	~12%	12.04%
Payout	40-50%	40%	40% <sup>B</sup>

<sup>A</sup> In constant euros.<sup>B</sup> Has been submitted to the 2023 AGM for approval. Includes cash dividend and share buybacks.

## Executive summary

**Despite the difficult and uncertain global economic environment, we achieved our objectives and strengthened our capital position.**

## Fully-loaded CET1 ratio



\*Including corporate transactions pending approval at year-end: -0.16%

Regulatory CET1 ratio (Phased-in)<sup>1</sup>

Year	Regulatory CET1 ratio (Phased-in)
2020	12.34%
2021	12.51%
2022	12.18%

## Main capital figures and capital adequacy ratios.

EUR million	Fully-loaded		Phased-in	
	2022	2021	2022	2021
Common Equity (CET1)	73,390	70,208	74,202	72,402
Tier 1	82,221	79,939	83,033	82,452
Total capital	96,373	95,078	97,392	97,317
Risk weighted assets	609,702	579,478	609,266	578,930
CET1 Ratio	12.04%	12.12%	12.18%	12.51%
Tier 1 Ratio	13.49%	13.79%	13.63%	14.24%
Total capital ratio	15.81%	16.41%	15.99%	16.81%
Leverage Ratio	4.70%	5.21%	4.74%	5.37%

Note: The phased-in ratio including the transitory treatment of IFRS9.

## Disciplined capital allocation strategy

## 2022 TARGETS

RWAs rising below loan growth  
(excluding FX impact)

2022 front book RoRWA: 2.2%

% of RWAs with RoE > CoE: 80%

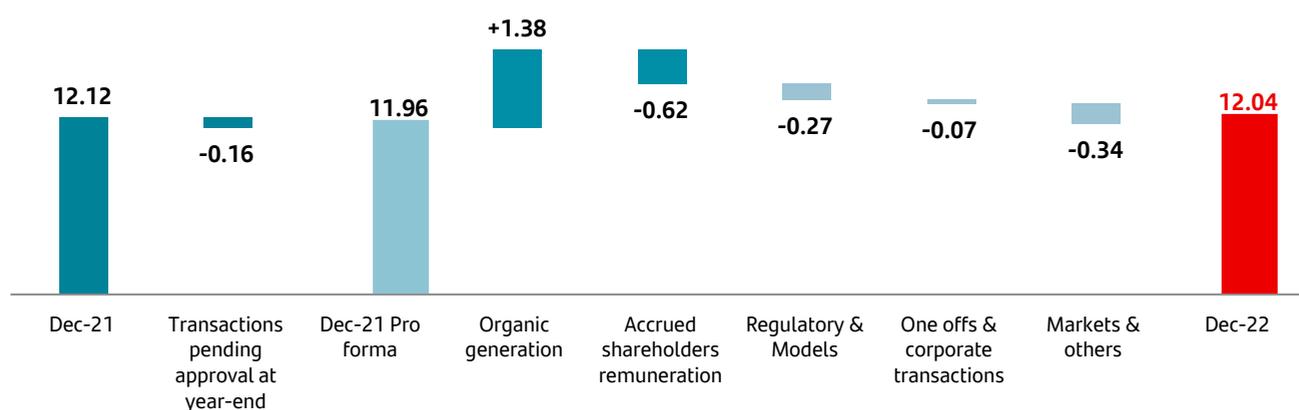
## 2022 ACHIEVEMENT

RWAs +1% < Loans +5%

2.6%

80% (70% in FY'21)

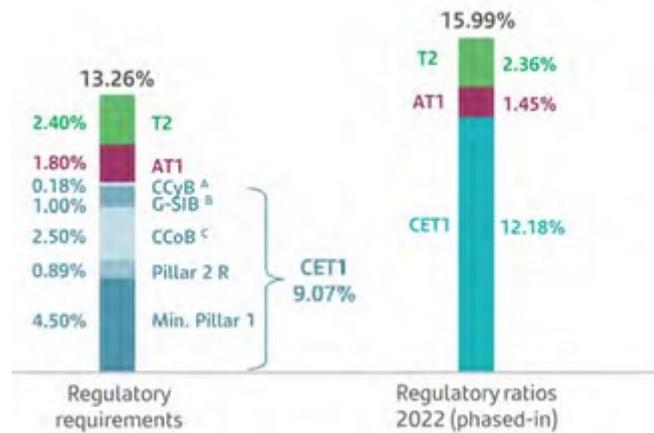
## Santander's CET1 ratio exceed minimum regulatory requirements



<sup>1</sup> The phased-in ratios include the transitory treatment of IFRS 9, calculated in accordance with article 473 bis of the Regulation on Capital Requirements (CRR2) and subsequent amendments introduced by Regulation 2020/873 of the European Union. Additionally, the Tier 1 and total phased-in capital ratios include the transitory treatment according to chapter 2, title 1, part 10 of the aforementioned CRR2.

### Regulatory Capital vs Regulatory requirement (Phased-in IFRS 9)<sup>A</sup>

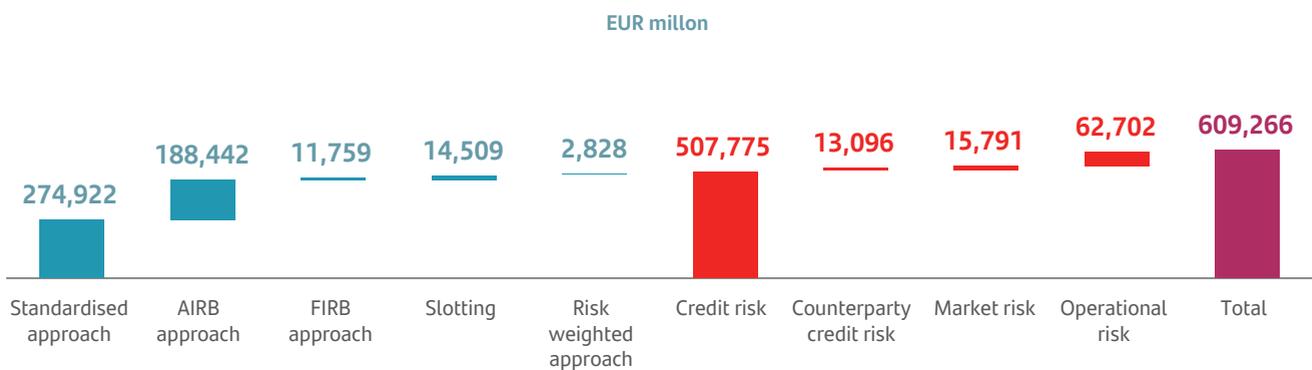
2022



<sup>A</sup> The phased-in ratios include the transitory treatment of IFRS 9, calculated in accordance with article 473 bis of the Regulation on Capital Requirements (CRR2) and subsequent amendments introduced by Regulation 2020/873 of the European Union. Additionally, the total phased-in capital ratios include the transitory treatment according to chapter 4, title 1, part 10 of the aforementioned CRR2.

### RWA distribution by risk type<sup>A B</sup>

2022

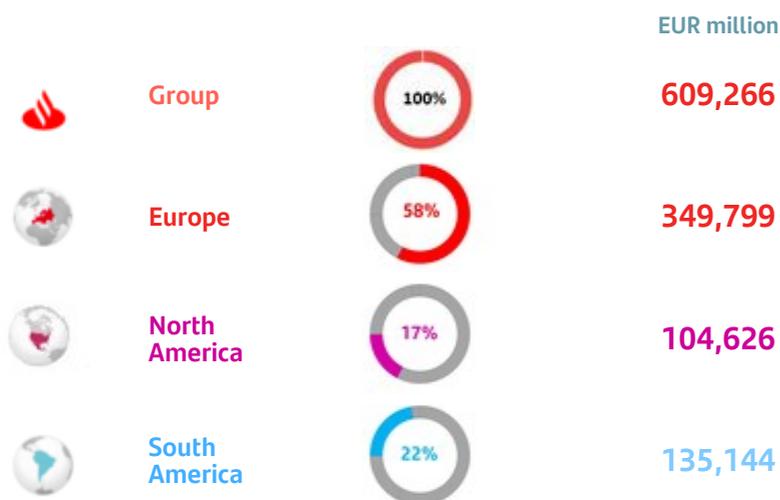


<sup>A</sup> Doesn't include settlement risk and securitisation exposures in the banking book. For more information, see Table 9. OV1

<sup>B</sup> CRR Phased-in, IFRS9 Phased-in

### RWA distribution by geographical region<sup>A B</sup>

2022



<sup>A</sup> Doesn't include others. For more information, see Table 10. RWAs by geographical region

<sup>B</sup> CRR Phased-in, Phased-in IFRS 9

**Table 1.KM1 - Key metrics template**

EUR million		a	b	c	d	e
		Dec'22	Sep'22	Jun'22	Mar'22	Dec'21
<b>Available own funds (amounts)</b>						
1	Common Equity Tier 1 (CET 1) capital	74,202	75,499	74,091	73,817	72,402
2	Tier 1 capital	83,033	84,513	82,885	82,917	82,452
3	Total capital	97,392	99,773	97,843	98,130	97,317
<b>Risk-weighted exposure amounts</b>						
4	Total risk-weighted exposure amount	609,266	616,738	604,977	598,789	578,930
<b>Capital ratios (as a percentage of risk-weighted exposure amount)</b>						
5	Common Equity Tier 1 ratio (%)	12.18 %	12.24 %	12.25 %	12.33 %	12.51 %
6	Tier 1 ratio (%)	13.63 %	13.70 %	13.70 %	13.85 %	14.24 %
7	Total capital ratio (%)	15.99 %	16.18 %	16.17 %	16.39 %	16.81 %
<b>Additional own funds requirements to address risks other than the risk of excessive leverage (as a percentage of risk-weighted exposure amount)</b>						
EU 7a	Additional own funds requirements to address risks other than the risk of excessive leverage (%)	1.58 %	1.50 %	1.50 %	1.50 %	1.50 %
EU 7b	of which: to be made up of CET1 capital (percentage points)	0.89 %	0.84 %	0.84 %	0.84 %	0.84 %
EU 7c	of which: to be made up of Tier 1 capital (percentage points)	1.19 %	1.13 %	1.13 %	1.13 %	1.13 %
EU 7d	Total SREP own funds requirements (%)	9.58 %	9.50 %	9.50 %	9.50 %	9.50 %
<b>Combined buffer requirement (as a percentage of risk-weighted exposure amount)</b>						
8	Capital conservation buffer (%)	2.50 %	2.50 %	2.50 %	2.50 %	2.50 %
EU 8a	Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member State (%)	— %	— %	— %	— %	— %
9	Institution specific countercyclical capital buffer (%)	0.18 %	0.03 %	0.01 %	0.01 %	0.01 %
EU 9a	Systemic risk buffer (%)	— %	— %	— %	— %	— %
10	Global Systemically Important Institution buffer (%)	1.00 %	1.00 %	1.00 %	1.00 %	1.00 %
EU 10a	Other Systemically Important Institution buffer	1.00 %	1.00 %	1.00 %	1.00 %	1.00 %
11	Combined buffer requirement (%)	3.68 %	3.53 %	3.51 %	3.51 %	3.51 %
EU 11a	Overall capital requirements (%)	13.26 %	13.03 %	13.01 %	13.01 %	13.01 %
12	CET1 available after meeting the total SREP own funds requirements (%)	6.41 %	6.58 %	6.58 %	6.72 %	7.12 %
<b>Leverage ratio</b>						
13	Total exposure measure	1,750,626	1,823,762	1,751,029	1,624,479	1,536,516
14	Leverage ratio (%)	4.74 %	4.63 %	4.73 %	5.10 %	5.37 %
<b>Additional own funds requirements to address risks of excessive leverage (as a percentage of leverage ratio total exposure amount)</b>						
EU 14a	Additional own funds requirements to address the risk of excessive leverage (%)	— %	— %	— %	— %	— %
EU 14b	of which: to be made up of CET1 capital (percentage points)	— %	— %	— %	— %	— %
EU 14c	Total SREP leverage ratio requirements (%)	3.00 %	3.00 %	3.00 %	3.06 %	3.06 %
<b>Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)</b>						
EU 14d	Leverage ratio buffer requirement (%)	— %	— %	— %	— %	— %
EU 14e	Overall leverage ratio requirements (%)	3.00 %	3.00 %	3.00 %	3.06 %	3.06 %
<b>Liquidity Coverage Ratio</b>						
15	Total high-quality liquid assets (HQLA) (Weighted value - average)	303,330	298,243	290,113	285,611	281,783
EU 16a	Cash outflows - Total weighted value	257,311	248,463	241,497	233,905	224,876
EU 16b	Cash inflows - Total weighted value	69,185	65,469	61,559	57,272	54,114
16	Total net cash outflows (adjusted value)	188,126	182,994	179,938	176,633	170,762
17	Liquidity coverage ratio (%)*	161.23 %	162.98 %	161.23 %	161.70 %	165.01 %
<b>Net Stable Funding Ratio</b>						
18	Total available stable funding	1,121,194	1,152,350	1,124,973	1,146,509	1,123,411
19	Total required stable funding	923,018	950,226	929,646	932,560	891,442
20	NSFR ratio (%)	121.47 %	121.27 %	121.01 %	122.94 %	126.02 %

CRR Phased-in, Phased-in IFRS9

\* Liquidity coverage ratio is the average of 12 months

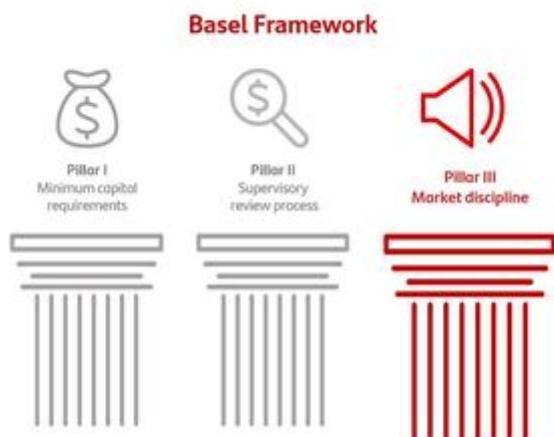
## 1.2. Santander Pillar 3 report overview



This section looks at general aspects applicable to Santander Group and describes the governance for approval and publication of the Pillar 3 report, in addition to the disclosure criteria used in the report.

Within the Basel framework, three Pillars can be distinguished:

- Minimum capital requirements (Pillar 1)
- Supervisory review (Pillar 2)
- Market discipline (Pillar 3).



Pillar 3 includes a set of disclosure requirements which are intended to provide analysts, investors, shareholders and other market agents with key capital and risk information to improve their ability of assessing banks' risk profile and capital adequacy.

The timely publication of this information is considered as a booster of transparency within financial institutions and it contributes to the adequate functioning of financial markets.

Santander Pillar 3 Disclosure Report is a public document that is published in the Group's corporate website in order to fulfil one of the regulatory requirements within the scope of Basel. Specifically, the reporting standards are set by Part Eighth of the Capital Requirements Regulation (CRR) 575/2013 and complementary European Banking Authority (EBA) Guidelines. In addition, the Report considers the Regulation (CRR2) 2019/876 amending Regulation 575/2013.

This document should be read in conjunction with the Annexes of Pillar 3 and the Annual Report, which have been published on our website ([www.santander.com](http://www.santander.com)).

In recent years, the Basel Committee on Banking Supervision (BCBS) and the European Banking Authority (EBA), seeking to enhance the consistency and comparability of institutions'

regulatory disclosures, have published several documents which establish the minimum requirements frequency, format and type of information that must be disclosed. Grupo Santander, as a Global Systematically Important Bank (G-SIB), has prepared its Pillar 3 Disclosure Report to the requirements defined by Regulation Authorities, and a simplified version of the Report is published on a quarterly-basis.

Following recent updates to the regulatory frameworks for credit institutions and investment firms, and the 2018 publication of the European Commission's action plan on sustainable finance, the EBA is implementing a new policy strategy on institutions' Pillar 3 disclosures that seeks to increase efficiency of institutions' disclosures and reinforce market discipline by developing a comprehensive framework with consistent and comparable disclosures. In addition, the EBA aims to promote transparency on Environmental, Social or Governance (ESG) risks, encouraging institutions to strengthen their management of these risks and promoting awareness of their key role in the transition to a green economy.

### 1.2.1. Background information on Santander

Banco Santander, S.A. is a legal entity subject to the rules and regulations applicable to banks operating in Spain. In addition to its direct operations, Banco Santander, S.A. is the holding company of a group of banking subsidiaries engaged in a range of business activities. The Capital Requirements Regulation (CRR) and its modifications (hereinafter referred to as CRR), Capital Requirements Directive (CRD) and its modifications, and its transposition through Banco de España Circular 2/2016, on supervision and capital adequacy, are applicable at a consolidated level to the entire Santander Group.

See Appendix II, CRR Mapping, for all aspects for which disclosure is required under Part Eight of the CRR, as amended but that are not applicable to Santander. These are reported as "N/A" (not applicable).

#### Disclosures by Santander subsidiaries

In addition to the information contained in this report, Santander subsidiaries that are considered to have significant importance for their local market (under article 13 of the CRR, Application of disclosure requirements on a consolidated basis) publish information at the individual level on their websites.

Santander subsidiaries in Argentina, Mexico, Santander Consumer Nordics, Santander Consumer Germany, Portugal, Poland, United Kingdom and Uruguay publish their Pillar 3 reports in accordance with local regulations, as well as Chile from 2023 onwards.

### 1.2.2. Disclosure criteria used in this report

This report has been prepared in accordance with current European regulations on capital requirements (CRR).

The ratios presented in this report have been calculated using the transitional CRR and IFRS 9 implementation schedules.

Details of the types of information where there are differences between the regulatory information shown in this report and the information in the annual report and accounting information are as follows.

- The credit risk exposure measurements used for calculating regulatory capital requirements include:
  - Current and future risk exposures arising from future commitments (contingent liabilities and commitments) and changes in market risk factors (derivative instruments).
  - The mitigating factors for these exposures (netting agreements and collateral agreements for derivative exposures, and collateral and personal guarantees for on-balance-sheet exposures).
- The criteria used in classifying non-performing exposures in portfolios subject to advanced models for calculating regulatory capital are more conservative than those used for preparing the disaggregated information provided in the annual report.
- ESG disclosure in Pillar 3 follows the Implementing Technical Standards (ITS) defined by the EBA for this purpose and it is not necessarily aligned with the management criteria reported in other Group's ESG reports.

### 1.2.3. Governance: policy, review and approval

Santander Group has a formal policy on Pillar 3 disclosures with the aim of defining requirements, elaboration process, frequency and associated governance in accordance with the Directive 2013/36/EU, Regulation (EU) no. 2019/876 of 20 May 2019 (the EU Regulation or CRR2) amending Regulation (EU) no. 575/2013, as well as the law on supervision and capital requirements (10/2014) of the Bank of Spain.

This policy has been prepared in compliance with the criteria established in the Guidelines on Materiality, Proprietary, Confidentiality and Frequency of the Information by European Banking Authority in accordance with Article 432, sections 1 and 2 and Article 433 of Regulation (EU) 575/2013.

The Pillar 3 disclosures report relies on a range of defined processes relating to the internal control framework, with duties and responsibilities for review and certification of the information contained in the report at several levels of the organisation.

Further information on Santander's internal control model (ICM) can be found in section VIII of the chapter on Corporate governance of the 2022 Annual report.

The information contained in this report has been subject to an ex-ante review by the External Auditor (PwC) which has not declared any findings in its report in relation to the reasonableness of the information detailed and the compliance with the information requirements established in the European Capital Directive and Regulation.

The conclusions are presented to the audit committee prior to its approval. In addition, this report is included in the recurring annual plan review of internal audit.

#### Approval by governing bodies

The report was reviewed by the Capital Committee held on 18 February 2023 and the Audit Committee during its session on the 21 February 2023, for its approval during the board of directors session on the 23 February 2023.

The board of directors of Santander certifies that the publication of the Pillar 3 disclosures report is compliant with the guidelines in Part Eight of Regulation (EU) 575/2013 and consistent with the "Pillar 3 Disclosures Policy" adopted by the board of directors.

No exceptions have been applied for the publication of information considered proprietary or confidential.

Furthermore, a quarterly report is published which includes a set of information complying with the internal policy and criteria established in the European Banking Authority guidelines about disclosure frequency.

The Pillar 3 disclosures report is available in the Shareholders and Investors section of the Santander website ([www.santander.com](http://www.santander.com)), under "Financial and economic information".



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)



[Access 2022 Annual Report available on the Santander Group website](#)

### 1.2.4. Developments in relation to the report

Santander takes into account all reporting requirements regarding market transparency published by the EBA, the BCBS and the Commission. Appendices I and II contain details on the various relevant documents.

Appendix I shows compliance with the various applicable in relation to disclosure, and Appendix II lists the location of the information disclosed in accordance with the relevant articles of Part Eight of the Regulation.

Some of the main transparency enhancements include the following:

- Pillar 3 includes from 2022 onwards new mandatory disclosure requirements in relation to environmental, social and governance risks, as set out in Article 449 of CRR II. The content of these requirements involves qualitative reporting on environmental, social and governance information, as well as quantitative reporting on transition risk and physical climate change risk, and climate change-related measures applied including the Green Asset Ratio.

For more information, see section 2.7.

- The implementing technical standard on the disclosure and reporting of the minimum requirement for own funds and eligible liabilities (**MREL**) and the total loss absorbing capacity (**TLAC**).

For more information, see section 2.7.

- As a result of the global health crisis, the EBA published a guide to the impact of covid-19 entitled "EBA GLs on reporting and disclosure of exposures subject to measures applied in response to the covid-19 crisis", which specifies that three quantitative templates with information on the scope of the moratoria must be published every six months. In January 2023 the EBA confirms that this report will be the last to publish information on the COVID-19 pandemic.

For more information, see section 4.10.

- The EBA also published another ITS on Pillar 3 disclosure on interest rate risk arising from the non-trading book activities (**IRRBB**).

For more information, see section 7.4.1.

See Appendix I Transparency Enhancements and Appendix II CRR Mapping for further information on improvements in transparency.

For more information, see Appendix I.

For more information, see Appendix II.

In the Financial and economic information / Pillar 3 section of the Group's website, we also publish all the tables shown in this document in editable format for easier processing, as well as the appendices.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

## 1.3. Regulatory framework

### 1.3.1. Prudential framework 2022: Capital Adequacy and Resolution key points

Credit institutions must meet a number of minimum capital and liquidity requirements. These minimum requirements are governed by the Capital Requirements Regulation (hereinafter CRR), and the Capital Requirements Directive (hereinafter CRD). In June 2019, these regulations were significantly amended.

As the Directives need to be transposed into the legal systems of the different Member States in order to be applicable, in the case of Spain, Royal Legislative Decree 7/2021 and Royal Decree 970/2021 were published for this purpose in 2021. In 2022, the transposition of the CRD into Spanish law has been completed with the publication of Bank of Spain Circular 3/2022, which amends Circular 2/2016, on supervision and solvency; Circular 2/2014, on the exercise of various regulatory options of the CRR and Circular 5/2012, addressed to credit institutions and payment service providers, on transparency of banking services and responsibility in the granting of loans.

The CRD introduced important modifications such as Pillar 2G regulation ('P2 Guidance' supervisory recommendation on Pillar 2 requirements).

On 27 October 2021, the European Commission published the draft review of the European banking legislation: CRR and CRD.

This review completes the implementation of the Basel III reform, which was agreed at the end of 2017 and aims to reduce the variability of risk-weighted assets and improve comparability between banks.

Progress was made in 2022 on discussions about the new texts and the final proposal is expected to be approved in 2023.

The banking package consists of the following elements: 1) Implementation of the **final Basel III reforms**, 2) Contribution to sustainability and green transition and 3) Stronger supervision: ensuring sound management of EU banks and better protection of financial stability.

The first element is reflected in the Commission's proposal to amend the text of the CRR. This proposal contains changes concerning, among other things, key risk factors, standardised credit risk, internal models, the output floor and operational risk.

The second element, relating to the **contribution to sustainability and green transition**, is reflected in the fact that the legislative proposals continue to incorporate ESG (environmental, social and governance) factors into the various areas of prudential regulation: governance, supervision, risk management, reporting obligations to competent authorities and disclosure requirements, among other topics. In this regard, it is important to note the Commission's mandate to the European Banking Authority (EBA) to assess whether specific prudential treatment is required for environmental and social risks. In line with this mandate, in 2022, the EBA issued the first consultation on the role of environmental risks within the prudential framework. Based on the feedback received in said consultation, and

depending on the final wording of the CRR/CRD, the EBA shall publish a report on the matter.

Finally, the third element, which refers to **stronger supervision** and protection of financial stability, is expressed in a series of provisions concerning: fit-and-proper requirements, the extension of the scope by revising certain definitions that would cover groups managed by fintechs, and the establishment of third-country branches in the EU in order to achieve greater harmonisation of rules and better supervision of this type of entity.

The European Council's proposal on CRR and CRD was published on 8 November 2022. During 2023, it is expected that the Parliament makes its position text public, which will be followed by the beginning of the trilogues process that will eventually result in the final versions of the regulations.

The new CRR/CRD regulations are expected to enter into force from 1 January 2025.

With regard to the resolution framework, institutions must have an adequate funding structure to ensure that, in the event of financial distress, the institution has sufficient liabilities to absorb losses in order to recover its position or be resolved, while ensuring the protection of depositors and financial stability. The entities must therefore meet several minimum loss-absorbing requirements, named Total Loss-Absorbing Capacity (TLAC) and Minimum Requirement for own funds and Eligible Liabilities (MREL), which are regulated by the CRR and by the Bank Recovery and Resolution Directive (BRRD).

In June 2019, the CRR introduced the minimum TLAC requirement, which only applies to global systemically important banks (G-SIBs). This requirement involves two metrics, the first is a minimum requirement for own funds and eligible liabilities in terms of a percentage of the total risk exposure amount (TREA), set at 18% from 1 January 2022 once the transition period ended. The second is a metric to set a minimum requirement for own funds and eligible liabilities in terms of a percentage of the average exposure to the Basel III Tier I leverage ratio of 6.75% from 1 January 2022 once the transition period ended.

For large banks (defined as banks with total assets of more than EUR 100 billion) or banks deemed to be systemically important by the resolution authority, the BRRD sets a minimum subordination requirement that will be higher between a 13.5% of risk-weighted assets and 5% of the leverage ratio. For the remaining institutions, the subordination requirement is set by the resolution authority on a case-by-case basis.

On 25 October 2022, the regulation on prudential treatment for global systemically important banks was published. This modifies both the CRR and the BRRD as regards prudential treatment of global systemically important banks (G-SIBs) with a multiple point of entry (MPE) resolution strategy, as well as methodologies for the indirect subscription of instruments (Daisy Chains) eligible for meeting the minimum requirement for own funds and eligible liabilities. This Regulation, known as the 'Quick Fix', covers the following objectives:

- Inclusion in the BRRD and CRR of references to third countries that allow adjustment of the deduction applied for the TLAC holding instruments issued by subsidiaries in third countries based on excess TLAC/MREL at the said subsidiaries, as well as the adjustment where the sum of

the requirements for own funds and eligible liabilities of G-SIBs under an MPE strategy exceed the theoretical requirements for the same group under a single point of entry (SPE) strategy. In other words, the latter adjustment is based on a comparison between the two possible resolution strategies.

For subsidiaries in jurisdictions without a resolution regime in place, the Regulation provides for a transitional period until 31 December 2024. During this transitional period the entities may adjust the deductions based on excess above capital requirements in subsidiaries in third countries, if they meet certain requirements.

- Inclusion of a deduction scheme for MREL instrument holdings through entities of the same resolution group other than the resolution entity. This Regulation sets a deduction for the intermediate entity (Daisy Chains) that buy instruments issued by another entity as a result of this the deduction. The intermediate entity is obligated to issue the same amount that is repurchasing to the Resolution Entity, transferring internal MREL needs to the Resolution Entity, which will finally cover the required amount with external MREL.

This Regulation is applicable since the 14<sup>th</sup> November 2022, except for the provisions relating to Daisy Chains, which apply since the 1<sup>st</sup> January 2024.

Finally, Deposit Guarantee Schemes (DGSs) are regulated by the Deposit Guarantee Schemes Directive (DSGD), which has not undergone any significant changes since its publication in 2014. It aims to harmonise the deposit guarantee schemes of the Member States, thus ensuring stability and balance in different countries. It creates an appropriate framework for depositors to have better access to DGSs than was the case before the publication of this Directive through clear coverage, shorter repayment periods, better information and robust funding requirements. This Directive is transposed into Spanish law by Royal Decree 2606/1996, with its amendments set forth in Royal Decree 1041/2021.

To ensure that depositors' funds are secured, the DGSs collect funds available through contributions that must be made by their members at least once a year; a target level of 0.8% of the guaranteed deposits total must be met by 3 July 2024. These annual collections are set depending on the guaranteed deposits total and the degree of risk faced by the entities involved in the DGS. The method for calculating contributions is stated in the EBA Guidelines (EBA/GL/2015/10). A review and evaluation process was opened for these Guidelines by the EBA in 2022 (EBA/CP/2022/10).

### Other regulatory developments in 2022:

Recent market developments have caused substantial increases in energy prices, which have consequently generated increases in the margins required by central counterparty entities (CCPs) to cover exposures. In response to this issue, Delegated Regulation (EU) 2022/2311 was published in November this year, amending Delegated Regulation (EU) 153/2013, which sets forth regulatory technical standards on the requirements that CCPs must meet. The new Regulation broadens the catalogue of guarantees that CCPs can accept as eligible collateral until November 2023.

In relation to the measures applied across Europe during the pandemic, we noted, in 2022, the repeal of the Guidelines on reporting and disclosure of exposures subject to measures

applied in response to the covid-19 crisis. As a result of the measures applied by the EBA in response to covid-19 (moratoria and public guarantees), Guidelines on reporting and disclosure of exposures subject to measures applied in response to the covid-19 crisis (EBA/GL/2020/07) were established in June 2020. The guidelines, which were initially expected to apply for a period of 18 months, were extended in January 2022 for a further year to ensure the monitoring of exposure and credit quality for loans with public support measures in the member states where these are still relevant. The decreasing relevance of public support measures prompted the EBA to take the decision, in December, to repeal the guidelines as of 1 January 2023.

### 1.3.2. Other regulations: Sustainability

The development of sustainable finances and, in particular, 'Fit 55: Compliance with the EU climate target for 2030 on the path towards climate neutrality' has continued this year and are key topics of debate and regulatory developments.

From the finance sector's perspective, 2022 has been a year with important regulatory milestones regarding sustainability that either supplement other regulatory components, pending development or making progress towards holistically integrating sustainability into the operations of financial institutions, non-financial institutions and their stakeholders.

The Taxonomy Regulation (2020/852) which establishes the criteria for classifying an economic activity as environmentally sustainable, identifies six environmental objectives on the basis of which technical criteria for qualifying an activity as environmentally sustainable have to be developed. In 2021, the European Commission published the final selection criteria for the identification of sustainable activities that contribute towards the first two environmental objectives set forth in the Taxonomy Regulation relating to climate change mitigation and adaptation, which were finally adopted in December 2021.

During 2022, discussions on the development of the four remaining objectives (sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems) continued to make progress, but the technical screening criteria for the selection of activities based on these remaining objectives have not been reflected in the corresponding Delegated Regulation by the end of the year— their definition will continue in 2023. As a noteworthy aspect in the development of the Taxonomy Regulation, it is remarkable the publication of the Delegated Regulation 2022/1214 which incorporates, under certain strict criteria, in what circumstances activities related to the generation of nuclear energy and electricity and heat and production of cold from fossil gas, are considered as activities that contribute to the mitigation or adaptation to climate change and establishes specific disclosure requirements for these activities in order to ensure transparency. These additional disclosure requirements complement those applicable since January 2022 for both financial and non-financial institutions, being the Green Asset Ratio (percentage of exposures aligned with environmentally sustainable activities identified and specified in the corresponding Delegated Regulations underlying the Taxonomy Regulation) the most relevant indicator for the banking sector.

In relation to the disclosure obligations regarding sustainability, it is important to note that the final Pillar 3 disclosure framework defined by the EBA was approved in 2022 and establishes disclosure obligations relating to climate risks (both physical and transitional) for large banks that trade securities on regulated markets of any Member State and will be published from 2023; however, the application of the obligation to disclose certain information or indicators will have a phased application.

At the supervisory level, the European Central Bank, which published its guidelines on supervisory expectations for climate and environmental risks in November 2020 and subsequently integrated them into the supervisory dialogue during 2021, conducted a thematic review in 2022 of institutions' capabilities to manage their risk strategies and climate and environmental risk profiles. Additionally, the ECB also carried out the first climate stress test, demonstrating its determination to continue making progress in the implementation of its supervisory expectations.

At international level, the Basel Committee published in June 2022, the principles for the effective management and supervision of climate-related financial risks. This document is part of the holistic approach adopted by the Committee to address these risks within the global banking system and seeks to improve both risk management by the entities as well as supervisory practices in this regard.

In December 2022, the Basel Committee published some Frequently Asked Questions (FAQs) to clarify how climate-related financial risks may be captured in existing Pillar 1 standards, in particular, concerning credit, market, operational and liquidity coverage ratio risks. This list of FAQs may be supplemented in the future, if the Basel Committee deems it necessary.

### 1.3.3. Other regulations: Digital

Parallel to the climate agenda, the goal of ensuring that Europe is prepared for the digital age has led regulators to make significant progress in adapting the regulatory framework to accommodate new realities and technologies, competitors and risks associated with new business models.

In 2022, a number of key regulatory pieces have been approved or are in the final stage of approval by the European institutions, to implement the digital finance plan announced by the European Commission in 2020. Specifically, we highlight the following:

- MICA (Markets in cryptoassets), which establishes a common framework within Europe for the issue, custody and trading of these assets.
- The DORA (Digital Operational Resilience Act) regulation, with the aim of managing the risks generated by information technology (ICT) service providers when they interact with finance sector players. DORA establishes a common supervisory framework for technology providers who provide services to financial institutions, in addition to imposing common cybersecurity requirements.
- DMA (Digital Markets Act), which establishes obligations and restrictions to those digital platforms that are considered as gatekeepers, to ensure that the EU digital market remains competitive. During 2023, the development of the delegated regulations will continue to

supplement the DMA on specific aspects that are still pending for further development.

- Internationally, we highlight the publication launched by the Basel Committee with the principles for prudential treatment of banks' cryptoassets exposures. The final version includes more granular classification of cryptoassets, which was added in the second consultation published in June 2022, based on intrinsic risks to cryptoassets; discretion for the competent authorities to establish an add-on for technology infrastructure risk; the decoupling of the prudential treatment from the accounting treatment in the case of cryptoassets; and a flexible approach to the exposure limit for Group 2 cryptoassets (which receive a more punitive treatment because they do not fulfil the classification conditions of Group 1, which is reserved for tokenized traditional assets and stablecoins).

Other regulatory initiatives still under discussion at 2022 year-end include:

- The proposal for a European regulation on Artificial Intelligence that regulates the use of this technology for both public and private entities. The proposal focuses on applications that are considered high-risk, including the customers' creditworthiness assessment and human resources management.
- Data Act: Regulation intended to promote harmonised rules regarding fair use and access to data in Europe. The developments covered by this Regulation include adopting measures to aid access to data generated by connected devices (IoT), minimum requirements to aid interoperability, minimum rights for users of data processing services when changing provider, among other such aspects.
- Central banks have continued to explore issuing digital currencies (CBDCs). In Europe in particular, the European Central Bank continues to make progress in the investigation phase for designing and implementing the digital euro, which is expected to conclude by the end of October 2023.

Lastly, the Financial Stability Board (FSB) has launched a consultation to establish a series of recommendations to promote consistency and comprehensiveness in approaches to regulation, supervision and control of activities involving cryptoassets and enhance international cooperation. In parallel, the FSB has also launched a consultation on a series of high-level recommendations for the regulation, supervision and surveillance of global stablecoins to address the associated financial stability risks.

### 1.3.4. Other regulations: Anti-money laundering and countering the financing of terrorism (AML/FT)

In July 2021, the European Commission published a proposal for an Anti-Money Laundering and Countering the Financing of Terrorism (AML/FT) regulatory package that aims to strengthen existing EU rules, improve the detection of suspicious transactions and activities, and close loopholes in the current regulatory framework. It consists of four legislative proposals:

1. Regulation establishing a new European AML/FT Authority that will coordinate national AML/FT authorities and directly supervise certain financial sector institutions. The

Authority is expected to become operational in 2024 and to start its supervisory activities in 2026.

2. AML/FT Regulation. Parts of the current Directive will be transferred to this Regulation, which will be directly applicable in all Member States without the need for local transposition. This will harmonise EU requirements in areas such as customer due diligence, among others. Expected to be implemented by the end of 2025.
3. Sixth AML/FT Directive, which will repeal the current Directive. It contains provisions that must be transposed into national law, in particular on national supervisory authorities and Financial Intelligence Units (FIUs).
4. Recast of the Regulation on Transfers of Funds, with a particular focus on the tracking of transfers of crypto-assets. This revision introduces new requirements in relation to Virtual Asset Service Providers (VASPs) by requiring these actors to collect and make available data on the originators and beneficiaries of the transfers of virtual or crypto assets they operate. The European Council and the Parliament have come to a provisional agreement on updating the EU Regulation, but confirmation from these institutions is still required for the Regulation to be formally adopted.

On 14 July 2022, the EBA published Guidelines specifying the role and responsibilities to be assumed by the Compliance Officer in the fight against money laundering and terrorism financing. The Guidelines also specify that the entities must appoint a member of their board of directors to be responsible for ensuring compliance with those obligations; being a single responsible in the event that the entity is part of a group.

This then creates a shared understanding between the competent authorities and the lending or financial institutions in line with the requirements of the EU Directive on the prevention of the use of the financial system for the purposes of money laundering and terrorist financing.

## 1.4. Scope of consolidation

This section covers the qualitative requirements LIA - Explanations of differences between accounting and regulatory exposure amounts and LIB - Other qualitative information on the scope of application.

The Group companies included in the scope of consolidation for calculating the capital adequacy ratio under the CRR are the same as those included in the scope of consolidation for accounting purposes under Banco de España Circular 2/2018.

### 1.4.1. Substantial amendments due to a change in the perimeter and corporate transactions

Following is a summary of the main acquisitions and disposals of ownership interests in the share capital of other entities and other significant corporate transactions performed in the last three years or pending to be completed:

- i. Tender offer for shares of Banco Santander México, S.A., Institución de Banca Múltiple, Grupo Financiero Santander México.
- ii. Agreement for the acquisition of a significant stake in Ebury Partners Limited.
- iii. Purchase by SHUSA for shares of Santander Consumer USA.
- iv. Acquisition of Amherst Pierpont Securities LLC, a U.S. fixed-income broker dealer.
- v. Reorganization of the banking insurance business, asset management and pension plans in Spain.

For more information on the main acquisitions and disposals of holdings in other companies and other major corporate transactions by Santander last year, refer to section 3 of the Notes in the Audit Report section of the 2022 Annual Report.



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### 1.4.2. Differences between the accounting consolidation method and the consolidation method for calculating regulatory capital

In application of Part I (General Provisions) of the CRR, some Santander entities are consolidated using a different method for accounting consolidation.

For the purposes of calculating the capital adequacy ratio based on the nature of their business activities, the Group companies included in the prudential scope of consolidation are consolidated using the full consolidation method, with the exception of jointly controlled entities, which use proportionate consolidation. All companies that cannot be consolidated based on their business activities are accounted for using the equity method and so are treated as equity exposures.

The basis of the information used for accounting purposes differs from that used for calculating regulatory capital requirements. Risk exposure measurements may differ depending on the purpose for which they are calculated, such as financial reporting, regulatory capital reporting and management information. The exposure data included in the quantitative disclosures in this document are used for calculating regulatory capital or leverage ratio.

The companies for which different consolidation methods are used, depending on the regulations applied (table L13), are listed in Appendix V of the 2021 Pillar 3 Report file available on the Santander website.



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The following table shows the relationship between the categories in the financial statements and the risk categories in accordance with prudential requirements.

**Table 2.LI1 - Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories**

EUR million		2022						
		a	b	c	d	e	f	g
		Carrying values of items:						Not subject to capital requirements or subject to deduction from capital
		Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to credit risk framework	Subject to the CCR framework	Subject to securitisation framework	Subject to market risk framework	
<b>Assets</b>								
1	Cash and cash balances at central banks	223,073	223,193	223,193	—	—	—	—
2	Financial assets held for trading	156,118	155,932	—	92,679	33	155,899	—
Non-trading financial assets mandatorily measured at fair value through profit or loss								
3		5,713	4,201	1,002	—	863	2,335	—
Financial assets not held for trading valued mandatorily at fair value through profit or loss								
4		8,989	7,030	—	815	—	7,030	—
5	Financial assets designated at fair value through profit or loss	85,239	72,437	63,352	—	9,086	—	—
6	Financial assets at amortised cost	1,147,044	1,151,081	1,097,583	40,240	13,209	—	49
7	Derivatives - Hedge accounting	8,069	8,335	—	8,335	—	—	—
Fair value changes of the hedged items in portfolio hedge of interest rate risk								
8		(3,749)	(3,749)	—	—	—	—	(3,749)
9	Investments in subsidiaries, joint ventures and associates	7,615	8,658	—	—	—	—	8,658
10	Reinsurance assets	308	—	—	—	—	—	—
11	Tangible assets	34,073	31,000	31,000	—	—	—	—
12	Intangible assets	18,645	18,724	2,156	—	—	—	16,568
13	Tax assets	29,987	29,969	28,186	—	—	—	1,783
14	Other assets	10,082	10,219	8,874	—	—	—	1,345
15	Non-current assets and disposal groups classified as held for sale	3,453	3,608	3,608	—	—	—	—
<b>16</b>	<b>Total assets</b>	<b>1,734,659</b>	<b>1,720,638</b>	<b>1,458,953</b>	<b>142,070</b>	<b>23,191</b>	<b>165,264</b>	<b>24,654</b>
<b>Liabilities</b>								
1	Financial liabilities held for trading	(115,185)	(115,051)	—	(92,535)	—	(115,051)	—
2	Financial liabilities designated at fair value through profit or loss	(55,947)	(40,600)	—	—	—	(40,600)	—
Financial liabilities measured at amortised cost								
3		(1,423,858)	(1,426,165)	—	—	—	—	(1,426,165)
4	Derivatives - Hedge accounting	(9,228)	(9,282)	—	(9,282)	—	—	—
Fair value changes of the hedged items in portfolio hedge of interest rate risk								
5		117	117	—	—	—	—	117
6	Liabilities under insurance contracts	(747)	—	—	—	—	—	—
7	Provisions	(8,149)	(8,179)	(734)	—	—	—	(7,446)
8	Tax liabilities	(9,468)	(9,440)	—	—	—	—	(9,440)
9	Other liabilities	(14,609)	(14,508)	—	—	—	—	(14,508)
<b>10</b>	<b>Total</b>	<b>(1,637,074)</b>	<b>(1,623,108)</b>	<b>(734)</b>	<b>(101,818)</b>	<b>—</b>	<b>(155,651)</b>	<b>(1,457,442)</b>

The difference in total assets between the public and the reserved scopes is not material (-EUR 14,023 billion) and corresponds to the exclusion of non financial institutions (-EUR 23,519 billion) and the inclusion of jointly controlled (+EUR 13,252 billion) and intra group entities (-EUR 3,756 billion).

In addition, the sum of the carrying amounts of certain items is greater than the carrying amounts under the scope of prudential consolidation, as the financial assets held for

trading and the financial assets at fair value through profit or loss are subject to the capital requirements of more than one risk category under the regulatory scope.

The main differences between the carrying amounts in the financial statements and the exposures for prudential purposes are shown below:

**Table 3.LI2 - Main sources of differences between regulatory exposure amounts and carrying values in financial statements**

EUR million		2022				
		a	b	c	d	e
		Total	Items subject to:			
			Credit risk framework	CCR framework	Securitisation framework	Market risk framework
1	Asset carrying value amount under scope of regulatory consolidation (as per template EU LI1)	1,789,477	1,458,953	142,070	23,191	165,264
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template EU LI1)	(258,203)	(734)	(101,818)	—	(155,651)
3	<b>Total net amount under regulatory scope of consolidation</b>	<b>1,531,275</b>	<b>1,458,219</b>	<b>40,252</b>	<b>23,191</b>	<b>9,613</b>
4	Off-balance sheet amounts	358,398	358,398		—	—
	Regulatory Add-on	51,349		51,349		—
5	Differences in valuations	—				—
6	Differences due to different netting rules, other than those already included in row 2	(14,918)		(5,305)		(9,613)
	Non-eligibility of the balances corresponding to accounting hedges (derivatives)	(8,335)		(8,335)		—
10	Securitisations with risk transfer	16,047	21,850		(5,803)	—
11	Other	(11,880)	(52,257)		40,377	—
7	Differences due to consideration of provisions	(16,359)	(16,035)	—	(324)	—
8	Differences due to CRMs	(49,452)	(10,207)	(38,822)	(423)	—
9	Differences due to CCFs	(273,230)	(273,230)	—	—	—
12	<b>(EAD)</b>	<b>1,582,895</b>	<b>1,486,739</b>	<b>39,138</b>	<b>57,018</b>	<b>—</b>

This table shows a breakdown of the differences between the amounts of exposures for prudential purposes and the carrying amounts according to various parameters

The main causes in this case, result from the amount of off-balance sheet items (+EUR 358.398 billion) and the application of CCFs (-EUR 273.230 billion). The regulatory add-on (+EUR 51.349 billion) and the differences resulting from the various offsetting rules (-EUR 14.918 billion).

The reconciliation of the public and non-public balance sheets (table CC2) is shown in Appendix VI, which is available on the Santander website.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)



# 2

## Capital

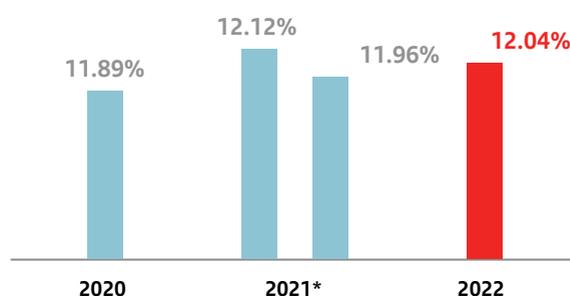
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# 2. Capital



This chapter looks at Santander Group's principle capital management and capital adequacy aspects, in addition to the main capital figures and solvency ratios, including Pillar 2 metrics. For further information on own funds requirements by risk type, see the chapters dedicated to each specific risk.

## Fully-loaded CET1 ratio



\*Including corporate transactions pending approval at year-end: -0.16%

## Regulatory CET1 ratio (Phased-in)<sup>2</sup>

Year	Regulatory CET1 ratio (Phased-in) <sup>2</sup>
2020	12.34%
2021	12.51%
2022	12.18%

## 2.1. Introduction

Capital management and adequacy at Santander aims to guarantee solvency and maximize profitability, while complying with internal capital targets and regulatory requirements.

It is determined by the strategic objectives and risk appetite set by the board of directors. To achieve this, the following policies have been established that shape the approach that the Group applies to capital management:

- Adequate **capital planning**, to meet current needs and provide the necessary resources to meet the needs of the business plans, regulatory requirements and the associated risks in the short and medium term, while maintaining the risk profile approved by the board of directors.
- Ensure that Santander and its subsidiaries have adequate capital to cover needs resulting from increased risks due to deteriorating macroeconomic conditions under **stress scenarios**.
- Optimise capital use through appropriate allocation among businesses, based on **the relative return on regulatory and economic capital** and taking into account risk appetite, growth and strategic objectives.

Santander Group manages capital and its value creation through six main blocks, placing **profitability** and **capital** at the forefront of its decisions, with the aim of improving the CET1 ratio and reinvesting freed up capital in **profitable growth, shareholder remuneration** and **strategic investments**. These blocks are:

- Capital strategy, which sets an ambitious Group-wide target including a capital buffer above requirements, and takes into account a holistic market perspective with regard to competitors and supervisory authorities.
- Increasing risk-adjusted returns through better allocation, analysing the performance of portfolios and carrying out both the organic (front-book) and inorganic capital allocation process.
- The detailed tracking and monitoring of performance across all geographies is reviewed and discussed at regular meetings to generate profitability-improvement actions.
- Portfolio management by identifying, prioritising and executing risk sharing and risk transfer across geographies.
- Precise capital calculation identifying opportunities to optimise the numerator (CET1) and denominator (RWA), as well as greater industrialisation and standardisation of the Group's processes. In addition, the Group is working towards the overall optimisation of capital requirements (SREP framework, stress tests, MREL, TLAC).
- Existence of technological infrastructure and systems, capital tools and other optimisers are cross-cutting elements and factors that allow for proper capital management.

<sup>2</sup> The phased-in ratios include the transitory treatment of IFRS 9, calculated in accordance with article 473 bis of the Regulation on Capital Requirements (CRR) and subsequent amendments introduced by Regulation 2020/873 of the European Union. Additionally, the Tier 1 and total phased-in capital ratios include the transitory treatment according to chapter 2, title 1, part 10 of the aforementioned CRR.

## Focus on disciplined capital allocation and shareholder remuneration while we established our fully-loaded CET1 target between 11% and 12%.

At December 31, 2022, the fully-loaded CET1 ratio (without applying the IFRS9 or CRR transitional arrangements) stood at 12.04% and the phased-in CET1 ratio was 12.18%. Only applying the IFRS9 transitional arrangements (CRR fully-loaded), the ratio remains at 12.18%. The following table shows the impact of the CRR transitional arrangements under a IFRS9 phased-in scenario:

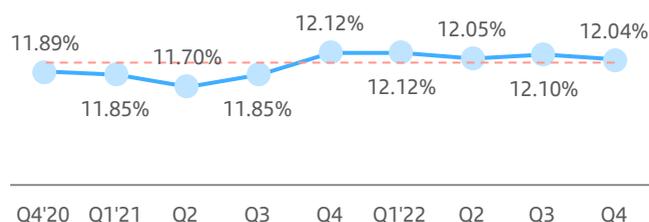
**Table 4. Main capital figures and capital adequacy ratios (Phased-in IFRS 9).**

EUR million	Fully-loaded CRR					Phased-in CRR				
	Dec'22	Sep'22	Jun'22	Mar'22	Dec'21	Dec'22	Sep'22	Jun'22	Mar'22	Dec'21
	Common Equity (CET1)	74,202	75,499	74,091	73,817	72,402	74,202	75,499	74,091	73,817
Tier 1	83,033	84,513	82,885	82,917	82,133	83,033	84,513	82,885	82,917	82,452
Total capital	97,185	99,547	97,631	97,931	97,013	97,392	99,773	97,843	98,130	97,317
Risk weighted assets	609,266	616,738	604,977	598,789	578,930	609,266	616,738	604,977	598,789	578,930
<b>CET1 Ratio</b>	<b>12.18%</b>	<b>12.24%</b>	<b>12.25%</b>	<b>12.33%</b>	<b>12.51%</b>	<b>12.18%</b>	<b>12.24%</b>	<b>12.25%</b>	<b>12.33%</b>	<b>12.51%</b>
<b>Tier 1 Ratio</b>	<b>13.63%</b>	<b>13.70%</b>	<b>13.70%</b>	<b>13.85%</b>	<b>14.19%</b>	<b>13.63%</b>	<b>13.70%</b>	<b>13.71%</b>	<b>13.85%</b>	<b>14.24%</b>
<b>Total capital ratio</b>	<b>15.95%</b>	<b>16.14%</b>	<b>16.14%</b>	<b>16.35%</b>	<b>16.76%</b>	<b>15.99%</b>	<b>16.18%</b>	<b>16.18%</b>	<b>16.39%</b>	<b>16.81%</b>
<b>Leverage Ratio</b>	<b>4.74%</b>	<b>4.63%</b>	<b>4.73%</b>	<b>5.10%</b>	<b>5.35%</b>	<b>4.74%</b>	<b>4.63%</b>	<b>4.73%</b>	<b>5.10%</b>	<b>5.37%</b>

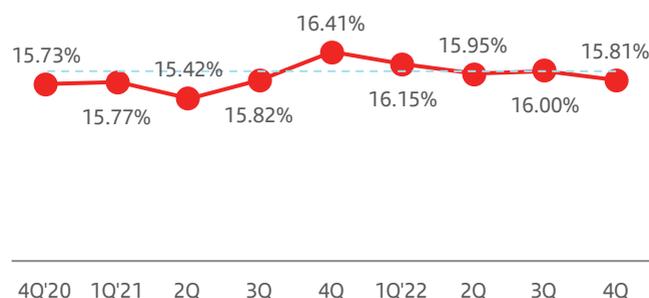
**Table 4 bis. Main capital figures and capital adequacy ratios (IFRS9 Fully-loaded).**

EUR million	Fully-loaded CRR					Phased-in CRR				
	Dec'22	Sep'22	Jun'22	Mar'22	Dec'21	Dec'22	Sep'22	Jun'22	Mar'22	Dec'21
	Common Equity (CET1)	73,390	74,653	72,964	72,658	70,208	73,390	74,653	72,964	72,658
Tier 1	82,221	83,667	81,758	81,758	79,939	82,221	83,667	81,758	81,758	82,452
Total capital	96,373	98,724	96,579	96,837	95,078	96,581	98,950	96,790	97,036	97,317
Risk weighted assets	609,702	617,116	605,605	599,445	579,478	609,702	617,116	605,605	599,445	578,930
<b>CET1 Ratio</b>	<b>12.04%</b>	<b>12.10%</b>	<b>12.05%</b>	<b>12.12%</b>	<b>12.12%</b>	<b>12.04%</b>	<b>12.10%</b>	<b>12.05%</b>	<b>12.12%</b>	<b>12.51%</b>
<b>Tier 1 Ratio</b>	<b>13.49%</b>	<b>13.56%</b>	<b>13.50%</b>	<b>13.64%</b>	<b>13.79%</b>	<b>13.49%</b>	<b>13.56%</b>	<b>13.50%</b>	<b>13.64%</b>	<b>14.24%</b>
<b>Total capital ratio</b>	<b>15.81%</b>	<b>16.00%</b>	<b>15.95%</b>	<b>16.15%</b>	<b>16.41%</b>	<b>15.84%</b>	<b>16.03%</b>	<b>15.98%</b>	<b>16.19%</b>	<b>16.81%</b>
<b>Leverage Ratio</b>	<b>4.70%</b>	<b>4.59%</b>	<b>4.67%</b>	<b>5.03%</b>	<b>5.21%</b>	<b>4.70%</b>	<b>4.59%</b>	<b>4.67%</b>	<b>5.03%</b>	<b>5.37%</b>

**CET 1 ratio fully loaded**



**Total capital ratio fully loaded**



## 2.2. Capital function

Core principles establish the underlying guidelines governing the actions of Santander entities in capital management, monitoring and control processes.

### 2.2.1. Organisation

The organisational structure has been defined with the aim of guaranteeing compliance with the core principles in relation to capital and ensuring that the relationship between the subsidiaries and the Corporate centre is maintained. This function allows dual objectives to be met: comply with the subsidiary's financial autonomy while at the same time retaining coordinated monitoring at group level.

### 2.2.2. Capital governance

Santander developed a structure of agile and efficient governing bodies, ensuring that the Capital function operates properly when it comes to decision-making and supervision and control. This ensures involvement of all relevant business areas and involvement of senior management as necessary.

Santander's characteristic subsidiary-based structure has a strong capital governance where there are various committees with responsibilities at regional level and also for coordination at group level. The local committees must report to the corporate committees in due time and proper form on any relevant aspects of their activity that may affect capital, to ensure proper coordination between the subsidiaries and the corporate centre.

Statutory committees	Board of directors	Determines the "target" level of capital adequacy considered sufficient for the entity to operate satisfactorily. Promotes efficient capital management by establishing minimum profitability requirements and allocating capital appropriately. Analyses and approves public disclosures and the ICAAP.
	Board Risk Committee	Assists the board in approving the capital strategy and oversees its implementation and alignment with the risk appetite. Challenge and review of the internal capital adequacy assessment process (ICAAP).
	Board Audit Committee	Reviews independently the annual accounts and other financial and non-financial information. Reviews and submits to the Board for approval the Disclosure policy and the Annual Pillar III Disclosure Report. Also ratifies the annual Pillar III external audit.
Executive-level committees	Executive Risk Committee	Challenge and review of the internal capital adequacy assessment process (ICAAP).
	Capital Committee 15 Meetings during 2022	<p>Technical committee responsible for supervision, approval and assessment of all factors related to the Group's capital and its adequacy.</p> <ul style="list-style-type: none"> <li>Oversees compliance with capital adequacy requirements.</li> <li>Supervises and reviews the procedures established to ensure efficient capital management, based on monitoring advanced metrics and review and validation of planning and stress tests.</li> <li>Deploys and reviews the use of advanced approaches in Santander Group and approves implementation of improvements and developments of these approaches.</li> <li>Coordinates relations with supervisors and the flow of information to the market.</li> <li>Intermediation and coordination of decision-making regarding liquidity and capital.</li> <li>Approval of the quarterly Pillar 3 Disclosure and challenge to the annual exercise presenting it to the Board.</li> </ul>
Support forums	Capital Operative Forum 27 Meetings during 2022	Forum with powers delegated by the capital committee responsible for support functions and reviews all aspects related to the capital and solvency of the Group. It reports to the capital committee.

### 2.2.3. Capital targets

Focus ahead will center on disciplined capital allocation and shareholder remuneration accomplishing our fully-loaded CET1 target between 11 and 12%.



The continuous improvement in the capital ratios reflects our profitable growth strategy and a culture of active capital management at all levels of the organization.

The '**Capital and Profitability Management**' team is in charge of our capital analysis, adequacy and management, coordination with subsidiaries on all matters related to capital and monitoring returns.

All countries and business units have developed **individual capital plans** focused on attaining a business that maximizes the return on equity.

Grupo Santander gives significant weight to the long-term sustainability of the entity and the efficient use of capital in the incentives of the Group's main executives. In this regard, certain aspects related to capital management and its profitability are taken into account in the 2022 variable remuneration of the members of senior management:

- Among the metrics taken into account are return on equity (RoTE), return on risk-weighted assets (RoRWA) and customer-related aspects.
- Among the **qualitative adjustments considered** are the efficient management of solvency metrics, the appropriate management of operational risk and risk appetite, and the sustainability and soundness of results and efficient cost management.

#### Action plans

In addition, we are developing an action plan for the continuous improvement of infrastructures, processes and methodologies that support all aspects related to capital, with the aim of further enhancing active capital management, responding more quickly to the numerous and increasing regulatory requirements and efficiently carrying out all associated activities.

## 2.3. Capital management, adequacy and profitability

Capital management and adequacy at Santander aims to guarantee solvency and maximize profitability, while complying with internal capital targets and regulatory requirements.

Capital management is a key strategic tool for decision-making at both the subsidiary and corporate levels.

We have a common framework that covers capital management actions, criteria, policies, functions, metrics and processes.

Our most notable capital management activities are:

- Establishing **capital adequacy and capital contribution targets** that align with minimum regulatory requirements and internal policies, to guarantee robust capital levels consistent with our risk profile and efficient use of capital to maximize shareholder value;
- Drawing up a **capital plan** to meet our strategic plan objectives. Capital planning is an essential part of executing the three-year strategic plan;
- Assessing **capital adequacy** to ensure the capital plan is also consistent with our risk profile and risk appetite framework and in stress scenarios;
- Developing the annual **capital budget** as part of the Group's budgeting process;
- **Monitoring and controlling budget execution** at Group and subsidiary level and drawing up action plans to correct any deviations;
- **Integrating capital metrics** into our business management to ensure alignment with the Group's objectives;
- Preparing **internal capital reports**, and reports for the supervisory authorities and the market; and
- **Planning and managing other loss absorbing instruments** (MREL and TLAC).

The Group's capital function is carried out on three levels:

#### Regulatory capital



The first step in managing regulatory capital is to analyse the capital base, the capital adequacy ratios under the current regulatory criteria and the scenarios used in capital planning in order to make the capital structure as efficient as possible, both in terms of cost and compliance with regulatory requirements. Active capital management includes strategies for capital allocation and its efficient usage, together with securitisations, asset sales and issuances of equity instruments (hybrid equity instruments and subordinated debt).

#### Economic capital



The objective of the economic capital model is to ensure that we adequately allocate our capital to cover all the risks to which we are exposed as a result of our activity and risk appetite. It also aims to optimise value creation in the Group and all of the business units.

#### Profitability and pricing



Creating value and maximizing profitability is one of Santander's main objectives by carefully selecting the most appropriate markets and portfolios based on profitability and risk. Profitability and pricing are therefore integral parts of the key capital model processes.

**Disciplined capital allocation, prioritizing organic growth and shareholder remuneration is always present in our capital management.**

### 2.3.1. Profitability

One of the main priorities in the Group is capital management, to ensure profitable capital adequacy in all our activities.

Our strategy includes allocating capital to those markets and portfolios with the best capital returns, to ensure strong value creation for shareholders in a sustainable manner.

Identifying and managing underperforming businesses is part of this process where we aim to optimize Group's capital by targeting customers, portfolios and markets with an attractive capital return. This process is dynamic and actively reviewed and monitored.

Encourage new business development and growth within capital and profitability targets through adequate and efficient capital allocation.

Our strength is our business model, diversified in business activities and geographically with strong results in terms of risk-adjusted profitability. Metrics such as RoTE, RoRWA and RoRAC are part of our business admission and monitoring policies.

The combination with a correct pricing adjusted to the risk taken with maintaining a medium-low risk profile is the key to success, having in every moment (including stress scenarios) the needed capital to execute our corporate strategy.

## Disciplined capital allocation

### A disciplined execution of our capital allocation strategy...



### ...leads to growth, profitability and strength...



Maintaining high levels of solvency and delivering high returns with an optimized capital allocation process are main goals of Grupo Santander. To this end, it is key priority to improve capital profitability and achieve value creation across all customers.

Santander is accelerating the path to a new model to maximize its capital productivity and shareholder value by:

- Focusing on value generation and profitability
- Ensuring capital efficiency at origination
- Increasing balance sheet rotation and velocity

Based on these pillars, the Groups Senior Management has promoted several key initiatives in 2022 that have been monitored monthly in local and Corporate ALCO Committees:

1. Enhanced understanding of value generation and profitability

On a monthly basis, RoRWA, RoTE and EVA/Tangible Equity have been reviewed and compared at Unit level. This helps to assess each geography profitability performance and monitor value creation.

**2. Reduction of low-performing clients and definition of a Watch Book**

The intention is to reduce low performing customers and to foster the active management of them and specifically the creation of a watch book with the biggest value destruction customers in each portfolio. The Units have to improve the profitability of these customers with specific action plans. This framework raises awareness on underperforming clients and helps asset rotation and improves profitability management.

**3. Pricing of the new origination**

To ensure profitability improvement and maximize capital productivity, focus on capital efficiency since origination is essential. Minimum profitability thresholds at Unit level are considered as a reference in pricing. This pricing should cover all the relevant costs (capital, credit, operational, funding, taxes,...) in order to be profitable and create value. New origination should aim to achieve higher profitability than current stock and this granular analysis enables to identify segments that are originating below minimum thresholds and where remediation actions should be considered. In this sense, new book profitability and new book low performers are periodically monitored order to improve profitability since the admission process.

**2.3.2. Pricing**

Santander's core objectives include creating value and maximising profitability. Therefore, pricing and profitability are among the capital model's key processes.

Pricing is an objective process for determining the right price based on the characteristics of the transaction, product, borrower, segment and market.

**4. Increased capital rotation**

Every analysis that has been previously described helps to identify non profitable segments and promote higher asset mobilization. Enhancing this portfolio management with a dynamic reallocation and operationalization of distribution opportunities on the full Balance sheet increases non-profitable RWA mobilization. Potential levers that have been implemented are securitizations, asset sales or risk transfer through credit protection and guarantees.

For further information on the management and profitable allocation of capital, see the 'Capital management and adequacy' section of the 'Economic and financial review' chapter of the 2022 Annual Report.



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The process must make sure the price is not below a minimum threshold for, at least, covering funding, operating, credit and capital costs, plus a margin that factors in the sensitivity of demand to price and value generation. Therefore, the pricing process should aim to maximise profitability by creating value on every transaction, customer and/or portfolio and ensuring that minimum return on capital targets are achieved.

The main components and responsibilities of the pricing process are:

**A**

**Determining the minimum price**

The finance function sets the criteria for establishing cost of capital and determining minimum profitability thresholds, ensuring that at least capital, funding, operating and credit costs are covered. The financial management function sets the criteria for establishing cost of funding and the management control function allocates operating costs and passes on financing costs to the businesses. The risk function sets the criteria for measuring expected loss and estimates the parameters used to calculate it.

**B**

**Integrating pricing into the approval process**

The business function is ultimately responsible for the transaction approval process, while the risk function is involved in authorising transactions based on each committee's rules and regulations and the governance of authority, and incorporates profitability metrics and minimum thresholds into the approval process.

**C**

**Monitoring of prices and profitability**

The financial and risk functions are the main functions charged with monitoring trends in profitability using appropriate risk-adjusted profitability metrics and presenting them to the relevant governing bodies. Together with the financial function, the risk function is also responsible for duly recording, controlling and monitoring transactions approved under the defined minimum threshold. The management control function monitors the degree of compliance with the budgeted profitability of each portfolio.

The **capital committee** tracks the relevant return on capital metrics. The ALCO monitors the status of origination. The executive risk committee (ERC) ensures that all transactions and customers/portfolios have the appropriate risk profile and create value in line with the agreed-upon return on capital targets. The ERC must also approve the internal models plan and approve the Group's main models, while the model approval forum (MAF) reviews and authorises the models used in the Group's capital management.

To execute this process correctly, Santander has a granular approval process for the SCIB and corporates segments with tools for calculating regulatory and economic return on capital (RoRWA and RoRAC) and determining the appropriate price. For retail segments, granular approval processes using risk-adjusted approval tools are already in place in many cases or are currently being developed. The approval and pricing processes consider the unit's minimum profitability threshold for creating value above cost of capital. Cost of capital is reviewed at least annually and approved by the capital committee. Implementation of a common granular tool for monitoring return on capital among units is now in the advanced stage. Once implemented, it will make it easier to assess profitability, determine whether pricing is commensurate with the level of risk considering the main related costs, and help recommend possible action plans.

Approval tools are used to identify and justify any new loans granted at a price below the minimum threshold. Monitoring tools are used to identify transactions whose profitability is below cost of capital and destroys value, and those for which it must apply measures to raise profitability and deliver on targets. The approval and profitability monitoring processes both have robust approval and review governance for ensuring that the minimum threshold is integrated correctly. An appropriate escalation process is in place for authorising transactions and those approved below the minimum threshold are monitored closely.

We will continue implementing our three-year growth strategy throughout 2023 and making progress on our goal of capital excellence by maximising capital productivity and value for shareholders.

With these initiatives, Santander is well positioned to ensure appropriate pricing and to maximize profitability. It also complies with regulatory requirements, especially the **EBA guidelines on loan origination and monitoring** published in May 2020 and effective from June 2021, which set out supervisory expectations regarding the need for risk-based pricing of loans, covering the main costs and ensuring that institutions apply an overall framework in their pricing. These EBA guidelines state that, in pricing, institutions should consider the relevant costs (mainly cost of capital, credit risk costs, cost of funding, and operating and administrative costs), that risk-adjusted indicators should be used as performance measures (e.g. **EVA, RoRWA, RoRAC, RoTA**), that ex ante transaction tools and regular ex post monitoring should be implemented, and that all material transactions below costs should be reported and properly justified.

For further information on RoRAC and value creation, see the Capital management section of the Economic and financial report of the 2022 Annual Report.



[Acceder al Informe Anual 2022 en la web de Grupo Santander](#)

The guidelines note that pricing frameworks should be well documented and supported by appropriate governance structures that are responsible for the maintenance of the overall pricing framework and for individual pricing decisions when relevant. In December 2020, the capital committee approved a **corporate pricing policy**, which sets out the general criteria and describes the main stages for pricing. It also outlines the core components, focusing on the minimum threshold, the need to integrate pricing in approval using ex ante tools and the relevance of defining robust governance and monitoring of recurring profitability. All Group units transposed this corporate policy in 2021, after validation by the corporate teams, to ensure uniformity in interpretation and local implementation. Meanwhile, in 2021 the risk function developed and approved **three pricing procedures**

- SCIB
- Corporates
- Pooled or personalised treatment

These procedures implement the processes described in the corporate pricing policy, further specifying and allocating the required roles and responsibilities, and governance processes have been transposed by most Units in 2022.

### 2.3.3. Other activities in capital management

The most significant actions undertaken over the year are:

#### Issues of hybrid capital and other loss absorbing instruments

Banco Santander, S.A. did not issue any hybrid instruments (subordinated debt and contingently convertible preferred shares - CoCos) in 2022 but did issue EUR 5,536 million in senior non-preferred debt.

For further details on main features of regulatory own funds instruments and eligible liabilities instruments (table CCA), see Appendix VII available on the Group's website.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

#### Dividends and shareholder remuneration

For 2022, the board continued the policy of allocating approximately 40% of the Group's underlying profit to shareholder remuneration, split in approximately equal parts between cash dividend and share buybacks.

- **Interim remuneration:** On 27 September 2022 the board agreed to pay an interim cash dividend of 5.83 euro cents per share (equivalent to approximately 20% of the Group's underlying profit in H1'22), charged against 2022 results and paid on 2 November 2022. In addition, the board agreed to implement the First 2022 Buyback Programme worth approximately EUR 979 million (approximately 20% of the Group's underlying profit in H1'22). It was approved by the ECB on 17 November 2022 and ran from 22 November 2022 to 31 January 2023. Banco Santander bought back 340,406,572 shares, which was 2.03% of its share capital at that time.
- **Final remuneration:** On 27 February 2023, pursuant to the 2022 shareholder remuneration policy, the board of directors decided to submit a resolution at the 2023 AGM to approve a final cash dividend in the gross amount of 5.95 euro cents per share entitled to receive dividend. If approved at the AGM, the dividend would be payable from 2 May 2023; and implement a Second 2022 Buyback Programme worth EUR 921 million, for which the appropriate regulatory authorization has already been obtained and that will be executed from 1 March 2023.

Once the above mentioned actions are completed, the shareholder remuneration for the 2022 results will have been EUR 3,842 million (approximately 40%<sup>3</sup> of the underlying profit in 2022) split in approximately equal parts in cash dividends (EUR 1,942 million) and share buybacks (EUR 1,900 million).

The shareholder remuneration policy the board has approved for the 2023 results is to pay out a shareholder remuneration of approximately 50% of the Group reported profit (excluding noncash, non-capital ratios impact items), distributed in approximately 50% in cash dividend and 50% in share buybacks.

The execution of the shareholder remuneration policy is subject to future corporate and regulatory approvals.

Finally, in the geographies where the ECB is not home supervisor, the local regulators, as a general rule, have not imposed restrictions on dividend distribution except (i) in Poland, where it has been distributed only 30% of the net profit due to the restrictions imposed by the KNF; (ii) in Argentina whose local supervisor has set a limit of 20% on the pay-out of dividends, subject to prior regulatory approval and in payments of 12 equal, monthly and consecutive instalments; and (iii) in Mexico, where, as a result of local stress tests, the distribution has been limited to 66% of the results.

For further details, see "Corporate governance" chapter, "Dividends" section.



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<sup>3</sup> Subject to approval of the final dividend at the 2023 AGM and completion of the Second 2022 Buyback Programme under the terms agreed by the board

## 2.4. Pillar 1 - Regulatory capital

The current regulatory framework for calculating capital is based on three pillars:

- **Pillar 1** sets the minimum capital requirements for credit risk, market risk and operational risk, allowing internal ratings and models to be used. The aim is to make regulatory requirements more sensitive to the risks actually incurred by financial institutions in their business activities.
- **Pillar 2** establishes a system of supervisory review, aimed at improving banks' internal risk management and capital adequacy assessment in line with their risk profile.
- **Pillar 3** is intended to enhance market discipline by developing a set of disclosure requirements that enable market agents to appraise key information relating to the application of Basel II: capital, risk exposures, risk assessment processes and, by extension, the bank's capital adequacy.

### 2.4.1. Eligible capital

Equity at 31 December 2022 stood at €97,585 million, up EUR 532 million from the year before.

The reconciliation between equity and capital eligible as Tier 1 is set out below:

**Table 5. Reconciliation of accounting capital with regulatory capital**

EUR million	2022	2021
Subscribed capital	8,397	8,670
Share premium account	46,273	47,979
Reserves	62,111	56,606
Treasury shares	(675)	(894)
Attributable profit	9,605	8,124
Approved dividend	(979)	(836)
<b>Shareholders' equity on public balance sheet</b>	<b>124,732</b>	<b>119,649</b>
Valuation adjustments	(35,628)	(32,719)
Non-controlling interests	8,481	10,123
<b>Total equity on public balance sheet</b>	<b>97,585</b>	<b>97,053</b>
Goodwill and intangible assets	(17,272)	(16,132)
Eligible preference shares and participating securities	8,831	10,050
Accrued dividend	(942)	(895)
Other adjustments	(5,169)	(7,624)
<b>Tier 1 (Phased-in)</b>	<b>83,033</b>	<b>82,452</b>

CRR Phased-in, IFRS 9 Phased-in.

### Eligible capital. December 2022

EUR million	Fully-loaded	Phased-in
CET1	73,390	74,202
Basic capital	82,221	83,033
<b>Eligible capital</b>	<b>96,373</b>	<b>97,392</b>
Risk-weighted assets	609,702	609,266
<b>CET1 capital ratio</b>	<b>12.04 %</b>	<b>12.18 %</b>
<b>Tier 1 capital ratio</b>	<b>13.49 %</b>	<b>13.63 %</b>
<b>Total capital ratio</b>	<b>15.81 %</b>	<b>15.99 %</b>

Note: The phased-in ratio includes the transitory treatment of IFRS9

The following table provides a breakdown of the Group's eligible capital and a comparison with the previous year:

**Table 6. Eligible capital**

EUR million	2022	2021
<b>Eligible capital</b>		
<b>Common Equity Tier 1 (CET1)</b>	<b>74,202</b>	<b>72,402</b>
Capital	8,397	8,670
(-) Treasury shares and own shares financed	(60)	(966)
Share premium	46,273	47,979
Reserves	62,246	58,157
Other retained earnings	(37,439)	(34,784)
Minority interests	7,416	6,736
Attributable profit net of dividends	7,684	6,394
Deductions	(20,315)	(19,784)
Goodwill and intangible assets	(17,182)	(16,064)
Others	(3,133)	(3,720)
<b>Additional Tier 1 (AT1)</b>	<b>8,831</b>	<b>10,050</b>
Eligible instruments AT1	8,344	10,102
T1 excesses - subsidiaries	487	(52)
Residual value of intangibles	—	—
Deductions	—	—
<b>Tier 2 (T2)</b>	<b>14,359</b>	<b>14,865</b>
Eligible instruments T2	14,770	15,424
Gen. funds and surplus loan loss prov. IRB	—	75
T2 excesses - subsidiaries	(411)	(634)
Others	—	—
<b>Total eligible capital</b>	<b>97,392</b>	<b>97,317</b>

CRR Phased-in, IFRS 9 Phased-in.

Common equity Tier 1 capital (CET1) comprises the elements of Tier 1 capital (after applying prudential filters) and CET1 deductions after applying the threshold exemptions specified in the CRR.

CET1 consists of:

- Subscribed share capital, which stood at €8,397 million in December 2022.
- Other tier 1 capital items: (i) paid-up share premiums; (ii) effective and disclosed reserves generated against profits and amounts that are not taken to the income statement but are recorded under "Other reserves" (any item); (iii) other retained earnings, including certain valuation adjustments, primarily for exchange differences and for hedges of net investments in foreign operations.
- The paid-up portion of any non-controlling interests arising from the issue of ordinary shares by consolidated subsidiaries, subject to the limits set in the CRR.
- The Group's attributable net of dividends, which was €7,684 million in December 2022<sup>4</sup>.
- The prudential filters exclude any positive or negative valuation adjustments from cash flow hedges. They also exclude gains or losses on liabilities and derivative liabilities measured at fair value resulting from changes in the institution's own credit quality. The prudential filters include the additional valuation adjustments applied pursuant to article 34 of the CRR.

- Deductions from CET1 items mainly include: treasury shares; current-year losses; goodwill and other intangible assets recognised in the balance sheet; deferred tax assets that rely on future earnings (subject to the limits set in the CRR); the valuation adjustments due to prudent valuation requirements; and defined benefit pension fund assets shown on the balance sheet.

In addition to the movements in net book equity, for changes in regulatory capital, the undistributed dividend for 2022 was considered to be €1,941 million, so the net attributable profit net of dividends calculated is €7,684 million<sup>3</sup>.

<sup>4</sup> The cash dividend represents 20% of ordinary profit, see note 4.a of the Consolidated Annual Accounts for the proposed result distribution

**Table 7. Regulatory capital. Changes**

EUR million	
	2022
<b>Common Equity Tier 1 (CET1)</b>	
<b>Ending figure (31/12/2021)</b>	<b>72,402</b>
Shares issued during the year and share premium account	(1,979)
Treasury shares and own shares financed	906
Reserves	(2,305)
Attributable profit net of dividends	7,684
Other retained earnings	(2,654)
Minority interests	680
Decrease/(increase) in goodwill and other intangibles	(1,118)
Other deductions	587
<b>Ending figure (31/12/2022)</b>	<b>74,202</b>
<b>Additional Tier 1 (AT1)</b>	
<b>Ending figure (31/12/2021)</b>	<b>10,050</b>
Eligible instruments AT1	(1,758)
AT1 excesses - subsidiaries	539
Residual value of intangibles	—
Deductions	—
<b>Ending figure (31/12/2022)</b>	<b>8,831</b>
<b>Tier 2 (T2)</b>	
<b>Ending figure (31/12/2021)</b>	<b>14,865</b>
Eligible instruments T2	(653)
Gen. funds and surplus loan loss prov. IRB	(75)
T2 excesses - subsidiaries	223
Deductions	—
<b>Ending figure (31/12/2022)</b>	<b>14,359</b>
Deductions from total capital	—
<b>Final figure for total capital (31/12/2022)</b>	<b>97,392</b>

CRR Phased-in, IFRS 9 Phased-in.

**Eligible capital over time**

Tier 1 capital comprises CET1 capital plus Additional Tier 1 capital (AT1) including preferred securities issued by Santander.

Tier 2 capital comprises Tier 1 capital plus Tier 2 capital (T2) and includes, among other items, equity instruments and subordinated loans where the conditions laid down in the CRR are met.

The movement of issued shares and issue premiums is mainly due to the amortisation of shares acquired through the share buy-back programme, with the aim of contributing to shareholder remuneration by increasing earnings per share, which is inherent to the reduction in the number of shares.

Similarly, the change included in deductions and prudential filters was increased as a result of a worsening of the valuation adjustments of financial assets at fair value through equity.

**The decrease in Tier 1 capital** is mainly explained by the amortisations and call exercises made in the period.

**The decrease in Tier 2 capital** is mainly due to the loss of eligibility for capital purposes of certain issues. During the period, issues were made for an amount of CLP 115,829 million.

For further detail on regulatory own funds (Table CC1) see Appendix VIII.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

At 31 December 2022, none of the financial institutions consolidated in the Group had less than the minimum capital required under applicable regulations.

Under Article 7 and 9 of the CRR, the subsidiaries Santander Leasing S.A. EFC and Santander Factoring y Confirming S.A. EFC are exempt from the minimum capital requirements, the limit on large exposures and the internal corporate governance obligations at 31 December 2021. None of the exemptions under applicable regulations have been used for any other Santander subsidiaries.

Santander maintains a very comfortable capital adequacy position, well above the levels required by applicable regulations and by the European Central Bank.

IFRS 9 became effective on 1 January 2018, implying changes in accounting that affect capital ratios. Santander decided to apply the transitional arrangements, which means a seven-year transitional period.

Had neither the IFRS 9 nor the CRR transitional arrangements been applied, the total impact on the fully-loaded CET1 ratio as at December would have been -14bps.

Phased-in CET1 stood at 12.18% in December, decreasing by 33bps during the year. The fully-loaded CET1 ratio stood at 12.04% in December

**Table 8. Comparison of institutions' own funds and capital and leverage ratios with and without the application of transitional arrangements for IFRS 9 or analogous ECLs (IFRS 9-FL)**

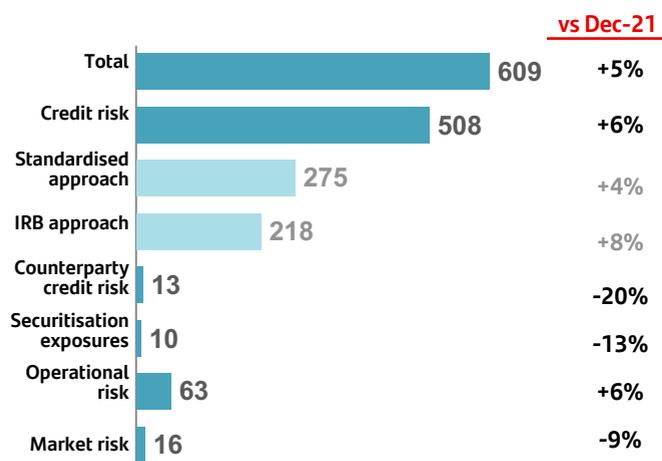
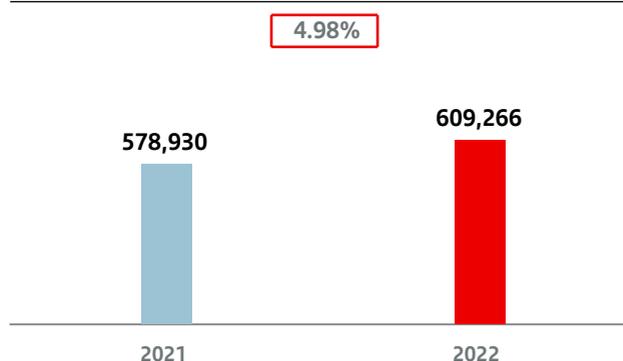
EUR million		a	b	c	d
		Dec'22	Sep'22	Jun'22	Mar'22
<b>Available capital (amounts)</b>					
1	Common Equity Tier 1 (CET1) capital	74,161	75,499	74,091	73,817
2	Common Equity Tier 1 (CET1) capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	73,350	74,653	72,964	72,658
3	Tier 1 capital	82,993	84,513	82,885	82,917
4	Tier 1 capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	82,181	83,667	81,758	81,758
5	Total capital	97,352	99,773	97,843	98,130
6	Total capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	96,540	98,950	96,790	97,036
<b>Risk-weighted assets (amounts)</b>					
7	Total risk-weighted assets	608,968	616,738	604,977	598,789
8	Total risk-weighted assets as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	609,404	617,116	605,605	599,445
<b>Capital ratios</b>					
9	Common Equity Tier 1 (as a percentage of risk exposure amount)	12.18 %	12.24 %	12.25 %	12.33 %
10	Common Equity Tier 1 (as a percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	12.04 %	12.10 %	12.05 %	12.12 %
11	Tier 1 (as a percentage of risk exposure amount)	13.63 %	13.70 %	13.70 %	13.85 %
12	Tier 1 (as a percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	13.49 %	13.56 %	13.50 %	13.64 %
13	Total capital (as a percentage of risk exposure amount)	15.99 %	16.18 %	16.17 %	16.39 %
14	Total capital (as a percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	15.84 %	16.03 %	15.98 %	16.19 %
<b>Leverage ratio</b>					
15	Leverage ratio total exposure measure	1,750,917	1,823,762	1,751,029	1,624,479
16	Leverage ratio	4.74 %	4.63 %	4.73 %	5.10 %
17	Leverage ratio as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	4.70 %	4.59 %	4.67 %	5.03 %

#### 2.4.2. Capital requirements

Capital requirements have barely changed from 2021, maintaining a Pillar I risk distribution similar to that of the prior year: credit risk 87%, market risk 3% and operational risk 10%.

The risk weighted assets for credit risk increased by 4.98% up to 609,266. This is due to the fact that credit risk increases 28.517 million euros. Operational risk increases 3.916 million euros, whereas counterparty credit risk decreases by 2.578 million euros and market risk by 1.433 million euros.

#### RWA Evolution (Phased-in)



Below is a general evolution of RWAs by risk, and then also by geography:

**Table 9.OV1 - Overview of risk weighted exposure amounts**

EUR million		RWA			Min. Capital Requirements	
		a	b	c		
		Dec'22	Sep'22	Jun'22	Dec'22	
<b>1</b>	<b>Credit risk (excluding CCR)*</b>	<b>507,775</b>	<b>512,829</b>	<b>500,957</b>	<b>40,622</b>	
2	Of which, standardised approach (SA)	274,922	286,106	277,260	21,994	<a href="#">Chapter 4. Credit Risk</a>
3	Of which, the foundation IRB (FIRB) approach	11,759	10,078	9,908	941	
4	Of which, slotting approach**	14,509	15,777	15,399	1,161	
EU 4a	Of which, equities under the simple risk weighted approach	2,828	2,694	2,846	226	
5	Of which, the advanced IRB (AIRB) approach	188,442	182,953	180,510	15,075	
<b>6</b>	<b>Counterparty credit risk - CCR</b>	<b>13,096</b>	<b>14,317</b>	<b>14,592</b>	<b>1,048</b>	
7	Of which, the standardised approach	9,493	10,322	13,061	759	<a href="#">Chapter 5. Counterparty Credit Risk</a>
8	Of which, internal model method (IMM)	—	—	—	—	
EU 8a	Of which, exposures to a CCP	278	322	302	22	
EU 8b	Of which, credit valuation adjustment - CVA	1,097	909	1,229	88	
9	Of which, other CCR	2,229	2,765	—	178	
<b>15</b>	<b>Settlement risk</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>—</b>	
<b>16</b>	<b>Securitisation exposures in the banking book (after the cap)</b>	<b>9,898</b>	<b>9,512</b>	<b>8,599</b>	<b>792</b>	
17	Of which, SEC-IRBA approach	4,471	4,359	4,528	358	<a href="#">Chapter 6. Credit Risk - Securitisations</a>
18	Of which, SEC-ERBA approach	2,156	3,432	953	173	
19	Of which, SEC-SA approach***	3,270	1,721	3,118	262	
EU 19a	Of which, 1250%****	—	—	—	—	
<b>20</b>	<b>Position, foreign exchange and commodities risks (Market risk)</b>	<b>15,791</b>	<b>18,432</b>	<b>20,272</b>	<b>1,263</b>	
21	Of which, standardised approach	7,521	9,305	7,685	602	<a href="#">Chapter 7. Market Risk</a>
22	Of which, IMA	8,270	9,127	12,587	662	
EU 22a	Large exposures	—	—	—	—	
<b>23</b>	<b>Operational risk</b>	<b>62,702</b>	<b>61,645</b>	<b>60,552</b>	<b>5,016</b>	
EU 23a	Of which, basic indicator approach	—	—	—	—	<a href="#">Chapter 8. Operational Risk</a>
EU 23b	Of which, standardised approach	62,702	61,645	60,552	5,016	
EU 23c	Of which advanced measurement approach	—	—	—	—	
<b>24</b>	<b>Amounts below the thresholds for deduction (subject to 250% risk weight)</b>	<b>25,868</b>	<b>25,382</b>	<b>23,615</b>	<b>2,069</b>	
<b>29</b>	<b>Total</b>	<b>609,266</b>	<b>616,738</b>	<b>604,977</b>	<b>48,741</b>	

CRR Phased-in, IFRS9 Phased-in.

\*It includes equities under the PD/LGD approach.

\*\* Correction from the mapping indicated by supervisor to {C 08.01, r0020, c0260, s0010} + {C 08.01, r0030, c0260, s0010}.

\*\*\*Correction from the mapping to the one appearing in tables SEC3+SEC4.

\*\*\*\*Information prepared following the recent update of the EBA (24.05.22, "ITS on institutions' Pillar 3 public disclosures").

Banco Santander S.A. deducts from capital those securitisations that meet the deduction requirements, and therefore does not apply a 1,250% weighting to these exposures. This row does not include the EUR 3,866.9 million that would result from applying this weighting to these exposures.

**Table 10.RWAs by geographical region**

EUR million	2022								
	Total	Europe	Of which, Spain	Of which, UK	North America	Of which, US	South America	Of which, Brazil	Other
<b>Credit risk (excluding CCR)</b>	<b>507,775</b>	<b>299,188</b>	<b>124,858</b>	<b>70,519</b>	<b>90,572</b>	<b>67,004</b>	<b>112,099</b>	<b>79,007</b>	<b>5,915</b>
Of which, internal rating-based (IRB) approach*	222,978	175,935	77,292	52,204	17,622	8,773	25,297	21,327	4,125
Central governments and Central Banks	—	—	—	—	—	—	—	—	—
Institutions	11,422	6,713	1,114	1,373	2,298	1,368	1,601	644	811
Corporates	123,261	81,227	42,034	16,387	15,192	7,312	23,612	20,663	3,229
of which, Specialised Lending	15,471	11,254	3,134	4,902	2,919	1,605	758	—	540
of which, SMEs	18,904	17,790	14,971	616	802	10	309	288	3
Retail - Secured by real estate SME	4,719	4,703	4,576	20	5	4	2	1	8
Retail - Secured by real estate non-SME	48,059	47,846	14,987	29,467	92	75	55	4	66
Retail - Qualifying revolving	4,547	4,541	1,089	2,649	1	1	3	1	2
Retail - Other SME	8,574	8,557	5,850	4	12	11	3	1	2
Retail - Other non-SME	20,818	20,771	6,064	2,304	21	2	21	14	6
Other non-credit-obligation assets	1,577	1,577	1,577	—	—	—	—	—	—
Of which, standardised approach (SA)	274,946	111,900	35,861	18,527	73,253	58,265	88,003	58,647	1,790
Central governments or central banks	26,579	11,537	10,217	5	2,543	—	12,285	11,163	215
Regional governments or local authorities	330	104	33	—	15	15	211	183	—
Public sector entities	369	53	—	—	198	198	116	—	2
Multilateral Development Banks	—	—	—	—	—	—	—	—	—
International Organisations	—	—	—	—	—	—	—	—	—
Institutions	4,610	1,506	585	318	1,639	1,548	1,422	1,171	43
Corporates	47,920	22,911	3,115	6,288	9,970	9,022	14,650	8,252	388
Retail	98,556	35,151	3,012	6,114	31,717	25,853	30,594	24,085	1,093
Secured by mortgages on immovable property	35,103	10,804	2,152	726	10,972	7,860	13,319	3,895	7
Exposures in default	12,251	3,305	1,345	341	4,296	3,542	4,642	3,042	9
Items associated with particular high risk	1,414	101	19	38	1	1	1,312	315	—
Covered bonds	257	257	—	246	—	—	—	—	—
Claims on institutions and corporates with a short-term credit assessment	157	100	14	4	50	50	—	—	6
Collective investments undertakings (CIU)	158	158	116	—	—	—	—	—	—
Equity under risk weighted	135	59	—	—	—	—	76	—	—
Other items	47,107	25,854	15,253	4,447	11,851	10,176	9,375	6,541	27
Of which, Equity IRB	18,120	18,120	18,120	—	—	—	—	—	—
Simple method	2,828	2,828	2,828	—	—	—	—	—	—
Under the PD/LGD method	5,388	5,388	5,388	—	—	—	—	—	—
Equity exposures under risk weighted	9,903	9,903	9,903	—	—	—	—	—	—
<b>Counterparty credit risk</b>	<b>13,096</b>	<b>7,385</b>	<b>6,007</b>	<b>600</b>	<b>911</b>	<b>632</b>	<b>2,570</b>	<b>1,795</b>	<b>2,230</b>
Of which, standardised approach	11,730	8,253	6,845	544	947	676	2,529	1,713	1
Of which, internal model method (IMM)	—	—	—	—	—	—	—	—	—
Of which, CCPs	278	156	4	113	59	57	62	8	—
Of which, CVA	1,097	551	463	47	85	28	460	401	—
<b>Settlement risk</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>Securitisations exposures in banking book (after cap)**</b>	<b>9,898</b>	<b>6,968</b>	<b>1,820</b>	<b>2,760</b>	<b>2,502</b>	<b>2,481</b>	<b>353</b>	<b>328</b>	<b>75</b>
<b>Market risk</b>	<b>15,791</b>	<b>10,477</b>	<b>9,998</b>	<b>245</b>	<b>1,568</b>	<b>1,568</b>	<b>3,757</b>	<b>1,326</b>	<b>—</b>
Of which, the standardised approach	7,521	4,570	4,091	245	1,568	1,568	1,394	1,326	—
Of which, internal model method (IMM)	8,270	5,907	5,907	—	—	—	2,363	—	—
<b>Operational risk</b>	<b>62,702</b>	<b>25,781</b>	<b>12,694</b>	<b>6,790</b>	<b>9,072</b>	<b>5,168</b>	<b>16,365</b>	<b>9,193</b>	<b>11,484</b>
Of which, basic indicator approach	—	—	—	—	—	—	—	—	—
Of which, standardised approach	62,702	25,781	12,694	6,790	9,072	5,168	16,365	9,193	11,484
Of which, advanced measurement approach	—	—	—	—	—	—	—	—	—
<b>Amounts below the thresholds for deduction (subject to 250% risk weight)</b>	<b>25,869</b>	<b>13,903</b>	<b>12,728</b>	<b>3</b>	<b>2,112</b>	<b>—</b>	<b>9,820</b>	<b>9,181</b>	<b>35</b>
<b>Total***</b>	<b>609,266</b>	<b>349,799</b>	<b>155,377</b>	<b>80,915</b>	<b>104,626</b>	<b>76,854</b>	<b>135,144</b>	<b>91,649</b>	<b>19,704</b>

Breakdown according to debtor's residency, except operational risk (management criteria) and some residual standardized approach exposures (legal basis).

\*Including counterparty credit risk.

\*\*It does not include 1250% deductions.

\*\*\* Total does not include amounts below the thresholds for deductions (subject to 250% risk weight).

### 2.4.2.1. IRB roll-out plan and supervisory approval

This section covers the letter (a) of the qualitative requirement CRE - Qualitative disclosure requirements related to IRB approach.

Santander remains committed to adopting the Basel III advanced internal ratings-based (AIRB) approach for its banks, increasing the amount of exposure under internal models. This approach will be applied progressively over the coming years. The commitment to the supervisory authority means adapting the advanced approaches in the Group's core markets.

This objective of covering IRB models in the group should be seen in the context of the current supervisory focus on the robustness and adequacy of existing models, as well as the simplification strategy recently agreed with ECB.

Santander has supervisory approval to use advanced approaches for calculating regulatory capital for credit risk for the parent and its main subsidiaries in Spain, the United Kingdom and Portugal, and for some portfolios in Germany, Mexico, Brazil, Chile, Nordic countries (Sweden, Finland and Norway), France and the United States.

The following table shows the geographical scope of the internal models for credit risk (AIRB or FIRB) in the various portfolios:

#### List of authorised IRB models by legal entity

Country	Legal Entity	IRB portfolio (AIRB or FIRB)
UK	Santander UK PLC	Institutions, Corporates Project Finance, Mortgages, Qualifying Revolving, Other Retail.
	Abbey National Treasury Services	Institutions, Corporates Project Finance.
	Abbey Covered Bonds LLP	Institutions
Spain	Banco Santander, S.A.	Institutions, Corporates, Corporates SMEs, Corporates Project Finance, Mortgages, Qualifying Revolving, Retail SMEs, Other Retail
	Santander Factoring y Confirming S.A.	Institutions, Corporates, Corporates SMEs, Corporates Project Finance, Mortgages, Retail SMEs, Other Retail
	Santander Lease, S.A. E.F.C.	Institutions, Corporates Corporates SMEs, Mortgages, Retail SMEs, Other Retail
	Santander Consumer EFC, S.A.	Corporates, Corporates SMEs, Qualifying Revolving, Other Retail.
	Santander Consumer Finance, S.A.	Corporates, Corporates SMEs, Qualifying Revolving, Other Retail.
Portugal	Banco Santander Totta	Institutions, Corporates, Corporates SMEs, Corporates Project Finance, Mortgages, Qualifying Revolving, Retail SMEs, Other Retail.
Brazil	Banco Santander Brasil	Corporates
	Santander Brasil EFC	Corporates
Germany	Santander Consumer Bank AG	Corporates, Corporates SMEs, Mortgages, Revolving and Other Retail
Mexico	Banco Santander México	Institutions, Corporates, Corporates SMEs, Corporates Project Finance
USA	Santander Bank, National Association	Corporates
France	Société Financière de Banque - SOFIB	Corporates, Corporates SMEs, Retail SMEs, Other Retail
Nordics	Santander Consumer Bank A.S.	Other Retail
	Santander Consumer Finance OY	Other Retail
Chile	Banco Santander - Chile	Institutions and Corporates

For further information on the scope of the use of IRB and SA approaches (Table CR6-A) see Appendix IX.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

The following table shows the geographical scope of portfolios using the internal models approach (IMA) for market risk:

#### List of authorised IMA models by legal entity

Country	Legal entity	IMA portfolio (product)
Spain	Banco Santander, S.A.	Trading book
	Santander London Branch	Trading book
Chile	Banco Santander - Chile	Trading book
	Santander Agent de Valores Limited	Trading book
	Santander Investment Chile Limited	Trading book
	Santander Corridors de Bolsa Limited	Trading book
Mexico	Banco Santander México	Trading book
	Casa de Bolsa Santander, S.A. de C.V.	Trading book



For further information on the market risk, see chapter 7.

The Group currently uses the standardised approach for calculating regulatory capital for **operational risk**, as provided for in the CRR. In 2017, the European Central Bank granted authorisation for the Alternative Standardised Approach to be used to calculate consolidated capital requirements at Banco Santander México, following the approval granted in 2016 for Brazil.



For further information on the Operational Risk, see chapter 8.

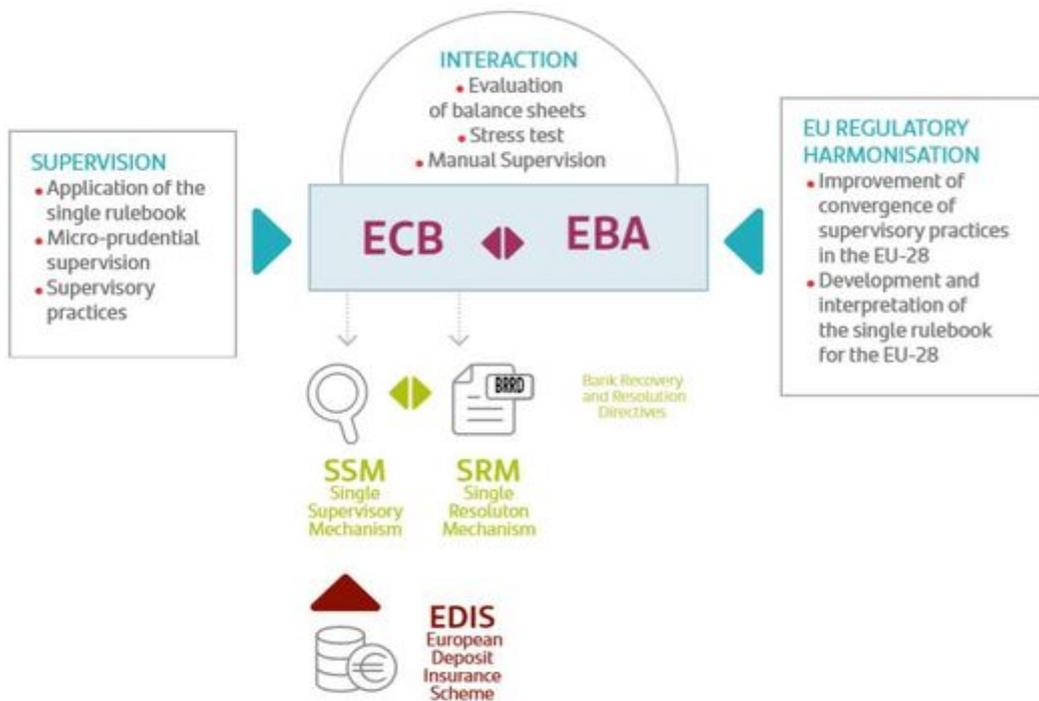
#### Supervisory validation process

As established by the European Parliament, the first key element of Banking Union is the Single Supervisory Mechanism (**SSM**). Under this mechanism, direct banking supervision falls to the European Central Bank. This ensures that the largest European banks are independently supervised by just one entity and are subject to a common set of standards. Eurozone states are required to participate. Participation is voluntary for non-eurozone EU Member States.

The second key element is the Single Resolution Mechanism (**SRM**), which is responsible for preparing for the worst-case scenario, i.e. bank failure. The objective is to ensure that such situations can be resolved in an orderly fashion and at the minimum cost to taxpayers. The focus on shielding taxpayers from the costs of future bank resolutions led to a change in the underlying regulations, namely the Bank Recovery and Resolution Directive (BRRD), so that the bank's shareholders and creditors will bear the brunt of the resolution costs. Under certain circumstances, banks may also obtain supplementary financing from the recently-created Single Resolution Fund (**SRF**), which is financed by the banking sector. The SRF is expected to meet its target funding level by 2023.

The SSM and the SRM are both operational: the SSM became effective on 4 November 2014

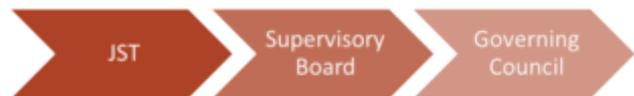
The SRM started developing resolution plans for banks in January 2015 and is fully operational since January 2016, with a full range of resolution tools.



The governance process of the European supervisor follows the following steps:

- The Joint Supervisory Team (JST), consisting of a mixed team of experts, analyses the entity's situation and releases a technical report to the ECB's Supervisory Board.
- The Supervisory Board then submits its preliminary decisions to the Governing Council.
- The Governing Council then issues a final decision authorising or rejecting the use of internal models.

The supervisory authority uses the documentation provided by the entity as the basis for its assessment of whether the minimum requirements for using advanced models to calculate regulatory capital have been met. This information must be sufficiently thorough and detailed to provide a third party with a clear idea of the entity's rating systems, methodologies, technological infrastructure, capital calculation process and internal governance, and to be able to replicate the outputs of the model. The unit itself is responsible for preparing this documentation, which forms part of the formal application required for the validation process established by the supervisors of entities seeking to implement advanced models to calculate regulatory capital.



A preparatory "pre-application" phase has been introduced as part of the supervisory approval process for major changes to advanced models for calculating regulatory capital. This involves the entity providing the supervisory authority with the necessary documentation beforehand, so that the supervisory authority can assess whether the minimum requirements have been met to continue the formal approval process. If the European Central Bank considers the entity to be initially ready, the application is sent and the supervisory authority begins a formal review process of the regulatory models.

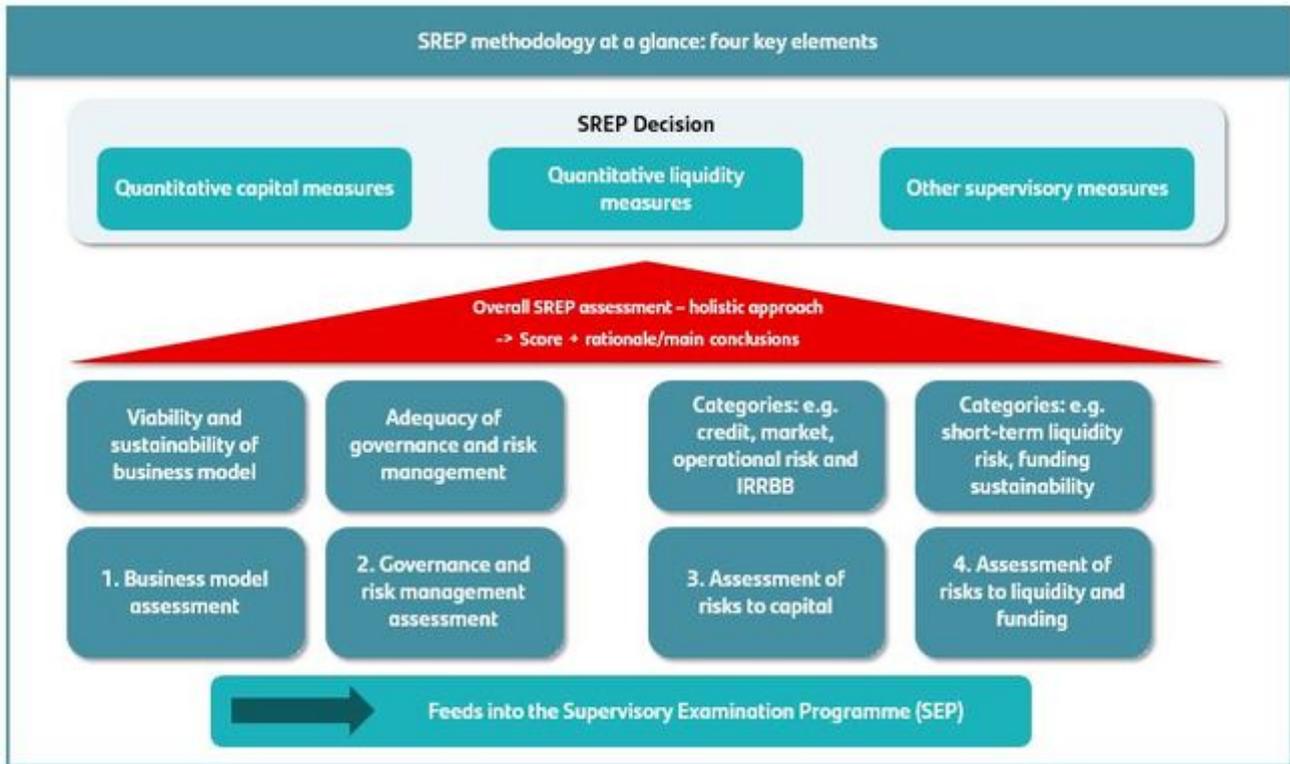
The approval of changes in the Group's models sometimes involves supervisory authorities from various jurisdictions, often subject to different legislation, criteria and implementation calendars. This often hinders and slows joint decisions on the approval of internal models on the basis of consolidation and may affect authorisations at the local level.

### 2.4.3. Eligible capital requirements and Capital buffers

#### Eligible capital requirements

The capital decision resulting from the Supervisory Review and Evaluation Process (SREP) under the European Central Bank's (ECB) Single Supervisory Mechanism comprises a Pillar 2 Requirement (Pillar 2R) and Pillar 2 Guidance (Pillar 2G). Pillar 2R is binding and failure to comply may have direct consequences for banks.

Pillar 2G is not directly binding. Failure to comply has no bearing on the maximum distributable amount (MDA) threshold. However, the ECB expects compliance with Pillar 2G at all times. If a bank is not compliant with Pillar 2G, the ECB will carefully consider the reasons and circumstances and may define additional supervisory control measures.



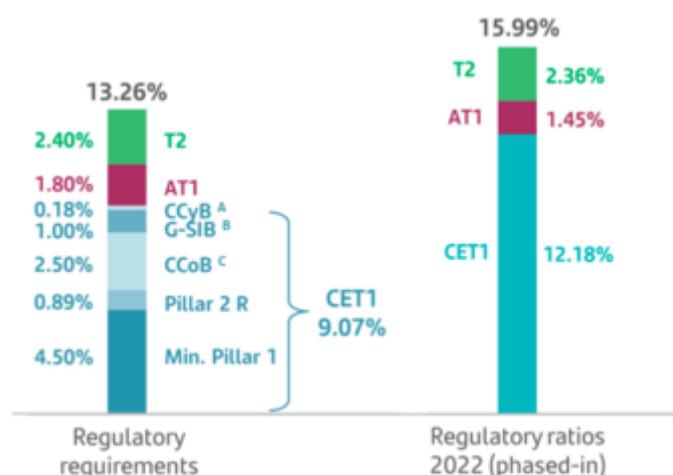
At the consolidated level, the minimum ratios required by the European Central Bank are 9.07% for CET1, 10.87% for tier 1 capital and 13.26% for total capital.

During 2022, capital requirements increased, mainly due to the reactivation of the countercyclical buffers by the competent authorities in the geographies in which Santander has exposures (+0.16 p.p.) and the ECB's review of the P2R (+0.08 p.p., of which 0.05 p.p. in CET1 and the rest between AT1 and tier 2).

At year-end, the CET1 (phased-in) ratio was 12.18%, which implies a management buffer of 311 basis points and shows our capacity for organic capital generation and a comfortable position for dividend distribution and capital management.

In addition, the total phased-in capital ratio stands at 15.99%. Taking into account the AT1 and tier 2 (T2) shortfall, the Group has a surplus (distance to MDA) of 272 basis points over the minimum requirement for 2022.

### Regulatory Capital vs Regulatory requirement (Phased-in IFRS9)



A. Countercyclical buffer.

B. Global systemically important banks (G-SIB) buffer

C. Capital conservation buffer.

The Group must always comply with the combined capital buffer requirement, which is defined as the total CET1 capital necessary to meet the following obligations:

- **Capital conservation buffer (CCoB):** mandatory for all entities from 1 January 2016. The recharge for banks is 2.5%.
- **Buffers for systemically important banks (G-SIB and D-SIB):** applicable from 1 January 2016. There are two types, each with their own methodologies, which classify financial institutions into buckets. These buckets determine their systemic risk (either global or domestic) and the recharge percentage applicable. Where an institution is subject to both recharges at the same consolidation level, the higher of the two shall apply. The two types are:
  - G-SIB (global systemically important banks) buffer: common methodology following the Basel framework. Applicable at the consolidated level. CRD added an additional methodology that considers the eurozone as a single jurisdiction, allowing the competent authority to classify a G-SIB in a lower bucket, reducing the applicable G-SIB buffer accordingly.
  - D-SIB (domestic systemically important banks) buffer: common methodology following EBA guidelines. This is applied at the consolidated, sub-consolidated or individual level.
- **Systemic risk buffer (SyRB):** competent national authorities may require this buffer to mitigate macro prudential or systemic risks that are not covered by the countercyclical buffer or the systemically important financial institutions buffer and that could trigger a disturbance in the financial system with serious consequences for both it and the real economy. Its application by the authorities is discretionary, and it may be required for all institutions or for one or more subsets of institutions, for all exposures or for a subset of

exposures (domestic, third countries, mortgage sector, etc.).

- **Countercyclical capital buffer (CCyB):** this is applied when the national authorities consider that lending is growing excessively in a jurisdiction, with the aim of containing it. This buffer is calculated specifically for each institution or group and consists of the weighted average of the countercyclical buffer rates applied in regions in which the bank's significant exposures are located. It is also applicable from 1 January 2016.

The table below summarises the required regulatory rates based on the capital buffers to be applied and Banco Santander's position in 2023:

Application	Buffers (% RWAs)	2023
All entities	Conservation (CCoB)	2.5 %
	G-SIB entities <sup>(1)</sup>	100% of the buffer
Designated entities	D-SIB entities <sup>(2)</sup>	100% of the buffer
	Systemic risk (SRB)	0% -> 5%
At the discretion of competent national authority	Countercyclical (CCyB) <sup>(3)</sup>	0% - 2.5%
	Consolidated combined buffer	CCoB+CCyB+SyRB +Max (G-SIB, D-SIB)

(1) Banco de España requires a 1% buffer from Santander for 2023

(2) This requirement is 1% for Santander

(3) % countercyclical buffer applicable at 1 January 2023:

- Exposures to customers resident in Bulgaria: 1.5%
- Exposures to customers resident in United Kingdom: 1%
- Exposures to customers resident in the Czech Republic: 2%
- Exposures to customers resident in Norway: 2%
- Exposures to customers resident in Denmark: 2%
- Exposures to customers resident in Sweden: 1%
- Exposures to customers resident in Estonia: 1%
- Exposures to customers resident in Iceland: 2%
- Exposures to customers resident in Romania: 0.5%
- Exposures to customers resident in Luxembourg: 0.5%
- Exposures to customers resident in Slovakia: 1%
- Exposures to customers resident in Australia: 1%
- Exposures to customers resident in Hong Kong: 1%

(4) Due to its relevance for the Group, we highlight that as of February 2023, Germany's countercyclical buffer will be 0.75% and as of July 2023, the UK's buffer will be 2%

The geographic breakdown of significant lending exposures for calculating the countercyclical capital buffer (table CCyB1) and the amount of institution-specific countercyclical capital buffer (table CCyB2) are available in Appendix X and Appendix XI respectively on Santander's website.



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### Global Systemically Important Institutions

The Group is one of 30 entities designated as global systemically important banks (G-SIB) in 2022.

Systemically important banks may pose a risk to financial stability.

The insolvency of a systemically important bank, or even an expectation that it might become insolvent, could generate negative effects for the financial system and even the real economy that are difficult to predict.

This situation warrants special prudential treatment. This has led to the introduction of specific capital buffer requirements

for both global (G-SIB) and domestic (D-SIB) systemically important banks.

This designation requires Santander to meet additional requirements mainly relating to the following:

- Its capital buffer (Santander is in the group of banks with the lowest capital buffer, 1%).
- TLAC (total loss-absorbing capacity) requirements.
- The requirement to publish relevant information more often than other banks.
- Stricter regulatory requirements for internal control bodies.
- Special supervision.
- Requirements to submit special reports to supervisory authorities.

The designation as a globally systemically important entity is made by the Basel Committee, jointly with the Financial Stability Board, using a methodology based on five indicators: size, cross-jurisdictional activity, interconnectedness with other financial entities, substitutability of financial services/ financial infrastructure and complexity (weighted at 20% for each of the above categories). The methodology was revised in December 2021 incorporating, among other things, an additional score considering the SRM Member States as a single jurisdiction.

The information needed to evaluate the indicators is requested yearly from banks with leverage exposure exceeding €200 billion, or from any other banks at the supervisor's discretion: 76 banks were considered in December 2021. These institutions are then required to publish the information before 30 April of the following year.

The information is used to produce a global indicator. The score obtained by each bank determines the size of the capital buffer required of it, which is based on a set of buckets defined by the regulators (CET1 surcharge ranging from 1% to 3.5%).

In November 2022, the Financial Stability Board (FSB) published its list of global systemically important banks based on the December 2021 data. This will be fully applicable in 2024. Meeting these requirements makes the Group a more robust bank than its domestic rivals. Santander is currently subject to a systemic capital surcharge of 1%, which will become fully effective in 2023. For more details regarding Quantitative indicators, access file "G-SIBs indicators quantitative", under sections Shareholders and Investors / Other presentations on the Santander Group website.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

### Indicators for global systemically important institutions

Category	Individual indicator	Supervisor jurisdiction
Size	Exposure used for the leverage ratio calculation	An indicator of the weight of the bank in the financial system
Cross-jurisdictional activity	Cross-jurisdictional assets Cross-jurisdictional liabilities	Snapshot of a bank's global footprint
Interconnectedness	Intra-financial system assets Intra-financial system liabilities Securities outstanding	Measures a bank's interconnectedness with other financial institutions
Substitutability/financial infrastructure	Assets under custody Payments activity Transactions subscribed in debt and equity markets Trading Volume	Measures whether the bank's activity can be replaced with other banks
Complexity	Notional amount of over-the-counter (OTC) derivatives Level 3 assets Held for trading and available-for-sale securities	Measures the complexity of a financial entity

### Global systemically important institutions

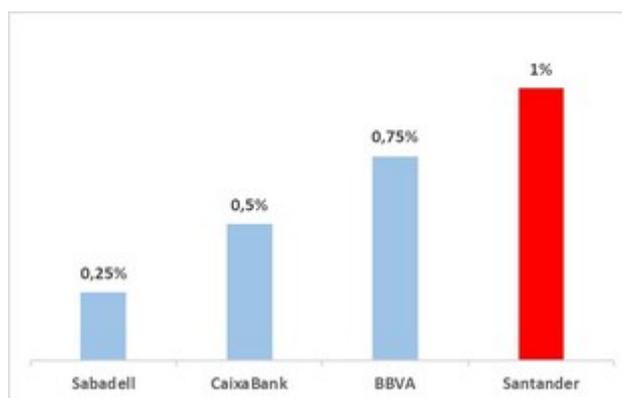
Capital buffer	Entity
5 (3.50%)	(Empty)
4 (2.50%)	JP Morgan Chase
3 (2.00%)	BNP Paribas Citigroup HSBC
2 (1.50%)	Bank of America Bank of China Barclays China Construction Bank Deutsche Bank Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG
1 (1.00%)	Agricultural Bank of China Bank of New York Mellon Credit Suisse Group BPCE Group Crédit Agricole ING Bank Mizuho FG Morgan Stanley Royal Bank of Canada <b>Santander</b> Société Générale Standard Chartered State Street Sumitomo Mitsui FG Toronto Dominion UBS Uni credit Group Wells Fargo

### Domestic Systemically Important Institutions

When identifying domestic systemically important banks (DSIBs), Banco de España, using the methodology established in rule 14 of Circular 2/2016, applies a mix of guidelines based on size, importance, complexity (cross-jurisdiction activity) and the degree of interconnectedness between the institutions and the financial system. Banco de España conducts an annual review of this classification. The following institutions are included on its 2022 list:

### Buffer sistémico (2022)

Domestic Systemically Important Institutions



The Group is on the lists of both global and domestic systemically important banks. Banco de España requires the higher of the two buffers to be applied, under rule 23 of Circular 2/2016. As both buffers are the same for Banco Santander, the applicable surcharge in 2022 will be 1%.

#### 2.4.4. Leverage ratio

This section covers the qualitative requirement LRA - Free format text boxes for disclosure on qualitative items.

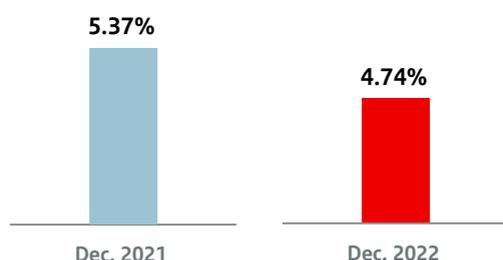
Basel III established the leverage ratio as a non-risk-sensitive measure to limit excessive growth of the balance sheet relative to available capital.

The ratio is calculated as the ratio of Tier 1 divided by the leverage exposure. This exposure is calculated as the sum of the following components:

- Asset value, without derivatives and without elements considered as deductions in Tier 1 (for example, the loan balance is included but not goodwill), also excluding the exposures referred to in section 1 of article 429.a of the standard.
- Off-balance-sheet accounts (mainly: guarantees, undrawn credit limits, letters of credit) weighted by the conversion factors of the standardised approach to credit risk.
- Inclusion of the net value of derivatives (gains and losses against a single counterparty are netted, minus collateral – provided certain criteria are met) plus a surcharge for potential future exposure.
- A surcharge for the potential risk of financing securities transactions.
- Lastly, a surcharge is included for risk relating to unhedged credit derivatives (CDS).

The following tables illustrate the ratios published by Santander since December 2021.

##### Leverage ratio (CRR fully loaded, phased-in IFRS9)



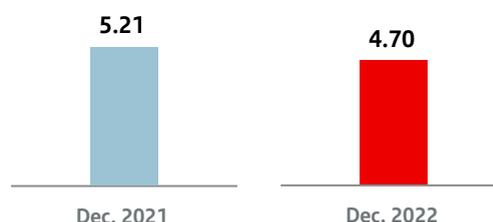
The Group's leverage ratio at 31 December 2022 was as follows:

**Table 11. Leverage ratio**

EUR million

	2022	
	CRR Fully/IFRS9 Fully	CRR Fully/IFRS9 Phased in
Tier 1	82,221	83,033
Exposure	1,750,250	1,750,626
<b>Leverage Ratio</b>	<b>4.70 %</b>	<b>4.74 %</b>

##### Leverage ratio (CRR fully-loaded, fully-loaded IFRS 9)



Data has been calculated under application of CRR and IFRS 9 transitional arrangements

With the publication of CRR II, the definitive calibration of the leverage ratio was set at 3% for all institutions, with G-SIBs being subject to an additional surcharge of 50% of the ratio of the buffer applicable to the global systemically important institution (G-SII). Adjustments to its calculation are also included, chief among which are the exclusion of certain exposures from the measure of total exposure: exposure in central banks when exceptional circumstances arise, public loans, transfer loans and officially supported export credits.

It is worth noting that, since 1 April 2022, the exclusion of central bank exposures from the leverage exposure measurements is no longer applicable due to the end of exceptional circumstances that allowed for this relief measure.

Banks implemented this final definition of the leverage ratio in June 2021, although the new ratio calibration (the additional surcharge for G-SIBs) will begin to apply from January 2023.

The following table gives a breakdown of the ratio calculation:

**Table 12. Leverage ratio details**

EUR million						2022
Item	Amounts Consol. Balance Sheet	To be eliminated	To be included	Leverage exposure	Comment	
Derivatives	75,188	75,188	26,034	26,034	Substitution of carrying amount by EAD net of collateral	
Securities financing transactions	78,476		1,836	80,312	A buffer is added for these transactions	
Assets deducted in Tier 1	18,588	18,588		—	Deletion to avoid duplication	
DTAs	—	—		—	Carrying amount of the balance sheet asset adjusted for changes in DTAs, as a result of the recognition of lower reserve account provisions, due to the application of IFRS 9 transitional arrangements.	
Rest of Assets	1,548,386	12,194		1,536,193	Fully included	
<b>Total Assets</b>	<b>1,720,638</b>	<b>105,969</b>	<b>27,870</b>	<b>1,642,538</b>		
<b>Total Off-Balance-Sheet items</b>	<b>380,606</b>	<b>272,518</b>		<b>108,088</b>	<b>Balances are weighted according to their risk</b>	
Total Exposure (denominator)				1,750,626		
Tier 1 (numerator)				83,033		
<b>Leverage ratio</b>	<b>1,614,668</b>			<b>4.74 %</b>	<b>Minimum recommended 3%</b>	

The leverage ratio is calculated by Santander every month and reported to the capital committee and other governing bodies, thus ensuring adequate monitoring of the risk of excessive leverage at its most restrictive measurement: fully loaded.

The leverage ratio is a primary metric in Santander's Risk Appetite Framework, as part of its commitment to preserving robust capital adequacy ratios. It is regularly monitored to ensure that the ratio comfortably exceeds the minimum regulatory requirements. The bank's Risk Appetite Framework includes a "stressed" leverage ratio as an additional metric, to manage the risk of excessive leverage in a forward-looking way, identifying how it will perform in a crisis scenario.

Within this framework, the group has established the necessary limits and alerts to ensure that leverage is kept at tolerable risk levels, consistent with sustainable growth in the group's balance sheet and well above the minimum levels that could be considered to be a risk. Any significant changes in any of the main drivers of this indicator are therefore analysed and reported to senior management.

Additional quantitative indicators are monitored as part of the group's active management of leverage risk, to complement the management and monitoring of the risk of excessive leverage, so as to understand the maturities, types of charges and movements of collateralised assets. These metrics include asset encumbrance and the Net Stable Funding Ratio (NSFR).



For more information, see section 10.1.2.

For further information on the leverage ratio, see tables LR1(LRSum)-summary reconciliation of accounting assets and leverage ratio exposures, LR2(LRCom)-leverage ratio common disclosure and LR3 (LRSpl)- split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures) in Appendix XII, Appendix XIII and Appendix XIV respectively, which are available on Santander's website.



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As part of its capital planning, the group estimates the leverage ratio over a three-year horizon under a range of macroeconomic scenarios, including recession.

## 2.5. Economic capital – Pillar 2

Economic capital is the capital required to cover risks from our activity with a certain level of solvency. We measure it using an internal model.

Economic capital is an essential internal management tool that helps us develop our strategy, assess solvency and manage portfolio and business risk. As such, it is a key part of the Supervisory Review and Evaluation Process (SREP).

Our economic capital model measurements cover all significant risks incurred in our activity (concentration risk, structural interest rate risk, business risk, pensions risk, deferred tax assets (DTAs), goodwill and others that are beyond the scope of regulatory Pillar 1). It also considers diversification, which is key to determining and understanding our risk profile and solvency in view of our multinational operations and businesses.

For more information on economic capital, see Capital management section of the Economic and financial report of the 2022 Annual Report.



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## 2.6. Capital planning and stress tests

This section covers the qualitative requirement OVC - ICAAP information.

Santander has an internal capital stress and planning process to respond to various regulatory exercises and is a key tool integrated within management and strategy. They aim to ensure sufficient current and future capital, even in unlikely-but-plausible economic scenarios. We estimate results in various business environments (including severe recessions as well as expected macroeconomic environments), based on our initial situation (financial statements, capital base, risk parameters and regulatory and economic ratios) to determine our solvency ratios, usually for a three-year period.

The ECB determines and sets Pillar 2 Guidance (P2G) according to the results of the adverse scenario in these supervisory stress tests, including the EU-level stress tests carried out by the EBA. When determining the P2G, the ECB considers the maximum impact expected on the CET1 ratio, which, for this purpose, is the difference between the lowest CET1 ratio in the adverse scenario over the projection horizon and the real CET1 ratio at the starting point.

For more information on capital planning and stress tests, see section 3.5 of the Economic and financial report of the 2022 Annual Report.



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## 2.7. Total Loss-Absorbing Capacity (TLAC) and Minimum Requirement for own funds and Eligible Liabilities (MREL)

In November 2015, the FSB published the TLAC term sheet based on its previously published principles on the crisis management framework. This aims to ensure that global systemically important banks (G-SIBs) are able to absorb losses and recapitalise as necessary to ensure that, during resolution procedures and immediately afterwards, their core operations continue without endangering the funds of taxpayers, public funds or financial stability.

The TLAC term sheet requires a minimum TLAC requirement to be set on an individual basis for each G-SIB as the higher of (a) 18% of risk-weighted assets; and (b) 6.75% of Basel III Tier 1 leverage ratio exposure, from 1 January 2022.

Some jurisdictions have already implemented the TLAC term sheet in their legislation (namely Europe through the CRR 2 and the BRRD II, and the United States). In other jurisdictions in which we operate, such as Brazil, this requirement is yet to be implemented. Mexico has implemented the requirement on 31 December 2022.

In June 2019, Europe published the final texts to revise the resolution's framework: CRR 2 and BRRD II. This revision primarily aimed to implement the TLAC requirement across Europe.

For G-SIBs, the CRR 2, which came into force that June 2019, introduces the minimum requirement established

in the TLAC term sheet (18%), which must consist of subordinated liabilities, except for a percentage of senior debt (3.5%).

As of 31 December 2022, the TLAC of the resolution group led by Banco Santander, S.A. stood at 24.81% of risk-weighted assets and 8.79% of leverage exposure.

The BRRD 2 was transposed in Spain in 2021.

Furthermore, an additional requirement (Pillar 2) will be added to the minimum TLAC requirement set in the CRR, as a result of applying the BRRD 2 MREL methodology.

Banco de España gave formal notice of the (binding) minimum requirement on own funds and eligible liabilities (MREL) for the Banco Santander, S.A. Resolution Group in May 2022, at a sub-consolidated level, which must be met by 1 January 2022. The requirement set the maximum between 28.95% of risk-weighted assets<sup>5</sup> and 13.20% of the Resolution Group's leverage ratio exposure, based on December 2020 data.

As of 31 December 2022, Banco Santander, S.A. currently complies with MREL requirements following last year's issuance of eligible liabilities. Specifically, the figures stood at 38.01% of risk-weighted assets and 16.32% of leverage ratio exposure.

Of the total MREL requirement, a minimum subordination was set equal to the maximum between 9.04% of risk-weighted assets and 6.02% of leverage ratio exposure. However, the minimum subordination required from the Resolution Group is determined by TLAC, not by MREL, as the TLAC subordination requirement is higher than that set under MREL. In December 2022, the subordinated MREL figures of the Resolution Group headed by Banco Santander, S.A. stood at 32.36% and 13.90% respectively.



CBR: Combined Buffer Requirement, composed by capital conservation buffer (2.5%), GSII (1%) and countercyclical capital buffer (0.18%).

<sup>5</sup> When the requirement is set in terms of RWAs, the CET1 used to cover the combined capital buffers cannot be used to comply with the MREL requirement at the same time.

The requirement for own funds and eligible liabilities are shown below:

**Table 13.EU KM2: Key metrics - G-SII requirement for own funds and eligible liabilities (TLAC)**

	G-SII Requirement for own funds and eligible liabilities (TLAC)					
	b	c	d	e	f	
	31 Dec 2022	30 Sep 2022	30 Jun 2022	31 Mar 2022	31 Dec 2021	
<b>Own funds and eligible liabilities, ratios and components</b>						
1	Own funds and eligible liabilities	72,856	74,571	70,518	74,033	78,475
2	Total risk exposure amount of the resolution group (TREA)	293,609	287,143	293,225	290,068	291,884
3	Own funds and eligible liabilities as a percentage of TREA (row1/row2)	24.81 %	25.97 %	24.05 %	25.52 %	26.89 %
4	Total exposure measure (TEM) of the resolution group	828,717	864,718	829,367	719,045	662,574
5	Own funds and eligible liabilities as percentage of the TEM	8.79 %	8.62 %	8.50 %	10.30 %	11.84 %
6a	Does the subordination exemption in Article 72b(4) of Regulation (EU) No 575/2013 apply? (5 % exemption)	No	No	No	No	No
6b	Aggregate amount of permitted non-subordinated eligible liabilities instruments if the subordination discretion in accordance with Article 72b(3) of Regulation (EU) No 575/2013 is applied (max 3,5 % exemption)	10,276	10,050	10,263	10,152	7,297
6c	If a capped subordination exemption applies in accordance with Article 72b (3) of Regulation (EU) No 575/2013, the amount of funding issued that ranks pari passu with excluded liabilities and that is recognised under row 1, divided by funding issued that ranks pari passu with excluded liabilities and that would be recognised under row 1 if no cap was applied (%)	47.56 %	45.26 %	52.65 %	68.74 %	62.64 %

**Table 14. EU TLAC1 - Composition - G-SII Requirement for own funds and eligible liabilities**

	b
	G-SII requirement for own funds and eligible liabilities (TLAC)
<b>Own funds and eligible liabilities and adjustments</b>	
1	74,761
2	8,008
6	10,087
11	92,856
<b>Own funds and eligible liabilities: Non-regulatory capital elements</b>	
12	28,489
EU-12a	—
EU-12b	—
EU-12c	2,296
13	21,606
EU-13a	—
14	10,276
17	41,061
EU-17a	30,785
<b>Own funds and eligible liabilities: Adjustments to non-regulatory capital elements</b>	
18	133,917
19	61,061
20	—
22	72,856
<b>Risk-weighted exposure amount and leverage exposure measure of the resolution group</b>	
23	293,609
24	828,717
<b>Ratio of own funds and eligible liabilities</b>	
25	24.81 %
26	8.79 %
27	6.81 %
28	3.68 %
29	2.50 %
30	0.18 %
31	— %
EU-31a	1.00 %
<b>Memorandum items</b>	
EU-32	510,180

The creditor ranking is shown below:

**Table 15.EU TLAC3a: creditor ranking - resolution entity**

	Insolvency ranking							Sum of 1 to 7
	1	2	3	4	5	6	7	
	(most junior)						(most senior)	
1 Description of insolvency ranking	CET1	AT1	Tier 2	Specific Subordinated Claims	Other subordinated debt and claims	Senior non preferred claims	Ordinary claims	
2 Liabilities and own funds	65,385	7,810	12,044	39,065	700	34,207	255,834	415,045
3 of which excluded liabilities	0	0	0	0	0	0	174,695	174,695
4 Liabilities and own funds less excluded liabilities	65,385	7,810	12,044	39,065	700	34,207	81,139	240,350
5 Subset of liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting TLAC	65,385	7,810	12,044	0	700	27,789	21,606	135,333
6 of which residual maturity ≥ 1 year < 2 years	0	0	0	0	0	905	9,650	10,555
7 of which residual maturity ≥ 2 year < 5 years	0	0	6,302	0	0	17,438	7,324	31,064
8 of which residual maturity ≥ 5 years < 10 years	0	0	5,598	0	0	8,509	4,242	18,350
9 of which residual maturity ≥ 10 years, but excluding perpetual securities	0	0	0	0	0	937	390	1,327
10 of which perpetual securities	65,385	7,810	144	0	700	0	0	74,039

For further information on capital and TLAC instruments main features - Own Funds and Eligible liabilities, see Appendix XV and Appendix XVI.



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## 2.8. Corporate Special Situations and Resolution Framework, crisis management, Recovery and Resolution Planning

For details on the main developments by the Group in crisis management, specifically in relation to viability and resolution plans, and the special situations management framework, see section 3.6 of the Economic and financial report of the 2022 Annual Report.



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# 3

## Global risk view

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# 3. Global risk view

## 3.1. Risk management and control model

This section covers the qualitative requirements OVA - Institution risk management approach and OVB - Disclosure on governance arrangements.

Our risk management and control model is underpinned by common principles, a strong risk culture, a solid governance structure and advanced risk management processes and tools.

### 3.1.1. Risk principles and culture

Our risk principles below are compulsory. They comply with regulatory requirements and are inspired by best market practices:

1. **All employees are risk managers** who must understand the risks associated with their functions and not assume risks with an impact that exceeds the Group's risk appetite or is unknown.
2. **Involvement of senior managers**, with consistent risk management and control through their conduct, actions and communications, as well as oversight of our risk culture and make sure we maintain our risk profile within the defined risk appetite.
3. **Independent risk management and control functions**, according to our three lines of defence model, described in detail under section 2.8. 'Lines of defence'.



For further information on the lines of defense, see section 2.8.

4. **A forward-looking, comprehensive approach to risk management and control** for all businesses and risk types.

5. **Complete and timely information** to identify, assess, manage and disclose risks to the appropriate level.

#### Risk culture - Risk Pro

At Santander, we have a solid culture known as Risk Pro (or I AM RISK in the United Kingdom and the United States). It is a pillar of the Santander Group culture – The Santander Way – a key lever in the Group's mission: to contribute to the progress of people and companies.

Risk Pro represents, above all, the individual responsibility for risk assumed by each employee in their activity and our contribution to identifying, assessing and managing all risks appropriately.

For more details on risk culture and the code of conduct, see the section 'Risk pro: our risk culture' in the Responsible Banking chapter of the 2022 Annual Report.



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### 3.1.2. Types of risk

The Santander Group's risk classification is based on our corporate risk framework and includes:

- 1 **Credit risk** relates to financial loss arising from the default or credit quality deterioration of a customer or counterparty, to which Santander has directly financed or assumed a contractual obligation.
- 2 **Market risk** results of loss and detriment to profits or capital stemming from movements in interest rates, exchange rates, stock and commodity prices and its potential impact on capital requirements.
- 3 **Liquidity risk** occurs if liquid financial resources are insufficient or too costly to obtain in order to meet liabilities when they fall due.
- 4 **Structural risk** relates risk that market movements or balance sheet behaviour will change the value or profit generation of assets or liabilities in the banking book. It covers insurance and pension risks as well as the risk that Santander will not have sufficient capital (in terms of quantity or quality) to meet internal business targets, regulatory requirements or market expectations.
- 5 **Operational risk** is the possibility of losses due to shortcomings and failures relating to processes, employees and internal systems, even as a result of external events. It includes legal, regulatory compliance and conduct risks.
- 6 **Financial crime risk** is the risk of loss due to criminal or illegal activity involving Santander's resources, products and services. Such activity includes money laundering, terrorism financing, violation of international sanctions, corruption, bribery and tax evasion.
- 7 **Model risk** involves potential losses due to inaccurate forecasting or from a model being implemented or misused models that can result in poor decision-making.
- 8 **Reputational risk** is the risk of current or potential negative economic impact due to damage to the bank's reputation among employees, customers, shareholders, investors and broader society.
- 9 **Strategic risk** relates to losses due to strategic decisions or their poor implementation that affect our core stakeholders' medium-to-long-term interests or to an inability to adapt to a changing environment.

Environmental and climate-related risk drivers are considered as factors that could impact the existing risks in the medium-to-longterm.

These elements include, on the one hand, those derived from the physical effects of climate change, generated by one-off events as well as by chronic changes in the environment and, on the other hand, those derived from the process of transition to a development model with lower emissions, including legislative, technological or behaviour of economic agents changes.

### 3.1.3. Risk management processes and tools

Grupo Santander has the following processes and tools to carry out an effective risk management :

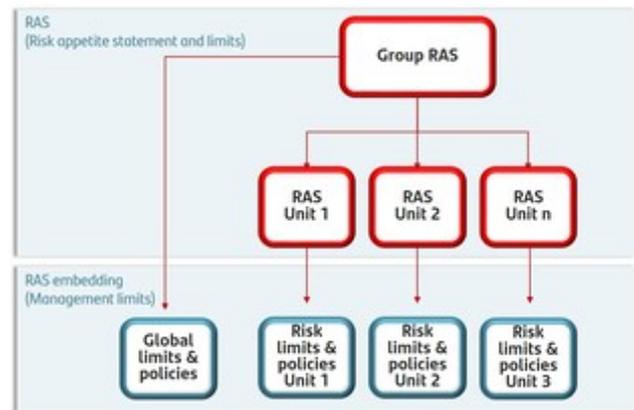
#### A. Risk appetite and structure of limits

Risk appetite is the volume and type of risks we deem prudent for our business strategy, even in unforeseen circumstances. Risk appetite is governed by the following principles for all entities:

- It is the responsibility of the board, which establishes the entire Group's risk appetite statement (RAS) every year. Our subsidiaries' boards also set their own risk appetites annually.
- Completeness and forward-looking view. Our appetite considers all material risks to which we are exposed and defines our target risk profile for both the current moment and the medium term, with a forward-looking view that considers stress scenarios.

To ensure that all material risks are adequately represented, we use methodologies (Top Risks and RCSA, among others) to identify and assess the risk to which we are exposed in the countries in which we operate, and which is inherent to our business.

- Common standards and integration into management. The Group shares the same risk appetite model, which includes common requirements for processes, metrics, governing bodies, controls and standards implemented throughout the Group, as well as for their effective and traceable translation into management policies and limits.
- The link between the Group's risk appetite limits and those of its subsidiaries, and between the latter's limits and those used to manage business units and portfolios, is key to making risk appetite an effective and consistent tool for risk management. Management policies and limits are based on the principles and limits defined in the risk appetite statement.



- Continuous adaptation to best market practices, regulatory requirements and supervisory expectations.
- Link with strategic and business plans. Risk appetite is a reference in strategic and business planning. Three-year strategic plans, the annual budget and the capital and liquidity planning are approved considering the limits set out in the risk appetite statement.

For more details on risk appetite fundamentals and risk appetite principles see the section 2.4. 'Risk management processes and tools' in the Risk management and compliance chapter of the 2022 Annual Report.



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**Limits structure, monitoring and control**

The risk appetite is articulated through qualitative statements, limits and quantitative metrics that measure the Group's risk profile under both actual and stress conditions. These metrics cover all the material risks to which we are

exposed and take into account the key risk types for the Group (set out in the corporate risk framework) and are articulated in five main areas that provide a holistic view of all the risks and define the positioning that Santander wishes to adopt or maintain in developing its business model:



**B. Risk profile assessment (RPA)**

The identification and assessment of risks is fundamental for their proper management, control and reporting. All those processes aimed at detecting risks and vulnerabilities, both internal and external, to which the Group is exposed, as well as quantitatively and qualitatively determining the relevance thereof. The risk framework defines the types of key risk, which are reviewed on an annual basis in view of the result of the Group's main risk identification and assessment exercises.

We systematically assess the risk profile of the Group and its subsidiaries using a single methodology, RPA, which is based on the fundamental principles of the risk identification and assessment model: accountability, efficiency, comprehensive risk coverage, materiality and decision oriented. The calculation of the risk profile under RPA methodology generates results through a scoring system that classifies the profile into four categories of materiality: "low", "medium-low", "medium-high" and "high", to make sure the board-approved Group risk appetite remains within medium-low and predictable risk profile.

For further details on the Santander Group's risk appetite, see Section 2.4. "Risk management processes and tools" in the "Risk management and compliance chapter" of the 2022 Annual Report.



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**3.2. Governance**

This section covers the qualitative requirements OVA - Institution risk management approach and OVB - Disclosure on governance arrangements.

Except in matters reserved for the general shareholders' meeting, the board of directors is Banco Santander's highest decision-making body. The board's policy is to delegate day-to-day management and the execution of strategy to the executive bodies and the management team, focusing on the performance of its general supervisory function.

**3.2.1. Board of directors**

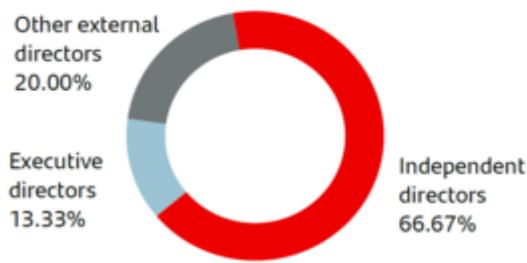
**Size**

As of 1st January 2023, the board of directors was made up of the 15 members whose profile and background are described in section 4.1 'Our directors'. The Bylaws allow it to have between 12 and 17 members.

**Composition by type of director**

The composition of the board of directors is balanced between executive and non-executive directors, most of whom are independent. Each director's status has been verified by the nomination committee and submitted to the board.

**Our Board composition**



For more details on the actual knowledge, skills and experience of the members of the board of directors, as well as on the appointment, renewal and succession of directors, see section 4. 'Board of Directors' of the Corporate Governance chapter of the 2022 Annual Report.



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**3.2.1.1. Diversity**

A diverse board of directors is essential to its effectiveness.

The combination of skills and experiences creates an environment with varied points of view that improves the quality of decision-making. Thus, we seek to achieve a sound balance of technical skills, expertise and points of view.

Our policy on the selection, suitability assessment and succession of directors helps make our board more diverse from different perspectives, for instance, in terms of gender, age, geographical provenance, experience and knowledge. Furthermore, the policy is free from implicit biases that could imply discrimination on the basis of race, disability and/or ethnic origin. Banco Santander applies this policy in the selection of directors to fill possible vacancies.

In 2019, the board established the objective of achieving a gender-balanced composition of the board by 2021 with a representation of both genders of between 40% and 60%, which was achieved by the end of that year, with women representing 40% of the board.

For more details on the skills and diversity matrix and on diversity in Santander see section 4 of the Corporate Governance chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

**3.2.1.2. Board committees**

Banco Santander has a structure of seven committees that support the board in three main areas:

- In the management of the Group, exercising decision-making powers, through the executive committee.

- In defining strategy in key areas, through the responsible banking, sustainability and culture committee and the innovation and technology committee.
- In its functions of supervision and adoption of relevant decisions, through the audit, appointments, remuneration and risk supervision, regulation and compliance committees.

For more details see section 4.3 of the Corporate Governance chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

**3.2.2. Risk governance structure**

The board of directors is ultimately responsible for risk and compliance management and control.

It revises and approves the bank's risk frameworks and appetite, while promoting a strong risk culture across the Group. The board relies on its risk supervision, regulation and compliance committee for risk control and on the Group's executive committee for risk approval.



For more details on Board committees see section 4 Board of directors 'of the Corporate Governance chapter and section 2.3. Risk governance of the Risk management and compliance chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

### 3.3. Lines of defence

In this section, the provisions of letters (b), (c) and (d) of the CRE - Qualitative disclosure requirements related to IRB approach requirement - Institution risk management approach, are complied with.

Our model of three lines of defence effectively manages and controls risks:

- **First line:** formed by the business units that take or originate exposure to risk, it recognizes, measures, controls, monitors and reports on risks according to internal risk management regulation. Risk origination must be consistent with the approved risk appetite and related limits.
- **Second line:** formed by the risk and compliance and conduct functions, it independently oversees and challenges the first line's risk management.
- **Third line:** the internal audit function, which is independent to ensure the board of directors and senior managers with high quality and efficient internal controls, governance and risk management systems, helping to safeguard our value, solvency and reputation.

The Risk, Compliance & Conduct and Internal Audit functions are separate and independent.

Each has direct access to the board of directors and its committees.

#### 3.3.1. Second line of defence

Its duties include ensuring that risks are managed according to the risk appetite defined by senior management and strengthening our risk culture throughout Grupo Santander.

For more information on the second line of defence see chapter 10.2 'Compliance and conduct risk' and 10.4 'Capital risk'.

#### 3.3.2. Third line of defence

Internal Audit applies the definition of the Institute of Internal Auditors. It is a permanent function and is independent of all other functions and units. Its mission is to provide the board of directors and senior management with independent assurance with regard to the quality and efficacy of the systems and internal control, risk (current and emerging) management and governance processes, helping to safeguard the organisation's value, capital adequacy and reputation. It evaluates:

- i. the efficacy and efficiency of the processes and systems referred to above;
- ii. compliance with applicable legislation and the requirements of supervisory bodies;
- iii. the reliability and integrity of financial and operating information;
- iv. and the integrity of capital.

Internal Audit is the third line of defence, acting independently.

Its scope of work encompasses:

- all group entities over which the group exercises effective control;
- separate asset pools (for example, investment funds) managed by the entities mentioned in the previous section;
- all entities (or separate asset pools) not included in the previous points for which there is an agreement for the group to provide internal audit functions.

Internal Audit is guided by the following principles in this work: (i) Independence, objectivity and impartiality, (ii) Integrity, ethical behaviour and confidentiality of the information handled and its findings, (iii) Competence and professional qualifications of the auditors, (iv) Quality of the work, (v) Value creation, (vi) Adequate collaboration with other control functions in the group and with the external auditors and other assurance providers working within the organisation, (vii) A smooth relationship with the supervisory bodies and (viii) Compliance with international standards for the function.

Internal Audit's authority comes directly from the board of directors. Internal Audit reports to the Board Audit Committee and complies with the reporting requirements it receives from the committee in the discharge of its duties. However, as an independent unit, it reports regularly to the board of directors, at least twice a year, and, when it deems it necessary, it has direct access to the board.

In addition, it organises its activities with the flexibility necessary to adapt to the Group's current structure and circumstances and to achieve its objectives with maximum effectiveness and efficiency.

The Group Chief Audit Executive is responsible for submitting a corporate framework for Internal Audit to the board of directors for approval and subsequent implementation. This corporate framework sets out the global function and the way in which it is to be performed, as well as any changes that arise from its regular reviews.

Internal Audit prepares a plan based on an assessment of the risks to which the group is exposed, and submits it to the audit committee. It is then submitted to the board of directors, which approves it. In terms of solvency, this plan is defined in accordance with the cycle of capital audits, taking into account the results of engagements in previous years and other criteria, such as the ratio of implementation of recommendations issued, the results of regulatory inspections, requests made by supervisory authorities and changes in mandatory regulations.

The Internal Audit functions uses this cycle to issue a full opinion on the capital function in the Group, assessing the capital governance framework and the key capital processes defined in the period established and executed by teams specialised in capital. It also performs other tasks focusing on transversal issues with significant impact on the Group's solvency, such as analysis of credit portfolios and accounting provisions, and risk management processes.

Internal Audit also includes Recovery and Resolution work in its review plan as part of the specific audit cycle, covering key aspects of crisis management and resolution.

In accordance with the "ECB Guide to Internal Models" of October 2019, a risk assessment exercise is performed on the models used to calculate capital. This focuses on the aspects

in each geography that present the greatest risks in the following major lines of action:

1. Reviewing compliance with the Group's internal governance model and supervisory requirements for the approval and maintenance of advanced models.
2. Managing models and their adequacy and integration.
3. Analysing the accuracy of risk measurement. Checking, through analysis and tests on the consistency and integrity of the Basel databases, that the methodology used in

constructing the risk parameter models is consistent with their intended uses and complies with corporate standards and regulatory requirements, and verifying the replication of the calculations.

4. Reviewing the regulatory capital calculation and reporting process.
5. Analysing the technical aspects and applications of the technological environment.





# 4

## Credit risk

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# 4. Credit risk

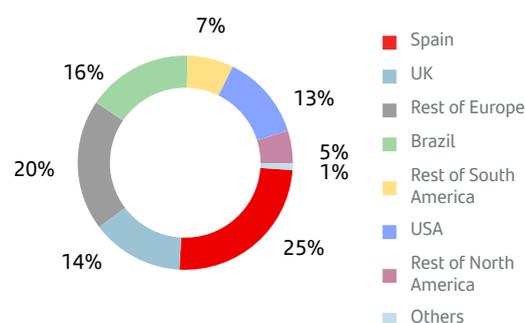


Credit risk is the risk of financial loss due to failure to comply with or deterioration of the credit rating of a customer or a third party, that has been financed or through which a contractual obligation has been assumed.

This chapter provides a detailed analysis of Santander Group's credit risk profile from several angles: region, activity sector, residual maturity, etc. with a focus on regulatory indicators (EAD and RWA).

## RWA by geography

Excludes Counterparty Credit risk



## Main figures

Million euros

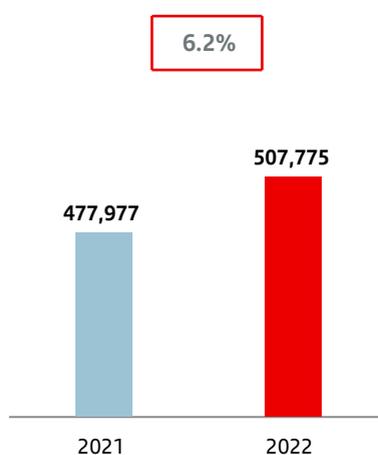
	RWA		Min. Capital Requirements	
	2022	2021	2022	2021
<b>Credit risk (excluding CCR)*</b>	<b>507,775</b>	<b>477,977</b>	<b>40,622</b>	<b>38,238</b>
Of which, standardised approach (SA)	274,922	262,869	21,994	21,029
Of which, the foundation IRB (FIRB) approach	11,759	9,483	941	759
Of which, slotting approach**	14,509	14,672	1,161	1,174
Of which, equities under the simple risk weighted approach	2,828	2,219	226	178
Of which, the advanced IRB (AIRB) approach	188,442	173,956	15,075	13,916
<b>Counterparty credit risk - CCR</b>	<b>13,096</b>	<b>15,674</b>	<b>1,048</b>	<b>1,254</b>
Of which, the standardised approach	9,493	13,639	759	1,091
Of which, internal model method (IMM)	0	0	0	0
Of which, exposures to a CCP	278	268	22	21
Of which, credit valuation adjustment - CVA	1,097	1,767	88	141
Of which, other CCR	2,229	0	178	0
<b>Settlement risk</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>Securitisation exposures in the banking book (after the cap)</b>	<b>9,898</b>	<b>11,151</b>	<b>792</b>	<b>892</b>

\*It includes equities under the PD/LGD approach.

\*\* Correction from the mapping indicated by supervisor to {C 08.01, r0020, c0260, s0010} + {C 08.01, r0030, c0260, s0010}.

## RWA variation

EUR million



## 4.1. General aspects

This section covers the CRA - General qualitative information about credit risk. It also complies with (d), (e), (f) and (g) of the OVA Requirement - Institution risk management approach.

The credit risk management process involves identification, assessment, control and decision-making in relation to the credit risk incurred in the group's operations.

It incorporates operational, customer and portfolio factors, together with a comprehensive view of the credit risk cycle. The Business and Risk areas are involved in the process, along with senior management. The Group's profile is mainly retail, with an adequate diversification of credit risk between mature and emerging markets.

## 4.2. Capital requirements for credit risk

The following table shows the main changes in capital requirements for credit risk in the year:

**Table 16. Credit risk capital requirements movements**

EUR million	RWAs	Capital requirements
<b>Starting amount (31/12/2021)</b>	<b>500,884</b>	<b>40,071</b>
Asset size	1,449	116
Asset quality		
Model updates	16,663	1,333
Methodology and policy		
Acquisitions and disposals	1,857	149
Foreign exchange movements	8,549	684
Other		
<b>Ending amount (31/12/2022)</b>	<b>529,401</b>	<b>42,352</b>

It includes capital requirements of equity, securitisations and counterparty credit risk (Does not include CVA and CPP)

Credit risk assets increased EUR 28,517 million mainly due to the impact of model updates, mainly in Spain. The foreign exchange rate effect was EUR 8,549 million, mainly due to the appreciation of the Brazilian real and the US dollar, partially offset by the depreciation of sterling. It is worth noting that in the year was the acquisition of Pierpont Capital Holdings LLC, which in loans amounted to EUR 1,857 million. In terms of asset size it is worth noting the increase in business mainly in South America and in Digital Consumer Banking, offset by the impact of the Group's securitisations (-EUR 13,205 million).

### 4.2.1. Internal ratings-based approach (IRB)

The following table shows the main variations in IRB credit risk RWAs:

**Table 17. CR8 - RWEA flow statements of credit risk exposures under the IRB approach**

EUR million	Three months ended Dec'22	Twelve months ended Dec'22
	a	
	RWA	RWA
<b>Risk weighted exposure amount as at the end of the previous reporting period</b>	<b>216,761</b>	<b>205,676</b>
1 Asset size	(4,785)	80
2 Asset quality	—	—
3 Model updates	15,202	16,663
4 Methodology and policy	—	—
5 Acquisitions and disposals	—	—
6 Foreign exchange movements	(4,252)	507
7 Other	—	—
<b>Risk weighted exposure amount as at the end of the reporting period</b>	<b>222,926</b>	<b>222,926</b>

It includes capital requirements of equity.

Fully-loaded CRR, Phased-in IFRS 9.

Credit risk assets under the IRB approach increased by EUR 6.165 million in the fourth quarter. It is worth noting the impact of model updates, mainly in Spain. This impact was partially offset by the assets size, particularly the decline in risk assets due to the securitisations carried out in the quarter in the Group. The exchange rate impact in the quarter was also - EUR 4.252 billion, mainly due to the depreciation of the US dollar and the Brazilian real.

Credit risk assets under the IRB approach increased by EUR 17,650 million in the year (EUR 6,165 in the fourth quarter). It is worth noting the impact of model updates, mainly during the fourth quarter in the mortgages and SMEs portfolios of Spain, but also in Portugal, Brazil, Consumer and SCIB in a lesser degree. In addition, the asset size decreased due to the securitisations carried out in the fourth quarter, but it is offset with the impact from previous quarters. The exchange rate in the fourth quarter was also EUR -4,252 million, mainly due to the depreciation of the US dollar and the Brazilian real but it was offset by the foreign exchange movements from the previous quarters.

The tables in this section show, for each business segment and credit rating (internal and Standard & Poor's), the value of exposures, credit risk parameters and capital under the IRB approach, distinguishing between foundation IRB (FIRB) and advanced IRB (AIRB).

**Table 18. Credit risk exposures by exposure class**

**AIRB**

EUR million 2022

Exposure class	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
Institutions	28,565	17,515	26.84 %	38,552	0.21 %	2,603	38.88 %	1.27	7,945	21 %	25	(25.49)
Corporates - Other	144,038	128,311	32.00 %	152,167	3.07 %	42,144	43.63 %	1.77	75,966	50 %	2,164	(2,343.26)
Corporates - SMEs	33,015	8,277	29.78 %	27,368	10.60 %	86,058	42.97 %	2.23	17,817	65 %	1,131	(1,436.40)
Retail - Mortgages SMEs	16,333	161	58.57 %	16,314	9.01 %	208,188	30.63 %	—	4,719	29 %	589	(524.38)
Retail - Mortgages no SMEs	289,886	10,022	64.05 %	296,778	3.97 %	2,308,440	12.09 %	—	48,059	16 %	1,583	(1,144.72)
Qualifying Revolving	3,122	19,628	54.17 %	13,825	3.62 %	20,044,774	64.68 %	—	4,547	33 %	322	(249.72)
Retail - Other non SMEs	39,621	1,908	66.73 %	40,777	5.12 %	6,643,840	47.10 %	—	20,816	51 %	1,151	(980.23)
Retail - SMEs	25,282	5,486	48.00 %	17,529	8.15 %	1,937,176	50.01 %	—	8,574	49 %	874	(924.91)
<b>Total</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>0.63</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629.11)</b>

**Table 18. Credit risk exposures by exposure class**

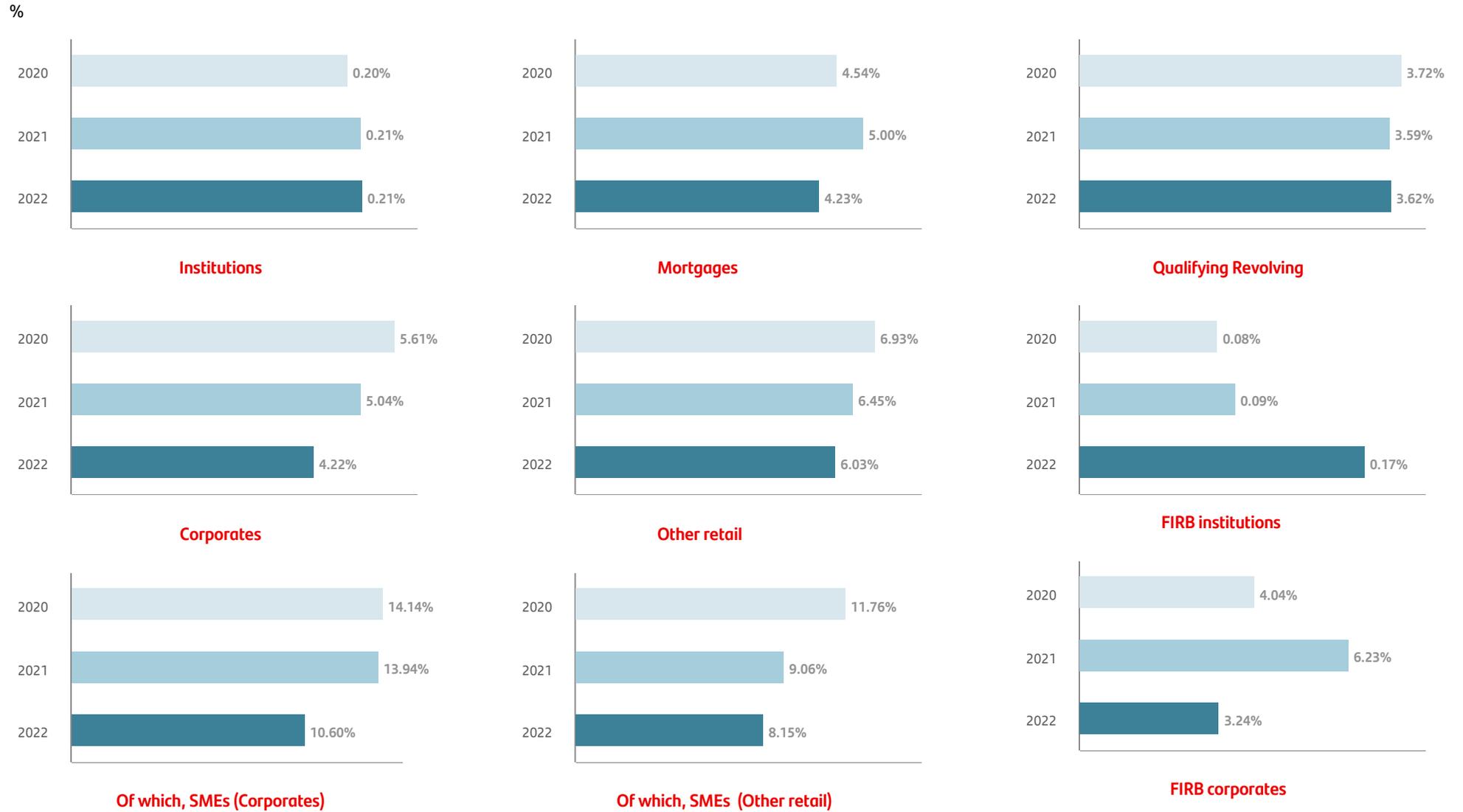
**FIRB**

EUR million 2022

Exposure class	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
Institutions	1,300	2,548	11.67%	1,894	0.17%	305	43.77%	0.65	392	21%	1	(1.22)
Corporates - Other	10,517	3,871	32.06%	11,243	2.40%	5,698	44.00%	2.56	8,722	78%	119	(98.23)
Corporates - SMEs	1,247	259	22.27%	1,295	10.52%	1,558	43.23%	2.76	1,066	82%	60	(63.40)
<b>Total</b>	<b>13,064</b>	<b>6,677</b>	<b>23.90%</b>	<b>14,432</b>	<b>2.83%</b>	<b>7,561</b>	<b>43.90%</b>	<b>2.32</b>	<b>10,181</b>	<b>71%</b>	<b>181</b>	<b>(162.85)</b>

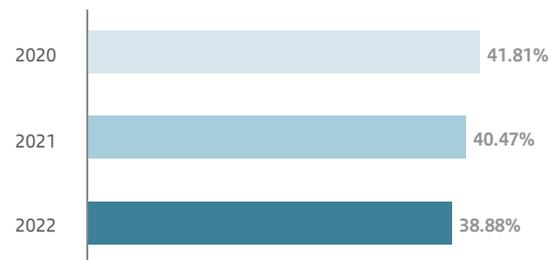
The following charts show portfolio's PDs, LGDs, exposures and RWA/EADs for the last three years.

**EAD-weighted average PD**

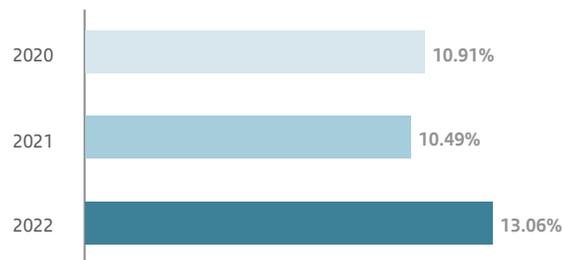


**LGD media ponderada por EAD**

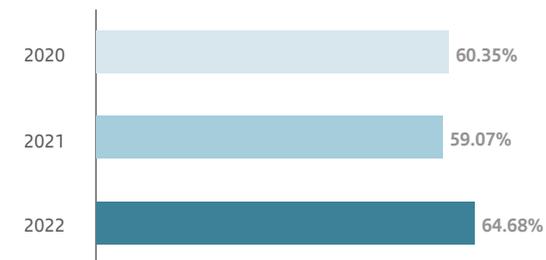
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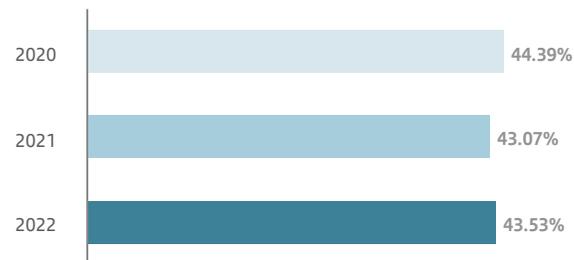
**Institutions**



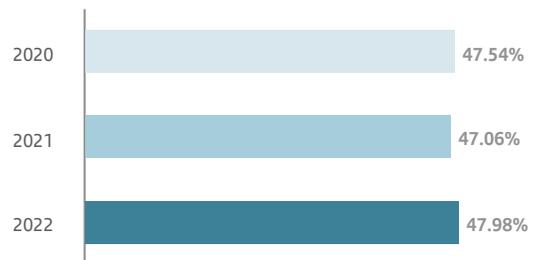
**Mortgages**



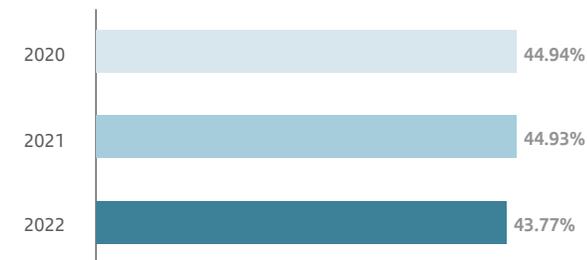
**Qualifying Revolving**



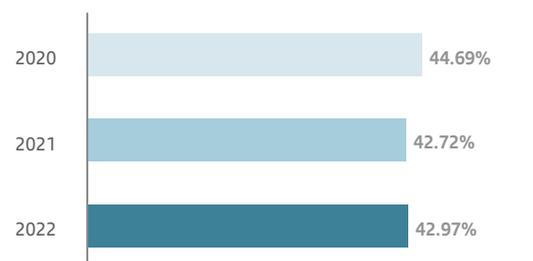
**Corporates**



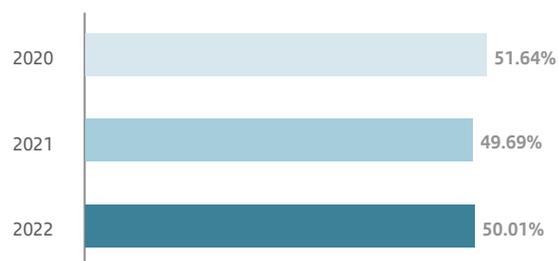
**Other retail**



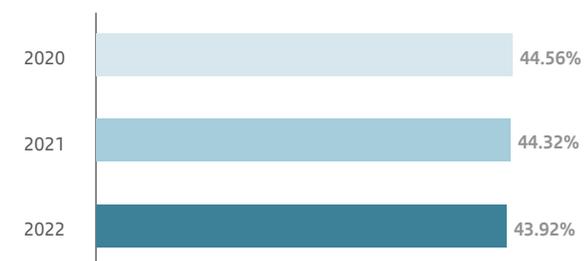
**FIRB institutions**



**Of which, SMEs (Corporates)**



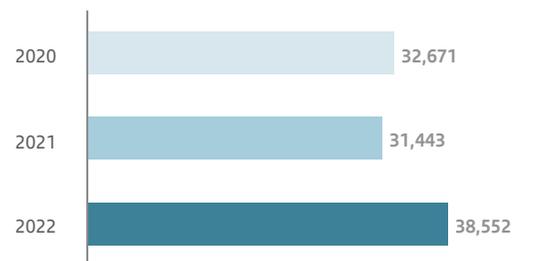
**Of which, SMEs (Other retail)**



**FIRB corporates**

**Exposure**

%



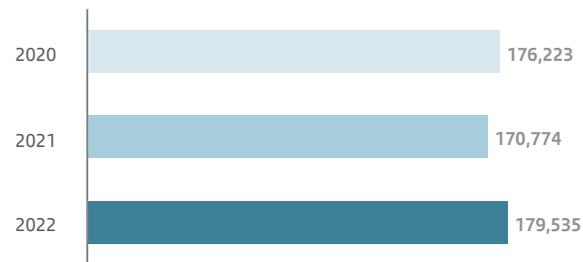
**Institutions**



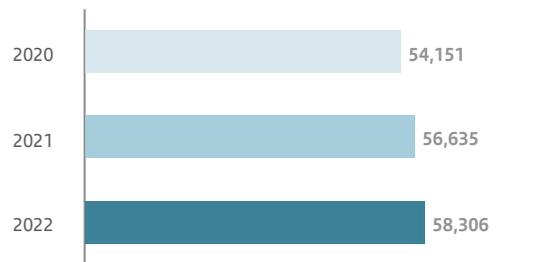
**Mortgages**



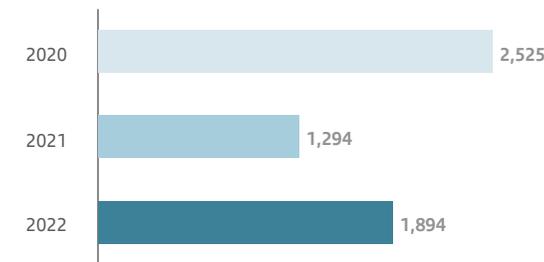
**Qualifying Revolving**



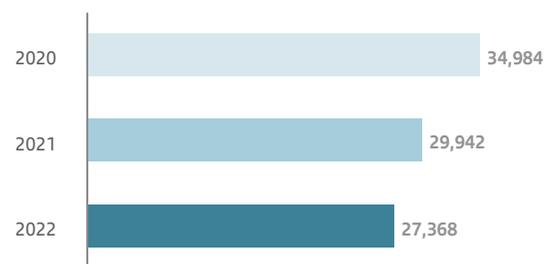
**Corporates**



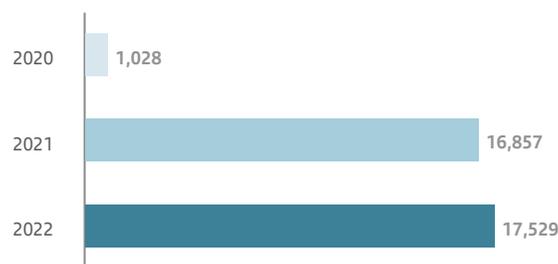
**Other retail**



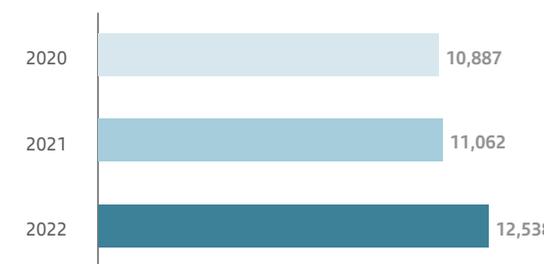
**FIRB institutions**



**Of which, SMEs (Corporates)**



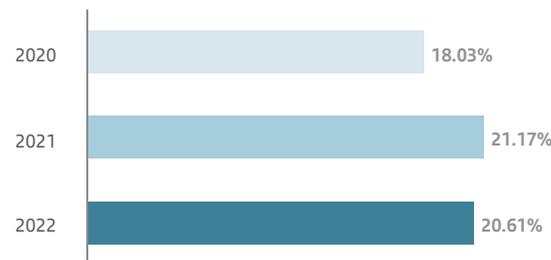
**Of which, SMEs (Other retail)**



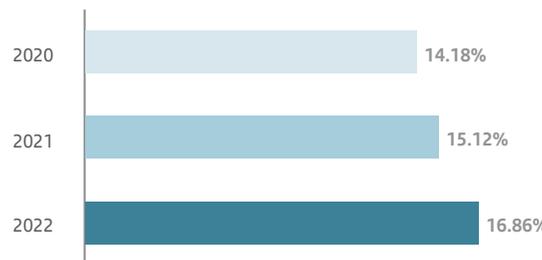
**FIRB corporates**

**RWA/EAD**

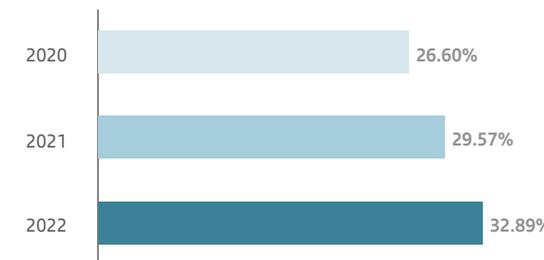
%



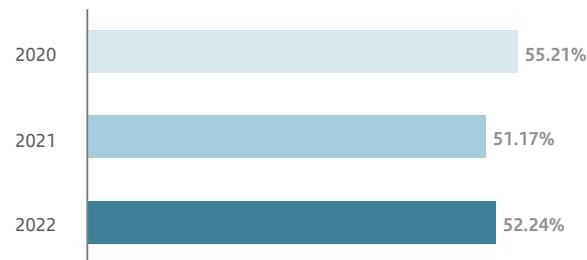
**Institutions**



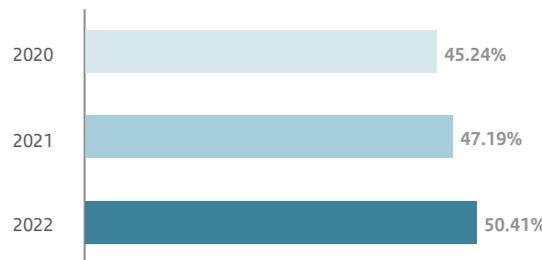
**Mortgages**



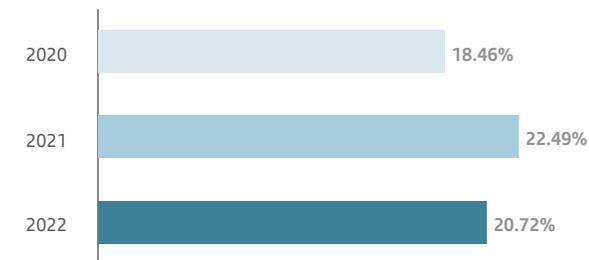
**Qualifying Revolving**



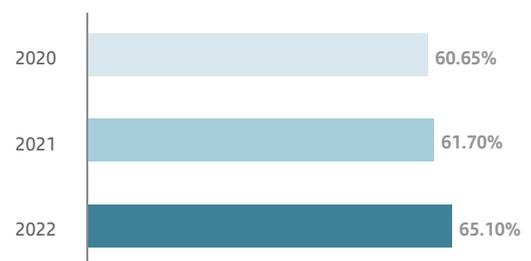
**Corporates**



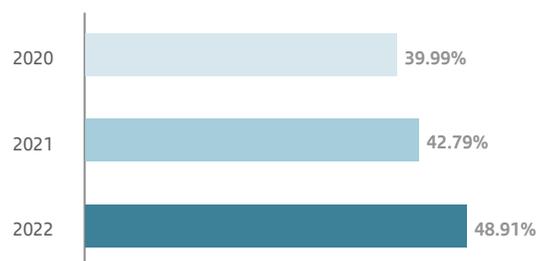
**Other retail**



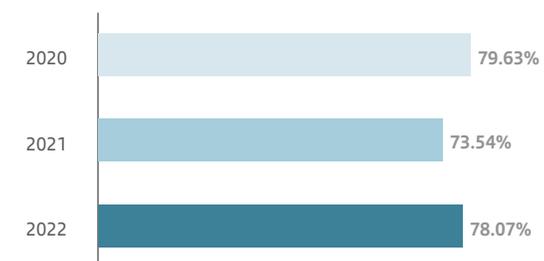
**FIRB institutions**



**Of which, SMEs (Corporates)**



**Of which, SMEs (Other retail)**



**FIRB corporates**

**Table 19.CR6 - AIRB approach - Credit risk exposures by exposure class and PD range**

EUR million

2022

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Institutions</b>												
0.00 < 0.15	18,852	13,572	26.13 %	31,239	0.05 %	1,017	40.28 %	1	4,446	14 %	4	(15.66)
0.00 to < 0.10	17,619	13,187	25.92 %	30,321	0.05 %	913	40.22 %	1	4,158	14 %	4	(14.29)
0.10 to < 0.15	1,233	385	33.49 %	919	0.13 %	104	42.19 %	1	288	31 %	—	(1.37)
0.15 < 0.25	4,033	2,237	33.76 %	3,102	0.16 %	337	41.41 %	1	1,217	39 %	2	(1.98)
0.25 < 0.50	1,719	603	27.06 %	1,535	0.32 %	149	41.74 %	1	932	61 %	2	(2.24)
0.50 < 0.75	514	52	23.54 %	491	0.63 %	91	11.86 %	5	144	29 %	—	(0.27)
0.75 < 2.50	2,366	409	28.86 %	1,811	0.99 %	666	17.76 %	4	767	42 %	4	(1.98)
0.75 to < 1.75	2,365	223	14.74 %	1,725	0.91 %	658	16.50 %	4	639	37 %	3	(1.72)
1.75 to < 2.50	1	185	45.90 %	86	2.46 %	8	43.03 %	—	128	149 %	1	(0.27)
2.50 < 10.00	782	209	25.60 %	320	3.52 %	193	24.10 %	3	266	83 %	3	(1.34)
2.50 to < 5	721	105	17.10 %	272	2.56 %	91	22.18 %	3	170	62 %	2	(0.93)
5 to < 10	62	104	34.21 %	48	8.90 %	102	34.88 %	2	96	198 %	1	(0.41)
10.00 < 100.00	299	433	12.15 %	53	45.00 %	147	41.91 %	2	173	329 %	10	(1.98)
10 to < 20	—	—	—	—	—	—	—	—	0	—	—	—
20 to < 30	—	—	—	—	—	—	—	—	0	—	—	—
30 to < 100	299	433	12.15 %	53	45.00 %	147	41.91 %	2	173	329 %	10	(1.98)
100.00 (Default)	—	—	— %	—	100.00 %	3	41.65 %	—	0	20 %	—	(0.04)
<b>Subtotal (exposure class)</b>	<b>28,565</b>	<b>17,515</b>	<b>26.84 %</b>	<b>38,552</b>	<b>0.21 %</b>	<b>2,603</b>	<b>38.88 %</b>	<b>1</b>	<b>7,945</b>	<b>21 %</b>	<b>25</b>	<b>(25.49)</b>
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629.11)</b>

**Table 19.CR6 - AIRB approach - Credit risk exposures by exposure class and PD range**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2022
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - Other</b>												
0.00 < 0.15	43,385	65,864	39.26 %	64,059	0.08 %	1,933	43.41 %	2	14,702	23 %	20	(55.72)
0.00 to < 0.10	27,664	49,074	43.87 %	44,813	0.05 %	1,033	43.04 %	2	8,660	19 %	10	(27.95)
0.10 to < 0.15	15,720	16,790	25.78 %	19,246	0.14 %	900	44.25 %	2	6,042	31 %	11	(27.77)
0.15 < 0.25	19,329	23,054	18.68 %	21,047	0.22 %	2,823	41.28 %	1	7,937	38 %	17	(29.71)
0.25 < 0.50	21,349	14,177	22.82 %	20,478	0.36 %	5,949	44.36 %	2	11,441	56 %	31	(132.27)
0.50 < 0.75	24,717	8,663	31.58 %	22,490	0.59 %	8,865	46.19 %	2	16,843	75 %	61	(47.61)
0.75 < 2.50	17,469	8,057	32.04 %	13,845	1.47 %	11,203	43.83 %	2	14,605	105 %	92	(77.97)
0.75 to < 1.75	12,217	6,324	30.11 %	8,995	1.25 %	6,380	43.68 %	2	9,325	104 %	50	(59.74)
1.75 to < 2.50	5,252	1,734	39.08 %	4,850	1.88 %	4,823	44.11 %	1	5,280	109 %	41	(18.23)
2.50 < 10.00	6,363	3,905	33.61 %	5,536	3.90 %	5,926	38.85 %	2	7,439	134 %	91	(119.99)
2.50 to < 5	5,217	3,104	32.31 %	4,638	3.38 %	4,591	37.35 %	2	5,696	123 %	63	(69.45)
5 to < 10	1,146	801	38.68 %	898	6.57 %	1,335	46.61 %	2	1,743	194 %	28	(50.54)
10.00 < 100.00	7,620	3,283	22.61 %	963	20.52 %	2,361	40.74 %	2	2,205	229 %	83	(95.89)
10 to < 20	6,870	3,088	22.01 %	720	15.82 %	1,651	41.08 %	2	1,630	227 %	50	(77.91)
20 to < 30	611	107	47.41 %	155	26.08 %	428	43.09 %	2	402	260 %	17	(7.72)
30 to < 100	139	88	13.38 %	89	49.01 %	282	33.80 %	2	173	195 %	16	(10.27)
100.00 (Default)	3,806	1,306	21.93 %	3,749	100.00 %	3,084	48.27 %	2	792	21 %	1,769	(1,784.09)
<b>Subtotal (exposure class)</b>	<b>144,038</b>	<b>128,311</b>	<b>32.00 %</b>	<b>152,167</b>	<b>3.07 %</b>	<b>42,144</b>	<b>43.63 %</b>	<b>2</b>	<b>75,966</b>	<b>50 %</b>	<b>2,164</b>	<b>(2,343)</b>
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>

**Table 19.CR6 - AIRB approach - Credit risk exposures by exposure class and PD range**

EUR million													2022
PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions	
a	b	c	d	e	f	g	h	i	j	k	l	m	
<b>Corporates - SMEs</b>													
0.00 < 0.15	23	3	41.59 %	24	0.11 %	585	31.34 %	3	5	23 %	—	(0.20)	
0.00 to < 0.10	—	1	55.57 %	1	0.05 %	293	56.98 %	5	0	40 %	—	(0.01)	
0.10 to < 0.15	22	2	32.07 %	23	0.11 %	292	30.38 %	3	5	22 %	—	(0.19)	
0.15 < 0.25	758	174	23.18 %	875	0.21 %	1,762	37.01 %	1	196	22 %	—	(1.65)	
0.25 < 0.50	3,870	1,360	33.96 %	3,707	0.37 %	9,628	46.02 %	2	1,683	45 %	5	(7.75)	
0.50 < 0.75	6,407	1,548	34.21 %	6,025	0.61 %	14,353	44.59 %	2	3,234	54 %	14	(17.47)	
0.75 < 2.50	11,184	2,466	35.74 %	8,522	1.57 %	31,669	42.51 %	2	5,896	69 %	55	(60.68)	
0.75 to < 1.75	7,624	1,556	36.01 %	5,589	1.29 %	19,679	42.68 %	2	3,722	67 %	30	(33.77)	
1.75 to < 2.50	3,559	910	35.28 %	2,933	2.10 %	11,990	42.19 %	2	2,173	74 %	25	(26.91)	
2.50 < 10.00	7,260	2,481	20.04 %	5,322	4.64 %	21,468	41.27 %	2	5,158	97 %	102	(195.95)	
2.50 to < 5	4,300	1,843	18.24 %	3,153	3.42 %	12,165	40.09 %	2	2,759	88 %	42	(69.93)	
5 to < 10	2,960	638	25.25 %	2,169	6.43 %	9,303	42.98 %	2	2,399	111 %	60	(126.02)	
10.00 < 100.00	650	136	24.43 %	529	19.62 %	2,975	42.94 %	2	818	155 %	42	(56.89)	
10 to < 20	419	75	28.62 %	370	13.10 %	2,016	43.81 %	2	551	149 %	20	(27.05)	
20 to < 30	92	30	17.19 %	71	24.18 %	500	45.65 %	3	126	177 %	8	(12.55)	
30 to < 100	139	30	21.22 %	88	43.31 %	459	37.12 %	3	141	160 %	14	(17.28)	
100.00 (Default)	2,864	108	18.49 %	2,364	100.00 %	3,618	41.93 %	3	827	35 %	912	(1,095.83)	
<b>Subtotal (exposure class)</b>	<b>33,015</b>	<b>8,277</b>	<b>29.78 %</b>	<b>27,368</b>	<b>10.60 %</b>	<b>86,058</b>	<b>42.97 %</b>	<b>2</b>	<b>17,817</b>	<b>65 %</b>	<b>1,131</b>	<b>(1,436)</b>	
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>	

**CR6 - AIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Institutions</b>												
0.00 < 0.15	15,899	8,956	30.41 %	22,796	0.06 %	912	41.91 %	1	3,051	13 %	5	(18.07)
0.00 to < 0.10	12,185	8,527	30.33 %	21,965	0.05 %	771	41.80 %	1	2,791	13 %	5	(16.30)
0.10 to < 0.15	3,714	428	31.86 %	831	0.13 %	141	44.99 %	1	260	31 %	—	(1.77)
0.15 < 0.25	4,648	2,636	29.97 %	4,208	0.16 %	478	41.03 %	1	1,241	29 %	3	(3.83)
0.25 < 0.50	2,781	1,038	29.84 %	1,783	0.32 %	188	42.17 %	1	814	46 %	2	(1.81)
0.50 < 0.75	1,199	1,164	24.89 %	774	0.66 %	248	42.21 %	2	637	82 %	2	(1.69)
0.75 < 2.50	2,801	351	17.08 %	1,606	1.10 %	788	18.10 %	4	696	43 %	3	(2.28)
0.75 to < 1.75	2,799	326	16.70 %	1,598	1.10 %	771	18.07 %	4	690	43 %	3	(2.18)
1.75 to < 2.50	2	24	22.13 %	8	2.43 %	17	23.59 %	1	5	66 %	—	(0.10)
2.50 < 10.00	292	46	77.89 %	267	3.15 %	59	27.00 %	3	214	80 %	2	(2.52)
2.50 to < 5	222	33	97.13 %	245	2.89 %	23	25.68 %	3	180	73 %	2	(1.13)
5 to < 10	70	14	32.10 %	22	6.04 %	36	41.73 %	2	34	156 %	1	(1.39)
10.00 < 100.00	35	—	23.85 %	—	28.04 %	13	47.54 %	1	0	264 %	—	—
10 to < 20	—	—	— %	—	— %	—	— %	—	0	— %	—	—
20 to < 30	28	—	— %	—	28.04 %	2	47.54 %	1	0	264 %	—	—
30 to < 100	7	—	23.85 %	—	— %	11	— %	—	0	— %	—	—
100.00 (Default)	9	64	— %	9	100.00 %	38	26.65 %	2	3	28 %	2	(4.61)
<b>Subtotal (exposure class)</b>	<b>27,665</b>	<b>14,255</b>	<b>29.52 %</b>	<b>31,443</b>	<b>0.21 %</b>	<b>2,724</b>	<b>40.47 %</b>	<b>1</b>	<b>6,655</b>	<b>21 %</b>	<b>20</b>	<b>(35)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - Other</b>												
0.00 < 0.15	37,211	55,211	43.95 %	60,042	0.08 %	2,116	43.05 %	2	14,353	24 %	22	(63)
0.00 to < 0.10	23,198	37,907	51.15 %	41,915	0.06 %	1,167	42.44 %	2	8,395	20 %	10	(52)
0.10 to < 0.15	14,013	17,303	28.17 %	18,127	0.15 %	949	44.45 %	2	5,958	33 %	12	(11)
0.15 < 0.25	15,155	15,359	21.62 %	16,227	0.24 %	2,133	42.50 %	1	6,552	40 %	17	(91)
0.25 < 0.50	19,021	14,041	28.66 %	21,964	0.37 %	5,160	42.68 %	2	11,705	53 %	34	(236)
0.50 < 0.75	23,889	11,823	29.65 %	18,749	0.60 %	8,130	44.71 %	2	13,522	72 %	50	(86)
0.75 < 2.50	17,983	7,651	30.26 %	14,657	1.42 %	11,784	42.40 %	2	14,224	97 %	89	(233)
0.75 to < 1.75	11,837	5,034	26.71 %	9,219	1.15 %	6,978	41.14 %	2	8,095	88 %	44	(76)
1.75 to < 2.50	6,146	2,616	37.09 %	5,438	1.89 %	4,806	44.54 %	2	6,129	113 %	45	(157)
2.50 < 10.00	6,231	3,632	27.83 %	4,963	4.08 %	5,982	40.85 %	2	6,424	129 %	83	(217)
2.50 to < 5	4,808	2,773	27.33 %	3,972	3.40 %	4,798	40.49 %	2	4,797	121 %	54	(143)
5 to < 10	1,423	858	29.45 %	991	6.80 %	1,184	42.28 %	2	1,627	164 %	28	(74)
10.00 < 100.00	2,430	809	63.80 %	611	21.06 %	1,211	43.38 %	2	1,455	238 %	56	(114)
10 to < 20	394	205	49.18 %	302	13.71 %	596	42.47 %	2	652	216 %	18	(75)
20 to < 30	1,938	563	71.70 %	239	23.90 %	443	44.51 %	2	630	264 %	25	(11)
30 to < 100	98	41	28.52 %	71	42.89 %	172	43.49 %	2	173	245 %	13	(28)
100.00 (Default)	3,563	1,220	21.62 %	3,618	100.00 %	1,926	48.23 %	2	684	19 %	1,720	(1,523)
<b>Subtotal (exposure class)</b>	<b>125,483</b>	<b>109,745</b>	<b>35.74 %</b>	<b>140,832</b>	<b>3.15 %</b>	<b>38,442</b>	<b>43.14 %</b>	<b>2</b>	<b>68,918</b>	<b>49 %</b>	<b>2,070</b>	<b>(2,564)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - SMEs</b>												
0.00 < 0.15	39	33	15.20 %	51	0.09 %	637	39.89 %	2	7	14 %	—	—
0.00 to < 0.10	20	30	13.37 %	30	0.08 %	367	45.19 %	1	4	13 %	—	—
0.10 to < 0.15	19	3	34.84 %	20	0.11 %	270	31.93 %	3	3	16 %	—	—
0.15 < 0.25	303	170	25.36 %	208	0.21 %	1,557	36.06 %	2	47	23 %	—	(1)
0.25 < 0.50	3,873	1,348	31.63 %	3,489	0.35 %	9,031	45.48 %	2	1,461	42 %	5	(13)
0.50 < 0.75	5,518	1,280	37.68 %	5,244	0.62 %	11,704	45.56 %	2	2,806	54 %	14	(12)
0.75 < 2.50	12,778	3,335	31.76 %	9,834	1.50 %	34,202	41.91 %	2	6,369	65 %	61	(71)
0.75 to < 1.75	8,789	2,320	28.12 %	6,786	1.25 %	20,998	41.42 %	2	4,153	61 %	35	(22)
1.75 to < 2.50	3,989	1,016	40.06 %	3,048	2.06 %	13,204	43.00 %	2	2,217	73 %	27	(50)
2.50 < 10.00	9,221	2,424	25.16 %	6,883	4.66 %	25,740	41.01 %	2	6,056	88 %	130	(113)
2.50 to < 5	5,328	1,587	24.78 %	3,976	3.32 %	14,961	41.29 %	2	3,184	80 %	53	(52)
5 to < 10	3,894	837	25.90 %	2,907	6.50 %	10,779	40.62 %	2	2,872	99 %	77	(61)
10.00 < 100.00	861	138	27.22 %	708	19.08 %	3,492	39.99 %	3	976	138 %	52	(40)
10 to < 20	610	84	31.87 %	523	13.42 %	2,445	41.43 %	2	710	136 %	29	(24)
20 to < 30	86	14	32.56 %	78	25.62 %	622	35.93 %	3	112	143 %	7	(5)
30 to < 100	166	40	15.46 %	107	41.94 %	425	35.90 %	4	154	145 %	16	(12)
100.00 (Default)	3,807	154	20.86 %	3,525	100.00 %	6,449	42.36 %	3	750	21 %	1,461	(1,960)
<b>Subtotal (exposure class)</b>	<b>36,401</b>	<b>8,881</b>	<b>30.35 %</b>	<b>29,942</b>	<b>13.94 %</b>	<b>92,812</b>	<b>42.72 %</b>	<b>2</b>	<b>18,474</b>	<b>62 %</b>	<b>1,724</b>	<b>(2,210)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**Table 20.CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range**

EUR million

2022

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - Mortgages SMEs</b>												
0.00 < 0.15	3,483	35	97.17 %	3,517	0.09 %	55,956	26.62 %	—	165	5 %	1	(6)
0.00 to < 0.10	2,657	31	100.00 %	2,688	0.07 %	42,749	26.65 %	—	108	4 %	1	(4)
0.10 to < 0.15	826	3	71.91 %	829	0.13 %	13,207	26.52 %	—	57	7 %	—	(2)
0.15 < 0.25	2,314	10	91.78 %	2,323	0.20 %	27,474	30.13 %	—	237	10 %	1	(5)
0.25 < 0.50	2,990	26	69.76 %	3,007	0.36 %	35,046	30.16 %	—	497	17 %	3	(7)
0.50 < 0.75	1,195	13	59.40 %	1,202	0.58 %	15,023	30.33 %	—	261	22 %	2	(4)
0.75 < 2.50	3,263	49	31.97 %	3,264	1.25 %	35,590	30.30 %	—	1,232	38 %	12	(17)
0.75 to < 1.75	2,592	37	35.39 %	2,595	1.04 %	28,355	30.78 %	—	905	35 %	8	(12)
1.75 to < 2.50	672	12	21.62 %	669	2.08 %	7,235	28.44 %	—	328	49 %	4	(5)
2.50 < 10.00	1,188	19	43.98 %	1,170	4.51 %	16,324	30.49 %	—	923	79 %	16	(24)
2.50 to < 5	687	11	61.92 %	676	3.23 %	10,430	30.41 %	—	452	67 %	7	(10)
5 to < 10	502	7	16.88 %	494	6.27 %	5,894	30.60 %	—	471	95 %	9	(14)
10.00 < 100.00	659	2	30.58 %	592	18.98 %	7,270	30.83 %	—	838	142 %	35	(51)
10 to < 20	459	1	44.28 %	392	13.52 %	5,270	29.38 %	—	503	128 %	16	(29)
20 to < 30	144	1	20.70 %	144	22.66 %	1,297	36.68 %	—	251	174 %	12	(15)
30 to < 100	56	1	22.03 %	56	47.47 %	703	25.92 %	—	84	150 %	7	(7)
100.00 (Default)	1,239	7	8.28 %	1,239	100.00 %	15,505	45.31 %	—	566	46 %	518	(411)
<b>Subtotal (exposure class)</b>	<b>16,333</b>	<b>161</b>	<b>58.57 %</b>	<b>16,314</b>	<b>9.01 %</b>	<b>208,188</b>	<b>30.63 %</b>	<b>—</b>	<b>4,719</b>	<b>29 %</b>	<b>589</b>	<b>(524)</b>
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>

**Table 20.CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range**

EUR million													2022
PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions	
a	b	c	d	e	f	g	h	i	j	k	l	m	
<b>Retail - Mortgages no SMEs</b>													
0.00 < 0.15	25,223	473	99.54 %	25,694	0.08 %	417,361	25.18 %	—	1,377	5 %	5	(39.53)	
0.00 to < 0.10	20,132	337	100.00 %	20,470	0.07 %	337,070	25.47 %	—	985	5 %	4	(35.65)	
0.10 to < 0.15	5,090	136	98.41 %	5,224	0.13 %	80,291	24.04 %	—	391	7 %	2	(3.88)	
0.15 < 0.25	24,000	1,373	81.00 %	25,119	0.20 %	217,700	22.00 %	—	2,392	10 %	11	(14.63)	
0.25 < 0.50	26,140	2,787	72.07 %	28,167	0.36 %	257,198	19.21 %	—	3,594	13 %	20	(24.55)	
0.50 < 0.75	19,205	940	66.55 %	19,843	0.62 %	161,511	12.35 %	—	2,365	12 %	15	(16.59)	
0.75 < 2.50	122,187	3,819	50.68 %	124,383	1.41 %	767,458	7.78 %	—	16,282	13 %	129	(95.05)	
0.75 to < 1.75	80,777	3,132	50.92 %	82,490	1.14 %	520,768	8.37 %	—	10,130	12 %	74	(63.87)	
1.75 to < 2.50	41,410	687	49.57 %	41,893	1.95 %	246,690	6.62 %	—	6,152	15 %	55	(31.19)	
2.50 < 10.00	58,321	400	50.15 %	58,676	4.38 %	346,955	7.23 %	—	14,838	25 %	195	(120.41)	
2.50 to < 5	40,095	357	49.92 %	40,391	3.32 %	236,866	6.54 %	—	7,950	20 %	88	(64.07)	
5 to < 10	18,227	42	52.03 %	18,285	6.74 %	110,089	8.74 %	—	6,888	38 %	107	(56.34)	
10.00 < 100.00	10,224	199	33.43 %	10,311	24.92 %	92,482	9.85 %	—	5,973	58 %	225	(202.93)	
10 to < 20	6,364	30	44.84 %	6,391	15.14 %	48,847	10.39 %	—	3,899	61 %	98	(92.18)	
20 to < 30	1,149	7	31.25 %	1,153	23.31 %	11,504	15.08 %	—	1,085	94 %	40	(57.18)	
30 to < 100	2,711	163	31.45 %	2,767	48.18 %	32,131	6.41 %	—	989	36 %	86	(53.57)	
100.00 (Default)	4,586	31	0.01 %	4,586	100.00 %	47,775	23.61 %	—	1,239	27 %	984	(631.03)	
<b>Subtotal (exposure class)</b>	<b>289,886</b>	<b>10,022</b>	<b>64.05 %</b>	<b>296,778</b>	<b>3.97 %</b>	<b>2,308,440</b>	<b>12.09 %</b>	<b>—</b>	<b>48,059</b>	<b>16 %</b>	<b>1,583</b>	<b>(1,145)</b>	
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>	

**Table 20.CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range**

EUR million													2022
PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions	
a	b	c	d	e	f	g	h	i	j	k	l	m	
<b>Qualifying Revolving</b>													
0.00 < 0.15	524	7,958	32.06 %	3,076	0.08 %	4,379,279	65.41 %	—	108	4 %	2	(3.41)	
0.00 to < 0.10	453	5,128	34.89 %	2,243	0.07 %	3,101,979	70.41 %	—	75	3 %	1	(2.24)	
0.10 to < 0.15	71	2,831	26.93 %	833	0.12 %	1,277,300	51.93 %	—	33	4 %	1	(1.17)	
0.15 < 0.25	221	1,259	37.25 %	694	0.21 %	828,622	67.04 %	—	54	8 %	1	(0.91)	
0.25 < 0.50	115	4,689	83.54 %	4,033	0.31 %	6,448,732	66.63 %	—	494	12 %	8	(3.05)	
0.50 < 0.75	130	700	47.55 %	465	0.63 %	703,591	62.68 %	—	85	18 %	2	(2.46)	
0.75 < 2.50	726	3,037	67.15 %	2,776	1.31 %	3,740,878	61.25 %	—	910	33 %	22	(15.23)	
0.75 to < 1.75	553	2,648	66.56 %	2,324	1.16 %	3,062,153	61.22 %	—	700	30 %	17	(9.48)	
1.75 to < 2.50	173	389	71.20 %	452	2.07 %	678,725	61.35 %	—	210	46 %	6	(5.75)	
2.50 < 10.00	799	1,585	65.41 %	1,853	4.69 %	2,775,304	64.44 %	—	1,564	84 %	56	(47.26)	
2.50 to < 5	504	1,080	62.23 %	1,187	3.51 %	1,747,469	64.61 %	—	831	70 %	27	(19.46)	
5 to < 10	295	506	72.20 %	666	6.81 %	1,027,835	64.13 %	—	733	110 %	29	(27.80)	
10.00 < 100.00	452	335	78.16 %	749	23.70 %	1,004,837	61.88 %	—	1,273	170 %	107	(71.23)	
10 to < 20	252	215	77.80 %	428	13.05 %	576,712	63.61 %	—	668	156 %	35	(27.58)	
20 to < 30	98	73	90.84 %	176	24.03 %	266,340	60.57 %	—	354	202 %	25	(18.51)	
30 to < 100	102	47	60.02 %	145	54.89 %	161,785	58.37 %	—	251	174 %	46	(25.14)	
100.00 (Default)	156	63	37.60 %	180	100.00 %	163,531	71.71 %	—	59	33 %	124	(106.18)	
<b>Subtotal (exposure class)</b>	<b>3,122</b>	<b>19,628</b>	<b>54.17 %</b>	<b>13,825</b>	<b>3.62 %</b>	<b>20,044,774</b>	<b>64.68 %</b>	<b>—</b>	<b>4,547</b>	<b>33 %</b>	<b>322</b>	<b>(250)</b>	
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>	

**Table 20.CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range**

EUR million

2022

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - Other non SMEs</b>												
0.00 < 0.15	927	456	69.01 %	1,241	0.07 %	2,054,994	50.96 %	—	122	10 %	—	(5.94)
0.00 to < 0.10	874	375	67.70 %	1,128	0.06 %	422,788	48.97 %	—	99	9 %	—	(2.71)
0.10 to < 0.15	53	80	75.10 %	113	0.12 %	1,632,206	70.80 %	—	23	21 %	—	(3.23)
0.15 < 0.25	3,380	69	36.35 %	3,405	0.20 %	411,760	37.91 %	—	579	17 %	3	(6.72)
0.25 < 0.50	6,043	540	85.76 %	6,484	0.35 %	829,090	47.32 %	—	1,972	30 %	11	(21.21)
0.50 < 0.75	6,253	112	57.06 %	6,312	0.61 %	675,825	39.03 %	—	2,133	34 %	15	(22.32)
0.75 < 2.50	13,961	232	56.79 %	14,038	1.32 %	1,470,909	48.08 %	—	7,992	57 %	89	(82.79)
0.75 to < 1.75	11,437	175	54.31 %	11,495	1.15 %	1,193,122	47.90 %	—	6,238	54 %	63	(58.54)
1.75 to < 2.50	2,524	56	64.50 %	2,542	2.09 %	277,787	48.89 %	—	1,754	69 %	26	(24.25)
2.50 < 10.00	6,050	137	25.81 %	6,060	4.49 %	691,669	54.37 %	—	5,139	85 %	146	(114.81)
2.50 to < 5	4,307	69	17.42 %	4,298	3.52 %	450,258	54.15 %	—	3,545	82 %	81	(65.27)
5 to < 10	1,743	68	34.36 %	1,762	6.85 %	241,411	54.92 %	—	1,594	90 %	65	(49.54)
10.00 < 100.00	2,031	358	66.51 %	2,262	25.92 %	318,092	46.25 %	—	2,358	104 %	268	(146.02)
10 to < 20	949	135	13.89 %	965	14.42 %	114,995	50.04 %	—	998	103 %	69	(44.80)
20 to < 30	670	220	99.57 %	888	23.02 %	88,553	42.10 %	—	937	106 %	86	(34.28)
30 to < 100	412	4	22.67 %	410	59.24 %	114,544	46.32 %	—	422	103 %	113	(66.94)
100.00 (Default)	976	4	28.64 %	974	100.00 %	191,501	67.76 %	—	521	53 %	619	(580.43)
<b>Subtotal (exposure class)</b>	<b>39,621</b>	<b>1,908</b>	<b>66.73 %</b>	<b>40,777</b>	<b>5.12 %</b>	<b>6,643,840</b>	<b>47.10 %</b>	<b>—</b>	<b>20,816</b>	<b>51 %</b>	<b>1,151</b>	<b>(980)</b>
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>

**Table 20.CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range**

EUR million

2022

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - SMEs</b>												
0.00 < 0.15	283	292	46.12 %	417	0.09 %	307,189	44.91 %	—	43	10 %	—	(1.93)
0.00 to < 0.10	216	178	50.50 %	306	0.07 %	105,229	42.88 %	—	23	8 %	—	(0.78)
0.10 to < 0.15	67	114	39.26 %	112	0.13 %	201,960	50.47 %	—	20	18 %	—	(1.15)
0.15 < 0.25	1,858	343	61.19 %	1,418	0.20 %	138,803	44.16 %	—	266	19 %	1	(6.22)
0.25 < 0.50	1,836	904	59.76 %	1,488	0.37 %	186,494	46.64 %	—	404	27 %	3	(5.97)
0.50 < 0.75	4,355	1,359	34.10 %	2,796	0.62 %	238,071	50.89 %	—	1,148	41 %	8	(17.51)
0.75 < 2.50	8,684	1,731	49.15 %	5,926	1.48 %	522,698	49.73 %	—	3,126	53 %	42	(51.79)
0.75 to < 1.75	5,941	1,324	49.17 %	4,055	1.18 %	357,665	50.16 %	—	2,056	51 %	23	(31.77)
1.75 to < 2.50	2,744	406	49.06 %	1,871	2.13 %	165,033	48.78 %	—	1,070	57 %	19	(20.02)
2.50 < 10.00	5,476	655	56.44 %	3,783	4.60 %	329,260	49.44 %	—	2,556	68 %	85	(115.14)
2.50 to < 5	3,754	391	55.63 %	2,584	3.63 %	217,722	48.82 %	—	1,683	65 %	45	(54.34)
5 to < 10	1,723	264	57.64 %	1,198	6.69 %	111,538	50.77 %	—	874	73 %	40	(60.80)
10.00 < 100.00	1,196	110	39.51 %	785	28.79 %	112,812	47.77 %	—	754	96 %	106	(103.06)
10 to < 20	548	37	40.81 %	340	14.13 %	40,827	48.52 %	—	291	86 %	23	(35.78)
20 to < 30	260	30	43.07 %	187	24.49 %	24,891	47.04 %	—	193	103 %	21	(21.99)
30 to < 100	387	43	35.96 %	258	51.19 %	47,094	47.31 %	—	270	104 %	62	(45.29)
100.00 (Default)	1,592	92	23.00 %	914	100.00 %	101,849	70.41 %	—	278	30 %	627	(623.28)
<b>Subtotal (exposure class)</b>	<b>25,282</b>	<b>5,486</b>	<b>48.00 %</b>	<b>17,529</b>	<b>8.15 %</b>	<b>1,937,176</b>	<b>50.01 %</b>	<b>—</b>	<b>8,574</b>	<b>49 %</b>	<b>874</b>	<b>(925)</b>
<b>Total (all exposures classes AIRB)</b>	<b>579,863</b>	<b>191,307</b>	<b>36.21 %</b>	<b>603,311</b>	<b>4.13 %</b>	<b>31,273,223</b>	<b>28.33 %</b>	<b>1</b>	<b>188,442</b>	<b>31 %</b>	<b>7,838</b>	<b>(7,629)</b>

**CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - Mortgages SMEs</b>												
0.00 < 0.15	3,747	27	98.59 %	3,772	0.07 %	61,905	13.87 %	—	79	2 %	—	(5.05)
0.00 to < 0.10	3,001	16	100.00 %	3,017	0.05 %	52,433	11.00 %	—	39	1 %	—	(3.98)
0.10 to < 0.15	746	11	96.46 %	756	0.11 %	9,472	25.32 %	—	40	5 %	—	(1.00)
0.15 < 0.25	1,469	7	94.45 %	1,475	0.19 %	21,320	15.69 %	—	73	5 %	—	(2.00)
0.25 < 0.50	1,895	14	77.95 %	1,912	0.39 %	24,468	21.26 %	—	214	11 %	2	(4.00)
0.50 < 0.75	690	17	40.36 %	723	0.64 %	10,432	15.99 %	—	92	13 %	1	(2.00)
0.75 < 2.50	2,528	33	52.15 %	2,600	1.34 %	29,449	22.26 %	—	712	27 %	7	(10.00)
0.75 to < 1.75	2,003	29	49.95 %	2,057	1.13 %	22,623	22.85 %	—	529	26 %	5	(4.00)
1.75 to < 2.50	525	5	66.18 %	543	2.15 %	6,826	20.02 %	—	183	34 %	2	(5.00)
2.50 < 10.00	859	18	63.08 %	864	4.69 %	9,742	28.24 %	—	607	70 %	11	(11.00)
2.50 to < 5	575	14	68.54 %	578	3.49 %	6,479	28.64 %	—	364	63 %	5	(5.00)
5 to < 10	284	4	42.85 %	285	7.12 %	3,263	27.42 %	—	243	85 %	5	(6.00)
10.00 < 100.00	626	3	49.15 %	629	24.50 %	8,460	20.08 %	—	550	87 %	30	(21.89)
10 to < 20	326	1	56.02 %	329	14.56 %	4,416	19.44 %	—	267	81 %	9	(7.35)
20 to < 30	71	—	20.58 %	71	24.56 %	736	23.00 %	—	77	108 %	4	(2.70)
30 to < 100	229	2	50.16 %	229	38.75 %	3,308	20.09 %	—	206	90 %	18	(11.84)
100.00 (Default)	2,310	14	8.35 %	2,310	100.00 %	29,444	32.56 %	—	577	25 %	695	(834.29)
<b>Subtotal (exposure class)</b>	<b>14,123</b>	<b>133</b>	<b>61.84 %</b>	<b>14,285</b>	<b>17.90 %</b>	<b>195,220</b>	<b>20.85 %</b>	<b>—</b>	<b>2,903</b>	<b>20 %</b>	<b>746</b>	<b>(889)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - Mortgages no SMEs</b>												
0.00 < 0.15	32,390	438	100.00 %	32,828	0.07 %	508,589	14.25 %	—	935	3 %	3	(15.19)
0.00 to < 0.10	27,817	258	100.00 %	28,075	0.06 %	443,714	13.05 %	—	629	2 %	2	(10.13)
0.10 to < 0.15	4,573	180	100.00 %	4,753	0.13 %	64,875	21.29 %	—	306	6 %	1	(5.00)
0.15 < 0.25	24,758	4,446	77.96 %	28,233	0.21 %	230,203	15.91 %	—	2,019	7 %	9	(15.00)
0.25 < 0.50	21,148	6,340	75.72 %	25,979	0.34 %	223,872	10.09 %	—	1,682	6 %	9	(18.00)
0.50 < 0.75	19,141	2,509	73.18 %	20,991	0.62 %	167,799	10.52 %	—	2,036	10 %	12	(10.00)
0.75 < 2.50	119,967	5,207	55.86 %	123,128	1.48 %	754,193	7.76 %	—	15,964	13 %	127	(74.00)
0.75 to < 1.75	79,567	4,193	55.79 %	82,025	1.20 %	513,674	8.17 %	—	9,895	12 %	73	(38.00)
1.75 to < 2.50	40,400	1,013	56.13 %	41,103	2.04 %	240,519	6.96 %	—	6,069	15 %	54	(35.00)
2.50 < 10.00	58,366	510	54.41 %	58,796	4.48 %	346,625	8.31 %	—	16,092	27 %	210	(105.00)
2.50 to < 5	40,188	459	53.44 %	40,549	3.44 %	233,647	7.48 %	—	8,644	21 %	96	(51.00)
5 to < 10	18,179	50	63.29 %	18,247	6.80 %	112,978	10.15 %	—	7,448	41 %	114	(53.00)
10.00 < 100.00	10,494	202	39.48 %	10,597	25.52 %	95,123	9.64 %	—	5,609	53 %	229	(130.50)
10 to < 20	6,189	33	46.61 %	6,220	15.01 %	44,384	9.95 %	—	3,377	54 %	83	(43.14)
20 to < 30	1,370	7	32.74 %	1,375	24.48 %	15,035	10.78 %	—	909	66 %	34	(23.10)
30 to < 100	2,934	163	38.34 %	3,002	47.77 %	35,704	8.47 %	—	1,324	44 %	112	(64.26)
100.00 (Default)	6,041	30	0.05 %	6,041	100.00 %	64,177	20.29 %	—	1,282	21 %	1,086	(1,023.27)
<b>Subtotal (exposure class)</b>	<b>292,304</b>	<b>19,682</b>	<b>70.15 %</b>	<b>306,592</b>	<b>4.40 %</b>	<b>2,390,581</b>	<b>10.01 %</b>	<b>—</b>	<b>45,619</b>	<b>15 %</b>	<b>1,685</b>	<b>(1,390)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Qualifying Revolving</b>												
0.00 < 0.15	458	5,428	54.84 %	3,435	0.08 %	3,039,850	58.48 %	—	106	3 %	2	(2.97)
0.00 to < 0.10	24	2,959	73.95 %	2,213	0.05 %	1,649,013	58.69 %	—	48	2 %	1	(1.89)
0.10 to < 0.15	434	2,469	31.93 %	1,222	0.13 %	1,390,837	58.11 %	—	57	5 %	1	(1.00)
0.15 < 0.25	149	1,870	40.50 %	906	0.19 %	1,459,244	59.58 %	—	56	6 %	1	(1.00)
0.25 < 0.50	82	6,649	69.60 %	4,710	0.31 %	7,137,486	62.03 %	—	527	11 %	9	(4.00)
0.50 < 0.75	134	835	48.58 %	541	0.57 %	559,424	46.80 %	—	69	13 %	1	(1.00)
0.75 < 2.50	741	4,039	60.56 %	3,193	1.38 %	4,476,332	55.73 %	—	977	31 %	24	(11.00)
0.75 to < 1.75	398	3,222	62.26 %	2,406	1.15 %	3,241,438	56.11 %	—	657	27 %	15	(6.00)
1.75 to < 2.50	343	817	53.88 %	787	2.09 %	1,234,894	54.56 %	—	319	41 %	9	(5.00)
2.50 < 10.00	920	1,511	70.35 %	1,992	5.03 %	2,767,391	60.24 %	—	1,646	83 %	60	(27.00)
2.50 to < 5	477	929	70.51 %	1,135	3.56 %	1,593,430	60.55 %	—	765	67 %	24	(10.00)
5 to < 10	443	582	70.09 %	857	6.98 %	1,173,961	59.82 %	—	881	103 %	36	(17.00)
10.00 < 100.00	466	381	72.31 %	770	24.54 %	1,001,322	59.19 %	—	1,251	163 %	109	(86.16)
10 to < 20	241	220	79.08 %	422	12.99 %	564,353	60.17 %	—	628	149 %	33	(49.74)
20 to < 30	104	90	78.05 %	184	23.51 %	261,001	59.94 %	—	359	196 %	26	(13.12)
30 to < 100	122	71	43.96 %	164	55.40 %	175,968	55.85 %	—	263	161 %	51	(23.30)
100.00 (Default)	187	62	36.21 %	210	100.00 %	168,669	71.29 %	—	27	13 %	147	(137.67)
<b>Subtotal (exposure class)</b>	<b>3,136</b>	<b>20,775</b>	<b>60.53 %</b>	<b>15,756</b>	<b>3.59 %</b>	<b>20,609,718</b>	<b>59.07 %</b>	<b>—</b>	<b>4,659</b>	<b>30 %</b>	<b>354</b>	<b>(271)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - Other non SMEs</b>												
0.00 < 0.15	1,110	44	55.59 %	1,135	0.09 %	138,940	39.02 %	—	109	10 %	—	(1.65)
0.00 to < 0.10	1,068	43	56.24 %	1,092	0.08 %	135,120	38.94 %	—	103	9 %	—	(1.02)
0.10 to < 0.15	42	2	38.54 %	43	0.14 %	3,820	41.14 %	—	6	14 %	—	(1.00)
0.15 < 0.25	3,331	479	53.01 %	3,585	0.20 %	600,429	37.82 %	—	604	17 %	3	(5.00)
0.25 < 0.50	5,614	397	91.55 %	5,896	0.36 %	690,168	47.82 %	—	1,862	32 %	11	(19.00)
0.50 < 0.75	3,585	70	83.75 %	3,643	0.58 %	434,390	38.55 %	—	1,191	33 %	8	(12.00)
0.75 < 2.50	15,363	551	75.27 %	15,661	1.25 %	1,556,445	46.08 %	—	8,222	53 %	88	(103.00)
0.75 to < 1.75	12,381	319	88.84 %	12,627	1.04 %	1,224,343	46.92 %	—	6,397	51 %	61	(68.00)
1.75 to < 2.50	2,982	232	56.67 %	3,034	2.11 %	332,102	42.58 %	—	1,825	60 %	27	(35.00)
2.50 < 10.00	7,006	270	47.96 %	7,050	4.23 %	751,180	49.55 %	—	5,394	77 %	143	(106.00)
2.50 to < 5	5,250	183	42.69 %	5,262	3.31 %	570,244	51.19 %	—	4,068	77 %	89	(63.00)
5 to < 10	1,756	87	59.05 %	1,788	6.97 %	180,936	44.72 %	—	1,326	74 %	54	(43.00)
10.00 < 100.00	1,696	32	73.19 %	1,690	27.17 %	281,356	46.43 %	—	1,798	106 %	217	(165.20)
10 to < 20	912	17	82.56 %	908	14.76 %	116,820	48.58 %	—	919	101 %	65	(28.05)
20 to < 30	319	7	59.72 %	318	26.47 %	73,516	37.19 %	—	315	99 %	32	(63.78)
30 to < 100	465	7	64.73 %	463	52.00 %	91,020	48.54 %	—	563	122 %	121	(73.37)
100.00 (Default)	1,129	7	18.86 %	1,120	100.00 %	226,783	67.69 %	—	336	30 %	732	(731.65)
<b>Subtotal (exposure class)</b>	<b>38,834</b>	<b>1,849</b>	<b>68.62 %</b>	<b>39,778</b>	<b>5.34 %</b>	<b>4,679,691</b>	<b>45.94 %</b>	<b>—</b>	<b>19,514</b>	<b>49 %</b>	<b>1,201</b>	<b>(1,143)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**CR6 - AIRB approach Retail - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Retail - SMEs</b>												
0.00 < 0.15	207	250	49.92 %	327	0.08 %	89,327	46.16 %	z	25	8 %	—	(0.72)
0.00 to < 0.10	190	147	55.73 %	269	0.07 %	70,632	45.40 %	—	18	7 %	—	(0.39)
0.10 to < 0.15	17	103	41.61 %	58	0.13 %	18,695	49.67 %	—	7	12 %	—	—
0.15 < 0.25	2,333	349	58.56 %	1,681	0.20 %	175,673	46.30 %	—	259	15 %	2	(3.00)
0.25 < 0.50	1,413	904	61.45 %	1,295	0.38 %	145,514	45.08 %	—	301	23 %	2	(5.00)
0.50 < 0.75	4,708	941	48.33 %	2,679	0.63 %	201,706	50.93 %	—	980	37 %	9	(8.00)
0.75 < 2.50	7,895	1,783	44.13 %	5,529	1.43 %	504,237	48.08 %	—	2,802	51 %	38	(42.00)
0.75 to < 1.75	5,455	1,374	44.85 %	3,974	1.20 %	322,978	48.55 %	—	2,020	51 %	23	(19.00)
1.75 to < 2.50	2,440	409	41.70 %	1,555	2.01 %	181,259	46.90 %	—	782	50 %	15	(23.00)
2.50 < 10.00	5,258	708	50.79 %	3,514	4.20 %	302,000	48.03 %	—	2,007	57 %	71	(50.00)
2.50 to < 5	3,750	518	53.09 %	2,604	3.37 %	227,562	46.85 %	—	1,414	54 %	41	(30.00)
5 to < 10	1,508	190	44.51 %	910	6.56 %	74,438	51.39 %	—	593	65 %	30	(21.00)
10.00 < 100.00	1,120	128	37.04 %	746	25.39 %	115,402	46.50 %	—	623	84 %	88	(57.38)
10 to < 20	610	72	37.62 %	382	13.77 %	53,006	47.13 %	—	284	74 %	25	(12.97)
20 to < 30	210	28	42.72 %	143	25.60 %	30,636	43.56 %	—	126	88 %	16	(10.47)
30 to < 100	300	28	29.86 %	221	45.34 %	31,760	47.30 %	—	214	97 %	48	(33.93)
100.00 (Default)	1,482	99	21.78 %	1,085	100.00 %	112,124	74.25 %	—	215	20 %	794	(813.45)
<b>Subtotal (exposure class)</b>	<b>24,416</b>	<b>5,162</b>	<b>49.49 %</b>	<b>16,857</b>	<b>9.06 %</b>	<b>1,645,983</b>	<b>49.69 %</b>	<b>—</b>	<b>7,213</b>	<b>43 %</b>	<b>1,003</b>	<b>(980)</b>
<b>Total (all exposures classes AIRB)</b>	<b>562,363</b>	<b>180,483</b>	<b>42.34 %</b>	<b>595,486</b>	<b>4.86 %</b>	<b>29,655,171</b>	<b>26.18 %</b>	<b>1</b>	<b>173,956</b>	<b>29 %</b>	<b>8,804</b>	<b>(9,483)</b>

**Tabla 21.CR6 - Método FIRB - Exposiciones al riesgo de crédito por categoría de exposición y banda de PD**

EUR million

2022

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Institutions</b>												
0.00 < 0.15	1,050	2,043	13.45 %	1,590	0.05 %	202	44.83 %	1	228	14 %	—	(0.68)
0.00 to < 0.10	1,048	1,690	13.62 %	1,544	0.05 %	169	44.83 %	—	204	13 %	—	(0.57)
0.10 to < 0.15	2	353	12.67 %	46	0.13 %	33	45.00 %	2	24	52 %	—	(0.11)
0.15 < 0.25	105	256	3.72 %	124	0.18 %	21	44.88 %	1	48	38 %	—	(0.17)
0.25 < 0.50	92	108	2.82 %	121	0.31 %	42	44.83 %	2	91	76 %	—	(0.13)
0.50 < 0.75	53	117	3.19 %	53	0.66 %	28	6.31 %	1	9	16 %	—	(0.21)
0.75 < 2.50	—	18	19.63 %	4	1.18 %	5	45.00 %	2	6	171 %	—	(0.01)
0.75 to < 1.75	—	18	19.63 %	4	1.18 %	5	45.00 %	2	6	171 %	—	(0.01)
1.75 to < 2.50	—	—	— %	—	— %	—	— %	—	—	—	—	—
2.50 < 10.00	—	—	— %	—	9.55 %	1	35.00 %	3	—	220 %	—	—
2.50 to < 5	—	—	— %	—	— %	—	— %	—	—	—	—	—
5 to < 10	—	—	— %	—	9.55 %	1	35.00 %	3	—	220 %	—	—
10.00 < 100.00	—	5	48.78 %	3	45.00 %	6	45.00 %	1	10	333 %	1	(0.02)
10 to < 20	—	—	— %	—	— %	—	— %	—	—	—	—	—
20 to < 30	—	—	— %	—	— %	—	— %	—	—	—	—	—
30 to < 100	—	5	48.78 %	3	45.00 %	6	45.00 %	1	10	333 %	1	(0.02)
100.00 (Default)	—	—	— %	—	— %	—	— %	—	—	—	—	—
<b>Subtotal (exposure class)</b>	<b>1,300</b>	<b>2,548</b>	<b>11.67 %</b>	<b>1,894</b>	<b>0.17 %</b>	<b>305</b>	<b>43.77 %</b>	<b>1</b>	<b>392</b>	<b>21 %</b>	<b>1</b>	<b>(1)</b>
<b>Total (all exposures classes FIRB)</b>	<b>13,064</b>	<b>6,677</b>	<b>23.90 %</b>	<b>14,432</b>	<b>2.83 %</b>	<b>7,561</b>	<b>43.90 %</b>	<b>2</b>	<b>10,181</b>	<b>71 %</b>	<b>181</b>	<b>(163)</b>

**Table 21.CR6 - FIRB approach - Credit risk exposures by exposure class and PD range**

EUR million												2022
PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - Other</b>												
0.00 < 0.15	3,093	1,901	38.73 %	4,068	0.10 %	56	45.00 %	2	1,303	32 %	2	(1.91)
0.00 to < 0.10	1,754	910	35.46 %	2,217	0.07 %	23	45.00 %	2	579	26 %	1	(0.94)
0.10 to < 0.15	1,339	990	41.73 %	1,852	0.14 %	33	45.00 %	2	724	39 %	1	(0.97)
0.15 < 0.25	246	230	26.57 %	253	0.22 %	35	45.00 %	2	124	49 %	—	(0.28)
0.25 < 0.50	2,669	203	28.78 %	2,352	0.44 %	988	44.41 %	3	1,628	69 %	5	(14.76)
0.50 < 0.75	408	239	25.55 %	406	0.59 %	448	44.72 %	3	340	84 %	1	(2.27)
0.75 < 2.50	2,280	835	28.12 %	2,286	1.24 %	1,902	41.95 %	3	2,243	98 %	12	(15.19)
0.75 to < 1.75	1,992	338	67.87 %	1,993	1.11 %	1,548	41.73 %	3	1,902	95 %	9	(11.73)
1.75 to < 2.50	288	497	1.13 %	293	2.13 %	354	43.47 %	3	341	116 %	3	(3.46)
2.50 < 10.00	1,416	316	24.68 %	1,469	5.10 %	1,506	43.17 %	3	2,307	157 %	32	(24.90)
2.50 to < 5	617	192	29.55 %	673	3.72 %	517	41.39 %	2	920	137 %	10	(17.97)
5 to < 10	799	124	17.16 %	796	6.27 %	989	44.67 %	3	1,387	174 %	22	(6.93)
10.00 < 100.00	319	142	6.21 %	320	18.80 %	610	44.67 %	3	777	243 %	27	(9.06)
10 to < 20	263	95	5.34 %	261	16.32 %	134	44.64 %	3	619	237 %	19	(2.78)
20 to < 30	21	2	100.00 %	23	22.09 %	394	45.00 %	3	63	281 %	2	(0.16)
30 to < 100	35	45	3.26 %	36	34.63 %	82	44.69 %	3	94	260 %	6	(6.12)
100.00 (Default)	87	6	49.11 %	89	100.00 %	153	45.00 %	3	—	— %	40	(29.86)
<b>Subtotal (exposure class)</b>	<b>10,517</b>	<b>3,871</b>	<b>32.06 %</b>	<b>11,243</b>	<b>2.40 %</b>	<b>5,698</b>	<b>44.00 %</b>	<b>3</b>	<b>8,722</b>	<b>78 %</b>	<b>119</b>	<b>(98)</b>
<b>Total (all exposures classes FIRB)</b>	<b>13,064</b>	<b>6,677</b>	<b>23.90 %</b>	<b>14,432</b>	<b>2.83 %</b>	<b>7,561</b>	<b>43.90 %</b>	<b>2</b>	<b>10,181</b>	<b>71 %</b>	<b>181</b>	<b>(163)</b>

**Table 21.CR6 - FIRB approach - Credit risk exposures by exposure class and PD range**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2022
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - SMEs</b>												
0.00 < 0.15	—	—	— %	—	— %	—	— %	—	—	—	—	—
0.00 to < 0.10	—	—	— %	—	— %	—	— %	—	—	—	—	—
0.10 to < 0.15	—	—	— %	—	— %	—	— %	—	—	—	—	—
0.15 < 0.25	—	—	— %	—	— %	—	— %	—	—	—	—	—
0.25 < 0.50	213	2	100.00 %	214	0.43 %	131	45.00 %	3	107	50 %	—	(1.06)
0.50 < 0.75	41	12	99.36 %	50	0.55 %	82	45.00 %	3	27	55 %	—	(0.25)
0.75 < 2.50	366	67	30.70 %	383	1.79 %	468	42.28 %	3	288	75 %	3	(6.30)
0.75 to < 1.75	231	15	98.89 %	242	1.57 %	406	45.00 %	3	189	78 %	2	(1.20)
1.75 to < 2.50	135	51	10.27 %	141	2.16 %	62	37.60 %	3	99	71 %	1	(5.10)
2.50 < 10.00	462	136	16.43 %	481	4.98 %	589	42.49 %	3	498	103 %	10	(22.45)
2.50 to < 5	297	113	8.89 %	307	4.10 %	180	41.67 %	3	295	96 %	5	(16.16)
5 to < 10	164	23	53.66 %	174	6.54 %	409	43.94 %	3	203	116 %	5	(6.29)
10.00 < 100.00	81	37	2.36 %	82	23.35 %	204	44.53 %	3	147	180 %	8	(6.25)
10 to < 20	50	26	1.03 %	51	18.10 %	31	44.29 %	3	90	177 %	4	(4.53)
20 to < 30	12	—	100.00 %	12	22.07 %	111	45.00 %	3	21	177 %	1	(0.05)
30 to < 100	18	11	3.45 %	19	38.32 %	62	44.88 %	3	35	188 %	3	(1.68)
100.00 (Default)	85	5	9.60 %	85	100.00 %	84	45.00 %	3	0	— %	38	(27.10)
<b>Subtotal (exposure class)</b>	<b>1,247</b>	<b>259</b>	<b>22.27 %</b>	<b>1,295</b>	<b>10.52 %</b>	<b>1,558</b>	<b>43.23 %</b>	<b>3</b>	<b>1,066</b>	<b>82 %</b>	<b>60</b>	<b>(63)</b>
<b>Total (all exposures classes FIRB)</b>	<b>13,064</b>	<b>6,677</b>	<b>23.90 %</b>	<b>14,432</b>	<b>2.83 %</b>	<b>7,561</b>	<b>43.90 %</b>	<b>2</b>	<b>10,181</b>	<b>71 %</b>	<b>181</b>	<b>(163)</b>

**CR6 - FIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Institutions</b>												
0.00 < 0.15	813	1,415	11.97 %	983	0.04 %	194	44.98 %	—	89	9 %	—	—
0.00 to < 0.10	802	1,190	11.31 %	937	0.04 %	161	44.98 %	—	72	8 %	—	—
0.10 to < 0.15	12	225	15.45 %	46	0.13 %	33	45.00 %	1	17	36 %	—	—
0.15 < 0.25	193	202	4.59 %	202	0.16 %	32	44.68 %	2	112	56 %	—	—
0.25 < 0.50	175	171	12.50 %	86	0.32 %	43	44.90 %	2	65	75 %	—	—
0.50 < 0.75	15	41	15.02 %	21	0.66 %	25	45.00 %	3	23	108 %	—	—
0.75 < 2.50	1	85	0.42 %	1	1.31 %	8	45.00 %	2	1	129 %	—	—
0.75 to < 1.75	1	85	0.42 %	1	1.31 %	8	45.00 %	2	1	129 %	—	—
1.75 to < 2.50	—	—	— %	—	— %	—	— %	—	—	— %	—	—
2.50 < 10.00	—	—	— %	—	— %	—	— %	—	—	— %	—	—
2.50 to < 5	—	—	— %	—	— %	—	— %	—	—	— %	—	—
5 to < 10	—	—	— %	—	— %	—	— %	—	—	— %	—	—
10.00 < 100.00	—	—	— %	—	— %	—	— %	—	—	— %	—	—
10 to < 20	—	—	— %	—	— %	—	— %	—	—	— %	—	—
20 to < 30	—	—	— %	—	— %	—	— %	—	—	— %	—	—
30 to < 100	—	—	— %	—	— %	—	— %	—	—	— %	—	—
100.00 (Default)	—	—	— %	—	— %	—	— %	—	—	— %	—	—
<b>Subtotal (exposure class)</b>	<b>1,197</b>	<b>1,914</b>	<b>10.79 %</b>	<b>1,294</b>	<b>0.09 %</b>	<b>302</b>	<b>44.93 %</b>	<b>1</b>	<b>291</b>	<b>22 %</b>	<b>1</b>	<b>(1)</b>
<b>Total (all exposures classes FIRB)</b>	<b>11,358</b>	<b>5,467</b>	<b>23.56 %</b>	<b>12,355</b>	<b>5.59 %</b>	<b>7,455</b>	<b>44.38 %</b>	<b>2</b>	<b>8,426</b>	<b>68 %</b>	<b>307</b>	<b>(244)</b>

**CR6 - FIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - Other</b>												
0.00 < 0.15	2,216	1,192	43.22 %	3,181	0.11 %	59	45.00 %	2	1,069	34 %	2	(1.50)
0.00 to < 0.10	1,072	518	52.34 %	1,569	0.07 %	21	45.00 %	2	432	28 %	1	(0.70)
0.10 to < 0.15	1,144	675	36.22 %	1,612	0.15 %	38	45.00 %	2	637	40 %	1	(1.00)
0.15 < 0.25	442	465	59.57 %	568	0.24 %	41	45.00 %	2	308	54 %	1	—
0.25 < 0.50	1,230	170	43.52 %	1,224	0.31 %	1,280	45.00 %	3	745	61 %	2	(6.00)
0.50 < 0.75	1,188	381	6.51 %	992	0.57 %	275	44.83 %	3	764	77 %	3	(4.00)
0.75 < 2.50	2,133	750	9.31 %	2,035	1.28 %	1,573	44.43 %	3	2,148	106 %	12	(10.00)
0.75 to < 1.75	1,697	125	23.48 %	1,559	1.07 %	1,351	45.00 %	3	1,600	103 %	8	(9.00)
1.75 to < 2.50	436	625	6.46 %	476	1.98 %	222	42.54 %	2	548	115 %	4	(2.00)
2.50 < 10.00	1,162	219	17.04 %	1,189	3.95 %	1,540	42.39 %	3	1,677	141 %	20	(12.00)
2.50 to < 5	1,041	185	19.09 %	1,069	3.56 %	1,330	42.25 %	3	1,463	137 %	16	(11.00)
5 to < 10	121	34	6.00 %	120	7.44 %	210	43.71 %	3	214	178 %	4	(1.00)
10.00 < 100.00	162	48	9.26 %	167	16.53 %	477	44.55 %	3	398	239 %	12	(1.35)
10 to < 20	153	27	12.17 %	156	15.55 %	408	44.61 %	3	372	238 %	11	(1.20)
20 to < 30	6	1	75.00 %	6	23.35 %	28	45.00 %	3	16	259 %	1	(0.03)
30 to < 100	3	20	3.11 %	4	43.85 %	41	41.67 %	3	9	232 %	1	(0.11)
100.00 (Default)	370	56	33.97 %	389	100.00 %	149	44.97 %	3	—	— %	175	(93.81)
<b>Subtotal (exposure class)</b>	<b>8,903</b>	<b>3,283</b>	<b>31.14 %</b>	<b>9,745</b>	<b>5.17 %</b>	<b>5,394</b>	<b>44.54 %</b>	<b>3</b>	<b>7,108</b>	<b>73 %</b>	<b>225</b>	<b>(130)</b>
<b>Total (all exposures classes FIRB)</b>	<b>11,358</b>	<b>5,467</b>	<b>23.56 %</b>	<b>12,355</b>	<b>5.59 %</b>	<b>7,455</b>	<b>44.38 %</b>	<b>2</b>	<b>8,426</b>	<b>68 %</b>	<b>307</b>	<b>(244)</b>

**CR6 - FIRB approach - Credit risk exposures by exposure class and PD range (31.12.2021)**

EUR million

PD range	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF	EAD post CRM and post CCF	Exposure weighted average PD (%)	Number of obligors	Average LGD	Average maturity	RWA	RW	EL	2021
												Value adjustments and provisions
a	b	c	d	e	f	g	h	i	j	k	l	m
<b>Corporates - SMEs</b>												
0.00 < 0.15	—	—	— %	—	— %	—	— %	—	—	— %	—	—
0.00 to < 0.10	—	—	— %	—	— %	—	— %	—	—	— %	—	—
0.10 to < 0.15	—	—	— %	—	— %	—	— %	—	—	— %	—	—
0.15 < 0.25	—	—	— %	—	— %	—	— %	—	—	— %	—	—
0.25 < 0.50	165.00	7.00	75.00 %	170.00	0.30 %	179.00	45.00 %	3.00	70.00	41.19 %	—	—
0.50 < 0.75	26.00	—	23.84 %	26.00	0.53 %	13.00	45.00 %	3.00	14.00	53.66 %	—	(1.00)
0.75 < 2.50	332.00	113.00	21.27 %	356.00	1.49 %	438.00	42.27 %	3.00	249.00	70.00 %	2.00	(15.00)
0.75 to < 1.75	181.00	55.00	34.16 %	200.00	0.96 %	324.00	45.00 %	3.00	134.00	67.15 %	1.00	(1.00)
1.75 to < 2.50	151.00	58.00	9.04 %	156.00	2.16 %	114.00	38.78 %	3.00	115.00	73.66 %	1.00	(13.00)
2.50 < 10.00	485.00	114.00	20.50 %	509.00	4.47 %	777.00	41.85 %	3.00	499.00	98.08 %	9.00	(39.00)
2.50 to < 5	422.00	99.00	21.80 %	444.00	3.98 %	691.00	41.87 %	3.00	421.00	95.00 %	7.00	(31.00)
5 to < 10	63.00	15.00	12.16 %	65.00	7.82 %	86.00	41.77 %	3.00	78.00	119.05 %	2.00	(9.00)
10.00 < 100.00	118.00	30.00	15.71 %	122.00	19.53 %	261.00	41.71 %	3.00	195.00	159.25 %	9.98	(8.46)
10 to < 20	105.00	29.00	14.45 %	109.00	16.98 %	199.00	41.41 %	3.00	174.00	159.14 %	7.61	(6.94)
20 to < 30	5.00	—	75.00 %	5.00	23.35 %	54.00	45.00 %	3.00	8.00	160.52 %	0.53	(0.02)
30 to < 100	8.00	—	97.03 %	8.00	50.47 %	8.00	43.69 %	3.00	13.00	160.02 %	1.84	(1.50)
100.00 (Default)	131.00	7.00	31.57 %	133.00	100.00 %	91.00	44.92 %	3.00	0.00	— %	59.71	(49.49)
<b>Subtotal (exposure class)</b>	<b>1,257.00</b>	<b>270.00</b>	<b>21.96 %</b>	<b>1,317.00</b>	<b>14.09 %</b>	<b>1,759.00</b>	<b>42.73 %</b>	<b>3.00</b>	<b>1,027.00</b>	<b>78.03 %</b>	<b>82.00</b>	<b>(113)</b>
<b>Total (all exposures classes FIRB)</b>	<b>11,357.69</b>	<b>5,466.80</b>	<b>23.56 %</b>	<b>12,355.03</b>	<b>5.59 %</b>	<b>7,455.00</b>	<b>44.38 %</b>	<b>2.41</b>	<b>8,425.61</b>	<b>68.20 %</b>	<b>307.27</b>	<b>(244)</b>

The distribution of exposures and average parameters by segments and geographies in IRBs without default, equities or specialized financing is shown below:

**Table 22. IRB Exposures and parameters by segment and geography**

EUR million

2022

	Institutions	Corporates	Retail Mortgages	Retail SME	Retail Other	Retail Qualifying Revolving	Total
<b>Santander Group</b>							
EAD	54,720	197,148	307,267	16,614	39,815	13,646	629,210
Average LGD in %	39.90 %	43.55 %	12.77 %	48.89 %	46.60 %	64.59 %	28.99 %
Average PD in %	0.24 %	0.87 %	2.42 %	3.09 %	2.80 %	2.35 %	1.78 %
<b>Europe</b>							
EAD	49,792	147,062	307,267	16,614	39,815	13,646	574,196
Average LGD in %	40.64 %	43.74 %	12.77 %	48.89 %	46.60 %	64.59 %	27.74 %
Average PD in %	0.21 %	0.90 %	2.42 %	3.09 %	2.80 %	2.35 %	1.88 %
<b>North America</b>							
EAD	3,970	17,023	—	—	—	—	20,993
Average LGD in %	27.99 %	41.85 %	— %	— %	— %	— %	39.23 %
Average PD in %	0.59 %	0.52 %	— %	— %	— %	— %	0.53 %
<b>South America</b>							
EAD	958	33,063	—	—	—	—	34,021
Average LGD in %	50.78 %	43.59 %	— %	— %	— %	— %	43.79 %
Average PD in %	0.31 %	0.92 %	— %	— %	— %	— %	0.91 %

EAD and parameters without default.

EAD including counterparty credit risk, does not include neither equities nor specialised lending.

The following tables show the specialized financing exposures:

**Table 23. CR10.1 - Specialised lending and equity exposures under the simple riskweighted approach. Project financing**

EUR million

2022

Regulatory Categories	Specialised lending : Project finance (Slotting approach)						
	Remaining maturity	On-balance-sheet amount	Off-balance-sheet amount	RW	EAD	RWA	Expected loss
		a	b	c	d	e	f
Category 1	< 2.5 years	474	373	50 %	618	234	0
	>= 2.5 years	2,605	1,222	70 %	2,979	1,685	12
Category 2	< 2.5 years	1,983	1,248	70 %	2,336	1,343	9
	>= 2.5 years	5,199	3,235	90 %	5,990	4,288	48
Category 3	< 2.5 years	222	28	115 %	228	255	6
	>= 2.5 years	400	38	115 %	408	415	11
Category 4	< 2.5 years	7	11	250 %	9	24	1
	>= 2.5 years	89	35	250 %	97	242	8
Category 5	< 2.5 years	29	4		30	0	15
	>= 2.5 years	324	6		327	0	163
<b>Total</b>	<b>&lt; 2.5 years</b>	<b>2,715</b>	<b>1,663</b>		<b>3,221</b>	<b>1,855</b>	<b>32</b>
	<b>&gt;= 2.5 years</b>	<b>8,616</b>	<b>4,536</b>		<b>9,801</b>	<b>6,630</b>	<b>242</b>

**Table 24.CR10.2 - Specialised lending and equity exposures under the simple riskweighted approach. Income-earning real estate and highly volatile commercial real estate**

EUR million

2022

Regulatory Categories	Specialised lending: Income-producing real estate and high volatility commercial real estate (Slotting approach)						
	Remaining maturity	On-balance-sheet amount	Off-balance-sheet amount	RW	EAD	RWA	Expected loss
		a	b	c	d	e	f
Category 1	< 2.5 years	865	38	50 %	884	402	—
	>= 2.5 years	963	37	70 %	982	624	4
Category 2	< 2.5 years	2,802	247	70 %	2,854	1,905	11
	>= 2.5 years	3,196	218	90 %	3,273	2,715	26
Category 3	< 2.5 years	209	2	115 %	209	215	6
	>= 2.5 years	383	2	115 %	384	409	11
Category 4	< 2.5 years	8	—	250 %	8	19	1
	>= 2.5 years	17	40	250 %	47	114	4
Category 5	< 2.5 years	12	—	—	12	—	6
	>= 2.5 years	43	—	—	43	—	22
<b>Total</b>	<b>&lt; 2.5 years</b>	<b>3,895</b>	<b>287</b>		<b>3,966</b>	<b>2,541</b>	<b>24</b>
	<b>&gt;= 2.5 years</b>	<b>4,602</b>	<b>298</b>		<b>4,729</b>	<b>3,861</b>	<b>66</b>

**Table 25.CR10.3 - Specialised lending and equity exposures under the simple riskweighted approach. Financing of assets**

EUR million

2022

Regulatory Categories	Specialised lending : Project finance (Slotting approach)						
	Remaining maturity	On-balance-sheet amount	Off-balance-sheet amount	RW	EAD	RWA	Expected loss
		a	b	c	d	e	f
Category 1	< 2.5 years	—	—	50 %	—	—	—
	>= 2.5 years	19	114	70 %	133	93	1
Category 2	< 2.5 years	50	41	70 %	55	38	—
	>= 2.5 years	114	74	90 %	167	147	1
Category 3	< 2.5 years	55	2	115 %	57	65	2
	>= 2.5 years	130	27	115 %	157	181	4
Category 4	< 2.5 years	5	—	250 %	5	13	—
	>= 2.5 years	—	—	250 %	—	—	—
Category 5	< 2.5 years	—	—	—	—	—	—
	>= 2.5 years	—	—	—	—	—	—
<b>Total</b>	<b>&lt; 2.5 years</b>	<b>110</b>	<b>42</b>		<b>117</b>	<b>117</b>	<b>2</b>
	<b>&gt;= 2.5 years</b>	<b>263</b>	<b>215</b>		<b>456</b>	<b>421</b>	<b>6</b>

**Table 26.CR10.4 - Specialised lending and equity exposures under the simple riskweighted approach. Financing of raw materials**

EUR million		2022						
		Commodities finance slotting approach						
Regulatory Categories	Remaining maturity	On-balance-sheet amount	Off-balance-sheet amount	RW	EAD	RWA	Expected loss	
		a	b	c	d	e	f	
Category 1	< 2.5 years	—	—	50 %	—	—	—	
	>= 2.5 years	—	—	70 %	—	—	—	
Category 2	< 2.5 years	—	—	70 %	—	—	—	
	>= 2.5 years	52	3	90 %	52	47	—	
Category 3	< 2.5 years	—	—	115 %	—	—	—	
	>= 2.5 years	—	—	115 %	—	—	—	
Category 4	< 2.5 years	—	—	250 %	—	—	—	
	>= 2.5 years	—	—	250 %	—	—	—	
Category 5	< 2.5 years	—	—	—	—	—	—	
	>= 2.5 years	—	—	—	—	—	—	
<b>Total</b>	<b>&lt; 2.5 years</b>	<b>—</b>	<b>—</b>		<b>—</b>	<b>—</b>	<b>—</b>	
	<b>&gt;= 2.5 years</b>	<b>52</b>	<b>3</b>		<b>52</b>	<b>47</b>	<b>—</b>	

#### 4.2.2. Equity investments and equity instruments not included in the held-for-trading book

This section provides definitions of investments in associates, equity instruments classified as other financial assets at fair value through other comprehensive income, and financial assets with mandatory classification at fair value through profit or loss. It also defines the accounting policies and measurement methods applied. Information is also provided on the amounts of those equity instruments not included in the held-for-trading portfolio.

Investments in associates are those stakes affording the Group significant influence, but not control or joint control. This capacity is usually observed with 20% or more of the voting power at the investee.

Equity instruments not held for trading issued by entities other than subsidiaries, jointly controlled entities and

associates are required to be classified at fair value through profit or loss, unless the entity opts to classify them as financial assets at fair value through other comprehensive income, irrevocably, on initial recognition.

Investments in associates are recognised at cost and the Group periodically tests for their impairment.

Equity instruments classified as other financial assets at fair value through other comprehensive income are recognised and measured at fair value with a corresponding entry in equity, under valuation adjustments, irrevocably. Instruments classified as financial assets with mandatory recognition at fair value through profit or loss are recognised and measured at fair value with a corresponding entry in profit or loss.

**Table 27.CR10.5 - Equity exposures under the simple risk-weighted approach**

EUR million		2022					
Categories	On-balance sheet exposure	Off-balance sheet exposure	Risk weight	Exposure value	Risk weighted exposure amount	Expected loss amount	
	a	b	c	d	e	f	
Private equity exposures	1,483	—	190 %	1,483	2,817	12	
Exchange-traded equity exposures	4	—	290 %	4	11	—	
Other equity exposures	—	—	370 %	—	—	—	
<b>Total</b>	<b>1,487</b>	<b>—</b>		<b>1,487</b>	<b>2,828</b>	<b>12</b>	

Equity exposures under the simple risk-weighted approach represent in Santander 955 million euros in exposure with a risk weighted exposure amount of 1.817 million.

**Table 28. Equity instruments through other comprehensive income**

EUR million	2022		
	Carrying value	Fair value	Valuation adjustment
Quoted	1,200	1,200	142
Unquoted	742	742	(756)
<b>Total</b>	<b>1,942</b>	<b>1,942</b>	<b>(614)</b>

**Table 29. Equity instruments mandatory at fair value through profit and loss**

EUR million	2022
	Fair Value
Quoted	68
Investment funds	331
Unquoted	1,935
<b>Total</b>	<b>2,335</b>

**Table 30. Equity instruments through other comprehensive income. Consolidated gross valuation adjustments**

EUR million	2022
	Fair Value
Prior-year balance	(116)
Revaluation gains and losses	(498)
<b>Current-year balance</b>	<b>(614)</b>

Refer to the Auditor's Report and Financial Statements in the Annual Report for further information on the portfolio of equity instruments classified as other financial assets at fair value through other comprehensive income.



[Access 2022 Annual Report available on the Santander Group website](#)

With respect to holdings accounted for using the equity method at year-end 2022, the amounts for associates and jointly controlled entities were EUR 5,706 million and EUR 550 million, respectively.

There are also investments in group entities totalling 2,402 million, which are accounted for using the full consolidation method in the public perimeter.

The group tests these investments for impairment on a regular basis. No evidence of significant impairment was found in 2022.

### 4.2.3. Standardised approach

For the calculation of regulatory capital under the standardised approach, Santander uses the external rating agencies designated as eligible by the ECB (European Central Bank). The agencies used for the capital calculation at 31 December 2022 are Fitch, Moody's, DBRS, Standard & Poor's, Japan Credit Rating Agency and HR Ratings de México.

For the central government and central banks category, if the requirements of article 137 of the CRR are met, the Group uses the OECD's Country Risk Classification of the Participants to the Arrangement on Officially Supported Export Credits.

Different risk weights are applied to credit exposures depending on the rating assigned by the credit rating agencies (e.g. Fitch, Moody's and Standard & Poor's for the segments approved under Part III, Title II, Chapter II of the CRR) or the minimum export insurance premium rating (e.g. OECD for the central government and central bank segment, as explained above). Japan Credit Rating Agency and HR Ratings de México are used for credit exposures in the Sovereign segment.

The assignment of weights according to credit ratings complies with the regulatory requirements, aligning the alphanumeric scale of each agency used with the credit quality steps set down in Chapter II, Section II of the CRR, as follows:

Credit quality step	S&P	Moody's	Fitch	DBRS	Japan Credit Rating Agency	HR Ratings Mexico
1	AAA a AA-	AAA to AA3	AAA a AA-	AAA to AAL	AAA to AA	HR AAA to HR AA
2	A+ to A-	A1 to A3	A+ to A-	AH to AL	A	HR A
3	BB+ to BBB-	BAA1 to BAA3	BB+ to BBB-	BBBH to BBBL	BBB	HR BBB
4	BB+ to BB-	BA1 to BA3	BB+ to BB-	BBH to BBL	BB	HR BB
5	B+ to B-	B1 to B3	B+ to B-	BH to BL	B	HR B
6	Lower than B-	Lower than B3	Lower than B-	CCCH to lower	CCC to lower	HR CCC to lower

Credit quality step	Central governments and central banks	Public sector entities	Institutions ≤ 3 months rated	Institutions > 3 months rated	Institutions not rated	Corporates
1	0%	20%	20%	20%	20%	20%
2	20%	50%	20%	50%	50%	50%
3	50%	100%	20%	50%	100%	100%
4	100%	100%	50%	100%	100%	100%
5	100%	100%	50%	100%	100%	150%
6	150%	150%	150%	150%	150%	150%

In accordance with article 150 of the CRR, Santander always uses the standardised approach for sovereign exposures denominated and funded in the Member State's local currency, applying a 0% risk weighting.

Guarantees are applied by reallocating exposures to the corresponding asset categories and risk weightings.

When credit institutions use some of their qualifying financial collateral as a credit risk mitigation technique, the valuation of this collateral for the calculation of risk-weighted exposure amounts can either follow the financial collateral simple method under Article 222 of the CRR or the financial collateral comprehensive method under Article 223.

**Table 31.CR4 - standardised approach - Credit risk exposure and CRM effects**

EUR million							2022
Exposure classes	Exposures before CCF and CRM		Exposures post CCF and CRM		RWAs and RW		
	On-balance-sheet amount	Off-balance-sheet amount	On-balance-sheet amount	Off-balance-sheet amount	RWAs	RW	
	a	b	c	d	e	f	
1 Central governments or central banks	355,992	2,939	407,830	4,944	26,579	6 %	
2 Regional governments or local authorities	1,649	56	1,387	12	330	24 %	
3 Public sector entities	3,901	662	4,459	257	369	8 %	
4 Multilateral Development Banks	2,064	2	4,681	—	—	— %	
5 International Organisations	664	—	664	—	—	— %	
6 Institutions	20,238	3,758	19,642	1,541	4,610	22 %	
7 Corporates	57,211	31,450	48,156	3,732	47,920	92 %	
8 Retail	151,211	82,995	138,674	1,464	98,556	70 %	
9 Secured by mortgages on immovable property	99,668	10,626	95,905	302	35,103	36 %	
10 Exposures in default	11,925	403	11,492	99	12,251	106 %	
11 Items associated with particularly high risk	956	394	943	—	1,414	150 %	
12 Covered bonds	1,728	—	1,728	—	257	15 %	
13 Claims on institutions and corporates with a short-term credit assessment	172	8	296	3	157	52 %	
14 Collective investments undertakings (CIU)	158	—	158	—	158	101 %	
15 Equity	135	—	135	—	135	100 %	
16 Other items	81,672	19,873	84,649	4,041	47,082	53 %	
<b>17 TOTAL</b>	<b>789,343</b>	<b>153,167</b>	<b>820,800</b>	<b>16,395</b>	<b>274,922</b>	<b>33 %</b>	

Securitisations not included.

CRR Fully-loaded, Phased-in IFRS 9

**CR4 - standardised approach - Credit risk exposure and CRM effects (31.12.2021)**

EUR million							2021
Exposure classes	Exposures before CCF and CRM		Exposures post CCF and CRM		RWAs and RW		
	On-balance-sheet amount	Off-balance-sheet amount	On-balance-sheet amount	Off-balance-sheet amount	RWAs	RW	
	a	b	c	d	e	f	
1 Central governments or central banks	328,544	1,114	370,750	3,943	25,913	7 %	
2 Regional governments or local authorities	2,829	650	10,802	494	312	3 %	
3 Public sector entities	4,883	693	5,009	290	357	7 %	
4 Multilateral Development Banks	1,970	3	4,451	1	—	— %	
5 International Organisations	63	—	63	—	—	— %	
6 Institutions	16,711	2,610	15,277	466	4,565	29 %	
7 Corporates	52,913	31,528	42,674	4,201	43,128	92 %	
8 Retail	148,484	72,322	135,969	1,810	98,353	71 %	
9 Secured by mortgages on immovable property	88,461	9,589	86,578	383	32,678	38 %	
10 Exposures in default	10,404	492	10,268	223	11,968	114 %	
11 Items associated with particularly high risk	945	251	921	2	1,384	150 %	
12 Covered bonds	1,567	—	1,567	—	157	10 %	
13 Claims on institutions and corporates with a short-term credit assessment	335	44	338	—	253	75 %	
14 Collective investments undertakings (CIU)	180	—	180	—	218	121 %	
15 Equity	148	—	148	—	148	100 %	
16 Other items	72,484	18,746	73,306	3,783	43,435	56 %	
<b>17 TOTAL</b>	<b>730,924</b>	<b>138,042</b>	<b>758,299</b>	<b>15,597</b>	<b>262,869</b>	<b>34 %</b>	

Securitisations not included.

CRR Fully-loaded, Phased-in IFRS 9

**Table 32.CR5 - standardised approach**

EUR million		Risk Weight															Total	Of which unrated
		0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Otros		
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o		
1	Central governments or central banks	393,891	—	—	—	1,286	—	1,709	—	—	9,499	4	6,386	—	—	—	412,775	409,135
2	Regional government or local authorities	655	—	—	—	487	—	49	—	—	207	—	—	—	—	—	1,399	1,131
3	Public sector entities	3,514	—	—	—	1,003	—	60	—	—	138	1	—	—	—	—	4,716	3,630
4	Multilateral development banks	4,681	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,681	4,681
5	International organisations	664	—	—	—	—	—	—	—	—	—	—	—	—	—	—	664	664
6	Institutions	—	2,638	—	—	17,059	—	767	—	—	625	94	—	—	—	—	21,183	11,858
7	Corporates	—	—	—	—	617	—	404	—	—	50,432	435	—	—	—	—	51,889	50,975
8	Retail	—	—	—	—	—	1,460	—	—	138,678	—	—	—	—	—	—	140,138	140,138
9	Secured by mortgages on immovable property	—	—	—	—	—	78,447	13,419	—	1,728	2,608	6	—	—	—	—	96,207	96,202
10	Exposures in default	—	—	—	—	—	—	—	—	—	10,270	1,321	—	—	—	—	11,591	11,591
11	Exposures associated with particularly high risk	—	—	—	—	—	—	—	—	—	—	943	—	—	—	—	943	943
12	Covered bonds	—	—	—	885	843	—	—	—	—	—	—	—	—	—	—	1,728	73
13	Institutions and corporates with a short-term credit assessment	—	—	—	—	2	—	281	—	—	16	—	—	—	—	—	299	3
14	Collective investment undertakings	11	—	—	—	—	—	—	—	—	123	23	—	—	—	—	158	158
15	Equity	—	—	—	—	—	—	—	—	—	135	—	—	—	—	—	135	135
16	Other items	27,399	340	—	—	17,322	—	11	—	43	43,574	—	—	—	—	—	88,690	88,690
<b>17</b>	<b>Total</b>	<b>430,816</b>	<b>2,978</b>	<b>—</b>	<b>885</b>	<b>38,620</b>	<b>79,907</b>	<b>16,699</b>	<b>—</b>	<b>140,449</b>	<b>117,628</b>	<b>2,827</b>	<b>6,386</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>837,195</b>	<b>820,005</b>

Securitisations not included. Including counterparty credit risk

**CR5 - standardised approach (31.12.2021)**

EUR million

		Risk Weight															Total	Of which unrated
		0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Otros		
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
1	Central governments or central banks	353,358	—	—	—	1,403	—	2,575	—	—	12,678	28	4,650	—	—	—	374,692	369,412
2	Regional government or local authorities	10,641	—	—	—	400	—	44	—	—	210	—	—	—	—	—	11,296	11,097
3	Public sector entities	4,184	—	—	—	908	—	64	—	—	143	—	—	—	—	—	5,299	4,199
4	Multilateral development banks	4,452	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,452	4,452
5	International organisations	63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63	63
6	Institutions	—	—	—	—	13,686	—	465	—	—	1,569	22	—	—	—	—	15,743	6,455
7	Corporates	—	—	—	—	1,247	—	174	—	—	44,927	528	—	—	—	—	46,876	45,799
8	Retail	—	—	—	—	—	1,392	—	—	136,387	—	—	—	—	—	—	137,779	137,779
9	Secured by mortgages on immovable property	—	—	—	—	—	69,332	12,726	—	2,334	2,562	7	—	—	—	—	86,961	86,955
10	Exposures in default	—	—	—	—	—	—	—	—	—	7,535	2,955	—	—	—	—	10,490	10,490
11	Exposures associated with particularly high risk	—	—	—	—	—	—	—	—	—	—	923	—	—	—	—	923	923
12	Covered bonds	—	—	—	1,567	—	—	—	—	—	—	—	—	—	—	—	1,567	—
13	Institutions and corporates with a short-term credit assessment	—	—	—	—	8	—	202	—	—	80	47	—	—	—	—	338	5
14	Collective investment undertakings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	180	180	180
15	Equity	—	—	—	—	—	—	—	—	—	148	—	—	—	—	—	148	148
16	Other items	22,103	260	—	—	13,890	—	16	—	703	40,117	—	—	—	—	—	77,089	77,085
<b>17</b>	<b>Total</b>	<b>394,802</b>	<b>260</b>	<b>—</b>	<b>1,567</b>	<b>31,542</b>	<b>70,725</b>	<b>16,268</b>	<b>—</b>	<b>139,424</b>	<b>109,969</b>	<b>4,510</b>	<b>4,650</b>	<b>—</b>	<b>—</b>	<b>180</b>	<b>773,896</b>	<b>755,042</b>

Securitisations not included. Including counterparty credit risk

## 4.3. Distribution of exposures

This section covers the CRB requirement - Additional disclosure concerning the credit quality of assets.

The tables below give a breakdown of the exposures to credit and dilution risk of the Group:

- Exposure category
- Business sector
- Geographical area
- Residual maturity

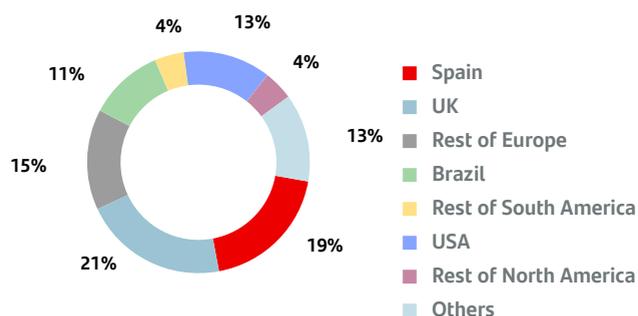
Information is also presented on non-performing exposures, impairment loss allowances, and provisions for contingent liabilities and commitments.

The amounts shown in the tables in this section include the amounts for counterparty and credit risk excluding securitisations.

The geographic distribution in standard portfolios is mainly concentrated in Brazil, Spain and the United States. The most prominent segments continue to be central administrations (with a strong presence in Spain, Brazil and UK) and retailers and companies with a prominent presence in Brazil, the United States and UK.

In terms of IRB portfolios, most of the exposure is concentrated in the corporate and retail segments in Spain and the UK.

### Exposures by geographical area



The following two tables show all exposures by industry and geographical area:

**Table 33.CQ5 - Credit quality of loans and advances by industry**

EUR million		2022					
		a	b	c	d	e	f
Gross carrying amount							
			of which: non-performing		of which: loans and advances subject to impairment	Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
			of which: defaulted				
10	Agriculture, forestry and fishing	8,343	493	493	8,289	(290)	—
20	Mining and quarrying	8,629	54	54	8,582	(48)	—
30	Manufacturing	58,859	2,067	2,067	58,490	(1,683)	(1)
40	Electricity, gas, steam and air conditioning supply	16,540	407	395	16,289	(206)	—
50	Water supply	1,547	33	33	1,520	(31)	—
60	Construction	18,649	1,115	1,115	18,617	(737)	—
70	Wholesale and retail trade	73,732	3,680	3,680	73,506	(1,923)	(2)
80	Transport and storage	18,242	997	997	18,088	(474)	(4)
90	Accommodation and food service activities	11,875	1,291	1,291	11,749	(538)	(1)
100	Information and communication	18,575	262	256	18,553	(137)	—
110	Real estate activities	41,955	1,242	1,238	41,446	(628)	—
120	Financial and insurance activities	—	—	—	—	—	—
130	Professional, scientific and technical activities	18,147	309	291	18,042	(592)	—
140	Administrative and support service activities	12,964	469	469	12,937	(306)	—
150	Public administration and defense, compulsory social security	1,997	—	—	1,924	(1)	—
160	Education	1,965	71	71	1,949	(56)	—
170	Human health services and social work activities	4,987	182	181	4,943	(110)	—
180	Arts, entertainment and recreation	1,544	148	148	1,536	(78)	—
190	Other services	19,582	490	469	19,422	(276)	—
<b>200</b>	<b>Total</b>	<b>338,132</b>	<b>13,310</b>	<b>13,248</b>	<b>335,882</b>	<b>(8,114)</b>	<b>(8)</b>

**Table 34.CQ4 - Quality of non-performing exposures by geography**

EUR million

									2022
		a	b	c	d	e	f	g	
		Gross carrying/Nominal amount				Accumulated impairment	Provisions on off-balance sheet commitments and financial guarantee given	Accumulated negative changes in fair value due to credit risk on non-performing exposures	
		of which: non-performing			of which: subject to impairment				
		of which: defaulted							
10	<b>On balance sheet exposures</b>	<b>1,256,237</b>	<b>37,284</b>	<b>37,026</b>	<b>1,249,266</b>	<b>(23,254)</b>			<b>(16)</b>
20	GB	289,030	3,685	3,685	288,518	(1,094)			—
30	ES	227,462	10,729	10,631	223,663	(5,124)			(8)
40	BR	140,948	8,131	8,131	139,409	(6,220)			—
50	US	154,979	5,179	5,178	154,802	(4,034)			—
60	MX	59,740	1,379	1,280	59,719	(1,045)			—
70	CL	55,400	2,368	2,368	55,399	(1,273)			—
	DE	51,949	654	654	52,031	(494)			—
	PL	46,862	1,611	1,603	46,845	(1,237)			(8)
	PT	45,937	1,118	1,118	46,079	(966)			—
	IT	31,914	350	349	31,233	(213)			—
70	Other countries	152,016	2,080	2,029	151,568	(1,554)			—
80	<b>Off balance sheet exposures</b>	<b>380,606</b>	<b>2,081</b>	<b>1,962</b>			<b>733</b>		
90	ES	88,114	822	719			155		
100	GB	54,792	109	109			90		
110	US	53,692	146	146			74		
120	BR	37,642	406	406			136		
130	FR	23,786	4	3			21		
	DE	16,235	42	42			10		
	MX	13,892	27	27			74		
	CL	13,621	24	24			49		
	PL	10,814	19	12			13		
	PT	9,904	167	167			54		
140	Other countries	58,114	315	307			57		
150	<b>Total</b>	<b>1,636,843</b>	<b>39,365</b>	<b>38,988</b>	<b>1,249,266</b>	<b>(23,254)</b>	<b>733</b>		<b>(16)</b>

**Table 35.CQ1 - Credit quality of forborne exposures**

EUR million

2022

	a	b	c	d	e	f	g	h	
	Gross carrying amount/nominal amount of exposures with forbearance measures				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions	Collateral received and financial guarantees received on forborne exposures			
	Performing forborne	Non-performing forborne			On performing forborne exposures	On non-performing forborne exposures	Of which collateral and financial guarantees received on non-performing exposures with forbearance measures		
		Of which defaulted	Of which impaired						
—	Cash balances at central banks and other demand deposits	—	—	—	—	—	—	—	
10	Loans and advances	19,076	15,973	15,942	15,599	(1,576)	(6,649)	20,372	7,510
20	Central banks	—	—	—	—	—	—	—	—
30	General governments	227	7	7	7	—	(5)	16	1
40	Credit institutions	—	—	—	—	—	—	—	—
50	Other financial corporations	228	140	140	140	(5)	(54)	266	86
60	Non-financial corporations	9,440	7,420	7,411	7,249	(414)	(3,077)	10,800	3,681
70	Households	9,181	8,406	8,384	8,203	(1,157)	(3,513)	9,290	3,742
80	Debt Securities	10	270	270	261	—	(132)	39	39
90	Loan commitments given	2,572	115	115	107	46	4	678	47
<b>100</b>	<b>Total</b>	<b>21,658</b>	<b>16,358</b>	<b>16,327</b>	<b>15,967</b>	<b>(1,622)</b>	<b>(6,785)</b>	<b>21,089</b>	<b>7,596</b>

The following table breaks down performing and non-performing exposures according to the number of days past due:

**Table 36.CQ3 - Credit quality of performing and non-performing exposures by past due days**

EUR million													2022	
		a	b	c	d	e	f	g	h	i	j	k	l	
		Performing exposures			Gross carrying amount/nominal amount									
					Non-performing exposures									
					Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted		
		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days											
5	Cash balances at central banks and other demand deposits	214,266	214,266	—	—	—	—	—	—	—	—	—	—	
10	Loans and advances	1,079,684	1,074,521	5,163	36,853	22,730	3,592	3,787	2,720	2,350	638	1,036	36,600	
20	Central banks	15,397	15,397	—	—	—	—	—	—	—	—	—	—	
30	General governments	27,100	27,097	3	65	60	—	—	—	1	1	3	65	
40	Credit institutions	46,519	46,519	—	—	—	—	—	—	—	—	—	—	
50	Other financial corporations	80,223	80,202	21	272	206	20	5	3	33	—	5	272	
60	Non-financial corporations	324,822	324,095	727	13,310	8,617	660	1,115	806	1,118	346	648	13,248	
70	Of which SMEs	120,996	120,452	544	8,037	4,417	521	937	650	782	266	464	8,005	
80	Households	585,623	581,211	4,412	23,206	13,847	2,912	2,667	1,911	1,198	291	380	23,015	
90	Debt securities	139,268	139,261	7	431	416	3	4	—	8	—	—	426	
100	Central banks	12,133	12,133	—	—	—	—	—	—	—	—	—	—	
110	General governments	90,873	90,873	—	—	—	—	—	—	—	—	—	—	
120	Credit institutions	7,033	7,033	—	—	—	—	—	—	—	—	—	—	
130	Other financial corporations	16,744	16,743	1	25	25	—	—	—	—	—	—	25	
140	Non-financial corporations	12,485	12,479	6	406	391	3	4	—	8	—	—	401	
150	Off-balance-sheet exposures	378,526			2,081								1,962	
160	Central banks	—			—								—	
170	General governments	4,267			4								—	
180	Credit institutions	39,555			9								5	
190	Other financial corporations	30,752			223								163	
200	Non-financial corporations	194,591			1,604								1,565	
210	Households	109,361			241								229	
220	<b>Total</b>	<b>1,811,744</b>	<b>1,428,048</b>	<b>5,170</b>	<b>39,365</b>	<b>23,146</b>	<b>3,595</b>	<b>3,791</b>	<b>2,720</b>	<b>2,358</b>	<b>638</b>	<b>1,036</b>	<b>38,988</b>	

The following table displays performing and non-performing exposures including provisions by stage:

**Table 37.CR1 - Performing and non-performing exposures and related provisions**

EUR million															2022	
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions						Collateral and financial guarantees received			
	Performing exposures			Non-performing exposures			Performing exposures - accumulated impairment and provisions			Non-performing exposures - accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions			Accumulated partial write-off	On performing exposures	On non-performing exposures	
	Of which, stage 1	Of which, stage 2		Of which, stage 2	Of which, stage 3		Of which, stage 1	Of which, stage 2		Of which, stage 2	Of which, stage 3					
5	Cash balances at central banks and other demand deposits	214,266	214,091	175	—	—	—	(3)	(3)	—	—	—	—	—	—	—
10	Loans and advances	1,079,684	1,007,077	64,974	36,853	2,800	33,204	(8,333)	(3,675)	(4,658)	(14,707)	(497)	(13,895)	(336)	724,054	15,974
20	Central banks	15,397	15,397	—	—	—	—	—	—	—	—	—	—	—	189	—
30	General governments	27,100	25,455	183	65	7	54	(14)	(12)	(2)	(11)	(1)	(10)	—	3,358	34
40	Credit institutions	46,519	45,845	1	—	—	—	(6)	(6)	—	—	—	—	—	10,856	—
50	Other financial corporations	80,223	76,284	774	272	—	263	(126)	(91)	(35)	(117)	—	(111)	—	46,422	138
60	Non-financial corporations	324,822	296,860	25,718	13,310	522	12,115	(2,295)	(970)	(1,325)	(5,827)	(87)	(5,489)	(254)	198,416	5,381
70	Of which SMEs	120,996	106,367	13,854	8,037	332	7,454	(1,237)	(428)	(809)	(3,537)	(67)	(3,361)	(74)	88,785	3,745
80	Households	585,623	547,236	38,298	23,206	2,271	20,772	(5,892)	(2,596)	(3,296)	(8,752)	(409)	(8,285)	(82)	464,813	10,421
90	Debt securities	139,268	137,916	75	431	—	403	(24)	(22)	(2)	(206)	—	(198)	—	601	39
100	Central banks	12,133	12,117	—	—	—	—	(1)	(1)	—	—	—	—	—	—	—
110	General governments	90,873	90,845	14	—	—	—	(3)	(3)	—	—	—	—	—	391	—
120	Credit institutions	7,033	7,031	—	—	—	—	(1)	(1)	—	—	—	—	—	—	—
130	Other financial corporations	16,744	15,907	—	25	—	11	(1)	(1)	—	(3)	—	—	—	—	—
140	Non-financial corporations	12,485	12,016	61	406	—	392	(18)	(16)	(2)	(203)	—	(198)	—	210	39
150	Off-balance-sheet exposures	378,526	371,650	6,846	2,081	218	1,769	495	327	168	238	22	209	—	6,700	253
160	Central banks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170	General governments	4,267	4,249	17	4	—	4	1	1	—	—	—	—	—	60	—
180	Credit institutions	39,555	39,554	1	9	—	9	1	1	—	—	—	—	—	339	—
190	Other financial corporations	30,752	30,255	498	223	—	223	15	10	5	3	—	3	—	420	—
200	Non-financial corporations	194,591	189,499	5,064	1,604	204	1,319	234	121	113	219	19	193	—	5,229	250
210	Households	109,361	108,093	1,266	241	14	214	244	194	50	16	3	13	—	652	3
220	<b>Total</b>	<b>1,811,744</b>	<b>1,730,734</b>	<b>72,070</b>	<b>39,365</b>	<b>3,018</b>	<b>35,376</b>	<b>(8,855)</b>	<b>(4,027)</b>	<b>(4,828)</b>	<b>(15,151)</b>	<b>(519)</b>	<b>(14,302)</b>	<b>(336)</b>	<b>731,355</b>	<b>16,266</b>

**CR1 - Performing and non-performing exposures and related provisions (31.12.2021)**

EUR million

															2021														
															a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
															Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions						Collateral and financial guarantees received		
															Performing exposures			Non-performing exposures			Performing exposures - accumulated impairment and provisions			Non-performing exposures - accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions			Accumulated partial write-off	On performing exposures	On non-performing exposures
															Of which, stage 1		Of which, stage 2	Of which, stage 2		Of which, stage 3	Of which, stage 1		Of which, stage 2	Of which, stage 2		Of which, stage 3			
5	Cash balances at central banks and other demand deposits	202,953	202,875	78	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
10	Loans and advances	1,014,387	934,678	65,365	37,663	3,604	31,767	(8,697)	(4,166)	(4,531)	(14,609)	(725)	(13,233)	(388)	685,665	16,771													
20	Central banks	15,679	15,679	—	—	—	—	—	—	—	—	—	—	—	2,359	—													
30	General governments	24,347	21,860	259	46	—	38	(17)	(14)	(3)	(14)	—	(13)	—	2,727	—													
40	Credit institutions	41,641	38,489	—	1	—	1	(8)	(8)	—	—	—	—	—	8,627	—													
50	Other financial corporations	69,707	63,629	633	260	—	250	(104)	(56)	(48)	(74)	—	(66)	—	38,357	167													
60	Non-financial corporations	303,894	270,410	30,151	14,919	708	13,094	(2,485)	(1,084)	(1,401)	(6,347)	(103)	(5,835)	(290)	182,675	6,233													
70	Of which SMEs	118,854	102,773	14,949	9,162	369	8,311	(1,166)	(482)	(684)	(4,010)	(78)	(3,687)	(122)	83,406	4,176													
80	Households	559,119	524,611	34,322	22,437	2,896	18,384	(6,083)	(3,004)	(3,079)	(8,174)	(622)	(7,319)	(98)	450,920	10,371													
90	Debt securities	121,697	120,626	128	349	—	277	(34)	(26)	(8)	(188)	—	(182)	—	560	58													
100	Central banks	7,551	7,551	—	—	—	—	(1)	(1)	—	—	—	—	—	—	—													
110	General governments	80,253	80,252	1	—	—	—	(3)	(3)	—	—	—	—	—	273	—													
120	Credit institutions	9,145	9,145	—	—	—	—	(1)	(1)	—	—	—	—	—	—	—													
130	Other financial corporations	15,075	14,413	1	13	—	—	(3)	(3)	—	—	—	—	—	—	—													
140	Non-financial corporations	9,673	9,265	126	336	—	277	(26)	(18)	(8)	(188)	—	(182)	—	287	58													
150	Off-balance-sheet exposures	347,857	338,487	9,367	2,402	393	1,566	513	368	145	219	54	159	—	6,208	253													
160	Central banks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
170	General governments	3,457	3,436	21	6	—	6	—	—	—	—	—	—	—	9	—													
180	Credit institutions	30,764	30,762	2	9	—	6	6	6	—	1	—	1	—	199	—													
190	Other financial corporations	27,485	26,899	587	283	1	217	18	8	10	—	—	—	—	126	1													
200	Non-financial corporations	173,742	166,351	7,389	1,905	389	1,178	236	131	105	197	54	138	—	5,371	248													
210	Households	112,409	111,039	1,368	199	3	159	253	223	30	21	—	20	—	503	4													
220	<b>Total</b>	<b>1,686,894</b>	<b>1,596,666</b>	<b>74,938</b>	<b>40,414</b>	<b>3,997</b>	<b>33,610</b>	<b>(8,218)</b>	<b>(3,824)</b>	<b>(4,394)</b>	<b>(14,578)</b>	<b>(671)</b>	<b>(13,256)</b>	<b>(388)</b>	<b>692,433</b>	<b>17,082</b>													

Requirements CQ2, CQ6, CQ8 and CR2A of the EBA Disclosure ITS are not published because our NPL ratio does not exceed 5%.

The following table shows the collateral obtained through repossession and foreclosure processes:

**Table 38.CQ7 - Collateral obtained by taking possession and execution processes**

EUR million	2022	
	a	b
	Value at initial recognition	Collateral obtained by taking possession Accumulated negative changes
10 Property, plant and equipment (PP&E)	—	—
20 Other than PP&E	6,438	2,818
30 Residential immovable property	977	280
40 Commercial Immovable property	5,189	2,509
50 Movable property (auto, shipping, etc.)	257	29
60 Equity and debt instruments	15	—
70 Other collateral	—	—
<b>80 Total</b>	<b>6,438</b>	<b>2,818</b>

The following table shows the stock of loans classified as non-performing between the close of the previous year and the end of current year.

**Table 39.CR2 - Changes in the stock of non-performing loans and advances**

EUR million	2022
	a
	Gross carrying amount
10 Opening balance	37,663
20 Inflows to non-performing portfolios	21,570
30 Outflows from non-performing portfolios	(10,219)
40 Outflows due to write-offs	(12,161)
50 Outflow due to other situations	—
60 Closing balance	36,853

Figures are referred to inflows to net new non-performing portfolios  
Mapping has been corrected to F18.01 & F12

**Table 40.CR1-A: Maturity of exposures**

EUR million	2022					
	a	b	c	d	e	f
	Net exposure value					
	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1 Loans and advances	44,687	319,195	310,538	419,077	—	1,093,497
2 Debt securities	—	36,774	55,512	44,691	—	136,977
<b>3 Total</b>	<b>44,687</b>	<b>355,969</b>	<b>366,050</b>	<b>463,768</b>	<b>—</b>	<b>1,230,474</b>

**CR1-A: Maturity of exposures (31.12.2021)**

EUR million	2021					
	a	b	c	d	e	f
	Net exposure value					
	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1 Loans and advances	35,062	282,182	275,475	436,022	—	1,028,741
2 Debt securities	—	37,328	49,530	34,722	—	121,580
<b>3 Total</b>	<b>35,062</b>	<b>319,510</b>	<b>325,005</b>	<b>470,744</b>	<b>—</b>	<b>1,150,321</b>

## 4.4. Internal rating systems

Santander has been using its own internal rating and scoring models to measure the credit quality of customers and transactions since 1993.

Each rating or score indicates a probability of default, measured on the basis of the bank's historical default experience (except in the case of low default portfolios).

More than 400 internal rating models are used in the Group's credit approval and risk monitoring process.

The global rating tools are those used for **SCIB** segments: corporates, financial institutions, sovereigns and specialised funding, which are managed centrally in Santander, in terms of both allocating the rating and risk monitoring. The rating these tools assign to each customer is obtained using a model which relies on an analyst's opinion, supported by a quantitative or automatic module based on balance sheet ratios or macroeconomic variables. This quantitative module is created by applying a structured technique for dealing with complex decisions based on two-by-two comparisons to evaluate priorities. Starting from an expert selection of variables/ratios to be considered in the model, this method yields the relative weight of each variable in the overall model. The analyst takes this information as a reference but revises and adjusts it to obtain the final rating, which is therefore heavily based on expert judgement. Occasionally, ratings are also adjusted when the company belongs to a group from which it receives explicit support, as in the case of Corporate SCIB.

The parent of Santander has established a single methodology for constructing a rating in each country for the **Corporates and Institutions** segment (including the SMEs with the highest turnover). The aim is to include all available information (internal behaviour, external sources, etc.) in a structured way and to (statistically) weight the objective (automatic) assessment and the subjective (expert) assessment according to the client's characteristics. The analyst may or may not modify the resulting score by a limited number of rating points.

Customer ratings are reviewed regularly to take account of new information that becomes available. Ratings are reviewed more frequently when certain automatic alerts are triggered and for customers placed on special watch. The rating tools are also reviewed, to refine the ratings they generate.

For the **Retail segment** (individuals and SMEs), Santander has scoring tools that automatically assign a score to transactions submitted for approval.

These credit approval systems are supplemented by behavioural rating models, which provide greater predictability of the assumed risk. These are used not only when accepting new risks but also when monitoring and setting limits.

For each of the Group's portfolios, PD models are developed where the rating and/or scoring models are an essential input. In the case of SCIB portfolios, the aforementioned models establish the following list of internal ratings and probability of default:

### Mapping of internal ratings and PD

Corporate		Banks		Financial institutions non banks	
Rating	PD	Rating	PD	Rating	PD
9.3	0.008%	9.3	0.013%	9.3	0.002%
9.2	0.009%	9.2	0.014%	9.2	0.002%
9.0	0.011%	9.0	0.016%	9.0	0.003%
8.5	0.018%	8.5	0.025%	8.5	0.006%
8.0	0.029%	8.0	0.038%	8.0	0.012%
7.5	0.048%	7.5	0.059%	7.5	0.025%
7.0	0.080%	7.0	0.090%	7.0	0.051%
6.5	0.133%	6.5	0.137%	6.5	0.108%
6.0	0.219%	6.0	0.193%	6.0	0.194%
5.5	0.362%	5.5	0.295%	5.5	0.406%
5.0	0.597%	5.0	0.451%	5.0	0.850%
4.5	0.984%	4.5	0.689%	4.5	1.779%
4.0	1.617%	4.0	1.051%	4.0	3.721%
3.5	2.646%	3.5	1.600%	3.5	7.785%
3.0	4.303%	3.0	2.429%	3.0	16.285%
2.5	6.922%	2.5	3.671%	2.5	34.068%
2.0	10.954%	2.0	5.512%	2.0	45.000%
1.5	16.907%	1.5	8.197%	1.5	45.000%
1.0	25.181%	1.0	12.024%	1.0	45.000%

These PDs are applied uniformly across the whole Santander, consistently with the global management of the portfolios. As we can see, the PD assigned to any given internal rating is not exactly the same in every portfolio. Regulatory requirements require differentiated calibration.

## 4.5. Rating assignment process and parameter estimation

This credit risk classification policy establishes criteria for the proper classification of transactions with customers, depending on the credit risk to which the bank is exposed. This classification is based on two regulations comprising:

- **Accounting principles:** pursuant to International Financial Reporting Standard 9 (IFRS 9), which is used for internal management, reporting and accounting purposes.
- **Prudential requirements:** pursuant to Article 178 of Regulation (EU) no. 575/2013 of the European Parliament and of the Council of 26 June 2013, on prudential requirements for credit institutions and investment firms, as well as the EBA Guidelines on the application of the definition of default.

For accounting purposes, the classification is broken down into the following categories: Phase 1, Phase 2, Phase 3 and Write-off. Furthermore, for prudential purposes, the classification is separated into: No-Default and Default.

As a result of consistency between the classification for prudential and accounting purposes, we typically classify transactions by credit risk as follows:

- **Phase 1/No-default risk:** This includes all transactions that do not meet the requirements to be classified in other categories.
- **Phase 2/No-default risk:** This category contains all the transactions that, without meeting the criteria for individual classification as Phase 3/Default or write-off, show significant increases in credit risk since initial recognition. Transactions are classified as Phase 2 based on the total value of the risk.
- **Phase 3/Default risk:** This includes all transactions, whether or not past due, for which the circumstances for classification as write-offs have not arisen, but there are reasonable doubts with regard to their total repayment (principal and interest) by the obligor as set out in the contract. It also includes off-balance-sheet exposures where payment by the entity is likely, but recovery is doubtful. Transactions are classified as Phase 3/Default based on the total value of the risk.
- **Write-off risk:** This includes debt instruments, whether or not past due, in relation to which an individual analysis considers that recovery is unlikely, due to severe or irretrievable impairment of the solvency of the transaction or the obligor. This is an accounting classification only, hence there is no equivalent in the prudential criteria.

In 2022, the accounting and prudential definitions were aligned by incorporating core regulation aspects that better capture the economic downturn, such as day count and materiality thresholds. Only certain criteria that capture an exclusively prudential assessment have been excluded from the definition, thus avoiding excessive conservatism in the accounting perspective.

Additionally, the Group's Customer Forborne Loans Debt Policy defines forbearance as the modification of the payment conditions of a transaction, which allows a customer experiencing financial difficulties (current or foreseeable) to fulfil his/her payment obligations, on the basis that if this modification were not made, it would be reasonably certain that the customer would not be able to meet his/her financial obligations.

The modification may be made to the original transaction or through a new transaction which replaces it and is accompanied with concessions by the bank.

The modification may be made to the original transaction or through a new transaction which replaces it and is accompanied with concessions by the bank.

Measuring the credit risk of a transaction involves calculating both the expected and the unexpected loss on the transaction. Unexpected loss is the basis for the calculation of both regulatory and economic capital. It refers to a very high, though improbable, level of loss that is not considered a recurring cost and must be absorbed by capital. Measuring risk involves two separate steps: estimating the risk and then assigning the credit risk parameters: PD, LGD and EAD.

**PD (probability of default)** estimates the likelihood that a customer or a contract will default within 12 months. PD used for regulatory capital is long run, or TTC (through-the-cycle) PD, which is not linked to a specific point in the cycle.

The default event being modelled is based on the definition in article 178 of the European Central Bank Solvency Regulation<sup>6</sup>, which considers default to be defined for a customer/contract when at least one of the following circumstances arises:

- The entity considers there is reasonable doubt about the obligor meeting their credit obligations in full.
- The customer/contract is past due by more than 90 days on any material credit obligation.

Recently, the definition of default has also been adopted in accordance with the "Guidelines on the application of the definition of default" and the materiality thresholds set by the competent authorities.

The event to be modelled in corporate portfolios is customer default, whereas PD is estimated at the contract level in retail portfolios.

Calculations of PD are based on the entity's own internal experience, i.e. on past observations of defaults by rating level or scoring.

**LGD (loss given default)** is the mathematical expectation of the percentage loss in the event of a default event. LGD is calculated using internal data on the income and expenses incurred by the institution during the recovery process once the default event has arisen, discounted to the start date of the default.

LGD calculated to determine regulatory capital is "downturn" LGD, i.e. considered for a worst-case scenario in the economic cycle.

In addition to the estimation of downturn LGD that will be used for normal operations, a specific loss estimate is made for operations in default. This is determined using LGD and

<sup>6</sup> Regulation (EU) No 575/2013 of the European Parliament and Council of 26 June 2013 on prudential requirements for credit institutions and investment firms.

ELBE (expected loss best estimate) parameters. ELBE attempts to provide the best estimate of economic loss at a particular time based mainly on the time during which the operation has been in default, with due regard to the prevailing economic situation, while LGD for transactions in default is increased by any further unexpected losses that may be reported during the recovery period.

Finally, **EAD (exposure at default)** is calculated. This is defined as the value of the debt at the time of default. For lending products or any product with no off-balance-sheet amount, EAD equals the balance of the transaction plus any interest accrued but not yet payable. For products providing facilities it is necessary to estimate any future drawings that will be made between the present time and any possible future default event. The **CCF (credit conversion factor)** is calculated for this reason, to show the percentage of the balance not currently utilised (off-balance-sheet amount) that would be utilised at the time of default.

**Past information** on portfolios is essential for estimating regulatory parameters, as established in EU regulations (Regulation No 575/2013). The minimum data periods to be used in estimates are between five and seven years, depending on the parameter and the portfolio, although the period used in the estimate can be longer, depending on the historical information available. The Bank has an internal data model containing historical information on portfolios, which is subject to review by the internal supervisory divisions (Validation and Audit) and by the supervisory authorities.

**The methodology** used to estimate the credit risk parameters will be updated under the new regulatory guidelines, mainly established in the "Guidelines on PD estimation, LGD estimation and the treatment of defaulted assets", to incorporate the requirements and interpretations deriving from these regulatory provisions.

For regulatory purposes, observations of frequency of default and associated losses must be averaged out over an entire economic cycle, in the case of PD, or represent a downturn situation in the case of LGD or EAD, or represent the current economic cycle in the case of ELBE for non-performing transactions.

For this reason, recent observations are not directly comparable with the regulatory parameters and **backtesting exercises** should be treated with due caution, placing them in the context of the current economic environment. As explained in section 3.10, recent observed default frequencies (ODFs) are below the regulatory PDs in geographies with economic growth rates above the average for the cycle. Conversely, in regions where economic growth is below average, the ODFs may exceed the regulatory PDs.

The risk parameters must be estimated separately for each entity, country and segment, and must be reviewed at least once a year.

The parameters are then assigned to the transactions recorded on each unit's balance sheet, so as to calculate the expected losses and capital requirements associated with the unit's exposure.

In certain portfolios there is so little default experience that alternative approaches to parameter estimation must be adopted. These are known as low default portfolios.

**Low default portfolio: corporates; banks; non-bank financial institutions and central governments.**

Estimates of PD and LGD in low default portfolios rely chiefly on studies performed by external rating agencies, which reflect the pooled experience of the large numbers of entities and countries rated by the agencies. These databases contain in-depth historical information to help identify complete economic cycles and analyse downturn situations.

The definition of default employed by the agencies is compared in detail with the regulatory requirements. Even though this does not produce a perfect match, there are sufficient points in common to enable this approach to be used.

For PD, the agencies do not directly report long run (through the cycle, TTC) estimates, but rather the annual observed default frequency. The observations are averaged out over an economic cycle by external rating levels to obtain the long run (TTC) PD. This long run PD is assigned to all counterparties with external ratings, which later helps to calibrate the internal rating. Therefore, the PD will not depend on the counterparty's external rating, but on its internal rating, and may also be applied to customers with no external rating.

The parameters estimated for global portfolios are the same for all the Group units. Thus, a financial institution with a rating of 8.5 will have the same PD, regardless of the unit in which the exposure is recognised.

#### **Corporates (including SMEs, specialised lending and receivables)**

The estimation is based on the entity's own internal experience for portfolios of customers that have an account manager assigned to them with sufficient experience of internal defaults. The PD is calculated for customers by observing new NPLs in the portfolio and relating these to the ratings assigned to the customers concerned. To this end, long-run observed default frequencies (LR ODFs) are calculated for a rating or group of ratings and are adjusted to the average PD observed for each portfolio over a complete economic cycle.

Unlike low default portfolios, corporates portfolios have specific rating systems in each the Group unit, requiring specific PD calibrations in each case.

In Corporates portfolios, LGD is calculated on the basis of observed recoveries of defaulted transactions. This calculation takes into account not only the cash inflows and outflows associated with the recovery process but also the timing of these flows, so as to calculate their present value, and direct and indirect recovery costs. For regulatory use, LGD estimates must be associated with a period of economic crisis or downturn. The existence of major variables (known as "drivers") is modelled to explain the emergence of various LGDs for different groups of transactions. The main drivers used are the age of the transactions, the existence or absence of guarantees, the type of guarantee, the Loan to Value, etc. Statistical significance and business relevance are required for these explanatory variables. Estimated ELBE and LGD are also calculated for operations in default.

Finally, EAD is estimated by comparing the percentage use of off-balance sheet operations at the time of default and in normal circumstances, to estimate the extent to which customers make more use of their credit facilities as they approach default. To estimate the CCF, information on past defaults is gathered from databases and balances (on and off the balance sheet) are compared between the time of default

and earlier times when the downturn in the customer's credit quality had yet to be observed.

### Retail

In portfolios where customers do not have an account manager assigned to them but are treated on a pooled or standardised basis, PDs are estimated based on the entity's internal experience, although the unit of information for assigning PD is the transaction, not the customer.

PDs are calculated by observing new NPLs and relating each new NPL to the score assigned to the transaction at the time of approval or, for transactions beyond a certain age, to the customer's rating. As with the corporates portfolios, LGD is calculated on the basis of an observed recovery process, adjusted to downturn conditions. Estimated ELBE and LGD are also calculated for transactions in default. The EAD estimation is also similar to that for corporates.

For further details, see Appendix XVII, which contains several tables summarising the parameter models used in the geographies, complying with the requirement (e) of CRE in relation to the article 452 (f) of the CRR.



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## 4.6. Uses of internal parameter estimates

One major application of the PD, LGD and EAD credit risk parameters is to determine minimum capital requirements within the CRR framework.

The CRR states that these parameters and their associated metrics, including expected and unexpected loss, are to be used not only for regulatory purposes but also for internal credit risk management.

The Group has adapted its projection methodology to IFRS 9, resulting in an impact on the estimation of expected loss and the other relevant credit risk metrics arising from the parameters obtained, thus making full use of the risk parameters (PD, LGD and EAD) in its management through the calculation of provisions and allowances.

The internal credit risk parameter estimates are also used in a variety of management tools, including pre-classifications, economic capital allocation, the RoRAC (return on risk-adjusted capital) calculation, RoRWA (return on risk-weighted assets), stress testing and scenario analyses, the results of which are reported to senior management through various internal committees.

The pre-classification tool is used to assign limits to customers based on their risk characteristics. For the Corporate Investment Banking (SCIB) segment, limits are established for capital at risk (CaR) and nominal CAP.<sup>7</sup> Limits for financial institutions are managed using credit risk equivalent (CRE) models.

Through the calculation and allocation of economic capital, all the various types of risks arising from the lending business are integrated in a single measurement, combining measurement of credit risk with that of other risks, including market, operational, business and on-balance-sheet interest rate risk. The economic capital allocation at the business unit level provides a view of the distribution of risk by business activity and geographical area, taking the benefits of diversification into account. By relating economic capital to financial results, it is possible to calculate the risk-adjusted return (RoRAC), which can be compared to the cost of capital to determine how each unit is contributing to value creation in the Group.

The use of economic capital figures in determining management compensation and setting capital and RoRAC-related targets for the business units further reinforces the integration of economic capital in management.

In scenario analyses, the credit risk parameters (including provisions under IFRS 9) are related to macroeconomic variables, such as the unemployment rate, GDP growth and interest rates, using statistical models. This allows credit risk to be quantified under different macroeconomic scenarios, and in particular, to assess potential risk levels in stress situations.

For further details on IFRS 9, see the Risk management chapter (section 3.4) of the 2022 Annual Report.



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## 4.7. Credit risk mitigation techniques

This section covers the CRC requirement - Qualitative disclosure requirements related to credit risk mitigation techniques.

**Santander applies various credit risk mitigation techniques based on customer and product type, among other factors.**

Some are inherent to specific operations (such as real estate collateral) while others apply to a series of transactions (such as netting or collateral).

### Second and subsequent mortgages

As a general rule, and from a risk acceptance perspective, lending criteria are linked to the borrower's capacity to fulfil all of their financial obligations in due time and proper form, although this is no impediment to seeking the highest level of collateral or personal guarantees.

Payment capacity is assessed on the basis of the funds or net cash flows from their businesses or usual sources of income, without depending on guarantors or assets delivered as collateral. These must always be taken into account when considering approval of the transaction as a second and exceptional method of recovery when the first method has

<sup>7</sup> Maximum nominal amount of a risk transaction, excluding market transactions and with maximum terms according to the type of transaction

failed. As a general rule, security is defined as a reinforcement that is added to a credit operation for the purpose of mitigating any loss arising from default on the payment obligation.

Effective guarantees, for these purposes, are collateral and personal guarantees whose validity is demonstrated as mitigating the credit risk and whose valuation is compliant with the internal policies and procedures in place. The analysis of the effectiveness of the guarantee must consider, among other things, the time necessary for the execution of the security and the capacity to make the guarantees effective.

For the calculation of regulatory capital, only those that meet the requirements described both in the CRR and in the EBA's guide on credit risk reduction are taken into consideration.

Implementation of mitigation techniques follows the minimum requirements established in the guarantee management policy: legal certainty (possibility of legally requiring the settlement of guarantees at all times); the lack of a substantial positive correlation between the counterparty and the value of the collateral; the correct documentation of all guarantees; the availability of the documented methodologies used for each mitigation technique; and appropriate monitoring, traceability and regular monitoring of the items or assets used for the guarantee. The mitigation techniques can be grouped into the following categories:

#### Personal guarantees

This type of guarantee grants the creditor a personal right or entitlement affecting the equity of the guarantor. Examples include bonds, guarantees and stand-by letters of credit. Only personal guarantees provided by persons who meet the minimum requirements established by the supervisory authority can be recognised in capital calculations.

#### Hedging through credit derivatives

Credit derivatives are financial instruments that are mainly used to hedge credit risk. By buying protection from a third party, Banco Santander transfers the risk of the issuer of the underlying instrument. Credit derivatives are over-the-counter (OTC) instruments that are traded on non-organised markets. Hedging with credit derivatives is contracted with leading financial institutions, mainly using credit default swaps.

The distribution of personal guarantees and credit derivatives for the corporates, banks, non-financial institutions and sovereigns segments by rating grade is shown below, in compliance with one of the transparency recommendations originally issued by the Basel Committee:

**Table 41. Guarantees by external rating**

EUR million		2022	
<b>Corporates</b>			
External Rating	Exposures in default	Exposures not in default	
AAA/AA	—	330	
A	—	8,430	
BBB	—	16,632	
BB	2	2,901	
B	—	1,110	
Rest	95	191	
Unrated	—	—	
<b>Total</b>	<b>97</b>	<b>29,594</b>	
<b>Banks</b>			
External Rating	Exposures in default	Exposures not in default	
AAA/AA	0	2,046	
A	0	5,200	
BBB	0	211	
BB	0	—	
B	0	—	
Rest	0	—	
Unrated	0	—	
<b>Total</b>	<b>0</b>	<b>7,456</b>	
<b>Other financial institutions</b>			
External Rating	Exposures in default	Exposures not in default	
AAA/AA	0	2,467	
A	0	7,038	
BBB	0	1,647	
BB	0	35	
B	0	—	
Rest	0	—	
Unrated	0	—	
<b>Total</b>	<b>0</b>	<b>11,187</b>	
<b>Sovereign</b>			
External Rating	Exposures in default	Exposures not in default	
AAA/AA	0	15,686	
A	0	26,293	
BBB	0	5,278	
BB	0	156	
B	0	212	
Rest	0	—	
Unrated	0	—	
<b>Total</b>	<b>0</b>	<b>47,626</b>	

## Collateral

This is collateral pledged on assets (movable or immovable) or rights that are specific and determinate. These are rights that secure performance of the main obligation for the creditor via the attachment of an asset. As a result of this attachment, in the event of default on the secured obligation, the creditor may realise the economic value of the asset through a regulated procedure and collect the proceeds; preference over other creditors may be upheld in this collection method. Collateral may also be classified as follows:

- **Real estate guarantees** implemented as first charge real estate mortgages. The property can be buildings and parts of finished buildings (homes, offices, commercial premises, multi-purpose buildings, non multi-purpose buildings and hotels), urban land and land for urban development, and other property (buildings under construction, developments in progress, etc.).
- **Pledges on financial instruments** (cash deposits, debt instruments).

A very important example of financial collateral is that which is used for the purpose (as with the netting technique) of reducing counterparty credit risk. Collateral consists of instruments with certain economic value and high liquidity that are deposited/transferred by one party in favour of another to guarantee or reduce any counterparty credit risk arising from portfolios of risk-bearing transactions between the two. Transactions backed by collateral are marked to market periodically (usually daily) and the parameters defined in the collateral agreement are applied, obtaining an amount of collateral (usually cash or securities) to be called from, or returned to, the counterparty.

From an estimation standpoint, the collateral adjudication flows are reduced on the basis of a haircut, which reflects the difference between the sale value of the asset and the adjudication value, as well as other aspects such as indirect costs or the effect of the discount factor.

## Netting

The concept of netting involves offsetting gains and losses on multiple transactions of the same type under the umbrella of a master agreement such as an ISDA or similar (CSA, OSLA, ISMA, GMRA, etc.).

Market gains and losses on derivative transactions between Santander and a counterparty are offset against one another, so that if the counterparty defaults, it owes (or Santander owes, if the net amount is negative) a single net amount, rather than a large number of positive and negative amounts relating to the individual transactions entered into with that counterparty.

An important feature of a master netting agreement is that it entails a single legal obligation, encompassing all the transactions covered by the agreement. This is what makes it possible to offset the risks of all the transactions covered by the agreement with a counterparty.

There are two methodologies for the measurement of exposure: a mark-to-market (MtM) methodology, involving replacement cost in the case of derivatives, plus an add-on for potential future exposure; and a methodology including calculation of exposure using Monte Carlo simulation, which is used in certain regions and for some products. We also

calculate capital at risk or unexpected loss, i.e. the loss in economic capital once expected loss is subtracted, net of guarantees and recoveries.

Exposures are recalculated at market close, adjusting all transactions to their new time horizon. Potential future exposure is adjusted and mitigation measures (netting, collateral, etc.) are applied, so that exposures can be checked on a daily basis against the limits approved by senior management. Risk control is performed through an integrated system in real time, enabling the exposure limit available with any counterparty to be known at any time.

**Table 42. Credit risk mitigation techniques - IRB and SA**

Million euros	Exposures unsecured	Exposures secured	Exposures secured by personal guarantees	Exposures secured by collateral pledged	Exposures secured by mortgage collateral
Total IRB exposures (after CCFs)	326,550	640,751	89,403	46,984	504,364
Total STD exposures	906,729	144,295	16,050	22,050	106,195
<b>Type of guarantee applied in credit risk mitigation evaluated under standard methodology</b>					
Central governments or central banks	354,937	3,994	3,963	32	
Regional government or local authorities	1,436	269	164	105	
Public sector entities	4,546	17	1	16	
Multilateral development banks	2,066	—	—	—	
International organisations	664	—	—	—	
Institutions	22,131	1,866	1,558	307	
Corporates	78,890	9,770	5,309	4,461	
Retail	216,591	17,616	3,071	14,545	
Exposures covered by residential mortgages	—	110,294	1,598	2,502	106,195
Exposures in default	11,886	442	370	72	
Higer-risk categories	1,337	13	5	9	
Covered bonds	1,728	—	—	—	
Institutions and corporates with a short-term credit assessment	179	—	—	—	
Collective investment under takings (CIU)	158	—	—	—	
Equity	2,181	—	—	—	
Other items	101,805	14	12	2	
<b>Type of guarantee applied in credit risk mitigation evaluated under IRB methodology</b>					
IRB methods when neither proprietary LGD estimates nor conversion factors are used					
Specialised lending	25,979	—	—	—	—
Institutions	3,804	48	18	10	20
Corporates - SMEs	1,341	229	—	1	228
Corporates - Other	12,843	1,491	914	203	374
IRB approach when proprietary LGD estimates and/or conversion factors are used					
Institutions	31,416	15,605	11,556	3,950	100
Corporates - SMEs	—	43,458	13,296	3,287	26,876
Corporates - Other	187,033	94,568	51,870	18,293	24,405
Retail exposures - guaranteed by real estate, SMEs	—	48,123	122	34	47,967
Retail exposures - guaranteed by real estate, not SMEs	—	403,536	—	12	403,524
Qualifying revolving retail exposures	23,000	—	—	—	—
Retail exposures - other, SME	16,314	15,380	11,501	3,258	622
Retail exposures - other, not SME	24,821	18,311	127	17,935	250

#### 4.7.1. Recognition of credit risk mitigation

##### Valuation and control processes

The valuation of collateral should always use conservative criteria appropriate to the time horizon of the secured transaction, using the most appropriate processes for each type of collateral to minimise the risk of overvaluation. The time value of the collateral offered, as well as its possible change in nature, especially in the case of rights, or risks of reduction in value, amortisation or disappearance, must be appropriate to the maturity and payment flow of the main

transaction. From the point of view of parameter estimation, the collateral allotment flows are discounted on the basis of a haircut, which reflects the difference between the sale value of the asset and the allotment value, as well as other aspects such as indirect costs or the effect of the discount factor.

For collateral, the value of the collateral established at the time of grant must be updated in accordance with minimum frequencies, either by individual valuation or by automated

methods. In any case, the following frequency criteria shall be observed depending on the type of collateral:

- Financial collateral shall be valued at least quarterly, taking its fair value as a reference value.
- For movable and immovable collateral, the existence of indications of significant falls in their reference valuations must be verified at least annually or when the thresholds established by the unit are exceeded, which in this case could trigger an individualised update. In determining whether there are indications of significant falls, factors such as the development of published mortgage market price indices or the opinion of an independent valuator will be taken into account. For transactions classified as doubtful risk, the minimum frequency must be annual..
- More specific review periods, with a higher frequency than normal, may be established for: real estate under construction, collateral securing transactions with a high LTV ratio, or when securing loans with a low credit quality, as defined in the relevant customer monitoring governance for each segment.

In any case, individualised updates of the value of collateral shall be made in the following cases:

- When the monitoring of the customer's performance reveals any negative symptoms that make it necessary to take urgent measures to secure the customer's credit operations.
- When a decision is taken to initiate a legal claim, or to negotiate a restructuring, with or without granting new credits.

- When it is intended to novate the credits in an amending way, altering essential elements of the same (amount and term).
- Where partial release or substitution of collateral associated with a transaction is sought.
- In guarantees granted through financial securities, where daily value updates and immediate requirement of additional coverage must be made when the thresholds established in the corresponding contract are exceeded. In this type of guarantees, the inclusion of a clause for replenishment or the provision of additional collateral in the event of variations in value below a certain threshold is considered to be an eligibility policy.
- When market conditions or extraordinary events make it advisable for certain types of transactions or when there is a specific regulation that makes it compulsory to do so.
- Transactions that have been in the doubtful risk category for more than 3 years.
- When required taking into consideration the type and complexity of the collateral, e.g. aircraft, ships, factories, machinery, etc.

For loans exceeding EUR 3 million or 5% of an institution's own funds, the valuation on the real estate must be reviewed by an expert valuer at least every 3 years.

**Table 43.CR3 - CRM techniques overview: Disclosure of the use of credit risk mitigation techniques**

EUR million		2022				
		Unsecured carrying amount	Secured carrying amount			
a	b		Of which secured by collateral	Of which secured by financial guarantees		
		c		d	Of which secured by credit derivatives	e
1	Loans and advances	567,731	740,029	639,839	100,190	3,027
2	Debt securities	139,059	640	39	601	—
3	<b>Total</b>	<b>706,790</b>	<b>740,669</b>	<b>639,878</b>	<b>100,791</b>	<b>3,027</b>
4	Of which non-performing exposures*	21,270	16,014	13,815	2,199	—
EU-5	Of which defaulted**	11,887	12,718	12,452	265	—

\*Correction of the mapping {F 18.00, r0070+r0191+r0221, c0060} - {F 18.00, r0070+r0191+r0221, c0200+c0210} + ({F 18.00, r0010+r0181+r0211, c0060} - {F 18.00, r0010+r0181+r0211, c0200+c0210})

\*\*Defaulted information net of provisions

**CR3 - CRM techniques overview: Disclosure of the use of credit risk mitigation techniques (31.12.2021)**

EUR million		2021				
	Unsecured carrying amount	Secured carrying amount				
		a	b	Of which secured by collateral	Of which secured by financial guarantees	Of which secured by credit derivatives
				c	d	e
1	Loans and advances	552,565	702,437	612,273	90,164	2,915
2	Debt securities	121,428	618	58	560	—
3	<b>Total</b>	<b>673,993</b>	<b>703,055</b>	<b>612,331</b>	<b>90,724</b>	<b>2,915</b>
4	Of which non-performing exposures	21,182	16,830	14,647	2,183	—
EU-5	Of which defaulted*	17,438	7,515	7,301	213	—

\*Defaulted information net of provisions

**Table 44. IRB approach. Credit risk mitigation techniques: credit derivatives and personal guarantees**

EUR million		2022		2021	
Original hedged exposure by collateral type and exposure category		Financial guarantees	Personal guarantees	Financial Guarantees	Personal guarantees
<b>IRB Approach</b>					
Central administrations and banks				—	—
Institutions		49	11,603	144	12,985
Corporates		1,816	64,486	1,637	52,537
Retail		—	11,749	—	11,732
<b>Total</b>		<b>1,865</b>	<b>87,838</b>	<b>1,781</b>	<b>77,253</b>

The following table shows the impact of the credit derivatives used as credit mitigation techniques in RWAs.

**Table 45. CR7 - IRB approach - Effect on the RWEAs of credit derivatives used as CRM techniques**

EUR million		2022	
		Pre-credit derivatives RWAs	Actual RWAs
		a	b
1	<b>Exposures under FIRB</b>	<b>24,690</b>	<b>24,690</b>
2	Central governments and central banks	—	—
3	Institutions	392	392
4	Corporates	24,298	24,298
4.1	of which Corporates - SMEs	1,066	1,066
4.2	of which Corporates - Specialised lending	14,509	14,509
5	<b>Exposures under AIRB</b>	<b>189,020</b>	<b>188,442</b>
6	Central governments and central banks	—	—
7	Institutions	8,522	7,945
8	Corporates	93,783	93,783
8.1	of Corporates - which SMEs	17,817	17,817
8.2	of which Corporates - Specialised lending	—	—
9	Retail	86,715	86,714
9.1	collateral	4,719	4,719
9.2	property collateral	48,059	48,059
9.3	of which Retail - Qualifying revolving	4,547	4,547
9.4	of which Retail - SMEs - Other	8,574	8,574
9.5	of which Retail - Non-SMEs- Other	20,816	20,816
10	<b>Total</b>	<b>213,710</b>	<b>213,132</b>

Does not include CCPs

The table shows an impact of credit derivatives on AIRB Institutions of 577 million euros.

**Table 46.CR7-A - IRB approach - Disclosure of the extent of the use of CRM techniques**

EUR million														2022	
Credit risk Mitigation techniques														Credit risk Mitigation methods in the calculation of RWEAs	
A-IRB	Total exposures	Funded credit Protection (FCP)						Unfunded credit Protection (UFCP)						RWEA without substitution effects (reduction effects only)	RWEA with substitution effects (both reduction and substitution effects)
		Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Other eligible collaterals (%)			Part of exposures covered by Other funded credit protection (%)			Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	Part of exposures covered by Instruments held by a third party (%)	Part of exposures covered by Life insurance policies (%)	Part of exposures covered by Cash on deposit (%)		
			Part of exposures covered by Immovable property Collaterals (%)	Part of exposures covered by Receivables (%)	Part of exposures covered by Other physical collateral (%)	Part of exposures covered by Cash on deposit (%)	Part of exposures covered by Life insurance policies (%)	Part of exposures covered by Instruments held by a third party (%)							
a	b	c	d	e	f	g	h	i	j	k	l	m	n		
<b>1</b>	<b>Central governments and central banks</b>														
<b>2</b>	<b>Institutions</b>	38,552	2.68 %	5.45 %	0.26 %	— %	5.19 %	— %	— %	— %	— %	— %	9,344	7,945	
<b>3</b>	<b>Corporates</b>	179,535	5.70 %	30.59 %	28.56 %	0.36 %	1.67 %	0.44 %	0.44 %	— %	— %	— %	98,930	93,783	
3.1	Of which Corporates - SMEs	27,368	5.35 %	103.95 %	98.20 %	0.19 %	5.55 %	0.01 %	— %	0.01 %	— %	— %	17,368	17,817	
3.2	Of which Corporates - Specialised lending												—		
3.3	Of which Corporates - Other	152,167	5.77 %	17.40 %	16.04 %	0.39 %	0.97 %	0.52 %	0.52 %	— %	— %	— %	81,563	75,966	
<b>4</b>	<b>Retail</b>	385,224	0.30 %	122.48 %	117.43 %	— %	5.05 %	0.01 %	— %	0.01 %	— %	— %	86,700	86,714	
4.1	Of which Retail - Immovable property SMEs	16,314	0.11 %	294.02 %	294.02 %	— %	— %	— %	— %	— %	— %	— %	4,784	4,719	
4.2	Of which Retail - Immovable property non-SMEs	296,778	— %	135.97 %	135.97 %	— %	— %	— %	— %	— %	— %	— %	48,059	48,059	
4.3	Of which Retail - Qualifying revolving	13,825	— %	— %	— %	— %	— %	— %	— %	— %	— %	— %	4,547	4,547	
4.4	Of which Retail - Other SMEs	17,529	2.07 %	20.07 %	3.55 %	— %	16.52 %	0.02 %	— %	0.02 %	— %	— %	8,490	8,574	
4.5	Of which Retail - Other non-SMEs	40,777	1.89 %	41.21 %	0.61 %	— %	40.60 %	0.06 %	— %	0.06 %	— %	— %	20,819	20,816	
<b>5</b>	<b>Total</b>	<b>603,311</b>	<b>2.06 %</b>	<b>87.66 %</b>	<b>83.50 %</b>	<b>0.11 %</b>	<b>4.05 %</b>	<b>0.14 %</b>	<b>0.13 %</b>	<b>— %</b>	<b>— %</b>	<b>— %</b>	<b>194,974</b>	<b>188,442</b>	

Phased-in IFRS9

**Table 46.CR7-A - IRB approach - Disclosure of the extent of the use of CRM techniques**

EUR million

2022

F-IRB	Credit risk Mitigation techniques											Credit risk Mitigation methods in the calculation of RWEAs		
	Funded credit Protection (FCP)							Unfunded credit Protection (UFCP)				RWEA without substitution effects (reduction effects only)	RWEA with substitution effects (both reduction and substitution effects)	
	Part of exposures covered by Other eligible collaterals (%)			Part of exposures covered by Other funded credit protection (%)				Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	Part of exposures covered by Instruments held by a third party (%)				
	Total exposures	Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Immovable property Collaterals (%)	Part of exposures covered by Receivables (%)	Part of exposures covered by Other physical collateral (%)	Part of exposures covered by Cash on deposit (%)	Part of exposures covered by Life insurance policies (%)							
a	b	c	d	e	f	g	h	i	j	k	l	m	n	
<b>1</b>	<b>Central governments and central banks</b>													
<b>2</b>	<b>Institutions</b>	1,894	0.20 %	1.19 %	1.05 %	— %	0.14 %	— %	— %	— %	— %	— %	534	392
<b>3</b>	<b>Corporates</b>	33,342	0.46 %	2.41 %	1.80 %	0.04 %	0.57 %	— %	— %	— %	— %	— %	25,894	24,298
3.1	Of which Corporates - SMEs	1,295	0.05 %	17.61 %	17.61 %	— %	— %	— %	— %	— %	— %	— %	1,066	1,066
3.2	Of which Corporates - Specialised lending	20,804	— %	— %	— %	— %	— %	— %	— %	— %	— %	— %	15,967	14,509
3.3	Of which Corporates - Other	11,243	1.37 %	5.12 %	3.32 %	0.11 %	1.68 %	— %	— %	— %	— %	— %	8,861	8,722
<b>4</b>	<b>Total</b>	<b>35,237</b>	<b>0.45 %</b>	<b>2.34 %</b>	<b>1.76 %</b>	<b>0.04 %</b>	<b>0.54 %</b>	<b>— %</b>	<b>— %</b>	<b>— %</b>	<b>— %</b>	<b>— %</b>	<b>26,428</b>	<b>24,690</b>

Phased-in IFRS9

## 4.8. Asset impairment losses: influencing factors and comparative analysis

In addition to the advanced models described (which are detailed in the economic capital section), other metrics are used to help ensure prudent and effective credit risk management based on an assessment of losses on the portfolios.

Credit risk is monitored continuously and comprehensively, to ensure the early identification of incidents involving risk that could affect customers' credit ratings. This monitoring is carried out through the periodic review of all customers, the allocation of a monitoring score, the establishment of pre-defined actions associated with each category and the implementation of specific measures (predefined or ad-hoc) to correct potential deviations that could have negative impact on the entity.

The analysis of credit risk involves continuous and systematic comparison to budgets, limits and standards, assessing the effects of future external events and strategic decisions, to establish measures that ensure the risk profile and volume are within the established parameters and aligned with the appetite established by the group.

The main metric used to measure and control the credit risk at the Group is the cost of credit. This ratio quantifies loan-loss provisions arising from credit risk over a defined period of time for a given loan portfolio. As such, it acts as an indicator of the group's credit quality.

The loan-loss provisions are calculated under the IFRS 9 standards.

The basic structure for the impairment recognition phases is as follows, from lower to higher credit quality impairment (phases 1 to 3):

- Phase 1: expected credit losses over the next twelve months
- Phase 2: expected credit losses over the life of the instrument
- Phase 3: recognised credit losses over the life of the instrument

A significant increase in credit risk determines the transition from the first phase to the second phase.

For further details on the key credit risk figures, see the Risk management and control chapter of the 2022 Annual Report.



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## 4.9. Backtesting of IRB parameters

### 4.9.1. Backtesting of PD

The aim of the backtesting of PD is to assess the suitability of regulatory PDs by comparing them with the Observed Default Frequencies (ODFs) during the most recent period.

This comparison applies the quantitative study required by the European Banking Authority (EBA) in its Guidelines on disclosure requirements under part eight of the capital requirements regulation (EU) No 575/2013, of August 2017.

This proposes reporting information for backtesting PD in accordance with Template 24: - Internal ratings-based approach (IRB) - Back-testing of PD per exposure class.

For further details on PD backtesting (in accordance with the format of table CR9), see Appendix XVIII. A summary of the conclusions from the results obtained can be found below:

1. **There is no major difference between the average exposure weighted PD and the simple average in each band**, indicating that exposure is fairly uniformly distributed among the various transactions. This result is quite typical of retail portfolios, but not so clear in the case of corporate portfolios, where certain individuals may have significant exposures that can lead to greater variation between both parameters. However, as may be observed in the results shown in the Annex, there are no significant differences in the corporate portfolios either.
2. Regulatory PDs are similar to the actual default rates observed, although the following material facts should be noted
  - In general, regulatory PDs are higher than actual default rates, both in the last year and from a historical perspective. This situation is generally reflected by: 1) the conservative approach adopted in the estimation of the parameters and 2) the gradually improving prospect, though interrupted in the last two years, of a better economic situation once the recession that began in 2008 was overcome. These factors tend to reduce the frequencies of default observed. The exceptions to this situation are rare and are generally due to idiosyncratic features of the portfolios that have nothing to do with the economic situation, such as the process of integrating acquired entities.

- **The good performance of mortgage portfolios is especially noteworthy**, where the differences between the PD of the model and the delinquency levels are more noticeable. In addition, thanks to the considerable volumetric of these portfolios, the PD and default rate values maintain monotony for the different PD intervals, giving greater robustness to the results.
- In the case of the portfolios of large corporates and Financial Institutions, to which section (f) of article 180(1) of the CRR is being applied to estimate the PD, it can be seen that the low number of defaults leads to inconsistencies in some intervals and makes comparability with the average PD per debtor difficult. There may also be differences if the PD is weighted by exposure.

For further details on PD backtesting, see Appendix XIX, Appendix XX, Appendix XXI and Appendix XXII.



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#### 4.9.2. Backtesting of EAD

In order to compare the suitability of the estimated credit conversion factors (CCFs), the estimated parameters are compared with the actual CCFs in the most recent period. Given the downturn nature of the regulatory parameter, the estimated conversion factors are expected to exceed those observed. For this reason, the comparison must be placed in the context of the economic circumstances in which the contrast is made, although EAD is not a parameter that is particularly sensitive to the economic cycle.

Additionally, calculations of the so-called “coverage ratios” are performed, where the assigned EAD is compared with the default balance or observed EAD. Values above 100% are indicative of a suitable degree of conservatism.

#### 4.9.3. Backtesting of LGD

As for the rest of the parameters, the LGD estimates are compared with the LGD realised in the most recent period. Given the downturn nature of the regulatory parameter, the estimated LGDs are expected to exceed those observed. For this reason, the comparison must be placed in the context of the economic circumstances in which the contrast is made, particularly taking into account the typical sensitivity to the cycle of the parameter, especially in portfolios where the collateral is sensitive to the economic cycle.

### 4.10. Covid-19

With regard to measures put in place in 2020, within the scope of the Group's general response to the covid pandemic, the extraordinary measures have completely ended. Performance was positive thanks to the improved macroeconomic and health context in the main geographies.

**Table 47. Information on loans and advances subject to legislative and non-legislative moratoria**

EUR million

													2022	
	Gross carrying amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk						Gross carrying amount	
	Performing			Non performing			Performing			Non performing				
		Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)		Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days		Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days	Inflows to non-performing exposures*		
<b>Loans and advances subject to moratorium</b>	<b>75</b>	<b>75</b>	<b>—</b>	<b>3</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>(1)</b>	<b>(1)</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1</b>
of which: Households	36	36	—	—	—	—	—	—	—	—	—	—	—	—
of which: Collateralised by residential immovable property	1	1	—	—	—	—	—	—	—	—	—	—	—	—
of which: Non-financial corporations	39	38	—	3	—	—	—	(1)	(1)	—	—	—	—	1
of which: Small and Medium-sized Enterprises	4	4	—	1	—	—	—	—	—	—	—	—	—	—
of which: Collateralised by commercial immovable property	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Following indications from the Competent supervisory authority, information in this table is related to outstanding moratoria.

\* Inflows to non-performing exposures are biannual.

The next template shows the volume of loans and advances subject to legislative and non-legislative moratoria divided by their residual maturity.

**Table 48. Breakdown of loans and advances subject to legislative and non-legislative moratoria by residual maturity of moratoria**

EUR million

2022

	Number of obligors		Gross carrying amount						
			Of which: legislative moratoria	Of which: expired	Residual maturity of moratoria				
					<= 3 months	> 3 months <= 6 meses	> 6 months <= 9 months	> 9 months <= 12 months	> 1 year
<b>Loans and advances for which moratorium was offered</b>	2,439,732	97,419							
<b>Loans and advances subject to moratorium</b>	2,191,513	76,677	55,021	76,602	52	10	3	9	1
of which: Households		65,771	50,008	65,734	13	10	3	9	1
of which: Collateralised by residential immovable property		57,888	48,313	57,887	1	—	—	—	—
of which: Non-financial corporations		10,906	5,013	10,867	39	—	—	—	—
of which: Small and Medium-sized Enterprises		4,096	2,727	4,092	4	—	—	—	—
of which: Collateralised by commercial immovable property		2,757	1,463	2,757	—	—	—	—	—

The last template displays information on newly originated loans and advances provided under newly applicable public guarantee schemes introduced in response to covid-19.

**Table 49. Information on newly originated loans and advances provided under newly applicable public guarantee schemes introduced in response to COVID-19 crisis**

EUR million

2022

	Gross carrying amount		Maximum amount of the guarantee that can be considered	Gross carrying amount
		of which: forborne	Public guarantees received	Inflows to non-performing exposures*
<b>Newly originated loans and advances subject to public guarantee schemes</b>	34,370	4,712	27,488	526
of which: Households	1,483	—	—	27
of which: Collateralised by residential immovable property	2	—	—	—
of which: Non-financial corporations	32,887	4,422	26,297	500
of which: Small and Medium-sized Enterprises	24,024	—	—	397
of which: Collateralised by commercial immovable property	166	—	—	—

\* Inflows to non-performing exposures are biannual.



# 5

## Counterparty credit risk

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# 5. Counterparty credit risk



Counterparty credit risk is the risk that a counterparty to a transaction could default before the final settlement of the transaction's cash flows.

This chapter gives a detailed analysis of Santander Group's counterparty credit risk profile from several angles: region, type of financial contract, calculation method and notional value. It also focuses on regulatory indicators (EAD and RWA).

## Main figures

EUR million	EAD		RWA	
	2022	2021	2022	2021
Counterparty credit risk	49,155	56,996	12,895	15,546
Of which the standardised approach*	39,138	47,828	11,798	13,779
Of which internal model method (IMM)	—	—	—	—
Of which exposures to a CCPs**	3,799	7,023	76	140
Of which credit valuation adjustment - CVA	10,017	9,168	1,097	1,767

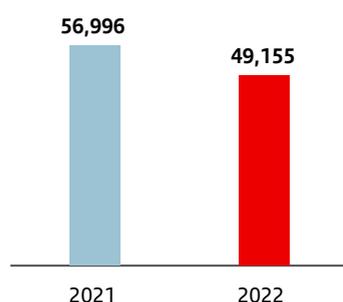
\*It includes other counterparty risks within standardised approach

\*\*Does not include CCPs exposures corresponding to pre-funded default fund contributions and unfunded default fund contributions.

## EAD variation

EUR million

(13.8)%

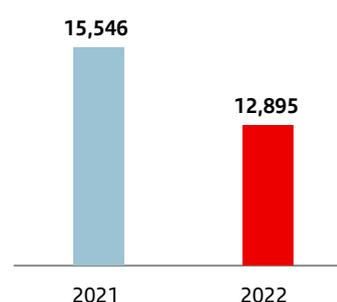


Note: Does not include CCPs or CVA.

## RWA variation

EUR million

(17.1)%



Note: Does not include CCPs or CVA.

## 5.1 Counterparty credit risk definition and framework

This section covers the qualitative requirement CCRA - Qualitative disclosure related to CCR. It also complies with (d), (e), (f) and (g) of the OVA Requirement - Institution risk management approach.

Chapter 6 of the CRR (Regulation (EU) No 575/2013) describes counterparty credit risk as the risk a counterparty to a transaction could default before the final settlement of the transaction's cash flows. It includes the following transaction types: derivative instruments, repurchase agreements, securities or commodities lending, long settlement transactions and lending transactions with margin replacement.

Santander includes counterparty credit risk in its Credit Risk Framework.

For management purposes, it also has a specific counterparty credit risk model, policy and procedures.

This risk is controlled using an integrated system that provides real-time information so that exposures can be checked on a daily basis against the limits approved by senior management for any counterparty, product or maturity, in any the Group unit.

Specific counterparty credit risk limits are included in the overall credit risk limits and counterparty credit risk is independently monitored and controlled. These limits are set and reviewed in accordance with the appetite set by the board. The definition of limits and appetite metrics are reviewed and updated every year.

There are two methodologies for the measurement of credit risk equivalent (CRE): a mark-to-market (MtM, replacement cost in the case of derivatives) methodology with an add-on for potential future exposure; and a methodology including calculation of exposure using Monte Carlo simulation, which is used in certain geographies and for some products.

In addition, quarterly stress tests are conducted for credit risk equivalent and the results are reported to senior management.

Credit risk equivalent is used to calculate capital at risk or unexpected loss, i.e. the loss in economic capital once expected loss is subtracted, net of guarantees and recoveries.

Every quarter, the risk teams report to senior management on the main risk metrics (exposure, MtM, notional amounts) of the group's Counterparty Credit Risk portfolio broken down by geography and segment.

## 5.2. Collateral agreements and guarantees

A policy is applied to regulate eligibility criteria for eligible collaterals and applicable haircuts complying with the Variation and Initial Margin regulatory requirements. The policy applies to derivatives, repo and securities lending transactions.

Transactions subject to collateral agreements are valued daily and on that valuation, the parameters agreed in the collateral agreement are applied, giving an amount of collateral to be called from, or returned to, the counterparty.

The counterparty that receives the margin call checks the valuation, at which point discrepancies may arise.

A monitoring committee (discrepancies committee) meets weekly to analyse transactions in which significant discrepancies have been detected, and manages them with Risk teams to ensure they are valued correctly.

## 5.3. Wrong-way risk

Wrong-way risk exists when the potential exposure of a transaction with a counterparty is highly and positively (adversely) correlated with the credit rating of the counterparty, i.e. if the counterparty's credit rating deteriorates, potential exposure increases.

The criterion used by the Group for calculating the credit exposure of derivatives with specific wrong way risk (WWR) is

very conservative, as exposure to derivatives with WWR resembles exposure to basic financing. In very specific exceptions, a decision may be taken to calculate the stressed credit exposure for the derivative, to provide incentives for short-term transactions with customers with good ratings and liquid underlyings with collateralisation mechanisms in the derivatives.

Santander has defined criteria to identify transactions subject to specific wrong way risk on the basis of the legal connection between the counterparty and the issuer of the underlying instrument. Additionally, a method for measuring general wrong way risk has also been defined.

Where most collateral is in cash, there is practically no risk of adverse effects arising from specific correlations between the collateral and the collateral provider. Any adverse effects arising from correlations in non-cash collateral are immaterial since issuances from the same counterparty and its subsidiaries are excluded from collateral eligibility policies.

## 5.4. Credit rating downgrade

It is estimated that if our credit rating was downgraded and it was required to post additional collateral, the impact of collateral would be relatively limited. This is because the Group's credit rating affects only a small percentage of its current collateral agreements. In the event of a hypothetical one-notch downgrade in the group's credit rating, it is estimated that the resulting impact of the collateral it would have to post would be €150 million.

## 5.5. Credit value adjustment (CVA)

The team responsible for managing counterparty credit risk in each geography charges the corresponding treasury desk a credit premium at the start of each transaction, in exchange for assuming the credit risk involved.

The team can then cover the CVA sensitivities through a combination of credit derivatives, interest rate derivatives, currency derivatives and other instruments.

CVA regulatory capital is also calculated. The purpose of this charge is to improve the resilience of banks to potential losses of market value associated with a reduction in the solvency of counterparties in derivatives transactions that are not settled through clearing houses.

The following table shows the credit valuation adjustment (CVA) for the counterparty credit risk.

**Table 50.CCR2 - Transactions subject to own funds requirements for CVA risk**

EUR million		2022	
		a	b
		Exposure value	RWA
1	Total transactions subject to the Advanced method		
2	(i) VaR component (including the 3× multiplier)		
3	(ii) stressed VaR component (including the 3× multiplier)		
4	Transactions subject to the Standardised method	10,017	1,097
EU4	Transactions subject to the Alternative approach (Based on the Original Exposure Method)		
5	<b>Total transactions subject to own funds requirements for CVA risk</b>	<b>10,017</b>	<b>1,097</b>

## 5.6. Central counterparties

The clearing of transactions through central counterparties is a common market practice for Santander. As a member of the clearing houses with which it operates, the bank contributes to their risk management framework through payments into the default fund, in addition to daily margin calls.

The risk associated with this type of counterparty is managed through the credit risk framework.

The following tables show central counterparty (CCP) exposure following risk mitigation techniques.

**Table 51.CCR8 - Exposures to CCPs**

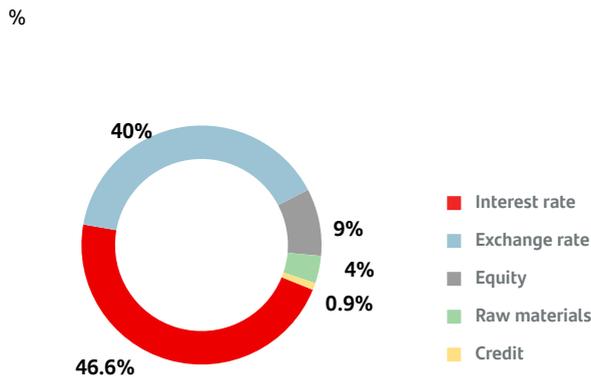
EUR million

	2022	
	a	b
	EAD (post CRM)	RWA
<b>1 Exposures to QCCPs (total)</b>		<b>230</b>
2 Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	3,799	76
3 (i) OTC derivatives	2,421	48
4 (ii) Exchange-traded derivatives	228	5
5 (iii) Securities financing transactions	1,151	23
6 (iv) Netting sets where cross-product netting has been approved		
7 Segregated initial margin		
8 Non-segregated initial margin		
9 Pre-funded default fund contributions	1,297	154
10 Unfunded default fund contributions	1,710	—
<b>11 Exposures to non-QCCPs (total)</b>		<b>48</b>
12 Exposures for trades at CCPs non-qualified (excluding initial margin and fund contributions); of which	2	2
13 (i) OTC derivatives	2	2
14 (ii) Exchange-traded derivatives		
15 (iii) Securities financing transactions		
16 (iv) Netting sets where cross-product netting has been approved		
17 Segregated initial margin		
18 Non-segregated initial margin		
19 Pre-funded default fund contributions	1	15
20 Unfunded default fund contributions	2	30

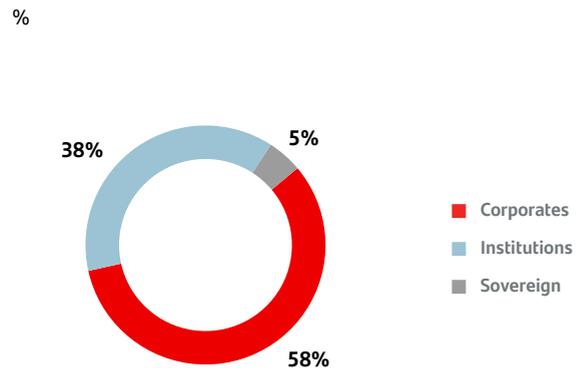
## 5.7. Credit counterparty credit risk indicators

The following table shows a breakdown of derivatives exposure by the type of product, category, geographical area and rating of the counterparty:

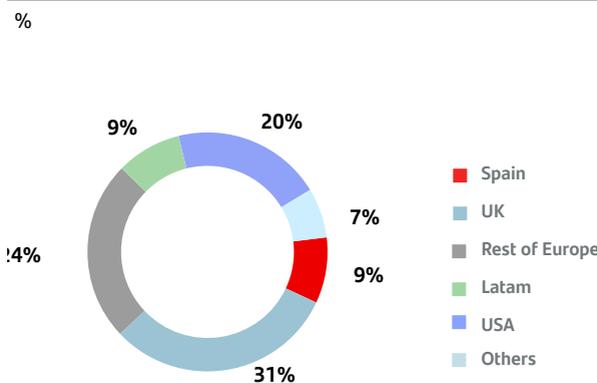
**Derivatives exposure by product**



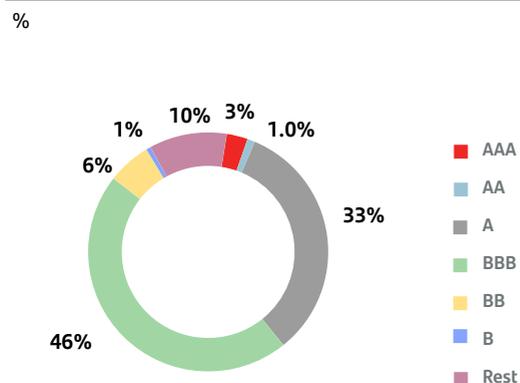
**Derivatives exposure by category**



**Derivatives exposure by geography**



**Derivatives exposure by rating**



In 2022, exposure to counterparty credit risk from derivative transactions was concentrated in counterparties with high credit quality, so that around 37% of the exposure was with counterparties rated A or higher. The distribution by type of counterparty was 38% Institutions, 5% in Sovereigns and 58% Corporates.

As regards geographic distribution, 31% of the exposure was accounted for by UK counterparties (mainly Santander UK's operations) with the remainder being accounted for by Spain (9%), the rest of Europe (24%), Latin America (9%), the United States (20%) and the rest of the world (7%).

The following table shows exposure to counterparty credit risk depending on the calculation methodology used.

**Table 52.CCR1 - Analysis of CCR exposure by approach**

EUR million									2022
		a	b	c	d	e	f	g	h
		Replacem ent cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre- CRM	Exposure value- post CRM	Exposure Value	RWEA
EU1	EU - Original Exposure Method (for derivatives)								
EU2	EU - Simplified SA-CCR (for derivatives)								
1	SA-CCR (for derivatives)	9,784	9,081		1.4	55,146	26,126	25,908	9,493
2	IMM (for derivatives and SFTs)								
2a	Of which securities financing transactions netting sets								
2b	Of which derivatives and long settlement transactions netting sets								
2c	Of which from contractual cross- product netting sets								
3	Financial collateral simple method (for SFTs)								
4	Financial collateral comprehensive method (for SFTs)					137,850	9,431	9,431	2,231
5	VaR for SFTs								
<b>6</b>	<b>Total</b>					<b>192,995</b>	<b>35,557</b>	<b>35,339</b>	<b>11,724</b>

Since June 2021, when the new European Capital Requirement Regulation (CRR) came into force, the Group has implemented the standard **SA-CCR** methodology for calculating the regulatory exposure of the derivatives portfolio.

The following table details the breakdown of counterparty credit risk exposures calculated using the standardised approach, by portfolio (counterparty type) and risk weighting (degree of risk resulting from the standardised approach):

**Table 53.CCR3 - Standardised approach - CCR exposures by regulatory exposure class and risk weights**

EUR million		Risk Weight											2022
		a	b	c	d	e	f	g	h	i	j	k	l
		0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	Total
1	Central governments or central banks	2,784	—	—	—	74	4	—	—	—	—	Others	2,862
2	Regional government or local authorities	8	—	—	—	210	—	—	—	—	—	—	218
3	Public sector entities	16	—	—	—	—	77	—	—	2	—	—	95
4	Multilateral development banks	552	—	—	—	—	—	—	—	—	—	—	552
5	International organisations	17	—	—	—	—	—	—	—	—	—	—	17
6	Institutions	1	3,799	—	—	853	387	—	—	102	—	—	5,142
7	Corporates	—	—	—	—	22	30	—	—	2,605	15	—	2,673
8	Retail	—	—	—	—	—	—	—	357	—	—	—	357
9	Institutions and corporates with a short-term credit assessment	—	—	—	—	—	7	—	—	—	6	—	13
10	Other items	—	—	—	—	—	—	—	—	18	—	—	18
<b>11</b>	<b>Total</b>	<b>3,378</b>	<b>3,799</b>	<b>—</b>	<b>—</b>	<b>1,159</b>	<b>504</b>	<b>—</b>	<b>357</b>	<b>2,727</b>	<b>22</b>	<b>—</b>	<b>11,947</b>

**CCR3 - Standardised approach - CCR exposures by regulatory exposure class and risk weights (31.12.2021)**

EUR million		Risk Weight											2021
		a	b	c	d	e	f	g	h	i	j	k	l
		0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	Total
1	Central governments or central banks	5,233	—	—	—	130	2	—	—	—	—	—	5,365
2	Regional government or local authorities	631	—	—	—	—	—	—	—	—	—	—	631
3	Public sector entities	188	—	—	—	—	—	—	—	—	—	—	189
4	Multilateral development banks	144	—	—	—	—	—	—	—	—	—	—	144
5	International organisations	23	—	—	—	—	—	—	—	—	—	—	23
6	Institutions	—	7,023	—	—	886	517	—	—	64	41	—	8,531
7	Corporates	12	—	—	—	7	29	—	—	2,546	47	—	2,641
8	Retail	—	—	—	—	—	—	—	42	—	—	—	42
9	Institutions and corporates with a short-term credit assessment	—	—	—	—	—	7	—	—	—	—	—	7
10	Other items	—	—	—	—	—	4	—	—	16	—	—	20
<b>11</b>	<b>Total</b>	<b>6,231</b>	<b>7,023</b>	<b>—</b>	<b>—</b>	<b>1,023</b>	<b>559</b>	<b>—</b>	<b>42</b>	<b>2,626</b>	<b>89</b>	<b>—</b>	<b>17,593</b>

The following table shows a breakdown of counterparty credit risk exposure by portfolio and PD scale (excluding CCPs and specialised lending).

**Table 54.CCR4 - AIRB approach - CCR exposures by exposure class and PD scale**

EUR million

							2022	
a	b	c	d	e	f	g	h	
PD scale	Exposure value	Exposure weighted average PD (%)	Number of obligors	Exposure weighted average LGD (%)	weighted average maturity (years)	RWEA	Density of risk weighted exposure amount	
<b>Institutions</b>								
1	0.00 < 0.15	11,975	0.06 %	1,021	43.74 %	0.67	1,992	16.64 %
2	0.15 < 0.25	976	0.19 %	105	44.48 %	0.55	400	41.00 %
3	0.25 < 0.50	306	0.33 %	123	42.67 %	0.18	150	48.99 %
4	0.50 < 0.75	99	0.66 %	31	41.52 %	0.04	69	69.65 %
5	0.75 < 2.50	9	1.91 %	41	44.39 %	0.77	12	128.18 %
6	2.50 < 10.00	71	2.89 %	31	21.35 %	4.75	58	82.00 %
7	10.00 < 100.00	69	45.00 %	77	41.59 %	0.97	213	309.15 %
8	100.00 (Default)	0	— %	0	— %	0.00	—	— %
<b>9</b>	<b>Sub-total</b>	<b>13,506</b>	<b>0.33 %</b>	<b>1,429</b>	<b>43.63 %</b>	<b>0.67</b>	<b>2,895</b>	<b>21.44 %</b>
<b>Corporates</b>								
1	0.00 < 0.15	8,529	0.09 %	368	44.96 %	2.05	2,168	25.42 %
2	0.15 < 0.25	865	0.22 %	534	44.97 %	3.14	501	57.85 %
3	0.25 < 0.50	360	0.37 %	215	44.93 %	2.02	233	64.81 %
4	0.50 < 0.75	849	0.59 %	837	42.58 %	2.40	667	78.53 %
5	0.75 < 2.50	208	1.43 %	495	43.78 %	1.94	224	107.87 %
6	2.50 < 10.00	158	3.23 %	255	42.00 %	1.58	201	126.99 %
7	10.00 < 100.00	34	21.58 %	85	43.65 %	1.08	85	254.19 %
8	100.00 (Default)	5	100.00 %	395	24.50 %	1.80	—	1.33 %
<b>9</b>	<b>Sub-total</b>	<b>11,008</b>	<b>0.32 %</b>	<b>3,184</b>	<b>44.70 %</b>	<b>2.15</b>	<b>4,079</b>	<b>37.06 %</b>
<b>Retail</b>								
1	0.00 < 0.15	11	0.12 %	19,735	59.57 %	—	2	18.21 %
2	0.15 < 0.25	—	0.19 %	771	59.46 %	—	—	24.39 %
3	0.25 < 0.50	—	— %	—	— %	—	—	— %
4	0.50 < 0.75	—	0.51 %	1,246	57.27 %	—	—	44.10 %
5	0.75 < 2.50	1	1.33 %	2,707	50.53 %	—	1	56.34 %
6	2.50 < 10.00	—	6.74 %	1,275	59.38 %	—	—	94.93 %
7	10.00 < 100.00	—	— %	1	— %	—	—	— %
8	100.00 (Default)	—	100.00 %	301	66.14 %	—	—	86.89 %
<b>9</b>	<b>Sub-total</b>	<b>13</b>	<b>0.57 %</b>	<b>26,036</b>	<b>58.49 %</b>	<b>—</b>	<b>3</b>	<b>24.74 %</b>

**CCR4 - AIRB approach - CCR exposures by exposure class and PD scale (31.12.2021)**

EUR million

2021

	a	b	c	d	e	f	g	h
PD scale	Exposure value	Exposure weighted average PD (%)	Number of obligors	Exposure weighted average LGD (%)	weighted average maturity (years)	RWEA	Density of risk weighted exposure amount	
<b>Institutions</b>								
1 0.00 < 0.15	11,529	0.07 %	922	44.35 %	0.28	1,688	14.64 %	
2 0.15 < 0.25	985	0.19 %	121	44.49 %	0.22	304	30.89 %	
3 0.25 < 0.50	505	0.33 %	93	43.94 %	0.07	198	39.30 %	
4 0.50 < 0.75	124	0.66 %	105	41.67 %	0.39	67	53.68 %	
5 0.75 < 2.50	206	1.07 %	38	46.04 %	3.17	249	120.70 %	
6 2.50 < 10.00	3	3.42 %	2	44.42 %	1.26	4	122.02 %	
7 10.00 < 100.00	—	— %	—	— %	—	—	— %	
8 100.00 (Default)	3	100.00 %	4	91.64 %	0.86	—	1.88 %	
<b>9 Sub-total</b>	<b>13,355</b>	<b>0.14 %</b>	<b>1,285</b>	<b>44.35 %</b>	<b>0.31</b>	<b>2,510</b>	<b>18.79 %</b>	
<b>Corporates</b>								
1 0.00 < 0.15	8,414	0.10 %	357	44.63 %	2.32	2,405	28.58 %	
2 0.15 < 0.25	1,567	0.24 %	231	44.92 %	2.01	749	47.77 %	
3 0.25 < 0.50	829	0.37 %	706	33.73 %	2.00	602	72.63 %	
4 0.50 < 0.75	835	0.63 %	906	34.82 %	2.45	748	89.63 %	
5 0.75 < 2.50	389	1.43 %	2,477	23.32 %	3.21	429	110.16 %	
6 2.50 < 10.00	281	4.74 %	2,092	25.13 %	2.93	372	132.25 %	
7 10.00 < 100.00	43	20.50 %	137	24.76 %	3.10	87	202.81 %	
8 100.00 (Default)	12	100.00 %	454	10.08 %	2.62	—	0.57 %	
<b>9 Sub-total</b>	<b>12,370</b>	<b>0.48 %</b>	<b>7,360</b>	<b>42.06 %</b>	<b>2.31</b>	<b>5,392</b>	<b>43.59 %</b>	
<b>Retail</b>								
1 0.00 < 0.15	—	— %	—	— %	—	—	— %	
2 0.15 < 0.25	—	— %	—	— %	—	—	— %	
3 0.25 < 0.50	—	0.40 %	145	— %	1.00	—	85.99 %	
4 0.50 < 0.75	2	0.64 %	447	— %	2.15	2	85.99 %	
5 0.75 < 2.50	2	1.73 %	1,014	6.90 %	3.36	2	68.89 %	
6 2.50 < 10.00	1	3.99 %	804	0.03 %	2.61	1	85.96 %	
7 10.00 < 100.00	28	11.68 %	15,398	38.36 %	2.28	18	65.41 %	
8 100.00 (Default)	2	100.00 %	1,239	30.70 %	2.52	1	46.81 %	
<b>9 Sub-total</b>	<b>35</b>	<b>14.20 %</b>	<b>19,047</b>	<b>32.46 %</b>	<b>2.36</b>	<b>23</b>	<b>66.62 %</b>	

**Table 55.CCR4 - FIRB approach - CCR exposures by exposure class and PD scale**

EUR million

2022

	a	b	c	d	e	f	g	h
PD scale	Exposure value	Exposure weighted average PD (%)	Number of obligors	Exposure weighted average LGD (%)	weighted average maturity (years)	RWEA	Density of risk weighted exposure amount	
<b>Institutions</b>								
1	0.00 < 0.15	636	0.08 %	84	45.00 %	0.53	120	18.84 %
2	0.15 < 0.25	61	0.17 %	17	45.00 %	0.81	24	38.79 %
3	0.25 < 0.50	66	0.32 %	24	45.00 %	0.90	39	60.06 %
4	0.50 < 0.75	4	0.67 %	12	45.00 %	1.45	5	103.00 %
5	0.75 < 2.50	—	— %	0	— %	—	—	— %
6	2.50 < 10.00	1	9.55 %	3	45.00 %	1.20	2	263.03 %
7	10.00 < 100.00	—	45.00 %	1	45.00 %	0.00	1	323.62 %
8	100.00 (Default)							
<b>9</b>	<b>Sub-total</b>	<b>768</b>	<b>0.13 %</b>	<b>141</b>	<b>45.00 %</b>	<b>0.59</b>	<b>190</b>	<b>24.72 %</b>
<b>Corporates</b>								
1	0.00 < 0.15	243	0.11 %	26	45.00 %	1.49	65	26.82 %
2	0.15 < 0.25	105	0.22 %	5	45.00 %	2.50	58	55.32 %
3	0.25 < 0.50	1	0.37 %	8	45.00 %	2.48	1	71.39 %
4	0.50 < 0.75	1	0.61 %	6	45.00 %	2.50	1	90.13 %
5	0.75 < 2.50	3	1.00 %	4	45.00 %	1.54	2	95.24 %
6	2.50 < 10.00	—	2.70 %	1	45.00 %	2.50	1	148.02 %
7	10.00 < 100.00	4	19.91 %	38	45.00 %	0.50	11	258.27 %
8	100.00 (Default)							
<b>9</b>	<b>Sub-total</b>	<b>357</b>	<b>0.38 %</b>	<b>88</b>	<b>45.00 %</b>	<b>1.78</b>	<b>139</b>	<b>38.83 %</b>

**CCR4 - FIRB approach - CCR exposures by exposure class and PD scale (31.12.2021)**

EUR million

2021

	a	b	c	d	e	f	g	h
PD scale	Exposure value	Exposure weighted average PD (%)	Number of obligors	Exposure weighted average LGD (%)	weighted average maturity (years)	RWEA	Density of risk weighted exposure amount	
<b>Institutions</b>								
1	0.00 < 0.15	738	0.06 %	73	45.00 %	1.13	127	17.17 %
2	0.15 < 0.25	84	0.19 %	23	45.00 %	0.20	25	30.32 %
3	0.25 < 0.50	132	0.32 %	26	45.00 %	1.28	80	60.35 %
4	0.50 < 0.75	18	0.66 %	12	45.00 %	1.82	16	93.58 %
5	0.75 < 2.50	1	1.38 %	1	45.00 %	0.20	1	77.84 %
6	2.50 < 10.00	0	— %	0	— %	0.00	0	— %
7	10.00 < 100.00	0	— %	0	— %	0.00	0	— %
8	100.00 (Default)	0	— %	0	— %	0.00	0	— %
<b>9</b>	<b>Sub-total</b>	<b>972</b>	<b>0.12 %</b>	<b>135</b>	<b>45.00 %</b>	<b>1.08</b>	<b>249</b>	<b>25.59 %</b>
<b>Corporates</b>								
1	0.00 < 0.15	62	0.11 %	20	45.00 %	1.92	19	30.36 %
2	0.15 < 0.25	155	0.24 %	9	45.00 %	2.37	85	55.20 %
3	0.25 < 0.50	11	0.40 %	8	45.00 %	2.50	8	72.88 %
4	0.50 < 0.75	13	0.65 %	53	45.00 %	1.06	9	70.80 %
5	0.75 < 2.50	5	1.65 %	5	45.00 %	2.46	6	125.78 %
6	2.50 < 10.00	0	2.85 %	1	45.00 %	2.50	0	147.68 %
7	10.00 < 100.00	0	— %	0	— %	0.00	0	— %
8	100.00 (Default)	2	100.00 %	2	45.00 %	2.50	0	— %
<b>9</b>	<b>Sub-total</b>	<b>248</b>	<b>1.23 %</b>	<b>98</b>	<b>45.00 %</b>	<b>2.20</b>	<b>128</b>	<b>51.56 %</b>

The following table shows a summary of the effects of netting agreements and collateral for exposure to counterparty credit risk, in addition to the type of collateral exchanges in derivatives transactions and securities financing transactions (SFTs).

**Table 56.CCR5 - Composition of collateral for CCR exposures**

		2022													
		a		b		c		d		e		f		g	
		Collateral used in derivative transactions				Collateral used in SFTs									
		Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received		Fair value of posted collateral							
		Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated
1	Cash - domestic currency	—	13,108	3,033	7,761	3	99,141	5	88,615						
2	Cash - other currencies	—	4,885	1,485	7,490	16	33,235	10	27,569						
3	Domestic sovereign debt	1,119	819	5,973	185	200	79,659	4,769	82,395						
4	Other sovereign debt	3,141	705	2,526	84	426	39,856	2,260	33,378						
5	Government agency debt	—	5	133	—	15	62	50	107						
6	Corporate bonds	615	84	486	149	1,779	30,901	2,513	34,648						
7	Shares	818	10	198	—	5,464	5,617	10,522	1,422						
8	Other collateral	—	—	—	—	—	565	—	565						
<b>9</b>	<b>Total</b>	<b>5,693</b>	<b>19,616</b>	<b>13,834</b>	<b>15,668</b>	<b>7,903</b>	<b>289,035</b>	<b>20,129</b>	<b>268,700</b>						

**Table 57.CCR6 - Credit derivatives exposures**

		2022	
		a	b
		Credit derivatives hedges	
		Protection bought	Protection sold
<b>Notionals</b>			
1	Single-name credit default swaps	6,608	2,952
2	Index credit default swaps	4,301	231
3	Total return swaps	467	
4	Credit options		
5	Other credit derivatives		
<b>6</b>	<b>Total notionals</b>	<b>11,375</b>	<b>3,183</b>
<b>Fair values</b>			
7	Positive fair value (asset)	223	67
8	Negative fair value (liability)	(127)	(27)

Bought credit derivatives do include loan coverage

**CCR6 - Credit derivatives exposures (31.12.2021)**

EUR million

		2021	
		a	b
		Credit derivatives hedges	
		Protection bought	Protection sold
<b>Notionals</b>		—	—
1	Single-name credit default swaps	7,935	3,082
2	Index credit default swaps	4,676	737
3	Total return swaps	—	—
4	Credit options	—	—
5	Other credit derivatives	—	—
<b>6</b>	<b>Total notionals</b>	<b>12,612</b>	<b>3,820</b>
<b>Fair values</b>		—	—
7	Positive fair value (asset)	13	124
8	Negative fair value (liability)	(227)	(11)

Bought credit derivatives do include loan coverage

Table CCR7- Statement of flows of risk-weighted amounts of counterparty exposures subject to IMM is not included as Santander does not have an internal model to calculate counterparty risk EAD.

For more information, see the 'Risk management and control' chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

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# 6

## Credit risk - Securitisations

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# 6. Credit risk - Securitisations



This chapter describes Santander Group's securitisation activity. It also looks at the basic concepts relating to securitisations and summarises the goals and functions of the securitisation management activity at Santander Group.

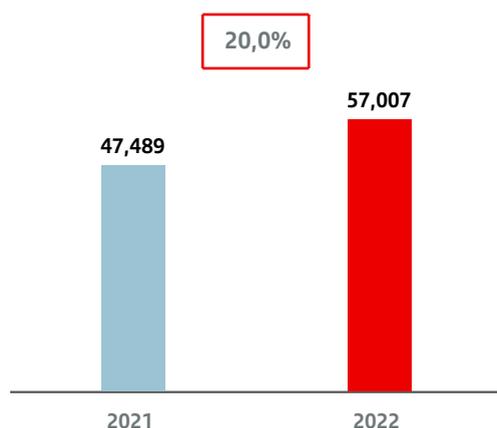
## Main figures

Million euros	EAD		RWA*	
	2022	2021	2022	2021
Securitisation exposures in banking book	57,007	47,489	9,898	9,268

\*It does not include 1250% deductions.

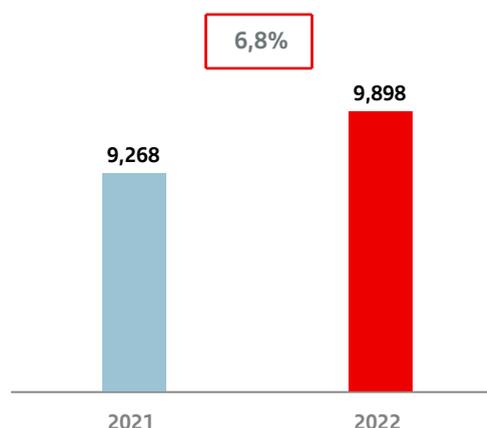
## EAD variation

Million euros



## RWA variation

Million euros



## 6.1. Management of the securitisation activity at Santander

This section covers the qualitative requirement SECA - Qualitative disclosure requirements related to securitisation exposures. Letters (d), (e), (f) e (i) are not applicable to Santander. Also the provisions of letters (d), (e), (f) and (g) of the OVA requirement - Institution risk management approach, are complied with.

### 6.1.1. Santander securitisation objectives and management

Santander pursues various objectives through its securitisation activity:

- **Management and diversification of credit risk:** the group aims to mitigate risk that arises naturally from growth in its commercial activity through securitisation transactions and the subsequent transfer of credit risk to third parties. The effective transfer of risk achieved through these transactions enables the group to optimise its credit risk exposure and contributes to value creation by reducing Banco Santander's need to retain own funds.
- **Optimization of capital consumption:** significantly transferring risk allows for reductions in capital consumption contributing to this objective. 2022 gave rise to 18 new transactions that benefit from the new securitization framework.
- **Obtaining liquidity:** securitisation enables Santander to mobilise its balance sheet by transforming illiquid assets into liquid assets and obtain wholesale funding by selling the transformed assets or using them as collateral. Retained securitisation positions can also be used as collateral for ECB and Bank of England.

- **Diversifying funding sources:** the liquidity obtained from securitisation allows the Group to diversify its funding sources, in terms of maturity and product type.

The Financial Management division draws up the issuances and securitisations plan for each Santander subsidiary/global business annually, on the basis of the liquidity plan and considering certain prudential limits on raising short-term market funding.

Santander Group also has a robust governance process for all securitisations intended to transfer risk. Said review assesses transactions from a risk, capital, regulatory and economic approach.

**6.1.2. Santander securitisation functions**

Santander's role in the securitization process is mainly that of originator – i.e. the entity that creates the exposures (underlying assets) subsequently traditionally or synthetically securitized. Apart from being the originator, Santander also generally manages the underlying portfolio (servicing).

In traditional securitizations, Santander usually also acts as the facilitator for credit enhancements (subordinated loan,

credit facilities or interest-rate swaps or caps) necessary for the securitisation fund that has acquired the loans and will subsequently issue the notes that typically have an external rating.

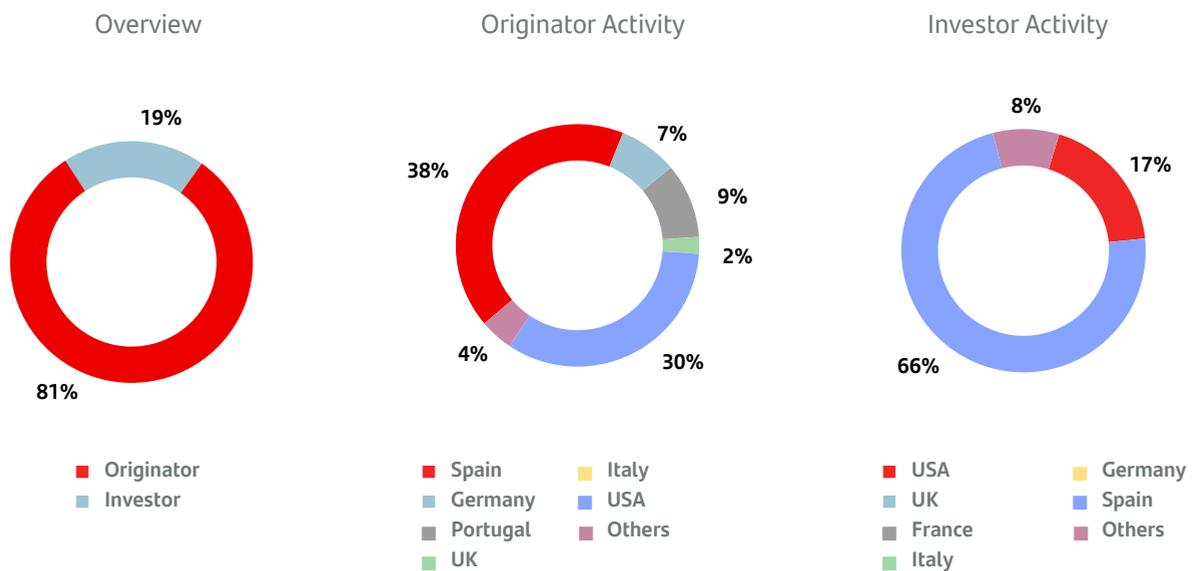
Santander also structures and places its own securitizations, as it does for third parties, and leads and promotes new structures in various jurisdictions for both funding and risk transfer purposes. This activity is carried out against a backdrop of securitization revival as a tool for channelling credit to the real economy, with a special focus on SMEs and consumer loans.

Conversely, Santander also acts as an investor, acquiring securitization positions originated by non-Santander entities.

Finally, Grupo Santander is the sponsor of a securitisation whose underlying consists of loans granted by various financial institutions to SSPEs of mortgage-backed bonds to cover the reserve fund.

The following diagram depicts the distribution of the Group's exposure by activity at 31 December 2022:

**Distribution of the Group's securitisation function (EAD)**



The information on the securitisation positions of the investment and trading portfolio of Santander is included.

As indicated in the graph, originator activity accounts for more than 81% of Santander securitisation activity, while investment activity accounts for 19%. 68% of the volume of securitisations originated by Santander is concentrated in Spain and the United States. On the investment side, 66% of acquisitions of investment positions are concentrated in Spain and 17% in the United States, as shown in the graph on the right.

The following table gives a breakdown of the distribution of the activity carried out by Grupo Santander at 31 December 2022:

**Table 58. Securitisation positions purchased and retained with risk transfer by exposure type in the banking book**

	EUR million											
	2022						2021					
	Exposure			RWA			EAD			RWA		
	Originator	Investor	Sponsor	Originator	Investor	Sponsor	Originator	Investor	Sponsor	Originator	Investor	Sponsor
<b>Traditional securitisations</b>	<b>455</b>	<b>17,380</b>	<b>—</b>	<b>60</b>	<b>3,323</b>	<b>—</b>	<b>631</b>	<b>14,552</b>	<b>—</b>	<b>139</b>	<b>2,944</b>	<b>—</b>
Residential mortgages	—	3,216	—	—	473	—	—	3,567	—	—	713	—
Commercial mortgages	—	—	—	—	—	—	—	—	—	—	—	—
Credit cards	—	244	—	—	91	—	—	120	—	—	41	—
Leasing	—	81	—	—	375	—	—	158	—	—	104	—
Loans to corporates or to SMEs treated as corporates	—	4,356	—	—	912	—	—	4,077	—	—	947	—
Consumer loans	407	5,047	—	55	794	—	629	3,807	—	139	701	—
Receivables	—	1,229	—	—	184	—	—	1,270	—	—	190	—
Securitisation positions	48	3,206	—	5	494	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	2	1,554	—	—	247	—
<b>Resecuritisations</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Securitisation positions	—	—	—	—	—	—	—	—	—	—	—	—
<b>Synthetic securitisations</b>	<b>39,172</b>	<b>—</b>	<b>—</b>	<b>6,515</b>	<b>—</b>	<b>—</b>	<b>32,307</b>	<b>—</b>	<b>—</b>	<b>6,186</b>	<b>—</b>	<b>—</b>
Loans to corporates or to SMEs treated as corporates	1,424	—	—	213	—	—	—	—	—	—	—	—
Consumer loans	3,935	—	—	829	—	—	3,192	—	—	477	—	—
Receivables	—	—	—	—	—	—	—	—	—	—	—	—
Residential mortgages	—	—	—	—	—	—	—	—	—	—	—	—
Commercial mortgages	18,543	—	—	2,880	—	—	19,491	—	—	4,261	—	—
Credit cards	10,990	—	—	1,974	—	—	4,085	—	—	732	—	—
Leasing	—	—	—	—	—	—	—	—	—	—	—	—
Others	4,281	—	—	619	—	—	5,539	—	—	715	—	—
<b>Total</b>	<b>39,627</b>	<b>17,380</b>	<b>—</b>	<b>6,575</b>	<b>3,323</b>	<b>—</b>	<b>32,937</b>	<b>14,552</b>	<b>—</b>	<b>6,325</b>	<b>2,944</b>	<b>—</b>

### 6.1.3. Risk inherent to the securitisation activity at Santander

Securitization offers advantages in terms of diversified funding sources and better risk management. However, it exposes investors to certain inherent risks, which are defined below. Santander is not exposed to any additional risk by acting as the originator or sole investor in a securitization. In fact, doing so it reduces liquidity risk by transforming illiquid assets (the loans originated) into liquid assets (securitization bonds).

- **Credit risk:** the risk that borrowers will fail to meet their contractual obligations in due time and proper form, with the consequent impairment of the underlying assets backing the securitisation positions. Credit risk is assessed by external credit rating agencies, which assign ratings to the securitisation positions. For third-party positions Santander Group invests in, this credit risk is firstly assessed by external credit rating agencies, who assign ratings to the securitisation positions. At the Group, the maximum exposure in the banking book is limited by rating (AAA, AA, A, BBB) and by type of underlying. In addition, the group continuously monitors published data on default of the underlying, the credit quality of the originator and mandatory minimum ratios and ratings in the structure, as well as data on granularity, geographical distribution and type of underlying.
- **Prepayment risk:** the risk of early repayment of some or all of the assets underlying the securitization, so that the securitization positions mature faster than expected and therefore fewer coupons are received than expected. Calculations of the average life, return and duration of securitisation positions is subject, among other aspects, to assumptions about the rate at which the underlying assets will be prepaid, which may vary.
- **Interest rate risk:** This risk arises when there is a mismatch between the interest rates of the securitized assets and those of the securitization positions. At Santander, and for any traditional securitizations that arise, this risk is usually hedged with swaps (Interest Rate Swaps — IRS).
- **Exchange rate risk:** This exists in securitizations where the securitized assets and the securitization positions are denominated in different currencies. Traditional securitizations issued by Santander are issued in the same currency as the underlying asset, so this risk is therefore absent. However, this risk will only be partially present in a small portion of synthetic securitizations.
- **Liquidity risk:** this risk is diminished through the securitisation process, whereby naturally illiquid assets are transformed into debt securities that can be traded on organised financial markets. In some securitisations, however, such as those which issue commercial paper, liquidity risk is still significant and is manifested in the need to cover potential timing mismatches between interest payments on the underlying assets and payments of interest on the securities. At Santander, this risk tends to be very small and is mitigated by liquidity facilities included in the structure (excluding synthetic securitisations). The liquidity risk associated with investing in bond positions is managed by establishing maximum holding periods.
- **Counterparty risk:** This risk is not present in traditional securitizations issued by Santander because the notes/bonds are actually sold in exchange for cash. This means

there is not counterparty risk involved. This risk is, however, present in synthetic securitizations if the hedging/protection obtained is not anchored. Synthetic transactions originated by Santander can be structured through a SPV (Special Purpose Vehicle), which hedges the portfolio and issues CLNs (Credit Link Notes), or the financial guarantee can be issued directly. If the financial guarantees are funded, there will be no counterparty risk. However, if hedged, if they are not funded, this risk will not be present (the counterparty risk). Lastly, a synthetic transaction can be structured without an SPV and without issuing notes. These types of guarantees are financial in nature and will tend not to be anchored. In this case, counterparty risk will indeed be present. To conclude, this type of risk will be present only if the synthetic guarantee received is not anchored. Santander will therefore have to reclaim losses generated by the hedged portfolio from the investor, whenever such losses reach their tranche. In synthetic securitisations, there is no right of credit risk transfer nor sale of the underlying portfolio. The financial guarantees received can be funded or unfunded. In the latter case, Banco Santander has to reclaim the losses from the investor, which generates counterparty risk.

Santander analyses biannually the evolution of the securitisations originated with the release of capital, assessing the different parameters from a risks and capital perspective (backtesting). These reviews are submitted to the relevant management bodies.

## 6.2. Santander securitisation activity

The list of SPPEs are listed in Appendix XXIII of the 2022 Pillar 3 Report file available on the Santander website.



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

### 6.2.1. Grupo Santander as asset manager

Grupos Santander has Santander de Titulización S.G.F.T., S.A. (Sociedad Gestora de Fondos de Titulización) and Gamma, STC. (Sociedade de Titularização de Créditos), in order to set up, manage and legally represent the securitisation funds originated in Spain and Portugal, respectively.

### 6.2.2. Grupo Santander as originator

In 2022, Santander Group originated 18 securitisations mainly for risk transfer purposes.

Santander Group has a total of 66 securitisations that transfer risk and free up capital (22 traditional transactions and 44 synthetic). The main underlying portfolios are consumer loans (primarily for cars) and loans to businesses.

Santander Group strives to achieve and maintain STS (Simple, Transparent and Standardised Securitizations) certification for all newly originated securitisations (both synthetic and traditional) whenever possible. Presently, 28 securitisations currently have this certification.

Of the **44 synthetic securitisation funds**, five were originated in 2022.

Santander also originates and holds positions in traditional securitisation funds whose underlying portfolios mainly comprise consumer and corporate loans.

Santander is awarded a rating by one or more of the following external rating agencies for each of these traditional structures and for some synthetic securitisations, regardless of the underlying product: Standard & Poors, Moody's, Fitch, DBRS, Arc, Scope and KROLL. The group obtains ratings from at least two of these agencies when a traditional securitisation is placed on the market in Europe.

### 6.2.3. Grupo Santander as sponsor

As of 31 December 2022, Santander participated as a sponsor in a traditional securitization structure where Santander holds investor positions in mezzanine and senior tranches, and also participated in 5% of the junior tranche to meet regulatory requirements on financial interest retention.

The underlying assets are short-term accounts receivable on individual debtors that are issued by a corporate customer in the energy sector, and the purpose of the structure is to provide an additional source of liquidity to address inflationary pressures felt in the energy sector. A programme has been established to fund accounts receivable for at least 9

months with a repayment period of 26 months and the option of annual renewal.

This structure is a private securitization involving the participation of an institutional investor who assumes risk on first-loss positions. The securitization meets the transparency and financial-interest retention requirements set forth in applicable regulations (Articles 6, 7 and 8 of the Regulation on capital in securities). Moreover, all information relating to underlying assets is made available to supervisory bodies in the European securitizations warehouse (European Data Warehouse).

As regards the controls implemented, recovery and credit performance of the underlying assets are monitored on a fortnightly basis and the corresponding reports are issued to investors.

### 6.2.4. Grupo Santander as investor

With regard to investment activity, Santander holds positions in **securitisation funds originated by entities outside the Group** whose underlying assets mainly comprise receivables, credit cards, and corporate, SME and mortgage loans. As Santander limits its maximum exposure by rating (AAA, AA, A, BBB), it does not usually employ hedging techniques to mitigate the risk.

Monitoring process for changes in associated risk:

- **Securitisation positions originated:** periodic monitoring is the responsibility of the different securitisation fund managers (trustees/management companies) or of the originators directly no fund is created. In any of the cases that prepare regular reports containing an update of the rating performance of the bonds' underlying portfolios of the securitisation positions generated.
- **Securitisation positions invested in:** published NPL metrics (90+, default, recoveries) and prepayments are monitored regularly using specialised software, which also checks whether the established rating-based limits are being met.

The processes mentioned above serve to monitor changes in credit and market risk for securitisation exposures.

The following tables show the distribution, by type of underlying asset, of the securitisation positions issued and repurchased by the Group as an originator, investor and sponsor at 31 December 2022, in both the banking book and trading book.

**Table 59.SEC1 - Securitisation exposures in the non-trading book**

EUR million

																2022			
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o				
	Bank acting as originator							Bank acting as sponsor				Bank acting as investor							
	Traditional			Synthetic				Traditional			Traditional								
	STS		Non-STS		of which		Sub-total	STS		Synthetic		STS		Non-STS		Synthetic		Sub-total	
	of which		of which		of which			STS		Synthetic		STS		Non-STS		Synthetic		Sub-total	
	SRT		SRT		SRT			STS		Synthetic		STS		Non-STS		Synthetic		Sub-total	
<b>1 Total exposures</b>	<b>1,363</b>	<b>329</b>	<b>35,040</b>	<b>126</b>	<b>39,172</b>	<b>39,172</b>	<b>75,575</b>	—	—	—	—	<b>1,548</b>	<b>15,832</b>	—	<b>17,380</b>				
<b>2 Retail (total)</b>	<b>1,320</b>	<b>329</b>	<b>34,186</b>	<b>126</b>	<b>15,498</b>	<b>15,498</b>	<b>51,003</b>	—	—	—	—	<b>1,548</b>	<b>8,141</b>	—	<b>9,690</b>				
3 Residential mortgages	—	—	5,867	—	1,424	1,424	7,290	—	—	—	—	341	2,875	—	3,216				
4 Credit card	—	—	—	—	—	—	—	—	—	—	—	—	244	—	244				
5 Other retail exposures	1,320	329	28,319	126	14,074	14,074	43,713	—	—	—	—	1,207	5,023	—	6,230				
6 Resecuritisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
<b>7 Wholesales (total)</b>	<b>43</b>	<b>—</b>	<b>854</b>	<b>—</b>	<b>23,675</b>	<b>23,675</b>	<b>24,572</b>	—	—	—	—	—	<b>7,690</b>	—	<b>7,690</b>				
8 Loans to corporates	—	—	77	—	18,543	18,543	18,620	—	—	—	—	—	4,356	—	4,356				
9 Commercial mortgage	—	—	—	—	3,935	3,935	3,935	—	—	—	—	—	—	—	—				
10 Finance leases and receivables	43	—	—	—	—	—	43	—	—	—	—	—	1,311	—	1,311				
11 Other wholesale exposures	—	—	777	—	1,197	1,197	1,973	—	—	—	—	—	2,023	—	2,023				
12 Resecuritisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

The securitisation portfolio has been considered as a whole (positions bought and retained)

Fully-loaded CRR, Phased-in IFRS 9.

**Table 60.SEC2 - Securitisation exposures in the trading book**

EUR million

												2022
	a	b	c	d	e	f	g	h	i	j	k	l
	Bank acting as originator				Bank acting as sponsor				Bank acting as investor			
	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal
	STS	Non-STS			STS	Non-STS			STS	Non-STS		
<b>1 Total</b>	—	—	—	—	—	—	—	—	<b>30</b>	<b>259</b>		<b>288</b>
<b>2 Retail (total)</b>	—	—	—	—	—	—	—	—	<b>30</b>	<b>63</b>		<b>92</b>
3 Residential mortgages									1	58		58
4 Credit card									—	—		—
5 Other retail exposures									29	5		34
6 Resecuritisation									—	—		—
<b>7 Wholesales (total)</b>	—	—	—	—	—	—	—	—	—	<b>196</b>		<b>196</b>
8 Loans to corporates									—	—		—
9 Commercial mortgage									—	3		3
10 Finance leases and receivables									—	—		—
11 Other wholesale exposures									—	193		193
12 Resecuritisation									—	—		—

Finally, in its role as originator and investment entity for securitisations, Santander complies with the requirements relating to the net retention of economic interest and requirements established in procedure and control policies for all securitisation funds issued since 1 January 2011. We have to distinguish between the requirements for originators and for investment positions:

#### Securitisations originated:

- Santander always retains a minimum of 5% of the net economic interest.
- Santander meets all the due diligence requirements, making available to investors all the information needed to ensure the risks of the investment are fully known before purchase and to enable regular monitoring of the
- performance of the investment. This information includes

details of the risk criteria applied to the securitised exposures, which in all cases are the same as for the non-securitised exposures in the originator's balance sheet.

#### Investment positions in securitisations:

- The Group performs due diligence to ensure that the investment risks are understood before purchase and to be able to monitor the performance of the investment on a regular basis.
- The Group verifies that the originators of the securitisations in which it invests retain a 5% net economic interest.

Below we show positions in securitisations with risk transfer and in investment and sponsoring positions on the banking book, based on the approach used to calculate regulatory capital:

**Table 61. Breakdown of repurchased positions in SSPEs with risk transfer, distributed by function and approach used**

	2022					2021				
	On-balance sheet amount exposures	Off-balance sheet amount exposures	EAD	EAD after capital reductions	RWA*	On-balance sheet amount exposures	Off-balance sheet amount exposures	EAD	EAD after capital reductions	RWA*
Originator - standardised approach	—	—	—	—	—	—	—	—	—	—
Originator - SEC standardised approach	5,286	—	5,212	5,058	924	3,779	—	3,768	3,745	570
Originator - SEC ERB approach	6,794	11	6,805	6,805	1,179	1,479	1	1,469	1,429	583
Originator - RB approach	—	—	—	—	—	—	—	—	—	—
Originator - SF approach	—	—	—	—	—	—	—	—	—	—
Originator - IRB approach	27,659	52	27,580	27,456	4,471	27,784	15	27,683	27,617	5,226
Originator - 1250%	520	55	29	—	—	667	14	17	—	—
<b>Total originator</b>	<b>40,259</b>	<b>118</b>	<b>39,627</b>	<b>39,319</b>	<b>6,575</b>	<b>33,709</b>	<b>30</b>	<b>32,937</b>	<b>32,791</b>	<b>6,379</b>
Investor - standardised approach	—	—	—	—	—	—	—	—	—	—
Investor - SEC standardised approach	13,387	1,007	14,388	14,387	3,300	12,406	173	12,573	12,570	2,126
Investor - SEC ERB approach	2,328	666	2,992	2,992	977	1,916	62	1,977	1,977	818
Investor - RB approach	—	—	—	—	—	—	—	—	—	—
Investor - SF approach	—	—	—	—	—	—	—	—	—	—
Investor - IRB approach	—	—	—	—	—	—	—	—	—	—
Investor - 1250%	—	—	—	—	—	1	—	1	—	—
<b>Total investor</b>	<b>15,715</b>	<b>1,673</b>	<b>17,380</b>	<b>17,379</b>	<b>4,277</b>	<b>14,322</b>	<b>235</b>	<b>14,552</b>	<b>14,548</b>	<b>2,944</b>
Sponsor - standardised approach	—	—	—	—	—	—	—	—	—	—
Sponsor - SEC standardised approach	—	—	—	—	—	—	—	—	—	—
Sponsor - SEC ERB approach	—	—	—	—	—	—	—	—	—	—
Sponsor - RB approach	—	—	—	—	—	—	—	—	—	—
Sponsor - SF approach	—	—	—	—	—	—	—	—	—	—
Sponsor - IRB approach	—	—	—	—	—	—	—	—	—	—
Sponsor - 1250%	—	—	—	—	—	—	—	—	—	—
<b>Total sponsor</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>Total</b>	<b>55,974</b>	<b>1,791</b>	<b>57,007</b>	<b>56,698</b>	<b>10,851</b>	<b>48,031</b>	<b>265</b>	<b>47,489</b>	<b>47,338</b>	<b>9,322</b>
Of which: traditional securitisations	16,631	1,791	17,835	17,774	4,336	15,607	265	15,182	15,159	3,115
Of which: synthetic securitisations	39,343	—	39,172	38,924	6,515	32,424	—	32,307	32,180	6,207

EAD IRB (RBA & SFA): exposures net of collateral, before provisions and deductions and after outflows to other regulatory reports.

EAD STD: exposures net of collateral, before deductions and after provisions and outflows to other regulatory reports.

RWA IRB (RBA & SFA): after provisions, deductions and outflows to other regulatory reports and before application of the limit.

RWA STD: after provisions, deductions and outflows to other regulatory reports and before application of the limit.

\*RWA before CAP.

It should be noted that for all securitisations which qualify for a weight of 1250%, the entity deducts this exposure from equity.

As shown in Table 61, exposure has increased by 20.4%, due to the increase in exposures in securitisations originated by the Group. This year, 18 new securitisations with significant risk transfer were originated, with the main goal of transferring credit risk and optimising capital consumption.

Securisation positions in the trading portfolio are eliminated from the regulatory capital calculation based on an internal market risk model and are included in the calculation of capital for specific risk, in accordance with article 335 of the CRR. The correlation trading portfolio is also included among these positions. This book consists of securitisation positions and nth-to-default derivatives that meet all the criteria in article 338.1 of the CRR. Therefore, none of these positions are considered in the VaR spread and IRC calculation, although they are included in the interest rate VaR calculation (general risk). For these positions, capital is calculated as if they were securitisation positions in the banking book, so that capital requirements are calculated taking into account the new approaches considered in the new Regulation (EU) 2017/2401 on securitisations.

Finally, Regulation (EU) 2017/2402 on securitisations came into force from 1 January 2019. This regulation changes the prudential requirements for credit institutions and investment firms, establishing new treatment for securitisation positions. One of the most significant changes is that positions in preferential securitisation tranches may not consume more capital than the loan portfolio. It also provides for a more favourable treatment for **senior tranches of STS (simple, transparent and standardised)** securitisations which was updated on 31 March 2021 Regulation (EU) 2021/558 amending Regulation (EU) No 575/2013 as regards adjustments to the securitisation framework to support the economic recovery in response to the covid-19 crisis.

A breakdown of all securitisations in the banking book is provided below, together with the corresponding capital consumption arranged by RW (risk weighting) interval and the calculation method employed when the Group acts as originator or sponsor.

The following table shows the aggregate value of securitisation positions purchased and retained in the trading portfolio.

**Table 62. Aggregate amount of securitisation positions purchased and retained. Trading book**

	2022					
	Investor positions		Originator positions		Sponsor positions	
	Mark to market	RWA	Mark to market	RWA	Mark to market	RWA
<b>ABS PORTFOLIO</b>						
<b>SEC - ERBA approach</b>						
10 -12%	26	—				
12-20%	141	18				
20-40%	14	—				
40-100%	8	6				
1,250%	75	263				
<b>ABS PORTFOLIO</b>						
10 -12%	1	—				
12-20%	23	—				
20-40%	1	—				
40-100%						
1,250%						
<b>Total ABS Portfolio</b>	<b>288</b>	<b>288</b>				
<b>CORRELATION PORTFOLIO</b>						
<b>SEC - ERBA approach</b>						
40-75 %						
100%						
250%						
<b>Supervisory formula method</b>						
FS						
<b>Total correlation portfolio</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>Total</b>	<b>288</b>	<b>288</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

The table does not include the RWA of short position correlation, since it does not consume capital.

The following table shows the current situation of the underlying portfolio for originated securitisations with risk transfer and the changes compared to 2021.

**Table 63. Securitisation structures with risk transfer**

	2022				2021			
	Outstanding balance	Of which, in default	Value adjustments in the period	RWA	Outstanding balance	Of which, in default	Value adjustments in the period	RWA
<b>Traditional SPVs</b>								
Residential mortgages	—	—	—	—	—	—	—	—
Commercial mortgages	—	—	—	—	—	—	—	—
Loans to corporates or to SMEs treated as corporates	—	—	—	—	—	—	—	—
Consumer loans	9,008	188	26	55	7,971	120	109	171
Others	2,220	48	6	5	2,674	31	16	—
<b>Resecuritisations</b>								
Securitisation positions	—	—	—	—	—	—	—	—
<b>Total traditional SPVs</b>	<b>11,228</b>	<b>236</b>	<b>31</b>	<b>60</b>	<b>10,645</b>	<b>151</b>	<b>126</b>	<b>171</b>
<b>Synthetic securitisation SPVs</b>								
Residential mortgages	1,599	—	1	213	—	—	—	—
Commercial mortgages	4,593	15	3	829	3,667	14	5	477
Loans to corporates or to SMEs treated as corporates	19,543	149	15	2,880	20,597	233	65	4,261
Consumer loans	12,893	113	28	1,974	5,228	63	34	754
Others	5,386	111	1	619	6,305	101	38	715
Total synthetic securitisation SPVs	44,014	389	49	6,515	35,798	412	142	6,207
<b>Total</b>	<b>55,242</b>	<b>624</b>	<b>80</b>	<b>6,575</b>	<b>46,443</b>	<b>563</b>	<b>268</b>	<b>6,379</b>

The value adjustments in the period include the value adjustments by asset and provision (generic and specific) deterioration.

As shown in Table 63, during 2022, the outstanding balance of originated securitisations increased due mainly to the increase in securitisations in residential mortgages and consumer loans.

In securitisation funds without risk transfer, the Group retains the majority of its positions in the originated securitisation funds, as they do not meet the regulatory conditions for

significant risk transfer. For these funds, capital is calculated for the securitised exposures as if the exposures had not been securitised.

The underlying assets securitised in the funds originated by Santander continue to mainly consist of residential mortgages and consumer loans.

**Table 64. SEC5 - Exposures securitised by the institution - Exposures in default and specific credit risk adjustments**

	EUR million			2022
	a	b	c	
Exposures securitised by the institution - Institution acts as originator or as sponsor				
Total outstanding nominal amount				
		Of which exposures in default	Total amount of specific credit risk adjustments made during the period	
1	Total exposures	137,238	2,817	743
2	Retail (total)	108,809	2,564	698
3	residential mortgage	22,101	512	—
4	credit card	—	—	—
5	other retail exposures	86,708	2,051	698
6	re-securitisation	—	—	—
7	Wholesale (total)	28,429	253	45
8	loans to corporates	21,082	193	50
9	commercial mortgage	4,782	24	2
10	lease and receivables	289	—	—
11	other wholesale	2,277	37	(6)
12	re-securitisation	—	—	—

CRR Fully Phased-in IFRS 9.

## 6.3. Securitisation accounting policies

This section covers letter (g) of the qualitative requirement SECA - Qualitative disclosure requirements related to securitisation exposures.

Pursuant to IFRS 9, the initial recording, classification and subsequent measurement of financial assets is influenced by the company's business model and by the nature of the cash flows for said financial assets. Specifically, to allow them to be measured at amortized cost or at fair value with changes in OCI, the Standard requires that contractual cash flows meet the criteria of a basic loan agreement (UPPI [Únicamente Pago de Principal e Intereses – principal and interest payment only] flows).

The rule for derecognising securitised assets is that set by IFRS 9 in section 3.2. The accounting treatment of transfers of financial assets depends on the form and extent to which the cash flows, risks and rewards are transferred to third parties, along with the control of the assets transferred:

1. Where substantially all the risks and rewards are transferred to third parties, e.g. in asset securitisations in which the transferor neither retains subordinated debt nor grants any credit enhancement to the new holders, the transferred financial assets are derecognised. Any right or obligation retained or created in the transfer is recognised. The difference between the carrying amount recorded prior to the transfer and the fair value of the retained rights or obligations is recognised in income for the year.
2. Where substantially all the risks and rewards associated with the transferred financial asset are retained (as in securitisations in which subordinated debt or some other type of credit enhancements are retained that absorb substantially all of the expected credit losses for the transferred asset or the probable variation of its future net cash flows), the transferred financial asset is not derecognised and continues to be measured using the same criteria as before the transfer. The following are also recognised for accounting purposes:
  - a. An associated financial liability, which is recognised for an amount equal to the consideration received and is subsequently measured at amortised cost, unless it meets the requirements for classification at fair value through profit or loss.
  - b. The income from the financial asset that has been transferred but not derecognised and any expense incurred on the new financial liability are presented on the income statement without netting.
3. The following distinction is made when substantially all the risks and rewards associated with the transferred financial asset are neither transferred nor retained, e.g. in securitisations in which the transferor takes on subordinated debt or some other type of credit enhancement for a portion of the transferred asset and thus significantly, but not substantially, reduces its exposure to variations in the present value of future net cash flows:
  - a. Where the transferor does not retain control of the transferred financial asset: the transferred financial asset

is derecognised and any right or obligation retained or created in the transfer is recognised.

- b. Where the transferor retains control of the transferred financial asset: it continues to recognise the transferred financial asset on its balance sheet for an amount equal to its exposure to possible changes in value and recognises a financial liability associated with the transferred financial asset. The net amount of the transferred asset and the associated liability is:
  - The amortised cost of the rights and obligations retained, if the transferred asset is measured at amortised cost, or
  - The fair value of the rights and obligations retained, if the transferred asset is measured at fair value.

Accordingly, financial assets are only derecognised when any of the following circumstances occur:

- The rights to the future cash flows they generate have been extinguished.
- The risks and benefits have been substantially transferred to third parties.
- If not all risks and benefits are retained or transferred, when control has been transferred.

There have been no changes with respect to the previous year in the methods, assumptions and key data used to assess the securitised exposures or re-securitisation exposures (i.e. securitisations in which at least one of the underlying exposures is a securitisation exposure)

There is no specific accounting treatment for synthetic securitisations or assets awaiting securitisation.

## 6.4. Capital requirements - Securitisations

Santander calculates regulatory capital under the securitisation approach for positions held in originated securitisations only if the regulatory conditions established in the CRR for significant risk transfer are met. Otherwise, capital is calculated for the securitised exposures as if they had never been securitised. Capital is also calculated for investment positions in securitisation funds originated by third parties.

For securitizations issued in 2020, capital requirements are calculated using the approaches under the new Regulation (EU) 2017/2401 on securitizations.

This framework modified the calculation methods for capital requirements. Firstly, with the aim of ruling out any form of automatic recourse to external ratings, the entity must use its own calculation of regulatory capital requirements so long as it is authorised to apply **the internal ratings-based approach for securitisations (SEC-IRBA)**. Entities that cannot use the SEC-IRBA must apply the standardised approach (**SEC-SA**) to securitisations. The SEC-SA must be based on a formula which takes as its input data the capital requirements calculated under the standardised approach for credit risk. When neither of these two approaches are available, the entities must adopt the external ratings-based approach for securitisations (SEC-ERBA). In accordance with **SEC-ERBA**, capital requirements must be assigned to securitisation tranches on the basis of their external rating.

Capital requirements for securitisation positions are calculated by applying the appropriate risk weight to the exposure value of each position, depending on the approach used by the entity to calculate the risk-weighted exposure amounts on the securitised portfolio.

In November 2020, the BCBS published a technical amendment establishing prudential treatment for securitisations of non-performing loans. In 2021, this technical amendment was transposed into an EU Regulation under the legislative process known as the 'quick fix' for securitizations implemented through two EU regulations, as explained below.

In April 2021, the 'quick fix' for securitizations was published, which consists of two regulations. Firstly, Regulation (EU) 2021/557, amended Regulation (EU) 2017/2402 (Securitization Regulation) to aid recovery from the covid-19 crisis 0 i) establishing a framework for securitizations of non-performing exposures and ii) extending the benefits of STS (simple, transparent and standardized) securitization to synthetic securitizations. The covid-19 crisis increased the amount of non-performing exposures, which made management of these exposures by institutions even more important. To this end, the framework was created so that institutions could trade their non-performing exposures in the market by securitizing the said exposures.

Secondly, Regulation 2021/558 amended Regulation 575/2013 (CRR) to specify the capital requirements applicable to the changes introduced by Regulation 2021/557, such as securitisations of NPLs, senior tranches of STS synthetic securitisations, etc.

On September 20 the European Banking Authority (EBA) published its final draft Regulatory Technical Standards (RTS) specifying the minimum performance-related triggers for simple, transparent and standardised (STS) on-balance-sheet securitisations that feature non-sequential amortisation. With the purpose of standardisation, the amended Securitisation Regulation sets out that sequential amortisation shall be applied to all tranches of STS on-balance-sheet securitisations. However, as a derogation, STS on-balance-sheet securitisation might feature non-sequential amortisation to avoid disproportionate costs of protection, as long as some minimum performance-related triggers determine the application of sequential amortisation. This will ensure that tranches providing credit protection have not already been amortised when significant losses occur at the end of the transaction.

A breakdown of all securitisations in the banking book is provided below, together with the corresponding capital consumption arranged by RW (risk weighting) interval and the

calculation method employed when the Group acts as originator or sponsor.

**Table 65.SEC3 - Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as originator or as sponsor**

EUR million

2022

	Exposure values (by RW bands/deductions)					Exposure values (by regulatory approach)				
	a	b	c	d	e	f	g	h	i	
	<= 20%	> 20% to 50%	> 50% to 100%	> 100% to 1250%	1250% RW/ deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions	
<b>1 Total exposure</b>	<b>31,269</b>	<b>7,860</b>	<b>172</b>	<b>18</b>	<b>309</b>	<b>27,456</b>	<b>6,805</b>	<b>5,058</b>	<b>309</b>	
<b>2 Traditional securitisation</b>	<b>318</b>	<b>77</b>	<b>—</b>	<b>—</b>	<b>60</b>	<b>383</b>	<b>11</b>	<b>—</b>	<b>60</b>	
3 Securitisation	318	77	—	—	60	383	11	—	60	
4 Retail underlying	318	77	—	—	60	383	11	—	60	
5 Of which STS	268	—	—	—	60	257	11	—	60	
6 Wholesale	—	—	—	—	—	—	—	—	—	
7 Of which STS	—	—	—	—	—	—	—	—	—	
8 Re-securitisation	—	—	—	—	—	—	—	—	—	
<b>9 Synthetic securitisation</b>	<b>30,951</b>	<b>7,783</b>	<b>172</b>	<b>18</b>	<b>248</b>	<b>27,072</b>	<b>6,794</b>	<b>5,058</b>	<b>248</b>	
10 Securitisation	30,951	7,783	172	18	248	27,072	6,794	5,058	248	
11 Of which, retail underlying	13,229	1,902	172	18	177	4,343	6,794	4,184	177	
12 Of which, wholesale underlying	17,722	5,881	—	—	71	22,729	—	874	71	
13 Of which, resecuritisation	—	—	—	—	—	—	—	—	—	

EUR million

2022

	RWEA (by regulatory approach)*				RWEA (by regulatory approach)			
	j	k	l	m	n	o	EU-p	EU-q
	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250% RW
<b>1 Total exposure</b>	<b>4,471</b>	<b>1,179</b>	<b>924</b>	<b>—</b>	<b>358</b>	<b>94</b>	<b>74</b>	<b>—</b>
<b>2 Traditional securitisation</b>	<b>58</b>	<b>2</b>	<b>—</b>	<b>—</b>	<b>5</b>	<b>—</b>	<b>—</b>	<b>—</b>
3 Securitisation	58	2	—	—	5	—	—	—
4 Retail underlying	58	2	—	—	5	—	—	—
5 Of which STS	26	2	—	—	2	—	—	—
6 Wholesale	—	—	—	—	—	—	—	—
7 Of which STS	—	—	—	—	—	—	—	—
8 Re-securitisation	—	—	—	—	—	—	—	—
<b>9 Synthetic securitisation</b>	<b>4,414</b>	<b>1,177</b>	<b>924</b>	<b>—</b>	<b>353</b>	<b>94</b>	<b>74</b>	<b>—</b>
10 Securitisation	4,414	1,177	924	—	353	94	74	—
11 Of which, retail underlying	632	1,177	793	—	51	94	63	—
12 Of which, wholesale underlying	3,781	—	131	—	303	—	10	—
13 Of which, resecuritisation	—	—	—	—	—	—	—	—

\*RWA do not include tranches that have a risk weight of 1250% due to they are deducted from Common Equity Tier 1.

Fully CRR Phased-in IFRS 9.

Following Mapping tool defined by the EBA, RWAs are before CAP adjustment, capital requirements after

**Table 66.SEC4 - Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as investor**

EUR million

						2022								
						a	b	c	d	e	f	g	h	i
						Exposure values (by RW bands/deductions)					Exposure values (by regulatory approach)			
						<= 20%	> 20% to 50%	> 50% to 100%	> 100% to 1250%	1250 %	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250 %
<b>1</b>	<b>Total exposure</b>					<b>14,378</b>	<b>2,655</b>	<b>92</b>	<b>254</b>	<b>1</b>	<b>—</b>	<b>2,992</b>	<b>14,387</b>	<b>1</b>
<b>2</b>	<b>Traditional securitisation</b>					<b>14,378</b>	<b>2,655</b>	<b>92</b>	<b>254</b>	<b>1</b>	<b>—</b>	<b>2,992</b>	<b>14,387</b>	<b>1</b>
3	Securitisation					14,378	2,655	92	254	1	—	2,992	14,387	1
4	Retail underlying					9,427	213	6	43	1	—	2,017	7,672	1
5	Of which STS					1,548	—	—	—	—	—	177	1,371	—
6	Wholesale					4,951	2,442	86	211	—	—	975	6,716	—
7	Of which STS					—	—	—	—	—	—	—	—	—
8	Re-securitisation					—	—	—	—	—	—	—	—	—
<b>9</b>	<b>Synthetic securitisation</b>					<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
10	Securitisation					—	—	—	—	—	—	—	—	—
11	Of which, retail underlying					—	—	—	—	—	—	—	—	—
12	Of which, wholesale underlying					—	—	—	—	—	—	—	—	—
13	Of which, resecuritisation					—	—	—	—	—	—	—	—	—

EUR million

						2022							
						j	k	l	m	n	o	EU-p	EU-q
						RWEA (by regulatory approach)				RWEA (by regulatory approach)			
						SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250% RW
<b>1</b>	<b>Total exposure</b>					<b>—</b>	<b>977</b>	<b>3,300</b>	<b>—</b>	<b>—</b>	<b>78</b>	<b>188</b>	<b>—</b>
<b>2</b>	<b>Traditional securitisation</b>					<b>—</b>	<b>977</b>	<b>3,300</b>	<b>—</b>	<b>—</b>	<b>78</b>	<b>188</b>	<b>—</b>
3	Securitisation					—	977	3,300	—	—	78	188	—
4	Retail underlying					—	380	1,137	—	—	30	91	—
5	Of which STS					—	20	152	—	—	2	12	—
6	Wholesale					—	597	2,163	—	—	48	97	—
7	Of which STS					—	—	—	—	—	—	—	—
8	Re-securitisation					—	—	—	—	—	—	—	—
<b>9</b>	<b>Synthetic securitisation</b>					<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
10	Securitisation					—	—	—	—	—	—	—	—
11	Of which, retail underlying					—	—	—	—	—	—	—	—
12	Of which, wholesale underlying					—	—	—	—	—	—	—	—
13	Of which, resecuritisation					—	—	—	—	—	—	—	—

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# 7

## Market risk

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# 7. Market risk



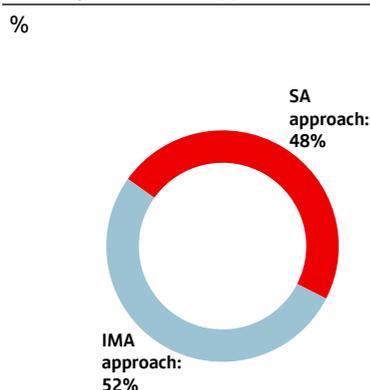
Market risk is the risk of loss of value of financial instruments arising from changes in market parameters, the volatility of these parameters and correlations between them.

This chapter provides information about activities subject to market risk and the performance of market risks and results in 2022, distinguishing between trading activity and structural risks. It also describes the methodologies and metrics used by Santander Group.

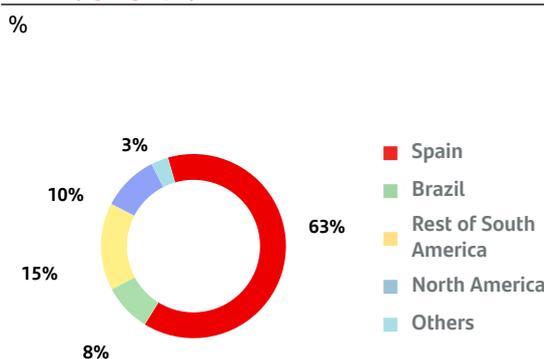
## Main figures

	RWA	
	2022	2021
Market risk	15,791	17,224
Of which, standardised approach	7,521	6,844
Of which, IMA	8,270	10,380

### RWA by calculation approach



### RWA by geography



## 7.1. Activities subject to market risk

This section covers the qualitative requirement MRA - Qualitative disclosure requirements related to market risk and MRB - Qualitative disclosure requirements for institutions using the internal Market Risk Models.

Also the provisions of letters (d), (e), (f) and (g) of the OVA requirement -Institution risk management approach, are complied with.

The measurement, control and monitoring perimeter of the Market Risk area includes all transactions where risk arises due to changes in market factors. This risk arises from changes in risk factors (interest rate, exchange rate, equities, credit spreads, commodity prices and the volatility of each of these) which may impact earnings or capital, and from the liquidity risk of the products and markets in which Santander operates.

The activities are segmented according to the purpose of the risk, as follows:

- a. **Trading:** the trading book includes all financial instruments that a bank holds for short-term resale in order to profit from short-term price movements, to make arbitrage profits or to hedge risks arising from the positions or instruments in this portfolio. This includes the provision of financial services in the markets to customers where the bank is the counterparty, as well as proprietary trading and positioning primarily in fixed income, equities, currencies and commodities. It should be noted that a corporate policy transposed by the different units delimits the Boundary between the Trading Book and the Banking Book.

See section 4.1, Introduction, of the the Group Annual Report, for further information about the different risks of this activity.



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b. **Structural risks:** these are composed of the market risks inherent to the balance sheet, excluding the trading book. Namely:

- **Structural interest rate risk:** this risk arises from timing mismatches in maturities and repricing of all balance sheet assets and liabilities.
- **Structural foreign exchange risk (hedging of results):** foreign currency risk arising from the currency in which investments in consolidated and non-consolidated companies are made (structural exchange rate). This category also includes the positions taken to hedge the foreign currency risk on future results generated in currencies other than the euro (hedging of results).
- **Structural equity risk:** this includes equity investments in non-consolidated financial and non-financial companies, and the available-for-sale portfolios of equity positions.

## 7.2. Capital requirements for market risk

This section provides more detailed information on changes in capital requirements for market risk through both internal and standardised models. The Group's consumption of regulatory capital for market risk at the end of December 2022 breaks down as follows.

**Table 67. Regulatory capital requirements for market risk**

EUR million	2022	2021
Position risk - Trading book* - Standardised approach	305	162
Commodity Risk - Standardised approach	32	37
Specific risk in the correlation trading risk portfolio	—	—
Currency risk - standardised approach	264	349
Position and currency risk - Tradingbook - Internal models	662	830
Spain & SLB	473	594
Chile	104	148
Mexico	85	89
<b>Total</b>	<b>1,263</b>	<b>1,378</b>

\*Includes structural equity considered as business.

Santander has an internal market risk model in Spain, Chile and Mexico.

At the end of December 2022, Santander had authorisation to use the internal market risk model for calculating regulatory capital in the trading books of the Spain, Chile and Mexico units. From October 2021, the market risk capital of the internal model for Spain and SLB will be reported in a single entity, following regulatory approval of the diversification between the two units. Santander aims to gradually extend this approval to the rest of the units with significant market positions. The other geographic units calculate capital consumption by market risk through the standardised approach. This calculation methodology is also used by entities that have approved internal models for only some of their portfolios. The standardised approach is applied to portfolios for which the internal model is not approved.

Consolidated regulatory capital under the internal market risk model for Santander is computed as the sum of the regulatory capital of the units that have the necessary approval from the European Central Bank. This is a conservative criterion when consolidating the Group's capital, as it takes no account of the capital savings arising from the geographic diversification effect.

The regulatory capital of the trading activity for the perimeter concerned is calculated with advanced approaches, using VaR, Stressed VaR and IRC (incremental risk charge) as the core metrics, in line with the new bank capital requirements under the Basel Accords and, specifically, the CRR.

The capital resulting from the VaR and SVaR metrics is adjusted through a Kr coefficient, derived from the number of backtesting overshootings existing for each unit in its local internal model.

In 2022, we continued to add new not-in-model risks to the calculation of capital by market risk, for those risk factors not included in the current regulatory capital metrics (VaR, SVaR, etc.).

A breakdown of capital requirements in the units that use the internal model is shown below, by geography and component, at year-end:

**Table 68. Capital requirements for market risk. Internal model**

						2022
	CR (VaR)	CR (SVaR)	IRC	Risk Not in VaR	Add-On	Total
Spain & SLB	157	269	37	10		473
Chile	51	50	3	—		104
México	26	57	2	—		85
<b>Total</b>	<b>234</b>	<b>377</b>	<b>41</b>	<b>10</b>	<b>—</b>	<b>662</b>

Below is a breakdown of capital requirements and RWAs for market risk and calculation component with internal model approval at 2022 year-end:

**Table 69. MR2-A - Market risk under the internal Model Approach (IMA)**

			2022	
		a	b	
			RWA	Capital requirements
<b>1 VaR (higher of values a and b)</b>		<b>2,919</b>	<b>234</b>	
(a) (a) Previous day's VaR (Article 365(1) of the CRR (VaRt-1))		626	50	
(b) (b) Average of the daily VaR (Article 365(1)) of the CRR on each of the preceding 60 business days (VaRavg) x multiplication factor (mc) in accordance with Article 366 of the CRR		2,919	234	
<b>2 SVaR (higher of values a and b)</b>		<b>4,706</b>	<b>377</b>	
(a) (a) Latest SVaR (Article 365(2) of the CRR (SVaRt-1))		1,111	89	
(b) (b) Average of the SVaR (Article 365(2) of the CRR) during the preceding 60 business days (SVaRavg) x multiplication factor (ms) (Article 366 of the CRR)		4,706	377	
<b>3 IRC (higher of values a and b)</b>		<b>516</b>	<b>41</b>	
(a) (a) Most recent IRC value (incremental default and migration risks calculated in accordance with Article 370 and Article 371 of the CRR)		386	31	
(b) (b) Average of the IRC number over the preceding 12 weeks		516	41	
<b>4 Comprehensive risk measure (higher of values a, b and c)</b>		<b>—</b>	<b>—</b>	
(a) (a) Most recent risk number for the correlation trading portfolio (Article 377 of the CRR)				
(b) (b) Average of the risk number for the correlation trading portfolio over the preceding 12 weeks				
(c) (c) 8% of the own funds requirement in the standardised approach on the most recent risk number for the correlation trading portfolio (Article 338(4) of the CRR)				
<b>5 Other*</b>		<b>128</b>	<b>10</b>	
<b>6 Total</b>		<b>8,270</b>	<b>662</b>	

\* Other includes Risks not in Model not included in Var or Svar

**Table 70.MR2-B - RWA flow statements of market risk exposures under the IMA**

EUR million		2022						
		a	b	c	d	e	f	g
		VaR	SVaR	IRC	Comprehensive risk measure	Other*	Total RWAs	Total capital requirements
<b>1</b>	<b>RWA Sep'22</b>	<b>2,799</b>	<b>5,515</b>	<b>701</b>		<b>112</b>	<b>9,127</b>	<b>730</b>
1a	Regulatory adjustment	2,117	4,189	253		—	6,559	525
1b	RWAs at the previous quarter-end (end of the day)	682	1,326	448		112	2,568	205
2	Movement in risk levels	154	(845)	(184)		15	(860)	(69)
3	Model updates/changes							
4	Methodology and policy							
5	Acquisitions and disposals							
6	Foreign exchange movements	(34)	37				3	—
7	Other							
8a	RWAs at the end of the reporting period (end of the day)	626	1,111	386		128	2,251	180
8b	Regulatory adjustment	2,293	3,595	131		—	6,019	482
<b>8</b>	<b>RWA Dec'22</b>	<b>2,919</b>	<b>4,706</b>	<b>516</b>		<b>128</b>	<b>8,270</b>	<b>662</b>

\* Other includes Risks not in Model not included in Var or Svar

**ESP & SLB:** Total capital is reduced mainly by the fall in SVaR consumption.

- SVaR: SVaR capital has decreased mainly due to the closing of the Spanish debt position on the XVA desk on 7 December.

**CHILE:** Total capital decreased, mainly due to the decrease in IRC consumption.

- IRC capital has decreased due to the exit of major positions during the previous months, which has caused a fall in the average of the last 12 weeks.

**MEXICO:** The total amount of capital has increased. The main variations are observed in SVaR and VaR.

- SVaR: SVaR capital has increased, with a notable increase in the metric in mid-December caused by US dollar futures trading.
- VaR: VaR capital has increased mainly due to changes in the USD position, which has decreased over the month.

**Table 71.MR1 - Market risk under the standardised approach**

EUR million		2022
		a
		RWEAs
<b>Outright products</b>		
1	Interest rate risk (general and specific)	3,267
2	Equity risk (general and specific)	118
3	Foreign exchange risk	3,209
4	Commodity risk	403
<b>Options</b>		
5	Simplified approach	—
6	Delta-plus method	223
7	Scenario approach	—
8	Securitisation (specific risk)	300
<b>9</b>	<b>Total</b>	<b>7,521</b>

Below is a breakdown of capital requirements and RWAs for market risk with standardised model approval from 2021 to 2022.

**Table 72. Capital requirements for market risk. Standardised approach**

	2022	
	Capital	RWAs
Starting figure (31 Dec. 2021)	547	6,844
Changes in business	54	677
Ending figure (31 Dec. 2022)	602	7,521

### Prudent Valuation Adjustments (PVA)

There is also a breakdown in Appendix XX of the constituent elements of Banco Santander's PVA for all assets measured at fair value (marked to market or marked to model) for which PVAs are required

The amount of prudent valuation adjustments has maintained a relatively stable profile during all quarters. Despite some specific moments during the year with higher volatility in the financial markets, there have been no significant variations in the elements of uncertainty to which the valuations of instruments measured at fair value may be subject. The slight reduction in PVA amounts in the year was mainly due to lower positions subject to this type of adjustments and to certain improvements in their calculation methodologies

For further details on prudent valuation adjustments (table PV1), see Appendix XXIV on the Santander's website.



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#### 7.2.1. Internal initiatives on methods for calculating market risk

Santander is making further progress with its new global Market Risk Advanced Platform (MRAP) initiative. This adapts, transforms and strengthens our current market risk calculation, in line with the new requirements of the regulatory framework for market risk published by Basel (FRTB), and adapts the internal risk models to the latest TRIM (Targeted Review of Internal Models) guidelines and to the supervisor's expectations.

This programme adopts a multidisciplinary and multi-geographical approach, with the participation of all our entities that carry on activities exposed to market risk and all relevant stakeholders, including Market Risk, Technology, Front Office, and Regulatory Affairs and Compliance.

The MRAP programme introduces significant improvements in terms of functional and IT architecture and operating models, leading to a change in the culture established in the group and the generation of synergies among all initiatives and resources.

As part of this programme, a good deal of work was carried out in 2019 and 2020 to improve and adapt the IRC model to take account of the findings previously raised by the supervisory authority. Finally, in 2021, following the

improvements and developments developed for this purpose, the ECB approved the new model for calculating capital requirements for market risk for Spain and SLB.

In addition to this programme, the Group has continued to work on improving the new IRC model throughout 2022 in response to the Obligations set by the supervisor.

As a result of the IBOR reform, the bank has started the transition programme to new valuation curves during 2019, as opposed to the IBOR reference curves it has been using.

See section 4.1, Introduction – IBOR reform, of the Santander Annual Report, for further information about the IBOR initiative.



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## 7.3. Trading activity

The goal of daily market risk function monitoring is to ensure that market risk positions remain within approved limits and to assess performance and significant deviations in risk metrics.

Trading activity at Santander is monitored by the local market risk units, under the principle of independence of business units, monitoring market risk positions on a daily basis and analysing the value of a set of metrics identified and approved by the group, the changes in them, any material changes that may occur and compliance with the approved limits on these metrics.

Regular reports are prepared and distributed on the basis of this analysis. These reports ensure the appropriate monitoring of market risk activities within the group, and are distributed to senior management and other internal and external stakeholders, so that market risk activities may be properly monitored.

The corporate Market Risk functions also monitor positions daily, both locally at the level of the individual unit and globally, through exhaustive checking of changes in the portfolios to detect any incidents and correct them immediately.

The local Market Risk functions are also responsible for the daily calculation and analysis of the results of the trading books. Preparing and analysing a daily income statement is an excellent risk indicator, helping us identify the impact of changes in financial variables on the portfolios.

The main market risk metrics are:

- VaR and Stressed VaR
- Equivalent and/or nominal positions
- Sensitivities of the various market risk factors to underlying factors (delta, vega, gamma and theta)
- Delivery risk for short positions in securities (fixed income and equities)

- The volume of effective and relative losses resulting from the monitoring of results during a period:
  - Loss trigger
  - Stop loss
- Credit metrics:
  - Total exposure and exposure by sector/geography/rating
  - Jump to default by issuer, product, currency and seniority
  - Sensitivity to credit risk
- Volume of origination transactions
- P&L of each desk and/or portfolio

These metrics are used to establish limits and sub-limits, in order to provide a sufficiently granular limit structure to enable effective control of the various types of market risk factors to which the group's portfolios are exposed in its trading activities.

The establishment of market risk limits for trading is a dynamic process that responds to the level of risk appetite established by the group. This process is part of an annual limits plan defined by the group's senior management, involving all of the group's subsidiaries.

For more information on the process of setting limits please refer to the sections 2.4 Management processes and tools and 4.2. Market risk management, of the Santander Annual Report.



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Scenario analysis is also performed as a risk management tool, to control the potential impact of extreme or unexpected movements in market risk factors on trading books. These scenarios can replicate past events (historical scenarios), identify plausible alternatives that do not correspond to past events (hypothetical scenarios) or look for market movements that cause a particular impact on results (reverse scenarios).

### 7.3.1. Value at Risk

Santander's VaR calculation methodology consists of historical simulation at a 99% confidence level, with a one-day horizon for internal risk management and a ten-day horizon when calculating own funds for market risk.

Statistical adjustments are applied in VaR to enable swift and efficient incorporation of the most recent events affecting the levels of risk assumed. Currently, all units use historical simulation with full revaluation, except for Market Risk Spain, which, while using this methodology for certain portfolios, applies historical simulation using a Taylor series approximation for the bulk of its portfolios.

The group uses a two-year window, or 520 daily readings, backwards in time from the VaR calculation reference date. Two figures are calculated every day: one applying an exponential decay factor that accords less weight to the observations furthest away in time and another with the same weight for all observations. The reported VaR is the

higher of these two figures. Additionally, it should be noted that VaR is calculated with a one-day horizon and scaled using the square root of time rule. Periodically, a comparison is made between this method and the direct calculation with 10-day performance.

To calibrate the VaR model, the risk factors use different calculation methodologies (relative, absolute or mixed approaches), based on observable data. The criteria for assigning these methodologies to the different groups of risk factors are set out in standards defined by Methodology and independently validated by Internal Validation (2nd Line of Defence). In addition, the corporate VaR guidance requires an annual review of the selection criteria for performance models.

At the same time as the VaR is calculated, the value at earnings (VaE) is also calculated, which measures the maximum potential gain at a certain level of confidence and time horizon, applying the same methodology as for VaR.

VaR by historical simulation has many advantages as a risk metric: it sums up the market risk of the portfolio in a single number and is based on observed market movements without the need for assumptions about functional forms or correlations between market factors.

In relation to the VaR, the Expected Shortfall (ES) is also calculated by estimating the expected value of the potential loss when this is greater than the level set by the VaR.

Unlike VaR, ES has the advantage of being better at capturing the risk of large losses with low probability (tail risk) and of being a sub-additive metric. The BCBS considers that a 97.5% confidence interval delivers a similar level of risk to VaR at a 99% confidence interval. ES is calculated by applying uniform weightings to all observations.

At the end of December 2022, Santander had authorisation from the European Central Bank to use the internal market risk model for calculating regulatory capital in the trading portfolios of the Spain, Santander London Branch, Chile and Mexico units.

The total regulatory capital figures based on the internal model are calculated as the linear sum of the individual regulatory capital of the units that have received internal model approval; i.e. without considering diversification.

Moreover, for those Santander Group entities without approval for calculating regulatory capital based on the internal model, capital will be calculated based on the standard model. This calculation methodology is also used by entities that have approved internal models for only some of their portfolios. The standardised approach is applied to portfolios for which the internal model is not approved.

During the year, the strategy for Santander trading activity was to remain focused on customer business, minimising any exposure to directional risk as much as possible and maintaining geographic and risk factor diversification. This is reflected in the VaR of SCIB's trading book.

The level of risk in the trading portfolio remained low, despite the war in Ukraine, which led to energy price hikes and, ultimately, inflation and increased interest-rate volatility. Furthermore, the risk management processes were proven to be solid, robust and effective, despite occasional peaks observed in VaR over the year.

This is reflected in the VaR of the trading portfolio, which, despite market volatility, especially in relation to interest rates and exchange rates, mostly stayed below the trend of the last three years, and closed December at EUR 47 million. This has meant that trading risk has contributed to capital less than in previous years.

Santander also continues to have very limited exposure to complex structured instruments or vehicles, reflecting a risk culture in which prudent risk management is one of the key features.

At the end of December 2022, the group had the following exposures in this regard:

- **Hedge funds:** exposure was €4 million, all of which was indirect, acting as a counterparty in derivative transactions. We analyse risk with this type of counterparty on a case-by-case basis, establishing percentages of collateralisation on the basis of the features and assets of each fund.
- **Monolines:** no exposure at the end of December 2022.

The group's policy for approving new transactions related to these products remains very prudent and conservative, and is subject to strict supervision by the group's senior management.

The bank's derivatives activity is mainly focused on the sale of investment products and on hedging risks for our customers. Risk management is focused on ensuring that net open risk is as low as possible.

These transactions include options on equities, fixed income and exchange rates. The units where this activity mainly takes place are: Spain, Brazil, the UK and Mexico.

In comparison with other similar financial groups, the Group's trading risk profile can be classified as low. Dynamic management of risk enables Santander to adopt changes in strategy to unlock opportunities in an uncertain environment.

For more information, see the Risk Management chapter (section 4) of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

At year-end 2022, VaR by geography was as follows:

**Table 73.MR3 - IMA values for trading portfolios**

EUR million		<u>a</u>		
Total		2022	2021	Variation
<b>Var (10 days - 99%)</b>				
1	Maximum	111	108	3%
2	Average	56	43	32%
3	Minimum	34	25	34%
4	End of period	47	50	(7) %
<b>Stressed VaR (10 days - 99%)</b>				
5	Maximum	229	160	43 %
6	Average	129	105	23 %
7	Minimum	66	71	(7) %
8	End of period	86	123	(30) %
<b>Incremental Risk Charge (99.9%)</b>				
9	Maximum	70	184	(62) %
10	Average	44	106	(58) %
11	Minimum	15	17	(10) %
12	End of period	37	20	84 %
<b>Comprehensive risk measure (99.9%)</b>				
13	Maximum			
14	Average			
15	Minimum			
16	End of period			

Figures do not include Risks not in model

Spain		<u>a</u>		
Total		2022	2021	Variation
<b>Var (10 days - 99%)</b>				
1	Maximum	68	72	(6) %
2	Average	38	29	31 %
3	Minimum	24	19	26 %
4	End of period	27	32	(17) %
<b>Stressed VaR (10 days - 99%)</b>				
5	Maximum	161	110	46 %
6	Average	94	79	18 %
7	Minimum	57	57	— %
8	End of period	57	87	(34) %
<b>Incremental Risk Charge (99.9%)</b>				
9	Maximum	57	161	(65) %
10	Average	39	96	(59) %
11	Minimum	15	15	— %
12	End of period	37	16	130 %
<b>Comprehensive risk measure (99.9%)</b>				
13	Maximum			
14	Average			
15	Minimum			
16	End of period			

Figures do not include Risks not in model

Chile		<u>a</u>		
Total		2022	2021	Variation
<b>Var (10 days - 99%)</b>				
1	Maximum	28	13	124%
2	Average	12	7	75%
3	Minimum	6	3	104%
4	End of period	13	12	9%
<b>Stressed VaR (10 days - 99%)</b>				
5	Maximum	45	28	63 %
6	Average	22	13	66 %
7	Minimum	4	8	(51) %
8	End of period	14	23	(39) %
<b>Incremental Risk Charge (99.9%)</b>				
9	Maximum	9	16	(45) %
10	Average	4	7	(51) %
11	Minimum	—	1	(92) %
12	End of period	—	3	(98) %
<b>Comprehensive risk measure (99.9%)</b>				
13	Maximum			
14	Average			
15	Minimum			
16	End of period			

Figures do not include Risks not in model

Mexico		<u>a</u>		
Total		2022	2021	Variation
<b>Var (10 days - 99%)</b>				
1	Maximum	15	23	(35) %
2	Average	6	7	(8) %
3	Minimum	4	3	20 %
4	End of period	7	6	17 %
<b>Stressed VaR (10 days - 99%)</b>				
5	Maximum	23	22	6 %
6	Average	13	12	8 %
7	Minimum	5	6	(14) %
8	End of period	15	13	10 %
<b>Incremental Risk Charge (99.9%)</b>				
9	Maximum	4	7	(41) %
10	Average	1	2	(44) %
11	Minimum	—	1	(85) %
12	End of period	—	1	(55) %
<b>Comprehensive risk measure (99.9%)</b>				
13	Maximum			
14	Average			
15	Minimum			
16	End of period			

Figures do not include Risks not in model

### 7.3.2. Stressed VaR

In addition to standard VaR, Stressed VaR is also calculated daily for the main portfolios. The methodology for calculating Stressed VaR is the same as that used to calculate VaR, apart from two differences:

- Historical window for observing factors: in the stressed VaR calculation a window of 260 data readings is used, instead of the 520 used for computing the ordinary VaR measurement.
- Unlike the method used for the ordinary VaR calculation: stressed VaR is not obtained as the higher of the uniformly weighted percentile and the exponentially weighted percentile; instead, the uniformly weighted percentile is used directly.

All other aspects of the methodology and inputs for calculating the stressed VaR are the same as for the VaR.

The Market Risk functions periodically define the window used to calculate SVaR (the observation period), using the most severe at any given time, depending on the positions in the portfolio. The scope considered comprises the Treasuries for which approval has been obtained for the use of the internal model at 31 December 2022: Spain + SLB, Chile and Mexico.

The windows currently used to calculate Stressed VaR are:

#### Stress Window

	Period
Spain & SLB	26/02/2008 – 05/03/2009
Chile	18/01/2008 – 30/01/2009
Mexico	11/05/2016 – 22/05/2017

The Market Risk functions review these stress windows every quarter. The SVaR figures are also checked daily, comparing them to the VaR figures. If this analysis reveals that the current window used to calculate daily VaR covers a period with greater volatility than the window used to calculate SVaR, the stress window is reviewed on an extraordinary basis.

### 7.3.3. Incremental risk charge

Following the recommendations of the Basel Committee on Banking Supervision and applicable regulations, an additional metric is calculated in relation to the credit risk inherent to the trading portfolios: the incremental risk charge (IRC).

The IRC is intended to measure both rating migration risk and any incremental default risk that is not captured by VaR, through changes in the corresponding credit spreads. To this end, transition matrices are used, which represent the probabilities of migrating from one rating to another over a certain time horizon. The matrices are extracted from reports published by one of the leading ECAs for the various sectors. The above-mentioned reports are produced annually by the ECAI, analysing more than thirty years of default data and one-year rating migrations for various types of debt. Some modifications are made to the transition matrices extracted from the reports in order to guarantee their consistency and that they can be used in the defined model.

The IRC metric is calculated for public and private fixed-income bonds, bond derivatives and credit derivatives in the trading portfolio. In addition, the new IRC model approved for

Spain (including the SLB) uses correlations that are determined by the relationship between each issuer and the systemic factors. These ratios are calibrated to a one-year time frame using historical price series representing each issuer and the systemic factors. The price series used are at least ten years long and include at least one stress period in accordance with regulatory requirements.

In the previous IRC model that continues to apply for the Mexican and Chilean units, the calculation of correlations uses the single-factor formula proposed by the Basel regulation.

The method used to calculate the IRC, which is essentially similar to that applied to the credit risk of non-trading portfolio exposures, is based on the Merton structural model, which dictates that the default event occurs when the assets of a company fall below a certain level of its debts. This internally developed model comprises direct measurements on the distribution queues of losses caused by the different credit events it provides for, i.e. default risk and migration of credit quality subject to a confidence interval of 99.9% and a capital horizon of one year for all positions. The assumed liquidity horizon coincides with the one-year capital horizon and the simulation methodology uses the Montecarlo approach.

Work has been ongoing in 2019 and 2020 to develop a new IRC model to respond to the shortcomings and findings raised by the regulator in the previous IMI. The new IRC model therefore includes various improvements to core aspects of the model. Following the IMI 4313 carried out in 2020, approval was granted by the regulator for Spain, including SLB, and the multiplier previously implemented for this region was consequently eliminated. Furthermore, in addition to this approval, a set of Obligations were established. Improvements have been under way throughout 2022 to meet these Obligations, and these improvements will continue throughout 2023.

As approval of the new model was only granted for Spain, the geographies of Chile and Mexico will continue to calculate their regulatory capital for market risk using the previous IRC model.

### 7.3.4. Analysis of scenarios and stress testing

The risk measures described above are based on assumptions that underpin day-to-day risk management and decision-making, including normal market conditions, continuous pricing and adequate liquidity, although they do not fully predict extreme movements or unforeseen market turbulence.

Stress testing is an important risk management tool that identifies unexpected outcomes related to a wide range of risks, telling us how much capital would be needed to absorb losses if these unexpected events were to occur.

Stress tests play a particularly important role in: estimating future risk; overcoming the inherent constraints of models and the use of historical data; the communication of internal and external risks; supporting liquidity and capital plans; reporting the establishment of risk tolerance levels; and designing risk mitigation and contingency plans for stressed conditions.

The group's stress test programme includes the following scenarios:

- **Historical scenarios:** these study how the portfolio reacts under crisis conditions or significant market events that occurred in the past which affect portfolio positions, estimating maximum losses under the assumption that such events will recur.
- **Subprime crisis:** based on events that occurred in the period between September 2007 and December 2008, triggered by the subprime mortgage crisis in the USA. Considering two different time horizons (one day and ten days), it identifies the most severe changes in market variables for each risk factor
- **Covid-19 crisis:** this reflects the dramatic changes in financial markets as a result of the covid-19 pandemic during the first two quarters of 2020. It is based on the application of historical market movements during the most severe ten-day period in terms of results, for most of the positions in the trading portfolios of the group's units
- **Hypothetical scenarios:** built using movements for market variables that are not necessarily connected to historical events, with a forward-looking (ex-ante) view, as opposed to a backward-looking (ex-post) view of historical scenarios.
- **Abrupt crisis:** a hypothetical scenario based on abrupt changes in market risk factors: rise in yield curves and credit spreads, appreciation of the USD, sharp fall in stock market indices and dividends, increased volatility in all risk factors, rises in commodity prices and default of the main positions in the portfolio.
- **Worst case:** this combines movements in risk factors and their respective historical volatilities, assuming a variation in the value of market factors of +/-3 and +/-6 standard deviations per day. Its output is the sum of the worst results by risk factor, regardless of their historical correlations.
- **EBA adverse scenario:** based on the adverse macroeconomic scenario to be applied to market risk factors, as proposed by the EBA for the "EU-wide stress test 2020" exercise
- **Forward-looking scenario:** a plausible scenario defined by the Market Risk functions, based on the portfolio positions and their expert judgement regarding short-term changes in market variables that can have a negative impact on such positions.
- **Reverse stress test scenarios:** analysis of scenarios that could undermine the institution's viability, identifying the

potential vulnerabilities of the business, along with hidden risks and interactions between risk factors. They start from a known stress result (such as non-compliance with certain ratios relating to capital, liquidity or capital adequacy) and from there they identify the extreme scenarios in which movements in market variables could cause events that might compromise the viability of the business.

Other scenarios:

- **IRC scenarios:** designed to stress the default risk and rating migration risk of credit positions in the trading portfolio, with a view to identifying credit events that could impact regulatory capital and measure how reasonable the assumptions of the IRC model are.
- **Use of proxies scenarios:** defined to analyse what impact incorrect estimates of proxies could have on determining the time horizons used to calculate VaR.
- **Liquidity and concentration stress scenario:** designed to estimate the potential impact of a reduction in market liquidity or an excessive concentration of portfolio positions that could affect their exit price.

The Market Risk functions regularly calculate and analyse all these scenarios. A consolidated stress test report is prepared every month, based on the results of each of the scenarios and for all the group's units with trading activities. There are also alerts on the stress results which, when exceeded, trigger communication and joint analysis by Risk and Business functions.

The table below shows the results as at 31 December 2022, broken down by risk factor (interest rate, equities, foreign currency, credit spread, commodities and the volatility for each), in a scenario in which volatility equivalent to six standard deviations in a normal distribution is applied, regardless of the historical correlation between them.

The scenario is defined by taking the change that produces the highest potential loss in the global portfolio for each risk factor, discarding the most improbable combinations in economic and financial terms.

The result of the analysis shows that the economic impact that Santander would suffer in its trading portfolios, in terms of mark to market, assuming that the stress movements defined in the worst-case scenario materialised in the market, would be €59 million.

**Table 74. Stress scenario: Maximum volatility (worst case)**

	2022						2021					
	Interest rate	Equities	Foreign currency	Credit spread	Commodities	Total	Interest rate	Equities	Foreign currency	Credit spread	Commodities	Total
<b>Total Trading</b>	<b>(30.60)</b>	<b>(11.00)</b>	<b>(12.00)</b>	<b>(5.20)</b>	<b>—</b>	<b>(58.80)</b>	<b>(22.60)</b>	<b>(17.50)</b>	<b>(13.20)</b>	<b>(21.10)</b>	<b>—</b>	<b>(74.40)</b>
Europe	(17.90)	(8.70)	(3.60)	(5.10)	—	(35.30)	(15.10)	(14.80)	(4.90)	(21.10)	—	(55.90)
South America	(8.20)	(2.10)	(4.40)	(0.10)	—	(14.80)	(3.10)	(2.70)	(6.20)	—	—	(12.00)
USA	(4.50)	(0.20)	(4.00)	—	—	(8.80)	(4.40)	—	(2.10)	—	—	(6.50)
Global Activities	—	—	—	—	—	—	—	—	—	—	—	—
Asia	—	—	—	—	—	—	—	—	—	—	—	—

### 7.3.5. Backtesting (MR4)

The backtesting exercise consists of comparing the VaR forecasts, given a certain confidence level and time horizon, with the actual losses incurred over a time horizon equal to the VaR time horizon.

The general aim of backtesting is to verify the accuracy of the Value at Risk (VaR) calculation model. In other words, whether to accept or reject the model used to estimate the maximum loss on a portfolio with a given level of confidence, over a certain period of time.

Backtesting is analysed at local level by the local market risk control units. The market risk consolidation unit is responsible for backtest reporting at consolidated level. It is important to note that the backtesting methodology is applied identically to all the sub-portfolios covered by the internal market risk model. The analysis of regulatory backtesting is conducted daily, at portfolio and sub-portfolio level.

Four types of backtesting are defined, depending on the kind of P&L used:

- **Economic P&L (dirty P&L):** refers to the daily P&L calculated on the basis of mark-to-market or mark-to-model securities (depending on the instruments) of the books and records of Banco Santander at the end of the day. It is calculated using Front Office systems (data on positions, pricing models, valuation methods, price parameters and end-of-day market data)
- **Actual P&L (dirty P&L without mark-ups):** refers to the daily P&L calculated by comparing the portfolio's closing value and its actual value at the end of the following day, including losses and gains derived from intraday activities, excluding fees, commission and net interest income. Santander, as considered acceptable in paragraph 63 of the TRIM guidance ("ECB Guide to Internal Models", Oct 2019), has established that net interest income is equal to zero in the trading portfolio. The "actual P&L" includes all time effects (theta). This P&L is used for the regulatory backtesting in accordance with article 366 (3) of the CRR, in order to compute the number of overshootings. The additional aspects included in the TRIM guidance are also considered.
- **Hypothetical P&L (clean P&L due to subtractions):** this refers to the daily P&L calculated by comparing the portfolio's closing value and its actual value at the end of the following day, assuming unchanged positions. In this case, time effects are not considered, to be consistent with the VaR. Similarly, the additional aspects included in the TRIM guidance are also considered. Specifically, any valuation adjustment made in actual P&L that is not included in VaR is also not included in hypothetical P&L. Hypothetical P&L is obtained from the Front Office platforms by the Market Risk function, without considering intraday results or changes in portfolio positions. This P&L, like actual P&L, is used for the regulatory backtesting in accordance with article 366 (3) of the CRR, in order to calculate the number of overshootings.
- **Risk-theoretical P&L (clean P&L due to change of factors):** this hypothetical P&L is similar to the previous measure but is calculated using the Market Risk calculation engine (AIRE), without considering intraday results, changes in portfolio positions or time effects (theta). This P&L is

exclusively used to verify the quality of the internal VaR model.

Of these four backtesting methods, only the backtesting on actual P&L (dirty P&L without mark-ups) and the hypothetical P&L (clean P&L due to subtractions) are used to measure and report the accuracy of the model, for regulatory purposes.

In order to calibrate and control the effectiveness of the internal market risk measurement and management systems, Santander regularly performed the required benchmark tests and analyses throughout 2022, with the conclusion that the model was reliable.

#### Number of overshootings

Overshooting occurs whenever the losses or gains observed in a day exceed the VaR estimate. The number (or percentage) of overshootings recorded is one of the most intuitive indicators of a model's accuracy.

When the P&L exceeds the previous day's VaR it is considered to be an overshooting (or exception). The number (or percentage) of overshootings recorded is one of the most intuitive indicators of the models accuracy. A regulatory coefficient "K" is calculated on the basis of the number of overshootings in the regulatory backtesting. This affects the calculation of regulatory capital in accordance with the following table:

Backtesting overshootings	KR value
0	—
1	—
2	—
3	—
4	—
5	0.40
6	0.50
7	0.65
8	0.75
9	0.85
10	1.00

The confidence level for the VaR calculation is a measure of the number of overshootings expected to occur in a given time window. For example, if the daily VaR is calculated with a confidence level of 99%, the percentiles of interest are the 1st and the 99th percentiles of the P&L distribution, so we should expect 2% of overshootings during the days studied (1% due to excess profits and 1% due to excess losses).

If there are significantly more, or fewer, overshootings, this might be a sign of problems in the VaR model employed. The observed P&L and estimated VaR data can be used to construct a hypothesis test to check the validity of the VaR/P&L relationship.

#### Time between overshootings

The confidence level for the VaR calculation is also an indicative measure of the number of days that can be expected to elapse between two successive overshootings. For instance, if the daily VaR is calculated at 99% confidence (1st and 99th percentiles), we may expect an average time of approximately 50 days between overshootings.

Similarly to the frequency of overshootings, hypothesis-testing can be done based on the time between overshootings, as a means of validating the VaR model.

### Distance between overshootings

Whereas VaR predicts the risk that is assumed with a certain probability, average overshooting (expected shortfall) is a predictor, for that probability, of the average loss once VaR is exceeded. This study should be included when analysing the backtesting report, to obtain the size of the potential losses that exceed the VaR level.

### Daily VaR/P&L relationship

To validate the VaR model, it is not enough to analyse the number and type of overshootings that occur in a time window. Other indicators must be observed to ensure the model's consistency. One such indicator is the daily VaR/P&L relationship. This relationship is defined as:

- The P&L figure, as a percentage of VaR, on all the days on which there are no overshootings (losses or gains).
- Calculation of its arithmetic mean.

The percentage should be close to a value determined by the VaR confidence level, because the higher the chosen confidence level, the higher the VaR estimate (and the smaller the P&L results as a percentage of that estimate).

If the percentage observed is much higher than expected, the risk is being underestimated and the model should be reviewed. Conversely, if the percentage is significantly smaller, then the risk is being overestimated and the VaR model should be adjusted. The latter outcome may, however, be desirable if the aim is to maintain conservative risk estimates.

The following diagram shows the annual backtest (MR4) at the end of December 2022 for each unit with internal model approval (see Appendix XXV).



[Access 2022 Pillar 3 Disclosures Report available on the Santander Group website](#)

The number of overshootings at 31 December 2022 for the units with internal model approval are shown below.

**Table 75. Exceptions at units with internal model**

	2022	
	Exceptions	Model Status
Spain & SLB	2	OK
Chile	3	OK
Mexico	—	OK

There were two exceptions in Spain and three in Chile in 2022.

The exceptions in Spain are due to increased volatility in the interest-rate curves of the EURO and in equity positions.

The exceptions in Chile, however, are due to increased volatility in CLF swap curves and in the CLP/USD exchange rate.

The fair value of a financial instrument is calculated using quoted market prices or appropriate valuation models, duly

validated and approved. This may cause a degree of uncertainty in the valuation of less liquid financial instruments, which are not traded on a regular basis or which use valuation models. These uncertainty factors are incorporated into the fair value of positions through valuation adjustments.

Valuation adjustments are designed to ensure the fair valuation of positions, by including variables in the market value that are not considered in the valuation models or for which there is sufficient uncertainty to significantly affect the valuation.

The valuation adjustment categories used at the Group include:

- Market liquidity valuation adjustments (close out cost): adjustments arising from the use of average prices when valuing portfolio positions, where accounting rules require valuation based on the exit price.
- Valuation adjustments are included due to the existence of spreads between buy and sell prices.
- These adjustments are calculated taking into account the spread between market buy and sell prices and are estimated independently for each risk factor, distinguishing between: interest rate curves, prices, dividends, volatilities and correlation.
- Valuation adjustments due to uncertainty in market prices (market price uncertainty): these are warranted because of considerable uncertainty in the market data used for the calculation of fair value, distinguishing between:
  - Observable market data
  - Unobservable market data
- Valuation adjustments due to model risk: these are warranted when there is a high degree of uncertainty in the valuation models or in the parameters used by these models. This uncertainty may be caused by: adding certain assumptions that may be erroneous, models whose results cannot be calibrated because there are no alternatives or because of dependence on parameters that are subject to possible estimation errors.
- Other valuation adjustments: adjustments for limitations in valuation systems, for exotic items not captured in the payoffs configured in the systems, uncertainty in the financing/investment costs used in estimating the exit price, profit reserves for specific or one-off transactions (generally associated with the first-day profit or loss of instruments classified as Level 3 in the fair value hierarchy) and credit risk adjustments (CVA/DVA).

### 7.3.6. Internal validation of the models

#### Market, counterparty and other non-financial risk models

In 2022, in accordance with the model risk policies, the Internal Validation team performed independent review exercises for the main models used in the group's various geographies. The areas covered are counterparty risk (maximum and expected exposures, CVA/DVA), issuer risk (incremental risk charge), valuation (interest rates, FX, equity, credit and commodities), valuation adjustments (AVA, FVA), market risk (VaR/SVaR), structural interest rate and liquidity risk (prepayments, accounts with no specified maturity,

mortgages, calculation of EVE/NIM) and other non-financial risks (operational risk, macroeconomic scenarios).

During these exercises, recommendations were issued aimed at improving the models and correcting their weaknesses. The resolution of the recommendations addressed was certified and an independent opinion was issued on the changes made to the models, in accordance with the policy on material changes.

The group also continued to monitor on a quarterly basis the VaR & SVaR models used to calculate regulatory capital for market risk, based on key indicators of the quality of the models, in order to proactively and independently monitor the operation of these models.

## 7.4. Structural balance sheet risks

This section covers the requirement IRRBBA - IRRBB qualitative information.

Structural risk is inherent in banking business and arises as a result of changes in a number of factors, including market or balance sheet behaviour variables, that affect the profit or loss or economic value of balance sheet items (banking book). This risk includes both the potential losses from price changes for assets recognised at fair value, and economic losses arising from management of assets and liabilities carried at amortised cost in the banking book positions.

Within structural risk, interest rate risk in the banking book (IRRBB) is considered the main source of balance sheet risk. There are four sources of IRRBB: repricing risk (or mismatch risk), curve risk, basis risk and optionality risk (automatic and behavioural).

The management of IRRBB measures aims to ensure the stability of net interest margin and the economic value within the Group's defined risk appetite.

These activities are based on the following principles, which take into account internal policy, regulatory and market best practice requirements:

- **Independence of risk management and control functions** following the group's established lines of defence model.
- **Involvement of senior management.**
- **Holistic approach to risk:** IRRBB control and monitoring must take into account all sources of risk and the fact that risks can originate due to factors connected with subsidiaries or for reasons not connected with them, so that local IRRBB risk events can have an impact on the group. Furthermore, the approach should be forward-looking and analyse trends over different time periods and under different scenarios.
- **Robust systems and quality internal data.**
- **Use of methodologies and models which are standardised and documented.**
- **Establishment and adaptability of limits**

For more information, see the Risk management and control chapter (section 4.1) of the 2022 Annual Report.



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The financial area of each group subsidiary manages interest rate risk originated by retail and commercial banking and is responsible for management of the structural risk generated by interest rate fluctuations. Mitigation strategies are used to manage the IRRBB risk profile by using interest rate instruments such as fixed income bond portfolios (usually government bonds) or derivative instruments with high credit quality, high liquidity and low capital consumption that complement the natural hedges provided by the balance sheet itself. They are always carried out taking into account the market environment.

For more information, see the Risk management and control chapter (section 4.5) of the 2022 Annual Report.



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### 7.4.1. Main interest rate risk in the banking book (IRRBB) metrics

The management, measurement and control of IRRBB risk and metrics is performed independently in each subsidiary. The set of metrics used in the group is homogeneous to ensure consistent measurement. However, the range of specific metrics implemented in each subsidiary depends on the dimensions and risk factors identified as relevant by each subsidiary in its IRRBB self-assessment, based on the individual features and nature of its business, its balance sheet structure and the complexity of the markets in which it operates.

IRRBB metrics are calculated under various scenarios and provide a static and/or dynamic overview of balance sheet exposure and net interest margin in response to adverse interest rate movements and/or on the main behavioural parameters and assumptions under which optionality is modelled. The main metrics are as follows:

- Repricing gap:** it measures the difference between the volume of sensitive assets and liabilities, on and off the balance sheet, that re-price (i.e. that mature or are subject to rate revisions) at certain times.
- Economic value and its sensitivity:** economic value of the equity (EVE) is the difference between the present value of assets less the present value of liabilities of the banking book, excluding own equity and other instruments that do not generate interest. The present value is calculated by discounting projected cash flows of assets and liabilities with the appropriate discount curve. EVE sensitivity is calculated as the difference between the EVE in a selected interest rates scenario and the EVE calculated in the baseline scenario. Therefore, EVE can have as many sensitivities as scenarios considered. This metric enables

the identification of long-term risk, and so supplements net interest margin.

- c. **Net interest margin and its sensitivity:** net interest margin is calculated as the difference between the interest income as percentage of assets and the interest cost of the liabilities of the banking book in a determined time horizon (typically from one to three years, the group's standard being one year). Its sensitivity reflects the impact of changes in interest rates on net interest income in the given time horizon. Net interest margin sensitivity is calculated as the difference between the net interest margin in a selected scenario and the net interest margin in the baseline scenario. Therefore, the net interest margin can have as many sensitivities as scenarios considered. This metric enables the identification of short-term risk, and supplements economic value of equity (EVE) sensitivity.
- d. **Earnings measures:** measures the change in expected future returns within a certain time horizon (three months) as a result of movements in interest rates and credit spreads as risk factors. This ratio takes into account both the impact of net interest income and the instruments whose value could be affected by changes in interest rates and which can be sold in the short term (mainly the instruments assigned to the HTC&S (Held to Collect and Sale) model and reported in the fair value measurement category OCI (Fair Value Through Other Comprehensive Income)).
- e. **Economic P&L of the ALCO portfolio:** to estimate losses from price changes of assets recognised at fair value, economic P&L is calculated under stress for fixed-income instruments managed by the ALCO (ALCO portfolios). The impact this market stress could have on the portfolio is then measured. A change in the value of this portfolio would reduce the group's equity and, therefore, have a negative effect on its capital ratio. The stress has a statistical component, as it is calibrated according to past performances observed in the market, and a forward-looking component, as it also uses stress scenarios generated by the group based on macro-economic analysis.
- f. **Value at risk (VaR and EaR) for the purpose of calculating economic capital:** the economic capital model by IRRBB in the group is based on a value-at-risk model that assesses the potential impact of movements in market variables, interest rates and credit spreads (the latter limited to the FV positions managed by ALCO) on both the economic value of equity and earnings. VaR and EaR represent the maximum amount of estimated losses on the economic value of equity and earnings calculated over a two-year period, which are expected to be exceeded only in a percentage of cases (confidence level 0.05%) and over a time horizon that varies for each subsidiary depending on its balance sheet structure.

#### System for controlling limits

The measurement, analysis and control of IRRBB metrics guarantees that the level of risk is aligned with the group's policies, approved management limits and risk appetite.

As a general rule, metrics are measured and controlled on a monthly basis, using the previous month's closing data.

IRRBB limits are set independently for each subsidiary in accordance with the individualised management and control per subsidiary. The main limits set in all subsidiaries are:

- Net interest margin sensitivity limit at one year
- Market value of equity sensitivity limit
- Limit of the market value of ALCO portfolios used for on-balance-sheet interest rate management that could have an impact on equity due to their accounting classification (fair value through equity)

The limits are reviewed regularly and have flexible modification mechanisms that can adapt to extreme or unfavourable market situations, but also to market opportunities.

If one of these limits or their sub-limits is exceeded (by currency or IRRBB risk type), the heads of risk management must explain the reasons and facilitate a corrective action plan.

IRRBB information is reported to the group's senior management on a subsidiary-by-subsiary basis, but collectively. In this way, the group's management can assess and control the risk profile in the subsidiaries, while at the same time obtaining a comprehensive overview of the risk so that it can be analysed and controlled from a global perspective.

The internal metrics used in the group to monitor IRRBB, based on the direct application of shocks to interest rate curves, are economic value and net interest margin sensitivities. The most commonly used interest rate scenarios are:

- Parallels of +/-100bp and +/- 25bp, depending on the volatility of the group's various currencies.
- The six regulatory scenarios (parallel and non-parallel) defined by the EBA<sup>8</sup> for the EVE sensitivity calculation.

In addition, each subsidiary of the group uses a variety of scenarios sufficient to ensure appropriate measurement and control of its IRRBB profile. The use of these scenarios plays an important role in providing supplementary future risk estimates. These scenarios are set on an annual basis and the range is also based on the IRRBB self-assessment performed by each entity in the group. They can be of different types, e.g. historical, forward-looking, probabilistic or based on expert assessments.

Santander measures structural risks using models to support decision-making processes, obtain predictive information and generate metrics that are better adapted to the reality of each subsidiary and its balance sheet structure. These models must be consistent with the methodological standards defined in the group. Wherever possible, the group tries to align all methods and models used for the calculation of regulatory and internal metrics, and currently there are no relevant differences.

The general IRRBB management strategies are transactions with fixed-income instruments or derivatives. If hedging is through fixed income instruments, they are generally recorded at fair value through equity and to a lesser extent at amortised cost. If hedging is through derivatives, the group's general policy to reduce asymmetries in accounting treatment

<sup>8</sup> EBA/GL/2018/02

is to enter into fair value or cash flow hedges depending on the exposure of the underlying.

Fair value hedges hedge portfolio risks (fixed rate) and are therefore exposed to changes in the fair value of the portfolios due to changes in interest rates.

The cash flow hedges hedge the exposure of foreign flows subject to changes in interest rates. The purpose of these hedges is to actively manage the interest rate risk of floating rate volumes by entering into interest rate derivatives where the bank swaps floating rate flows for fixed rate flows.

Both types of hedging are carried out in the group. The financial management divisions of the individual subsidiaries are responsible for designing and implementing operations according to their balance sheet structure, risk exposure and markets. These hedges are made through mainly interest rate swaps.

Financial derivatives that do not qualify for hedge accounting are treated for accounting purposes as trading derivatives.

For further details, see the Hedging transactions chapter (section 4.5) of the 2022 Annual Report.



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## Methodologies

Three main elements are necessary to calculate IRRBB metrics in Santander:

- Yield curves for capitalisation and discounting
- Behavioural models that enable the cash flows of certain instruments to be determined
- Assumptions about future changes in the entity's balance sheet and its various items

Of these three elements, the behavioural element is the main one subject to modelling.

The group develops methodological standards that establish best practises and criteria to be followed for the successful development and implementation of IRRBB models. Models may be based on quantitative approaches and methods using statistical or other mathematical techniques, or on assumptions and hypotheses assessed by experts. All models are managed within the framework of the Model Risk framework, which defines the principles and processes (including planning, development, validation, etc.) required to ensure adequate control of the models used in the group.

The main models used in the management and control of IRRBB are described below, by product type:

### a. Treatment of non-maturity deposits (NMD)

Accounts with no contractual maturity are subject to two types of optionality, the customer's option to withdraw their money without prior notice and/or the bank's option to review the interest paid. The NMD corporate model models the

product as a synthetic bond, with callable nominal and a periodic coupon. The callable nominal is determined by the stable balance and the estimated run-off for these flows. The coupon can be fixed, floating or subject to an elasticity with respect to market rates or a more complex function depending on different variables.

The model is based on the following sub-models and variables:

- **Beta model:** this sub-model defines the relationship between benchmark interest rates in the market and the remuneration paid to customers. The model can use a single beta or multi betas for the same account.
- **Attrition model:** is determined by two sub-models: one calculates the unstable/stable balance, while the other determines the run-off of the stable balance up to the maximum maturity considered. For the unstable balance an outflow is assumed in the first temporary bucket, typically one day.
- **Stable and unstable balance:** a statistical model is used to estimate the stable balance based on the historical distribution of aggregated balances at the segment level and the observed outflows in relation to the trend of the series. The stable balance is determined on the basis of a certain confidence level, which is usually above 95%.
- **Run-off model:** this sub-model attempts to estimate customer behaviour on the basis of historical harvest data (development of accounts created at the same point in time). The estimate can be made using a statistical model that depends on several variables (interest rates, spread with other products, macro variables) or it can be calculated using an optimisation process that assumes a certain function, e.g. assuming an exponential function and calibrating the decay rate<sup>9</sup>.

The average repricing term is not a parameter used directly in the NMD corporate model, but duration is. However, following regulatory criteria, the group ensures that the average repricing term of NMDs for each currency does not exceed the thresholds set out in the EBA guidelines. This is calculated using the average maturity of the expected cash flows of the entire NMD balance (stable and unstable) adjusted by the betas of the model. For segments with fixed coupons or a beta of zero, the average maturity of the repricing dates matches the average maturity of the cash flows, and as the unstable balance (repricing balance) or betas increase, the gap between them opens (causing the average repricing maturity to decrease).

This model requires a variety of inputs, which are as follows:

- Parameters inherent to the product.
- Customer and/or bank behavioural parameters (in this case, analysis of historical data is combined with expert judgement on the business).
- Market data.
- Historical data for the portfolio.

### b. Treatment of non-maturing assets (NMA)

The model used on the asset side for products such as credit cards can be modelled in a similar way to the NMD model,

<sup>9</sup> An exponential function implies assuming higher outflows in the short/medium term followed by long-term stability; i.e. the empirically observed behaviour of most units with positive interest rates.

sharing some of the same methodology and assumptions. The difference between the two models is that for assets without a fixed maturity, the fixed credit limit, which serves as a ceiling for future drawdowns, must be taken into account.

### c. Treatment of prepayment of certain assets.

The prepayment option is defined as the possibility offered to customers to repay their loans before the contractual maturity date, without this involving a significant additional cost for them. Prepayment can be total or partial. Prepayment mainly affects fixed-rate products, such as fixed-rate mortgages in markets where the yield curves for these loans are at low levels and there is an incentive for customers to prepay when the market interest rate is below the product's reference interest rate. However, prepayment does not only depend on the level of interest rates. It also depends on other more complex factors resulting from macroeconomic and cultural situations in the market. This means that the normal techniques used to value options cannot be applied directly, and they must be combined with empirical statistical models that aim to capture customer behaviour. Some of the factors conditioning this behaviour are:

- **Interest rate:** the differential between the fixed rate of the product (e.g. a mortgage) and the market rate at which it could be refinanced, net of cancellation and opening costs.
- **Seasoning:** the trend whereby prepayment is low at the beginning of the instrument lifecycle (signature of the agreement) and then increases, stabilising with the passage of time.
- **Seasonality:** redemptions and early cancellations tend to take place at specific dates.
- **Burnout:** a decreasing trend in the speed of prepayment as the instrument's maturity approaches. This includes:
  1. Age, which defines low rates of prepayment.

2. Cash pooling, which defines loans that have already survived various waves of interest rate reductions as being more stable. In other words, when a loan portfolio has been through one or more cycles of rate cuts and, thus, high levels of prepayment, the surviving loans have a significantly lower prepayment probability.

3. Other: such as geographic mobility, demographic, social and disposable income factors.

However, prepayment can also occur with variable rate products, and variable rate mortgages are also modelled in the group. In these cases, prepayment is usually due to factors other than the level of interest rates and the impact in terms of IRRBB risk is lower due to having variable repricing.

The prepayments model assumes that these balances naturally decline as customers gradually repay. Prepayment parameters can be constant values or a function dependent on several variables. The model creates a function that produces a fall in flows until the maturity for the transaction.

The use of additional behavioural models in the group (e.g. early termination of time deposits or pipelines) depends on the structure and complexity of each subsidiary's balance sheet. The rationale for these models is based on those described above.

### d. Treatment of NPE<sup>10</sup>

The group includes and models NPEs in the IRRBB measurement. The definition of the parameters used in the model (e.g. estimated recovery period) is based on expert judgement and/or credit risk model parameters (probability of default and loss given default).

<sup>10</sup> Non Performing Exposures

The published sensitivity to economic value in the IRRBB1 table follows all methodologies and criteria defined within the group and is adjusted (if necessary) by the principles set out in the EBA guidelines.

The published sensitivity to net interest margin is calculated for an interest rate shock of +/-200 basis points in all currencies and following all methodologies and principles defined for internal metrics.

The average and maximum repricing maturity of NMDs in the group is calculated by each subsidiary based on its historical data and statistical techniques. The data for the group are:

	Average repricing maturity		Longest repricing maturity	
	Total volume	Core Volume	Total Volume	Core volume
	Retail	2.50	3.40	20.00
Non-financial Wholesale	2.60	3.80	20.00	20.00

For further details, see the Hedging transactions chapter (section 4.1) of the 2022 Annual Report.



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The following tables show changes in the bank's economic value of equity (EVE) and net interest margin (NIM) for every prescribed interest rate scenario and for every currency:

**Table 76. IRRBB1 - Interest rate risks of non-trading book activities**

EUR million		2022			
Total	Supervisory shock scenarios	a		b	
		Current period	Last period	Current period	Last period
		Changes of the economic value of equity		Changes of the net interest income	
				requirement	
					Last period
1	Parallel up	(5,488.84)	(2,082.26)	1,162.57	1,512.24
2	Parallel down	(3,023.53)	(9,802.65)	(2,454.02)	(2,677.20)
3	Steeper	252.91	1,294.02		
4	Flattener	(4,752.82)	(5,749.82)		
5	Short rates up	(5,536.56)	(4,642.13)		
6	Short rates down	(98.68)	(444.58)		

EUR	Supervisory shock scenarios	a		b		c		d	
		Current period	Last period	Current period	Last period	requirement	Last period		
		Changes of the economic value of equity		Changes of the net interest income					
1	Parallel up	531.01	3,395.95	429.72				372.95	
2	Parallel down	(5,548.27)	(7,422.50)	(1,739.46)				(1,687.65)	
3	Steeper	224.25	1,473.19						
4	Flattener	(2,884.17)	(2,198.43)						
5	Short rates up	(1,831.94)	(558.59)						
6	Short rates down	(2,152.00)	(1,863.42)						

USD	Supervisory shock scenarios	a		b		c		d	
		Current period	Last period	Current period	Last period	requirement	Last period		
		Changes of the economic value of equity		Changes of the net interest income					
1	Parallel up	(765.50)	(1,185.27)	603.89				500.76	
2	Parallel down	(71.42)	(1,149.06)	(620.79)				(457.57)	
3	Steeper	0.03	(397.78)						
4	Flattener	(350.02)	(805.66)						
5	Short rates up	(467.17)	(867.69)						
6	Short rates down	374.20	(250.50)						

	Supervisory shock scenarios	a		b		c		d	
		Changes of the economic value of equity		Changes of the net interest income					
GBP		Current period	Last period	Current period	requirement	Last period		Last period	
1	Parallel up	(1,610.12)	392.35	366.98		866.70			
2	Parallel down	2,091.78	(2,594.91)	(516.41)		(944.86)			
3	Steeper	(182.20)	1,274.30						
4	Flattener	(9.40)	(1,361.50)						
5	Short rates up	(588.19)	(901.73)						
6	Short rates down	894.08	827.54						

	Supervisory shock scenarios	a		b		c		d	
		Changes of the economic value of equity		Changes of the net interest income					
BRL		Current period	Last period	Current period	requirement	Last period		Last period	
1	Parallel up	(1,916.63)	(1,500.40)	(338.54)		(197.18)			
2	Parallel down	1,985.56	1,629.02	338.54		197.18			
3	Steeper	271.64	302.49						
4	Flattener	(677.52)	(617.96)						
5	Short rates up	(1,309.86)	(1,101.28)						
6	Short rates down	1,390.06	1,192.40						



# 8

## Operational risk

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# 8. Operational risk



Operational risk is the risk of losses resulting from deficient or failed processes, people or information systems or from external events to Santander Group.

This chapter looks at the Group's targets in the areas of operational risk management and control, and includes the main capital figures and changes.

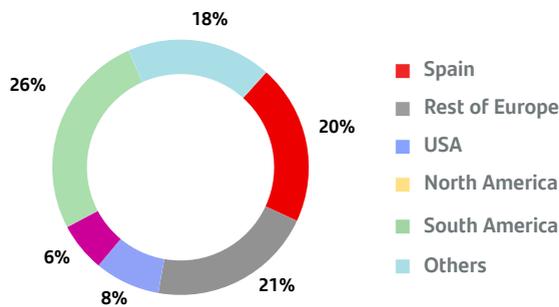
## Main figures

Million euros

	RWA	
	2022	2021
Operational risk	62,702	58,786
Of which, standardised approach	51,663	49,645
Of which, alternative standardised approach	11,039	9,141

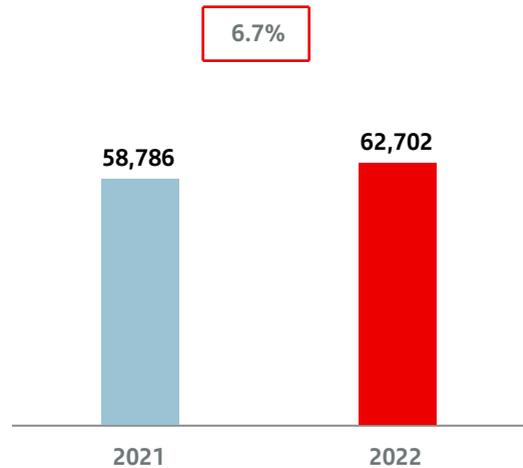
## RWA by geography

%



## RWA variation

Million euros



## 8.1. Definition and objectives

This section covers the letter (a) of the qualitative requirement ORA - Qualitative information on operational risk. Also the provisions of letters (d), (e), (f) and (g) of the OVA requirement - Institution risk management approach, are complied with.

Paragraphs (c) and (d) of the qualitative requirement ORA are not applicable as Banco Santander does not use the AMA approach to calculate minimum capital requirements.

Santander operational risk management and control model is based on a continual process of identifying, evaluating and mitigating sources of risk, regardless of whether they have materialized or not, ensuring that risk management priorities are established appropriately. Santander expressly recognises that while a certain volume of operational losses can be expected, severe unexpected losses resulting from failures in business controls are unacceptable.

The group applied new developments and enhancements to the operational risk management model in 2022 in the risk

assessment and control tools, operational risk appetite, business continuity plans and the analysis and integration of new risks (such as transformation risk or climate risk) into the non-financial risk monitoring and control model.

In terms of key risks, the business opportunities arising from digital transformation bring with them a host of new risks, such as technology risks, cyber risks and increasing dependence on suppliers, which increases potential exposure to events that could affect the delivery of services to our customers. The group has taken numerous initiatives to mitigate these risks and adapt to changes in the regulatory framework, the focus being on strengthening its ability to recover from disruptive events affecting its core operations.

For more information, see the Risk management and control chapter (section 6) of the 2022 Annual Report.



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Operational risk reporting should cover the following objectives:

- a. Provide the heads of business units and support functions with the data they need to manage their risks and meet their objectives and strategies.
- b. Provide senior management with the information it needs to establish, review and, where appropriate, modify business strategies and risk profiles.
- c. Provide the operational risk function with the information necessary to efficiently discharge its duties.
- d. Comply with the information requests of supervisory and regulatory bodies.

The business and support functions of all group entities are responsible for identifying, assessing and communicating their operational risks and are supported by the Operational Risk Coordinator function. The Operational Risk function in each Group unit collects information from all business and support functions and reports on it in established local forums.

Subsequently, the corporate Operational Risk function consolidates the information available from each unit in order to provide a comprehensive and complete overview of the group's operational risk profile. Such information shall be communicated to senior management in accordance with the governance framework described in the Corporate governance chapter of the 2022 annual report.

At the group level, the process of consolidating and reporting operational risk information is divided into the following phases:

- a. Reception of information: the local operational risk functions submit various types of information to the corporate operational risk function with the frequency that is specified in the related procedures and guidelines. Although information can be sent via various channels, the Heracles corporate tool is the primary tool for collecting and recording information.
- b. Consolidation and processing of the information: once all the required information has been received and/or extracted, the corporate operational risk function conducts a qualitative analysis, checking the suitability and consistency of the data and the main deviations.
- c. Use of information: the consolidated information is used for reporting to external parties as well as to the group's senior management. The reports' content is updated and developed in response to the needs of the governing bodies.

Heracles is the Golden Source of the operational risk data of the Group. One of its main components is the database of events and losses for this risk, which is used in internal and regulatory reporting and in the calculation of economic capital. In addition, Heracles contains all the necessary tools for operational risk analysis and management: controls, risks,

metrics, scenarios and mitigation measures. Its functionality integrates all these programmes through the use of common taxonomies applied in the different control communities and common methodologies for assessing risks and the effectiveness of controls. Heracles is also the tool used to perform certifications related to various regulations such as SOX, Volcker and FATCA.

Risk mitigation is one of the core elements of the operational risk framework and consists of continuous monitoring of risks exposure to identify unmanaged risks, implement control procedures, provide training and reduce the occurrence of events and losses. This information is shared on a regular basis with the governing bodies in order to ensure proper monitoring and control.

For Santander, insurance is also a key element in operational risk management. The Own Insurance function is responsible for the use of risk transfer formulas to optimize and safeguard the bank's financial results. The group constantly monitors the appropriate implementation of policies and procedures for managing insurable risks, in collaboration with the relevant group areas that contribute to their correct execution in the various units.

For further information on the specific management of the principal operational risks, as well as global insurance programs, please refer to the Risk management and control chapter (section 6) of the 2022 Annual Report.



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The following are the key operational risk management and control processes:

- a. Strategic planning: covers the activities necessary to define the Group's objective operational risk profile, including setting the risk appetite, estimating losses annually and reviewing the management perimeter.
- b. Identification and assessment of operational risk: aims to identify the risks and factors that may cause OR in the organisation and assess their potential impact quantitatively or qualitatively. The first lines of defence, which include all organisational units of the group, are responsible for identifying and assessing the operational risks in their activities.
- c. Continuous monitoring of the OR profile: this process aims to regularly analyse available information on the nature and extent of the risks incurred in the development of the group's activities through an adequate alerts system, based on available tools such as indicators and escalation processes.
- d. Risk response decisions including risk mitigation and risk transfer measures: once the OR assessment has been carried out, it is important to identify risk mitigation measures to prevent risks from occurring and, if necessary, to take corrective measures to minimise the economic impact of the risks that have occurred. The identification and implementation of such risk mitigating measures is an ongoing process and particularly important for adequate risk management.

e. Information: information includes obtaining, disseminating and making available the information necessary for decision-making to the relevant persons. The information processes are carried out in accordance with the standards and criteria established in each case. See the OVA and OVB tables for more information about this process.

The group has defined an organisational model with three lines of defence for the structure and organisation of operational risk management in order to meet regulatory requirements and in line with best practises in the banking sector:

- a. The first line of defence includes all business units and support functions. The first line of defence is responsible for the OR generated in its area. Its main function within the OR management and control model is to identify, assess, monitor, mitigate and communicate the risks.
- b. The second line of defence comprises the operational risk control function within the Risk division. Its main responsibilities include: designing, maintaining and evolving the OR management and control model, fostering the development of a risk culture throughout the group, encouraging business units and support functions to monitor and effectively manage identified risks, and ensuring that the management bodies receive adequate information on all relevant risks for decision-making.
- c. At Santander, Internal Audit is the independent body that performs the functions of the third line of defence. Its functions include: verifying that the risks associated with the group's activities are adequately covered; monitoring the compliance, effectiveness and efficiency of the internal control systems of OR; assessing the state of implementation of the OR management and control model in the group; and making recommendations for continuous improvement to all functions involved in OR management.

For more information on risk governance structure, please refer to the Corporate governance chapter of the 2022 Annual Report.



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For more information on risk measurement and control tools and reporting of operational risk, please refer to the EU OVA table of this document, and the Risk management and control chapter (section 6) of the 2022 Annual Report.



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## 8.2. Capital requirements for Operational Risk

This section covers the letter (b) of the qualitative requirement ORA - Qualitative information on operational risk .

Santander uses the standardised approach to calculate the capital requirements for operational risk, as established in the CRR.

The resolution was taken by the board of directors on 22 June 2007 and reported to Banco de España's general supervisory department by the second vice chairman and chief executive officer on 29 June 2007.

Under the standardised approach, capital requirements are calculated on the basis of relevant income, which is defined as the sum of the following components of the income statement:

- Interest and similar income
- Interest expense and similar charges
- Income from equity instruments
- Fee and commission income
- Fee and commission expense
- Trading gains (net)
- Exchange differences (net)
- Other operating income (earnings)

The CRR also defines the following segmentation of business lines for this method:

- a. Corporate finance
- b. Trading and sales
- c. Retail brokerage
- d. Commercial banking
- e. Retail banking
- f. Payment and settlement
- g. Agency services
- h. Asset management

## Relevant income

Under the standardised approach, capital requirements are calculated as the simple average over the last three years of the aggregation, for each year, of the greater of zero or the sum of relevant income across each of the business lines, multiplied by the weight assigned to each business line.

The mathematical expression of these requirements is as follows:

$$\frac{\{\sum \text{years 1 - 3 Max} [\sum (RI1 - 8 \times \beta1 - 8), 0]\}}{3}$$

Where:

RI1-8 = Relevant income of each business line, with the appropriate sign, in accordance with the CRR.

β1-8 = Weight applicable to each business line, in accordance with the CRR.

The Financial Accounting and Control division is responsible for obtaining data on relevant income, allocating it to the various business lines and calculating the capital requirements.

Santander obtains the figure for relevant income from the consolidated management information by business line. This information is generated from accounting information.

Consolidated management information is published quarterly in aggregate form and is the basis on which the budgetary compliance of the businesses is measured. This is prepared by the Management Control area, which regulates the business lines of all the group's units based on corporate criteria, which all units must apply when drawing up their management information.

## Main segments

This primary level of segmentation, which is based on the group's management structure, comprises five reportable segments: four operating areas plus the corporate centre. The operating areas are:

**Europe:** includes all business conducted in the region except that included in Digital Consumer Bank, including Spain, the UK, Portugal and Poland.

**North America:** includes all the business activities carried out in Mexico and the US, which includes the holding company

(SHUSA) and the businesses of Santander Bank, Santander Consumer USA, the specialised unit of Banco Santander International, Santander Investment Securities (SIS), and the New York branch.

**South America:** mainly includes all the financial activities performed by the group through its banks and subsidiary banks in the region.

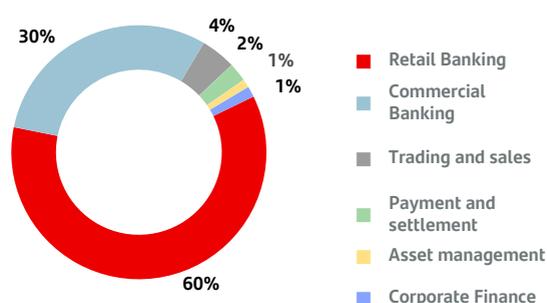
**Digital Consumer Bank:** includes Santander Consumer Finance, which covers all the consumer business in Europe, Openbank and ODS (Open Digital Services).

In addition to these operating units described, the group continues to maintain the corporate centre, which includes the centralised management businesses relating to financial holdings, financial management of the structural exchange rate position, carried out within the scope of the group's assets and liabilities committee, and management of liquidity and own funds through issuances.

As the group's holding entity, the corporate centre manages all capital and reserves and allocations of capital and liquidity with the rest of businesses. It also incorporates amortisation of goodwill but not the costs related to the group's central services (charged to the areas), except for corporate and institutional expenses related to the group's functioning.

The following chart shows the distribution of capital by business line at 31 December 2022.

### Capital distribution by business line



Changes in capital requirements and RWAs for operational risk from 2021 to 2022 are shown below:

**Table 77. Changes in capital requirements for operational risk**

EUR million	2022	
	Capital	RWAs
<b>Starting figure (31/12/2021)</b>	<b>4,703</b>	<b>58,786</b>
Perimeter	18	223
Exchange rate effect	46	573
Change in business	250	3,120
<b>Ending figure (31/12/2022)</b>	<b>5,016</b>	<b>62,702</b>

The standardised approach imposes higher capital requirements for financial institutions operating in jurisdictions with high net interest income, which are often associated with a high risk premium but not necessarily greater operational risk. To avoid this undesired effect, EU legislation (Regulation 575/2013/EU) provides for the use of the alternative standardised approach by businesses that meet certain conditions, subject to the supervisor's approval. This approach uses a standardised indicator calculated by multiplying certain balances by 3.5%, thereby providing an average which is more in line with the unit's operational risk.

On 3 February 2016, the European Central Bank issued authorisation for the alternative standardised approach to be used to calculate consolidated capital requirements for operational risk at Banco Santander Brasil, S.A.

The European Central Bank also issued authorisation for the alternative standardised approach to be used to calculate consolidated capital requirements for operational risk at Banco Santander México S.A., on 12 July 2017.

**Table 78.OR1 - Operational risk own funds requirements and risk-weighted exposure amounts**

EUR million						2022
	a	b	c	d	e	
	Relevant indicator			Own funds requirements	Risk weighted exposure amount	
	Year-3	Year-2	Last year			
1	<b>Banking activities subject to basic indicator approach (BIA)</b>					
2	Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches					62,702
3	29,541	31,558	33,982			
4	6,056	6,073	7,131			
5	<b>Banking activities subject to advanced measurement approaches AMA</b>					

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# 9

## ESG risks

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# 9. ESG risk

## 9.1. Environmental risks

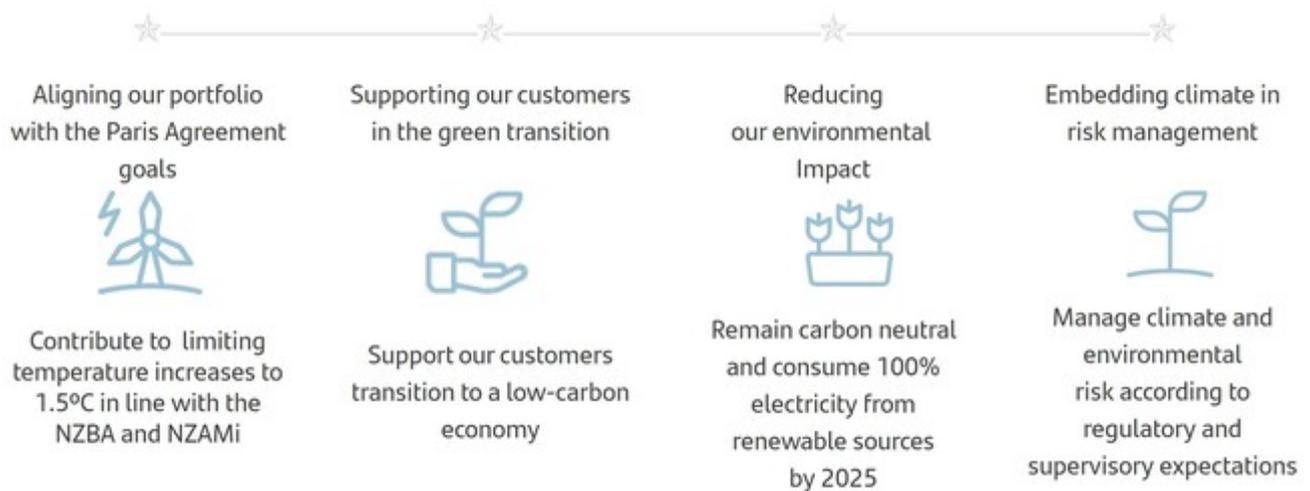
### 9.1.1. Business strategy and processes

This section covers the requirement on qualitative information on environmental risk, specifically, the point on business strategy and processes, for questions (a), (b) and (c)

This is a summary of our overall climate strategy. For further detail, please refer to our Annual Report and climate finance report, available in our corporate website.

### Our approach

Within our broader ESG strategy, tackling climate change is a key priority at Santander. We support the Paris agreement goals. Our ambition is to achieve zero carbon emissions by 2050. To do this, and support the green transition, we are working in four areas:



For fulfilling those purposes, within a broader set of ESG objectives, the Group has set some climate-related and environmental goals:

	2018	2019	2020	2021	2022	2025/2030 Target
<b>Electricity from renewable sources</b>	43 %	50 %	57 %	75 %	88 %	100 %
<b>Carbon neutral in our own operations</b>			✓	✓	✓	Every year
<b>Green finance raised and facilitated (EUR bn)<sup>1</sup></b>		19	33.8	65.7	94.5	120 bn by 2025 220 bn by 2030
<b>AuMs in Socially Responsible Investments (EUR bn)</b>				27.1	53.2	100 bn by 2025
<b>Thermal coal-related power &amp; mining phase out (EUR bn)</b>				7 mm	5.9	0 by 2030
<b>Emissions intensity of power generation portfolio<sup>2</sup></b>		0.21	0.17			0.11 tCO <sub>2</sub> e / MWh in 2030
<b>Absolute emissions of energy (oil &amp; gas) portfolio<sup>2</sup></b>		23.84				16,98 mtCO <sub>2</sub> e in 2030
<b>Emissions intensity of aviation portfolio<sup>2</sup></b>		92.47				61,71 grCO <sub>2</sub> e/ RPK in 2030
<b>Emissions intensity of steel portfolio<sup>2</sup></b>		1.58				1,07 tCO <sub>2</sub> e/ tCS in 2030

New in 2022

From... To Cumulative target Commitment achieved

1 In 2022, SCIB contributed EUR 28.8 billion to the green finance target, including EUR 4.8 bn in Project Finance (MLA); EUR 7.2 bn in financial advice; EUR 5 bn in green bonds (DCM); EUR 21 mn in project bonds; EUR 1.5 bn in export finance (ECAs); EUR 8.5 bn in M&A; and EUR 1.8 bn from equity capital markets, according to Dealogic, Infraction news, TXF and Mergermarket league tables. This refers to all roles undertaken by Banco Santander in the same project. It does not include financial inclusion and entrepreneurship. Green Finance raised and facilitated is not a synonym of EU Taxonomy. Please refer to specific section on EU taxonomy-related requirements for further details in this regard.

2 Given limited data availability from customers to assess financed emission, we will provide target progress update in the "June 2023 – Climate Finance Report"

### Investment targets towards environmental objectives

This section covers the requirement on qualitative information on environmental risk, specifically, the point on business strategy and processes, for questions (c)

To achieve our ambition to become sustainable finance leaders in our markets, we are mobilizing EUR 120 bn in green finance by 2025 and EUR 220 bn by 2030.

We redoubled efforts to reach our goal of EUR 100 billion of AUM in socially responsible investments (SRI) by 2025.

We have the goal of providing our clients with global and local green solutions in SCIB, retail and commercial banking and raising awareness in our local communities.

For more detail on our green finance products, services and partnerships see the "Supporting the green transition" section in the Annual Report.

### Our net zero ambition

Santander aims to be net-zero in carbon emissions by 2050. This applies to the Group's operations (which have been carbon neutral since 2020) and emissions from our lending, advisory and investment services.

Our approach to decarbonization is to focus on the most material, high-emitting sectors portfolios. The methodologies we have developed inform our plans to decarbonize our credit portfolios, especially ones directly related to fossil fuels.

We are a founding member of the Net Zero Banking Alliance (under the United Nations Environment Programme Finance Initiative, NZBA), committing the Group to:

- Transition operational and attributable greenhouse gas (GHG) emissions from lending and investment portfolios towards pathways to net-zero by mid-century.
- Set intermediate targets for priority GHG emitting sectors for 2030 (or sooner).
- Prioritize client engagement with products and services that facilitate the necessary transition in the real economy.

## Policies and procedures relating customer engagement on their strategies to mitigate and reduce environmental risks

This section covers the requirement on qualitative information on environmental risk, specifically, the point on business strategy and processes, for questions d)

Our customer engagement approach aims to facilitate the achievement of our emissions targets while enabling us to develop a deep understanding of our customers' transition strategies and support their transition to low carbon business models. The approach will be supported by clear governance processes, involving various internal stakeholders, such as front office teams, the risk reporting functions, as well as senior management to guide the potential portfolio steering actions.

### Collect

We rely on the information we obtain from ongoing dialogue between our relationship managers and customers. We source information from our customers through tailored ESG questionnaires that contain transition focused elements that are designed to help us better understand their decarbonization strategies. We are also sourcing reliable and consistent information from credible third parties to complement our understanding. This information will be collected and updated both at the client onboarding stage, but also annually as part of the annual business and risk assessment with each customer.

### Assess

Assessment consists of a two-step approach designed to categorize our customers according to their emissions intensity pathway and perceived quality of their transition strategy. The assessment will be based on ongoing interaction and monitoring of our customers, and we update it at least annually.

Our first step is assessing how our customers' emissions trajectory aligns with our current and future alignment targets for the power sector. The second step is assessing the perceived quality of each customer's transition plan. Our methodology focuses on four items: Targets, Action Plan, Disclosure and Governance. We draw on established transition plan assessment methodologies, such as TPI (Transition Pathway Initiative), CDP, ACT (Assessing Low Carbon Transition), Climate Action 100+, as well as other climate risk disclosure frameworks such as the TCFD.

Our assessment is also vital for identifying material engagement topics that will support future dialogue with our clients, based on the assessment of different aspects, such as, climate targets and actions plan, disclosure and governance. More detail of the assessment performed can be found in 9.3. Governance risk section.

### Engage

We aim to engage our customers through insightful transition dialogue, offering compelling sustainable financing solutions and sharing expertise in sustainable technologies enabling the energy transition. Our dialogue is informed by transition assessment tiering in the previous phase.

For more detail about our client's engagement see section Engage in the climate finance report.

### 9.1.2. Governance

This section covers the requirement on qualitative information on environmental risk, specifically, the point on governance, for questions (e), (h), and (g)

#### Governance bodies and frequency

Governance bodies involved in ESG management and how often climate change is discussed:



#### Board of directors

Approves and supervises the implementation of general policies and strategies relating to our corporate culture, values, responsible business practices and sustainability; makes sure all the Group's employees are aware of codes of conduct and act ethically; and ensures compliance with the laws, customs and good practices of the industries and countries where we operate.

#### Responsible banking, sustainability & culture committee ("RBSCC")

Supports the board and oversees the Group's responsible banking agenda and strategy.

For more details, see 4.9 'Responsible banking, sustainability and culture committee activities in 2022' in the Corporate governance chapter in the annual report.

#### Management meeting

Chaired by the CEO, it discusses our progress on the responsible banking agenda, especially as regards to climate change, TCFD and ESG business opportunities.

In 2022, the committee was informed four times on progress made with the responsible banking agenda.

#### Responsible banking forum

Executes the responsible banking agenda across the Group; drives decision-making on responsible banking issues; ensures the execution of any mandates from the RBSCC, other board committees and the board of directors; and ensures alignment with key issues, including the review and escalation of reports to the RBSCC.

The Group's responsible banking corporate unit and RB network work jointly to deliver on our strategy in a co-ordinated way across the Group:

#### Group responsible banking unit

Coordinates and drives the responsible banking agenda, with support from a senior adviser on responsible business practices who reports directly to the executive chair.

#### Responsible banking network

Our subsidiaries' Responsible banking teams execute the agenda according to our corporate strategy and policies. They are led by a senior manager in the group-wide Responsible banking network, which meets every two months.

We issue guiding principles for subsidiaries and global business units to embed our responsible banking agenda across the Group.

Corporate and subsidiary responsible banking units hold regular bilateral meetings.

Working groups on climate change help agree actions and align efforts.

In 2022, the network held six virtual meetings to discuss progress on the Group's agenda. The network also ran the fourth Responsible Banking workshop, which representatives from all businesses and geographies attended over two days.

### Our management focus in 2022

In 2022, in line with our ESG agenda, our management focused on: 1) our climate strategy, including our pledge to be net zero by 2050; 2) our sustainable finance and investment value proposition and transition plans to a low-carbon economy; 3) the integration of climate and social criteria into risk management; 4) the extension of our financial empowerment proposition; and 5) the mobilization and use of enablers to integrate ESG criteria into everything we do in the Group.

### Management body's integration of environmental risks, organisational structure both within business lines and internal control functions

This section covers the requirement on qualitative information on environmental risk, specifically, the point on governance, for question (f)

In 2022 we continued to embed climate management in business-as-usual across SCIB, Risk and Responsible Banking. We created two new positions: Risks head of ESG & New Business (who reports directly to the CRO), and global head of Green finance (who reports directly to the CEO).

For more detail about Green Finance functions, see Retail and Commercial Banking section in the annual report



"Technical Screening Criteria" and "Do No Significant Harm" for "green" transactions according to the European Taxonomy.

Annual risk assessment and internal audit planning make a point to cover climate risk. In 2022, our Internal Audit area audited climate risk management, verifying that the Group's initiatives are progressing according to plan. It also suggested some improvements to strengthen governance and controls, and to roll out initiatives in subsidiaries. It will continue to monitor this in 2023.

Santander integrates short-term, medium-term and long-term effects of environmental risks for the purposes of risk management through the integration of climate-related and environmental risk in our main strategic financial planning, that comprises annual budgeting, our three-year financial plan and the Group's long-term strategic plan.

These core strategic financial processes; with different time horizons, enable us to identify threats and changing conditions that could hinder our ability to achieve our targets. Such processes are reviewing climate-related and environmental risk and the transition to a low carbon economy more extensively, in keeping with our risk appetite and policies.

Climate-related time horizons have been defined and embedded into our strategic process. We define short term as 1 year aligned with budget; medium term as 3 years aligned with financial planning; long term as 5 years aligned with strategic planning; and, for ad hoc analysis, we define longer term as beyond 5 years.

## Alignment of the remuneration policy with environmental risk-related objectives

This section covers the requirement on qualitative information on environmental risk, specifically, the point on governance, for questions (i)

The executive director remuneration policy for 2022 included variable, multi-year remuneration (2023-2025) based on relative total shareholder return, return on tangible equity and ESG metrics. We measure our progress in ESG against these four lines of action and their related metrics : (1) percentage of women in senior positions, (2) financial inclusion, (3) green finance and socially responsible investment, and (4) exposure to thermal coal.

Regarding environmental aspects, these targets cover:

- Green finance and socially responsible investment

Green finance raised and facilitated <sup>B</sup> (EUR Bn)	Coefficient
≥ 240	1.25
≥ 220 but < 240	1 – 1.25 <sup>A</sup>
≥ 160 but < 220	0 – 1 <sup>A</sup>
< 160	0

A. Increase of the coefficient is proportional to its position on this line of the scale

B. Grupo Santander's contribution to green business: SCIB, Retail & Commercial banking and Digital Consumer Bank. It is measured with cumulative data since 2019

Socially responsible investments <sup>B</sup> (EUR Bn)	Coefficient
≥ 102	1.25
≥ 100 but < 102	1 – 1.25 <sup>A</sup>
≥ 53 but < 100	0 – 1 <sup>A</sup>
< 53	0

A. Increase of the coefficient is proportional to its position on this line of the scale

B. Funds registered under article 8 and 9 (SFDR) in the EU, including third-party funds and SAM's Latin American funds that meet equivalent criteria

- Exposure in Thermal coal-related power and mining portfolios:

Thermal coal-related power & mining <sup>B</sup> (EUR Bn)	Coefficient
≤ 3.8	1.25
< 5.8 but > 3.8	1 – 1.25 <sup>A</sup>
=5.8	1
> 5.8	0

A. Increase of the coefficient is proportional to its position on this line of the scale.

B. Credit risk exposure with customers affected by the thermal coal 2030 phase-out target: power generation customers with more than 10% of revenues coming from thermal coal and thermal coal-mining customers.

As regards the overall assessment of these ESG metrics, they will be measured jointly with the social risk commitments set out in the section on Remuneration policy for social aspects objectives. In the joint assessment, these metrics are weighted equally.

More detail can be found in the "Directors' remuneration policy for 2023, 2024 and 2025 submitted to a binding shareholder vote" section in the annual report.

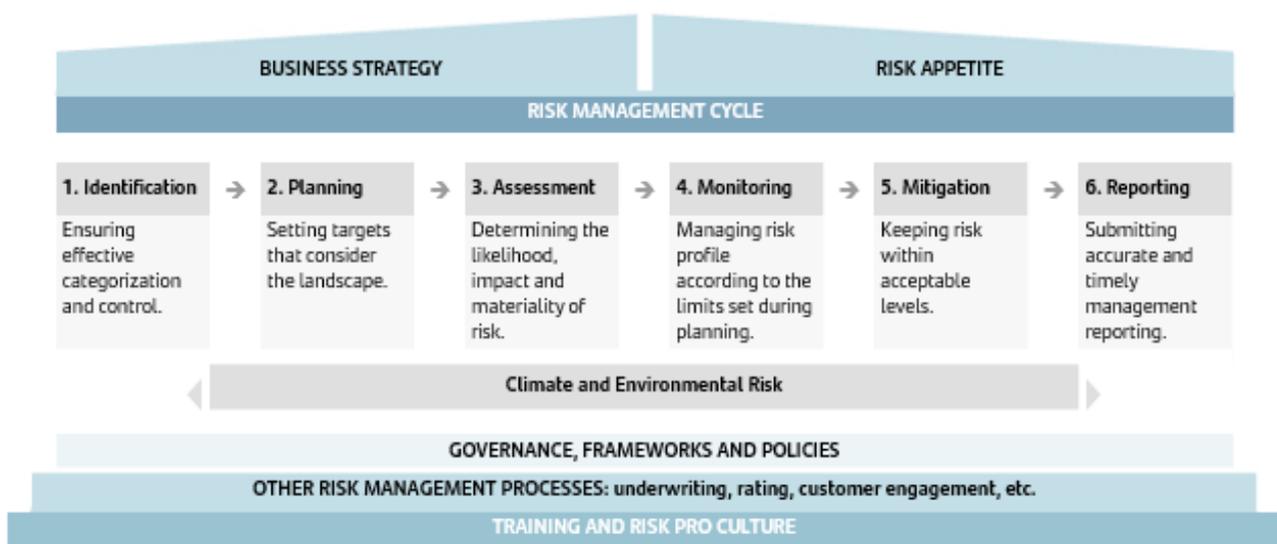
### 9.1.3. Risk management

This section covers the requirement on qualitative information on environmental risk, specifically, the point on risk management, for questions (j), (l), (m), (n) and (q)

#### Integration of environmental factors in the risk framework: management, setting of limits and tools

We continue to embed climate and environmental risk in our risk management model according to regulation and growing supervisory demands.

The chart below explains how our risk management cycle accounts for climate change and environmental risk:



The risk management cycle consists of these phases:

#### I. Identification

The main risk identification process within Grupo Santander is the top and emerging risk identification.

In identifying emerging and top risks, we measure internal and external threats to profitability, capital adequacy and strategy. Since 2018, our process has included a climate subcategory. More recently, it includes biodiversity loss.

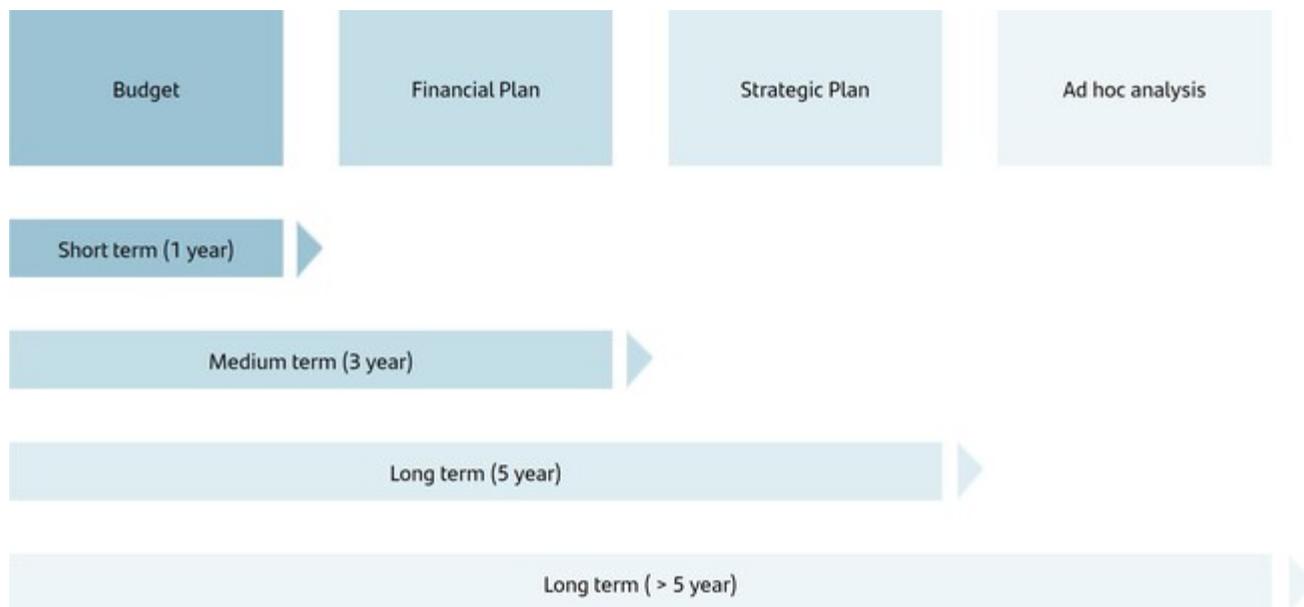
Risk analysis covers qualitative and quantitative factors and informs our internal capital and liquidity adequacy assessment processes (ICAAP and ILAAP).

Moreover, a specific questionnaire related to climate risk was implemented in 2021 as part of the risk profile assessment process (RPA), which Grupo Santander regularly conducts to cover all risk types and reveals any threat to its business plan.

During 2022, we evolved the questionnaire related to climate risk taking into account the latest regulatory and management developments, as well as industry best practices. We seek to assess the progress made by the corporate center and subsidiaries to integrate climate risk into management. It helped us identify gaps and areas for improvement.

## II. Planning

Grupo Santander includes decarbonization targets in strategic planning as part of our public sustainability commitments. We run these exercises with separate time horizons:



## III. Assessment

Santander runs a quarterly materiality assessment to determine significant climate- and environmentally-material credit portfolios. It proves fundamental to decisions and strategic priorities on selected industries, customers and regions. It covers climate and environmental risk in the Group's markets over certain time horizons. Therefore, we can address them in risk appetite, top risk identification, credit limits, stress testing and other management processes.

Our 2022 materiality assessment covered climate risk c.a.80% of our balance sheet items. We expanded its scope to cover most portfolio segments and other business such as Santander Consumer Finance Auto.

To strengthen materiality assessment, we updated Klima, an in house tool to spot, qualify, quantify and manage climate and environmental risk. The common standards it applies help manage physical and transition risk. It includes our risk taxonomy and heat maps to assess short-, mid- and long-term exposure and draws on the same calculation methodology for all business lines.

## IV. Monitoring

Santander uses risk appetite and scenario analyses to monitor climate and environmental risk.

The time horizons of our risk appetite framework are aligned with the horizons of the commitments made, both in the medium (2030) and long term (2050). We announced our first decarbonization commitments for the thermal coal sector in February 2021 in line with our ambition to be net zero by 2050. Accordingly, by 2030 we will end financial services to electricity generating customers if 10% of their revenues rely on thermal coal, and we will eliminate our exposure to thermal coal mining worldwide.

In 2022, the Risk, SCIB and Responsible Banking areas launched initiatives to achieve the Group's decarbonization target for power generation, which will be included in risk appetite.

Moreover, we are gradually using metrics and limits for agriculture, aluminum, cement, commercial and residential real estate, iron and steel, oil and gas, transport and other material sectors in risk appetite, with a view to having them fully adopted in the coming years.

## V. Mitigation

In mitigation, we updated our environmental, social and climate change (ESCC) policy, which sets out our public commitments and aims to support our strategy for sensitive, special-attention and prohibited industries. The ESCC policy sets out Santander's standards for identifying, measuring, monitoring and managing environmental and social risk, especially in oil and gas, power generation, mining and metals and soft commodities. It is consistent with our responsible banking and sustainability policy.

Apart from our policies, our internal taxonomy also qualifies as a mitigating instrument since it helps us inform our customers of the need for credible plans to ensure an orderly transition to a low-carbon economy. The sustainable finance classification system (SFCS) is our internal guide to identify sustainable activities and ensures a blanket approach to monitoring operations, supporting the development of solutions for customers and mitigating the risk of greenwashing.

Furthermore, the first line of defence runs due diligence with several special questionnaires to grant credit. If the process reveals a reputational issue, it will be escalated to the reputational risk function for providing an opinion. SCIB's project finance transactions must be checked against the Equator Principles.

## VI. Reporting

Reports to senior managers and stakeholders on climate and environmental risk are transparent and accurate and comply with the law and supervisors' expectations. Our annual report and climate finance report highlight our progress with climate and environmental risk.

For more detail see Climate and environmental risk management section in the annual report.

### International standards on which the environmental risk management framework is based

This section covers the requirement on qualitative information on environmental risk, specifically, the point on risk management, for questions (k)

The environmental, social and climate change risk policy sets out Santander's criteria for the identification, assessment, monitoring and management of Environmental and Social (E&S) risks and other climate change related activities, in the oil & gas, power generation and mining & metals sectors and those arising from businesses engaged in soft commodities. It is aligned to, and must be applied in conjunction with, Santander Group's responsible banking and sustainability policy.

We are part of the main and most important local and global initiatives to support the inclusive and sustainable growth. Some examples are:

- UNEP FI. We are a founding signatory to the United Nations Principles for Responsible Banking.
- World Business Council for Sustainable Development (WBCSD).
- Banking Environment Initiative (BEI)
- UN Global Compact,
- Equator Principles.

More detail about the standards on which the environmental risk management framework is based by sector can be founded in the environmental, social and climate change Risk policy in our corporate website.

The Group's policies and guidance set the standard for all units. We systematically review the scope of policies on integrating ESG criteria to ensure compliance with international best practice. Since 2021, we have the Responsible Banking framework approved by the Board. It is the Group's highest-level regulatory document and raises ESG to a material issue, with monitoring at subsidiary board level to boost opportunities and improve our competitive position.

Additionally, the sustainable finance classification system (SFCS) in the aspects related to environmental risks, draws on such international industry guidelines, standards and principles as the EU taxonomy and International capital market association (ICMA), Loan market association (LMA) principles, UN environment programme's finance initiative (UNEP FI) framework and climate bond standards of Climate bonds initiative (CBI).

## Impact of environmental risk on capital and liquidity risk

This section covers the requirement on qualitative information on environmental risk, specifically, the point on risk management, for question (o)

Santander continues embedding climate risks in its internal capital adequacy assessment process (ICAAP). In 2022, for the first time, our ICAAP included a full climate stress scenario, assessing the impact on P&L, capital requirements and solvency.

Additionally, Grupo Santander has increased focus on the impact of climate risk in relation to market, structural and liquidity risk, which arise from the possibility that changes in climate may adversely affect the value of a financial instrument, a portfolio or the Group as a whole. This risk may have an impact both on financial instruments value or portfolios and on Santander's liquidity. Grupo Santander measures this risk through stress scenarios for both market and liquidity risk, which arises from the possibility that climate change may adversely affect the value of a financial instrument, a portfolio or the Group as a whole.

We conducted materiality assessments every quarter. In addition to analysing residual value, strategic, market and liquidity risk, we identified credit portfolios from our entire balance sheet with considerable climate and environment risk.

Furthermore, climate change and environmental risk could affect other risks in different time horizons on account of physical damage, as well as factors relating to the transition to a more sustainable economy, such as legislative reform, technology and economic agents. Given the nature of its operations, the Group has no environment-related liabilities, expenses, assets or contingencies of a material relevance to its consolidated equity, financial situation and results.

Most exposures in sectors potentially affected by climate change risk are with wholesale clients, whose preliminary reviews, credit approval and credit ratings take such risk into account. Customers' ratings determine the parameters for calculating loan loss (typically in terms of probability of default or "PD"). Thus, when climate factors are relevant, in conjunction with other elements of analysis, they have an impact on the loan loss calculations which support capital and provisions.

The Group also passed the recent regulatory climate stress tests, which had been classified as learning exercises for the industry. Results showed that the Group's coverage for potential losses would be sufficient in view of portfolio maturity over time.

Therefore, based on the best information available at the time these consolidated annual financial statements were prepared, the Group sees no additional environmental or climate change risk having a substantial impact on its equity, financial situation and results in 2022. Still, this matter is constantly changing, and, like other banks, the Group is working on developing more methodologies to better measure potential loan loss in line with new management needs, best practice, and regulators' and supervisors' requirements.

## Data availability, quality and accuracy

This section covers the requirement on qualitative information on environmental risk, specifically, the point on risk management, for question (p)

As stated by the EBA in the Report on management and supervision of ESG risks for credit institutions and investment firms, one of the main challenges faced by financial institutions in the integration of ESG risks is insufficient data. Grupo Santander, together with the rest of the industry, is therefore working to increase the granularity and quality of the ESG data necessary for management, including, among others:

- The availability of energy efficiency certificates, especially in those geographies where there is no specific regulation or requirement.
- The collection and availability of customers' financed emissions, information that will improve in Europe with the entry into force of the CSRD regulation.
- Improving the granularity and accuracy of the information needed to assess physical risks.

In order to achieve the above, the following lines of work are being carried out:

- Enhance the internal ESG information available.
- Strengthen the customer registration and risk admission process.
- Supplement the information available through external providers.
- Assess the development of models and proxies to be able to estimate the information not available once the other 3 previous initiatives have been applied.

## Link between environmental risks with other risks in the management framework

This section covers the requirement on qualitative information on environmental risk, specifically, the point on risk management, for questions (r)

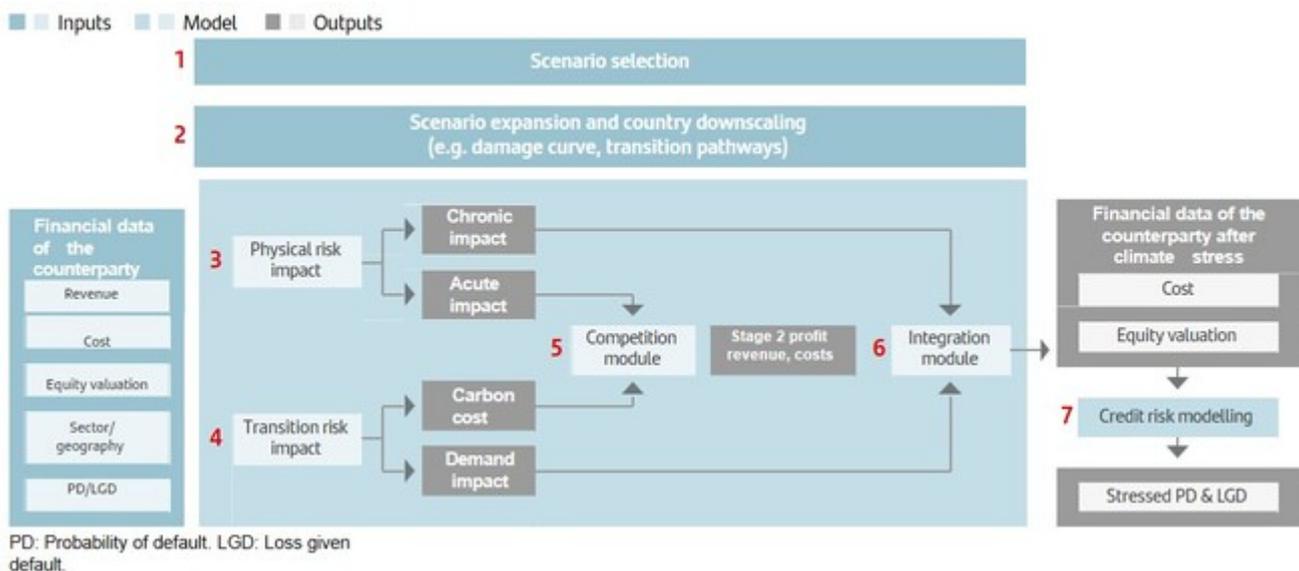
Grupo Santander considers climate and environmental risk as a cross-cutting risk. Grupo Santander continues to boost its capacity to identify climate and environmental risk triggers and integrate them into risk management. This table summarizes the impact that this risk may have on other risks, our response, and our plans for 2023.

Risk factor	Potential impact on climate risk factors	What we're doing to manage climate risk	Next steps
<b>Credit</b>	<ul style="list-style-type: none"> <li>– Extreme weather can lead to higher retail and corporate loan default and lower collateral value.</li> <li>– Credit risk can also rise if borrowers' business models do not consider the transition to a low-carbon economy (greater risk of revenue decline and business interruption, which can lead to higher default or a loss of business value).</li> </ul>	<ul style="list-style-type: none"> <li>– Materiality assessment to spot physical and transition risk in all the Group's credit portfolios.</li> <li>– Analysis on short-, mid- and long-term risk concentration per sector and region. Heat-maps that follow orderly, disorderly and HHW scenarios up to 2050. Scenario analyses and sensitivities to forecast changes in ratings, PDs and LGDs in view of physical and transition risk.</li> <li>– ESCC factor measurement in customer and transaction analysis, and ratings. Setting of risk appetite limits and alerts to manage climate-related sectors.</li> </ul>	<ul style="list-style-type: none"> <li>– Launch of "The climate race" Environmental &amp; Climate change credit risk TOM.</li> <li>– Inclusion of climate factors in internal physical and transition risk models. Development of tools to monitor physical risk in all the Group's markets.</li> </ul>
<b>Market and Liquidity</b>	<ul style="list-style-type: none"> <li>– Growing consumer demand for sustainable products and a short supply of certain resources can affect the value of shares, bonds and other assets.</li> <li>– More frequent extreme weather can have stifle the economic growth of countries susceptible to climate change, increase their sovereign debt and reduce their access to capital markets.</li> <li>– Cash outflows from companies trying to boost their reputation in the market or solve problems with climate scenarios.</li> </ul>	<ul style="list-style-type: none"> <li>– Qualitative analysis of climate risk scenarios' impact on market and liquidity risk (highly liquid assets and impact of financing of exposed companies).</li> <li>– Materiality assessment to spot physical and transition risk in all the Group's trading portfolios, under climate stress scenarios that cover liquidity.</li> </ul>	<ul style="list-style-type: none"> <li>– Enhance analysis of material climate impact on trading portfolios to help with future sector-based stress testing.</li> <li>– Enrich stress testing and review new scenarios to include</li> <li>– Adapt stress testing to emerging market practices.</li> <li>– Include new liquidity scenarios to measure the materiality of their impact.</li> </ul>
<b>Operational</b>	<ul style="list-style-type: none"> <li>– Serious climate events can affect business continuity, infrastructure, processes and headcount at branches and offices.</li> <li>– If energy, water and insurance prices soar, so will operational costs.</li> </ul>	<ul style="list-style-type: none"> <li>– Climate risk was a mandatory addition to our scenario analyses.</li> <li>– We updated our operational risk database with a new climate and environmental strengthen climate and environmental risk governance, which the Reputational risk forum addresses. Formal meetings scheduled to review reputational issues (including climate matters), involving the legal, responsible banking, investor relations, risk and other teams.</li> </ul>	<ul style="list-style-type: none"> <li>– Embed climate risk in the annual operational and control risk self-assessment.</li> <li>– Enhance the operational risk that considers climate risk data.</li> <li>– Study external data sources</li> </ul>

<b>Reputational</b>	<ul style="list-style-type: none"> <li>– If customers, investors and other stakeholders in general perceive that banks are not adequately aligned with the goals of the low-carbon transition or fail to meet their public commitments, it can affect the image of the bank..</li> <li>– The Group's climate information is considered insufficient or misleading, or product announcements appear to be “greenwashing”.</li> </ul>	<ul style="list-style-type: none"> <li>– Updated climate and environmental risk policies and procedures.</li> <li>– Corporate credit committees address reputational risk when assessing sensitive transactions that involve climate and environmental risk.</li> <li>– Strengthen climate and environmental risk governance, which the Reputational risk forum addresses. Formal meetings scheduled to review reputational issues (including climate matters), involving the legal, responsible banking, investor relations, risk and other teams.</li> </ul>	<ul style="list-style-type: none"> <li>– Methodology to quantify the reputational impact of climate and environmental risk.</li> </ul>
<b>Strategic</b>	<ul style="list-style-type: none"> <li>– The Group's net-zero financing and operations strategy fails to bring about enough change and undermines our strategy.</li> </ul>	<ul style="list-style-type: none"> <li>– Regular monitoring of the strategic “Climate change” project, including KPIs that relate to the Group’s net zero objectives.</li> <li>– Our top risk identification includes a climate change risk event. We analyse the potential impact of low-probability stress scenarios on the Group's strategic plans and draw up action plans accordingly, o budget tracking for inclusion in the strategic risk profile.</li> <li>– Monitoring of ESG initiatives presented at the corporate products governance forum and investors’ forum.</li> </ul>	<ul style="list-style-type: none"> <li>– Increase granularity of stressed event impacts as part of the top risk identification.</li> <li>– Update key ESG metrics according to the Group's strategy.</li> <li>– Include more ESG factors in our business model performance review.</li> <li>– Continue to include ESG factors in comparisons with peers.</li> </ul>

To evaluate climate-related risks, one of our main tools is scenario analysis. Santander used internal models, the "Planetrics" platform and vendors' databases to quantify the financial impact of physical and transition risk for each counterparty. The platform has seven modules (see chart below), based on the United Nations Environmental Programme Finance Initiative's (UNEP FI) methodology and other sources of information. The exercises we conduct entail both a bottom-up analysis of the customer and a top-down analysis of portfolios by industry and geography. We embedded scenario analysis methodology in our credit risk management using Klima's sensitivities and materiality assessment modules to obtain a forward-looking overview of the portfolios that include sector forecasts and quantitative heatmaps.

For more detail about of our scenario analysis tool modules see section Climate-related and environmental risk management in our Annual Report.



For more information on our ESG strategy and our performance in 2022, please refer to the Responsible Banking chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

## 9.2. Social risk

### 9.2.1. Business strategy and processes

This section covers the requirement on qualitative information on social risk, specifically, the point on business strategy and processes, for question (a)

### Integration of social factors on the business strategy

The Group materiality matrix reflects the ESG topics we should focus on according to our strategy.

In the development of the materiality matrix, following the proposed Corporate Sustainability Reporting Directive (CSRD) and leading ESG reporting standards, we applied the principle of double materiality: (1) financial materiality (how ESG issues impact financial performance); and (2) environmental and social materiality (how ESG action impacts society and the environment).

Regarding social topics, according to the materiality assessment, we have identified the following aspects to focus on:

- **Crucial topics:**
  - **Customer experience and satisfaction:** be the bank of choice for our customers with products, process and services that meet their needs and treat them in a simple, personal and fair way. Innovation & usage of digital technologies to maximise access to products and services and enhance customer experience.
  - **Financial health:** financially support our stakeholders to help with any potential challenges (e.g., rising cost of living) that might emerge through tailored products and solutions, including financial education.
- **Major topics:**
  - **Diversity, equity and inclusion:** ensuring fairness and respect among employees in an inclusive environment, with zero tolerance of harassment and discrimination in a psychological safety environment.
  - **Talent management:** have a talented and motivated workforce, offering development opportunities; and ensuring meritocracy.
  - **Financial inclusion:** developing and providing products and services promoting access to basic financial services, including finance that meet their needs.

- **Relevant topics:**

- **Education and support to communities:** Santander Universities focus on providing education, employability and entrepreneurship opportunities, connecting startups and SMEs, clients, training and other resources. We also support community well-being and improve the lives of people at risk of exclusion through our community programs.

Additionally, our internal taxonomy, the Sustainable finance classification system (SFCS), is our guide on green and social financing. With regards to the latter, our social eligibility standards outline the business activities that address or mitigate specific social issues or seek to achieve positive social outcomes.

Currently, Grupo Santander is addressing 9 business activities: education, healthcare, transport, energy, water and waste management, real estate, finance and insurance, IT and communications, and non-profit organizations. All of which have an "impact metric" that measures its social contribution and a "target population" that is eligible for this social financing.

For more details, see the "Sustainable finance classification system" in our corporate website.

### Objectives, targets and limits to assess and address social risk

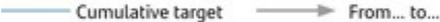
This section covers the requirement on qualitative information on social risk, specifically, the point on business strategy and processes, for question (b)

Our activity and investments contribute to several United Nations' Sustainable Development Goals (SDG) and support the Paris Agreement, and other international and local initiatives such as UN Women's Empowerment Principles.

We analysed our agenda's contribution to the SDGs and determined the most relevant goals to Banco Santander's business, commitments and strategy. For more details, see the 'Banco Santander and the SDGs' brochure on our corporate website.

Following UN Principles for Responsible Banking, we have set social targets in those areas where we have the greatest potential impact (additional to the environmental targets listed under Environmental risk).

	2018	2019	2020	2021	2022	Target
<b>Women in senior positions<sup>A</sup> (%)</b>	20% →	22.7%	23.7%	26.3%	29.3%	→ 30% by 2025
<b>Equal pay gap<sup>B</sup></b>	3% →	2%	2%	1%	1%	→ ~0% by 2025
<b>Financially empowered people<sup>C</sup> (cumulative)</b>	—	2mn	5mn	7mn	11.8mn	— 10mn by 2025



A. Senior positions make up 1% of the total workforce

B. Equal pay gap based on same jobs, levels and functions

C. Unbanked, underbanked and financially vulnerable individuals who receive tailored finance solutions and become more aware and resilient through financial education

## Policies and procedures to manage social risks

This section covers the requirement on qualitative information on social risk, specifically, the point on business strategy and processes, for question (c)

Santander Group ensures ethical factors are properly considered when conducting business.

We therefore adhere to several policies, codes and internal rules inspired by the best practices, international conventions and protocols, codes of conduct and guides that are applicable in every area.

Our compliance with these policies is a process of continuous improvement. Santander undertakes an annual review of its corporate sustainability policies, which apply to the whole Group.

Among the most relevant policies relating to social aspects, are the following:

- **Responsible banking and sustainability policy**

Outlines our responsible banking and sustainability principles, commitments, objectives and strategy with regard to our stakeholders including human rights protection.

- **Environmental, social and climate change risk policy**

This policy sets out Santander Group's criteria for investing in entities, and/or providing financial products and/or services to customers involved in the oil & gas, power generation and mining & metals sectors and those arising from businesses engaged in soft commodities. The policy sets out the criteria for the identification, assessment, monitoring and management of environmental and social risks and other climate change related activities. This policy is a substitute to the previous energy, mining and metals, and soft commodities policies.

- **Policy on contributions for social purpose**

The purpose of this policy is to delimit and regulate the process of proposal, assessment, decision, control and monitoring of those free contributions that the Santander Group considers making for social purposes.

- **Principles of responsible behaviour for suppliers**

This document establishes the minimum principles of ethical, social and environmental conduct that Banco Santander expects from all its suppliers; these are aligned with the ten principles of the Global Compact.

The complete list of policies can be found on the Group's corporate website.

### 9.2.2. Governance

This section covers the requirement on qualitative information on social risk, specifically, the point on governance, for questions (d), (e) and (f)

#### Responsibilities of the management body for setting the risk framework, supervising and managing the implementation of the objectives, strategy and policies in the context of social risk management

The Group's board of directors is responsible of the approval of the general policies and strategies of the Company, and the supervision of their application, including strategy and policies on responsible business and sustainability and, in particular, on environmental and social matters and corporate sustainability policies.

Additionally, we have created a multidisciplinary team to help enhance the identification, remediation and mitigation of social and environmental risks (including human rights), analyse customer engagement throughout their relationship with us, spot deficiencies and implement action plans.

In the management of the social objectives and strategies, the following initiatives, among others, are considered:

- **Activities towards the community and society**
  - **Conduct and ethical behaviour:** our business complies with the highest standards of conduct and ethical behaviour.
  - **Support for higher education and other local initiatives:** we support the communities where we operate, with a special focus on higher education, through our programme Santander Universities.
  - **Financial inclusion and empowerment:** we help people access the financial system, set up and grow micro-businesses, and learn how to manage their finances.
- **Employee relationships and labour standards:** we want to be an employer of choice. Our approach strategy is based on three pillars:
  - Ensuring that we have the best culture, and a great employee experience – delivered through initiatives such as diversity, equity & inclusion, culture, health& wellbeing.
  - Ensuring to have the right talent and skills in place to ensure the Bank's transformation: attracting and retaining the best talent and encouraging our people to learn through great leadership, a strong focus on development and having a strong employee value proposition.
  - Aligning with the business to ensure we add value proactively and help deliver the strategic objectives: having the best organisation design, making data driven decisions, and, utilizing new ways of working to drive value for all stakeholders.

- **Customer protection and product responsibility**

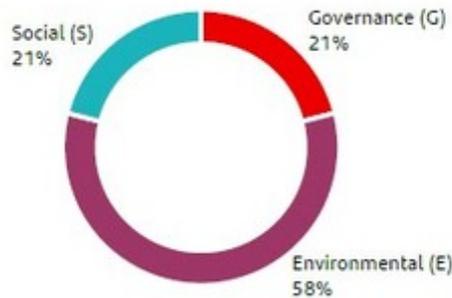
- **Customer conduct risk model:** being responsible means offering our customers products and services that are simple, personal and fair (SPF). Our customer conduct risk model sets out the lines of action and standards for managing and mitigating conduct risk in service design, sales, post-sales and execution.

The Product Governance & Consumer Protection area pinpoints risk from banking regulation and good practice. It also conducts thematic reviews to avoid problems that might affect our customers. 2022 thematic reviews have been focused on pricing, account closure, services for elderly customers, care for victims of fraud, and payment protection insurance.

- **Product governance:** Santander's governance structure enables it to safeguard customers' interests. Our product governance forum ensures the products and services we market meet the needs of specific target segments and are reasonably and clearly priced.

- **Human rights:** our board-approved responsible banking and sustainability policy illustrates ESG Santander's commitments including human rights protection of our employees, customers, suppliers and the communities we serve.

- We run initiatives to combat discrimination, forced labour, child exploitation and other affronts to people's dignity, as well as to preserve freedom of association and collective bargaining, our employees' health, and decent employment.
- We protect our customers' human rights through responsible business practices, and granting their data protection.
- We're also enhancing human rights questionnaires including risks in the supply chain to clients under environmental, social and climate change risk management policy. As a result, a strengthened analysis of client's exposure to social risks was achieved.
- We assess human rights impacts over transactions under the scope of Equator Principles.



For more detail of our social initiatives, see section Building a more responsible bank in our annual report.

## Alignment of the remuneration policy with social risk-related objectives

This section covers the requirement on qualitative information on social risk, specifically, the points on governance, for question (g)

To align the remuneration policy with the institution's social risk-related objectives, Santander applies the equal pay principle in the corporate remuneration policy of Grupo Santander for executive directors and employees alike, which forbids any type of differential treatment that is not exclusively based on an assessment of performance results and corporate behaviours, and promotes equal pay for men and women.

Furthermore, Santander's remuneration framework rewards employees for their contribution based on principles like, among others:

- **Meritocracy:** non-discrimination based on sex, age, culture, religion or ethnicity.
- **Consistency:** remuneration consistent with the level of responsibility, leadership and performance within the Group, to promote retention of key professionals and attract the best talent.
- **Social responsibility:** in order to give our social responsibility prominence in remuneration, the Group's Responsible banking objectives for employee remuneration include the people financially empowered metric.

Also, performance objectives for annual variable remuneration have included since 2020 ESG components aligned with our Responsible banking goals.

Remuneration policy for executive directors in 2022 included 2023-2025 pluriannual variable pay assessing the following social aspects:

- Women in senior leadership positions by the end of 2025

Women in senior leadership positions <sup>B</sup> (%)	Coefficient
≥ 36%	1.25
≥ 35% but < 36%	1 – 1.25 <sup>A</sup>
≥ 29.3% but < 35%	0 – 1 <sup>A</sup>
< 29.3%	0

A. Increase of the coefficient is proportional to its position on this line of the scale.

B. Senior leadership positions make up 1% of the total workforce

- Financial inclusion between 2023 and 2025

Financial inclusion <sup>B</sup> (million)	Coefficient
≥ 6	1.25
≥ 5 but < 6	1 – 1.25 <sup>A</sup>
≥ 3 but < 5	0 – 1 <sup>A</sup>
< 3	0

A. Increase of the coefficient is proportional to its position on this line of the scale.

B. Banking proposals for unbanked and underbanked regarding access to basic financial services (i.e.: cash-in/cash-out services in remote locations) or tailored finance (i.e.: for micro-entrepreneurs to set up or grow a business or customers in financial distress).

More detail can be found in the "Directors' remuneration policy for 2023, 2024 and 2025 submitted to a binding shareholder vote" section in the annual report.

### 9.2.3. Risk management

This section covers the requirement on qualitative information on social risk, specifically, the point on risk management, for question (h)

#### International standards on which the social risk management framework is based

Our social risk management framework draws up on international industry guidelines and principles. Thus, the 5 policies covered previously on “Policies and procedures to manage social risks”, have been established in accordance with international standards:

- The **responsible banking and sustainability policy** is based on standards such as the Agreements reached at the 2015 COP21 summit on climate change in Paris, the International Wildlife Trade Financial Taskforce, or the UNESCO World Heritage list, the 2011 United Nations Guiding Principles on Business and Human Rights, the International Bill of Human Rights, the ten principles of the United Nations Global Compact, the OECD guidelines for multinational companies, and the Convention on the Rights of the Child and its two Protocols, among others.
- Our **environmental, social & climate change risk management policy**, follows the Equator Principles, the standards for social and environmental performance and the explanatory notes of the International Finance Corporation (IFC), the United Nations Global Compact, the Universal Declaration of Human Rights; the International Labour Organization Declaration; the Convention on the Rights of the Child; the Rio Declaration on Environment and the United Nations Convention against corruption.
- In the **policy on contributions for social purpose**, contributions must be in keeping with implementation of standards such as the UNEP FI: United Nations Environmental Programme for Financial Institutions, the United Nation Sustainable Development Goals, or the Agreements reached at the 2015 COP21 summit on climate change in Paris.
- Banco Santander expects with the **Principles of responsible behaviour for suppliers** for them to work to support and respect the protection of human rights in accordance with the United Nations Universal Declaration of Human Rights, the Fundamental Conventions of the International Labour Organization (ILO) and the United Nations Guiding Principles on Business and Human Rights.

An exhaustive list of the standards that each policy follows is available on the Group's corporate website.

In addition, the sustainable finance classification system (SFCS). in the aspects related to social risk, draws on international industry guidelines, standards and principles such as the ICMA's social and green bond principles, LMA's principles or the UNEP FI framework among others.

#### Integration of social factors in the risk framework: management, setting of limits, tools and link with other risks

This section covers the requirement on qualitative information on social risk, specifically, the point on risk management, for question (i), (j), (k), (l) and (m)

The integration of social factors into the risk framework can be summarised as follows:

- From a management point of view, for credit approvals, the first line of defense, with analysis of the second line, runs due diligence with several specific questionnaires for wholesale clients and certain sectors. If the process reveals a reputational issue, it will be escalated to the Reputational risk team as a preventative measure. All project-related transactions with SCIB must be analyzed according to the Equator Principles.

In this regard and as indicated in the ESCC risk policy, the questionnaires that are evaluated at client intake include ethical considerations and inclusiveness assessment (considering, among others, actions and policies on non-discrimination at work, working conditions, populations in need of special attention, human rights).

We apply our environmental, social and climate change risk management policy in conjunction with our general sustainability policy. In addition, the environmental, social and climate change risk and compliance departments carry out extra due diligence on cases with red flags. The findings, which provide further input for decision-making, are submitted to risk approval committees.

- Moreover, in the process of the identification of exposures aligned with the EU Taxonomy, they will be considered aligned if they meet the technical screening criteria (TSC), the minimum social safeguards (MSS), and do not significantly harm the other environmental objectives (DNSH).

Regarding this last point, the objective of this criterion is to add a social component to the environmental dimension, so that potentially green financing to clients must also be aligned with:

- OECD Guidelines for Multinational Enterprises
  - ILO Declaration on Fundamental Principles and Rights at Work
  - Universal Declaration of Human Rights
  - UN Guiding Principles on Business and Human Rights
- Furthermore, in 2022, we updated our policy on preventing bribery and corruption. This was transposed in the subsidiaries, with guidelines and special training to manage the risks of occurrence.
  - Among the tools for integrating social factors, we run surveys and "speak-up" channels for employees, plus interactive platforms for customers. We assess externalities to identify risks and opportunities and to appraise our impact on the community. We respond to demands from top analysts, investors and indices interested in ESG matters.
  - We keep up to date of new regulations and best practices around the world. To this end, we engage in consultations with authorities, industry associations and other organisations involved in sustainable development policy-making.
  - Additionally, in 2022, the remuneration committee continued prioritizing gender pay measurement and trends in the Group to set targets; and checked that the methodology to calculate gender equality metrics was accurate and action plans effectively narrowed the gender pay gap in the Group and its subsidiaries.
  - With regards to methodologies for the incorporation of social aspects in scenario analysis, these are still incipient. Grupo Santander closely monitors regulatory developments relating to these aspects.
  - Lastly, the interaction of social risks with the other risks is carried out on the basis of the aforementioned questionnaires. These are carried out during the process of analysis and granting of financing, but are also taken into account for the management of market, operational and reputational risks associated with these customers. However, the connection between these factors and the market and operational risks is being analysed.

## 9.3. Governance risk

This section covers the requirement on qualitative information on risks derived from governance, specifically questions (a), (b), (c) and (d).

The management of risks derived from governance is a relevant aspect in two facets: on the one hand, in the internal governance of the Santander Group, and on the other, in the evaluation we make of the governance of our clients.

Our internal governance is described in the Group's Annual Report, which also covers, among other things, the committees responsible for ESG matters, the management of ethical issues, inclusivity, transparency, conflicts of interest, and of internal communication on critical concerns, as described in section 9.1 Environmental risk.

In relation to the analysis of our clients' governance, it is assessed in:

1. The elaboration of our clients' credit ratings.  
In the development of CIB's client credit ratings, we assess aspects of our clients' governance such as the application of good governance codes on our stakeholders like Sarbanes-Oxley and their involvement in management issues.
2. In customer tiering: phasing it progressively in accordance with our decarbonisation targets, beginning with power generation (more detail in the climate finance report, section 5. Metrics and targets).
3. In the screening and assessment process of the environmental, social and climate change risk ("ESCC") of Santander Corporate and Investment Banking (SCIB) clients' activities in committed sectors (subject to the ESCC Policy) such as oil and gas, power, soft commodities, mining and metals.

Throughout this process, questionnaires are developed to assess aspects of our clients' governance and risk management:

- The **ethical considerations and inclusiveness** assessment includes, among others, actions and policies on non-discrimination at work, working conditions, populations requiring special attention, human rights, and how internal client communication works, for example, in terms of grievance mechanisms for workers.
- The **strategy and risk management assessment** includes the analysis of the quality and ambition of the customer's quantitative GHG emissions targets and the credibility of the customer's decarbonization strategy to achieve their emissions reduction targets (e.g. policies on climate change action; business strategy consideration of climate change risks and opportunities; and action plans to achieve their decarbonization targets).
- The disclosure assessment focuses on the **transparency** of the customer's reporting on past emissions performance across all relevant scopes, the level of assurance, as well as the degree of reporting alignment with the TCFD. Where possible, it may also include assessment as to whether or not previous GHG emission targets were achieved.
- The **governance assessment** focuses on the level of management oversight and governance of a customer's

transition strategy. We assess the level of seniority of executives accountable for climate strategy; board committee oversight of climate change issues; and how executive remuneration is aligned with climate change performance.

- Our clients' relationship with their **suppliers**, for example, assessing **potential conflicts** that could arise in the event of non-compliance with government policies or regulations.

As a result of the evaluation of the questionnaires, as a preventive measure, key decisions can be escalated to the Reputational Risk Forum and even to the board of directors.

With the entry into force of the Corporate Sustainability Reporting Directive (CSRD), additional aspects of governance risk assessment for our clients will be incorporated.

Additionally, Compliance area will continue to deepen its analysis of our clients' governance in order to broaden the focus on aspects such as ethics and integrity, board diversity and equality and customer protection and, in the longer term, board and supplier governance.

## 9.4 Credit quality of exposures

This template provides information on exposures to non-financial companies operating in sectors that significantly contribute to climate change, including, among other things, information on the credit quality of the exposures and on financed emissions.

ESG disclosure in Pillar 3 follows the implementing technical standards on prudential disclosures on ESG risks defined by the EBA for this purpose. Therefore, the ESG information disclosed in this template of Pillar 3 is not necessarily aligned with other Group's ESG management reports.

The perimeter includes exposures in the banking book, including loans and advances, debt securities and equity instruments to non-financial corporations, other than those held for trading.

Santander has an exposure of EUR 351 billion, distributed between those sectors identified by the EBA as major climate change contributors (75% – NACE A–I and L) and other, less polluting sectors (25% – NACE K, J, M–U).

The template also requires the identification of exposures excluded from benchmarks aligned with the Paris Agreement. To this end, we have applied sections d) through g) of Article 12.1, and Article 12.2 of Commission Delegated Regulation (EU) 2020/1818. Companies are identified based on the following criteria:

- 1% or more of their revenues derive from exploration, mining, extraction, distribution or refining of hard coal and lignite.
- 10% or more of their revenues derive from the exploration, extraction, distribution or refining of oil fuels.
- 50% or more of their revenues derive from the exploration, extraction, manufacturing or distribution of gaseous fuels.
- At least 50% of its revenue comes from electricity generation with a GHG emission intensity of more than 100 g CO<sub>2</sub> equivalent/kWh.

In order to apply these criteria to our portfolio, we have used information from external providers regarding revenues of the companies by sector of activity obtained, when available.

Additionally, according to the Commission Delegated Regulation, companies that are found or estimated to significantly harm one or more of the environmental objectives will be excluded. For this purpose, we have reviewed if those companies internally assessed for ESG purposes can be considered as significant harm for one or more of the environmental objectives.

In relation to the publication of financed emissions, we have adopted a progressive approach. We start with the sectors for which we have established an emissions-based commitment: power generation, energy, steel and aviation. Likewise, we have established our strategic commitment to stop financing the thermal coal sector by 2030; therefore, it is not expressed in terms of emissions.

Financed emissions have been calculated following the methodological and design decisions used in the process of aligning our portfolios (i.e. exposure, reference year, emissions by scope etc.). For further information on the design decisions applied, see the 2022 Annual Report and the 2021 Climate Finance Report. Emissions have been assigned according to the Group's main activity, in accordance with the corresponding NACE codes.

The information needed to calculate financed emissions is obtained from various data sources for emissions, physical intensities and production data. Primarily, information on emissions and production is obtained from the publication of annual reports by our clients. Additionally, we use S&P Global Trucost and Asset Resolution as alternative sources. Finally, we use Transition Pathway Initiative to collect information regarding physical emissions intensity in certain sectors, such as energy and aluminum.

Regarding the percentage of the portfolio covered by real emissions of the counterparties, this has been estimated based on the EAD according to the design choices applied in the calculation of alignment metrics, as described in section 9.6.

As a member of the Net Zero Banking Alliance, the Santander Group will progressively calculate and publish financed emissions from other sectors following the internally defined alignment portfolio plan.

Regarding 'environmentally sustainable (CCM)' column, according to the Pillar 3 ESG implementing technical standards, we will start disclosing this content as of end 2023.

**Table 79.ESG 1 - Banking book- Climate Change transition risk: Credit quality of exposures by sector, emissions and residual maturity**

Sector/subsector	a	b	c	d	e
	Gross carrying amount (Mln EUR)				
		Of which exposures towards companies excluded from EU Paris-aligned Benchmarks in accordance with points (d) to (g) of Article 12.1 and in accordance with Article 12.2 of Climate Benchmark Standards Regulation	Of which environmentally sustainable (CCM)	Of which stage 2 exposures	Of which non-performing exposures
1 <b>Exposures towards sectors that highly contribute to climate change*</b>	261,752	6,438	—	21,749	11,514
2 A - Agriculture, forestry and fishing	8,703	—	—	773	498
3 B - Mining and quarrying	8,660	2,744	—	81	57
4 B.05 - Mining of coal and lignite	93	—	—	—	1
5 B.06 - Extraction of crude petroleum and natural gas	3,209	1,249	—	26	6
6 B.07 - Mining of metal ores	1,967	847	—	6	4
7 B.08 - Other mining and quarrying	471	71	—	29	43
8 B.09 - Mining support service activities	2,920	577	—	20	3
9 C - Manufacturing	60,071	1,411	—	3,894	2,112
10 C.10 - Manufacture of food products	18,488	63	—	673	526
11 C.11 - Manufacture of beverages	1,944	—	—	80	59
12 C.12 - Manufacture of tobacco products	1,288	—	—	1	—
13 C.13 - Manufacture of textiles	861	—	—	98	76
14 C.14 - Manufacture of wearing apparel	1,499	—	—	960	97
15 C.15 - Manufacture of leather and related products	483	—	—	64	68
16 C.16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	927	—	—	70	57
17 C.17 - Manufacture of pulp, paper and paperboard	2,037	—	—	125	36
18 C.18 - Printing and service activities related to printing	689	—	—	74	66
19 C.19 - Manufacture of coke oven products	2,068	641	—	160	10
20 C.20 - Production of chemicals	4,969	571	—	160	62
21 C.21 - Manufacture of pharmaceutical preparations	1,562	—	—	32	11
22 C.22 - Manufacture of rubber products	1,845	—	—	166	74
23 C.23 - Manufacture of other non-metallic mineral products	1,905	—	—	173	84

24	C.24 - Manufacture of basic metals	3,321	90	—	66	147
25	C.25 - Manufacture of fabricated metal products, except machinery and equipment	3,143	—	—	233	206
26	C.26 - Manufacture of computer, electronic and optical products	2,010	—	—	56	23
27	C.27 - Manufacture of electrical equipment	2,074	—	—	103	95
28	C.28 - Manufacture of machinery and equipment n.e.c.	2,177	17	—	132	71
29	C.29 - Manufacture of motor vehicles, trailers and semi-trailers	3,410	9	—	156	193
30	C.30 - Manufacture of other transport equipment	855	—	—	113	25
31	C.31 - Manufacture of furniture	629	—	—	70	51
32	C.32 - Other manufacturing	1,179	19	—	64	37
33	C.33 - Repair and installation of machinery and equipment	705	1	—	66	40
34	D - Electricity, gas, steam and air conditioning supply	17,017	1,710	—	838	409
35	D35.1 - Electric power generation, transmission and distribution	16,122	1,340	—	830	404
36	D35.11 - Production of electricity	11,106	646	—	753	381
37	D35.2 - Manufacture of gas; distribution of gaseous fuels through mains	828	370	—	2	2
38	D35.3 - Steam and air conditioning supply	66	—	—	7	3
39	E - Water supply; sewerage, waste management and remediation activities	1,556	—	—	104	38
40	F - Construction	18,664	14	—	1,823	1,117
41	F.41 - Construction of buildings	10,639	—	—	1,130	514
42	F.42 - Civil engineering	3,575	14	—	238	225
43	F.43 - Specialised construction activities	4,449	—	—	455	378
44	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	74,772	338	—	5,598	3,686
45	H - Transportation and storage	18,447	220	—	2,613	1,003
46	H.49 - Land transport and transport via pipelines	9,012	186	—	494	454
47	H.50 - Water transport	1,873	33	—	784	173
48	H.51 - Air transport	1,101	—	—	72	70
49	H.52 - Warehousing and support activities for transportation	6,305	—	—	1,254	297
50	H.53 - Postal and courier activities	155	—	—	9	10
51	I - Accommodation and food service activities	11,886	—	—	2,349	1,300
52	L - Real estate activities	41,978	—	—	3,675	1,293
53	<b>Exposures towards sectors other than those that highly contribute to climate change*</b>	<b>90,037</b>	<b>3,995</b>	<b>—</b>	<b>4,558</b>	<b>2,323</b>
54	K - Financial and insurance activities	—	—	—	—	—
55	Exposures to other sectors (NACE codes J, M - U)	90,037	3,995	—	4,558	2,323
56	<b>TOTAL</b>	<b>351,789</b>	<b>10,433</b>	<b>—</b>	<b>26,307</b>	<b>13,837</b>

\* In accordance with the Commission delegated regulation (EU) 2020/1818 supplementing regulation (EU) 2016/1011 as regards minimum standards for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks - Climate Benchmark Standards Regulation - Recital 6: Sectors listed in Sections A to H and Section L of Annex I to Regulation (EC) No 1893/2006

**Table 79.ESG 1 - Banking book- Climate Change transition risk: Credit quality of exposures by sector, emissions and residual maturity**

Sector/subsector	f	g	h
	Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions (MIn EUR)		
		Of which Stage 2 exposures	Of which non-performing exposures
1 <b>Exposures towards sectors that highly contribute to climate change*</b>	-6,565	-1,116	-4,763
2 A - Agriculture, forestry and fishing	-290	-48	-200
3 B - Mining and quarrying	-50	-5	-30
4 B.05 - Mining of coal and lignite	-2	—	—
5 B.06 - Extraction of crude petroleum and natural gas	-6	-3	-1
6 B.07 - Mining of metal ores	-3	—	-2
7 B.08 - Other mining and quarrying	-29	-2	-25
8 B.09 - Mining support service activities	-9	-1	-2
9 C - Manufacturing	-1,694	-231	-1,310
10 C.10 - Manufacture of food products	-586	-53	-505
11 C.11 - Manufacture of beverages	-30	-4	-24
12 C.12 - Manufacture of tobacco products	-1	—	—
13 C.13 - Manufacture of textiles	-47	-4	-40
14 C.14 - Manufacture of wearing apparel	-105	-57	-46
15 C.15 - Manufacture of leather and related products	-33	-4	-29
16 C.16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	-34	-4	-28
17 C.17 - Manufacture of pulp, paper and paperboard	-26	-7	-18
18 C.18 - Printing and service activities related to printing	-98	-4	-31
19 C.19 - Manufacture of coke oven products	-7	-3	-3
20 C.20 - Production of chemicals	-37	-7	-23
21 C.21 - Manufacture of pharmaceutical preparations	-8	-1	-5
22 C.22 - Manufacture of rubber products	-51	-8	-38
23 C.23 - Manufacture of other non-metallic mineral products	-63	-15	-45
24 C.24 - Manufacture of basic metals	-45	-7	-40
25 C.25 - Manufacture of fabricated metal products, except machinery and equipment	-185	-14	-163
26 C.26 - Manufacture of computer, electronic and optical products	-15	-5	-8
27 C.27 - Manufacture of electrical equipment	-64	-7	-55
28 C.28 - Manufacture of machinery and equipment n.e.c.	-43	-7	-30
29 C.29 - Manufacture of motor vehicles, trailers and semi-trailers	-127	-6	-114

30	C.30 - Manufacture of other transport equipment	-14	-3	-9
31	C.31 - Manufacture of furniture	-29	-4	-24
32	C.32 - Other manufacturing	-22	-3	-16
33	C.33 - Repair and installation of machinery and equipment	-24	-4	-17
34	D - Electricity, gas, steam and air conditioning supply	-208	-33	-134
35	D35.1 - Electric power generation, transmission and distribution	-204	-33	-132
36	D35.11 - Production of electricity	-195	-32	-128
37	D35.2 - Manufacture of gas; distribution of gaseous fuels through mains	-3	—	-1
38	D35.3 - Steam and air conditioning supply	-1	—	-1
39	E - Water supply; sewerage, waste management and remediation activities	-30	-7	-19
40	F - Construction	-733	-105	-551
41	F.41 - Construction of buildings	-403	-67	-285
42	F.42 - Civil engineering	-130	-13	-106
43	F.43 - Specialised construction activities	-200	-25	-161
44	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	-1,928	-311	-1,407
45	H - Transportation and storage	-474	-101	-328
46	H.49 - Land transport and transport via pipelines	-270	-37	-201
47	H.50 - Water transport	-23	-13	-7
48	H.51 - Air transport	-29	-4	-23
49	H.52 - Warehousing and support activities for transportation	-146	-47	-91
50	H.53 - Postal and courier activities	-6	-1	-5
51	I - Accommodation and food service activities	-531	-125	-388
52	L - Real estate activities	-627	-150	-397
53	<b>Exposures towards sectors other than those that highly contribute to climate change*</b>	<b>-1,777</b>	<b>-302</b>	<b>-1,257</b>
54	K - Financial and insurance activities	—	—	—
55	Exposures to other sectors (NACE codes J, M - U)	-1,777	-302	-1,257
56	<b>TOTAL</b>	<b>-8,343</b>	<b>-1,418</b>	<b>-6,020</b>

**Table 79.ESG 1 - Banking book- Climate Change transition risk: Credit quality of exposures by sector, emissions and residual maturity**

Sector/subsector	i	j
	GHG financed emissions (scope 1, scope 2 and scope 3 emissions of the counterparty) (in tons of CO2 equivalent)	
	Of which Scope 3 financed emissions	
1 <b>Exposures towards sectors that highly contribute to climate change*</b>	33,682,052	19,771,187
2 A - Agriculture, forestry and fishing		
3 B - Mining and quarrying	23,840,814	19,771,187
4 B.05 - Mining of coal and lignite		
5 B.06 - Extraction of crude petroleum and natural gas	23,840,814	19,771,187
6 B.07 - Mining of metal ores		
7 B.08 - Other mining and quarrying		
8 B.09 - Mining support service activities		
9 C - Manufacturing	2,619,767	
10 C.10 - Manufacture of food products		
11 C.11 - Manufacture of beverages		
12 C.12 - Manufacture of tobacco products		
13 C.13 - Manufacture of textiles		
14 C.14 - Manufacture of wearing apparel		
15 C.15 - Manufacture of leather and related products		
16 C.16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials		
17 C.17 - Manufacture of pulp, paper and paperboard		
18 C.18 - Printing and service activities related to printing		
19 C.19 - Manufacture of coke oven products		
20 C.20 - Production of chemicals		
21 C.21 - Manufacture of pharmaceutical preparations		
22 C.22 - Manufacture of rubber products		
23 C.23 - Manufacture of other non-metallic mineral products		
24 C.24 - Manufacture of basic metals	2,619,767	—
25 C.25 - Manufacture of fabricated metal products, except machinery and equipment		
26 C.26 - Manufacture of computer, electronic and optical products		
27 C.27 - Manufacture of electrical equipment		
28 C.28 - Manufacture of machinery and equipment n.e.c.		

29	C.29 - Manufacture of motor vehicles, trailers and semi-trailers		
30	C.30 - Manufacture of other transport equipment		
31	C.31 - Manufacture of furniture		
32	C.32 - Other manufacturing		
33	C.33 - Repair and installation of machinery and equipment		
34	D - Electricity, gas, steam and air conditioning supply	5,407,372	
35	D35.1 - Electric power generation, transmission and distribution	5,407,372	
36	D35.11 - Production of electricity	5,407,372	—
37	D35.2 - Manufacture of gas; distribution of gaseous fuels through mains		
38	D35.3 - Steam and air conditioning supply		
39	E - Water supply; sewerage, waste management and remediation activities		
40	F - Construction		
41	F.41 - Construction of buildings		
42	F.42 - Civil engineering		
43	F.43 - Specialised construction activities		
44	G - Wholesale and retail trade; repair of motor vehicles and motorcycles		
45	H - Transportation and storage	1,814,099	
46	H.49 - Land transport and transport via pipelines		
47	H.50 - Water transport		
48	H.51 - Air transport	1,814,099	—
49	H.52 - Warehousing and support activities for transportation		
50	H.53 - Postal and courier activities		
51	I - Accommodation and food service activities		
52	L - Real estate activities		
53	<b>Exposures towards sectors other than those that highly contribute to climate change*</b>		
54	K - Financial and insurance activities		
55	Exposures to other sectors (NACE codes J, M - U)		
56	<b>TOTAL</b>	<b>33,682,052</b>	<b>19,771,187</b>

**Table 79.ESG 1 - Banking book- Climate Change transition risk: Credit quality of exposures by sector, emissions and residual maturity**

Sector/subsector	k	l	m	n	o	p
	GHG emissions (column i): gross carrying amount percentage of the portfolio derived from company- specific reporting	<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	Average weighted maturity
1 Exposures towards sectors that highly contribute to climate change*	43 %	203,768	35,247	13,096	9,641	3.3
2 A - Agriculture, forestry and fishing		6,708	1,338	398	259	3.6
3 B - Mining and quarrying	— %	6,461	1,583	440	176	3.7
4 B.05 - Mining of coal and lignite		42	—	—	51	0.2
5 B.06 - Extraction of crude petroleum and natural gas	— %	2,502	622	—	86	2.9
6 B.07 - Mining of metal ores		1,936	29	—	2	1.2
7 B.08 - Other mining and quarrying		340	94	4	33	3.4
8 B.09 - Mining support service activities		1,641	838	437	5	6.3
9 C - Manufacturing	99 %	51,036	6,418	914	1,703	2.3
10 C.10 - Manufacture of food products		16,471	1,158	95	765	2.1
11 C.11 - Manufacture of beverages		1,703	169	36	36	1.7
12 C.12 - Manufacture of tobacco products		1,267	—	—	21	1.5
13 C.13 - Manufacture of textiles		711	112	11	26	2.4
14 C.14 - Manufacture of wearing apparel		531	945	9	15	5.8
15 C.15 - Manufacture of leather and related products		387	66	8	22	2.5
16 C.16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials		750	120	22	35	2.9
17 C.17 - Manufacture of pulp, paper and paperboard		1,544	465	10	18	2.7
18 C.18 - Printing and service activities related to printing		513	106	20	50	3.3
19 C.19 - Manufacture of coke oven products		1,452	166	448	2	4.3
20 C.20 - Production of chemicals		4,368	515	14	72	1.5
21 C.21 - Manufacture of pharmaceutical preparations		1,301	105	2	154	1.8
22 C.22 - Manufacture of rubber products		1,640	151	21	34	2.4
23 C.23 - Manufacture of other non-metallic mineral products		1,585	240	15	65	2.1
24 C.24 - Manufacture of basic metals	99 %	2,822	470	7	22	2.3
25 C.25 - Manufacture of fabricated metal products, except machinery and equipment		2,585	381	48	130	2.7

26	C.26 - Manufacture of computer, electronic and optical products		1,926	64	1	19	1.2
27	C.27 - Manufacture of electrical equipment		1,919	130	6	19	1.1
28	C.28 - Manufacture of machinery and equipment n.e.c.		1,869	220	20	68	2.2
29	C.29 - Manufacture of motor vehicles, trailers and semi-trailers		2,910	474	5	22	2.7
30	C.30 - Manufacture of other transport equipment		685	86	77	8	3.3
31	C.31 - Manufacture of furniture		453	139	14	23	3.4
32	C.32 - Other manufacturing		1,092	56	7	25	2.1
33	C.33 - Repair and installation of machinery and equipment		556	81	18	50	2.9
34	D - Electricity, gas, steam and air conditioning supply	70 %	11,961	2,517	2,103	435	4.4
35	D35.1 - Electric power generation, transmission and distribution	70 %	11,109	2,499	2,082	432	4.5
36	D35.11 - Production of electricity	70 %	7,098	1,874	1,742	392	5.4
37	D35.2 - Manufacture of gas; distribution of gaseous fuels through mains		791	14	21	2	1.8
38	D35.3 - Steam and air conditioning supply		60	5	1	1	2.6
39	E - Water supply; sewerage, waste management and remediation activities		935	315	209	97	5.3
40	F - Construction		13,852	2,220	1,286	1,306	4.1
41	F.41 - Construction of buildings		8,550	946	376	767	3.8
42	F.42 - Civil engineering		2,218	690	560	107	4.9
43	F.43 - Specialised construction activities		3,084	585	350	431	4.2
44	G - Wholesale and retail trade; repair of motor vehicles and motorcycles		65,096	5,194	618	3,864	2.0
45	H - Transportation and storage	— %	12,952	3,800	1,115	580	4.3
46	H.49 - Land transport and transport via pipelines		7,451	1,011	160	391	3.4
47	H.50 - Water transport		766	743	359	5	6.2
48	H.51 - Air transport	— %	977	118	1	5	2.7
49	H.52 - Warehousing and support activities for transportation		3,639	1,896	594	176	5.0
50	H.53 - Postal and courier activities		120	32	1	3	3.4
51	I - Accommodation and food service activities		6,953	2,792	1,613	528	5.5
52	L - Real estate activities		27,814	9,070	4,400	693	4.5
53	Exposures towards sectors other than those that highly contribute to climate change*		72,052	8,305	3,864	5,817	3.1
54	K - Financial and insurance activities		—	—	—	—	—
55	Exposures to other sectors (NACE codes J, M - U)		72,052	8,305	3,864	5,817	3.1
56	TOTAL	43 %	275,820	43,552	16,961	15,457	3.3

## 9.5 Energy efficiency of the collateral

The purpose of this template is to measure the energy efficiency of the loans collateralized with commercial and residential immovable property and of repossessed real estate collaterals, in terms of their consumption as expressed in kWh/m<sup>2</sup> and/or their energy performance certificates (EPCs).

ESG disclosure in Pillar 3 follows the implementing technical standards on prudential disclosures on ESG risks defined by the EBA for this purpose. Therefore, the ESG information disclosed in this template of Pillar 3 is not necessarily aligned with other Group's ESG management reports.

With the aim of promoting the energy efficiency of buildings, the Energy Performance of Buildings Directive (2010/31/EU) and the Energy Efficiency Directive (2012/27/EU) introduced EPCs in Europe. Following their entry into force, these certificates are compulsory for the sale and rent of immovable property in the Eurozone.

However, when analysing the information provided, the following should be taken into account:

- Transactions (sales/renting) prior to the date of entry into force of the directive were not subject to the obligation of providing an EPC.
- The directive is applicable across the European Union and, as such, does not cover all jurisdictions where Santander operates.
- Even at the European Union level, as recognized by the EBA in the implementing technical standards on prudential disclosures on ESG risks, application of the directive is not standardized.
- Depending on the legal provisions in each geography, an EPC's obligation to carry out the transaction does not always imply that the financial institution involved in the transaction has access to such information.

Given that the directive is applicable in the European Union, the Group has worked to obtain EPCs for the main collateralized portfolios in this region (Spain and Portugal), as well as the United Kingdom, since it has a EPC system that is similar to that of the European Union.

For these geographies, work has been done to obtain EPCs and energy consumption (in kWh/m<sup>2</sup>), drawing from various sources of information:

- Firstly, information already available internally has been used.
- Additionally, this has been supplemented by information obtained by external suppliers (Gloval and Landmark).
- In regard to immovable property for which real data was not available, for those immovable properties subject to EPCs this has been modelled both internally (in the case of Spain), as well as by an external supplier (in the case of Portugal and the United Kingdom), in order to cover a large percentage of the portfolio and allowing us to cover almost the entire portfolio in both countries.

As per EBA guidelines, whereas in the report on exposure by energy certificate (EPC label) only actual energy certificates were considered, the report by energy consumption (kWh/m<sup>2</sup>) used real consumption in addition to estimated consumption. Given this, energy consumption has been estimated for both the portion of the portfolio for which no EPC label was available, and for the part of the portfolio with EPC label where real consumption information was not available.

In the case of the UK, Spain and Portugal, actual EPCs have been reported for 58% of the portfolio, with estimated EPCs available for a further 38%.

Additionally, in the case of these three units, EPC information is being considered in the pricing for those operations with EPC A or B in UK and Spain, and A+ or A in Portugal.

For the remaining regions, such as the United States and Latin America, given the current lack of European Union equivalent regulations in this respect, the exposure of these geographies are being reported as not having EPCs.

However, the portfolios collateralized by immovable property in geographies without EPC schemes or equivalent in place represent less than 25% of the Group's total portfolio.

**Table 80.ESG 2 - Banking book - Climate change transition risk: Loans collateralised by immovable property - Energy efficiency of the collateral**

Counterparty sector	a	b	c	d	e	f	g
	Total gross carrying amount (in MEUR)						
	Level of energy efficiency (EP score in kWh/m <sup>2</sup> of collateral)						
	0; <= 100	> 100; <= 200	> 200; <= 300	> 300; <= 400	> 400; <= 500	> 500	
1 <b>Total EU area</b>	156,943	78,448	28,062	6,823	3,036	2,067	2,667
2 Of which Loans collateralised by commercial immovable property	31,266	6,461	5,153	3,204	2,656	1,998	2,630
3 Of which Loans collateralised by residential immovable property	119,459	71,965	22,868	3,614	379	68	37
4 Of which Collateral obtained by taking possession: residential and commercial immovable properties	6,217	21	41	4	1	—	—
5 Of which Level of energy efficiency (EP score in kWh/m <sup>2</sup> of collateral) estimated	116,411	76,127	26,725	6,189	2,804	1,979	2,587
6 <b>Total non-EU area</b>	300,629	24,987	49,754	92,162	32,715	7,940	5,416
7 Of which Loans collateralised by commercial immovable property	26,476	88	584	968	1,012	725	1,853
8 Of which Loans collateralised by residential immovable property	273,937	24,900	49,170	91,194	31,703	7,216	3,563
9 Of which Collateral obtained by taking possession: residential and commercial immovable properties	216	—	—	—	—	—	—
10 Of which Level of energy efficiency (EP score in kWh/m <sup>2</sup> of collateral) estimated	41,718	775	5,803	26,906	7,145	690	399

**Table 80.ESG 2 - Banking book - Climate change transition risk: Loans collateralised by immovable property - Energy efficiency of the collateral**

Counterparty sector	h	i	j	k	l	m	n	o	p
	Total gross carrying amount (in MEUR)								
	Level of energy efficiency (EPC label of collateral)							Without EPC label of collateral	
	A	B	C	D	E	F	G		Of which level of energy efficiency*
1 <b>Total EU area</b>	2,288	2,649	3,219	4,583	9,094	1,961	2,152	130,997	73 %
2 Of which Loans collateralised by commercial immovable property	267	679	624	856	656	241	230	27,715	67 %
3 Of which Loans collateralised by residential immovable property	2,022	1,969	2,594	3,726	8,436	1,719	1,923	97,070	79 %
4 Of which Collateral obtained by taking possession: residential and commercial immovable properties	—	—	1	1	1	1	—	6,212	1 %
5 Of which Level of energy efficiency (EP score in kWh/m <sup>2</sup> of collateral) estimated								95,155	100 %
6 <b>Total non-EU area</b>	841	27,636	41,297	67,878	26,816	5,621	1,168	129,372	32 %
7 Of which Loans collateralised by commercial immovable property	296	1,442	1,858	1,073	283	26	111	21,388	1 %
8 Of which Loans collateralised by residential immovable property	545	26,194	39,439	66,805	26,533	5,595	1,057	107,768	39 %
9 Of which Collateral obtained by taking possession: residential and commercial immovable properties	—	—	—	—	—	—	—	216	— %
10 Of which Level of energy efficiency (EP score in kWh/m <sup>2</sup> of collateral) estimated								41,718	100 %

\*Energy consumption in kWh/m<sup>2</sup> of the actual guarantee

## 9.6 Alignment metrics

The purpose of this template is to show information on the emissions of institutions according to the sector to which the counterparty belongs and according to the alignment metrics defined by the International Energy Agency (IEA) for the various sectors.

To this end, we are adopting a gradual approach and beginning with the most significant sectors. Santander carries out regular materiality assessments to determine which portfolios are most relevant in relation to physical and transition-based risks. This materiality assessment is the basis on which we prioritise sectors when we define objectives.

In February 2021, the Group's board of directors approved the ambitious objective of achieving net zero carbon emissions by 2050. This vision applies to the Group's operations and to the emissions of our financing, advisory and investment services.

As part of our net zero ambition, we are a founding member of the Net Zero Banking Alliance (NZBA), under which we are committed to defining interim objectives for 2030 (more information in the 2021 Climate Finance Report). As such, we have marked the three-year objectives requested in the template as "Not available". Nevertheless, the evolution of our objectives is continuously monitored against the objectives defined for each sector.

To maintain consistency, the portfolio alignment methodology and assumptions applied in this template (i.e. exposure, reference year, emissions by scope etc.) are based on the design choices used to define the objectives in each sector. For further information on the design choices made, see the 2022 Annual report and the 2021 climate finance report.

One of these design choices is the metric to express the targets. Except for the energy sector (absolute emissions), targets are set in terms of physical intensity, based on attributed production, i.e., the company's or project finance's emission intensity weighted by their production and adjusted by the attribution factor according to the methodology defined by PCAF. In each sector, the metrics are defined according to:

- For power generation sector, the scope is limited to corporates and project finance on electricity generation activity, where the majority of emissions take place. The choice of the alignment metric is physical intensity (tones of CO<sub>2</sub>e/MWh) including scope 1 of our credit portfolio.
- In the energy sector, we are focusing on upstream companies and integrated companies with substantial revenues coming from E&P activities- and pure upstream companies. The objective is to reduce the absolute CO<sub>2</sub>e financed emissions (scope 1, 2 and 3) for our credit portfolio measured in tones of CO<sub>2</sub>e and calculated according to PCAF standards.
- In the steel sector the objective is to reduce the CO<sub>2</sub>e emission intensity (scope 1 and 2) of our credit portfolio in steel producers measured in tCO<sub>2</sub>e/tCS.
- Regarding aviation sector the focus is on passenger airlines and aircraft leasing companies. The objective to reduce the CO<sub>2</sub>e emission intensity measured in grCO<sub>2</sub>e/RPK -scope 1 and 2- of our credit portfolio.

With regards to the remaining sectors included in the portfolio alignment table, they will be published progressively as decarbonization targets are made, in accordance with the Pillar 3 ESG's implementing standards.

Several data sources are used for performing these calculations, including: emissions are obtained mainly from S&P Global Trucost, emissions intensities from Transition Pathway Initiative (TPI) and gaps have been filled by consulting companies' annual reports.

To set science-based decarbonization targets for our financed sectors, we choose a credible scenario that draws a pathway to reach net zero emissions by 2050 and will limit temperature rise to 1.5° C. The scenario we have chosen for sectors for which we have released decarbonization targets is the "International Energy Agency - Net Zero Emissions by 2050 Scenario" (IEA-NZE). Our aviation target is aligned to the expected adoption of current technologies, while our expectation is that breakthrough innovation could further accelerate its achievement.

**Table 81.ESG 3 - Banking book - Climate change transition risk: Alignment metrics**

	a	b	c	d	e	f	g
Sector	NACE Sectors (a minima)	Portfolio gross carrying amount (Mn EUR)	Alignment metric	Year of reference	Distance to IEA NZE2050 in % ***	Target (year of reference + 3 years)	
1 Power	351	11,721	0.17 (T* CO2e/MWh)	2020	12	N/A**	
2 Fossil fuel combustion	6	7,679	23.84 (T* CO2e)	2019	29	N/A**	
3 Automotive							
4 Aviation	5110	1,546	92.47 (grCO2e/RPK)	2019	41	N/A**	
5 Maritime transport							
6 Cement, clinker and lime production							
7 Iron and steel, coke, and metal ore production							
8 Chemicals							
9 Iron and steel, coke, and metal ore production (Steel)	241	1,518	1.58 (T* CO2e/tCS)	2019	32	N/A**	

\* Tones

\*\* Not available

\*\*\* PIT distance to 2030 NZE2050 scenario in % (for each metric)

## 9.7. Exposure to the top 20 polluting companies

The objective of this template is to show aggregate exposure to the 20 most carbon-intensive companies globally.

The perimeter includes loans and advances, debt securities and equity instruments, classified under the accounting portfolios in the banking book, excluding financial assets held for trading and held for sale assets.

As the EBA instructions do not specify which list to use to cover this template, we have decided to use one of the two options mentioned as an example in the EBA's implementing technical standards on prudential disclosures on ESG risks. Among these, the Thomson Reuters list has been considered more relevant due to the higher number of customers registered with the Group and because of the higher representativeness of the sectors considered.

Regarding environmentally sustainable (CCM) column, according to the Pillar 3 ESG implementing technical standards, we will start disclosing this content as of end 2023.

**Table 82.ESG 4 - Banking book - Climate change transition risk: Exposures to top 20 carbon-intensive firms**

EUR million					
	a	b	c	d	e
	Gross carrying amount (aggregate)	Gross carrying amount towards the counterparties compared to total gross carrying amount (aggregate)*	Of which environmentally sustainable (CCM)	Weighted average maturity	Number of top 20 polluting firms included
1	2,877	0.23 %	N/A		2

\*For counterparties among the top 20 carbon emitting companies in the world

## 9.8. Exposures subject to physical risk

The purpose of this template is to identify exposures subject to acute and chronic physical risk, including exposures collateralized by immovable property, exposures by business sector and foreclosed assets.

ESG disclosure in Pillar 3 follows the implementing technical standards on prudential disclosures on ESG risks defined by the EBA for this purpose. Therefore, the ESG information disclosed in this template of Pillar 3 is not necessarily aligned with other Group's ESG management reports.

The perimeter includes exposures in the banking book, including loans and advances, debt securities and equity instruments not held-for-trading and not held-for-sale.

Physical risks are defined as risks which arise from the physical effects of climate change and environmental degradation. They can be categorised either as acute - if they arise from climate and weather-related events and an acute destruction of the environment, or chronic - if they arise from progressive shifts in climate and weather patterns or a gradual loss of ecosystem services.

In order to assess the physical risk of its portfolio, Santander has requested information on acute and chronic physical risk from its supplier, Munich Re, to cover the main countries across over 1250 regions, allowing approximately 90% of the Group's exposure to be assessed.

The methodology applied by Munich RE follows the basis developed by the UNEP-FI working teams led by Acclimatise on physical risk, an example proposed by the EBA in the report on management and supervision of ESG risks for credit institutions and investment firms.

Munich RE's methodology, incorporates rating levels for the 13 threats identified and 8 vulnerability factors to adjust these hazards' impact on various economic activities in each geography. Including vulnerabilities in models allows us to identify the main physical events that each economic activity may be affected.

For each one of the regions or subdivisions of the NUTS 3 administrative units (same granularity used by the ECB in the 2022 climate risk stress test) and selected sectors (activities added to level 2 of the NACE codes), Munich RE has provided an assessment of the risks (8 acute and 5 chronic) identifying the risk associated with each one on a scale of 1 to 5, from lowest to highest risk, respectively. This analysis has been performed for the main climate-related scenarios (RCP 2.6, RCP 4.5 and RCP 8.5) and the following time horizons: current, 2030, 2040 and 2050.

The template requires determining which exposures are sensitive to the impact of physical risk, but the instructions of the European Banking Authority do not set forth under which specific metric or threshold this determination should be made. To this end, using the scale mentioned earlier, Santander has applied the conservative criteria suggested by the provider, deeming that an activity in a geography is sensitive to the impact of physical risks when at least one hazard provided by the external supplier is assessed as four or higher.

The scenario used for this assessment is RCP 4.5, which is deemed appropriate as it serves as a middle ground between the scenario that achieve the Paris Agreement target (RCP 2.6) and a scenario more typical of stress exercise (RCP 8.5).

The chosen time horizons have been deemed consistent with the average portfolio maturities, with conservative criteria. As such, for unsecured exposures, a time horizon of 2030 has been taken into account, which comfortably covers the average maturity of these portfolios. Moreover, for the longer-term secured portfolios, a time horizon of 2050 has been taken into account.

A more granular analysis was conducted in the main countries for the collateralized portfolio, the aim being to better identify regions with a large percentage of whose territory sensitive to the most relevant physical risks (flooding and storms), under the criteria explained earlier.

In general, and by following the methodology described, there was limited exposure affected by (acute and/or chronic) physical risk in the Santander Group's total portfolio. Activity such as agriculture, mining and some manufacturing activities that use natural resources such as water intensively are found to be more exposed to chronic risk. Despite in some cases immovable property are subject to chronic risks, the effect associated with these events is limited, with acute risks being the most significant.

The results obtained have been aggregated by analysis regions that are reported on in other reports by the Group (Europe/North America/South America).

**Table 83.ESG 5 - Banking book - Climate change physical risk: Exposures subject to physical risk**

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Europe	Gross carrying amount (Mln EUR)														
	of which exposures sensitive to impact from climate change physical events														
	Breakdown by maturity bucket					Average weighted maturity	of which exposures sensitive to impact from chronic climate change events	of which exposures sensitive to impact from acute climate change events	of which exposures sensitive to impact both from chronic and acute climate change events	Of which Stage 2 exposures	Of which non-performing exposures	Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions			
	<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	of which Stage 2 exposures							Of which non-performing exposures	of which Stage 2 exposures	Of which non-performing exposures	
1	A - Agriculture, forestry and fishing	4,023	1,824	552	48	41	3	2,333	146	13	357	150	-87	-23	-57
2	B - Mining and quarrying	4,166	713	34	1	11	1	266	526	34	26	15	-12	-1	-10
3	C - Manufacturing	32,254	5,259	1,879	65	122	3	6,637	694	6	1,566	329	-250	-87	-152
4	D - Electricity, gas, steam and air conditioning supply	9,747	2,729	856	1,422	133	7	3,048	2,092	—	154	66	-55	-3	-46
5	E - Water supply; sewerage, waste management and remediation activities	1,098	18	7	1	—	5	—	25	—	—	—	—	—	—
6	F - Construction	14,595	1,152	277	51	67	3	1,152	578	182	234	126	-68	-8	-56
7	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	47,375	1,042	169	58	86	3	147	1,229	20	216	95	-39	-6	-31
8	H - Transportation and storage	11,178	284	126	70	2	5	174	312	5	15	55	-10	-1	-8
9	L - Real estate activities	23,989	1,582	415	220	6	4	—	2,223	—	135	127	-55	-4	-47
10	Loans collateralised by residential immovable property	333,953	1,542	3,790	12,196	26,138	23	—	43,665	—	2,839	866	-194	-54	-128
11	Loans collateralised by commercial immovable property	37,468	3,585	1,255	1,031	133	6	—	6,005	—	718	434	-217	-40	-166
12	Repossessed colaterals	6,169	—	—	—	36	—	—	36	—	—	—	-17	—	—
13	Other relevant sectors (breakdown below where relevant)														

**Table 83.ESG 5 - Banking book - Climate change physical risk: Exposures subject to physical risk**

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	North America	Gross carrying amount (Mln EUR)													
		of which exposures sensitive to impact from climate change physical events													
		Breakdown by maturity bucket						of which exposures sensitive to impact from chronic climate change events	of which exposures sensitive to impact from acute climate change events	of which exposures sensitive to impact both from chronic and acute climate change events	Of which Stage 2 exposures	Of which non-performing exposures	Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		
		<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	Average weighted maturity							of which Stage 2 exposures	Of which non-performing exposures	
1	A - Agriculture, forestry and fishing	1,013	635	10	—	13	2	610	210	162	21	4	-8	-1	-2
2	B - Mining and quarrying	1,181	729	40	—	1	1	761	720	711	1	—	-1	—	—
3	C - Manufacturing	8,486	815	299	—	10	3	485	680	40	10	6	-8	-1	-3
4	D - Electricity, gas, steam and air conditioning supply	4,253	2,237	321	—	1	2	584	2,551	575	96	4	-39	-16	—
5	E - Water supply; sewerage, waste management and remediation activities	253	2	—	—	—	3	2	—	—	—	—	—	—	—
6	F - Construction	1,443	116	1	79	5	6	161	133	92	3	1	-2	—	-1
7	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	10,997	2,430	1	—	31	3	1,086	1,676	300	24	6	-14	-2	-3
8	H - Transportation and storage	2,895	624	355	124	2	5	53	1,086	34	470	3	-10	-7	-1
9	L - Real estate activities	14,410	1,900	853	1	—	4	34	2,719	—	241	7	-20	-10	—
10	Loans collateralised by residential immovable property	27,483	850	889	564	924	14	549	2,678	—	196	63	-20	-4	-9
11	Loans collateralised by commercial immovable property	11,375	1,781	170	—	—	2	166	1,785	—	172	8	-22	-9	-1
12	Repossessed colaterals	82	—	—	—	20	—	6	15	—	—	—	—	—	—
13	Other relevant sectors (breakdown below where relevant)														

**Table 83.ESG 5 - Banking book - Climate change physical risk: Exposures subject to physical risk**

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	South America	Gross carrying amount (Mln EUR)													
		of which exposures sensitive to impact from climate change physical events											Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		
		Breakdown by maturity bucket				Average weighted maturity	of which exposures sensitive to impact from chronic climate change events	of which exposures sensitive to impact from acute climate change events	of which exposures sensitive to impact both from chronic and acute climate change events	Of which Stage 2 exposures	Of which non-performing exposures	of which Stage 2 exposures	Of which non-performing exposures		
		<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years										
1	A - Agriculture, forestry and fishing	3,666	1,719	60	—	41	1	1,238	750	168	38	29	-26	-4	-12
2	B - Mining and quarrying	3,314	1,555	156	1	85	4	1,797	1,191	1,190	31	5	-14	-3	-2
3	C - Manufacturing	19,331	5,020	35	—	1	1	5,056	5	5	121	115	-91	-10	-76
4	D - Electricity, gas, steam and air conditioning supply	3,017	844	78	83	19	3	928	169	73	—	—	-1	—	—
5	E - Water supply; sewerage, waste management and remediation activities	204	14	—	—	—	2	14	1	1	2	1	-1	—	-1
6	F - Construction	2,626	345	12	—	—	2	358	55	55	44	33	-29	-5	-24
7	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	16,401	2,951	297	2	4	2	2,928	625	300	293	885	-239	-40	-190
8	H - Transportation and storage	4,374	228	19	53	5	5	214	112	21	19	5	-5	-1	-3
9	L - Real estate activities	3,578	3	—	—	—	1	3	—	—	—	—	—	—	—
10	Loans collateralised by residential immovable property	31,960	86	48	151	613	24	897	1	—	51	39	-5	-1	-4
11	Loans collateralised by commercial immovable property	8,901	417	44	6	4	3	471	—	—	15	5	-4	—	-3
12	Repossessed colaterals	182	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Other relevant sectors (breakdown below where relevant)														

## 9.9. Other climate change mitigating actions

The purpose of this template is to report all exposures to clients that are aimed at facilitating climate change adaptation and mitigation objectives and that are not reported in templates 6 to 9 (relating to GAR and BTAR data to be disclosed with data as of December 2023 and 2024 respectively).

The financial instruments included in this template, loans and bonds, contribute to the mitigation of physical and transition-based risks arising from climate change. The definition of these have followed the Article 18a of EBA/ITS/2022/01. According to the nature and characteristics of the assets included in this template, and with the current availability of information, these exposures have been considered as contributing to mitigate transition risks, and a specific subset of them (mainly agriculture related) mitigate physical risks.

We have classified exposures according to the sustainable finance classification system (SFCS), our internal guidance which includes criteria for considering whether an asset is green, social or sustainable across the Group's units and businesses. For further information, please refer to the 2022 Annual report.

As such, the following activities are included in the loans section for financial corporations, non-financial corporations, households and other counterparties:

- Activities supporting counterparties in the process of transitioning and adjusting to climate change mitigation and adaptation objectives, even if not assessed or fully aligned with the EU Taxonomy: agriculture, forestry and livestock, water and waste management, biodiversity and conservation projects.
- Sustainability-linked loans with sustainable KPIs.
- Funding of hybrid and gas cars (i.e.: natural gas or LPG internal combustion engine) as they are activities that contribute significantly to mitigate transitional risk by supporting the transition to a low-carbon emission economy.

As per the bonds section, information is reported for investments in bonds issued by financial corporations and non-financial corporations under the Corporate Green, Social and Sustainable Bond Principles. Apart from green bonds we have also reported sustainability linked bonds aligned with GHG emissions reductions (scope 1 and 2), reduction of food waste and packaging.

**Table 84.ESG 10 - Other climate change mitigating actions that are not covered in the EU Taxonomy**

	a	b	c	d	e	f
	Type of financial instrument	Type of counterparty	Gross carrying amount (million EUR)	Type of risk mitigated (Climate change transition risk)	Type of risk mitigated (Climate change physical risk)	Qualitative information on the nature of the mitigating actions
1	<b>Bonds (e.g. green, sustainable, sustainability-linked under standards other than the EU standards)</b>	Financial corporations	61.01	YES	NO	Sustainability linked bonds are included
2		Non-financial corporations	174.54	YES	YES	Sustainability linked bonds are included
3		Of which Loans collateralised by commercial immovable property	—	NO	NO	N/A
4		Households	—	NO	NO	N/A
5		Of which Loans collateralised by residential immovable property	—	NO	NO	N/A
6		Of which building renovation loans	—	NO	NO	N/A
7		Other counterparties	—	NO	NO	N/A
8	<b>Loans (e.g. green, sustainable, sustainability-linked under standards other than the EU standards)</b>	Financial corporations	271.13	YES	NO	This mainly includes sustainability linked loans and, additionally, financing of hybrid and gas vehicles.
9		Non-financial corporations	2,677.00	YES	YES	This mainly includes sustainability linked loans. In addition, financing of hybrid and gas vehicles, activities related to sustainable agriculture, afforestation/reforestation, water supply and sewage, water management and remediation are included.
10		Of which Loans collateralised by commercial immovable property	378.53	YES	NO	This mainly includes sustainability linked loans and, additionally, financing of activities related to sustainable agriculture.
11		Households	3,224.69	YES	YES	This mainly includes financing of hybrid and gas vehicles. In addition, activities related to sustainable agriculture and real estate are included.
12		Of which Loans collateralised by residential immovable property	130.61	YES	YES	Activities related to real estate are included
13		Of which building renovation loans	—	NO	NO	N/A
14		Other counterparties	0.01	YES	NO	Financing of hybrid and gas vehicles are included

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# 10

## Other risks

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# 10. Other risks



This chapter describes different types of risk, such as liquidity and funding risk, compliance and conduct risk, and capital risk.

## 10.1. Liquidity and funding risk

This section covers the qualitative requirements LIQA - Liquidity risk management and LIQB - Qualitative information on LCR, which complements template EU LIQ1. Also the provisions of letters (d), (e), (f) and (g) of the OVA requirement -Institution risk management approach, are complied with.

Liquidity risk entails the potential losses that may be incurred by an entity as a result of its inability to secure funding on the market and/or the higher borrowing costs of new sources of finance.

Our structural liquidity management aims to optimize maturities and costs, and to avoid undesired liquidity risks in funding Santander's operations.

It follows these principles:

- Decentralized liquidity model.
- Medium- and long-term (M/LT) funding needs must be covered by medium- and long-term instruments.
- High contribution from customer deposits due to the retail nature of the balance sheet.
- Wholesale funding sources diversified by instrument, investor, market, currency and maturity.
- Limited use of short-term funding.
- Sufficient liquidity reserves (including standing facilities/discount windows at central banks) to be used in adverse situations.
- Group and subsidiary compliance with regulatory liquidity requirements.

### Main figures

Million euros	2022	2021
<b>Liquidity Coverage Ratio</b>		
Total high-quality liquid assets (HQLA) (Weighted value - average)	303,330	281,783
Cash outflows - Total weighted value	257,311	224,876
Cash inflows - Total weighted value	69,185	54,114
Total net cash outflows (adjusted value)	188,126	170,762
Liquidity coverage ratio* <sup>11</sup>	161%	165%
<b>Net Stable Funding Ratio</b>		
Total available stable funding	1,121,194	1,123,411
Total required stable funding	923,018	891,442
NSFR ratio	121%	126%

The requirements of the EU LIQA table are addressed in the Economic and financial report (section 3.4) chapter of the 2022 Annual Report.



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### 10.1.1. Liquidity Coverage Ratio (LCR)

#### Description of the degree of centralisation of liquidity management and interaction among the Group's units:

The group has adopted a decentralised financing model through a structure of autonomous subsidiaries that are self-sufficient when it comes to liquidity.

Each subsidiary is responsible for covering the liquidity needs arising from its current and future business, either through deposits secured from its customers in its area of influence or through recourse to the wholesale markets in which it operates, within a management and supervision framework coordinated at group level. **Therefore, each subsidiary manages and monitors its own LCR ratio, ensuring that it remains at all times within the limits specifically established for that subsidiary.**

This funding model has proven itself to be highly effective during times of high market stress, since it effectively prevents problems at one area from impacting the borrowing capacity of other areas and, therefore, of the group as a whole, which can happen with centralised funding models.

The breakdown of the LCR ratio is essentially the sum of the individual ratios at each group unit, stripping out any one-off intra-group transactions.

<sup>11</sup> \* Liquidity coverage ratio is the average of 12 months

For more information, see the LIQ1 table in Appendix XXVI and Appendix XXVII available on the Group's website.



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### Explanation of the main drivers and inputs that contribute to the LCR

The Group's consolidated ratio is largely shaped by the individual ratios of its three main units: Santander Parent, Santander UK and Santander Brazil. These units acquire most of their funding from retail deposits, which are much more stable liabilities that generate fewer potential outflows from the LCR ratio. Most cash outflows from the LCR ratio stem from wholesale funding, which is considerably more unstable, although the group typically minimises and diversifies the maturities. The group's stock of liquid assets is very high quality. On average, approximately 98% of the assets that form part of the LCR numerator are Level 1. This is because the units' asset portfolios mainly comprise the public debt of the countries in which the group operates or countries with good credit ratings.

### The value of the Group's consolidated ratio in December was 152%, above the internal and regulatory requirement.

The Group's LCR performance has remained stable with increased available liquidity in 2022, after having strengthened the balance sheet thanks to the combination of growth in customer deposits, an increase in short-term instruments and more activity in medium- and long-term issuance, intended to keep regulatory liquidity ratios and internal metrics at prudent levels following the return of TLTRO-III, implemented by the European Central Bank and with an original maturity of 2023. Against the backdrop of Central Banks withdrawing stimuli, in the last quarter of 2022, Santander Group commenced early repayment of a significant portion of the funding received under the TLTRO-III programme.

### Composition of the liquidity buffer

The group's liquidity buffer consists mainly of Level 1 assets: cash and sovereign debt, with a broad level of diversification across issuers. In addition to the regulatory liquidity buffer, the group has an internal buffer that monitors the positions of other non-pledged liquid assets that can be immediately used as collateral for additional funding.

### Concentration of funding and liquidity sources

The group seeks to diversify its sources of wholesale financing, in terms of instruments, investors, markets, currencies and maturities, to ensure sound liquidity management. The group's model relies on its presence in major markets, affording it a large degree of diversification. Since most group units are commercially-oriented, they obtain a large part of their funding from deposits secured from retail customers, which are inherently more stable than wholesale funding sources.

In view of the above, there is no material risk in the concentration of funding. However, the group has a number of additional metrics in place to identify and monitor those counterparties whose funding is significant and whose

withdrawal could trigger liquidity issues. During 2022, the group's concentration risk levels were within management limits, ensuring the diversity of wholesale funding at unit level.

### Derivative exposures and potential collateral calls

Most derivatives transactions involving Group entities are subject to collateral contracts covering the market value of the transactions. Liquidity risk relates to the impact of adverse market scenarios leading to changes in the market values of derivatives, which generate additional liquidity needs due to the requirement to post collateral. Group units include liquidity risk in their LCR ratios using the historical look-back approach, in which the most significant net change in 30 days over the preceding 24 months is calculated and then added as additional liquidity needs.

### Currency mismatches in the LCR

The Group prepares its consolidated LCR ratio for each of its identified significant currencies, which reflect the geographies in which the group's units operate: euro (EUR), US dollar (USD), pound sterling (GBP), Brazilian real (BRL), Mexican peso (MXN) and Chilean peso (CLP). Each of the entities draws up its own LCR ratio in its significant currency. Units present a consistent position between the liquidity buffer and net outflows. Latin American countries have significant buffer positions in USD, so as to optimise the position and ensure high convertibility. The positions of foreign currencies are closely tracked, e.g. by conducting currency stress scenarios.

### Other items in the LCR calculation not captured in the LCR disclosure template that the institution considers relevant for its liquidity profile

Contingent lines, which are the last driver of the group's LCR, exhibit a stable performance over time, lines are tracked and monitored daily.

For further details, see the Economic and financial report chapter and the Risk management and control chapter in the 2022 Annual Report.



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## 10.1.2. Net Stable Funding Ratio (NSFR)

NSFR or the net stable funding ratio is a regulatory metric which represents required stable funding against available stable funding. This metric requires banks to maintain a solid balance sheet in which assets and off-balance sheet activities are funded with stable liabilities. Grupo Santander monitors this metric on a monthly basis, which is a higher requirement than the regulatory one.

We benefit from a high weight of customer deposits, which are more stable, from permanent liquidity needs deriving from commercial activity funded by medium- and long-term instruments and limited recourse to short-term funding. Taken together, this has enabled us to maintain a balanced liquidity structure, reflected in **NSFR ratios higher than 100%, both at Group and at the level of our subsidiaries at end December 2022.**

For more information, see the LIQ2 table in Appendix XXVIII available on the Santander's website.



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### 10.1.3. Asset Encumbrance

This section covers the qualitative requirements AE4 - Accompanying narrative information.

Following the guidelines laid down by the European Banking Authority (EBA), the concept of asset encumbrance includes both on-balance-sheet assets pledged as collateral in

transactions to obtain liquidity and off-balance-sheet assets that have been received and re-used for similar purposes, in addition to other assets associated with liabilities other than for funding reasons.

Disclosures on the Group required by Commission Delegated Regulation (EU) 2017/2295.

The scope used for the disclosures in this report is the same as the liquidity management scope on a consolidated basis, as regulated in CRR II 876/2019, which amends regulation 575/2013.

The value of the exposure shown in the tables below was calculated as the median of the values disclosed in the regulatory information for the four quarters of the year, in line with European Banking Authority guidelines.

As we can see from table AE1, the vast majority of unencumbered assets are loans that could be pledged as collateral.

**Table 85.AE1 - Encumbered and unencumbered assets**

EUR million		2022							
		10	30	40	50	60	80	90	100
		Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA	
10	Assets of the reporting institution								
30	Equity instruments	8,124	5,704	8,123.737	5,703.84	6,573	1,583	6,573.411	1,583.4595
40	Debt securities	71,397	53,517	70,926	53,062	99,126	63,432	102,433	61,943
50	of which: covered bonds	1,937	1,844	1,956	1,864	1,570	1,424	1,558	1,335
60	of which: securitisations	6,738	5,343	6,027	4,688	8,670	4,900	9,757	4,505
70	of which: issued by general governments	60,119	45,848	59,842	45,601	54,906	51,708	56,365	50,510
80	of which: issued by financial corporations	9,584	6,606	9,508	6,425	21,806	6,761	22,351	6,409
90	of which: issued by non-financial corporations	1,257	432	1,251	421	12,080	141	12,625	123
120	Other assets	299,075	1,236			1,259,612	207,965		

**Table 86.AE2 - Collateral received and own debt securities issued**

EUR million		2022			
		10	30	40	60
		Fair value of encumbered collateral received or own debt securities issued		Fair value of collateral received or own debt securities issued available for encumbrance	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA	
130	Collateral received by the reporting institution	105,905	86,995	31,317	24,009
140	Loans on demand	—	—	—	—
150	Equity instruments	5,797	4,803	6,642	4,875
160	Debt securities	98,589	81,809	24,252	18,868
170	of which: covered bonds	971	914	548	548
180	of which: securitisations	3,845	3,098	2,183	612
190	of which: issued by general governments	84,584	72,772	15,601	14,254
200	of which: issued by financial corporations	11,271	7,906	4,701	2,609
210	of which: issued by non-financial corporations	639	207	359	47
220	Loans and advances other than loans on demand	1,591	—	3	—
230	Other collateral received	—	—	109	—
240	Own debt securities issued other than own covered bonds or securitisations	36	—	619	—
241	Own covered bonds and asset-backed securities issued and not yet pledged			5,468	—
250	<b>Total assets, collateral received and own debt securities issued</b>	<b>480,833</b>	<b>113,937</b>		

Where our own covered bonds and asset-backed securities are retained and used, the pledged asset is included in Table 85 under loans and the related liability in Table 87.

The main sources and types of encumbrances and the level of over-collateralisation are set out in the following table:

**Table 87.AE3 - Sources of encumbrance**

EUR million	2022		
	10	30	
	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered	
10	Carrying amount of selected financial liabilities	300,776	403,380

The table below shows the amount of own covered bonds and asset-backed securities retained and not used as collateral and the value of the related underlying assets

**Table 88. Own covered bonds and asset-backed securities issued**

EUR million	2022	
	Non-encumbered	
	Carrying amount of the underlying pool of assets	Fair value of debt securities issued available for encumbrance
Own covered bonds and asset-backed securities issued	11,006	8,417
Retained covered bonds issued	4,623	3,494
Retained asset-backed securities issued	5,875	4,236

The contribution to the group's level of asset encumbrance on a consolidated basis by the various units is uneven across geographies. The assets of the Santander Consumer USA (United States) and Santander Consumer Finance (Eurozone) units are relatively more encumbered, due to the high weight of the consumer business. In the other units operating in the Eurozone and the United Kingdom, where covered bonds and securitisations are highly developed, the level of asset encumbrance is similar and close to the Group average. Asset encumbrance is also significant in Mexico, which is very active in asset repurchase agreements. The South American and Poland units have a relatively low level of asset encumbrance. Moreover, intra-group asset encumbrance is not material.

Without prejudice to the median values shown in the tables, it is important to note that asset utilisation levels in financing operations fell in the last quarter of the year, as a result of beginning to return funding programmes from central banks, namely the European Central Bank, which were implemented following the outbreak of the COVID pandemic. This funding has been replaced by other sources that, collectively, use fewer balance sheet assets.

In each unit, the encumbered assets are denominated in the same currency as the encumbrance, normally the unit's functional currency.

For further details on unencumbered assets (article 443 of the CRR), see the Economic and financial report chapter (Liquidity and funding management section) of the 2022 Annual Report.



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## 10.2. Compliance and conduct risk

Under the current configuration of the three lines of defence, Compliance and Conduct is a second line of defence which conducts independent control of risks, reporting organisationally to the Group chief risk officer (CRO). It reports directly and regularly to the board of directors and its committees, through the Group chief compliance officer (GCCO).

The Compliance and Conduct function covers all matters related to regulatory compliance, financial crime compliance (FCC), product governance and consumer protection, and reputational risk.

The main responsibility for Compliance and Conduct risks lies with the first lines of defence, which identify, assess and manage these risks. The Compliance and Conduct function is responsible for monitoring and overseeing these risks and assessing the impact on our risk appetite and risk profile.

To this effect, the Compliance function fosters Santander's adherence to rules, supervisory requirements, ethical principles and values of good conduct by setting standards and control standards and mechanisms, and discussing, advising and reporting, in the interests of employees, customers, shareholders and society in general.

The Santander Group's risk appetite in this area takes the form of a declaration of zero appetite for non-financial risk arising from material weaknesses in the controls that could pose a risk for violation of regulatory rules, laws and requirements, as well as non-compliance with the Group's policies and the occurrence of high impact reputational events. To ensure this, Compliance and Conduct Risk performs consistent management of this area, using a common methodology and taxonomy, which is fully aligned with the Risk function's principles, and establishes a series of compliance and conduct risk indicators, assessment matrices and qualitative statements.

In 2022, as in previous years, the annual process of preparing the risk appetite was completed towards the end of the year, with the aim of verifying that the current model is appropriate for measuring the Compliance and Conduct function's risk appetite and ensuring that it is aligned with the Group's risk appetite.

The composition of the indicators has been reviewed and some of their corporate thresholds have been adjusted, to provide a more accurate view and to ensure proper alignment with the strategy of the function, the environment of the financial sector and risk tolerance. These adjustments were approved by the relevant committees and passed on to the units concerned.

For further details on Compliance and Conduct risk, see the Risk management chapter (section 8) on the 2022 Annual Report.



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## 10.3. Model risk

### 10.3.1. Introduction

A model is a system, approach or method that makes quantitative estimates based on statistical, economic, financial and mathematical theories, techniques and assumptions about data. Its simplified representations, which contrast real and observed trends, help Santander focus on specific matters.

Santander uses models for scoring and rating and for measuring capital, behaviour trends, provisions, and market, operational, compliance and liquidity risk.

Models that are poorly developed or misused in decision-making can have bad consequences, including financial loss, poor decision-making and strategy, and harm to the Group's operations.

Model risk stems from:

- incorrect or incomplete data or faulty modelling.
- a model's misuse.

### 10.3.2. Model Risk Management

Santander has been measuring, managing and controlling model risk for years. Our Model Risk area covers the corporation and our core subsidiaries.

Our internal regulation sets out principles, obligations and procedures for organizing, approving, managing and governing models throughout their life cycle.

We manage model risk according to each model's importance. We synthesize the importance of non-regulatory models through tiering. Regulatory models, which are particularly important to Grupo Santander, are subjected to more intense monitoring and management.

In 2022 we launched MRM Next, a multi-year strategic plan to promote model risk culture and place Santander at the forefront in the banking industry. MRM Next replaces the regulatory Model Risk Management 2.0 (MRM 2.0) plan, which ended successfully in 2021, ensuring compliance with the regulatory standards ( ECB's Guide to internal models, 2018)

MRM Next coordinated with the global Models & Data unit, and supported by digital processes and specialist staff to effect advanced management based on deep understanding and prediction of portfolio trends.

For more information, see section 2.5 'Models and Data Unit' of the Annual Report.



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We are fully committed to enhancing our regulatory models (IRB and IMA) to comply with ECB's requirements. Our main priority for the year ahead will be to focus on the implementation of the EBA Repair Programme. We have submitted several model changes to the ECB during 2021 that will require formal approval, prior to implementation. This

approval will follow a thorough review process by the ECB that will require full input from Model Risk function.

Model risk management and monitoring are structured into what's known as the "model life cycle". They consist of these phases:



#### 1. Identification

Model risk monitoring must include identified models. For sound management, a complete inventory of models in use is key.

Our centralized inventory system is a single platform with uniform taxonomy and detailed descriptions of all the models that business units use. It enables us to monitor them closely by level of importance and tier.

#### 2. Planning

An internal annual exercise approved by our subsidiaries' governance bodies and ratified by the global team, which formulates strategic measures for models managed by the Model risk area and pinpoints needs for any models to be created, revised or implemented during the year.

#### 3. Development

This is the model development phase. The models & data unit, both at corporate and local level, is responsible for the development of the models according to the needs of each subsidiary. Development by a specialized team guarantees a higher, more efficient and centralised execution, while taking advantage of the synergies resulting from the combination of models and data. In addition, we have common Group methodological standards that promotes the quality of the models.

#### 4. Internal validation

Independent model validation is a regulatory requirement and key feature of our model risk management and control.

A specialist unit that is totally independent from developers and users issues technical assessments of internal model suitability. Each model is validated with a rating that summarizes the model risk associated to it. Validation intensity and frequency are well-defined and risk-driven.

Validation covers theory, methodology, technological systems and data quality to ensure effectiveness. It also involves detailed analysis of model performance as well as controls, reporting, uses, senior management involvement and other components of risk management.

Our model risk management is robust and consistent across our footprint. We have a single model inventory, a model risk team in 13 markets with a common way of working and the same internal policies, and a unique validation approach led by the Single Validation Office, which supports the second line of defence.

#### 5. Approval

Before we can use a model, internal governing bodies must approve it through a governance circuit in place for our model inventory, based on its level of importance.

#### 6. Implementation and use

In this phase, we add new models to our systems. Because this is another source of model risk, technical teams and model managers test proper model integration based on methodology and expectations.

#### 7. Monitoring and control

We regularly review models to ensure that they function correctly or, otherwise, adapt and redesign them. Monitoring teams must make sure models are managed according to the general model risk framework and other internal rules.

### 10.3.3. Key metrics

Group and subsidiary risk appetite uses thresholds based on models' average rating and the monitoring of changes in ratings distribution.

Model risk appetite metrics focus on the quality of models according to internal validation scores. Appetite varies based on models' importance. For instance, regulatory models are more demanding.

We monitor metrics monthly and have action plans to keep to set levels. We also monitor recommendations from the Internal validation team and include impact on metrics in our planning to keep model quality consistent with the appetite roadmap.

For more information, see the Risk Appetite section of the chapter 'Management processes and tools' in the Annual Report.



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## 10.4. Capital risk

The Group takes into account, in the context of structural risk, the risk of maintaining an insufficient quantity or quality of capital to meet internal business objectives, regulatory requirements or market expectations.

The Capital Risk function, as part of the second line of defence, monitors and oversees the capital activities carried out by the first line.

Through a range of processes such as capital planning and adequacy and the resulting implementation and monitoring of the budget, along with continuous measurement of capital and reporting and disclosure of information on capital, as shown below:



This control and oversight is carried out independently, mainly through the following processes:

- **Supervision of capital planning and adequacy** to ensure that capital levels fit with our risk profile and are adequate and consistent with the group's strategy.
- **Ongoing supervision of the measurement of the group's regulatory capital** by identifying the key metrics for the calculation, setting tolerance levels and reviewing significant variations and the consistency of the calculations, including individual transactions that impact capital. The performance of capital initiatives is also reviewed and challenged, in line with the risk appetite and planning.
- **Monitoring the effective risk transfer** of those securitisations that allow for the release of risk-weighted assets according to the applicable regulatory criteria.

The function aims to provide complete and regular monitoring and control of capital risk by verifying that capital coverage and adequacy reflect the Group's risk profile.

### Main initiatives in 2022

Compliance with capital contribution targets was monitored continuously throughout 2022 in such a way that the risk department allowed us to view the various threats and/or opportunities in terms of achieving the capital targets that year. The impact of market variables on capital levels was also monitored. The Group continued applying hedging policies to mitigate exchange rate volatility in the CET1 ratio.

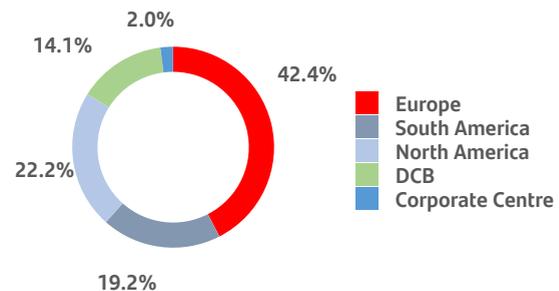
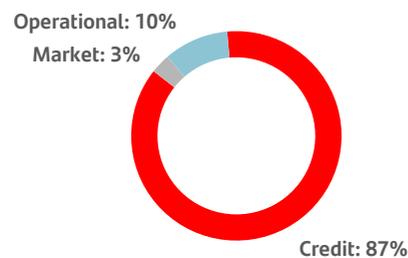
In parallel, and within the risk appetite framework, this department, together with the first line of defence, established solvency appetite limits, ensuring calibration in line with medium-low global risk resilient to stress conditions. With a view to ensuring a more robust risk appetite framework, certain new Solvency risk appetite metrics have been incorporated at Group and unit level. This has ensured better alignment in order to achieve the risk

profile defined at group level and better hedging against the risks to which the entity is exposed.

With regard to planning exercises, this year the analysis has included analysis of forecasts for loss absorption metrics (MREL/TLAC) in the various different scenarios, just as is done for other capital indicators.

As regards the task of monitoring SRT securitisations, it is important to note that, in 2022, capital risk has enhanced the introduction of improvements in the reporting and governance of corporate supervision at the origination stage. Likewise, as regards the monitoring process, the units have become more involved in periodic exercises and the process has been further automated thanks to the use of a corporate tool.

The distribution of risk-weighted assets by risk factor and by region at the end of December reflects the Group's main activity in credit risk and the Group's geographic diversification:



For further details on capital risk, see the 'Risk management' chapter of the 2022 Annual Report.



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# 11

## Risk takers remunerations

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# 11. Risk takers remunerations



This chapter provides different information on Santander Group's remuneration policies, including the total remuneration for identified staff in 2022, and the remuneration policy for 2023 and thereafter.

## 11.1. Relevant information contained in other documents

This section covers the qualitative requirement REMA - Remuneration policy.

The corporate governance chapter in the 2022 Annual Report, which was published together with the call to the 2023 General Shareholders' Meeting, describes:

- The functions of the remuneration committee regarding the remuneration of directors, members of senior management and other executives whose work could have a material impact on the Group's risk profile.
- The composition of the remuneration committee, directors' attendance at meetings, the involvement of board members on other committees, the approximate time dedicated to each task and how the committee operates.
- The principles of the remuneration policy of directors, in their capacity as such or for their performance of executive duties, and the corporate governance principles regulating remuneration.
- The 2022 remuneration policy for directors and senior management, focusing especially on variable remuneration and how it was applied in the year.
- And the changes in the principles or in the composition of the Board Members' remuneration in terms of the performance of their supervisory tasks and collective decision-making, with respect to those established in 2022, for the years 2023, 2024 and 2025.

The board of directors is responsible for approving the remuneration of directors and senior management, as well as the core payment terms of other executives and employees who, while not belonging to senior management, take on risks, carry out control functions (i.e. Internal Audit, Risk Management and Compliance) or receive total remuneration that places them in the same remuneration bracket as senior management, and employees who take on risk and whose professional activities may have a material impact on the Group's risk profile. All of these, together with the senior management and the Company's board of directors, are known as "identified staff" or Material Risk Takers).

The corporate governance chapter of the Annual Report also includes the following Pillar 3 disclosures:

- The decision-making process for setting the remuneration policy of directors, senior management and the core elements of the remuneration of identified staff.
- The basic features of the remuneration components.
- Information on the criteria applied for assessing the metrics that determine the variable remuneration of directors and senior management and their adjustment according to risk, as well as the results of the metrics for directors.
- The deferral policy and other conditions linked to the payment of variable remuneration, including the application of malus and clawback provisions.

## 11.2. Remuneration policy applicable to categories of staff that may have a material impact on the risk profile of Santander

Santander has specific guidelines in its remuneration policy for those professionals qualified internally as identified staff or material risk takers. These guidelines contain:

- The principles and criteria that determine which people have a material impact on the Group's risk profile, based on Commission Delegated Regulation (EU) 2021/923 of 25 March 2021 as explained in the section below.
- The specifics that modify the general remuneration policy for its application to this group, taking into account all applicable rules and European Banking Authority (EBA) guidelines, are described below.
- The mandate to apply the Group's remuneration policy, as adapted in each case so as to comply with local regulatory requirements and recommendations issued by supervisory bodies.

The remuneration of identified staff in 2022 is in line with the criteria in the Group's remuneration policy, which is reviewed annually to ensure that it is aligned with the long-term interests of shareholders, the Group's strategic targets and regulatory requirements.

The subsidiaries formally adhere to the Group's corporate remuneration policy, which implies the alignment of their practices with the principles it contains.

## 11.3. Main characteristics of the criteria for identifying categories of staff that may have a material impact on the risk profile of Santander

The Identified Staff have been defined according to the provisions of Law 10/2014, of 26 June, on the restructuring, supervision and capital adequacy of credit institutions, (Law 10/2014 or LOSS), transposing into Spanish law the text of Directive 2013/36/EU of the European Parliament and Council of 26 June 2013, on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (Directive CRD IV) and its successor, CRD V, is transposed through Royal Decree-Law 7/2021, of 27 April.

In accordance with the CRD V, people who may have a material impact on the Bank's risk profile are deemed to include senior management, employees who assume risks, employees who exercise control functions and all employees who receive total remuneration that includes them in the same remuneration bracket as senior management and employees who assume risks. In addition to the previous definition, European legislation, through the publication of Commission Delegated Regulation (EU) No. 2021/923, 25 March 2021, supplementing CRD V with regard to the regulatory technical standards on appropriate qualitative and quantitative criteria for identifying personnel categories whose professional activities have a material impact on an institution's risk profile (hereinafter, "Delegated Regulation 2021/923"), that together with Directive 2019/879, establishes a closed list of those relating to the application of reduction (malus) and recovery (clawback) clauses.

Santander implements the quantitative and qualitative criteria in the regulation to determine the members of identified staff and has further supplemented these criteria with additional internal criteria. The following persons generally qualify as identified staff based on these criteria:

- Based on qualitative criteria, staff members who work at a material business unit, such as:
  - Members of the management body and senior management.
  - Members of staff with managerial responsibilities with regard to the entity's control functions or significant business units.
  - Those responsible for legal affairs, sound accounting policies and procedures, finance, including taxation and budgeting, conducting economic analysis, anti-money laundering and counter-terrorism financing, human resources, developing and implementing remuneration policy, information technology, information security, management of outsourcing arrangements for essential or important functions.
  - Members of senior risk committees and executives with powers to initiate, approve or veto significant credit and market risk proposals.
  - Traders authorised to take substantial positions in market risk.

- Members of the new products committee.
- By quantitative criteria:
  - Staff who have received significant remuneration in the previous financial year.
  - Managers receiving total remuneration of over €750 thousand in 2021.
  - Managers of companies with more than 1,000 employees whose remuneration is in the 0.3% highest in their country.
- By internal criteria:
  - Executives with a given level of credit or market risk responsibility at certain non-material units.
  - Heads of business units with a banking licence.
  - Managers of the managers identified by any of the qualitative criteria.

Additional criteria have also been defined to identify and classify the units to which the above criteria are applied. These criteria are based on simple and widely recognised parameters (such as capital, gross income, profit before taxes, franchise value or asset under management) and reflect the relative importance of each identified unit with an impact on the Group's risk profile.

Current legislation, best practices and market trends are taken into account when defining the proportionality standards. These apply to both the relative importance of the units and the degrees of responsibility of the positions occupied by the individuals, to facilitate implementation.

According to these criteria, the identified staff comprised 1,029 executives across Santander at year-end 2022, accounting for approximately 0.50% of total staff.

Finally, it is indicated that the entity has benefited from the exception established in Article 94, Section 3 b), of Directive 2013/36/EU.

## 11.4. Specific features of the remuneration policy applicable to the identified staff

In general:

- Fixed remuneration must represent a significant proportion of total compensation.
- Variable remuneration for the year shall not exceed 100% of the fixed remuneration, in any event, of the members of the independent control functions, and generally for other employees that are part of the identified staff, unless the General Shareholders' Meeting has authorised a higher percentage for these, which may not exceed 200%. In this respect, the General Shareholders' Meeting, held on 1 April 2022, authorised the increase up to 200% of the maximum percentage permitted, for a maximum of 696 members of the identified staff in 2022 and up to 50 additional beneficiaries, up to a maximum of 746 people in total.

Variable remuneration typically comprises:

- An incentive to be received partly in cash and partly in instruments. Payment of this incentive is deferred for a period of four to five years (up to seven years in the United Kingdom). Performance measurement elements in line with the strategy and long-term interests of shareholders. These elements, take into consideration quantitative and qualitative criteria that reflect the entity's results, return, capital performance, conduct in respect of customers and quality of the services provided thereto, risk management and compliance with legislation.
- Malus and clawback clauses, which are triggered in situations in which there is poor financial performance by the Bank as a whole, specific divisions or areas, or the exposure generated by the staff, attributable to the management of the person(s) in charge, based on the presence of, at least, some of the following factors:

(i) Significant failures in risk management by the Bank, a business or a risk control unit.

(ii) Increases in capital requirements in the Bank or one of its business units that were not planned at the time that exposure was generated.

(iii) Regulatory penalties or legal convictions for events that might be attributable to the unit or staff responsible for them. Failure to comply with the Bank's internal codes of conduct.

(iv) Improper conduct, whether individual or collective. Negative effects deriving from the marketing of unsuitable products and the liability of persons or bodies making such decisions will be considered especially significant.

- Ban on hedging deferred or retained shares or instruments and on transferring these in the twelve months following their delivery.

For control functions, the total remuneration package must be competitive within the market to attract sufficiently qualified and experienced employees. The individual objectives of these positions must be pegged to the performance of the control function rather than business results. Performance of

the control function must be assessed by staff members who are independent of the business units being supervised.

## 11.5. Application of the remuneration policy for the identified staff in 2022

The remuneration policy and the essential remuneration conditions of individuals belonging to the identified staff have been approved by Banco Santander's board of directors at the proposal of the remuneration committee. The human resources function and the risk and compliance functions in each Santander company have duly confirmed that this policy and the remuneration practices comply with applicable law and regulations.

This is confirmed by the third independent report issued in application of article 33.2 of Act 10/2014 of 26 June on the ordering, supervision and solvency of credit institutions. The risk supervision, regulation and compliance committee supervises the remuneration policy and remuneration schemes with the greatest impact to ensure that they are suitably aligned with risk management.

The essential elements with regard to variable remuneration include:

- The metrics used to determine the variable remuneration of senior management and other top executives, which have also been used to determine the variable remuneration of other members of the identified staff. These metrics are described in section 6.3.B ii) of the corporate governance chapter of the 2022 Annual Report.
- Deferral percentages and periods for the identified staff based on their category:
  - For the Group's executive directors and Promontorio executives:

	Immediate Payment Percentage	Deferred Percentage (**)	Deferral Period (**)	Deferred Portion Subject to Objectives (**)
Executive Directors, members of senior management(*) and those beneficiaries of the Award whose target(**) total variable remuneration is $\geq$ €2.7 mill.	40%	60%	5 years	Last 3 years (3/5 of Deferred Percentage)
Remaining members of senior management(*) and those beneficiaries of the Award whose target(**) total variable remuneration is $\geq$ €1.7 mill. (< €2.7 mill.).	50%	50%	5 years	Last 3 years (3/5 of Deferred Percentage)
Rest of Beneficiaries of the Award A.	60%	40%	4 years	Last 2 years (2/4 of Deferred Percentage)

(\*)For the purposes of these Regulations, senior management comprises all the members included in Banco de España's Register of senior officers.

(\*\*) In certain countries, the deferral percentage and the deferral period may also be different to comply with applicable local regulations or with the requirements of the competent authority in each case. Similarly, the deferred part subject to objectives can be applied to years that are not the last ones, but not before the third year.

- For the other members of the identified staff:

	Immediate Payment Percentage	Deferred Percentage (*)	Deferral Period (*)
Beneficiaries of the Award whose target total variable remuneration is $\geq$ €2.7 mill.	40%	60%	5 years
Beneficiaries of the Award whose target total variable remuneration is $\geq$ €1.7 mill. (< €2.7 mill.).	50%	50%	5 years
Other Beneficiaries of the Award.	60%	40%	4 years

(\*) In certain countries, the deferral percentage and the deferral period may also be different to comply with applicable local regulations or with the requirements of the competent authority in each case.

Note: Reference variable remuneration for an standard compliance (100% of the objectives).

- Pegging a part of the deferred amounts to fulfilment of multi-year objectives for executive directors, senior management and other executives based on their category. These metrics are described in section 6.3.B (iv) of the corporate governance chapter of the 2022 Annual Report.
- The suitability of financial instruments used for the portion of deferred remuneration in financial instruments: use of shares in Banco Santander S.A. or in any of its listed subsidiaries (such as Brazil and Poland) or equivalent instruments (Chile); and the ratio between these instruments.
- Defining the events that might trigger the application of malus and clawback provisions on the variable remuneration accruing in 2022. These events are described in the previous section and apply to all the identified staff.
- No discount is applied to deferred variable remuneration when calculating the ratio of variable to fixed components.

In addition to the general scheme of variable remuneration metrics, the corporate and investment banking business (Santander Corporate & Investment Banking, SCIB) follows a model that is widely applied across all geographies where the business carries out its activities. The model provides remuneration for achieving results using a partial pay-out system, pegging variable remuneration to the division's ordinary net profit, including provisions and other assimilated costs, and the budget objectives, with additional impact from the Group's results, ensuring alignment with it. The model includes the same categories of metrics – including capital, risks and customers – as used for senior management, although they may be adapted for the needs and requirements of the individual business.

For further details, see the corporate governance chapter of the 2022 Annual Report.



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## 11.6. Total remuneration of the identified staff in 2022

The following table shows the total remuneration of the identified staff in 2022, distinguishing between the supervisory function of the management body, the management function of the management body, other senior management and other identified staff:

**Table 89.REM1 - Remuneration awarded for the financial year**

EUR Thousands

		2022			
		a	b	c	d
		MB Supervisory function	MB Management function	Other senior management	Other identified staff
1		<b>Number of identified staff</b>			
		12	2	14	1,001
2		<b>Total fixed remuneration</b>			
		4,369	10,404	28,542	379,413
3		Of which: cash-based			
		4,369	6,951	19,328	308,649
EU-4a	Fixed remuneration	Of which: shares or equivalent ownership interests			
		—	—	—	—
5		Of which: share-linked instruments or equivalent non-cash instruments			
		—	—	—	—
EU-5x		Of which: other instruments			
		—	—	—	—
7		Of which: other forms			
		—	3,452	9,215	70,764
9		<b>Number of identified staff</b>			
		12	2	14	1,001
10		<b>Total variable remuneration</b>			
		—	13,248	31,832	453,534
11		Of which: cash-based			
		—	6,624	15,666	234,924
12		Of which: deferred			
		—	3,796	7,933	81,202
EU-13a	Variable remuneration	Of which: shares or equivalent ownership interests			
		—	3,888	15,766	210,251
EU-14a		Of which: deferred			
		—	2,474	8,033	102,443
EU-13b		Of which: share-linked instruments or equivalent non-cash instruments			
	—	2,736	400	7,338	
EU-14b		Of which: deferred			
	—	1,322	400	7,338	
EU-14x		Of which: other instruments			
	—	—	—	—	1,021
EU-14y		Of which: deferred			
	—	—	—	—	921
15		Of which: other forms			
	—	—	—	—	—
16		Of which: deferred			
	—	—	—	—	—
17	<b>Total remuneration</b>	<b>4,369</b>	<b>23,652</b>	<b>60,374</b>	<b>832,947</b>

The detail in the following table (REM 2) includes the special payments to personnel whose professional activities have a material impact on institutions' risk profile (identified staff):

**Table 90.REM2 - Special payments to staff whose professional activities have a material impact on institutions' risk profile (identified staff)**

EUR Thousands		2022			
		a	b	c	d
		MB Supervisory function	MB Management function	Other senior management	Other identified staff
<b>Guaranteed variable remuneration awards</b>					
1	Guaranteed variable remuneration awards - Number of identified staff	—	—	—	17
2	amount	—	—	—	21,162
3	Of which guaranteed variable remuneration awards paid during the financial year, that are not taken into account in the bonus cap	—	—	2,515	2,562
<b>Severance payments awarded in previous periods, that have been paid out during the financial year</b>					
4	Severance payments awarded in previous periods, that have been paid out during the financial year - Number of identified staff	—	—	—	19
5	Severance payments awarded in previous periods, that have been paid out during the financial year - Total amount	—	—	—	4,387
<b>Severance payments awarded during the financial year</b>					
6	Severance payments awarded during the financial year - Number of identified staff	—	—	—	42
7	Severance payments awarded during the financial year - Total amount	—	—	—	38,989
8	Of which paid during the financial year	—	—	—	38,411
9	Of which deferred	—	—	—	578
10	financial year, that are not taken into account in the bonus cap	—	—	—	37,544
11	Of which highest payment that has been awarded to a single person	—	—	—	9,270

The table REM 5 refers to the information on the remuneration of personnel whose professional activities have a material impact on the institution's risk profile (identified staff).

The Investment Banking area includes members of identified staff who belong to businesses related to corporate and investment banking (Santander Corporate & Investment Banking).

The Retail and Commercial Banking area covers all customer banking businesses, including all the people who provide support in the geographies, whether they are local senior executives or other categories.

**Table 91.REM5 - Information on remuneration of staff whose professional activities have a material impact on institutions' risk profile (identified staff)**

EUR Thousands										2022
	a	b	c	d	e	f	g	h	i	j
	Management body remuneration			Business areas						
	MB Supervisory function	MB Management function	Total MB	Investment banking	Retail banking	Asset management	Corporate functions	Independent internal control functions	All other	Total
1	Total number of identified staff									1,029
2	Of which: members of the MB									
3	Of which: other senior management			1	1	1	8	3	—	
4	Of which: other identified staff			99	619	21	51	211	—	
5	Total remuneration of identified staff									
	4,369	23,652	28,021	138,766	506,590	24,386	108,439	115,141	—	
6	Of which: variable remuneration									
	—	13,248	13,248	89,717	273,133	13,295	61,304	47,917	—	
7	Of which: fixed remuneration									
	4,369	10,404	14,773	49,049	233,457	11,091	47,135	67,224	—	

The total amount of severance payments and other benefits associated with contract termination, including pre-retirement payments, awarded during the year to members of the identified staff amounted to €38 million (no member of senior management during 2022 has received any severance payment or non-compete payment) for a total of 42 people with average seniority of 10.1 years. Out of that total, 6 people received an amount corresponding to more than two annual fixed remuneration payments, with a total vested value of severance payments of €26.1 million. The maximum amount of a single award was €9.3 million.

The area of independent control functions includes risk management, internal audit and compliance functions.

Corporate functions cover people belonging to the identified staff of corporate support areas (such as Human Resources, Technology and Operations, Intervention and management control, as well as other functions related to the control of regulatory capital, Communication, Executive Secretary, Strategy, Financial Planning, etc.).

The sum of variable components in 2022 for each member of the identified staff did not exceed the limit established in each case for 2022, which was either 100% or 200%, as authorised by the General Shareholders' Meeting. Specifically, the ratio of variable components of remuneration to fixed components for all the identified staff was 82% and the limits prescribed for each component were duly observed in all cases.

**Table 92.REM3 - Deferred remuneration**

EUR Thousands									2022
		a	b	c	d	e	f	EU - g	EU - h
Deferred and retained remuneration		Total amount of deferred remuneration awarded for previous performance periods	Of which due to vest in the financial year	Of which vesting in subsequent financial years	Amount of performance adjustment made in the financial year to deferred remuneration that was due to vest in the financial year	Amount of performance adjustment made in the financial year to deferred remuneration that was due to vest in future performance years	Total amount of adjustment during the financial year due to ex post implicit adjustments (i.e. changes of value of deferred remuneration due to the changes of prices of instruments)	Total amount of deferred remuneration awarded before the financial year actually paid out in the financial year	Total of amount of deferred remuneration awarded for previous performance period that has vested but is subject to retention periods
1	<b>MB Supervisory function</b>	—	—	—	—	—	—	—	—
2	Cash-based	—	—	—	—	—	—	—	—
3	Shares or equivalent ownership interests	—	—	—	—	—	—	—	—
4	Share-linked instruments or equivalent non-cash instruments	—	—	—	—	—	—	—	—
5	Other instruments	—	—	—	—	—	—	—	—
6	Other forms	—	—	—	—	—	—	—	—
7	<b>MB Management function</b>	<b>31,266</b>	<b>20,395</b>	<b>10,871</b>	<b>4,603</b>	—	-116	9,319	4,660
8	Cash-based	12,903	7,713	5,190	2,302	—	—	4,660	2,330
9	Shares or equivalent ownership interests	12,903	7,713	5,190	2,302	—	-116	4,660	2,330
10	Share-linked instruments or equivalent non-cash instruments	—	—	—	—	—	—	—	—
11	Other instruments	—	—	—	—	—	—	—	—
12	Other forms	5,459	4,968	491	—	—	—	—	—
13	<b>Other senior management</b>	<b>61,253</b>	<b>36,507</b>	<b>24,746</b>	<b>6,193</b>	—	-161	21,897	10,948
14	Cash-based	28,567	16,836	11,731	3,097	—	—	10,948	5,474
15	Shares or equivalent ownership interests	27,917	16,836	11,081	3,097	—	-161	10,948	5,474
16	Share-linked instruments or equivalent non-cash instruments	650	—	650	—	—	—	—	—
17	Other instruments	—	—	—	—	—	—	—	—
18	Other forms	4,120	2,835	1,285	—	—	—	—	—
19	<b>Other identified staff</b>	<b>270,647</b>	<b>180,399</b>	<b>90,248</b>	<b>19,317</b>	—	-485	242,804	121,402
20	Cash-based	135,066	90,010	45,056	9,659	—	—	121,402	60,701
21	Shares or equivalent ownership interests	126,338	90,010	36,328	9,659	—	-485	121,402	60,701
22	Share-linked instruments or equivalent non-cash instruments	8,728	—	8,728	—	—	—	—	—
23	Other instruments	—	—	—	—	—	—	—	—
24	Other forms	515	379	135	—	—	—	—	—
25	<b>Total amount</b>	<b>363,166</b>	<b>237,301</b>	<b>125,865</b>	<b>30,114</b>	—	-762	274,019	137,010

Lastly, the breakdown of the remuneration by salary band of the members of the identified staff in the whole of Santander is shown below:

**Table 93.REM4 - Remuneration of 1 million EUR or more per year**

		2022
		a
EUR	Identified staff that are high earners as set out in Article 450(i) CRR	
1	1 000 000 to below 1 500 000	152
2	1 500 000 to below 2 000 000	42
3	2 000 000 to below 2 500 000	27
4	2 500 000 to below 3 000 000	17
5	3 000 000 to below 3 500 000	6
6	3 500 000 to below 4 000 000	7
7	4 000 000 to below 4 500 000	10
8	4 500 000 to below 5 000 000	2
9	5 000 000 to below 6 000 000	4
10	6 000 000 to below 7 000 000	4
11	7 000 000 to below 8 000 000	2
12	8 000 000 to below 9 000 000	—
13	9 000 000 to below 10 000 000	1
14	10 000 000 to below 11 000 000	1
15	11 000 000 to below 12 000 000	—
16	12 000 000 to below 13 000 000	—
17	13 000 000 to below 14 000 000	1
18	14 000 000 to below 15 000 000	1
19	15 000 000 to below 16 000 000	—
20	16 000 000 to below 17 000 000	—
21	17 000 000 to below 18 000 000	1
<b>28</b>	<b>Total</b>	<b>278</b>

(\*) Remuneration assigned in financial year 2022 including deferred variable remuneration subject to long-term objectives at fair value that will be paid in 2026, 2027 and, where appropriate, 2028, depending on the level of achievement of the plan.

The data shown in this table reflects the Santander Group business model, with a strong presence in the United States and the United Kingdom (whose salaries are adapted to the local market in terms of competitiveness and cost of living) and with a positive evolution in the last years of the Corporate and Investment Banking activity.

## 11.7. Remuneration policy for 2023 and following years

The 2023 remuneration policy for directors is described in section 6.4 of the corporate governance chapter of the Annual Report. The main principles of the policy, along with the fixed and variable remuneration components and the variable remuneration policy for members of the identified staff, will comply with the rules and procedures for executive directors set out in the report referred to above. In particular, as regards the variable remuneration policy:

- The existence of a single incentive, which will be determined by a set of quantitative and qualitative metrics.
- The quantitative metrics, a relative performance multiplier versus market and a qualitative assessment which will include risk, compliance and ESG aspects, in the short-term incentive.
- Long-term metrics for senior managers: return on tangible equity (RoTE), relative performance of Banco Santander's total shareholder return (TSR) in relation to the weighted TSR of a reference group and metrics linked to environmental, social and corporate governance (ESG) criteria: percentage of women in managerial positions, financially empowered people, green financing and reduction of the exposure in thermal coal-related power.
- Part payment in cash or other instruments.
- Continued-employment, malus and clawback provisions.
- Other conditions, such as the ban on hedging and transferring shares in the twelve months following their delivery (three years in the case of executive directors unless the director already holds shares for an amount equivalent to 200% of their net annual salary (calculated on the basis of their gross annual salary). In such case, the regulatory obligation to hold shares is for one year from their grant date. And share options shall not be exercisable until one year after their delivery.

Delivery is conditional on the beneficiary remaining in the Group's employment, and is subject to the deferral rules and other regulatory restrictions, such as malus and clawback provisions.

Likewise, the board of directors, upon recommendation of the remuneration committee, may approve a new incentive to boost the transformation process of Banco Santander, being part of the variable remuneration of Group's employees, including members of identified staff.

For further details, see the corporate governance chapter of the 2022 Annual Report.



[Access 2022 Annual Report available on the Santander Group website](#)

Deferral periods for members of the identified staff are as follows:

- For the Group's executive directors and Promontorio executives:

	Immediate Payment Percentage	Deferred Percentage (**)	Deferral Period (**)	Deferred Portion Subject to Objectives (**)
Executive Directors, members of senior management(*) and those beneficiaries of the Award whose target(**) total variable remuneration is $\geq$ €2.7 mill.	40%	60%	5 years	Last 3 years (3/5 of Deferred Percentage)
Remaining members of senior management(*) and those beneficiaries of the Award whose target(**) total variable remuneration is $\geq$ €1.7 mill. (< €2.7 mill.).	50%	50%	5 years	Last 3 years (3/5 of Deferred Percentage)
Rest of Beneficiaries of the Award A.	60%	40%	4 years	Last 2 years (2/4 of Deferred Percentage)

(\*) For the purposes of these Regulations, senior management comprises all the members included in Banco de España's Register of senior officers.

(\*\*) In certain countries, the deferral percentage and the deferral period may also be different to comply with applicable local regulations or with the requirements of the competent authority in each case. Similarly, the deferred part subject to objectives can be applied to years that are not the last ones, but not before the third year.

- For the other members of the identified staff:

	Immediate Payment Percentage	Deferred Percentage (*)	Deferral Period (*)
Beneficiaries of the Award whose target total variable remuneration is $\geq$ €2.7 mill.	40%	60%	5 years
Beneficiaries of the Award whose target total variable remuneration is $\geq$ €1.7 mill. (< €2.7 mill.).	50%	50%	5 years
Other Beneficiaries of the Award.	60%	40%	4 years

(\*) In certain countries, the deferral percentage and the deferral period may also be different to comply with applicable local regulations or with the requirements of the competent authority in each case.

Note: Reference variable remuneration for an standard compliance (100% of the objectives).



# 12

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VI.	CC2 - reconciliation of regulatory own funds to balance sheet in the audited financial statements
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XV.	CCA - Capital and TLAC instruments main features - Own Funds
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XVII.	IRB parameter models by region
XVIII.	CR9 - AIRB Back-testing of PD per exposure class (fixed PD scale)
XIX.	CR9 - AIRB Retail Back-testing of PD per exposure class (fixed PD scale)
XX.	CR9 - FIRB Back-testing of PD per exposure class (fixed PD scale)
XXI.	CR9.1 - AIRB Back-testing of PD per exposure class (only for PD estimates according to point (f) of Article 180(1) CRR)
XXII.	CR9.1 - FIRB Back-testing of PD per exposure class (only for PD estimates according to point (f) of Article 180(1) CRR)
XXIII.	List of SPPEs
XXIV.	PV1 - Prudent valuation adjustments (PVA)
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XXVII.	LIQB - Qualitative information on LCR, which complements template EU LIQ1
XXVIII.	LIQ2 - Net Stable Funding Ratio

# Appendix I - Location of disclosures

## IMPLEMENTING TECHNICAL STANDARDS ON PUBLIC DISCLOSURES BY INSTITUTIONS UNDER PART EIGHT OF REGULATION (EU) NO 575/2013

Requirement	2022 Pillar 3 Location	
<b>Annex I. Disclosure of key metrics and overview of risk-weighted exposure amounts</b>		
<b>Annex II. Disclosure of key metrics and overview of risk-weighted exposure amounts (instructions)</b>		
KM1	Key metrics template	Table 1
OV1	Overview of risk weighted exposure amounts	Table 9
INS1	Insurance participations	N/A <sup>1</sup>
OVC	ICAAP information	Section 2.6
<b>Annex III. Disclosure of risk management policies and objectives</b>		
<b>Annex IV. Disclosure of risk management policies and objectives (instructions)</b>		
OVA	Institution risk management approach	Section 3.1, 4.1, 5.1, 6.1, 7.1, 8.1, 10.1
OVB	Disclosure on governance arrangements	Section 3.2
<b>Annex V. Disclosure of the scope of application</b>		
<b>Annex VI. Disclosure of the scope of application (instructions)</b>		
LI1	Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories	Table 2
LI2	Main sources of differences between regulatory exposure amounts and carrying values in financial statements	Table 3
LI3	Outline of the differences in the scopes of consolidation (entity by entity)	Appendix V
LIA	Explanations of differences between accounting and regulatory exposure amounts	Section 1.4
LIB	Other qualitative information on the scope of application	Section 1.4
PV1	Prudent valuation adjustments (PVA)	Appendix XX
<b>Annex VII. Disclosure of own funds</b>		
<b>Annex VIII. Disclosure of own funds (instructions)</b>		
CC1	Composition of regulatory own funds	Appendix VIII
CC2	Reconciliation of regulatory own funds to balance sheet in the audited financial statements	Appendix VI
CCA	Main features of regulatory own funds instruments and eligible liabilities instruments	Appendix VII
<b>Annex IX. Disclosure of countercyclical capital buffers</b>		
<b>Annex X. Disclosure of countercyclical capital buffers (instructions)</b>		
CCyB1	Geographical distribution of credit exposures relevant for the calculation of the countercyclical buffer	Appendix X
CCyB2	Amount of institution-specific countercyclical capital buffer	Appendix XI
<b>Annex XI. Disclosure of the leverage ratio</b>		
<b>Annex XII. Disclosure of the leverage ratio (instructions)</b>		
LR1	LRSum: Summary reconciliation of accounting assets and leverage ratio exposures	Appendix XII
LR2	LRCom: Leverage ratio common disclosure	Appendix XIII
LR3	LRSpl: Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures)	Appendix XIV
LRA	Free format text boxes for disclosure on qualitative items	Section 2.4.4
<b>Annex XIII. Disclosure of liquidity requirements</b>		
<b>Annex XIV. Disclosure of liquidity requirements (instructions)</b>		
LIQA	Liquidity risk management	Section 10.1
LIQ1	Quantitative information of LCR	Section XXVI
LIQB	Qualitative information on LCR, which complements template EU LIQ1	Section XXVIII
LIQ2	Net Stable Funding Ratio	Appendix XXVIII
<b>Annex XV. Disclosure of credit risk quality</b>		
<b>Annex XVI. Disclosure of credit risk quality (instructions)</b>		
CRA	General qualitative information about credit risk	Section 4.1
CRB	Additional disclosure related to the credit quality of assets	Section 4.3
CR1	Performing and non-performing exposures and related provisions	Table 37
CR1-A	Maturity of exposures	Table 40
CR2	Changes in the stock of non-performing loans and advances	Table 39

<sup>1</sup> The exemption under Article 48 of the CRR is not used, so table INS1 on non-deducted holdings in insurance companies does not need to be published.

CR2-A	Changes in the stock of non-performing loans and advances and related net accumulated recoveries	N/A <sup>2</sup>
CQ1	Credit quality of forborne exposures	Table 35
CQ2	Quality of forbearance	N/A <sup>3</sup>
CQ3	Credit quality of performing and non-performing exposures by past due days	Table 36
CQ4	Quality of non-performing exposures by geography	Table 34
CQ5	Credit quality of loans and advances by industry	Table 33
CQ6	Collateral valuation - loans and advances	N/A <sup>4</sup>
CQ7	Collateral obtained by taking possession and execution processes	Table 38
CQ8	Collateral obtained by taking possession and execution processes – vintage breakdown	N/A <sup>5</sup>
<b>Annex XVII. Disclosure of the use of credit risk mitigation techniques</b>		
<b>Annex XVIII. Disclosure of the use of credit risk mitigation techniques (instructions)</b>		
CRC	Qualitative disclosure requirements related to CRM techniques	Section 4.7
CR3	CRM techniques overview: Disclosure of the use of credit risk mitigation techniques	Table 43
<b>Annex XIX. Disclosure of the use of standardised approach</b>		
<b>Annex XX. Disclosure of the use of standardised approach (instructions)</b>		
CRD	Qualitative disclosure requirements related to standardised model	Section 4.2.3
CR4	Standardised approach – Credit risk exposure and CRM effects	Table 31
CR5	Standardised approach	Table 32
<b>Annex XXI. Disclosure of the use of the IRB approach to credit risk</b>		
<b>Annex XXII. Disclosure of the use of the IRB approach to credit risk (instructions)</b>		
CRE	Qualitative disclosure requirements related to IRB approach	Section 3.3 Appendix XVII
CR6	IRB approach – Credit risk exposures by exposure class and PD range	Table 19, Table 20, Table 21
CR6-A	Scope of the use of IRB and SA approaches	Appendix IX
CR7	IRB approach – Effect on the RWEAs of credit derivatives used as CRM techniques	Table 45
CR7-A	IRB approach – Disclosure of the extent of the use of CRM techniques	Table 46
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CR9	AIRB Back-testing of PD per exposure class (fixed PD scale)	Appendix XVIII
CR9	AIRB Retail Back-testing of PF per exposure class (fixed PD scale)	Appendix XIX
CR9	FIRB Back-testing of PD per exposure class (fixed PD scale)	Appendix XX
CR9.1	AIRB approach – Back-testing of PD per exposure class (only for PD estimates according to point (f) of Article 180(1) CRR)	Appendix XXI
CR9.1	FIRB approach – Back-testing of PD per exposure class (only for PD estimates according to point (f) of Article 180(1) CRR)	Appendix XXII
<b>Annex XXIII. Disclosure of specialised lending</b>		
<b>Annex XXIV. Disclosure of specialised lending (instructions)</b>		
CR10	Specialised lending and equity exposures under the simple riskweighted approach	Table 23, Table 24, Table 25, Table 26, Table 27
<b>Annex XXV. Disclosure of exposures to counterparty credit risk</b>		
<b>Annex XXVI. Disclosure of exposures to counterparty credit risk (instructions)</b>		
CCRA	Qualitative disclosure related to CCR	Section 5.1
CCR1	Analysis of CCR exposure by approach	Table 52
CCR2	Transactions subject to own funds requirements for CVA risk	Table 50
CCR3	Standardised approach – CCR exposures by regulatory exposure class and risk weights	Table 53
CCR4	IRB approach – CCR exposures by exposure class and PD scale	Table 54, Table 55
CCR5	Composition of collateral for CCR exposures	Table 56
CCR6	Credit derivatives exposures	Table 57
CCR7	RWEA flow statements of CCR exposures under the IMM	N/A <sup>6</sup>
CCR8	Exposures to CCPs	Table 51

<sup>2</sup> Requirement CR2A of the EBA Disclosure ITS are not published because our NPL ratio does not exceed 5%

<sup>3</sup> Requirement CQ2 of the EBA Disclosure ITS are not published because our NPL ratio does not exceed 5%.

<sup>4</sup> Requirement CQ6 of the EBA Disclosure ITS are not published because our NPL ratio does not exceed 5%.

<sup>5</sup> Requirement CQ8 of the EBA Disclosure ITS are not published because our NPL ratio does not exceed 5%.

<sup>6</sup> Statement of flows of risk-weighted amounts of counterparty exposures subject to IMM is not included as Santander does not have an internal model to calculate counterparty risk EAD.

**Annex XXVII. Disclosure of exposures to securitisation positions****Annex XXVIII. Disclosure of exposures to securitisation positions (instructions)**

SECA	Qualitative disclosure requirements related to securitisation exposures	Section 6.1, 6.3
SEC1	Securitisation exposures in the non-trading book	Table 59
SEC2	Securitisation exposures in the trading book	Table 60
SEC3	Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as originator or as sponsor	Table 65
SEC4	Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as investor	Table 66
SEC5	Exposures securitised by the institution - Exposures in default and specific credit risk adjustments	Table 64
List of SPPEs	List of SPPEs	

**Annex XXIX. Disclosure of the use of standardised approach and internal model for market risk****Annex XXX. Disclosure of the use of standardised approach and internal model for market risk (instructions)**

MRA	Qualitative disclosure requirements related to market risk	Section 7.1
MR1	EU MR1 - Market risk under the standardised approach	Table 71
MRB	Qualitative disclosure requirements for institutions using the internal Market Risk Models	Section 7.1
MR2-A	Market risk under the internal Model Approach (IMA)	Table 69
MR2-B	RWA flow statements of market risk exposures under the IMA	Table 70
MR3	IMA values for trading portfolios	Table 73
MR4	Comparison of VaR estimates with gains/losses	Appendix XXV

**Annex XXXI. Disclosure of operational risk****Annex XXXII. Disclosure of operational risk (instructions)**

ORA	Qualitative information on operational risk	Section 8.1 and 8.2
OR1	Operational risk own funds requirements and risk-weighted exposure amounts	Table 78

**Annex XXXIII. Disclosure of remuneration policy****Annex XXXIV. Disclosure of remuneration policy (instructions)**

REMA	Remuneration policy	Section 11.1
REM1	Remuneration awarded for the financial year	Table 89
REM2	Special payments to staff whose professional activities have a material impact on institutions' risk profile (identified staff)	Table 90
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REM4	Remuneration of 1 million EUR or more per year	Table 93
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**Annex XXXV. Disclosure of encumbered and unencumbered assets****Annex XXXVI. Disclosure of encumbered and unencumbered assets (instructions)**

AE1	Encumbered and unencumbered assets	Table 85
AE2	Collateral received and own debt securities issued	Table 86
AE3	Sources of encumbrance	Table 87
AE4	Accompanying narrative information	Section 10.1.3

**IMPLEMENTING TECHNICAL STANDARDS ON DISCLOSURE OF INFORMATION ON EXPOSURES TO INTEREST RATE RISK ON POSITIONS NOT HELD IN THE TRADING BOOK**

Table	Table Title	2022 Pillar 3 Location
IRRBB1	Interest rate risks of non-trading book activities	Table 76
IRRBBA	IRRBB qualitative information	Section 7.4

**GUIDELINES ON UNIFORM DISCLOSURES UNDER ARTICLE 473A OF REGULATION (EU) NO 575/2013 AS REGARDS THE TRANSITIONAL PERIOD FOR MITIGATING THE IMPACT OF THE INTRODUCTION OF IFRS 9 ON OWN FUNDS - EBA/GL/2018/01**

Table	Table title	2022 Pillar 3 Location
IFRS 9-FL Template	Comparison of equity, capital ratios and leverage of entities with or with out the application of the transitional arrangements of IFRS 9 or analog ECL	Table 8

**GUIDELINES ON COVID -19 MEASURES REPORTING AND DISCLOSURE - EBA/GL/2018/10**

Table	Table title	2022 Pillar 3 Location
Template 1	Information on loans and advances subject to legislative and non-legislative moratoria	Table 47
Template 2	Breakdown of loans and advances subject to legislative and non-legislative moratoria by residual maturity of moratoria	Table 48
Template 3	Information on newly originated loans and advances provided under newly applicable public guarantee schemes introduced in response to covid-19 crisis	Table 49

**IMPLEMENTING TECHNICAL STANDARDS ON DISCLOSURE AND REPORTING OF MREL AND TLAC**

Table	Table title	2022 Pillar 3 Location
KM2	Key metrics – MREL and, where applicable, G-SII requirement for own funds and eligible liabilities	Tabla 13
TLAC1	Composition – MREL and, where applicable, the G-SII requirement for own funds and eligible liabilities	Tabla 14
TLAC3	Creditor ranking – resolution entity	Tabla 15
CCA - Own funds	Capital and TLAC instruments main features - Own Funds	Appendix XV
CCA - Eligible Liabilities	Capital and TLAC instruments main features - Eligible Liabilities	Appendix XVI

**IMPLEMENTING TECHNICAL STANDARDS (ITS) ON PRUDENTIAL DISCLOSURES ON ESG RISKS IN ACCORDANCE WITH ARTICLE 449a CRR<sup>7</sup>**

Table	Table title	2022 Pillar 3 Location
ESG1	Banking book- Climate Change transition risk: Credit quality of exposures by sector, emissions and residual maturity	Table 78
ESG2	Banking book - Climate change transition risk: Loans collateralised by immovable property - Energy efficiency of the collateral	Table 79
ESG3	Banking book - Climate change transition risk: Alignment metrics	Table 80
ESG4	Banking book - Climate change transition risk: Exposures to top 20 carbon-intensive firms	Table 81
ESG5	Banking book - Climate change physical risk: Exposures subject to physical risk	Table 82
ESG10	Other climate change mitigating actions that are not covered in the EU Taxonomy Page Size Break	Table 89

<sup>7</sup> According to art.449a CRRII the templates 6 *Summary of KPIs on the Taxonomy-aligned exposures*, 7 *Mitigating actions: Assets for the calculation of GAR*, 8 *GAR (%)* shall apply as of end 2023. In addition, template 9 *Mitigating actions: BTAR* shall apply as of end June 2024

## Appendix II -CRR Mapping

The following table links the CRR's articles on divulging information (Part 8) to the various sections of the document that provide the information required. The 'Location' column specifies the section of Pillar 3 or other public document in which the information is dealt with, in whole or in part. This information may be distributed throughout the document on a piecemeal basis.

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
<b>431. Scope of disclosures requirements</b>				
431.1	Requirement to publish Pillar 3 disclosures.	Pillar 3 Disclosures Report (Santander corporate website)		
431.2	Permission granted by the competent authorities under Part Three for the instruments and methodologies referred to in Title III shall be subject to the public disclosure by institutions of the information laid down therein.	Section 2.4.2.1.		
431.3	Institution must have a policy covering the frequency of disclosures, their verification, comprehensiveness and appropriateness, as well as policies for assuring the overall comprehension of their risk profile by market participants.	Section 1.2.2.		
431.4	All quantitative disclosures shall be accompanied by a qualitative narrative and any other supplementary information that may be necessary			
431.5	Explanation of SMEs ratings decision upon request.	Section 4.4.		
<b>432. Non-material, proprietary or confidential information</b>				
432.1	Institutions may omit information that is not material if certain conditions are respected.	Sections 1.2.1. and 1.2.2.		
432.2	Institutions may omit information that is proprietary or confidential if certain conditions are respected.	Section 1.2.2.		
432.3	Where 432.2 applies this must be stated in the disclosures, and more general information must be disclosed.	Section 1.2.2.		
<b>433. Frequency of disclosure</b>				
433	Institutions shall publish the disclosures required under Titles II and III in the manner set out in Articles 433a, 433b and 433c.	Section 1.2.2.		
<b>433a. Disclosures by large institutions</b>				
433a	Large institutions shall disclose the information outlined below with the following frequency:	Section 1.2.2.		
<b>433b. Disclosures by small and non-complex institutions</b>				
433b	Small and non-complex institutions shall disclose the information outlined below with the following frequency	N/A		
<b>433c. Disclosures by other institutions</b>				
433c	Institutions that are not subject to Article 433a or 433b shall disclose the information outlined below with the following frequency	N/A		
<b>434. Means of disclosure</b>				
434.1	Institutions shall disclose all the information required under Titles II and III in electronic format and in a single medium or location.	Section 1.2.1.		
434.2	Disclosures made under other requirements (e.g. accounting, listing) can be used to satisfy Pillar 3 requirements, if appropriate.	Section 1.2.1.		
<b>434a. Uniform disclosure formats</b>				

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
434a	EBA shall develop draft implementing technical standards specifying uniform disclosure formats, and associated instructions in accordance with which the disclosures required under Titles II and III shall be made.	N/A		
<b>435. Risk management objectives and policies</b>				
435.1	Disclose information for each separate category of risk:			
435.1.a	The strategies and processes to manage risks.	Chapters 3 to 10		Risk Management Chapter (Section 2)
435.1.b	Structure and organization of the risk management function.	Chapters 3 to 10		Risk Management Chapter (Section 2)
435.1.c	Risk reporting and measurement systems.	Chapters 3 to 10		Risk Management Chapter (Section 2)
435.1.d	Hedging and mitigating risk - policies, strategies and processes.	Chapters 3 to 10		Risk Management Chapter (Section 3.2.) (Section 3.5) (Sections 4 - 9)
435.1.e	A declaration of adequacy of risk management arrangements approved by the Board.	Section 3.1.3.		Risk Management Chapter (Section 2)
435.1.f	Inclusion of a concise risk statement approved by the Board.	Sections 1.4.1. and 3.1.3.		Risk Management Chapter (Section 2)
435.2	Information on governance arrangements, including information on Board composition and recruitment, and risk committees.			
435.2.a	Number of directorships held by Board members.	Section 3.2.1.		Corporate Governance Chapter
435.2.b	Recruitment policy for the selection of Board members, their actual knowledge, skills and expertise.	Section 3.2.		Corporate Governance Chapter
435.2.c	Policy on diversity of Board membership, objectives, and achievement status.	Section 3.2.		Corporate Governance Chapter
435.2.d	Existence of a dedicated risk committee, and number of meetings during the year.	Section 2.2.2.		Corporate Governance Chapter Risk Management Chapter
435.2.e	Description of the information flow on risk to the Board.	Section 2.2.2.		Corporate Governance Chapter Risk Management Chapter
<b>436. Scope of application of the requirements</b>				
436	Institutions shall disclose the following information regarding the scope of application of the requirements of this Regulation in accordance with Directive 2013/36/EU:			
436.a	Name of institution to which the requirements of this Regulation applies.	Section 1.2.1.		
436.b	Difference in the basis of consolidation for accounting and prudential purposes, briefly describing entities that are: (i) fully consolidated (ii) proportionally consolidated (iii) deducted from own funds (iv) neither consolidated nor deducted	Section 1.4.2.	Table 2 (L11) Table 3 (L12) Appendix V (L13)	
436.c	a breakdown of assets and liabilities of the consolidated financial statements prepared in accordance with the requirements on regulatory consolidation pursuant to Sections 2 and 3 of Title II of Part One	Section 1.2.2.	Table 2 (L11)	
436.d	a reconciliation identifying the main sources of differences between the carrying value amounts in the financial statements under the regulatory scope of consolidation as defined in Sections 2 and 3 of Title II of Part One	Section 1.4.2.	Table 2 (L11) Table 3 (L12)	
436.e	a breakdown of the amounts of the constituent elements of an institution's prudent valuation adjustment, by type of risks, and the total of constituent elements separately for the trading book and non-trading book positions;		Appendix XXIV (PV1)	
436.f	Impediments to transfer of own funds between parent and subsidiaries.	Sections 1.3.1. and 2.3.3.		
436.g	Capital shortfalls in any subsidiaries outside the scope of consolidation.	Section 1.2.1.		

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
436.h	The circumstance of making use of articles on derogations from: a) Prudential requirements b) Liquidity requirements for individual subsidiaries/entities.	Section 1.2.1.		
<b>437. Disclosure of own funds</b>				
437.1	Institutions shall disclose the following information regarding their own funds:			
437.1.a	A full reconciliation of Common Equity Tier 1 items, Additional Tier 1 items, Tier 2 items and filters and deductions applied pursuant to Articles 32 to 35, 36, 56, 66 and 79 to own funds of the institution and the balance sheet in the audited financial statements of the institution.		Tables 4 y 5 Appendix VI (CC2) Appendix VIII (CC1) Appendix VII (CCA)	
437.1.b	Description of the main features of the Common Equity Tier 1 and Additional Tier 1 instruments and Tier 2 instruments issued by the institution.	Section 2.4.1.	Appendix VII (CCA) Appendix VIII (CC1)	
437.1.c	Dull terms and conditions of all Common Equity Tier 1, Additional Tier 1 and Tier 2 instruments.	Section 2.4.1.	Appendix VII (CCA) Appendix VIII (CC1)	
437.1.d	Disclosure of the nature and amounts of the following:	Sections 2.2. and 2.3.	Appendix VIII (CC1)	
437.1.d.i	Each prudential filter applied pursuant to Articles 32 to 35;	Sections 2.2. and 2.3.	Appendix VIII (CC1)	
437.1.d.ii	Each deduction made pursuant to Articles 36, 56 and 66;	Sections 2.2. and 2.3.	Appendix VIII (CC1)	
437.1.d.iii	Items not deducted in accordance with Articles 47, 51, 56, 66 and 79.	Sections 2.2. and 2.3.	Appendix VIII (CC1)	
437.1.e	Description of all restrictions applied to the calculation of own funds in accordance with this Regulation and the instruments, prudential filters and deductions to which those restrictions apply.	Section 2.4.1.	Appendix VIII (CC1)	
437.1.f	Explanation of the calculation basis of the disclosed capital ratios estimated using elements of own funds determined, on a basis other than that laid down in this Regulation.	N/A		
<b>437a. Disclosure of own funds and eligible liabilities</b>				
437a	Institutions that are subject to Article 92a or 92b shall disclose the following information regarding their own funds and eligible liabilities: (a) the composition of their own funds and eligible liabilities, their maturity and their main features; (b) the ranking of eligible liabilities in the creditor hierarchy; (c) the total amount of each issuance of eligible liabilities instruments referred to in Article 72b; (d) the total amount of excluded liabilities referred to in Article 72a(2).	Sections 1.2.4. and 1.3.		
<b>438. Capital requirements</b>				
438	Institutions shall disclose the following information regarding their compliance with Article 92 of this Regulation and with the requirements laid down in Article 73 and in point (a) of Article 104(1) of Directive 2013/36/EU:			
438.a	a summary of their approach to assessing the adequacy of their internal capital to support current and future activities;	Section 2.4		Economic and Financial Report Chapter (Section 3.5)
438.b	the amount of the additional own funds requirements	Sections 2.4.1, 2.4.3. and 2.5.	Table 1 (KM1)	
438.c	upon demand from the relevant competent authority, the result of the institution's internal capital adequacy assessment process;	Section 2.4.		Economic and Financial Report Chapter (Section 3.5)
438.d	the total risk-weighted exposure amount and the corresponding total own funds requirement determined in accordance with Article 92, to be broken down by the different risk categories set out in Part Three and, where applicable, an explanation of the effect on the calculation of own funds and risk-weighted exposure amounts that results from applying capital floors and not deducting items from own funds;	Section 2.4.2.	Table 9 (OV1)	

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
438.e	The on- and off-balance-sheet exposures, the risk-weighted exposure amounts	Section 2.4.2.	Tables 23 - 27 (CR10)	
438.f	The exposure value and the risk-weighted exposure amount of own funds instruments held in any insurance undertaking, reinsurance undertaking or insurance holding company that the institutions do not deduct from their own funds	N/A		
438.g	The supplementary own funds requirement and the capital adequacy ratio of the financial conglomerate	N/A		
438.h	The variations in the risk-weighted exposure amounts of the current disclosure period compared to the immediately preceding disclosure period that result from the use of internal models, including an outline of the key drivers explaining those variations.		Table 17 (CR8) Table 70 (MR2-B)	
<b>439. Exposure to counterparty credit risk</b>				
439	Institutions shall disclose the following information regarding the institution's exposure to counterparty credit risk as referred to in Part Three, Title II, Chapter 6:			
439.a	Description of process to assign internal capital and credit limits to CCR exposures.	Sections 5, 5.1. and 5.6.	Table 51 (CCR8)	
439.b	Discussion of policies for securing collateral and establishing credit reserves.	Section 5.2.	Table 56 (CCR5)	
439.c	Discussion of management of wrong-way risk exposures.	Section 5.3.		
439.d	Disclosure of collateral to be provided (outflows) in the event of a ratings downgrade.	Section 5.4.		
439.e	The amount of segregated and unsegregated collateral received and posted per type of collateral,		Table 56 (CCR5)	
439.f	For derivative transactions, the exposure values before and after the effect of the credit risk mitigation		Table 52 (CCR1)	
439.g	For securities financing transactions, the exposure values before and after the effect of the credit risk mitigation		Table 52 (CCR1)	
439.h	The exposure values after credit risk mitigation effects and the associated risk exposures for credit valuation adjustment capital charge	Section 5.5.	Table 50 (CCR2)	
439.i	The exposure value to central counterparties and the associated risk exposures	Section 5.6.	Table 51 (CCR8)	
439.j	The notional amounts and fair value of credit derivative		Table 57 (CCR6)	
439.k	The estimate of alpha where the institution has received the permission of the competent authorities to use its own estimate of alpha		Table 52 (CCR1)	
439.l	Separately, the disclosures included in point (e) of Article 444 and point (g) of Article 452;		Table 52 (CCR1) Table 53 (CCR3) Tables 54 and 55 (CCR4) Table 56 (CCR5) Table 57 (CCR6)	
439.m	For institutions using the methods set out in Sections 4 to 5 of Chapter 6 of Title II Part Three, the size of their on- and off-balance-sheet derivative business		Table 46 (CCR1)	
<b>440. Capital buffers</b>				
440	Disclosure of the following information in relation to its compliance with the requirement for a countercyclical capital buffer referred to in Title VII, Chapter 4 of Directive 2013/36/EU:			

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
440.a	Geographical distribution of credit exposures relevant for the calculation of countercyclical capital buffer.	Section 2.2.3.	Appendix X (CCyB1)	
440.b	Amount of the specific countercyclical capital buffer.	Section 2.2.3.	Appendix XI (CCyB2)	
<b>441. Indicators of global systemic importance</b>				
441	Disclosure of the indicators of global systemic importance.	Section 2.4.3.		
<b>442. Credit risk adjustments</b>				
442	Institutions shall disclose the following information regarding the institution's exposure to credit risk and dilution risk:			
442.a	The scope and definitions that they use for accounting purposes of 'past due' and 'impaired' and the differences, if any, between the definitions of 'past due' and 'default' for accounting and regulatory purposes;	Section 4.5.		Risk Management Chapter (Section 3.3.)
442.b	A description of the approaches and methods adopted for determining specific and general credit risk adjustments;		Table 64 (SEC1)	Risk Management Chapter (Section 3.3.)
442.c	Information on the amount and quality of performing, non-performing and forborne exposures for loans, debt securities and off-balance-sheet exposures, including their related accumulated impairment, provisions and negative fair value changes due to credit risk and amounts of collateral and financial guarantees		Table 33 (CQ5) Table 34 (CQ4) Table 35 (CQ1) Table 37 (CR1) Table 38 (CQ7)	
442.d	An ageing analysis of accounting past due exposures;		Table 36 (CQ3)	Risk Management Chapter (Section 3.3.)
442.e	The gross carrying amounts of both defaulted and non-defaulted exposures, the accumulated specific and general credit risk adjustments, the accumulated write-offs taken against those exposures and the net carrying amounts and their distribution by geographical area and industry type and for loans, debt securities and off balance-sheet exposures;		Table 37 (CR1) Table 33 (CQ5) Table 34 (CQ4)	Risk Management Chapter (Section 3.3.)
442.f	Any changes in the gross amount of defaulted on- and off-balance-sheet exposures, including, as a minimum, information on the opening and closing balances of those exposures, the gross amount of any of those exposures reverted to non-defaulted status or subject to a write-off;		Table 39 (CR2)	Risk Management Chapter (Section 3.3.)
442.g.	The breakdown of loans and debt securities by residual maturity		Table 40 (CR1-A)	
<b>443. Unencumbered assets</b>				
443	Institutions shall disclose information concerning their encumbered and unencumbered assets. For those purposes, institutions shall use the carrying amount per exposure class broken down by asset quality and the total amount of the carrying amount that is encumbered and unencumbered.	Section 10.1.3.	Table 85 (AE1) Table 86 (AE2) Table 87 (AE3)	Economic and Financial Report Chapter (Section 3)
<b>444. Use of ECAIs</b>				
444	For institutions calculating the risk-weighted exposure amounts in accordance with Part Three, Title II, Chapter 2, the following information shall be disclosed for each of the exposure classes specified in Article 112:			
444.a	Names of the ECAIs used in the calculation of Standardised approach risk-weighted assets and reasons for any changes.	Section 4.2.3.		
444.b	Exposure classes associated with each ECAI.	Section 4.2.3.		
444.c	Description of the process used to transfer credit assessments to non-trading book items.	Section 4.2.3.		
444.d	Mapping of external rating to credit quality steps (CQS).	Section 4.2.3.		
444.e	Exposure value pre and post-credit risk mitigation, by CQS.		Table 31 (CR4) Table 32(CR5) Table 53(CCR3)	
<b>445. Exposure to market risk</b>				

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
445	Disclosure of position risk, large exposures exceeding limits, FX, settlement and commodities risk.	Section 7.2.	Table 65 (MR1)	
<b>446. Operational risk</b>				
446	Institutions shall disclose the following information about their operational risk management:			
446.a	The approaches for the assessment of own funds requirements for operation risk that the institution qualifies for;	Chapter 8	Table 78 (OR1)	
446.b	A discussion of the relevant internal and external factors being considered in the institution's advanced measurement approach;	Chapter 8	Table 78 (OR1)	
446.c	In the case of partial use, the scope and coverage of the different methodologies used.	Chapter 8	Table 78 (OR1)	
<b>447. Disclosure of key metrics</b>				
447	Institutions shall disclose the following key metrics in a tabular format:			
447.a	The composition of their own funds and their own funds requirements as calculated in accordance with Article 92;		Table 1 ( KM1)	
447.b	The total risk exposure amount as calculated in accordance with Article 92(3);		Table 1 ( KM1)	
447.c	Where applicable, the amount and composition of additional own funds which the institutions are required to hold		Table 1 ( KM1)	
447.d	Their combined buffer requirement which the institutions are required to hold		Table 1 ( KM1)	
447.e	Their leverage ratio and the total exposure measure as calculated in accordance with Article 429		Table 1 ( KM1)	
447.f	Information in relation to their liquidity coverage ratio		Table 1 ( KM1)	
447.g	Information in relation to their net stable funding requirement		Table 1 ( KM1)	
447.h	Their own funds and eligible liabilities ratios and their components, numerator and denominator			
<b>448. Exposure to interest rate risk on positions not included in the trading book</b>				
448.1	As from 28 June 2021, institutions shall disclose the following quantitative and qualitative information on the risks arising from potential changes in interest rates that affect both the economic value of equity and the net interest income of their non-trading book activities			
448.1.a	The changes in the economic value of equity calculated under the six supervisory shock scenarios for the current and previous disclosure periods;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	Risk Management Chapter (Section 4.4.)
448.1.b	The changes in the net interest income calculated under the two supervisory shock scenarios for the current and previous disclosure periods;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	Risk Management Chapter (Section 4.4.)
448.1.c	A description of key modelling and parametric assumptions used to calculate changes in the economic value of equity and in the net interest income	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.d	An explanation of the significance of the risk measures disclosed under points (a) and (b) of this paragraph and of any significant variations of those risk measures since the previous disclosure reference date;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.e	The description of how institutions define, measure, mitigate and control the interest rate risk of their nontrading book activities for the purposes of the competent authorities' review	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.e.i	A description of the specific risk measures that the institutions use to evaluate changes in their economic value of equity and in their net interest income;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
448.1.e.ii	A description of the key modelling and parametric assumptions used in the institutions' internal measurement systems that would differ from the common modelling and parametric assumptions referred to in Article 98(5a) of Directive 2013/36/EU for the purpose of calculating changes to the economic value of equity and to the net interest income, including the rationale for those differences;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.e.iii	A description of the interest rate shock scenarios that institutions use to estimate the interest rate risk	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.e.iv	The recognition of the effect of hedges against those interest rate risks, including internal hedges that meet the requirements laid down in Article 106(3)	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.e.v	An outline of how often the evaluation of the interest rate risk occurs	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.f	The description of the overall risk management and mitigation strategies for those risks;	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.1.g	Average and longest repricing maturity assigned to non-maturity deposits.	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	
448.2	By way of derogation from paragraph 1 of this Article, the requirements set out in points (c) and (e)(i) to (e) (iv) of paragraph 1 of this Article shall not apply to institutions that use the standardised methodology or the simplified standardised methodology referred to in Article 84(1) of Directive 2013/36/EU.	Sections 7.4. and 7.4.1.	Table 76 (IRRBB1)	

#### 449. Exposure to securitisation positions

449	Institutions calculating risk-weighted exposure amounts in accordance with Chapter 5 of Title II of Part Three or own funds requirements in accordance with Article 337 or 338 shall disclose the following information separately for their trading book and non-trading book activities:			
449.a	A description of their securitisation and re-securitisation activities, including their risk management and investment objectives in connection with those activities	Sections 6.3.1, 6.3.2 and 6.4		
449.b	The type of risks they are exposed to in their securitisation and re-securitisation activities by level of seniority of the relevant securitisation positions	Sections 6.3.3. and 6.3.4.		
449.c	Their approaches for calculating the risk-weighted exposure amounts that they apply to their securitisation activities	Section 6.4.	Table 65 (SEC3)	
449.d	A list of SSPEs falling into any of the following categories, with a description of their types of exposures to those SSPEs, including derivative contracts.	N/A		
449.e	A list of any legal entities in relation to which the institutions have disclosed that they have provided support	N/A		
449.f	A list of legal entities affiliated with the institutions and that invest in securitisations originated by the institutions or in securitisation positions issued by SSPEs sponsored by the institutions;	N/A		
449.g	A summary of their accounting policies for securitisation activity, including where relevant a distinction between securitisation and re-securitisation positions;	Section 6.3.		
449.h	The names of the ECALs used for securitisations and the types of exposure for which each agency is used;	Section 6.4.		
449.i	A description of the Internal Assessment Approach as set out in Chapter 5 of Title II of Part Three,	N/A		
449.j	Separately for the trading book and the non-trading book, the carrying amount of securitisation exposures,		Table 59 (SEC1) Table 60 (SEC2)	
449.k	For the non-trading book activities, the following information:		Table 65 (SEC3) Table 66 (SEC4)	
449.k.i	The aggregate amount of securitisation positions where institutions act as originator or sponsor and the associated risk-weighted assets and capital requirements by regulatory approaches		Table 65 (SEC3) Table 66 (SEC4)	
449.k.ii	The aggregate amount of securitisation positions where institutions act as investor and the associated risk weighted assets and capital requirements by regulatory approaches		Table 65 (SEC3) Table 66 (SEC4)	

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
449.l	For exposures securitised by the institution, the amount of exposures in default and the amount of the specific credit risk adjustments made by the institution during the current period, both broken down by exposure type.		Table 64 (SEC5)	
<b>449a. Disclosure of environmental, social and governance risks (ESG risks)</b>				
449a	From 28 June 2022, large institutions which have issued securities that are admitted to trading on a regulated market of any Member State, as defined in point (21) of Article 4(1) of Directive 2014/65/EU, shall disclose information on ESG risks, including physical risks and transition risks, as defined in the report referred to in Article 98(8) of Directive 2013/36/EU.	Chapter 9	Table 79 (ESG 1) Table 80 (ESG 2) Table 81 (ESG 3) Table 82 (ESG 4) Table 83 (ESG 5) Table 84 (ESG 10)	
<b>450. Remuneration policy</b>				
450	Remuneration disclosures (Material Risk Takers):	Chapter 11	Table 89 (REM1) Table 90 (REM2) Table 92 (REM3) Table 93 (REM4) Table 91 (REM5)	Corporate Governance Chapter
<b>451. Leverage</b>				
451.1	Institutions that are subject to Part Seven shall disclose the following information regarding their leverage ratio.			
451.1.a	The leverage ratio and how the institutions apply Article 499(2);		Appendix XIII (LR2)	
451.1.b	A breakdown of the total exposure measure referred to in Article 429(4), as well as a reconciliation of the total exposure measure with the relevant information disclosed in published financial statements;		Appendix XII (LR1) Appendix XIII (LR2) Appendix XIV (LR3)	
451.1.c	Where applicable, the amount of exposures and the adjusted leverage ratio		Appendix XIII (LR2)	
451.1.d	A description of the processes used to manage the risk of excessive leverage;	Section 2.4.4.	Table 12	
451.1.e	A description of the factors that had an impact on the leverage ratio during the period to which the disclosed leverage ratio refers.	Section 2.4.4.	Table 12	
451.2	Public development credit institutions as defined in Article 429a(2) shall disclose the leverage ratio without the adjustment to the total exposure measure determined in accordance with point (d) of the first subparagraph of Article 429a(1).		Appendix XIII (LR2)	
451.3	Large institutions shall disclose the leverage ratio and the breakdown of the total exposure measure.		Appendix XIII (LR2)	
<b>451a. Use of the IRB Approach to credit risk</b>				
451a.1	Institutions that are subject to Part Six shall disclose information on their liquidity coverage ratio, net stable funding ratio and liquidity risk management in accordance with this Article.	Sections 10.1.1. and 10.1.2.		
451a.2	Institutions shall disclose the following information in relation to their liquidity coverage ratio as calculated in accordance with the delegated act referred to in Article 460(1)			
451a.2a	The average or averages, as applicable, of their liquidity coverage ratio based on end-of-the-month observations over the preceding 12 months for each quarter of the relevant disclosure period		Appendix XXVI (LIQ1)	
451a.2b	The average or averages, as applicable, of total liquid assets, after applying the relevant haircuts, included in the liquidity buffer pursuant to the delegated act referred to in Article 460(1), based on end-of-the-month observations over the preceding 12 months for each quarter of the relevant disclosure period, and a description of the composition of that liquidity buffer		Appendix XXVI (LIQ1)	
451a.2c	the averages of their liquidity outflows, inflows and net liquidity outflows as calculated in accordance with the delegated act referred to in Article 460(1), based on end-of-the-month observations over the preceding 12 months for each quarter of the relevant disclosure period and the description of their composition		Appendix XXVI (LIQ1)	

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
451a.3	Institutions shall disclose the following information in relation to their net stable funding ratio as calculated in accordance with Title IV of Part Six		Appendix XXVIII (LIQ2)	
451a.4	Institutions shall disclose the arrangements, systems, processes and strategies put in place to identify, measure, manage and monitor their liquidity risk in accordance with Article 86 of Directive 2013/36/EU.	Section 10.1.		Risk Management Chapter (Section 3.4.)
<b>452. Use of the IRB Approach to credit risk</b>				
452	Institutions calculating the risk-weighted exposure amounts under the IRB Approach shall disclose the following information:			
452.a	Permission for use of the IRB approach from the competent authority.	Section 2.4.2.1.		
452.b	For each exposure class referred to in Article 147, the percentage of the total exposure value of each exposure class subject to the Standardised Approach or to the IRB Approach, as well as the part of each exposure class subject to a roll-out plan.		Appendix IX (CR6-A)	
452.c	The control mechanisms for rating systems at the different stages of model development, controls and changes, which shall include	Sections 3.3. and 4.5.		
452.c.i	The relationship between the risk management function and the internal audit function;	Sections 3.3. and 4.5.		
452.c.ii	The rating system review;	Sections 3.3. and 4.5.		
452.c.iii	The procedure to ensure the independence of the function in charge of reviewing the models from the functions responsible for the development of the models;	Sections 3.3. and 4.5.		
452.c.iv	The procedure to ensure the accountability of the functions in charge of developing and reviewing the models;	Sections 3.3. and 4.5.		
452.d	The role of the functions involved in the development, approval and subsequent changes of the credit risk models;	Sections 3.3.2. and 10.3.		
452.e	The scope and main content of the reporting related to credit risk models;		Appendix XVII (CRE)	
452.f	A description of the internal ratings process by exposure class, including the number of key models used with respect to each portfolio and a brief discussion of the main differences between the models within the same portfolio, covering:		Appendix XVII (CRE)	
452.f.i	The definitions, methods and data for estimation and validation of PD		Appendix XVII (CRE)	
452.f.ii	Were applicable, the definitions, methods and data for estimation and validation of LGD		Appendix XVII (CRE)	
452.f.iii	Where applicable, the definitions, methods and data for estimation and validation of conversion factors		Appendix XVII (CRE)	
452.g	As applicable, the following information in relation to each exposure class referred to in Article 147:		Tables 19 - 21 (CR6) Table 31 (CR4)	
452.g.i	Their gross on-balance-sheet exposure;		Tables 19 - 21 (CR6) Table 31 (CR4)	
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452.g.iii	Their exposure after applying the relevant conversion factor and credit risk mitigation;		Tables 19 - 21 (CR6) Table 31 (CR4)	
452.g.iv	Any model, parameter or input relevant for the understanding of the risk weighting and the resulting risk exposure amounts disclosed across a sufficient number of obligor grades (including default) to allow for a meaningful differentiation of credit risk;		Tables 19 - 21 (CR6) Table 31 (CR4)	

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
452.g.v	Separately for those exposure classes in relation to which institutions have received permission to use own LGDs and conversion factors for the calculation of risk-weighted exposure amounts, and for exposures for which the institutions do not use such estimates, the values referred to in points (i) to (iv) subject to that permission;		Tables 19 - 21 (CR6) Table 31 (CR4)	
452.h	Institutions' estimates of PDs against the actual default rate for each exposure class over a longer period		Appendix XVIII (CR9)	
<b>453. Use of credit risk mitigation techniques</b>				
453	Institutions applying credit risk mitigation techniques shall disclose the following information:			
453.a	Use of on and off-balance sheet netting.	Sections 4.7. and 5.7.	Table 42 (CR3), Table 44, 45 (CR7) Table 46 (CR7-A), Table 56 (CCR5)	Risk Management Chapter (Section 3.2.)
453.b	How collateral valuation is managed.	Section 4.7.		Risk Management Chapter (Section 3.2.)
453.c	Description of types of collateral used by the institution.	Section 4.7.		Risk Management Chapter (Section 3.2.)
453.d	Main types of guarantor and credit derivative counterparty, creditworthiness.	Sections 4.7. and 4.7.1.	Table 42 (CR3) Table 44 Table 45 (CR7) Table 46 (CR7-A)	Risk Management Chapter (Section 3.2.)
453.e	Market or credit risk concentrations within risk mitigation exposures.	Section 4.7.	Table 41	
453.f	For institutions calculating risk-weighted exposure amounts under the Standardised Approach or the IRB Approach, the total exposure value not covered by any eligible credit protection and the total exposure value covered by eligible credit protection after applying volatility adjustments		Table 43 (CR3)	
453.g	The corresponding conversion factor and the credit risk mitigation associated with the exposure and the incidence of credit risk mitigation techniques with and without substitution effect;		Table 31 (CR4) Table 46 (CR7-A)	
453.h	For institutions calculating risk-weighted exposure amounts under the Standardised Approach, the on- and off-balance-sheet exposure value by exposure class before and after the application of conversion factors and any associated credit risk mitigation;		Table 31 (CR4)	
453.i	for institutions calculating risk-weighted exposure amounts under the Standardised Approach, the riskweighted exposure amount and the ratio between that risk-weighted exposure amount and the exposure value after applying the corresponding conversion factor and the credit risk mitigation associated with the exposure		Table 31 (CR4)	
453.j	For institutions calculating risk-weighted exposure amounts under the IRB Approach, the risk-weighted exposure amount before and after recognition of the credit risk mitigation impact of credit derivatives		Table 45 (CR7)	
<b>454. Use of the Advanced Measurement Approaches to operational risk</b>				
454	Description of the use of insurance or other risk transfer mechanisms to mitigate operational risk.	Chapter 8	Table 78 (OR1)	
<b>455. Use of Internal Market Risk Models</b>				
455	Institutions calculating their capital requirements in accordance with Article 363 shall disclose the following information:			
455.a	For each sub-portfolio covered:			
455.a.i	Disclosure of the characteristics of the market risk models used;	Sections 7.2, 7.3.1, 7.3.2. and 7.3.3.		
455.a.ii	Disclosure of the methodologies used to measure incremental default and migration risk;			

Article	Brief Description	2022 P3DR Location	Tables	2022 Annual Report Location
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455.a.iv	Methodology for back-testing and validating the models.	Section 7.3.6.		
455.b	Scope of permission for use of the models.	Section 7.2.		
455.c	Policies and processes to determine trading book classification, and to comply with prudential valuation requirements.	Sections 7.3.1, 7.3.2. and 7.3.3.		
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## Appendix IV -Glossary

**Advanced IRB approach:** all the credit risk parameters are estimated internally by the entity, including the CCFs for calculating the EAD.

**Alignment metrics:** decarbonization targets to align a portfolio's emissions with the Paris Agreement targets.

**ALM (Asset liability management):** a series of techniques and procedures to ensure correct decision-making on investments and funding at the entity, taking into consideration the interrelation between the various on- balance-sheet and off- balance-sheet items.

**AMA (Advanced Measurement Approach):** an operational risk measurement technique set forth in Basel capital adequacy norms, based on an internal modelling methodology.

**AQR (Asset Quality Review):** asset quality review exercise performed by the European Central Bank.

**Asset-backed commercial paper (ABCP) programme:** a securitisation programme in which the securities issued predominantly take the form of commercial paper with an original maturity of one year or less.

**AT1 (Additional Tier 1):** capital which consists primarily of hybrid instruments.

**Backtesting:** the use of historical data to monitor the performance of the risk models.

**Basel III:** a set of amendments to the Basel II regulations published in December 2010, scheduled to take effect in January 2013 and to be gradually implemented until January 2019.

**Basic IRB approach:** all the risk parameters are determined by the regulator except for the probability of default, which is estimated internally by the bank. The CCFs required to calculate EAD are determined by the regulator.

**BCBS:** Basel Committee on Banking Supervision.

**BIS:** Bank for International Settlements.

**BRRD (Bank Recovery and Resolution Directive):** approved in 2014, the BRRD establishes the framework for the recovery and resolution of banks with the objective of minimising the costs for taxpayers.

**CBE 2/2016:** Banco de España Circular of 2 February 2016 on the supervision and solvency of credit institutions, which completes the adaptation to Spanish law of Directive 2013/36/EU and Regulation (EU) No 575/2013. The new Circular repeals Banco de España Circular 3/2008 to credit institutions on the determination and control of minimum own funds (except the parts referred to in Circular 5/2008 regarding the regime established therein) and section 11 of Banco de España Circular 2/2014.

**CBE 3/2008:** Banco de España Circular of 22 May 2008 on the calculation and control of minimum capital requirements.

**CBE 4/2004:** Banco de España Circular of 22 December 2004 on public and confidential financial reporting standards and model financial statement forms.

**CBE 9/2010:** Banco de España Circular of 22 December 2010 amending Circular 3/2008.

**CCAR (Comprehensive Capital Analysis Review):** a framework introduced by the Federal Reserve to review the capital planning and adaptation processes of the main US financial institutions.

**CCF (Credit conversion factor):** a conversion factor used for converting off-balance-sheet credit risk balances into credit exposure equivalents. Under the AIRB approach Santander applies the CCFs in order to calculate the EAD value of the items representing contingent liabilities and commitments.

**CCoB (Conservation Buffer):** a capital buffer equal to 2.5% of risk-weighted assets (and comprised fully of high-quality liquid assets) to absorb losses generated from the business.

**CCP (Central Counterparty Clearing House):** entity defined in article 2.1 of Regulation (EU) no. 648/2012.

**CCyB (Counter Cyclical Buffer):** a buffer whose objective is to mitigate or prevent cyclical risks arising from excessive credit growth at aggregate level. Accordingly, the CCB is designed to build up capital buffers during expansionary phases with a dual objective: to enhance the solvency of the banking system and to stabilise the credit cycle.

**CET1 (Common Equity Tier 1):** the highest quality capital of a bank.

**CoCos (Contingent Convertible Bonds):** debt securities that are convertible into capital if a specified event occurs.

**Common equity:** a capital measure that considers, among other components, ordinary shares, the share premium and retained profits. It does not include preference shares.

**Companies excluded from EU Paris-aligned Benchmarks:** companies that have a certain percentage of their revenues derived from activities considered polluting are not included in the benchmarks aligned with the Paris agreements.

**Concentration risk:** the risk of loss due to large exposures to a small number of debtors to which the entity has lent money.

**Confidence level:** in the context of value at risk (VaR) and economic capital, this is the level of probability that the actual loss will not exceed the potential loss estimated by value at risk or economic capital.

**COP 21:** United Nations Climate Change Conference held in 2015.

**Cost of capital:** The minimum return required by investors (shareholders) as compensation for the opportunity cost and risk assumed when investing their capital in the entity. It represents a "cut-off rate" or "minimum return" to be achieved, enabling analysis of the activity of business units and evaluation of their efficiency

**Counterparty credit risk:** the risk that a counterparty will default on a derivatives contract before its maturity. The risk could arise from derivatives transactions in the trading portfolio or the banking portfolio and, as with other credit exposures, it is subject to a credit limit.

**Credit default swap:** a derivatives contract that transfers the credit risk of a financial instrument from the buyer (who receives the credit protection) to the seller (who guarantees the solvency of the instrument).

**Credit risk:** the risk that customers are unable to meet their contractual payment obligations. Credit risk includes default, country and settlement risk.

**Credit risk mitigation:** a technique for reducing the credit risk of a transaction by applying coverage such as personal guarantees or collateral.

**CRM (Comprehensive Risk Measure):** the estimate of risk in the correlation trading portfolio.

**CRR (Capital Requirements Regulation) and CRD IV (Capital Requirements Directive):** directive and regulation transposing the Basel II framework into European Union law.

**CSP:** Commercial strategic plan.

**CSRD (Corporate Sustainability Reporting Directive):** EU directive that require large companies and listed companies to publish regular reports on the social and environmental risks they face and the impact of their activities.

**CVA (Credit Valuation Adjustment):** the difference between the value of the risk-free portfolio and the true portfolio value, taking into account counterparty credit risk.

**DEBA:** European Banking Authority. Created in 2010, it entered into operation in 2011. The EBA acts as a coordinator between the national entities responsible for safeguarding values such as the stability of the financial system, transparency of markets and financial products, and the protection of bank customers and investors.

**Default risk:** the risk that counterparties will not meet their contractual payment obligations.

**Derivatives:** financial instruments that derive their value from one or more underlying assets, e.g. bonds or currencies.

**DLGD (Downturn LGD):** the LGD estimated in adverse economic conditions.

**DNSH (Do not significantly harm):** principle that requires an assessment to ensure that the investment does not adversely affect one or more of the six environmental objectives defined in the EU Taxonomy.

**DTA:** deferred tax assets.

**D-SIIs:** Domestic Systemically Important Institutions.

**EAD (Exposure at Default):** the amount that the entity could lose in the event of counterparty default.

**ECAI:** External Credit Assessment Institution, such as Moody's Investors Service, Standard & Poor's Ratings Group and Fitch Group.

**ECB Governing Council:** the main decision-making body of the ECB, consisting of all members of the Executive Board and the governors of the national central banks of the Euro area countries.

**ECB Supervisory Board:** the body which undertakes the planning and execution of the ECB's supervisory tasks, carrying out preparatory work and making proposals for decisions for approval by the ECB Governing Board.

**Economic capital:** the figure that demonstrates to a high degree of certainty the quantity of capital resources that Santander needs at a given point in time to absorb unexpected losses arising from its current exposure.

**EDTF (Enhanced Disclosure Task Force):** task force that issues recommendations to enhance the transparency of financial institution disclosures to the market.

**EL (Expected loss):** a regulatory calculation of the average amount expected to be lost on an exposure, using a 12-month time horizon. EL is calculated by multiplying probability of default (a percentage) by exposure at default (an amount) and LGD (a percentage).

**EPC label:** letter code representing the energy performance of the collateral, from A (the most efficient from the point of view of energy saving) to G (the least efficient).

**EP score:** energy consumption of a collateral in kWh/m<sup>2</sup>.

**EPS (earnings per share):** an indicator used to measure a company's profitability over a specified period of time. EPS is calculated by dividing the company's profit for the period by the number of shares comprising its share capital.

**Equator Principles:** common baseline and risk management framework for financial institutions to identify, assess and manage environmental and social risks when financing projects.

**ESCC Policy (Environmental, Social & Climate Change):** Santander Group's criteria for (i) investing in entities, and/or (ii) providing financial products and/or services to customers involved in oil & gas, power generation and transmission, mining, metals and soft commodities activities.

**ESG (Environmental, Social and Governance):** is an evaluation of a firm's collective conscientiousness for social and environmental factors. It is typically a score that is compiled from data collected surrounding specific metrics related to intangible assets within the enterprise. It can be considered a form of corporate social credit score.

the body that has been charged with macroprudential supervision of the financial system in the European Union in order to contribute to preventing or mitigating to systemic risks to financial stability.

**ESG risks:** environmental, social and governance risks.

**EU Taxonomy:** Classification system, developed by the European Commission, that establishes a list of sustainable economic activities from an environmental point of view available to companies and investors.

**Exposure:** the gross amount that the entity could lose if the counterparty is unable to meet its contractual payment obligations, without taking into consideration any guarantees, credit enhancements or credit risk mitigation transactions.

**Financed emissions:** greenhouse gas emissions that are associated with a given loan or provision of financial services to a counterparty. It breaks down by three scopes:

- **Scope 1:** direct GHG emissions that occur from sources owned or controlled by the reporting company, such as emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.
- **Scope 2:** indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company.
- **Scope 3:** all other indirect GHG emissions (not included in Scope 2) that occur in the value chain of the company.

**First-loss tranche of a securitisation:** the most subordinated tranche of a securitisation, which is the first tranche to bear losses on the securitised exposures and therefore provides protection for the second-loss tranche and, where applicable, the senior tranches.

**FSB (Financial Stability Board):** international institution that monitors and makes recommendations on the global financial system.

**Fully-Loaded:** denotes full compliance with Basel III solvency requirements (which become mandatory in 2019).

**GHG:** greenhouse gas.

**GHOS (Group of Governors and Heads of Supervision):** supervisory body of the Basel Committee.

**Greenwashing:** the practice of gaining an unfair competitive advantage by marketing a financial product as environmentally friendly when, in fact, it does not meet basic environmental requirements.

**Global rating tools:** these assign a rating to each customer using a quantitative or automatic module.

**G-SIB (Global Systemically Important Bank) or SIFI (Systemically Important Financial Institution):** financial institutions which, because of their size, complexity and systemic interconnectedness, if allowed to fail could cause major disruptions to the financial system and economic activity.

**HQLA:** High Quality Liquid Assets.

**HVCRE:** High Volatility Commercial Real Estate.

**ICAAP:** internal capital adequacy assessment process.

**IFRS:** International Financial Reporting Standards.

**ILAAP (Internal Liquidity Adequacy Assessment Process):** process for the identification, measurement, management and control of liquidity implemented by the entity in compliance with article 86 of Directive 2013/36/EU.

**Implicit LGD:** this is used to back-test the regulatory LGD estimates. It is based on taking NPLMV as proxy for the Observed Loss, and then dividing the Observed Loss by the PD gives an implicit or observed LGD that can be compared to the regulatory LGD.

**Interest rate risk:** exposure of the bank's financial position to adverse movements in interest rates. Acceptance of this risk is a normal part of the banking business and can be a source of significant returns and creation of shareholder value.

**Internal ratings-based approach (IRB):** an approach based on internal ratings for the calculation of risk-weighted exposures.

**Internal validation:** a pre-requisite for the supervisory validation process. A sufficiently independent specialised unit of the entity obtains an expert opinion on the adequacy of the internal models for the relevant internal and regulatory purposes, and issues a conclusion on their usefulness and effectiveness.

**Investment entity of a securitisation:** any institution or subject, other than the originator or sponsor institution, holding a securitisation position.

**IRC (Incremental Risk Charge):** an estimate of the credit risk associated with unsecuritised positions in the trading book.

**IRP:** This report, titled Pillar 3 Disclosures in the English version. (the acronym is for the Spanish Informe de Relevancia Prudencial).

**IRRB:** Interest Rate Risk in the Banking Book.

**ISDA (International Swaps and Derivatives Association):** OTC derivative transactions between financial institutions are usually carried out under a master agreement established by this organisation which details the definitions and general terms and conditions of the contract.

**ITS:** Implementing Technical Standards.

**JST (Joint Supervisory Team):** one of the main forms of cooperation between the ECB and the national supervisors.

**LCR (Liquidity Coverage Ratio):** a ratio that ensures that a bank has an adequate stock of unencumbered high quality liquid assets that can be converted, easily and immediately, into cash in private markets, to meet its liquidity needs for a 30 calendar day liquidity stress scenario.

**LDP:** low-default portfolio.

**Leverage Ratio:** a complementary (non-risk based) regulatory capital measure that attempts to guarantee banks' financial resilience. The ratio is calculated by dividing eligible Tier 1 capital by exposure.

**LGD (Loss Given Default):** the portion of EAD not recovered at the end of the loan recovery process. It is equal to 1 minus the recovery rate (i.e.:  $LGD = 1 - \text{recovery rate}$ ). The definition of loss used to estimate LGD must be a definition of economic loss, not an accounting loss.

**Liquidity risk:** the risk that Santander might be unable to meet all its payment obligations when they fall due or might only be able to meet them at an excessive cost.

**LTV (Loan to value):** amount of credit extended / value of guarantees and collateral.

**Mark-to-market approach:** in regulatory terms, an approach for calculating the value of the credit risk exposure of counterparty derivatives (present market value plus a margin, i.e. the amount that takes into consideration the potential future increase in market value).

**Market risk:** the risk arising from uncertainty regarding changes in market prices and rates (including interest rates, share prices, exchange rates and commodity prices), the correlations between them and their levels of volatility.

**MDA:** Maximum Distributable Amount.

**Mezzanine tranche of a securitisation:** a securitisation position that is subordinated to the senior securitisation position, senior to the first-loss tranche and subject to a risk weight of less than 1250% and more than 25%.

**Model validation:** the process of assessing the effectiveness of a credit risk model using a pre-defined set of criteria, such as the model's discriminatory power, the appropriateness of the inputs and expert opinions.

**MPE (Multiple Point of Entry):** a resolution approach based on multiple points of entry.

**MREL (Minimum Requirement of Eligible Liabilities):** the final loss absorption requirement established in European legislation for institutions based on an assessment of their resolution plans.

**MSS (Minimum Social Safeguards):** due diligence to avoid any negative impacts and comply with the human and labour rights standards.

**Netting:** a bank's ability to reduce its credit risk exposure by setting off the value of its rights against its obligations with the same counterparty.

**Non-standardised customers:** customers who have been assigned a risk analyst due to the risk assumed. This category includes wholesale banking customers, financial institutions and certain enterprises in retail banking.

**NSFR (Net Stable Funding Ratio):** a ratio designed to ensure a bank has a balanced balance sheet structure, in which stable funding requirements are funded by stable liabilities.

**NZAMi (Net Zero Asset Management initiative):** international group of asset managers committed to supporting the goal of net zero greenhouse gas emissions by 2050.

**NZBA (Net-Zero Banking Alliance):** group of 43 of the world's leading banks with a focus on delivering the banking sector's ambition to align its climate commitments with the Paris Agreement goals.

**Operational risk:** the risk of incurring losses with regard to employees, contractual specifications and documentation, technology, infrastructure failures and disasters, projects, external influences and customer relations. This definition includes legal and regulatory risk but does not include business and reputational risk.

**Originator institution of a securitisation:** is an institution that:

- itself or through related entities was, directly or indirectly, involved in the original agreement that created the obligations or potential obligations of the debtor or potential debtor giving rise to the exposure being securitised; or
- purchases a third party's exposures for its own account and then securitises them.

**Over-the-counter (OTC):** off-exchange, that is, trading done between two parties (in derivatives, for example) without the supervision of an organised exchange.

**Paris Agreement:** international treaty on climate change. It stipulates that the involved parties will take the necessary actions to limit further increases in global average temperatures to well below 2°C and ideally to below 1.5°C.

**PCAF (Partnership for Carbon Accounting Financials):** initiative created in 2019 that aims to establish an international methodology for measuring and disclosing financed greenhouse gas emissions to financial institutions.

**Phased-in:** refers to compliance with current solvency requirements bearing in mind the transitional period for Basel III implementation.

**Physical risk:** risk of losses arising from any negative financial impact on the institution stemming from the current or prospective impacts of the physical effects of environmental factors on the institution's counterparties or invested assets.

- **Acute:** physical risks that include harsh meteorological events such as cyclones, hurricanes or floods, as well as the increased severity of these.

- **Chronic:** physical risks that include longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves.

**Pillar 1 – Minimum Capital Requirements:** the part of the New Basel Capital Accord that establishes the minimum regulatory capital requirements for credit, market and operational risk.

**Pillar 2 - Supervisory Review Process:** an internal capital adequacy assessment process reviewed by the supervisor with possible additional capital requirements for risk that are not included in Pillar 1 and the use of more sophisticated methodologies than Pillar 1.

**Pillar 3 - Market Discipline:** this pillar is designed to complete the minimum capital requirements and the supervisory review process and, accordingly, enhance market discipline through the regulation of public disclosure by the entities.

**Point-in-time (PIT) PD:** the probability of default at a particular point in time or in particular state of the economic cycle.

**Probability of default (PD):** this represents the likelihood that a customer or a transaction will fall into default. It is the probability that an event (the default) will occur within a given time horizon.

**QIS (Quantitative Impact Study):** ad-hoc requests by the EBA for studies analysing and calibrating the impact of new changes in regulation.

**Qualifying central counterparty (QCCP):** a central counterparty that has either been authorised under article 14 of Regulation (EU) no. 648/2012, or been recognised under article 25 of said Regulation.

**Rating:** the result of the objective assessment of the counterparties' future economic situation based on current characteristics and assumptions. The methodology for assigning the ratings depends largely on the type of customer and the available data. A wide range of methodologies for assessing credit risk is applied, such as expert systems and econometric methods.

**RCP (representative concentration pathways):** climate change projection scenarios estimated by the Intergovernmental Panel on Climate Change (IPCC).

**RDL:** Royal Decree Law.

**Regulatory Capital requirements:** the minimum amount of capital the regulatory authority requires the entity to hold to safeguard its capital adequacy, based on the amount of credit, market and operational risk.

**Eligible capital:** the volume of capital the regulatory authority considers eligible to meet capital requirements. The main components of eligible capital are accounting capital and reserves.

**Risk appetite:** the amount and type of risks considered reasonable to assume in the execution of its business strategy, so that Santander can maintain its ordinary activity in the event of unexpected circumstances. Severe scenarios are taken into account that could have a negative impact on the levels of capital, liquidity, profitability and/or the share price.

**Risk limits:** approval tools for certain risk types and levels.

**Risk-weighted assets (RWA):** calculated by assigning a level of risk, expressed as a percentage (risk weighting), to an exposure in accordance with the relevant rules under the standardised approach or the IRB approach.

**RoRAC:** Return on Risk Adjusted Capital.

**RoRWA:** Return on Risk-Weighted Assets.

**ROTA (Return On Total Assets):** ratio between net income and total average assets, or the amount of financial and operational income a company receives in a financial year as compared to the average of that company's total assets. The ratio is considered to be an indicator of how effectively a company is using its assets to generate earnings.

**RPK:** revenue passenger-kilometer.

**RTS:** Regulatory Technical Standards.

**RWA density:** ratio that compares institutions' total weighted assets and their total balance sheet, and can be interpreted as an average relative risk measure -according to regulatory criteria- of a bank's overall operations.

**SDG (Sustainable Development Goals):** universal set of goals, targets and indicators that UN member states will be expected to use to frame their agendas and policies over the next years.

**Senior tranche of a securitisation:** all tranches other than the first loss or mezzanine tranches. Within the senior tranche, the super senior tranche is the top tranche in the priority of payments, without taking into account for these purposes of any amounts owed under interest rate or currency derivatives, brokerage charges or similar payments.

**Securitisation:** a financial transaction or scheme whereby the credit risk associated with an exposure or pool of exposures is divided into tranches, with both of the following characteristics:

- Payments for the transaction or scheme are dependent upon the performance of the exposure or pool of exposures.
- The subordination of the tranches determines the distribution of losses during the ongoing life of the transaction or scheme

**Securitisation position:** exposures arising from securitisations. For these purposes, the providers of credit risk hedges for specific securitisation positions are considered to hold positions in the securitisation.

**SFT (Securities Financing Transactions):** any transaction where securities are used to borrow cash, or vice versa. They mostly include repurchase agreements (repos), securities lending activities and sell/buy-back transactions.

**Slotting Criteria:** an approach used for calculating risk weights for specialised lending exposures, which consists of mapping the internal ratings to five supervisory categories, each with its own specific risk weight.

**Special-purpose vehicle (SPV):** a company created for the sole purpose of acquiring certain assets or derivative exposures and of issuing liabilities that are associated solely with these assets or exposures.

**Sponsor institution of a securitisation:** an institution other than the originator that establishes and manages an asset-backed commercial paper programme, or other securitisation

scheme, that purchases exposures from third-party entities and to which liquidity or credit facilities or other credit enhancements are generally granted.

**SRB (Single Resolution Board):** the single resolution authority, which is the second pillar of the Banking Union after the Single Supervisory Mechanism.

**SRB:** Systemic Risk Buffer.

**SREP (Supervisory Review and Evaluation Process):** a review of the systems, strategies, processes and mechanisms applied by credit institutions and of their risks.

**SRF:** Single Resolution Fund.

**SRM:** Single Resolution Mechanism.

**SSM (Single Supervisory System):** the system of banking supervision in Europe. It comprises the ECB and the competent supervisory authorities of the participating EU countries.

**Standardised approach:** an approach for calculating credit risk capital requirements under Pillar I of Basel II. Under this approach, the risk weightings used in the capital calculation are determined by the regulator.

**Standardized customers:** customers which have not been expressly assigned a risk analyst. This category generally includes individuals, individual entrepreneurs and retail banking enterprises not classified as non-standardized customers.

**Stress testing:** used to describe various techniques for measuring the potential vulnerability to exceptional but plausible events.

**Stressed VaR:** measures the level of risk in stressed historical or simulated market situations.

**Sustainable Finance Classification System (SFCs):** internal guide with harmonized criteria to classify green, social and sustainable assets in all the Group's units and businesses.

**Synthetic securitisation:** transactions that involve a basket of credit swap agreements and bonds serving as collateral. They are called synthetic as rather than containing physical bonds, they carry credit derivatives, also known as synthetic contracts.

**TCFD (Task Force on Climate-related Financial Disclosures):** created by the Financial Stability Board to improve and increase reporting of climate-related financial information.

**tCS:** tonnes of crude steel.

**Through-the-cycle (TTC) PD:** probability of default adjusted to a full economic cycle. It may be taken as a long-term average of the point-in-time PD.

**Tier 1:** core capital less hybrid instruments.

**Tier 2:** supplementary capital instruments, mainly subordinated debt and general loan loss allowances, which contribute to the robustness of financial institutions.

**TLAC (Total Loss Absorbency Capacity):** an additional requirement to the minimum capital requirements set out in the Basel III framework for the absorption of total losses and effecting a recapitalisation that minimises any impact on financial stability, ensures the continuity of critical functions and avoids exposing taxpayers to losses. This requirement is applicable to all G-SIBs.

**TLTRO:** Targeted Longer-Term Refinancing Operations.

**Traditional securitisations:** a securitisation in which the economic interest in the securitized exposures is transferred by the transfer of ownership of those exposures from the originator to an SSPE (securitisation special purpose entity) or by sub-participation of an SSPE, where the securities issued do not represent payment obligations of the originator.

**TPI (Transition Pathway Initiative):** global initiative led by asset owners and supported by asset managers that assess the progress that companies are making on the transition to a low-carbon economy.

**Transition risks:** risk arising from political, legal, technological and market changes generated by the transition to a lower carbon economy.

**TRIM:** Targeted Review of Internal Models.

**TSC (Technical screening criteria):** specific requirements and thresholds that each activity covered in the EU Taxonomy will need to meet in order to be considered as significantly contributing to a sustainable objective.

**TSR (Total Shareholder Return):** relative performance of total shareholder returns. An indicator of the returns obtained by owners of a company over a period of one year on capital provided to the company.

**UNEP FI:** United Nations Environment Programme Finance Initiative.

**Unexpected loss:** unexpected losses (not covered by allowances) must be covered by capital.

**VaR (Value at Risk):** estimate of the potential losses that could arise in risk positions as a result of movements in market risk factors within a given time horizon and for a specific confidence level.

**Value creation:** Any profit generated above the cost of economic capital. Santander creates value when risk-adjusted returns (measured by RoRAC) exceed its cost of capital, and destroys value when the reverse occurs. It measures the risk-adjusted return in absolute terms (monetary units), supplementing the RoRAC result.

