ING Group
Additional Pillar III Report 2018

Additional Pillar III Report

amounts in millions of euros, unless stated otherwise

Navigation map

The index below enables the readers to track the main risk items through the various risk disclosures.

Non-financial risk

	Subjects	Risk Management	Pillar III
Operational risk is the risk of direct or indirect loss returning from inadequate or failed internal processes, people and systems or from external events.	Governance	352	
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Compliance risk is the risk of impairment of ING's integrity, leading to damage to ING's reputation, legal or regulatory sanctions, or financial loss, as a result of failure (or perceived failure) to comply with applicable laws, regulations, ING policies and minimum standards and the ING values.	Operational risk and main developments	355	64
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Business risk

	Subjects	Risk Management	Pillar III
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Introduction

Basis of disclosure
The information in this report relates to ING Groep N.V. and all of its subsidiaries (hereafter ING Group). There are no differences between the scope of consolidation for prudential purposes and the scope of consolidation for accounting purposes as reported in the annual accounts in Note 1 'Accounting policies', Note 49 'Principal subsidiaries' and Note 50 'Structured entities.'

Assurance/validity
The Pillar III disclosures have been subject to ING Group's internal control assessments and validation mechanisms, to ensure compliance with laws and regulations. The Disclosure Committee (DisCom), responsible for all ING Group disclosures, assesses the accuracy of the content before reporting their conclusions to the Audit Committee (AC) for review and submission to the Supervisory Board for final approval. This report has not been audited by ING Group's external auditor.

Regulatory framework
In 2010, the Basel III framework was adopted and consequently translated in the European Union (EU) into regulation through the Capital Requirement Regulation (CRR) and Capital Requirement Directive IV (CRD IV). The CRR is binding for all EU member states and became effective per 1 January 2014.

The Basel Committee's framework is based on three pillars. Pillar I on minimum capital requirements, which defines the rules for the calculation of credit, market and operational risk. Pillar II, for risks not included in Pillar I, is about Supervisory Review and Evaluation Process (SREP), which requires banks to undertake an internal capital adequacy assessment process (ICAAP) to identify and assess risks and maintain sufficient capital to face these risks, and an internal liquidity adequacy assessment process (ILAAP) focusing on maintaining sufficient liquidity (and funding) risk management. Pillar III is on market discipline and transparency, requiring disclosures to allow investors and other market participants to understand the risk profiles of individual banks.

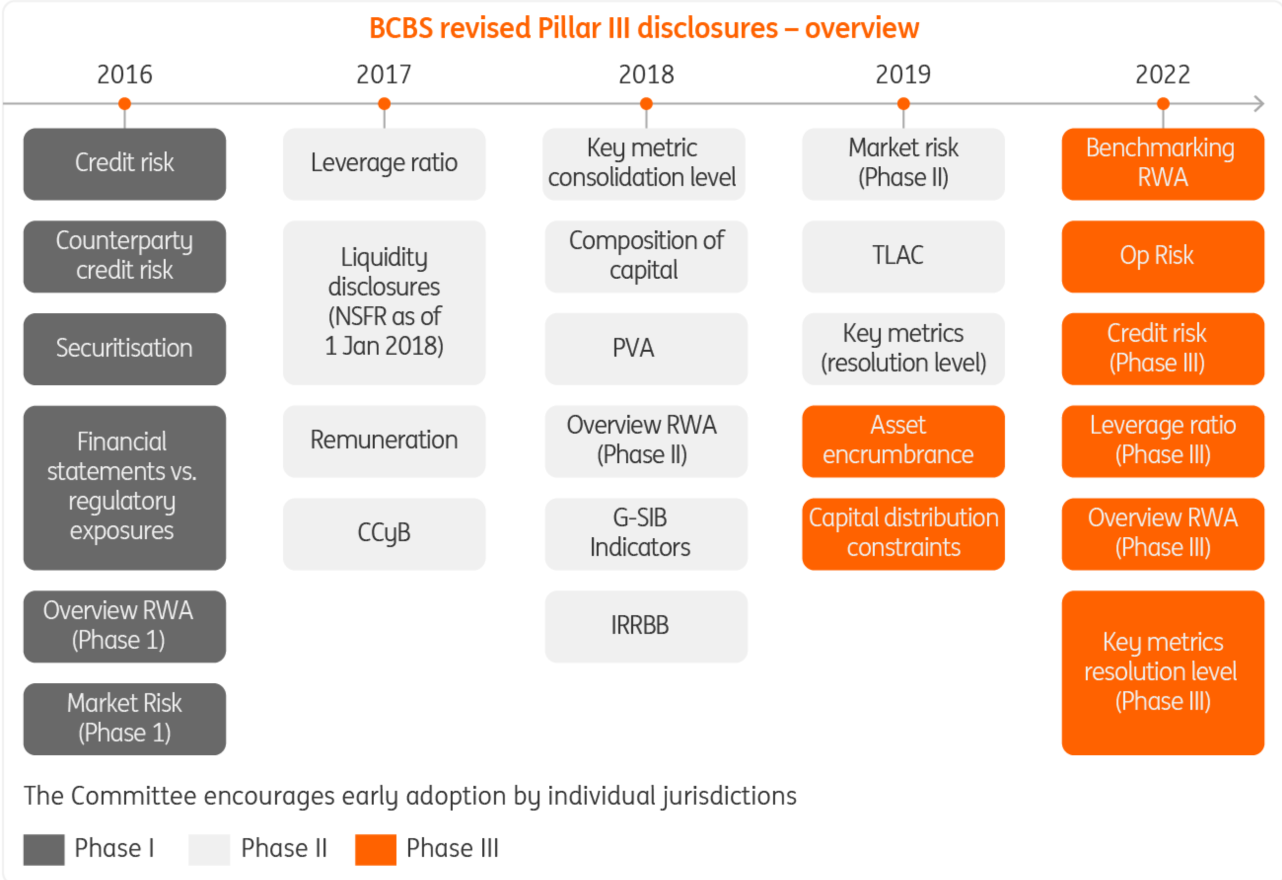
ING Group prepares the Pillar III report in accordance with the CRR and CRD IV as required by the supervisory authority. ING Group's 'Additional Pillar III Report' contains disclosures for regulatory capital requirements, credit risk, including counterparty credit risk, securitisations and other non-credit obligation assets (ONCOA), market risk, liquidity risk and non-financial risk disclosures. Furthermore, the report will discuss regulatory exposures and risk weighted assets. For more information on these topics, we refer you to the Risk Management and Capital Management sections of the Annual Report, which present a comprehensive discussion on both topics.

The Pillar III report is published on an annual basis. However, some capital requirements as laid down in Article 438 as well as information on risk exposure or other items prone to rapid change are disclosed on a quarterly or semi-annual basis. Some subsidiaries publish information on capital and solvency on their websites or annual reports pursuant to local regulatory requirements.

Developments in disclosure requirements

BCBS Revised Pillar III framework (RPF)
With respect to market information disclosures, the Basel Committee on Banking Supervision (BCBS) announced in 2014 its ambition to revise and consolidate the Pillar III disclosure requirements. The BCBS published in December 2018 updated Pillar 3 disclosure requirements. These requirements, together with the updates published in January 2015 and March 2017, complete the Pillar 3 framework. They set out (i) additional disclosure requirements to the Pillar III framework arising from the finalisation of the Basel III post-crisis regulatory reforms in December 2017, such as new disclosure requirements to benchmark the risk-weighted asset (RWA) outcomes of banks' internal models with RWA calculated according to the standardised approaches, (ii) new disclosures for asset encumbrance, (iii) new disclosures on capital distribution constraints (when required by national supervisors at the jurisdictional level) and (iv) amendments to the scope of application of disclosures on the composition of regulatory capital to expand it to resolution groups, instead of the current scope being the consolidated group.

The revised Pillar III framework (RPF) is the result of an extensive review of Pillar III reports, in which the existing Pillar III disclosure requirements are superseded. The result applies to internationally active banks at the highest consolidated level. The implementation timeline, as displayed in the total overview of the RPF below, is highly dependent upon the finalisation of the underlying regulatory standards.



European Regulation

CRR/CRD IV review

On 23 November 2016, the European Commission (EC) published proposals amending major European regulations for the CRD IV and CRR essential to further reinforce banks' ability to withstand potential shocks, among others. For the disclosure requirements, the Commission proposed targeted amendments to ensure better alignment with international standards. In particular, new disclosure requirements are proposed for TLAC, counterparty credit risk, market risk and liquidity requirements. On 25 October 2017, it was announced that the European Parliament, the Council and the Commission agreed on elements of the review of the CRR and CRD proposed in November 2016. The first consolidated CRR text with the amendments to the initial Commission's Proposal has been shared with the delegations.

Further, the European Banking Authority (EBA) is mandated to develop uniform disclosure formats to enhance comparability, and ING's management is required to verify and sign-off on compliance with disclosure requirements and the adherence to internal policies on disclosure.

EBA guidelines on disclosure requirements under Part Eight of Regulation (EU) 575/2013 (EBA/GL/2016/11)

The EBA issued a final paper (EBA guidelines 2016/11) on the guidelines on CRR disclosure requirements in order to allow EU institutions to implement the RPF in a way that is compliant with the requirements of Part Eight of the CRR. A second version was issued on 9 June 2017 with some slight amendments to reflect legislation updates.

The EBA guidelines should therefore be seen as specifications of the existing CRR disclosure requirements, rather than a completely new set of requirements. In line with the recommendations provided in the guidelines, a compilation of the quantitative information is disclosed on the corporate website ing.com. http://www.ing.com/About-us/Annual-Reporting-Suite.htm

The scope of the EBA guidelines and format of the disclosures correspond almost fully with the RPF, focusing on general disclosure requirements for risk management, credit risk, counterparty credit risk and market risk. Although in scope of the RPF, securitisation and other requirements in Part Eight of the CRR, for which there are already delegated or implemented regulations or guidelines, were left out at this stage.

The table below “Disclosure index EBA guidelines” indicates where the templates from the EBA guidelines 2016/11 are located in the Pillar III report and/or the annual report:

Disclosure index EBA guidelines

Type	ID	EBA description	Pages
Capital requirements	EU OV1	Regulatory capital requirements	8
	EU CR10	IRB (specialised lending and equities)	58
Credit risk and general information on CRM	EU CR8	RWA flow statement of credit risk exposures under the IRB approach	16
	EU CRB-B	Total and average net amount of exposures	23
	EU CRB-C	Geographical breakdown of exposures	24
	EU CRB-D	Concentration of exposures by industry or counterparty types	25
	EU CRB-E	Maturity of exposures	27
	EU CR1-A	Credit quality of exposures by exposure class and instrument	37
	EU CR1-B	Credit quality of exposures by industry or counterparty types	39
	EU CR1-C	Credit quality of exposures by geography	40
	EU CR1-D	Ageing of past-due exposures	42
	EU CR1-E	Non-performing and forborne exposures	41
	EU CR2-A	Changes in the stock of general and specific credit risk adjustments	43
	EU CR2-B	Changes in the stock of defaulted and impaired loans and debt securities	43
	EU CR3	Credit risk mitigation techniques – overview	53
Credit risk and CRM in the standardised approach	EU CR4	Standardised approach – Credit risk exposure and CRM effects	34
	EU CR5	Standardised approach - Post-CCF and Post-CRM Techniques	35
Credit risk and CRM in the IRB approach	EU CR6	IRB– Credit risk exposures by exposure class and PD range	29
	EU CR6	IRB - Geographical breakdown of exposure-weighted average LGD and PD by exposure classes	26
	EU CR9	IRB approach – Backtesting of PD per exposure class	32-33
CCR	EU CCR1	Analysis of CCR exposure by approach	41
	EU CCR2	CVA capital charge	47
	EU CCR3	Standardised approach – CCR exposures by regulatory portfolio and risk	46
	EU CCR4	IRB approach – CCR exposures by portfolio and PD scale	47
	EU CCR5-A	Impact of netting and collateral held on exposure values	50
	EU CCR5-B	Composition of collateral for exposures to CCR	50
	EU CCR6	Credit derivatives exposures	52
	EU CCR8	Exposures to central counterparties	51
Market risk	EU MR1	Market risk under the standardised approach	xxx of the ING Group annual report 2018
	EU MR2-A	Market risk under the IMA	xxx of the ING Group annual report 2018
	EU MR2-B	RWA flow statements of market risk exposures under an IMA	58
	EU MR3	IMA values for trading portfolios	xxx of the ING Group annual report 2018

EU Commission adopted RTS for asset encumbrance (AE) disclosure

On 13 December 2017, the EU Commission adopted a Commission Delegated Regulation supplementing the CRR with regard to Regulatory Technical Standards (RTS) for disclosure of encumbered and unencumbered assets (article 443 of the CRR). Based on the RTS and building on the EBA disclosure guidelines, the Commission Delegated Regulation sets out the data required for asset encumbrance disclosure. It is introducing additional items to the current disclosure of AE being (i) additional information on the asset type (article 1) and (ii) inclusion of EHQLA/HQLA as an asset quality indicator (article 2). The Commission Delegated Regulation entered into force on 2 January 2018 replacing the current EBA Guidelines on the disclosure of encumbered and unencumbered assets. However, the application of additional disclosure requirements concerning asset quality indicators (article 2) has been deferred by one year so that institutions can develop necessary IT systems.

EBA guidelines on IFRS 9
In January 2018, the EBA published its final guidelines on disclosure requirements of IFRS 9 or analogous expected credit losses (ECLs) transitional arrangements. The guidelines specify a uniform disclosure template institutions shall use when disclosing the information on own funds, capital and leverage ratios, with and without the application of transitional arrangements for IFRS 9 or ECLs. The aim of these guidelines is to ensure consistency and comparability of the data disclosed by institutions during the transition to the full implementation of the new accounting standard and to foster market discipline. These guidelines have been drafted in accordance with article 473a, paragraph 10 of the CRR, which mandates the EBA to issue guidelines on the disclosure requirements laid down in the same article.

ING Group has decided not to apply the CRR transitional arrangements for mitigating the impact of the introduction of IFRS 9 impairment on own funds. Therefore, the capital and leverage ratios published as from reporting period 1 January 2018 fully reflect the impact of impairment requirements resulting from IFRS 9. More information on the implementation and impact of the adoption of IFRS 9 by ING is available in Note 1 'accounting policies' part of the Consolidated Annual Accounts.

Public disclosure of return on assets
The CRD IV requires ING Group to disclose information on its return on assets. ING Group has decided to calculate ROA based on underlying results and average assets derived from quarter-end assets to align it with the other indicators. The underlying ROA represents profit as a percentage of average total assets. In 2018, the underlying ROA remained stable at 0.62% (in 2017: 0.58%).

Capital requirements

Economic and Regulatory Capital

Economic Capital (EC) and Regulatory Capital (RC) are the main sources of capital allocation within ING. Both of these capital metrics are used to determine the amount of capital that a transaction or business unit requires to support the economic and regulatory-based risks it faces. The concept of EC differs from RC in the sense that RC is the mandatory amount of capital that is defined under Pillar I while EC is the best estimate of Pillar II capital that ING uses internally to manage its own risk. EC is a non-accounting measure that is inherently subject to dynamic changes and updated as a result of ING's portfolio mix and general market developments. ING continuously recalibrates the underlying assumptions behind its EC model which may have an impact on the values of EC going forward. In the course of 2018 ING has conducted a thorough review of its EC Framework, aimed at redefining key design principles and exploring which role EC is to play in business planning and decision making. These design principles as well as the role of EC in business planning and decision making will be implemented in the next years.

EC is defined as the amount of capital that a transaction or business unit requires in order to support the economic risks it takes. EC focuses on the bank activities on a ING Bank consolidated level and is therefore only available per that scope. In general, EC is measured as the unexpected loss above the expected loss at a given confidence level. The EC calculation is used as part of the CRR/CRD IV Pillar II Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP) that is performed regularly by the supervisor.

The following fundamental principles and definitions have been established for the model:

- ING Bank uses a one-sided confidence level of 99.95% and a one-year time horizon to calculate EC;
- It is assumed that all currently known measurable sources of risk are included;
- The best estimate risk assumptions are as objective as possible and based on thorough statistical analysis;
- The EC calculations reflect known embedded options and the influence of customer behaviour in banking products;
- The EC calculations are on a before tax basis and do not consider the effect of regulatory requirements on capital levels; and
- The framework does not include any franchise value of the business, discretionary management intervention or future business volumes and margins.

Capital Adequacy Rules – CRR/CRD IV

The rules for required Regulatory Capital or Capital adequacy are based on the guidelines developed by the Basel Committee on Banking Supervision (The Basel Committee) and the European Union Regulation and Directives, as implemented by the European Central Bank and the Dutch Central Bank for supervisory purposes.

The rules express the regulators' and legislators' opinion on how much capital a bank and other regulated credit institutions must retain in relation to the size and the type of risk its taking, expressed in the form of Risk-Weighted Assets. The most important part of the capital base is the shareholders' equity. In addition to equity, the institution may issue certain liabilities such as Tier 1 and Tier 2 instruments to be included in the capital base. The legal minimum requirement (excluding buffers) stipulates that the capital base must correspond to at least 8% of the Risk-Weighted Assets (RWA).

The table below presents an overview of the Minimum capital requirements and the RWA at year end 2018 per risk type and method of calculation. The largest part of the RWA is related to credit risk (84%), primarily to the portfolio with calculations based on the Advanced Internal Ratings Based (AIRB) approach. More information on credit RWA is given in the following chapter "Credit risk".

EU OV1: ING Group Regulatory capital requirements

	RWA		Minimum capital requirements
	2018	2017	2018
Credit risk (excluding counterparty credit risk) (CCR)	**252,992**	**242,436**	**20,239**
Of which standardised approach (SA)	25,726	26,122	2,058
Of which internal rating-based (IRB) approach	223,412	212,265	17,873
Of which Equity IRB under the simple risk-weight or the internal models approach	3,853	4,049	308
Counterparty credit risk (CCR)	**9,419**	**12,330**	**754**
Of which Marked to market	8,372	8,746	670
of which standardised approach for counterparty credit risk	250	454	20
Of which risk exposure amount for contributions to the default fund of a CCP	245	376	20
Of which CVA	552	2,754	44
Settlement risk			
Securitisation exposures in banking book (after cap)	**728**	**628**	**58**
Of which IRB approach (RBA)	728	628	58
Market risk	**6,509**	**4,679**	**521**
Of which standardised approach (SA)	1,131	1,074	90
Of which internal model approaches (IMA)	5,378	3,604	430
Large exposures			
Operational risk	**35,522**	**40,093**	**2,842**
Of which Advanced Measurement Approach	35,522	40,093	2,842
Amounts below the thresholds for deduction (subject to 250% risk weight)	**8,979**	**9,721**	**718**
Floor adjustment			
Total	**314,149**	**309,887**	**25,132**

The increase in RWA is mainly driven by an increase in RWA for credit risk (excl. CCR) and market risk, which was partly offset by decrease in RWA for counterparty credit risk and operational risk.

ING Group Regulatory Capital flow statement

	2018		2017	
	CRR/CRD IV phased-in	CRR/CRD IV fully loaded	CRR/CRD IV phased-in	CRR/CRD IV fully loaded
Common Equity Tier 1 capital				
Opening amount	45,581	45,550	44,466	44,568
Profit included in CET1 capital	2,057	2,057	2,302	2,302
Adjustment prudential filters own credit risk	-210	-207	83	104
Change in goodwill and intangibles	-720	-381	-434	-158
Change in revaluation reserves	-819	-1,549	-394	-1,277
Change in minority interests, counting as Common Equity Tier 1 capital	45	28	-230	-184
Change in deductions significant investments in Financial Institutions				
Other	-442	-56	-212	195
Closing amount	**45,493**	**45,443**	**45,581**	**45,550**
Additional Tier 1 capital				
Opening amount	4,745	5,179	6,897	7,706
Change in AT 1 instruments	202	202	-2,569	-2,569
CRR/CRD IV phased-in adjustments (excl. significant investments in FIs)	433		376	
Change in deductions significant investments in Financial Institutions				
Change in minority interests, counting as Additional Tier 1 capital	6	6	41	42
Closing amount	**5,385**	**5,387**	**4,745**	**5,179**
Tier 2 capital				
Opening amount	7,085	8,569	9,402	9,597
Change in Tier 2 instruments	-2,839	-2,839	1,598	1,598
CRR/CRD IV phased-in adjustments (excl. significant investments in FIs)	94		100	
Haircut on externally placed Tier 2 instruments by subsidiaries	2,560	1,364	-3,936	-2,551
Change in deductions significant investments in Financial Institutions				
Change in minority interests, counting as Tier 2 capital	21	18	-79	-75
Closing amount	**6,922**	**7,112**	**7,085**	**8,569**
Total Regulatory Capital	**57,801**	**57,943**	**57,410**	**59,298**

As per 31 December 2018, the total amount of available distributable items following the CRD IV definition is EUR 43,314 million, increased compared with EUR 42,782 million in 2017.

ING Group available distributable items according to the CRR/CRD IV

	2018	2017
Share premium	17,050	17,006
Other reserves	25,704	24,224
Legal and Statutory reserves	3,597	4,385
Non distributable	-7,700	-7,678
	38,650	**37,937**
Accrued interest expenses on own fund instruments at year-end	121	93
Distributable items excluding unappropriated result for the year	**38,771**	**38,030**
Unappropriated result for the year	4,543	4,752
Total available distributable items	**43,314**	**42,782**

Capital position

As of 1 January 2014, the CRR/CRD IV capital rules entered into force. According to CRR/CRD IV capital adequacy rules, the Common Equity Tier 1 ratio has to be at least 4.5%, the Tier 1 ratio at least 6% and the total capital ratio at least 8% of all risk-weighted assets.

The capital position table reflects own funds according to the CRR/CRD IV rules. As the CRR/CRD IV is phased in gradually until 2019, the table shows the CRR/CRD IV positions both according to the 2019 end-state rules and the 2018 rules. This makes clear which items phase in directly and which phase in gradually.

ING Group's capital consists of Tier 1 capital and Tier 2 capital net after deductions. Tier 1 capital consists of both Common Equity Tier 1 capital and other Tier 1 capital, also referred to as hybrid capital. Tier 2 capital consists mostly of subordinated loans.

ING Group's phased-in (transitional) common equity Tier 1 ratio at year-end 2018 of 14.48% is well in excess of the 10.43% common equity Tier 1 requirement for ING Group in 2018. This requirement is the sum of (i) 4.5% Pillar 1 requirement (ii) 1.75% Pillar 2 requirement, being the European Central Bank's (ECB) decision on the 2017 Supervisory Review and Evaluation Process (SREP) (iii) the 1.875% capital conservation buffer, (iv) 2.25% for the Systemic Risk Buffer (SRB) which has been set separately for Dutch systemic banks by the DNB as macro-prudential supervisor and (v) 0.06% for the countercyclical buffer. With a 14.47% fully-loaded Group CET1 ratio as at 31 December 2018, ING is already in compliance with the current fully-loaded Pillar 2 requirement (P2R) that is expected to grow to 11.83% fully-loaded in 2019, assuming the P2R will remain the same for 2019.

ING Group Capital position	2018		2017	
	2018 rules (CRR/CRD IV phased in)	2019 rules (CRR/CRD IV fully loaded)	2017 rules (CRR/CRD IV phased in)	2019 rules (CRR/CRD IV fully loaded)
Shareholders' equity	**50,932**	**50,932**	**50,406**	**50,406**
Regulatory adjustments:				
Minority interests, counting as Common equity Tier 1	141	170	95	141
Goodwill and intangibles deducted from Tier 1[1]	-2,075	-2,075	-1,356	-1,695
Provision shortfall	-491	-491	-754	-943
Revaluation reserve debt securities			-195	
Revaluation reserve equity securities			-495	
Revaluation reserve real estate			-41	
Revaluation reserve cash flow hedge	-604	-604	-263	-263
Prudent valuation adjustment	-14	-14	-13	-13
Irrevocable Payment Commitment (IPC)	-178	-178		
Prudential filters:				
Own credit risk	-8	-8	186	186
Defined benefit remeasurement (IAS19R)	79		160	
Net defined benefit pension fund assets	-446	-446	-362	-453
Deferred tax assets	-101	-101	-106	-132
Own credit risk adjustments to derivatives (DVA)	-27	-27	-12	-15
Interim profit not included in CET1 capital	-1,712	-1,712	-1,670	-1,670
Available capital - Common equity Tier 1	**45,493**	**45,443**	**45,581**	**45,550**
Subordinated loans qualifying as Tier 1 capital[2]	5,339	5,339	5,137	5,137
Deduction of goodwill and other intangibles[1]			-339	
Provision shortfall			-94	
Minority interests, counting as Additional Tier 1 capital	46	48	41	42
Available capital - Tier 1	**50,878**	**50,831**	**50,326**	**50,729**
Supplementary capital - Tier 2[2]	8,248	8,248	11,086	11,086
Haircut on externally placed Tier 2 instruments by subsidiaries	-1,376	-1,187	-3,936	-2,551
Provision shortfall			-94	
Minority interests, counting as Tier 2 capital	51	51	29	34
BIS capital	**57,801**	**57,943**	**57,410**	**59,298**
Risk-weighted assets	**314,149**	**314,149**	**309,887**	**309,887**
Common Equity Tier 1 ratio	**14.48%**	**14.47%**	**14.71%**	**14.70%**
Tier 1 ratio	**16.20%**	**16.18%**	**16.24%**	**16.37%**
Total capital ratio	**18.40%**	**18.44%**	**18.53%**	**19.14%**

1 Intangibles: mainly capitalised software.
2 Assuming that non CRR/CRD IV eligible Tier 1 and Tier 2 capital will be replaced by CRR/CRD IV eligible equivalents before they stop to meet the CRR/CRD IV grandfathering conditions. Future Tier 2 instruments will be issued by ING Group.

Own funds

The CRR requires ING Group to disclose information on own funds in a specific format that was provided in the EBA Implementation Technical Standards. The EBA templates Annex I, II and Annex VI are disclosed on the corporate website ing.com. http://www.ing.com/About-us/Annual-Reporting-Suite.htm

Countercyclical buffer

As only a few countries had set a countercyclical buffer rate larger than zero and ING Group's exposures in these countries is relatively small, the resulting countercyclical buffer is also small: 0.056% in 2018. See below for an overview of the exposure distribution for the most relevant countries (having a share larger than 1% and/or having in place or announced a positive countercyclical buffer rate).

Countercyclical buffer

2018	General credit exposures		Trading book exposures	Securitisation exposures	Own fund requirements					
	Exposure value for SA	Exposure value for IRB	Value of trading book exposures for internal models	Exposure value for IRB	of which: General credit exposures	of which: Trading book exposures	of which: Securitisation exposures	Total	Own funds requirements weights	Countercyclical capital buffer rate
Netherlands	3,189	185,498		728	3,537	1	5	**3,543**	19.59%	-
Belgium	1,050	88,558			2,732	1		**2,733**	15.11%	-
Germany	341	97,838		3,964	2,035	1	26	**2,061**	11.40%	-
United States	10	41,795		1,270	1,640	3	10	**1,653**	9.14%	-
Poland	11,638	14,182	10		1,127	1		**1,127**	6.23%	-
Italy	1,820	17,633			607	0		**607**	3.36%	-
Spain	3,301	20,734	10	427	594	1	3	**598**	3.31%	-
Turkey	6,775	2,905	57		537	2		**540**	2.98%	-
France	150	13,488		213	504	1	2	**507**	2.81%	-
United Kingdom	41	13,310		238	491	1	1	**494**	2.73%	1.00%
Australia	2,922	39,249	7	4	458	0	0	**459**	2.54%	-
Luxembourg	183	17,246		858	423	2	9	**433**	2.40%	-
Switzerland	5	10,343			287	1		**288**	1.59%	-
Romania	3,348	2,322	0		254	0		**254**	1.40%	-
Russian Federation	0	4,374	42		227	2		**229**	1.27%	-
Hong Kong	57	6,181	1		135	0		**135**	0.75%	1.88%
Ireland	1	2,706		25	77	0	0	**77**	0.43%	-
Sweden	0	1,802			66	1		**66**	0.37%	2.00%
Czechia	3	1,391	2		43	0		**43**	0.24%	1.00%
Denmark	5	940			28	0		**28**	0.15%	-
Slovakia	0	879			27			**27**	0.15%	1.25%
Norway	0	2,278		8	24	0	0	**25**	0.14%	2.000%
Bulgaria	0	469	2		20	0		**20**	0.11%	-
Iceland	0	11			0			**0**	0.00%	1.250%
Lithuania	0	0			0			**0**	0.00%	0.500%
Greenland		0			0			**0**	0.00%	-
Faroe Islands		0			0			**0**	0.00%	-
Other countries	434	61,140	185	232	2,121	13	1	**2,135**	11.81%	-
Total	**35,274**	**647,274**	**317**	**7,966**	**17,996**	**29**	**58**	**18,084**	**100.00%**	**0.056%**

Amount of institution-specific CCyB

	2018
Total RWA	314,149
Weighted countercyclical buffer rate	0.056%
Countercyclical buffer requirement	**174.7**

Countercyclical buffer

2017	General credit exposures		Trading book exposures	Securitisation exposures	Own fund requirements					
	Exposure value for SA	Exposure value for IRB	Value of trading book exposures for internal models	Exposure value for IRB	of which: General credit exposures	of which: Trading book exposures	of which: Securitisation exposures	Total	Own funds requirements weights	Countercyclical capital buffer rate
Netherlands	3,327	184,175	83	935	3,812	1	6	**3,818**	22.34%	
Belgium	939	85,442			2,503			**2,503**	14.64%	
Germany	301	95,438	14	1,149	1,961	1	7	**1,969**	11.52%	
United States	9	37,431		2,095	1,392		17	**1,409**	8.24%	
Poland	10,083	12,894	7		984	2		**985**	5.76%	
Turkey	8,241	3,063	107		606	30		**636**	3.72%	
Spain	2,541	18,304	34	566	509	2	4	**515**	3.01%	
Italy	1,570	17,101	31		505			**505**	2.95%	
France	641	13,748		157	490		2	**492**	2.88%	
United Kingdom	110	13,319	25	268	482	2	2	**485**	2.84%	
Australia	2,775	36,428	12	8	402			**402**	2.35%	
Luxembourg	197	13,898	50	1,063	346	1	9	**356**	2.08%	
Switzerland		8,773			233			**233**	1.36%	
Russian Federation	4	3,646	240		217	9		**227**	1.33%	
Romania	2,767	2,130	4		209			**209**	1.22%	
Singapore		7,773	23		182			**182**	1.06%	
Hong Kong	44	5,632	56		104	1		**105**	0.61%	1.250%
Sweden		1,705	2		53			**53**	0.31%	2.000%
Norway		2,324	11	15	43			**44**	0.26%	2.000%
Czechia	4	1,128			36			**36**	0.21%	0.500%
Slovakia		867			25			**25**	0.15%	0.500%
Iceland		22			1			**1**	0.01%	1.250%
Other countries	388	52,911	496	219	1,858	44	5	**1,906**	11.15%	
Total	**33,941**	**618,152**	**1,196**	**6,476**	**16,953**	**93**	**50**	**17,096**	**100.00%**	**0.021%**

Amount of institution-specific CCyB

	2017
Total RWA	309,887
Weighted countercyclical buffer rate	0.021%
Countercyclical buffer requirement	**64.7**

Leverage ratio

The leverage ratio is a CRR/CRD IV measure indicating the level of the Tier 1 Capital compared to the total exposure. Its aim is to assess the risk of excessive leverage of the institution. In line with the regulatory requirements, ING Group will use the specific EBA templates as basis for the presentation of its Leverage ratio. These EBA templates reflect the Leverage ratio as calculated under the Leverage ratio Delegated Act which was introduced in October 2014. The Final Draft Implementing Technical Standards (ITS) on disclosure of the leverage ratio have been approved by the European Commission and published in the EU Official Journal early 2016. The official reporting of the Delegated Act Leverage ratio to the ECB has commenced per September 2016. The fully loaded leverage ratio of ING Group based on the Delegated Act, and with notional cash pooling grossed is 4.4% at 31 December 2018.

Summary reconciliation of accounting assets and leverage ratio exposures

		2018 CRR/CRD IV phased in	2018 CRR/CRD IV fully loaded	2017 CRR/CRD IV phased in	2017 CRR/CRD IV fully loaded
		Applicable amounts	Applicable amounts	Applicable amounts	Applicable amounts
1	Total assets as per published financial statements	887,030	887,030	846,216	846,216
4	Adjustments for derivative financial instruments[1]	3,234	3,234	-946	-946
5	Adjustments for securities financing transactions 'SFTs'	13,090	13,090	3,493	3,493
6	Adjustment for off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	79,751	79,751	73,254	73,254
7	Other adjustments[1]	181,179	181,100	159,514	159,869
8	**Total leverage ratio exposure**	**1,164,283**	**1,164,204**	**1,081,531**	**1,081,887**

1 The adjustment for Receivables for cash variation margin provided in derivatives transactions has been included in the line Other adjustments.

Group leverage ratio common disclosure

		2018 CRR/CRD IV phased in	2018 CRR/CRD IV fully loaded	2017 CRR/CRD IV phased in	2017 CRR/CRD IV fully loaded
		CRR leverage ratio exposures	CRR leverage ratio exposures	CRR leverage ratio exposures	CRR leverage ratio exposures
On-balance sheet exposures (excluding derivatives and SFTs)					
1	On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral)	972,346	972,346	916,069	916,069
2	(Asset amounts deducted in determining Tier 1 capital)	-3,689	-3,768	-3,683	-3,327
3	**Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)**	**968,657**	**968,578**	**912,386**	**912,742**
Derivative exposures					
4	Replacement cost associated with all derivatives transactions (i.e. net of eligible cash variation margin)	7,880	7,880	7,784	7,784
5	Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	18,676	18,676	19,326	19,326
7	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	-8,137	-8,137	-10,621	-10,621
9	Adjusted effective notional amount of written credit derivatives	13,529	13,529	13,472	13,472
10	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	-12,076	-12,076	-11,854	-11,854
11	**Total derivative exposures**	**19,872**	**19,872**	**18,107**	**18,107**
Securities financing transaction exposures					
12	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	101,473	101,473	88,974	88,974
13	(Netted amounts of cash payables and cash receivables of gross SFT assets)	-18,560	-18,560	-14,684	-14,684
14	Counterparty credit risk exposure for SFT assets	13,090	13,090	3,493	3,493
16	**Total securities financing transaction exposures**	**96,004**	**96,004**	**77,784**	**77,784**
Other off-balance sheet exposures					
17	Off-balance sheet exposures at gross notional amount	-247,012	-247,012	220,673	220,673
18	(Adjustments for conversion to credit equivalent amounts)	-167,261	-167,261	-147,419	-147,419
19	**Other off-balance sheet exposures**	**79,751**	**79,751**	**73,254**	**73,254**
Capital and total exposures					
20	Tier 1 capital[1]	50,878	50,831	50,326	50,729
21	**Total leverage ratio exposures**	**1,164,283**	**1,164,204**	**1,081,531**	**1,081,887**
Leverage ratio					
22	**Leverage ratio**	**4.4%**	**4.4%**	**4.7%**	**4.7%**
Choice on transitional arrangements and amount of derecognised fiduciary items					
EU-23	Choice on transitional arrangements for the definition of the capital measure	Transitional	Fully phased in	Transitional	Fully phased in

1 Please note that Tier 1 Capital per December 2018 includes grandfathered hybrids to an amount of EUR 2,506 million (2017: EUR 2,446 million)

Disclosure on qualitative items		
1	Description of the processes used to manage the risk of excessive leverage	ING follows the leverage ratio on a monthly basis and takes it into account when taking certain securitisation and/or Tier 1 issuance/redemption decisions.
2	Description of the factors that had an impact on the leverage ratio during the period to which the disclosed leverage ratio refers	The change in leverage ratio was mainly due to the increase of the total exposure measure as result of the growth of the balance sheet and growth in off-balance commitments.

Credit Risk

Basis and scope of presentation

In the credit risk section of Pillar III, data included in the tables are related to ING's credit risk resulting from Lending (both on- and off-balance), Money Market activities, Investment Risks, Securities Financing and Derivatives. The Securities Financing and Derivatives portfolios are presented separately in the counterparty credit risk section.

The amounts presented in this section relate to amounts used for credit risk management purposes, which follow ING's internal interpretation of the definitions as prescribed under CRR/CRD IV. Therefore, the numbers can be different from the accounting numbers as reported in the annual accounts under IFRS-EU. An example is the treatment of ONCOA (Other Non-Credit Obligation Assets) items – while the accounting numbers include ONCOA, they are excluded from the credit risk section of Pillar III.

The majority of the tables included in this section are based on gross or net carrying value. The gross carrying value refers to the original exposure pre-credit conversion factors for the on- and off-balance sheet items. The net carrying value corresponds to the original exposure (on- and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

READ is the Regulatory Exposure at Default (READ) and credit risk weighted assets (RWA) under the CRR/CRD IV definitions. READ is the sum of the on-balance and off-balance sheet: Lending, Investment, Money Market and counterparty activities plus an estimated portion of the unused credit facilities extended to the obligor. The amounts associated with Investment and Lending activities are based on the original amount invested less repayments.

Figures for Derivatives and Securities Financing are based on the Current Exposure Method, which is equal to the marked-to-market value of the underlying trades plus a (regulatory defined) 'add-on' which represents estimated potential future exposure (PFE). The amounts are adjusted based on the underlying collateral and any legal netting or compensation that may be permitted under master agreement arrangements such as International Swaps and Derivatives Association (ISDA) master agreements and Credit Support Annexes (CSAs).

Off-balance sheet exposures include letters of credit and guarantees, which are associated with the Lending risk category and are included under 'credit risk outstandings'. Additionally, off-balance sheet exposures include a portion of the unused limits, which represent the expected value of the outstanding at the theoretical moment of default. These are not counted under 'credit risk outstandings' but they contribute to total exposure and READ.

Exposures associated with Securitisations (Asset Backed Financing, Commercial / Residential Mortgage Backed Securities) are shown separately because of their specific treatment. These amounts also relate to the amount invested prior to any impairment or mark-to-market adjustments. These amounts are also considered to be 'Credit Risk outstandings'.

Investments in a financial sector entity, determined following art. 43 of the CRR, are included in the item "amounts below the thresholds for deduction" of table EU-OV1 "ING Group Regulatory capital requirements" up to the level at which the combined significant investments are less than or equal to 10% of the CET1 capital of ING Group. These exposures are subject to 250% risk weight.

A small part of the equity exposure of ING's portfolio is subject to the simple risk weight method for calculating the regulatory capital.

Credit RWA Migration Analysis

The table below explains the changes in Credit RWA in the AIRB portfolio during the reporting period and provides additional information by linking the impact of changes in portfolio composition, model changes and shifts in the risk environment on Credit RWA. The table reconciles movements in Credit RWA for the period for each Credit RWA risk type of ING for the AIRB portfolio including securitisations excluding equity and ONCOA. It does not include counterparty credit risk exposures under the Internal Model Method (IMM), as ING has not yet received regulatory approval to use IMM.

EU CR8 RWA flow statement of credit risk exposures under the IRB approach

		2018
	RWA amounts	Capital requirements
RWAs at the end of the previous reporting period	**198,519**	**15,881**
Asset size	16,059	1,285
Asset quality	-11,693	-935
Model updates	5,192	415
Methodology and policy	1,743	139
Foreign exchange movements	2,169	173
Other	-396	-32
RWAs at the end of the reporting period	**211,592**	**16,927**

Including securitisations, equity, ONCOA and counterparty credit risk exposures.

Over the year 2018 the credit RWA in the IRB portfolio grew by EUR 13.1 billion to EUR 211.6 billion.

- **Asset size:** Growth in the asset size of the portfolio led to an increase of RWA by EUR 16.1 billion, mainly observed in the Wholesale Banking (EUR 10.8 billion RWA) and Challenger & Growth portfolios (EUR 4.3 billion RWA). The growth in the Challengers & Growth portfolios was observed mainly in the Germany and Poland. EUR 1.2 billion RWA of the increase in Germany was due to asset transfer from US Wholesale Banking to ING DiBA. The asset size of the Wholesale Banking portfolio grew in the Genral Lending and Structured Finance. EUR 3.1 billion RWA of the growth in Wholesale Banking was due to asset transfer from Turkey Retail Banking to Wholesale Banking. In the Market Leaders portfolio the asset size increased in BeLux while the growth in the Netherlands was stagnant.
- **Asset Quality:** The risk profile of the portfolio improved, resulting in a reduction of EUR 11.7 billion RWA. The largest decrease was related to improved risk profiles in Wholesale Banking (mainly General Lending and Structured Finance) and C&G countries (mainly in Germany, Poland and Spain) decreasing RWA by EUR 6.5 billion and EUR 2.5 billion, driven by improved economic conditions. NVM House Price index uplift also further improved the book quality of the Dutch mortgages portfolio by relieving RWA by EUR 2.1 billion RWA. Furthermore, country risk rating upgrades for Russia, Spain and United States of America decreased RWA by EUR 0.6 billion while Turkey country rating downgrade partly offset the trend by increasing RWA by EUR 1.1 billion.
- **Model Updates:** Project Finance and CPF LGD Model updates caused an RWA increase of EUR 3.4 billion and EUR 1.7 billion respectively. The CPF LGD Model updates is a reclassification from ONCOA. Luxemburg retail and SME PD model and Spanish mortgages PD and LGD model update and NL SBF provisioning calculation change further increased RWA by EUR 0.2 billion, EUR 0.1 billion and EUR 0.2 billion respectively. On the other hand, Belgium SBF and SME LGD model updates partly offset the RWA increase by decreasing RWA EUR 0.3 billion.
- **Methodology and policy:** During 2018, 30% Add-on on Belgium mortgages required by Belgian regulator increased RWA by EUR 1.6 billion while cash flow based maturity calculation methodology change partly compensate this increase by reducing RWA by EUR 0.9 billion. There were also model add-ons for dutch mortgages LGD Model related TRIM exercise and Project Finance NPL LGD Model increasing RWA by EUR 0.6 billion together. Exposure class change for various clients from Corporates SME to Corporas Other caused further RWA increase of EUR 0.3 billion. Besides, margin of conservatism adjustment for Luxembourg retail portfolio models added additional EUR 0.2 billion to the total RWA impact of Methodology and policy.
- **Foreign exchange movements:** The increase of RWA by EUR 2.2 billion can be allocated to appreciation of US dollar during 2018. US dollar appreciation against Euro (5.0%) caused an increase of RWA by EUR 2.8 billion whereas Australian dollar (-5.4%) and Polish zloty (-2.8%) depreciated against Euro and partly balanced the RWA increase by decreasing it by EUR 0.2 billion each.
- **Other:** The remaining decrease of EUR 0.4 billion RWA was mainly due to SIMBA securitisation program impacting RWA positively by EUR 0.6 billion. Furthermore, client and portfolio level cover updates and punitive rated clients which have lowered rating due to late rating assignment or unrated by business units affected RWA as well.

Overall, RWA management has a high priority throughout ING Group in all aspects of our business. From product design to pricing, RWA allocation and consumption is extensively monitored, reported and managed at all levels of the organisation.

Credit risk approach

This section is to be read in conjunction with the Risk Management paragraph of the Annual Report.

ING applies the Advanced Internal Ratings Based (AIRB) approach on the majority of its significant portfolios that contain credit risk in accordance with the required approvals granted by ECB and various local regulators. The AIRB approach is permitted by the regulator if there are regulatory approved rating models (PD, EAD and LGD) in place and if the (local) management understands and uses these rating models (Basel Use Test) in their credit decision-making processes. However, a small portion of the portfolio remains subject to the Standardised Approach (SA). The majority of SA portfolios at ING relate to subsidiaries where the home regulator does not have a robust AIRB framework or requirement.

Credit risk capital and measurement

Credit risk capital

Regulatory capital is the minimum amount of capital (based on 99.90% confidence level) that ING holds from a regulatory perspective as a cushion to be able to survive large unexpected losses.

RWA comparison

Comparison of RWA and risk weights across institutions is inherently challenging. Differences in RWA among banks have been classified by the BIS in 3 categories:

- Risk based drivers that stem from the differences in underlying risk at the exposure/portfolio level and in business models/ strategies including asset class mix;
- Practice-based drivers including approaches to risk management and risk measurement; and
- Regulatory environment such as supervisory practices, implementing laws and regulations including national discretion and accounting standards.

Risk based drivers

ING's portfolio is dominated by secured lending especially in the areas of residential mortgages, leasing and commercial real estate. Secured lending tends to have a much lower LGD, given the collateral involved, which is a key driver of RWA calculations. Therefore the regulatory formula for residential mortgages tends to result in lower RWA, all other factors being equal.

Practice based drivers

ING has a proactive approach to non-performing exposures. Non-performing exposures are recognised early based on unlikely to pay triggers. For non-retail, ING typically classifies default based on a borrower rating and not a facility rating which means that a customer will only have one PD (probability of default) regardless of the type(s) of transactions done with ING. As a consequence, if one facility is in default, usually all facilities of the client are in default. Non-performing clients which were granted forbearance measures have an additional probation period of 1 year starting from the last moment they are classified as forborne, before returning to performing status.

Regulatory environment

ING's primary supervising entity is the ECB, which is supported by many host supervisors. The ECB supervises adherence to regulatory rules: the regulatory framework defined in CRR/CRD, European Bank Authority (EBA) standards and ECB guidance. The ECB requires all 'significant changes' in internal models (PD, LGD, EAD and IFRS 9) and policies to be reviewed and approved by the ECB, prior to implementation. Lower level model changes are either pre-notified or post-notified to the ECB.

Comparing capital levels across banks is a challenging exercise because of different risk profiles, differences in risk based drivers, practice based drivers and the regulatory environment (e.g. advanced internal rating based approach or the standardised approach). These factors have a substantial impact on the regulatory capital/RWA of a financial institution. ING continues to work with industry groups and strives to adhere to the latest BIS and EBA recommendations to improve the transparent reporting of the bank's capital calculations.

Economic capital

Economic capital reflects ING's own view on credit risk, which allows it to be used in decision-making processes at (sub) portfolio level. Credit risk and transfer risk capital are calculated for all portfolios which contain credit or transfer risk, including investment portfolios. Economic capital is the minimum amount of capital required to cover unexpected losses within a 99.95% confidence level and a 12 month time horizon. It is used throughout ING in the decision-making process (mainly wholesale banking), in risk adjusted counterparty and portfolio profitability measurement tools (wholesale and retail banking), in investment and divestment decisions, in the country risk framework and in concentration risk management, including risk appetite statements (RAS). Economic capital is calculated using the economic values of rating models (PD, EAD and LGD), in line with regulatory requirements.

An important characteristic of our IT systems and framework is that models are built for several purposes, including economic capital, regulatory capital and loan loss provisioning. These credit risk models are used throughout the organisation which is compliant with the Basel Use Test requirement and facilitates active feedback on the risk parameters by business units.

Credit risk measurement

There are two ways to measure credit risk for regulatory reporting purposes within ING's portfolio, depending on whether the exposure is booked under an ING office which is permitted by the ECB to use the advanced internal rating based (AIRB) approach, or if it falls under the standardised approach (SA).

Standardised approach

The SA applies a fixed risk weight to each asset as dictated by the CRR, and is based on the exposure class to which the exposure is assigned. As such, the SA is the least sophisticated of the regulatory capital methodologies and is not as sensitive as the risk-based approach. Where external rating agency ratings are available, they may be used as a substitute to using the fixed risk weightings assigned by the Financial Supervisory Authorities. Because the underlying obligors are relatively small for exposures treated under SA, the underlying obligors tend not to have external ratings.

Advanced internal rating based approach

There are five main elements that drive the determination of risk-weighted assets under the AIRB approach.

- **Probability of Default (PD)**: The first is the borrower's probability of default, which measures a client's creditworthiness in terms of likelihood to go into default. It attempts to measure the senior, unsecured standalone creditworthiness of an organisation without consideration of structural elements of the underlying transactions, such as collateral, pricing, or maturity. Each borrower has a rating which translates into a specific PD.
- **Exposure at Default (EAD)**: The second element is the borrower's exposure at default. EAD models are intended to estimate the outstandings amount or obligation at the moment of default. Since the time in which a client may go into default is unknown, and the level of outstandings that may occur on that date is also unknown, ING uses a combination of statistical and hybrid models to estimate the EAD. With the exception of guarantees and letters of credit, the EAD is always equal to or higher than the associated credit risk outstandings, under the assumption that clients tend to absorb liquidity from available credit resources before financial problems become apparent to the client's creditors. EAD is largely a function of the type of credit facility (overdraft, revolving, term) offered to the borrower.
- **Loss Given Default (LGD)**: The third element is loss given default. LGD models are intended to estimate the amount ING would lose after liquidating collateral pledged in association with a given loan or financial obligation, or alternatively, from liquidating the company as a whole as part of a workout process. LGD models are based on cover types, estimated recovery rates given orderly liquidation, and (in)direct cost of liquidation.
- **Maturity (M)**: The fourth element is the time to the maturity of the underlying financial obligation. Regulatory requirements (CRR/CRDIV) floor the maturity element at one year and cap it at five years.
- **Exposure Class**: The fifth element is the exposure class (a regulatory prescribed grouping of a common obligor type or product type) which is a driver for the correlation factor. To calculate risk-weighted assets the default correlation between a transaction and all other transactions in the portfolio is taken into account.

The expected loss (EL) provides a measure of the value of the credit losses that ING may reasonably expect to incur on its portfolio. In its basic form, the expected loss can be represented as:

EL = PD * EAD * LGD

Securitisations

ING has implemented the AIRB approach for credit risk. As a consequence, ING uses the rating based approach (RBA) for investments in tranches of asset-backed securities (ABS) and mortgage-backed securities (MBS) which have been rated by external rating agencies. Rating agencies which are used by ING under the RBA include Standard & Poor's, Fitch and Moody's.

Under the RBA, the RWA are determined by multiplying the amount of the exposure by the appropriate regulatory risk weights, which depend on:

- The external rating or an available inferred rating;
- The seniority of the position; and
- The granularity of the position.

Further, CRR/CRD IV introduced an additional regulatory capital charge for material increases in the Credit Valuation Adjustment (CVA), the market price of the counterparty credit risk of derivatives. In particular, as credit spreads of ING's counterparties increase, CVA will increase as well and ING will incur a loss. ING follows the SA for calculation of the capital charge to cover CVA Risk (CVA capital) in accordance with the CRR/CRD IV. The scope of the products and counterparties that the CVA capital charge is applied to also follows those regulations.

ING uses the AIRB and the Internal Assessment Approach (IAA) for liquidity lines provided to Asset Backed Commercial Paper programmes and this is explained in more detail in the securitisation section. ING does not use the Basel Foundation IRB Approach (FIRB) for any of its portfolios.

Credit risk tools

Exposure classes

The BCBS has developed the concept of 'Exposure Classes' which has been transposed into CRR/CRDIV. These are essentially groupings of credit risks associated with a common client type, product type and/or cover type. For the AIRB Approach, most of the exposure classes have subcategories. ING has applied the following definitions to determine Exposure Classes:

- Sovereigns include Sovereign Government entities, Central Banks and recognised Local / Regional Authorities as well as Supranational Organisations;
- Institutions include Commercial Banks, non-Bank Financial Institutions, such as Funds and Fund Managers, and Insurance Companies, as well as local and regional government entities not classified as governments;
- Corporates includes all legal entities, that are not considered to be Governments, Institutions or Retail Other;
- Retail includes the following classes:
    - Retail – Secured by immovable property non-SME (hereafter residential mortgages) includes all retail loans which are covered by residential properties;
    - Retail - Secured by immovable property SME (included in tables with Other Retail) includes all retail loans which are covered by commercial properties; and
- Other Retail includes all other credit obligations related to Retail SMEs (such as partnerships and one-man businesses) and private individuals (such as consumer loans, car loans and credit cards). Under these exposure class definitions, it is possible for a private individual to have exposure classified as both residential mortgages and retail other.
- Securitisations include securitisation programs for which ING acts as an investor, sponsor or originator.

Models used for exposure classes

ING has developed PD, EAD and LGD models for Wholesale Banking and Retail Banking portfolios. These models are subject to CTRC approval and changes which significantly impact the results require approval from the regulator before implementation. By nature, the above described exposure classes have different, specific characteristics. To capture these specific characteristics and to have suitable valuations and analyses in place, Model Development is continuously updating and developing models within each exposure class.

ING master scale

Internal rating grade and corresponding PD and external rating equivalent			
Internal rating grade		PD range for each grade	External Rating Equivalent
Performing			
Investment grade	1	0.00 - 0.01%	AAA
	2	0.01 - 0.03%	AA+
	3	0.03 - 0.04%	AA
	4	0.04 - 0.05%	AA-
	5	0.05 - 0.06%	A+
	6	0.06 - 0.08%	A
	7	0.08 - 0.11%	A-
	8	0.11 - 0.17%	BBB+
	9	0.17 - 0.26%	BBB
	10	0.26 - 0.37%	BBB-
Non-investment grade	11	0.37 - 0.58%	BB+
	12	0.58 - 1.00%	BB
	13	1.00 - 1.77%	BB-
	14	1.77 - 3.23%	B+
	15	3.23 - 6.05%	B
	16	6.05 - 11.67%	B-
	17	11.67 - 20.20%	CCC
Sub-standard grade	18	20.20 - 29.58%	CC
	19	>29.58%-100%	C
Non-performing			
Non-performing grade	20	100%	Default
	21	100%	Default
	22	100%	Default

AIRB models per exposure class
In the table below, the number of significant PD, EAD and LGD models per asset class are shown. Additionally a description of the model and methodology are provided per exposure class. The asset classes presented in this table do not align with the EBA Exposure classes as the scope has been redefined to better fit the scope of the model. SME exposure, for example, can be part of either corporate exposures or other retail depending on the size of the SME.

AIRB models and methodology

	Model Type	Number of significant models	Model description and methodology	Number of years of data
Sovereigns	PD	1	The Government Central PD model is a fully statistical model, containing only quantitative risk drivers.	>7 years
	LGD	1	The LGD model for Sovereigns and other governments is an unsecured recovery model built on assessment of structural factors that influence a country's performance.	>7 years
	EAD	1	The Low Default EAD model is a hybrid model that pools default information from multiple low default portfolios, including central governments and central banks.	>7 years
Government related entities	PD	1	The government related entities PD model is expert based and assigns ratings based on stand-alone credit fundamentals as well as degree of government support.	>7 years
	LGD	1	The LGD model for Government related entities is a secured/unsecured recovery model built on assessment of stand-alone fundamentals as well as geography.	>7 years
	EAD	1	The Low Default EAD model is a hybrid model that pools default information from multiple low default portfolios, including government related entities.	>7 years
Financial institutions	PD	3	The main PD model applied is Bank Commercial based upon financial, qualitative and country information. Other PD models for different types of financial institutions are built using a similar framework, but are more specialised for the specific characteristics of the financial institution.	>7 years
	LGD	1	This LGD model was developed based on expert judgement, supported by limited internal and external data. The developed LGD model is based on ultimate recovery rates.	>7 years
	EAD	1	The Low Default EAD model is a hybrid model used that pools default information from multiple low default portfolios, including financial institutions.	>7 years
Corporates - Specialized lending	PD	3	Expert based scorecards Models predict a rating for Commercial Property Finance, Project Finance, Trade and Commodity Finance.	>7 years
	LGD	3	Hybrid LGD Models predict loss given default for Commercial Property Finance, Project Finance, Trade and Commodity Finance.	>7 years
	EAD	1	There is a dedicated EAD model for commercial property finance due to the specificities of this portfolio.	>7 years
Large Corporates	PD	1	The Corporate Large model is a global hybrid model build on 13 years of data, including balance sheet and qualitative information as well as country risk and parent influence.	>7 years
	LGD	1	Loss Given Default for Large corporates are predicted by a dedicated hybrid LGD model using both no loss rates as well as secured/unsecured recovery rates.	>7 years
	EAD	1	The Low Default EAD model is a hybrid model used that pools default information from multiple low default portfolios, including large corporates.	>7 years
SME	PD	6	The SME PD models are estimated statistically and directly predict a PD. Most of these models are developed locally to reflect regional/jurisdiction circumstances.	>7 years
	LGD	6	Local statistical models or hybrid models use various data inputs on cure behaviour as well as cost and recovery.	>7 years
	EAD	6	Local statistical models that use various data inputs, including product type and geography.	>7 years
Secured by residential mortgages	PD	7 [1]	The PD mortgages models are all developed statistically and include borrower specific information, payment behaviour and product related information. These are statistical models that directly predict a PD.	>5 years [2]
	LGD	7	Local statistical models or hybrid models use various data inputs on cure behaviour as well as cost and recovery	>7 years
	EAD	7	Local statistical models that use various data inputs, including product type and geography.	>7 years
Private Individuals	PD	4 [1]	The PD models for private individuals are all developed statistically and include borrower specific information, payment behaviour and product related information. These are statistical models that directly predict a PD.	>5 years [2]

	LGD	4	Local statistical models use various data inputs on cure behaviour as well as cost and recovery.	>7 years
	EAD	4	Local statistical models that use various data inputs, including product type and geography.	>7 years
Other[1]	Other		(Covered Bonds, Structured assets)	

1 Belgian PD models provide a rating at a customer level, covering both secured and unsecured loans.
2 For retail PD modelling a minimum of 5 years is allowed based on ING's Modelling Standards, which are compliant with regulatory requirements.

Credit risk exposure excluding Counterparty Credit Risk

In this credit risk section the tables shown represent the net values of on- and off-balance sheet exposures as per EBA definitions. The scope of these tables are the credit risk exposures excluding the counterparty credit risk exposures (within the Risk Management paragraph these are named Pre-Settlement exposures), Securitisations, Equity positions, CVA RWA, default fund contribution (DFC) and ONCOA items. As per 2017 the DFC is excluded from the credit risk tables as this is strongly related to the Pre-settlement portfolio and therefore reported in the pre-settlement tables in the Counterparty Credit risk section.

In the next four tables the net carrying values are broken down per exposure class, geography, counterparty type and maturity.

The table below displays the net carrying values at the end of 2017 and as per end of 2018 per AIRB and SA exposure classes. Next to it the average net carrying value per the same exposure classes over the past 4 quarters is provided. This average net carrying value is based upon the last 4 quarter-end observations in the year 2018.

EU CRB-B: Total and average net amount of exposures

AIRB Approach	Net carrying value[1] of exposures at the end of 2018	Average net exposures over the period	Net carrying value of exposures at the end of 2017
Central governments or central banks	268,349	253,181	231,353
Institutions	107,915	107,667	102,175
Corporates	451,072	435,020	413,116
Of Which: Specialised lending	159,650	155,004	144,998
Of Which: SME	27,610	33,332	35,634
Retail	330,343	329,579	325,702
Secured by real estate property	299,959	299,006	295,503
SMEs	11,805	11,859	11,630
Non-SMEs	288,154	287,147	283,873
Other Retail	30,384	30,573	30,199
SMEs	5,029	5,316	5,381
Non-SMEs	25,355	25,257	24,818
Total AIRB approach	**1,157,680**	**1,125,448**	**1,072,346**
SA approach			
Central governments or central banks	3,484	3,508	3,830
Regional governments or local authorities	220	210	246
Institutions	2,007	2,488	4,110
Corporates	10,489	11,186	12,392
of which: SMEs	1,854	2,412	2,853
Retail	17,366	17,010	16,436
of which: SMEs	3,862	4,238	4,623
Secured by mortgages on immovable property	18,086	18,036	18,147
of which: SMEs	1,553	2,167	2,809
Exposures in default	540	492	471
Total SA approach	**52,192**	**52,929**	**55,632**
Total	**1,209,872**	**1,178,377**	**1,127,978**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

In 2018, the total net carrying value of the AIRB portfolio increased by EUR 81.9 billion. The growth in the central governments or central banks' exposure class relates to regulatory reserve deposits, fixed rate notes and issuer investments limits, and the growth in the Corporates exposure class was observed in term loans, revolvers and Letter of credits and guarantees.
The SA portfolio decreased EUR 3.4 billion in 2018, mainly caused by decreased nostro balances at institutions and trade related transactions, term loans and performance bonds in corporates.

Exposure by geography

The table below presents a breakdown of net carrying value of exposures and their totals by geographical area and exposure classes under the AIRB and SA approaches.

EU CRB-C: Geographical breakdown of exposures

	Net carrying value[1]									
2018	Europe	Netherlands	Belgium & Luxembourg	Germany	Other Europe	America	Africa	Asia	Australia	Total
Central governments or central banks	229,860	49,578	52,429	71,672	56,182	19,202	599	10,464	8,225	268,349
Institutions	59,148	5,830	13,814	2,307	37,196	13,402	1,122	29,920	4,324	107,915
Corporates	298,474	70,852	67,581	16,995	143,046	72,495	4,938	68,247	6,918	451,072
Retail	296,849	132,812	51,072	87,740	25,226	248	46	200	32,999	330,343
Total AIRB approach	**884,330**	**259,072**	**184,896**	**178,713**	**261,650**	**105,346**	**6,705**	**108,832**	**52,466**	**1,157,680**
Central governments or central banks	3,462	1			3,461			22		3,484
Regional governments or local authorities	220	50	5		165					220
Institutions	1,922	1,606	75	3	238	31		52	2	2,007
Corporates	10,109	686	1045	358	8,019	10	2	332	37	10,489
Retail	17,174	55	114	1	17,005	7	6		178	17,366
Secured by mortgages on immovable property	15,185	2,979	5	1	12,200	1		57	2,843	18,086
Exposures in default	537	36	144		356				3	540
Total SA approach	**48,609**	**5,413**	**1,388**	**363**	**41,444**	**49**	**8**	**463**	**3,063**	**52,192**
Total	**932,939**	**264,484**	**186,284**	**179,076**	**303,094**	**105,396**	**6,712**	**109,295**	**55,529**	**1,209,872**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

EU CRB-C: Geographical breakdown of exposures

	Net carrying value[1]									
2017	Europe	Netherlands	Belgium & Luxembourg	Germany	Other Europe	America	Africa	Asia	Australia	Total
Central governments or central banks	200,196	41,189	47,901	67,205	43,902	13,767	616	8,781	7,993	231,353
Institutions	56,604	5,634	11,764	2,962	36,245	11,125	550	28,887	5,008	102,175
Corporates	277,065	66,592	63,989	15,888	130,596	65,843	4,660	60,887	4,662	413,116
Retail	293,069	134,486	49,186	86,080	23,316	234	53	194	32,152	325,702
Total AIRB approach	**826,935**	**247,901**	**172,840**	**172,135**	**234,059**	**90,969**	**5,879**	**98,748**	**49,816**	**1,072,346**
Central governments or central banks	3,800	1			3,799			30		3,830
Regional governments or local authorities	246	32	4		210					246
Institutions	4,065	3,769	92	4	200	28		11	6	4,110
Corporates	11,947	828	963	346	9,811	10	2	394	39	12,392
Retail	16,333	46	105	1	16,181	4	3		96	16,436
Secured by mortgages on immovable property	15,284	3,073	4	1	12,206	1		44	2,819	18,147
Exposures in default	467	25	133		309				4	471
Total SA approach	**52,141**	**7,773**	**1,300**	**352**	**42,715**	**43**	**5**	**479**	**2,964**	**55,632**
Total	**879,076**	**255,674**	**174,140**	**172,487**	**276,774**	**91,012**	**5,884**	**99,227**	**52,779**	**1,127,978**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

During 2018, net carrying value increased by EUR 53.9 billion in Europe. One of the main drivers of this growth is an increase in exposure (money market and regulatory) due to deposits given to De Nederlandsche Bank and Deutsche Bundesbank

Second, there was growth in Belgium & Luxembourg, Netherlands, Germany and Switzerland mainly in term loans and revolvers in the corporates exposure class. Further in Asia, trade related transactions in Singapore and Hong Kong and revolvers in Japan and China were the main driver for increased exposures in the corporates exposure class.

Exposure by industry or counterparty type

The following table provides a breakdown of the net carrying values by industry or counterparty type per exposure class, for both the AIRB and SA portfolio and ordered by the size of the combined AIRB and SA exposure. These industry sector or counterparty types are based upon the European NACE[2] codes (Nomenclature statistique des Activités économiques dans la Communauté Européenne) and reflect the main activity of the client. The industry or counterparty type allocation is based exclusively on the nature of the client. The classification of the exposures incurred jointly by more than one obligor should be done on the basis of characteristics of the obligor that was the more relevant, or determinant, for the institution to grant the exposure.

EU CRB-D: Concentration of exposures by industry or counterparty types

	Net carrying value[1]						
2018	Activities of households as employers and own use	Wholesale and retail trade	Financial and insurance activities	Public administration and defence, compulsory social security	Manufac turing	Other Services	Total
Central governments or central banks			109,157	155,663	2	3,527	268,349
Institutions			95,811	7,481	24	4,600	107,915
Corporates	52	92,591	46,211	0	95,002	217,216	451,072
Retail	272,360	6,258	1,893	13,434	8,984	27,416	330,343
Total AIRB approach	**272,411**	**98,849**	**253,072**	**176,577**	**104,011**	**252,759**	**1,157,680**
Central governments or central banks			2,719	763		1	3,484
Regional governments or local authorities				168		52	220
Institutions			1,990			17	2,007
Corporates	346	2,949	247		4,252	2,695	10,489
Retail	8,613	1,869	362	991	1,590	3,941	17,366
Secured by mortgages on immovable property	10,871	712	54	8	867	5,575	18,086
Exposures in default	231	105	3	3	68	130	540
Total SA approach	**20,061**	**5,634**	**5,377**	**1,934**	**6,776**	**12,411**	**52,192**
Total	**292,472**	**104,483**	**258,449**	**178,511**	**110,788**	**265,170**	**1,209,872**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

2 NACE is the regulatory requirement for this table. At ING in general the NAICS industry codes are used, for example in the Risk Industry Concentration section in the Risk Management Paragraph.

EU CRB-D: Concentration of exposures by industry or counterparty types

	Net carrying value[1]						
2017	Activities of households as employers and own use	Wholesale and retail trade	Financial and insurance activities	Public administration and defence, compulsory social security	Manufac turing	Other Services	Total
Central governments or central banks			81,481	146,373		3,499	231,353
Institutions			90,478	7,290	48	4,359	102,175
Corporates		82,175	46,424	9	89,862	194,593	413,116
Retail	270,324	5,796	1,716	13,344	9,008	25,514	325,702
Total AIRB approach	**270,378**	**87,971**	**220,099**	**167,016**	**98,917**	**227,965**	**1,072,346**
Central governments or central banks			2,729	1,100		1	3,830
Regional governments or local authorities				213		33	246
Institutions			4,110				4,110
Corporates	283	3,588	396		4,635	3,490	12,392
Retail	7,268	2,230	316	864	1,899	3,859	16,436
Secured by mortgages on immovable property	9,524	1,195	75	12	1,316	6,024	18,147
Exposures in default	224	81	3	3	64	96	471
Total SA approach	**17,300**	**7,094**	**7,629**	**2,192**	**7,913**	**13,504**	**55,632**
Total	**287,677**	**95,065**	**227,728**	**169,208**	**106,831**	**241,469**	**1,127,978**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

The table shows the industry or counterparty types that represent at least 5% of the total net carrying value. In total the top 5 counterparty or industry types makes up 78% of the exposure in 2018. The other counterparty or industry types exposures are grouped under the Other Services. Manufacturing is logically mostly found in the corporate exposure class and the Financing activities in the Institutions and Sovereign exposure classes.
The exposure in Financial and insurance activities increased due to (regulatory reserve) deposits in Europe and issuer investment limit balances in Asia.

The increase in the Manufacturing industry was related to term loans and revolvers in Europe, term loans in America and trade related transactions in Asia. The increase in Public administration and defence, compulsory social security sector exposure mostly consisted of government bonds of United States and European countries; namely Poland, Czech Republic and Germany, Brazil and local governments in Canada. Wholesale and retail trade exposures contained letter of credits, revolvers, overdrafts and term loans in mainly Singapore, Switzerland, Netherlands, Hong Kong and United Arab Emirates. In other services, biggest exposure increase was observed within Mining and Quarrying, Information and Communication, Real Estate Activities and Transportation and Storage industries.

Within the SA portfolio, exposure decrease was due to nostro balance drop at Institutions in Europe. Besides, residential mortgages exposures increased significantly in Poland and Romania whereas term loans for households increased in France, Poland, Romania and Italy.

Exposure by maturity
The table below presents a breakdown of the net carrying value by residual maturity, for both AIRB and SA exposure classes. In ING's data model all transactions get assigned a regulatory maturity between 1 day and 5 years.

EU CRB-E: Maturity of exposures

2018	<= 1 year	> 1 year < 5 years	>= 5 years	Total
	Net carrying value[1]			
Central governments or central banks	115,548	86,464	66,337	268,349
Institutions	65,332	27,810	14,773	107,915
Corporates	173,800	192,990	84,282	451,072
Retail	10,685	27,102	292,556	330,343
Total AIRB approach	**365,365**	**334,366**	**457,948**	**1,157,680**
Central governments or central banks	2,698	777	9	3,484
Regional governments or local authorities	5	75	140	220
Institutions	1,804	138	65	2,007
Corporates	5,283	4,183	1,023	10,489
Retail	4,820	6,660	5,886	17,366
Secured by mortgages on immovable property	2,138	3,584	12,365	18,086
Exposures in default	309	55	177	540
Total SA approach	**17,058**	**15,471**	**19,663**	**52,192**
Total	**382,423**	**349,837**	**477,612**	**1,209,872**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

EU CRB-E: Maturity of exposures

2017	<= 1 year	> 1 year < 5 years	>= 5 years	Total
	Net carrying value[1]			
Central governments or central banks	102,987	64,308	64,058	231,353
Institutions	62,790	24,491	14,894	102,175
Corporates	156,713	178,071	78,331	413,116
Retail	11,893	25,810	288,000	325,702
Total AIRB approach	**334,383**	**292,680**	**445,284**	**1,072,346**
Central governments or central banks	2,800	1,018	11	3,830
Regional governments or local authorities	4	68	174	246
Institutions	3,922	79	109	4,110
Corporates	4,994	5,786	1,612	12,392
Retail	4,925	6,975	4,535	16,436
Secured by mortgages on immovable property	2,375	3,936	11,836	18,147
Exposures in default	262	31	178	471
Total SA approach	**19,284**	**17,893**	**18,455**	**55,632**
Total	**353,666**	**310,573**	**463,739**	**1,127,978**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

The largest part of the exposure is in the > 5 years maturity bucket (39.5%). This bucket comprises residential mortgages, which typically have longer maturities. The lower maturity buckets for Central Governments or Central Banks are mostly in money market deposits and regulatory reserve deposits and revolving loans. Exposures in the other two buckets are predominantly seen in bond investment products. Regarding Corporates, revolving loans, guarantees and letters of credit make up the majority of the exposure seen in the first maturity bucket, whereas term loans and revolving loans are the dominant product types in the longer maturity buckets.

For the SA portfolio, most exposures within corporate exposure classes can be found in the first two maturity buckets. Due to residential mortgages, most exposures are with the third bucket.

In the AIRB portfolio, the exposure increased mainly in the Central Governments or central banks' exposure class, related to (regulatory reserve and money market) deposits in the first two buckets. The exposure increase in Corporate was significant in the first two bucket due to term loans and revolvers. The retail portfolio exposure increased in the > 5 years bucket indicates the growth in residential mortgages and term loans. In the SA portfolio ,retail and secured by mortgages on immovable properties categories exposure increased in longest maturity bucket while exposure decreased for the shorter buckets which was significant in term loans in retail and residential mortgages in secured by mortgages on immovable properties exposure class.

Advanced Internal Rating Based approach (AIRB)

The AIRB approach has five main elements that drive the CRR/CRD IV 'risk-based approach' for the determination of RWA and EL. The elements include: Exposure Class, Probability of Default (PD), Regulatory Exposure at Default (READ), Loss Given Default (LGD) and maturity (M). For further details on these elements please see the 'Risk Management' part of the consolidated annual accounts.

AIRB credit exposures by exposure class and PD range

The table below provides an overview of the main parameters used for the calculation of capital requirements for AIRB models. The on-and off-balance sheet exposures are shown by the four main exposure classes and according to PD grades to enable an assessment of the credit quality of the portfolio. The exposures are bucketed in PD Scales prescribed by EBA. This bucketing of PD scales is not used within ING. The ING's Probability of Default (PD) rating models are based on a 1-22 scale, which corresponds to the same rating grades that are assigned by external rating agencies. Risk Ratings (PD) for performing loans (1-19) are calculated within ING with regulatory approved models. Risk Ratings for non-performing loans (20-22) are set on the basis of an approved discretionary methodology by the Global or Regional Restructuring unit. Overall the risk weights of the ING portfolio are a mixture of low risk weights for sovereigns and residential mortgages combined with higher risk weights for Corporates. Many central governments exposures receive a zero risk weight due to the high quality rating (permanent partial use of the SA rules). Mortgages generally benefit from large levels of (over) collateralisation.

The average Credit Conversion Factor CCF (the conversion of off-balance sheet exposure into credit exposure equivalents) is calculated as the off-balance exposure post-crm and post-ccf over the original off-balance sheet exposure. The CCF's percentages are applied on product or transaction level and are regulatory driven.

EU CR6: IRB- Credit risk exposures by exposure class and PD range

2018	PD Scale	Original on-balance sheet gross exposure	off-balance sheet exposures pre-ccf	Average CCF	EAD post crm and post-ccf	Average pd	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Value adjust-ments and provisions
Central Governments and Central Banks	0.00 to < 0.15	106,290	154,453	5%	114,756	0.0%	1,163	34%	2	4,484	4%	4	-6
Central Governments and Central Banks	0.15 to < 0.25	344	765	24%	530	0.2%	20	35%	2	94	18%	0	0
Central Governments and Central Banks	0.25 to < 0.50	2,256	2,995	7%	2,461	0.3%	57	59%	1	1,096	45%	3	-10
Central Governments and Central Banks	0.50 to <0.75												
Central Governments and Central Banks	0.75 to < 2.50	212	406	32%	341	1.9%	40	25%	4	195	57%	1	0
Central Governments and Central Banks	2.50 to < 10.00	272	305	87%	538	7.6%	42	18%	4	196	37%	4	-3
Central Governments and Central Banks	10.00 to < 100.00	0	17	27%	5	16.3%	48	10%	1	2	42%	0	0
Central Governments and Central Banks	default	54	0	63%	54	100.0%	5	3%	5	4	8%	1	-1
Central Governments and Central Banks	**subtotal**	**109,429**	**158,941**	**6%**	**118,686**	**0.1%**	**1,372**	**35%**	**2**	**6,072**	**5%**	**14**	**-20**
Institutions	0.00 to < 0.15	29,978	52,207	8%	34,379	0.1%	2,865	28%	2	4,798	14%	6	-2
Institutions	0.15 to < 0.25	1,934	3,080	16%	2,437	0.2%	479	15%	2	394	16%	1	0
Institutions	0.25 to < 0.50	4,462	6,254	17%	5,501	0.4%	965	17%	2	1,158	21%	3	-1
Institutions	0.50 to <0.75	11	3	92%	14	0.7%	14	20%	4	7	49%	0	0
Institutions	0.75 to < 2.50	3,836	3,661	14%	4,357	1.3%	622	26%	2	2,367	54%	13	-9
Institutions	2.50 to < 10.00	78	736	14%	184	6.4%	209	26%	2	178	97%	3	0
Institutions	10.00 to < 100.00	53	1,280	19%	298	16.5%	3,574	17%	3	266	89%	7	-2
Institutions	default	325	36	36%	337	100.0%	217	1%	5	12	4%	3	-3
Institutions	**subtotal**	**40,676**	**67,257**	**10%**	**47,506**	**1.1%**	**8,910**	**25%**	**2**	**9,179**	**19%**	**36**	**-17**
Corporate	0.00 to < 0.15	42,855	79,809	34%	70,163	0.1%	17,601	40%	2.71	15,343	22%	21	-9
Corporate	0.15 to < 0.25	28,607	33,351	32%	39,275	0.2%	8,159	35%	2.79	11,385	29%	23	-9
Corporate	0.25 to < 0.50	74,510	62,883	37%	97,888	0.4%	25,937	36%	3.16	37,329	38%	89	-42
Corporate	0.50 to <0.75	1,631	489	48%	1,865	0.6%	2,301	34%	3.11	920	49%	3	-2
Corporate	0.75 to < 2.50	64,770	35,823	39%	78,754	1.3%	34,988	35%	3.19	49,181	62%	261	-173
Corporate	2.50 to < 10.00	10,926	5,220	34%	12,689	5.6%	12,144	52%	2.93	11,896	94%	187	-182
Corporate	10.00 to < 100.00	4,209	2,433	27%	4,855	22.0%	21,591	28%	2.94	6,521	134%	260	-201
Corporate	default	5,560	726	66%	6,037	100.0%	6,409	35%	2.21	8,263	137%	2,112	-2,112
Corporate	**subtotal**	**233,068**	**220,735**	**36%**	**311,525**	**3.0%**	**127,683**	**37%**	**2.99**	**140,837**	**45%**	**2,957**	**-2,730**
Retail	0.00 to < 0.15	87,858	16,031	74%	99,729	0.1%	4,827,943	23%	4.64	4,295	4%	14	-4
Retail	0.15 to < 0.25	59,811	3,072	62%	61,709	0.2%	630,732	23%	4.86	4,983	8%	21	-7
Retail	0.25 to < 0.50	99,381	3,295	75%	101,867	0.3%	1,376,907	20%	4.87	11,671	11%	60	-18
Retail	0.50 to < 0.75	16,234	1,189	59%	16,936	0.6%	342,878	34%	4.73	4,249	25%	27	-12
Retail	0.75 to < 2.50	22,118	2,385	80%	24,032	1.3%	1,343,282	41%	4.29	10,507	44%	108	-98
Retail	2.50 to < 10.00	10,453	653	77%	10,953	4.9%	454,931	31%	4.51	7,860	72%	135	-112
Retail	10.00 to < 100.00	5,274	181	105%	5,464	22.2%	177,033	29%	4.44	6,012	110%	298	-202
Retail	default	3,599	48	148%	3,670	100.0%	97,856	34%	4.02	5,927	162%	787	-787
Retail	**subtotal**	**304,727**	**26,854**	**73%**	**324,360**	**2.0%**	**9,040,020**	**24%**	**4.72**	**55,503**	**17%**	**1,450**	**-1,238**
Total (all portfolios)	**Total**	**687,900**	**473,786**	**24%**	**802,076**	**2.0%**	**9,177,943**	**31%**	**3.54**	**211,592**	**26%**	**4,458**	**-4,006**

All figures are in millions of EUR, except for the number of obligors. All cells that are left blank have minimal values.

The PD, LGD, EAD and maturity are drivers of RWA and RWA density. RWA density is measured as the RWA over the EAD and increases with each PD scale. In several instances the RWA Density is lower than one might expect, due to the loans guaranteed by an Export Credit Agency (ECA). These ECAs offer loans and insurance to help remove the risk of uncertainty of exporting to other countries and underwrite the political risk and commercial risks of overseas investments, and as such lower the LGD for these loans. With very low LGDs as a result the RWA is lower than would be assumed in a higher PD class.

The Central Governments and Central Banks exposures mostly consists of bond investments issued by European sovereigns. The majority of the exposure resides in the 0.00 – 0.15 PD scale and the RWA density of this bucket remained stable at 4%. The defaulted exposures in central governments and central banks exposures belonged to a few African sovereigns.

RWA increased by EUR 13.1 billion in 2018 mainly due to Corporate exposures class. The increase of RWA in the Corporates exposures class was spread to all the buckets except for default bucket category. Default bucket RWA decreased due to risk profile improvements and repayments. Regarding the retail exposure class, the PD buckets 0.15 to < 0.25 and 0.75 to < 2.50 PD drove the increase in the RWA.

EU CR6: IRB - Geographical breakdown of exposure-weighted average LGD and PD by exposure classes

2018	Europe	Netherlands	Belgium & Luxembourg	Germany	Other Europe	America	Africa	Asia	Australia
Central governments or central banks									
Average PD	0.04%	0.01%	0.03%	0.02%	0.11%	0.05%	14.81%	0.22%	0.02%
Average LGD	35.28%	29.87%	45.64%	33.20%	34.21%	29.81%	3.98%	32.40%	33.34%
Institutions									
Average PD	1.38%	10.35%	0.35%	0.24%	0.42%	0.70%	0.63%	0.12%	0.05%
Average LGD	24.94%	26.60%	25.19%	37.28%	23.98%	14.48%	50.80%	35.61%	35.85%
Corporates									
Average PD	3.35%	4.15%	3.71%	1.10%	2.99%	2.48%	8.43%	1.20%	2.85%
Average LGD	38.19%	27.63%	54.59%	32.47%	35.88%	36.49%	33.55%	32.74%	28.71%
Of Which: Specialised lending									
Average PD	2.72%	3.89%	1.68%	1.82%	2.65%	2.35%	2.16%	1.33%	4.19%
Average LGD	29.26%	15.30%	39.32%	27.19%	31.93%	33.72%	43.88%	28.93%	24.16%
Of Which: SME									
Average PD	6.15%	4.05%	5.85%	1.97%	9.77%	1.58%	4.39%	15.12%	-
Average LGD	77.64%	45.51%	117.71%	57.53%	33.27%	34.85%	1.28%	58.90%	-
Retail									
Average PD	2.05%	1.65%	4.03%	1.44%	2.26%	3.18%	5.07%	2.54%	1.17%
Average LGD	25.32%	16.06%	22.22%	39.29%	31.40%	19.10%	21.21%	19.33%	14.58%
Secured by real estate property									
Average PD	1.85%	1.49%	3.87%	1.14%	2.12%	3.08%	5.84%	2.23%	1.14%
Average LGD	21.99%	36.54%	23.55%	18.60%	31.89%	18.08%	15.31%	15.69%	14.45%
Other retail									
Average PD	3.31%	3.15%	4.01%	3.15%	6.01%	3.41%	2.96%	5.79%	5.54%
Average LGD	80.19%	71.08%	48.71%	93.70%	31.26%	20.94%	38.33%	58.28%	38.60%

EU CR6: IRB - Geographical breakdown of exposure-weighted average LGD and PD by exposure classes									
2017	Europe	Netherlands	Belgium & Luxembourg	Germany	Other Europe	America	Africa	Asia	Australia
Central governments or central banks									
Average PD	0.05%	0.01%	0.03%	0.02%	0.13%	0.06%	5.77%	0.07%	0.02%
Average LGD	36.60%	29.89%	43.43%	34.65%	35.52%	29.35%	12.97%	33.10%	34.94%
Institutions									
Average PD	1.34%	11.44%	0.13%	0.29%	0.30%	0.31%	1.06%	0.11%	0.05%
Average LGD	26.07%	28.32%	28.01%	24.18%	24.47%	17.17%	51.00%	38.84%	31.88%
Corporates									
Average PD	4.10%	5.50%	3.84%	0.92%	3.84%	2.72%	6.44%	1.30%	4.03%
Average LGD	41.53%	25.54%	49.87%	30.20%	47.32%	35.31%	37.71%	38.44%	25.21%
Retail									
Average PD	2.29%	2.00%	4.21%	1.43%	3.04%	2.51%	4.12%	1.92%	1.26%
Average LGD	27.23%	17.29%	28.91%	39.93%	33.69%	20.23%	22.85%	20.13%	14.97%

Note: The reported figures for 2017 have been adjusted compared to the Pillar III Report 2017 following an adjustment in the calculation methodology.

Over the year, PD's for most geographical areas and sectors improved, in line with the prevailing economic environment. For the calculation of the average LGD, ING adjusted the calculation resulting in slightly higher LGD's for most of the locations and sectors than it was reported in previous year.

Backtesting of model parameters

ING has dedicated AIRB credit risk models per business line and geography. The performance and predictive power of the models is monitored by Model Development, that is part of the Financial Risk department. Moreover an independent Model Risk Management department periodically reviews all AIRB models. All models are backtested when possible by both the Model development and the independent Model Risk Management departments.

If a model is considered not to be robust or backtesting indicates insufficient performance, then the model is either re-calibrated or re-developed. All model recommendations from the Model Risk Management department are tracked via an internal database that management uses to track issues detected by the Internal Audit department, incidents and non-financial risk issues. All significant model changes are submitted to the ECB and implemented after regulatory approval. On average, 81% of the AIRB credit risk models in the validation cycle have had 'No to Remote' (44%) and 'Minor' (37%) model deficiencies.

PD backtesting

The PD backtesting is performed per exposure class and PD-range, corresponding to the internal rating scales 1 to 19, which are then mapped to comparable rating grades from Standard & Poor's. Securitisations and Equity exposures are not included in these tables.

The average PD as of 31 December 2018 per portfolio is split per exposure class and rating grade. Both the number and the amount-weighted predicted PD figures are shown for the performing portfolios. The number weighted predicted PD is also referred to as the arithmetic weighted PD, and the amount weighted PD is referred to as the EAD-weighted PD.

The Annual Average historical default rate is calculated over the last 6 years, from 2013 until 2018. The performing clients at the end of each year were followed through the following year (12 months) and their into-default moments were flagged each month. In case a client went into-default more than once within the 12-month observation period, the last (i.e. most recent) observed into-default moment was used. The annual average observed default rate represents the average of the 6 years observed number weighted default rates.

EU CR9: IRB – Backtesting of probability of default (PD) per exposure class

Exposure class	PD Range	External rating equivalent	Weighted average PD	Arithmetic average PD by obligors	Number of obligors		Defaulted obligors in the year	Average historical annual default
					End of 2017	End of 2018		
Central Governments	0.00 - 0.01	AAA	0.01%	0.01%	94	418		
Central Governments	0.01 - 0.03	AA	0.02%	0.02%	487	243		
Central Governments	0.03 - 0.04	AA	0.03%	0.03%	262	207		
Central Governments	0.04 - 0.05	AA	0.04%	0.04%	152	151		
Central Governments	0.05 - 0.06	A	0.05%	0.05%	81	77		
Central Governments	0.06 - 0.08	A	0.06%	0.06%	38	30		
Central Governments	0.08 - 0.11	A	0.09%	0.09%	33	36		
Central Governments	0.11 - 0.17	BBB	0.14%	0.14%	11	9		0.21%
Central Governments	0.17 - 0.26	BBB	0.21%	0.21%	18	21		
Central Governments	0.26 - 0.37	BBB	0.31%	0.31%	48	44		
Central Governments	0.37 - 0.58	BB	0.44%	0.44%	17	18		
Central Governments	0.58 - 1.00	BB	0.76%	0.76%	11	4		
Central Governments	1.00 - 1.77	BB	1.32%	1.32%	9	16		
Central Governments	1.77 - 3.23	B	2.38%	2.41%	26	21		
Central Governments	3.23 - 6.05	B	4.39%	4.40%	21	24		0.79%
Central Governments	6.05 - 11.67	B	8.35%	8.36%	22	17		
Central Governments	11.67 - 20.20	CCC	16.32%	16.32%	4	4	1	3.57%

EU CR9: IRB – Backtesting of probability of default (PD) per exposure class

Exposure class	PD Range	External rating equivalent	Weighted average PD	Arithmetic average PD by obligors	Number of obligors		Defaulted obligors in the year	Average historical annual default
					End of 2017	End of 2018		
Corporates	0.00 - 0.01	AAA	0.01%	0.01%	11	293		
Corporates	0.01 - 0.03	AA	0.02%	0.02%	296	22		
Corporates	0.03 - 0.04	AA	0.03%	0.03%	85	86		
Corporates	0.04 - 0.05	AA	0.04%	0.04%	72	70		0.06%
Corporates	0.05 - 0.06	A	0.05%	0.05%	3,314	3,963	6	0.12%
Corporates	0.06 - 0.08	A	0.06%	0.07%	1,457	1,589	1	0.15%
Corporates	0.08 - 0.11	A	0.09%	0.10%	1,607	1,721	5	0.15%
Corporates	0.11 - 0.17	BBB	0.14%	0.14%	10,331	10,300	35	0.32%
Corporates	0.17 - 0.26	BBB	0.21%	0.21%	7,154	7,396	22	0.32%
Corporates	0.26 - 0.37	BBB	0.31%	0.30%	11,274	12,125	54	0.46%
Corporates	0.37 - 0.58	BB	0.44%	0.44%	14,231	14,300	57	0.60%
Corporates	0.58 - 1.00	BB	0.75%	0.76%	13,898	14,728	126	1.08%
Corporates	1.00 - 1.77	BB	1.31%	1.34%	13,551	14,188	156	1.55%
Corporates	1.77 - 3.23	B	2.36%	2.39%	10,126	10,038	288	2.86%
Corporates	3.23 - 6.05	B	4.38%	4.34%	7,448	7,551	295	4.32%
Corporates	6.05 - 11.67	B	8.33%	8.35%	3,229	3,130	264	9.68%
Corporates	11.67 - 20.20	CCC	15.60%	15.37%	2,266	1,953	396	10.13%
Corporates	20.20 - 29.58	CC-	24.50%	24.30%	1,178	991	249	17.91%
Corporates	29.58 - 100.00	C-	36.77%	40.18%	898	685	284	28.01%

EU CR9: IRB – Backtesting of probability of default (PD) per exposure class

Exposure class	PD Range	External rating equivalent	Weighted average PD	Arithmetic average PD by obligors	Number of obligors End of 2017	Number of obligors End of 2018	Defaulted obligors in the year	Average historical annual default
Institutions	0.00 - 0.01	AAA	0.01%	0.01%	48	54		
Institutions	0.01 - 0.03	AA	0.02%	0.02%	34	27		
Institutions	0.03 - 0.04	AA	0.03%	0.03%	67	55	1	0.32%
Institutions	0.04 - 0.05	AA	0.04%	0.04%	243	219		
Institutions	0.05 - 0.06	A	0.05%	0.05%	1,323	1,332	1	0.04%
Institutions	0.06 - 0.08	A	0.06%	0.06%	743	760		
Institutions	0.08 - 0.11	A	0.09%	0.09%	444	355		
Institutions	0.11 - 0.17	BBB	0.14%	0.14%	635	619	1	0.10%
Institutions	0.17 - 0.26	BBB	0.21%	0.21%	573	540	1	0.04%
Institutions	0.26 - 0.37	BBB	0.31%	0.31%	502	662	1	0.10%
Institutions	0.37 - 0.58	BB	0.44%	0.44%	671	530	6	0.17%
Institutions	0.58 - 1.00	BB	0.76%	0.76%	501	426	7	0.24%
Institutions	1.00 - 1.77	BB	1.32%	1.33%	323	424	2	0.47%
Institutions	1.77 - 3.23	B	2.38%	2.41%	302	338	27	2.29%
Institutions	3.23 - 6.05	B	4.20%	4.32%	162	170	6	1.18%
Institutions	6.05 - 11.67	B	8.35%	8.32%	59	103	4	2.36%
Institutions	11.67 - 20.20	CCC	16.09%	16.13%	42	53	3	3.34%
Institutions	20.20 - 29.58	CC-	25.00%	24.96%	22	15	9	9.97%
Institutions	29.58 - 100.00	C-	33.99%	41.53%	7	8	1	7.42%

EU CR9: IRB – Backtesting of probability of default (PD) per exposure class

Exposure class	PD Range	External rating equivalent	Weighted average PD	Arithmetic average PD by obligors	Number of obligors End of 2017	Number of obligors End of 2018	Defaulted obligors in the year	Average historical annual default
Retail	0.00 - 0.01	AAA	0.01%	0.01%	1,463,121	1,610,777	326	0.03%
Retail	0.01 - 0.03	AA	0.02%	0.02%	817,115	800,937	238	0.08%
Retail	0.03 - 0.04	AA	0.03%	0.03%	119,109	124,920	42	0.08%
Retail	0.04 - 0.05	AA	0.04%	0.04%	680,750	684,179	255	0.05%
Retail	0.05 - 0.06	A	0.05%	0.05%	30,026	46,403	13	0.03%
Retail	0.06 - 0.08	A	0.06%	0.06%	143,194	124,691	92	0.07%
Retail	0.08 - 0.11	A	0.10%	0.10%	364,871	388,580	226	0.10%
Retail	0.11 - 0.17	BBB	0.14%	0.13%	1,158,036	1,215,927	1,229	0.13%
Retail	0.17 - 0.26	BBB	0.18%	0.21%	683,092	725,259	744	0.19%
Retail	0.26 - 0.37	BBB	0.29%	0.31%	601,667	629,171	1,622	0.35%
Retail	0.37 - 0.58	BB	0.46%	0.48%	682,504	667,246	1,999	0.52%
Retail	0.58 - 1.00	BB	0.79%	0.76%	422,388	445,739	1,993	1.13%
Retail	1.00 - 1.77	BB	1.34%	1.45%	612,471	668,584	6,091	1.47%
Retail	1.77 - 3.23	B	2.53%	2.55%	533,235	587,376	5,429	1.93%
Retail	3.23 - 6.05	B	4.80%	4.14%	162,454	174,842	5,243	5.38%
Retail	6.05 - 11.67	B	8.13%	8.08%	171,546	159,559	10,259	7.34%
Retail	11.67 - 20.20	CCC	16.17%	16.38%	59,671	77,503	6,427	11.77%
Retail	20.20 - 29.58	CC-	24.23%	25.60%	10,360	9,931	1,988	19.57%
Retail	29.58 - 100.00	C-	39.85%	35.94%	26,107	35,578	8,634	29.95%

It should be noted that some of the observed values related to low number of observations (in particular for Sovereigns), hence the numbers should be interpreted with care. For some of the ratings, in particular for the Corporate exposures class, some of the observed values fall above the range of estimation. Until the models have been redeveloped and approved in the context of incorporating new regulations, this has been compensated by add-ons or other prudential measures. Overall, the EL backtest (see EU CR9) does not exhibit underestimations.

EL backtesting
The table below gives insight in the Expected Loss rate and the Observed Loss rate. The expected loss as of 31 December 2017 for the performing portfolio is split per exposure class. The 31 December 2017 portfolio is followed through 2018 to determine the defaulted exposures. The models are based on long series of historical data. In the comparison, the expected loss rate is calculated by dividing the expected loss of the performing portfolio as of 31 December 2017 by the READ of the performing portfolio of the same period. The Observed Loss rate is a result of multiplying the observed defaulted exposures by its EAD. This backtest is only representative of the year end 2018 portfolio and can be influenced by small sample sizes or incidents. Nonetheless, backtesting gives a comparison of the Expected Loss rate versus the observed Loss rate.

Expected loss rate under the Advanced IRB approach versus the observed loss rate per exposure class

2018	Sovereigns	Institutions	Corporate	Other retail	Total
Expected loss rate 2017*	0.01%	0.05%	0.27%	0.21%	0.20%
Observed Loss Rate 2018	0.00%	0.01%	0.68%	0.41%	0.42%

Includes the AIRB portfolio only; excludes securitisations, equities and ONCOA.
* Expected loss rate 2017 includes performing loans only.

Standardised Approach
A subset of the ING portfolio is treated with the Standardised Approach (SA approach). The SA approach applies fixed risk weights to each exposure class, split into credit quality steps (based on external ratings) as dictated by the Capital Requirement Directive (CRD). The SA approach is the least sophisticated of the CRR/CRD IV methodologies and is not as risk sensitive as the risk-based AIRB Approach.

In order to calculate the regulatory capital requirements under the SA approach, ING uses eligible external ratings from Standard & Poor's, Moody's and Fitch Ratings. Ratings are applied to all relevant exposure classes in the SA approach. For the mortgage portfolio, fixed risk weights (based on the LtV) are used.

Exposures before and after risk mitigation for the SA portfolio
The table below shows how credit risk mitigation (CRM) in the SA portfolio is distributed over the exposure classes. ING's exposure value is shown before and after credit risk mitigation. There are three principal methods for reducing or mitigating Credit Risk: i) by reduction of credit risk through the acceptance of pledged financial assets as collateral or mitigation or shifting of credit risks to a lower risk weighting group, ii) by accepting guarantees from unrelated third parties, or iii) secure by mortgages. ING uses both methods to take CRM effects into account. For financial markets collateral, ING uses the Financial Collateral Comprehensive Method to allow for mitigation effects.

The table below illustrates the effect of all CRM techniques applied in accordance with the Part Three, Title II, Chapter 4 of Regulation (EU) 575/2013 on the standardised approach capital requirements' calculations.

EU CR4: Standardised approach - credit risk exposure and Credit Risk Mitigation (CRM) effects

2018	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
Exposure classes	On-Balance Sheet amount	Off-Balance Sheet amount	On-Balance Sheet amount	Off-Balance Sheet amount	RWA	RWA density
Central governments or central banks	1,519	1,975	1,586	18	1,444	90%
Regional governments or local authorities	170	53	168	4	116	67%
Institutions	1,806	202	3,241	55	697	21%
Corporates	5,474	5,042	5,350	744	5,936	97%
Retail	12,113	5,466	10,474	1,343	8,456	72%
Secured by mortgages on immovable property	16,078	2,052	15,996	650	8,488	51%
Exposure in default	1,047	55	490	9	589	118%
Total	**38,207**	**14,844**	**37,304**	**2,824**	**25,726**	**64%**

Excludes Counterparty Credit Risk exposures.

EU CR4: Standardised approach - credit risk exposure and Credit Risk Mitigation (CRM) effects

2017	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
Exposure classes	On-Balance Sheet amount	Off-Balance Sheet amount	On-Balance Sheet amount	Off-Balance Sheet amount	RWA	RWA density
Central governments or central banks	1,904	1,927	3,154	21	1,973	62%
Regional governments or local authorities	148	98	148		112	75%
Institutions	3,860	251	4,752	65	1,016	21%
Corporates	6,144	6,264	5,597	856	6,344	98%
Retail	10,701	5,857	9,301	1,525	7,764	72%
Secured by mortgages on immovable property	15,710	2,460	15,263	712	8,386	52%
Exposure in default	962	39	441	5	528	118%
Total	**39,429**	**16,897**	**38,657**	**3,188**	**26,122**	**62%**

Excludes Counterparty Credit Risk exposures.

The largest SA portfolios are in Poland, Turkey, Romania, Spain, Australia, Italy and Belgium. The total SA exposure before CCF and CRM decreased by EUR 3.3 billion or 5.8% compared to December 2017.

Risk weights per exposure class

The table below presents the breakdown, post conversion factor and post risk mitigation techniques, of exposures under the Standardised approach by exposure class and risk weight (corresponding to the riskiness attributed to the exposure according to SA approach). The risk weights presented encompass all those assigned to each credit quality step in Article 113 to Article 134 in Part Three, Title II, Chapter 2 of Regulation (EU) 575/2013.

EU CR5: Standardised approach Post-CCF and Post-CRM Techniques

2018	Risk weight							Total
Exposure Classes	0%	20%	35%	50%	75%	100%	150%	
Central governments or central banks	160					1,444		**1,604**
Regional governments or local authorities		51		32		90		**173**
Institutions		3,235		22		39		**3,296**
Corporates		7		46		6,016	25	**6,093**
Retail					11,817			**11,817**
Secured by mortgages on immovable property			9,215	4,116		3,315		**16,646**
Exposure in default						319	180	**499**
Total	**160**	**3,294**	**9,215**	**4,215**	**11,817**	**11,222**	**205**	**40,128**

Excludes Counterparty Credit Risk exposures.

EU CR5: Standardised approach Post-CCF and Post-CRM Techniques

2017	Risk weight							Total
Exposure Classes	0%	20%	35%	50%	75%	100%	150%	
Central governments or central banks	212			1,777		1,186		**3,175**
Regional governments or local authorities		36		16		96		**149**
Institutions		4,705		76		37		**4,817**
Corporates				3		6,420	31	**6,453**
Retail					10,827			**10,827**
Secured by mortgages on immovable property			8,027	4,469		3,478		**15,975**
Exposure in default						283	163	**446**
Total	**212**	**4,741**	**8,027**	**6,341**	**10,827**	**11,501**	**194**	**41,845**

Excludes Counterparty Credit Risk exposures.

The exposure of the SA portfolio shrank by 4.1% to EUR 40.1 billion in terms of READ. In Central governments and central banks, the READ increase in 100% bucket was due to Turkey's external rating downgrade prior to which some portion of the exposure was within 50% in 2017. Other reason for READ decrease in 50% bucket in this exposure class was repayments. In institutions, the READ decrease within 20% bucket occurred in the Netherlands in 2018. Secured by mortgages on Real immovable property exposure class with 35% and 100% buckets are mostly Polish and Romanian residential mortgages and 50% bucket belongs to Australian residential mortgages

Credit quality

This section focusses on non-performing loans, which are loans where there is a reasonable probability that ING may encounter a loss, unless ING intervenes with specific and significant actions. In other words, in this category an account or portfolio requires a more intensified approach, which may include renegotiation of terms and conditions and/or business/financial restructuring. This section should be read in conjunction with the Risk Management paragraph sections of the Annual Report on: Risk Appetite Framework and Credit Quality.

The credit quality of risk exposures is presented in three tables providing insight in the credit quality per exposure class, industry or counterparty type and geography. These tables present the gross carrying values, consisting of on- and off-balance sheet exposures, split over non-performing / performing, specific risk adjustments and impairments/allowances. The net carrying values are the result of specific risk adjustments and / or after impairments/allowances and are presented at the end of the tables. These three tables should be read in conjunction with table EU CR6: IRB-Credit risk exposures by exposure class and PD range.

On-balance sheet items include loans and debt securities. Off-balance sheet items include guarantees given and irrevocable loan commitments. Pre-settlement exposures are not included in this section.
More information on the definition of non-performing loans and allowances can be found in the credit quality section of the Risk Management paragraph of the Annual report.

Credit quality of exposures
This section provides a comprehensive picture of the credit quality of the banks' assets per exposure class.

EU CR1-A: Credit quality of exposures by exposure classes and instruments

	gross carrying values[1]			
2018	defaulted exposures	non-defaulted exposures	specific credit risk adjustments	Net values
Central governments or central banks	54	268,316	-20	268,349
Institutions	360	107,572	-17	107,915
Corporates	6,286	447,517	-2,730	451,072
of which: specialised lending	2,186	158,127	-663	159,650
of which: SMEs	948	27,051	-389	27,610
Retail	3,647	327,934	-1,238	330,343
secured by real estate property	2,970	297,525	-536	299,959
SMEs	447	11,498	-140	11,805
Non-SMEs	2,523	286,027	-396	288,154
Other retail	677	30,410	-703	30,384
SMEs	211	5,019	-201	5,029
Non-SMEs	466	25,390	-502	25,355
Total IRB Approach	**10,346**	**1,151,339**	**-4,006**	**1,157,680**
Central governments or central banks		3,494	-10	3,484
Regional governments or local authorities		223	-3	220
Institutions		2,008		2,007
Corporates		10,516	-27	10,489
of which: SMEs		1,866	-2	1,863
Retail		17,579	-213	17,366
of which: SMEs		3,900	-37	3,863
secured by mortgages on immovable property		18,130	-43	18,086
of which: SMEs		1,561	-8	1,553
Exposures in default	1,102		-561	540
Total SA approach	**1,102**	**51,949**	**-858**	**52,192**
Total	**11,448**	**1,203,288**	**-4,864**	**1,209,872**

Excludes Counterparty Credit Risk, Securitisations, CVA RWA, Equities, DFC and ONCOA.
1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

EU CR1-A: Credit quality of exposures by exposure classes and instruments

2017	gross carrying values[2] defaulted exposures	non-defaulted exposures	specific credit risk adjustments[1]	Net values
Central governments or central banks		231,359	-6	231,353
Institutions	333	101,854	-12	102,175
Corporates	7,593	408,242	-2,719	413,116
of which: specialised lending	3,098	142,743	-843	144,998
of which: SMEs	1,328	34,781	-475	35,634
Retail	4,179	322,781	-1,258	325,702
secured by real estate property	3,473	292,716	-686	295,503
SMEs	544	11,268	-182	11,630
Non-SMEs	2,929	281,448	-504	283,873
Other retail	706	30,065	-572	30,199
SMEs	254	5,322	-194	5,381
Non-SMEs	452	24,743	-377	24,818
Total IRB Approach	**12,105**	**1,064,236**	**-3,995**	**1,072,346**
Central governments or central banks		3,831	-1	3,830
Regional governments or local authorities		246		246
Institutions		4,111	-1	4,110
Corporates		12,409	-17	12,392
of which: SMEs		2,856	-4	2,853
Retail		16,558	-123	16,436
of which: SMEs		4,643	-20	4,623
secured by mortgages on immovable property		18,170	-23	18,147
of which: SMEs		2,815	-6	2,809
Exposures in default	1,001		-530	471
Total SA approach	**1,001**	**55,326**	**-695**	**55,632**
Total	**13,106**	**1,119,562**	**-4,690**	**1,127,978**

Excludes Counterparty Credit Risk, Securitisations, CVA RWA, Equities and ONCOA.
1 Includes 104 million for contingent liabilities
2 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

The defaulted exposures in the AIRB portfolio decreased by EUR 1.8 billion in 2018. The decrease is mostly spread amongst the corporate and retail portfolio. In the corporates portfolio, the decrease was mainly driven by repayments and positive risk migration in the Netherlands retail and Netherlands WB.

As per 1st of January 2018, the provisions are reported under IFRS 9 and not comparable with previous years under IAS 39. However, the provisions were stable over 2018 compared to the previous year.

During 2018, the increase in the defaulted exposures and provisions emanated from the SA portfolio. While defaulted exposure increase was relatively significant in Turkey, Italy, Netherlands and Belgium, provisions increase was significant in Romania and Spain under SA portfolio.

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EU CR1-B: Credit quality of exposures by industry or counterparty types

2018	gross carrying values[1] defaulted exposures	non-defaulted exposures	specific credit risk adjustments	Net values
Agriculture, Forestry and Fishing	191	5,075	-72	5,194
Mining and Quarrying	819	24,907	-260	25,466
Manufacturing	1,497	110,106	-815	110,788
Electricity, Gas, Steam and Air Conditioning Supply	234	25,100	-98	25,236
Water Supply; Sewerage, Waste Management and Remediation Activities	32	3,587	-22	3,597
Construction	976	20,453	-415	21,014
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	1,242	103,838	-597	104,483
Transportation and Storage	800	33,772	-268	34,304
Accommodation and Food Service Activities	94	4,931	-48	4,976
Information and Communication	160	20,998	-123	21,035
Financial and Insurance Activities	497	258,078	-126	258,449
Real Estate Activities	945	54,138	-276	54,807
Professional, Scientific, and Technical Activities	430	28,162	-255	28,337
Administrative and Support Service Activities	390	24,444	-135	24,698
Public Administration and Defence; Compulsory Social Security	87	178,499	-75	178,511
Education	21	1,710	-15	1,716
Human Health and Social Work Activities	126	10,464	-80	10,510
Arts, Entertainment, and Recreation	25	1,708	-14	1,719
Other Service Activities	56	2,534	-30	2,560
Activities of Households as Employers; Producing Activities of Households for own use	2,827	290,785	-1,140	292,472
Total	**11,448**	**1,203,288**	**-4,864**	**1,209,872**

Excludes Counterparty Credit Risk exposures, Securitisations, CVA RWA, Equities, DFC and ONCOA.

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

EU CR1-B: Credit quality of exposures by industry or counterparty types

2017	gross carrying values[1] defaulted exposures	non-defaulted exposures	specific credit risk adjustments	Net values
Agriculture, Forestry and Fishing	253	4,354	-80	4,528
Mining and Quarrying	1,369	18,412	-211	19,570
Manufacturing	1,436	106,085	-690	106,831
Electricity, Gas, Steam and Air Conditioning Supply	315	22,976	-173	23,118
Water Supply; Sewerage, Waste Management and Remediation Activities	56	3,369	-28	3,397
Construction	1,085	20,099	-480	20,705
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	1,414	94,244	-594	95,065
Transportation and Storage	980	30,743	-268	31,456
Accommodation and Food Service Activities	110	4,580	-45	4,645
Information and Communication	155	17,818	-88	17,885
Financial and Insurance Activities	409	227,402	-83	227,728
Real Estate Activities	1,267	49,862	-402	50,728
Professional, Scientific, and Technical Activities	459	27,074	-216	27,317
Administrative and Support Service Activities	388	21,211	-127	21,472
Public Administration and Defence; Compulsory Social Security	90	169,170	-52	169,208
Education	18	2,061	-10	2,069
Human Health and Social Work Activities	78	10,491	-44	10,525
Arts, Entertainment, and Recreation	36	1,528	-17	1,546
Other Service Activities	47	2,493	-29	2,511
Activities of Households as Employers; Producing Activities of Households for own use	3,141	285,590	-1,054	287,677
Total	**13,106**	**1,119,562**	**-4,690**	**1,127,978**

Excludes Counterparty Credit Risk exposures, Securitisations, CVA RWA, Equities and ONCOA.
1 Includes EUR 104 million for contingent liabilities
2 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

The defaulted exposures decreased within almost all industries. The biggest decrease were observed in Mining and Quarrying, Households and Real Estate Activities. Mining and quarrying industry showed a recovery in 2018 which was mostly witnessed in Netherlands WB and Belgium & Luxembourg WB while biggest improvement in Households was in dutch residential mortgages due to good economic outlook

EU CR1-C : Credit quality of exposures by geography

2018	gross carrying values[2] defaulted exposures	non-defaulted exposures	specific credit risk adjustments[1]	Net values
Europe	9,842	927,430	-4,332	932,939
Netherlands	3,212	262,352	-1,080	264,484
Germany	747	178,829	-500	179,076
Belgium & Luxemburg	2,590	184,456	-762	186,284
Other Europe	3,293	301,792	-1,990	303,094
Africa	152	6,597	-37	6,712
America	827	104,894	-325	105,396
Asia	237	109,156	-98	109,295
Australia	390	55,210	-71	55,529
Total	**11,448**	**1,203,288**	**-4,864**	**1,209,872**

Excludes Counterparty Credit Risk exposures, Securitisations, CVA RWA, Equities, DFC and ONCOA.
1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

EU CR1-C : Credit quality of exposures by geography

2017	gross carrying values[2] defaulted exposures	gross carrying values[2] non-defaulted exposures	specific credit risk adjustments[1]	Net values
Europe	11,254	872,195	-4,372	879,076
Netherlands	4,075	252,909	-1,310	255,674
Germany	696	172,280	-489	172,487
Belgium & Luxemburg	2,588	172,232	-680	174,140
Other Europe	3,895	274,773	-1,894	276,774
Africa	73	5,819	-9	5,884
America	992	90,203	-184	91,012
Asia	382	98,925	-80	99,227
Australia	405	52,419	-45	52,779
Total	**13,106**	**1,119,562**	**-4,690**	**1,127,978**

Excludes Counterparty Credit Risk exposures, Securitisations, CVA RWA, Equities and ONCOA.

1 Includes EUR 104 million for contingent liabilities

2 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

Default exposures decreased by almost EUR 1.7 billion and the biggest decrease was seen in the Netherlands and other parts of Europe mostly in term loans and residential mortgages. The main contributor in the increase of provisions was the term loans in the United States within America region.

Non-performing and forborne exposures

The non-performing exposure table should be read in conjunction with the information and statements made in the Risk Management paragraph of the annual accounts.

EU CR1-E: Non-performing and forborne exposures

	Gross carrying amount of performing and non-performing exposures					Accumulated impairment and provisions and negative fair value adjustments due to credit risk				Collaterals and financial guarantees received	
				Of which non-performing		On performing exposures		On non-performing exposures		On non-performing exposures	of which: forborne exposures[1]
2018		Of which performing but past due >30 days and <=90 days	of which performing forborne		of which: forborne		of which: forborne		of which: forborne		
Debt Securities	71,184					-17					
Loans and advances	659,647	1,402	5,949	10,548	4,145	-1,401	-144	-3107	-996	5,479	6,892
Off-balance sheet exposures	156,997	129	275	648	58	-21		-101		8	

1 This relates to the Collaterals and financial guarantees received for the total portfolio of forborne exposures

EU CR1-E: Non-performing and forborne exposures

2017	Gross carrying amount of performing and non-performing exposures	Of which performing but past due >30 days and <=90 days	of which performing forborne	Of which non-performing	Of which non-performing – of which: forborne	Accumulated impairment and provisions and negative fair value adjustments due to credit risk – On performing exposures	On performing exposures – of which: forborne	On non-performing exposures	On non-performing exposures – of which: forborne	Collaterals and financial guarantees received – On non-performing exposures	of which: forborne exposures[1]
Debt Securities	82,192			4	4	-1		-4			
Loans and advances	624,307	1,135	5,693	11,982	5,743	-725	-58	-3,794	-1,372	6,377	8,156
Off-balance sheet exposures	220,673		311	744	163			-101		249	

1 This relates to the Collaterals and financial guarantees received for the total portfolio of forborne exposures

While the portfolio of ING grew in 2018, non-performing exposures and forborne exposures decreased. This is in line with the improved performance of the portfolio. An exception is the increased exposure in the ageing bucket performing but past due > 30 days and <=90 days exposures. This deterioration is a result of a changed delivery methodology following the implementation of the IFRS 9 and was mainly seen in the 31-60 days bucket and the 61-90 days bucket.

The total ING Bank forborne assets decreased by EUR1.5 billion to EUR 10.4 billion per December 2018. This was due to the decrease in the non-performing forborne assets of EUR 1.7 billion and the small increase in the performing forborne assets of EUR 0.2 billion. Almost 94% of the total forborne assets decrease was visible industries Real Estate EUR 0.5 billion, Natural Resources 0.5 billion which was mostly due to the Oil & Gas portfolio and Private Individuals EUR 0.4 billion. The main concentration of forborne assets in a single country was in the Netherlands with EUR 3.6 billion of total forborne assets.

Aging of past due exposures

The table below gives an insight into the ageing of the FINREP eligible Business and Consumer exposures, including both performing and non-performing assets. The table covers Loans and Debt Securities. The values displayed are the on balance sheet gross carrying values before impairment, provisions before write- offs, as write- offs take place after the provisioning process.

EU CR1-D: Ageing of past-due exposures

2018	<= 30 days	>30 days <60 days	> 60 days <90 days	>90 days <180 days	>180 days < 1year	> 1year
Loans	652,113	1,401	503	1,574	811	3,246
Debt Securities	71,184					
Total exposures	**723,297**	**1,401**	**503**	**1,574**	**811**	**3,246**

EU CR1-D: Ageing of past-due exposures

2017	<= 30 days	>30 days <60 days	> 60 days <90 days	>90 days <180 days	>180 days < 1year	> 1year
Loans	609,209	941	2,822	1,151	939	6,743
Debt Securities	82,192					
Total exposures	**691,401**	**941**	**2,822**	**1,151**	**939**	**6,743**

The > 30 days past due reduced significantly over the year, from 1.79% as at 31-12-2017 to 1.03% as at 31-12-2018. Specifically, reductions were seen in the 30 to 90 days and the over 1 year past due buckets. Of the ≤ 30 days past due, 99% is 0 days past due.

Changes in the stock of general and specific credit risk adjustments

This table identifies the changes in the stock of general and specific credit risk adjustments held against loans and debt that are defaulted or impaired. General and specific credit risk adjustments: Include amounts defined in Article 1 of the Commission Delegated Regulation (EU) No 183/2014 of 20 December 2013. December 2018 is the first time this table is included in the Pillar 3 disclosure.

EU CR2-A: Changes in the stock of general and specific credit risk adjustments

	2018	
	Accumulated specific credit risk adjustment	Accumulated general credit risk adjustment
Opening balance	**4,030**	**1,393**
Increases due to amounts set aside for estimated loan losses during the period	312	230
Decreases due to amounts reversed for estimated loan losses during the period	-372	-301
Decreases due to amounts taken against accumulated credit risk adjustments	-991	
Transfers between credit risk adjustments	628	159
Impact of exchange rate differences	-386	-55
Business combinations, including acquisitions and disposals of subsidiaries		
Other adjustments		
Closing balance	**3,221**	**1,426**
Recoveries on credit risk adjustments recorded directly to the statement of profit or loss		
Specific credit risk adjustments directly recorded to the statement of profit or loss		

Changes in the stock of defaulted and impaired loans and debt securities
In the next table the changes of the stock of defaulted loans and debt securities is shown. The table shows the movements in the gross carrying amounts of the defaulted exposures. The line other changes includes primarily changes in volumes of defaulted loans for instance as a consequence of partial repayments, or FX impact.

EU CR2-B: Changes in the stock of defaulted and impaired loans and debt securities

	2018
	Gross carrying value defaulted exposures
Opening balance	**11,679**
Loans and debt securities that have defaulted or impaired since the last reporting period	2,514
Returned to non-defaulted status	-1,330
Amounts written off	-1,044
Other changes	-1,270
Closing balance	**10,548**

LTV residential mortgages per country
The table below shows the weighted average Loan-to-Value (LTV) ratio of the ING residential mortgage portfolio per country. All LTV figures are based on market values. In most portfolios, ING uses official house price indices to adjust the market values. In several markets, customers provide additional collateral or (government sponsored) mortgage insurance programmes are used. None of these additional covers are included in the LTV figures.

Loan-to-Value residential mortgages per country

			2018		2017
	LTV	READ	net carrying values[1]	LTV	READ
Netherlands	65%	116,984	117,970	70%	118,376
Germany	61%	75,625	77,675	62%	72,104
Belgium, Luxembourg	66%	40,844	40,763	65%	39,048
Australia	59%	34,664	34,404	61%	33,830
Spain	59%	15,105	15,084	59%	13,097
Italy	58%	8,688	8,638	58%	8,478
Poland	61%	7,857	8,046	61%	6,691
Turkey	51%	589	587	54%	920
Romania	69%	1,765	1,753	69%	1,486
Total	**63%**	**302,121**	**304,922**	**67%**	**294,033**

1 The net carrying values correspond to the original exposure (on and off-balance) pre-credit conversion factors corrected for allowances, impairments and provisions.

The sustained benign economic environment in most countries supported the housing markets, resulting in increased house prices and improved LTVs, especially in the Netherlands. In the Netherlands, the average Dutch house price increased to EUR 298,000 in December 2018 from EUR 269,000 in December 2017, which led to an improved LTV through indexation. Most countries showed an increased READ due to growth in the mortgage portfolios.

The decrease in the Netherlands can be explained by repayments which were not compensated by new production and the continued transfer of mortgages from WestlandUtrecht Bank to Nationale Nederlanden Bank. In Belgium, there was a slight increase in the LTV, caused by new production at higher LTVs. Of the reduction in Turkey, EUR 97 million can be attributed to the devaluation of the TRY by 25% against the EUR and the remainder to a reduction in new production in the wake of elections and economic volatility.

Off-balance items

Undrawn commitments

The figures below represent the potential exposure that may be drawn by ING's obligors under committed facilities. In most cases, the obligors have the right to draw under these facilities unless an event of default has occurred, or another event as defined in the relevant credit risk agreement has occurred. Usually, the obligor pays a commitment fee to ING on the unused portion of these facilities. Pre-Settlement, Money Market and Investment limits are generally not committed.

Undrawn commitments

						2018	2017
	Central Governments and central banks	Institutions	Corporate	Retail – sec. by imm. property non-SME / on residential prop.	Other retail[1]	Total	Total
Under SA approach	3	31	1,085	385	2,735	4,238	4,690
Under AIRB Approach	5,768	6,926	90,851	11,314	2,789	117,647	107,735
• 0% risk weight	3,200		7	1	2	3,210	3,424
• >0% - ≤10% risk weight	949	3,134	11,836	8,670	790	25,379	28,227
• >10% - ≤20% risk weight	1,312	812	13,719	1,649	527	18,019	13,162
• >20% - ≤35% risk weight	59	1,124	21,694	648	433	23,958	23,847
• >35% - ≤50% risk weight	1	1,115	18,002	163	391	19,672	14,099
• >50% - ≤75% risk weight		329	12,951	79	414	13,773	12,988
• >75% - ≤100% risk weight		256	5,855	36	151	6,298	5,393
• >100% - ≤150% risk weight	247	30	4,399	47	46	4,769	4,716
• >150% - ≤200% risk weight	1	96	1,825	16	27	1,964	1,218
• >200% - <1250% risk weight		30	563	5	9	606	661
• 1250% risk weight						0	0
Total	**5,771**	**6,957**	**91,936**	**11,699**	**5,524**	**121,885**	**112,425**

1 AIRB: Retail – secured by immovable property SME, Retail – Other SME, Retail – non SME; SA: Retail, exposures secured by mortgages on commercial immovable property.

If all of the undrawn commitments would be drawn, ING Group's credit risk outstandings would increase by 17%. For RWA calculation purposes, the EAD models estimate how much of these commitments would be drawn under normal circumstances and increase the EAD accordingly. For uncommitted facilities a similar approach is applied, albeit at a lower rate.

The overall increase in undrawn commitments is in line with the increase in outstanding exposures. The share of SA in the total undrawn commitments reduced.

The single largest increase can be seen in the Corporate 35 to 50% RW band, mainly due to increased revolving credit facilities, limits increased by EUR 12 billion and credit outstandings by EUR 5.9 billion.

Counterparty credit risk (CCR)

The main activities that qualify under counterparty credit risk are derivatives trading activities and securities financing. To mitigate the credit risk of these transactions, ING enters into master agreements such as ISDA master agreements and Global Master Repurchase Agreements (GMRAs) that ensures netting of the outstanding positions. To further eliminate the risk on the netted positions, both ING Bank and its counterparties may agree to pledge additional collateral to each other. Additionally ING started to exchange initial margin amounts with its trading partners in 2017. The actual amount that ING may be required to pledge varies based on ING 's portfolio composition of both derivatives and securities pledged in securities financing transactions, market circumstances, the number of downgrade notches as well as the terms and conditions of future CSAs or other similar agreements.

CCR risk approach

Analysis of the counterparty credit risk exposure by approach

In the table below ING counterparty credit risk portfolio is presented according to the regulatory approach. Under Pillar 1 ING uses the Current Exposure Method (Mark to Market method, in line with CRR art. 274), which is a standard approach prescribed by the regulation. There are no exposures under the advanced, Internal Model Method (IMM) under Pillar1. Under Pillar 2 however ING uses the IMM for FX and interest rate derivatives, which is a risk sensitive approach based on Monte Carlo simulations.

For the calculation of the collateral and securities financing transactions (SFT) exposures, ING uses the financial collateral comprehensive method. There is no contractual cross product netting applied.

Under Pillar 1, according to the Current Exposure Method, the regulatory exposure at default (READ) measure consists of an MTM part and a regulatory prescribed add-on to reflect additional potential future credit exposure of the trade. The exposure at default is calculated on a daily basis to take into account the changes in the MTM value due to market movements and changes in the portfolio composition. This calculation is done on:

- Gross basis (ignoring any collateral received and ignoring any netting between trades).
- Net basis (ignoring any collateral received, but applying netting between trades with a positive and negative MTM in case there is a legally enforceable netting agreement in place).
- Net basis after collateral (subtracting any post haircut value of collateral received, and applying netting between trades with a positive and negative MTM in case there is a legally enforceable netting agreement in place).

In 2018, by following EBA Q&A_2735 interpretation, ING amended the way the variation margin is considered in the after collateral exposure. Therefore, under Pillar 1, variation margin is taken into account in the exposure, while initial margin received is in the LGD parameter when ING calculates the own fund requirement.

READ also takes into account the credit valuation adjustment (CVA) recognised as an incurred write-down in line with art. 273(6) CRR.

EU CCR1 – Analysis of the counterparty credit risk (CCR) exposure by approach

2018	Replacement cost (floored MtM)	Potential future exposure	EAD post-CRM[1]	RWA
Mark to market (Derivatives)	10,853	17,638	25,595	7,185
Financial collateral comprehensive method (for SFT's)			8,825	1,467
Total				**8,653**

Excluding exposure class Securitizations

EU CCR1 – Analysis of the counterparty credit risk (CCR) exposure by approach

2017	Replacement cost (floored MtM)	Potential future exposure	EAD post-CRM	RWA
Mark to market (Derivatives)	12,361	19,002	26,576	8,106
Financial collateral comprehensive method (for SFT's)			8,281	1,144
Total				**9,250**

Excluding exposure class Securitizations.

The EAD and RWA measures of the counterparty credit risk portfolio did not change significantly during the year. The minor volume increase was offset by the methodology changes mentioned above. Latter had impact on the PFE too, as the variation margin mitigated the components of the PFE. The process that started in 2017 with slow increase of interest rates persisted in 2018. The drop of MtM during the year reflects this trend.

Standardised approach – CCR exposures by regulatory portfolio and risk

The following table presents the CCR exposures that are calculated according the Standardised approach (SA):

EU CCR3: Standardised approach - CCR exposures by regulatory portfolio and risk

2018	Risk weight					Total
Exposure Class	20%	50%	75%	100%	150%	
Regional governments or local authorities	4					4
Institutions	62	33				96
Corporates				211	6	217
Retail			1			1
Total	**66**	**33**	**1**	**211**	**6**	**318**

Excluding exposure class Securitizations

EU CCR3: Standardised approach - CCR exposures by regulatory portfolio and risk

2017	Risk weight					Total
Exposure Class	20%	50%	75%	100%	150%	
Regional governments or local authorities	4					**4**
Institutions	13	410		4		**427**
Corporates				237	3	**249**
Retail			1			**0**
Total	**17**	**410**	**1**	**241**	**3**	**672**

Excluding exposure class Securitizations

The 100% risk weight exposures contain mainly FX forwards in the ING Turkey portfolio as well as interest rate swaps related to the Dutch healthcare portfolio.

IRB – CCR exposures by portfolio and PD scale

The following table shows all relevant parameters used for the calculation of CCR capital requirements for IRB models.

EU CCR4: IRB-CCR exposures by portfolio and PD scale

2018	PD Scale	READ	Average pd	Number of obligors	Average LGD	Average maturity	RWA	RWA density
Central Governments and Central Banks	0.00 to < 0.15	2,511	0.03%	137	28%	4	125	5%
Central Governments and Central Banks	0.15 to < 0.25	21	0.21%	5	35%	4	9	44%
Central Governments and Central Banks	0.25 to < 0.50	40	0.31%	11	45%	3	27	69%
Central Governments and Central Banks	0.75 to < 2.50	0		2			0	
Central Governments and Central Banks	2.50 to < 10.00	0		1			0	
Central Governments and Central Banks	10.00 to < 100.00	2	16.32%	8	31%	4	3	176%
Central Governments and Central Banks	**sub-total**	**2,574**	**0.04%**	**164**	**28%**	**4**	**164**	**6%**
Corporates	0.00 to < 0.15	6,557	0.09%	1,439	30%	1	1,207	18%
Corporates	0.15 to < 0.25	1,130	0.21%	841	43%	3	557	49%
Corporates	0.25 to < 0.50	2,226	0.37%	2,644	47%	2	1,459	66%
Corporates	0.50 to < 0.75	3	0.64%	386	56%	2	2	74%
Corporates	0.75 to < 2.50	1,289	1.17%	2,866	47%	2	1,369	106%
Corporates	2.50 to < 10.00	132	5.20%	480	36%	4	188	143%
Corporates	10.00 to < 100.00	19	19.09%	658	49%	2	47	248%
Corporates	default	14	100.00%	166	45%	3	80	586%
Corporates	**sub-total**	**11,369**	**0.49%**	**9,470**	**37%**	**2**	**4,910**	**43%**
Institutions	0.00 to < 0.15	23,534	0.07%	1,200	29%	2	2,376	10%
Institutions	0.15 to < 0.25	1,610	0.21%	123	14%	1	244	15%
Institutions	0.25 to < 0.50	1,623	0.31%	363	15%	0	214	13%
Institutions	0.75 to < 2.50	398	1.20%	621	50%	1	442	111%
Institutions	2.50 to < 10.00	5	5.04%	189	31%	1	6	113%
Institutions	10.00 to < 100.00	2	16.32%	268	39%	1	5	221%
Institutions	default							
Institutions	**sub-total**	**27,173**	**0.11%**	**2,764**	**28%**	**2**	**3,286**	**12%**
Retail	0.00 to < 0.15	5	0.06%	190	49%	1	0	8%
Retail	0.15 to < 0.25	1	0.20%	69	53%	1	0	21%
Retail	0.25 to < 0.50	2	0.35%	130	54%	1	1	32%
Retail	0.50 to < 0.75	3	0.58%	106	55%	1	1	44%
Retail	0.75 to < 2.50	1	1.40%	199	41%	4	1	39%
Retail	2.50 to < 10.00	0	7.26%	41	30%	2	0	38%
Retail	10.00 to < 100.00	7	16.32%	160	55%	3	8	117%
Retail	default	0	100.00%	16	36%	1	0	454%
Retail	**sub-total**	**19**	**6.23%**	**911**	**52%**	**2**	**11**	**58%**
Total Portfolio		**41,135**	**0.21%**	**13,309**	**30%**	**2**	**8,372**	**20%**

Excluding exposure class Securitisations. All figures are in EUR millions, except for the number of obligors.
RWA density is the average risk weight.

EU CCR4: IRB-CCR exposures by portfolio and PD scale

2017	PD Scale	READ	Average pd	Number of obligors	Average LGD	Average maturity	RWA	RWA density
Central Governments and Central Banks	0.00 to < 0.15	3,097	0.03%	124	25%	3	152	5%
Central Governments and Central Banks	0.15 to < 0.25	38	0.21%	7	38%	3	17	43%
Central Governments and Central Banks	0.25 to < 0.50	71	0.31%	10	45%	5	58	82%
Central Governments and Central Banks	0.75 to < 2.50	0	0.76%	2	46%	0	0	57%
Central Governments and Central Banks	2.50 to < 10.00	4	8.35%	2	100%	1	15	384%
Central Governments and Central Banks	10.00 to < 100.00	0	16.32%	3	31%	5	1	181%
Central Governments and Central Banks	**sub-total**	**3,211**	**0.05%**	**148**	**26%**	**3**	**242**	**8%**
Corporates	0.00 to < 0.15	5,701	0.09%	1,331	24%	2	846	15%
Corporates	0.15 to < 0.25	1,238	0.21%	784	38%	3	551	45%
Corporates	0.25 to < 0.50	2,430	0.37%	2,922	39%	2	1,310	54%
Corporates	0.50 to < 0.75	2	0.59%	201	49%	1	1	65%
Corporates	0.75 to < 2.50	1,646	1.20%	2,629	44%	3	1,616	98%
Corporates	2.50 to < 10.00	132	5.61%	478	34%	3	162	123%
Corporates	10.00 to < 100.00	52	22.69%	460	42%	4	130	247%
Corporates	default	19	100.00%	143	43%	3	108	563%
Corporates	**sub-total**	**11,220**	**0.67%**	**8,945**	**33%**	**2**	**4,724**	**42%**
Institutions	0.00 to < 0.15	27,470	0.07%	1,234	30%	3	2.634	10%
Institutions	0.15 to < 0.25	3,258	0.21%	143	25%	1	576	18%
Institutions	0.25 to < 0.50	540	0.38%	342	35%	2	236	44%
Institutions	0.75 to < 2.50	376	0.93%	615	25%	2	208	55%
Institutions	2.50 to < 10.00	21	5.13%	110	23%	1	25	119%
Institutions	10.00 to < 100.00	31	16.32%	109	38%	4	80	261%
Institutions	default							
Institutions	**sub-total**	**31,696**	**0.12%**	**2,553**	**30%**	**2**	**3,760**	**12%**
Retail	0.00 to < 0.15	8	0.07%	213	51%	1	1	9%
Retail	0.15 to < 0.25	3	0.16%	66	54%	1	1	21%
Retail	0.25 to < 0.50	3	0.37%	191	56%	2	1	29%
Retail	0.50 to < 0.75	1	0.57%	68	50%	1	1	41%
Retail	0.75 to < 2.50	2	1.36%	169	41%	3	1	42%
Retail	2.50 to < 10.00	1	4.78%	54	42%	1	1	64%
Retail	10.00 to < 100.00	12	16.40%	132	55%	4	15	117%
Retail	default	0	100.00%	13	56%	2	1	757%
Retail	**sub-total**	**31**	**7.31%**	**906**	**52%**	**2**	**20**	**74%**
Total Portfolio		**46,157**	**0.25%**	**12,552**	**31%**	**2**	**8,746**	**16%**

Excluding exposure class Securitisations. All figures are in EUR millions, except for the number of obligors. The maturity is not applicable for the retail exposure class, for all other cells that are left blank, the values are minimal

Derivatives by product type

The table below shows the derivatives exposure by product type, where the exposure measure is based on the regulatory exposure at default (READ).

Derivatives by product type in READ

	Sovereigns	Institutions	Corporate	Other retail	2018 Total	2017 Total
Interest Rate Derivatives	2,201	11,008	4,000	2	17,212	22,482
FX Derivative	256	1,694	1,516	5	3,471	5,608
Equity Derivative	0	504	1,316	13	1,835	1,769
Exchange Traded Products		622	672	0	1,295	1,396
Commodity Derivative		57	789	0	846	1,225
Credit Derivative		542	106		648	455
Derivatives Other	0	56	9		65	126
Total	**2,457**	**14,484**	**8,409**	**21**	**25,371**	**33,063**

Excluding exposure class Securitisations

The main purpose of the derivatives portfolio of ING is to facilitate the hedging of the mortgage lending portfolio as well as hedging for clients.
As mentioned in the introduction of the chapter, ING changed the methodology how variation margin is taken into account. That is the main driver behind the significant decrease in the interest rate and foreign exchange derivative portfolio. They give the majority (82%) of the total derivative exposure.
It must also be noted that - in line with regulatory requirement - ING novated the bulk of its new trades via qualifying central counterparties (CCPs), which compresses the exposure via the use of the large netting pool of a CCP.

Over-the-counter and exchange traded derivatives

This section quantifies the size of the derivatives exposure in terms of notional value. It also shows whether derivatives are traded over-the-counter (OTC) or traded on recognised exchanges (ETD). Where the derivatives are OTC, the table shows how much is cleared by central counterparties.

Credit risk from derivative transactions

	2018	2017
	Notional	Notional
OTC derivatives		
CCP	2,248,857	2,230,063
Non-CCP	1,376,338	1,533,871
ETD derivatives	27,061	35,287
Total	**3,652,256**	**3,799,222**

At the end of 2018, in line with EMIR regulations, close to 62% of the derivative portfolio (based on notional value) was novated via a central counterparty. 20% of the non-cleared trades were uncollateralized, which mainly relate to corporates with small credit limits and mainly comprise of interest rate derivatives and FX Derivatives.

Among the collateralised, but not cleared trades 86% are under a bilateral CSA. Unilateral CSA agreements relate to agreements that are unilateral against ING and mainly consist of Interest Rate Derivatives with Sovereign counterparties.

Securities financing by product type

The exposures in this table are calculated based on the Financial Collateral Comprehensive Method as described in CRR art. 223, where regulatory haircuts are used for exposure and collateral and where netting is applied whenever there is a master netting agreement in place with a positive legal netting opinion.

Securities financing by product type in READ

				2018	2017
	Sovereigns	Institutions	Corporate	Total	Total
Bond Financing Given	37	6,957	738	7,732	6,114
Equity Financing Given		3,796	1,079	4,875	5,172
Bond Financing Taken	84	1,079	796	1,959	1,766
Equity Financing Taken		952	564	1,516	715
Total (ALL)	**121**	**12,784**	**3,177**	**16,082**	**13,767**

Includes both AIRB and SA portfolios; excludes Securitisations, equities and ONCOA.

Impact of netting and collateral held on exposure values

Impact of netting

It is common practice in OTC derivatives trading to sign master agreements that allow for close-out netting in the event that one of the parties defaults. When ING has signed such a master agreement and a positive legal netting opinion is in place, the agreement is deemed to be legally enforceable. For trades done under such a legally enforceable netting agreement, it is possible to calculate the exposure on a net basis.

EU CCR5-A: Impact of netting and collateral held on regulatory exposure values

2018	Gross positive fair value	Netting benefits	Netted current credit exposure	Collateral held	Net credit exposure post collateral
Derivatives	103,265	72,450	30,815	5,220	25,595
Securities Financing Transactions	43,875	27,638	16,237	7,412	8,825
Total	**147,140**	**100,088**	**47,052**	**12,632**	**34,421**

Excluding exposure class securitization

EU CCR5-A: Impact of netting and collateral held on regulatory exposure values

2017	Gross positive fair value	Netting benefits	Netted current credit exposure	Collateral held	Net credit exposure post collateral
Derivatives	112,186	78,646	33,540	6,953	26,576
Securities Financing Transactions	37,975	24,209	13,767	5,486	8,281
Total	**150,161**	**102,855**	**47,306**	**12,439**	**34,857**

Excluding exposure class securitization

The different treatment of variation margin (mentioned earlier) explains the large decline in derivatives collateral held.

Collateral
The change in the actual amount that ING had to pledge can be observed in the following table.

EU CCR5-B: Composition of collateral for exposures to counterparty credit risk

		Collateral used in derivative transactions				Collateral used in SFT's	
		Fair value of collateral received		Fair value of posted collateral			
2018		Segregated	Un-Segregated	Segregated	Un-segregated	Fair value of collateral received	Fair value of posted collateral
	Cash	667	5,012	-3,398	-7,081		
	Securities	1,317	1,270	-2,054	-269		
	Total	**1,984**	**6,282**	**-5,452**	**-7,350**	**121,597**	**-106,815**
2017	Total	**1,029**	**7,067**	**-4,792**	**-8,155**	**116,780**	**-88,217**

The change in collateral posted and received on the derivatives portfolio is mainly coming from increase in the amount of IM collateral due to EMIR regulations kicking in and ING Bank NV going on to the ISDA SIMM model for exchanging IM. The bulk of collateral posted/received is in government bonds both for OTC derivatives and SFT. ING's key drivers of the changes to the collateralized derivatives portfolio are Interest- and Foreign Exchange Risk. A one notch rating downgrade will not lead to a material outflow of collateral. Additional outflows are taken into account in the Liquidity Coverage Ratio if ING would be downgraded by three notches.

Central Counterparties
In line with EMIR regulation - for standard products - the use of Central Clearing Parties (CCPs) is mandatory and thus increasing part of the portfolio is shifting from bilateral trades to CCPs.

The table below presents the exposures to central counterparties, broken down by qualified (QCCP) and non-qualified CCPs:

EU CCR8: Exposures to central counterparties		
2018	EAD (post-CRM)	RWA
Exposures to QCCPs (total)		
Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	8,397	168
(i) OTC derivatives	7,209	144
(ii) Exchange-traded derivatives	439	9
(iii) Securities financing transactions	749	15
Pre-funded default fund contributions	185	244
Exposures to non-QCCPs (total)		
Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions); of which	4	2
(i) OTC derivatives		
(ii) Exchange-traded derivatives		
(iii) Securities financing transactions	4	2
Pre-funded default fund contributions	1	1

EU CCR8: Exposures to central counterparties		
2017	EAD (post-CRM)	RWA
Exposures to QCCPs (total)		
Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	8,233	165
(i) OTC derivatives	6,805	136
(ii) Exchange-traded derivatives	544	11
(iii) Securities financing transactions	884	18
Pre-funded default fund contributions	212	376

Notes:
(1) By definition segregated initial margin does not contribute to exposure
(2)The status "qualified" is based on the European Securities and Markets Authority (ESMA) qualification. ING clears with the following QCCPs: Banque Centrale de Compensation SA, Banque Centrale de Compensation SA, LCH CDSClear SA, Chicago Mercantile Exchange Inc, EUREX Clearing Aktiengesellschaft, EUREX OTC CLEAR, ICE Clear Europe Ltd, Japan Securities Clearing Corp, KDPW_CCP SA

LCH Limited, Equity Clear Service, LCH Ltd, Forexclear service, LCH.Clearnet Repoclear service, LCH.Clearnet Swapclear service, LME Clear Ltd, The Korea Exchange, The Options Clearing Corporation.

Voluntary and mandatory clearing has a large impact on the development of EAD and RWA. From an EAD perspective many trades are concentrated in one netting set (per CCP service), compared to bilateral trading, where trades are in various netting sets. Novating a bilateral traded contract to a CCP therefore typically reduces the amount of EAD. From an RWA perspective, the novation reduces the amount of RWA even more, due to the fact that the risk weight is only 2% (for QCCP exposure).

CVA risk

ING follows the standardised approach for calculating the own fund requirement for CVA Risk. The scope of products and counterparties follows the European regulations (CRR and EMIR).

EU CCR2 – CVA capital charge		2018		2017
	Exposure value	RWAs	Exposure value	RWAs
Total portfolios subject to the advanced method				
All portfolios subject to the standardised method	6,558	552	7,931	2,754
Based on the original exposure method				
Total subject to the CVA capital charge	**6,558**	**552**	**7,931**	**2,754**

There are two drivers that marginalized CVA Capital charge in 2018 compare to 2017. On the one hand the exposure decreased due to (i) increased use of EMIR collaterals, (ii) new methodology how the variation margin is reflected and (iii) decreased proportion of un-cleared derivative transactions with financial counterparties. However the major factor behind the RWA reduction is ING decision to take into account CDS hedges in the capital calculation.

Credit default swaps

ING participates in the credit risk derivative trading market, as a net purchaser of credit risk protection from other counterparties.

EU CCR6: Credit derivatives exposures

2018	Protection bought	Protection sold
Notionals		
Single-name credit default swaps	-15,176	13,212
Index credit default swaps	-1,433	430
Total return swaps	0	1,852
Total Notionals	**-16,609**	**15,494**
Fair values	-36	30
Positive fair value (asset)	132	142
Negative fair value (liability)	-168	-112

EU CCR6: Credit derivatives exposures

2017	Protection bought	Protection sold
Notionals		
Single-name credit default swaps	-15,684	13,226
Index credit default swaps	-1,188	607
Total return swaps		1,523
Total Notionals	**-16,872**	**15,356**
Fair values	-196	195
Positive fair value (asset)	29	208
Negative fair value (liability)	-225	-13

For ING's credit derivative positions as of 28 September 2018, the largest notional is under single-name credit default swap (CDS), and a small notional is under Index CDS (IXCDS).

Compared to 2017, the absolute total notional remained stable for both protection bought and protection sold. For protection bought, the total fair value became less negative in 2018 compared to 2017, mainly due to an increase in the positive fair value of the sovereign positions. On the other hand, the fair value of protection sold became less positive in 2018 compared to 2017, mainly caused by a decrease in the negative fair value of the sovereign positions.

Credit risk mitigation

ING's lending and investment businesses are subject to credit risk. As such, the creditworthiness of our customers and investments is continually monitored for their ability to meet their financial obligations to ING Bank. In addition to determining the credit quality and creditworthiness of the customer, ING uses various credit risk mitigation techniques and instruments to mitigate the credit risk associated with an exposure and to reduce the losses incurred subsequent to an event of default on an obligation a customer may have towards ING. The most common terminology used in ING for credit risk protection is 'cover'. While a cover can be an important method for mitigation of credit risk and an alternative source of repayment, generally it is ING's practice to lend on the basis of the customer's creditworthiness rather than exclusively relying on the value of the cover. Within ING, there are two distinct forms of covers: assets and third party obligations.

Cover forms

Assets

The asset that has been pledged to ING as collateral or security gives ING the right to liquidate it in the event where the customer is unable to fulfil its financial obligation. As such, the proceeds can be applied towards full or partial payments of the customer's outstanding exposure. An asset can be tangible (such as cash, securities, receivables, inventory, plant & machinery and mortgages on real estate properties) or intangible (such as patents, trademarks, contract rights and licenses).

Third party obligation

Third Party Obligation, indemnification or undertaking (either by contract and/or by law) is a legally binding declaration by a third party that gives ING the right to expect and claim from that third party to pay an amount, if the customer fails on its obligations to ING. The most common examples are guarantees (such as parent guarantees and export credit insurances) and letters of comfort.

Cover valuation methodology
General guidelines for cover valuation are established to ensure consistency of the application within ING. These general guidelines also require that the value of the cover is monitored on a regular basis, in principle at least annually. Covers shall be revalued accordingly and whenever there is reason to believe that the market is subject to significant changes in conditions. The frequency of monitoring and revaluation depends on the type of covers.

The valuation method also depends on the type of covers. For asset collateral, the valuation sources can be the customer's balance sheet (e.g. inventory, machinery, and equipment), nominal value (e.g. cash, receivables), market value (e.g. securities and commodities), independent appraiser (commercial real estate) and market indices (residential real estate). For third party obligations, the valuation is based on the value which is attributed to the contract between ING and that third party.

For the determination of the Credit Risk applicable amount for Pre-Settlement transactions, ING first matches trades with similar characteristics to determine their eligibility for offset. This offsetting effect is called 'compensation'. Subsequently, ING reduces the amount by any legal netting that may be permitted under various types of Master Agreements (such as ISDAs and GMRAs). Lastly, the amount is further reduced by any collateral that is held by ING under CSAs or other similar agreements.

For the other risk types and especially lending, covers are received which are intended to reduce the losses incurred subsequent to an event of default on an obligation a customer may have towards ING. These are subdivided into four groups called collateral values mortgages, cover values cash, cover value guarantees and other physical covers.

The table below presents the ING portfolio excluding equities per loan type. Exposures represent the outstandings and a loan is presented as secured by collateral or a guarantee if such a cover exists on a facility type. The secured amounts represent the part of the loan that is covered by the collateral. If a loan has both collateral and a guarantee than these are both shown in the designated column.

Credit Risk Mitigations techniques – overview
The table below presents the extent of the use of CRM techniques. All collaterals and financial guarantees are included for all secured exposures, irrespective of whether the standardized approach or the IRB approach is used for RWA calculation. In the column *Exposures unsecured – Carrying amount* are the exposures (net of allowances/impairments) that do not benefit from a CRM technique. In the column *Exposures to be secured* are the exposures that have at least one CRM mechanism (collateral, financial guarantees, credit derivatives) associated with them.

EU CR3: Credit risk mitigation techniques - overview

2018	Exposures unsecured: carrying amount	Exposures to be secured	Exposures secured by collateral	Exposures secured by financial guarantees
Total loans	624,330	411,070	364,627	46,443
Total debt securities	173,828	644	566	78
Total exposures	**798,158**	**411,714**	**365,193**	**46,521**
Of which defaulted	4,003	3,981	3,488	493

Includes the AIRB and SA portfolios and excludes the Default Fund Contribution, securitisations, CVA RWA, equities and ONCOA.

EU CR3: Credit risk mitigation techniques - overview

2017	Exposures unsecured: carrying amount	Exposures to be secured	Exposures secured by collateral	Exposures secured by financial guarantees
Total loans	584,461	379,782	339,397	40,385
Total debt securities	163,425	95		95
Total exposures	**747,886**	**379,876**	**339,397**	**40,480**
Of which defaulted	4,540	4,654	4,298	356

Includes the AIRB and SA portfolios and the Default Fund Contribution, excludes securitisations, CVA RWA, equities and ONCOA.

Over the year, there was a slight increase in the covered amounts, from 33.7% to 34.0% of total exposures. For more information on the covers, please see the section 'credit risk mitigation' part of the Risk Management paragraph of the ING Group Annual Report 2018.

Securitisations

The following is prepared taking into account the ‘Industry Good Practice Guidelines on Pillar 3 disclosure requirements for securitisations’ issued by the European Banking Federation and other industry associations on 31 January 2010 and the CRR/CRD IV disclosure requirements. It includes qualitative and quantitative disclosures addressing both the exposure securitised as well as securitisations positions held. While quantitative disclosures are limited to those securitisations that are used for the purpose of calculating the regulatory capital requirements under the CRR/CRD IV, qualitative information have a broader scope and give a view on ING’s entire securitisation activity.

Depending on ING’s role as investor, originator, or sponsor, the objectives, the involvement and the rules applied may be different. ING is primarily engaged in securitisation transactions in the role of investor (in securitisations arranged by others). To a lesser extent, ING is also an originator or sponsor of securitisations that are usually traded in the public markets. ING does not re-securitise its securitisations exposure and even though ING hedges its securitisation positions, such instruments are not recognized as credit risk mitigation for regulatory capital purposes. ING does not engage in securitisation of any impaired assets from its own balance. Furthermore, ING does not have any securitisation position in its trading book.

Valuation and accounting policies

ING’s activities regarding securitisations are described in Note 50 ’Structured entities’ in the annual accounts. The applicable accounting policies are included in the section ‘Accounting policies for the consolidated annual accounts of ING Group’ in the annual accounts. The most relevant accounting policies for ING’s own originated securitisation programmes are ‘De-recognition of financial assets’ and ‘Consolidation’. Where ING acts as investor in securitisation positions, the most relevant accounting policy is ‘Classification of financial instruments’.

Regulatory capital method used and Rating Agencies

ING has implemented the AIRB approach for credit risk. As a consequence, ING uses the Rating Based Approach (RBA) for investments in tranches of asset-backed securities (ABS) and mortgage-backed securities (MBS) which have been rated by external rating agencies. Rating agencies which are used by ING under the RBA include Standard & Poor’s, Fitch and Moody’s. The securitisation exposure for which each rating agency is used is given in the following table. In case of multiple ratings, the worst rating is applied.

ING uses the Internal Assessment Approach (IAA) for the support facilities it provides to Asset Backed Commercial Paper (ABCP) conduit Mont Blanc Capital Corp., based on externally published rating agency methodologies. Under the IAA approach, the unrated position is assigned by the institution to an internal rating grade, which is estimated using an ING developed model. The individual liquidity facilities are then attributed a derived rating by mapping the internal rating grade to an externally published credit assessments corresponding to that rating grade.

Securitisation exposure per rating agency used

						2018	2017
	S&P	Fitch	Moody’s	IAA approach	Other	Total	Total
Asset Backed Securities	1,520	344	373			2,237	3,446
Residential Mortgage Backed Securities	3,000	533	251		96	3,879	1,202
Securitisation Liquidity				1,181		1,181	1,139
Interest Rate Derivatives				281		281	364
Other		4		384		388	325
Total	**4,520**	**881**	**624**	**1,846**	**96**	**7,966**	**6,476**

Under the RBA, RWA are determined by multiplying the amount of the exposure by the appropriate regulatory risk weights, which depend on: the external rating or an available inferred rating, the seniority of the position and the granularity of the position.

Securitisations - credit risk disclosure in READ	2018	2017	Delta %
Geography	**7,966**	**6,476**	**23.0%**
America	1,248	2,064	-39.5%
Asia	143	139	3.4%
Australia	4	8	-49.3%
Europe	6,570	4,265	54.1%
Europe	**6,570**	**4,265**	**54.1%**
Germany	4,801	1,564	207.0%
Netherlands	728	926	-21.4%
Spain	427	566	-24.5%
United Kingdom	238	268	-11.5%
Rest of Europe	377	941	-59.9%
Product Type	**7,966**	**6,476**	**23.0%**
Asset Backed Securities	2,237	3,446	-35.1%
Residential Mortgage Backed Securities	3,879	1,202	222.7%
Securitisation Liquidity (1)	1,181	1,139	3.7%
Interest Rate Derivatives	281	364	-22.7%
Other	388	325	19.2%
Exposure Class (2)	**7,966**	**6,476**	**23.0%**
Securitisation Originator	2,860	-	
Securitisation Investor	3,259	4,661	-30.1%
Securitisation Sponsor	1,846	1,815	1.7%

Excludes equities and ONCOA.
1 These are structured financing transactions by ING for clients by assisting them in obtaining sources of liquidity by selling the clients' receivables or other financial assets to an SPV.
2 Securitisation benefits are excluded. Own originated securitisations are explained in a separate section.

During 2018 the exposure to securitisations increased from EUR 6.5 billion to EUR 8.0 billion mainly caused by finalizing a synthetic securitisation as originator. All assets in the securitisation portfolio are performing.

Investor securitisations

ING's goal is to maintain a portfolio of high quality liquid assets that meets the regulatory requirements of CRR/CRD IV and the Delegated Act of October 2014 regarding liquidity. ING invests in high quality Asset Backed Securities (ABS) keeping close track of the securitisation investment positions via monthly monitoring reports and weekly update calls. Additionally, ING may invest in securitisation positions in order to facilitate client business from Wholesale Banking Securitisation department.

In the next table, the investor securitisations are given, broken down by underlying exposure.

In 2018, the total Securitisation Investment portfolio decreased with EUR 1,4 billion to EUR 3,3 billion. The biggest decrease was in Other retail Exposures of EUR 1.2 billion to EUR 0.8 billion, this is the result of de-risk in Student Loans.

Investor securitisation activities

		2018	2017
	Traditional	Total	Total
Residential mortgage	1,193	1,193	1,225
Other retail exposures	887	887	2,127
Loans to corporates	61	61	8
Commercial mortgage			
Lease and receivables	1,118	1,118	1,301
Re-securitisation			
Total	**3,259**	**3,259**	**4,661**

The following table provides the breakdown of current exposures by risk weight bands. The amount of securitisation positions is based on the regulatory exposure values calculated according to the CRR/CRD IV after consideration of credit conversion factors (CCFs) where applicable as used for the purpose of Pillar 1, but prior to the application of credit risk mitigates on securitisation positions. Given the focus on high quality securitisations the portfolio composition is shifting to the lower risk band.

Investor securitisation activities

		2018		2017
	READ	RWA	READ	RWA
Risk weight band 1 <= 10%	2,711	206	4,194	317
Risk weight band 2 >10% and <= 18%	481	80	185	22
Risk weight band 3 >18% and <= 35%	67	12	270	56
Risk weight band 4 >35% and <= 75%				
Risk weight band 5 >75% and <1250%			10	24
Risk weight 1250%		6	1	16
Total	**3,259**	**304**	4,661	**434**

Capital requirements for investment positions in securitisations

		Traditional securitisation			Total exposure 2018	Total exposure 2017
		Total traditional	Of which retail underlying	Of which non-retail underlying		
Exposure values (by RW bands)	<= 20% RW	3,259	3,198	61	3,259	4,650
	>20% to 50% RW					
	>50% to 100% RW					2
	>100% to <1250% RW					8
	1250% RW				0	1
	Total	**3,259**	**3,198**	**61**	**3,259**	**4,661**
Exposure values (by regulatory approach)	IRB RBA (incl. IAA)	3,259	3,198	61	3,259	4,660
	1250% Risk Weight	0	0	0	0	1
	Total	**3,259**	**3,198**	**61**	**3,259**	**4,661**
RWA (by regulatory approach)	IRB RBA (incl. IAA)	298	290	7	298	419
	1250% Risk Weight	6	6	0	6	16
	Total	**304**	**296**	**7**	**304**	**435**
Capital charge after cap	IRB RBA (incl. IAA)	24	23	1	24	33
	1250% Risk Weight				0	2
	Total Capital	**24**	**24**	**1**	**24**	**35**

Excludes equities and ONCOA. ING does not have any re-securitisation in its books.

In the table above an overview of Investor Securitization exposures and their respective capital requirements are shown. In line with ING's policy and Risk Appetite the vast majority of positions are rated AA- and above, and almost the entire portfolio remains within the investment grade.

Sponsor securitisations

In the normal course of business, ING structures financing transactions for its clients by assisting them in obtaining sources of liquidity by selling the clients' receivables or other financial assets to a Special Purpose Vehicle (SPV). The senior positions in these transactions are funded by the ING administered multi seller Asset Backed Commercial Paper (ABCP) conduit Mont Blanc Capital Corp. (rated A-1/P-1). Mont Blanc Capital Corp. funds itself externally in the ABCP markets.

In its role as administrative agent, ING facilitates these transactions by acting as administrative agent, swap counterparty and liquidity provider to Mont Blanc. ING also provides support facilities (liquidity) backing the transactions funded by the conduit. The types of asset currently in the Mont Blanc conduit include trade receivables, consumer finance receivables and car leases.

ING supports the commercial paper programmes by providing Mont Blanc Capital Corp. with short-term liquidity facilities. Once drawn these facilities bear normal credit risk.

The liquidity facilities, provided to Mont Blanc are EUR 1,173 million. There was no drawn liquidity amount at 31 December 2018. Mont Blanc has no investments in securitisation positions that ING has securitised.

The standby liquidity facilities are reported under irrevocable facilities. All facilities, which vary in risk profile, are granted to the SPE subject to normal ING credit and liquidity risk analysis procedures. The fees received for services provided and for facilities are charged subject to market conditions. Mont Blanc is consolidated by ING. These transactions are therefore on-balance sheet arrangements.

In line with the Internal Assessment Approach, which has been approved for use by ECB for ING in relation to the ING sponsored ABCP conduit, Mont Blanc Capital Corp, the credit quality of the positions are internally assessed by following publicly available assessment methodology of external rating agencies. This includes differing stress factors for different asset classes as outlined by rating agencies as well as assessing the entire structure of the transaction including additional quantitative and qualitative features. This will result in the calculation of a certain credit enhancement. Other protections in a transaction (eligibility criteria, early amortization triggers, commingling protections etc.) are factored in that results in an internal rating. This rating is then directly mapped to an external rating which is used to determine the RWA for the liquidity facilities provided by ING to support the transactions and is outlined in a defined approach. Any changes to rating agency methodology is tracked annually with a procedure in place with the credit risk measurement department verifying that any changes are captured in an update to the approach.

The credit approval process for individual transactions follows ING's standard credit approval procedures. At inception, initial data is required to be received outlining the historical performance of the assets. Due diligence is carried out on the underlying asset pool. Following ING policy, each transaction is reviewed (including reassessing the internal assessment approach analysis for that transaction) on a regular basis. The performance of each transaction is closely monitored on an ongoing basis through a.o. detailed transaction reports.

Originator securitisations

ING originates own securitisation transactions for economic and regulatory capital purposes, as well as liquidity and funding purposes.

Liquidity and funding

The senior tranches in securitisations are used to obtain funding and/or provide contingent liquidity. To be eligible as collateral for central banks securitised exposures must be sold to a Special Purpose Vehicle (SPV) which, in turn, issues securitisation notes ('traditional securitisations') in two tranches, one subordinated tranche and one senior tranche, rated AAA by a rating agency. The AAA tranche can then be used by ING as (stand-by) collateral in the money market for secured borrowings. The assets awaiting securitisations are originated from a banking book and are valued in line with the respective accounting framework. In principle, loans that are securitised are valued at cost.

ING has created a number of these securitisations with a 31 December 2018 position of approximately EUR 66 billion of AAA rated notes and unrated subordinated notes. The underlying exposures are residential mortgages in the Netherlands, Belgium, Spain, Italy and Australia and SME Loans in Belgium.

As long as the securitisation exposures created are not transferred to third parties, the regulatory capital remains unchanged. These are not detailed hereunder. Apart from the structuring and administration costs of these securitisations, these securitisations are profit / loss neutral.

Simple risk weight method

A small part of the equity exposure of ING's portfolio is subject to the simple risk weight method for calculating the regulatory capital. The table below shows more details on the equity exposure for which the simple risk weight method is used.

EU CR10: IRB (specialised lending and equities) - Equities under the simple risk-weighted approach

	On balance sheet amount		RW	Exposure amount		RWA		Capital requirements	
	2018	2017		2018	2017	2018	2017	2018	2017
Exchange traded equity exposures	954	1,055	290%	954	1,055	2,766	3,059	221	245
Private equity exposures	572	521	190%	572	521	1,087	990	87	79
Other equity exposures			370%						
Total	**1,526**	**1,576**		**1,526**	**1,576**	**3,853**	**4,049**	**308**	**324**

In 2018, the total value of ING Group equity investments reported under simple risk weighted approach has decreased by EUR 50 million to EUR 1,526 million (2017: EUR 1,576 million). As a result, the total value of RWA under simple risk weight method and the total value of regulatory capital has decreased by EUR 196 million and EUR 16 million in 2018 respectively. The EUR 50 million decrease in total value of ING equity exposure is mainly observed in assets under 290% risk weight category (-EUR 101 million), the impact is mostly driven by complete divestment of warrants on Voya and NN shares, and the sale of 0.67% of Kotak Mahindra shares in November 2018. This decrease was partly offset by EUR 51 million increase in equity assets under 190% risk weight, mainly driven by new acquired equity stakes, as well as share price movements and value adjustments of the outstanding equity stakes.

Market risk

Prudent Valuation Adjustments

The fair valued instruments of ING portfolio are subject to valuation adjustments, supported by a bank-wide valuation policy framework which meets both IFRS and CRR requirements. In addition to the valuation adjustments reflected in the P&L, an adjustment for fair valued concentrated positions is recognised in the Tier 1 capital (i.e. Concentration AVA), in compliance with EBA regulatory standards and IFRS.

Adjustment on concentrated position

								2018			2017
	Equity	Interest rates	FX	Credit spread	Commodities	Total	Of which: in the trading book	Of which: in the banking book	Total	Of which: in the trading book	Of which: in the banking book
Concentration AVA	**184**	**2**	**0**	**18,292**	**0**	**18,478**	**16,391**	**2,087**	**17,524**	**16,910**	**614**

As of 31 December 2018, the Concentration AVA totalled EUR 18.5 million (before tax). This is an increase of EUR 1.0 million when compared to year-end 2017 (EUR 17.5 million before tax; EUR 13 million after tax) mainly driven by fair valued bonds held by the banking book as a result of IFRS 9 reclassification effective since 2018. On a quarterly basis the Concentration AVA, as well as all other valuation adjustments, is discussed and approved in the Global Pricing and Impairment Committee (GP&IC), who oversees the bank-wide valuation framework.

Market RWA under the internal model approach (IMA)

The table below explains the changes in Market RWA under the Internal Model Approach (IMA) during 2018 and provides additional information by linking the impact of changes in portfolio composition, model changes, and shifts in the risk environment on Market RWA.

EU MR2-B: RWA flow statements of market risk exposures under the IMA

amounts in EUR millions						2018		2017
		VaR	SVaR	IRC	Total RWA	Total capital requirements	Total RWA	Total capital requirements
1	RWA at previous year end	**649**	**1,750**	**1,205**	**3,604**	**288**	**5,579**	**446**
1a	*Regulatory adjustment*	*440*	*908*	*224*	*1,572*	*126*	*2,575*	*206*
1b	*RWA at previous year-end (end of the day)*	*209*	*842*	*981*	*2,032*	*163*	*3,003*	*240*
2	Movement in risk levels	320	645	-254	710	57	-972	-78
8a	*RWAs at the end of the reporting period (end of the day)*	*529*	*1,486*	*727*	*2,742*	*219*	*2,032*	*163*
8b	*Regulatory adjustment*	*866*	*1,730*	*40*	*2,636*	*211*	*1,572*	*126*
8	RWA at the end of the reporting period	**1,394**	**3,217**	**767**	**5,378**	**430**	**3,604**	**288**

* It is required to fill in Rows 1a/1b and 8a/8b when the RWA/capital requirement for any of the columns (VaR, SVaR, IRC) is the 60-day average (for VaR and SVaR) or the 12-week average measure (for IRC) and not the RWA/capital requirement at the end of the period. According to regulatory guidelines the values in rows 1a/8b are calculated as differences between values in rows 1 and 1b and 8 and 8a, respectively.

** Movement in risk levels: Changes due to position changes between end-of-day values for two reporting periods in question.

Key changes

The ING Bank Market RWA under Internal Model Approach increased to EUR 5.4 billion in 2018 from EUR 3.6 billion in 2017 (+1,774 million), mainly driven by risk position changes. The components of the change are: 10D HVaR (EUR +745 million), 10D SVaR (EUR +1,467 million), while IRC decreased (EUR -438 million). The change in IRC is mainly due to a decrease in IRC default as a result of decreased debt positions in sovereigns and financials.

Funding & liquidity risk

Funding and liquidity risk is the risk that ING Group or one of its subsidiaries cannot meet its financial liabilities when they come due, at reasonable cost and in a timely manner. ING ensures that long term obligations are adequately met with a diversity of stable funding instruments under both normal and stressed conditions. For more information, please refer to the Risk management paragraph of the ING Group Annual Report.

To protect ING and its depositors against liquidity risks, ING maintains a liquidity buffer based on the Delegated Act LCR. ALCO Bank ensures that sufficient liquidity is maintained, in accordance with Bank and regulatory rules and standards, including a buffer of unencumbered, high quality liquid assets.

EU LIQ1: LCR disclosure template

EUR million		Total unweighted value	Total weighted value
		31 December 2018	
Number of data points used in the calculation of averages		12	12
HIGH-QUALITY LIQUID ASSETS			
1	Total high-quality liquid assets (HQLA)		135,726
CASH-OUTFLOWS			
2	Retail deposits and deposits from small business customers, of which:	393,055	28,538
3	*Stable deposits*	290,231	14,512
4	*Less stable deposits*	95,914	12,291
5	Unsecured wholesale funding	330,381	120,713
6	*Operational deposits (all counterparties) and deposits in networks of cooperative banks*	221,185	55,115
7	*Non-operational deposits (all counterparties)*	101,245	57,647
8	*Unsecured debt*	7,951	7,951
9	Secured wholesale funding		12,588
10	Additional requirements	100,984	23,818
11	*Outflows related to derivative exposures and other collateral requirements*	10,502	10,502
12	*Outflows related to loss of funding on debt products*	310	310
13	*Credit and liquidity facilities*	90,172	13,006
14	Other contractual funding obligations	9,639	8,876
15	Other contingent funding obligations	134,263	5,812
16	**TOTAL CASH OUTFLOWS**		200,345
CASH-INFLOWS			
17	Secured lending (eg reverse repos)	89,328	15,987
18	Inflows from fully performing exposures	40,360	30,527
19	Other cash inflows	207,563	43,213
20	**TOTAL CASH INFLOWS**	337,251	89,727
EU-20a	***Fully exempt inflows***	0	0
EU-20b	***Inflows Subject to 90% Cap***	0	0
EU-20c	***Inflows Subject to 75% Cap***	328,397	89,727

			TOTAL ADJUSTED VALUE
21	**LIQUIDITY BUFFER**		135,726
22	**TOTAL NET CASH OUTFLOWS**		110,618
23	**LIQUIDITY COVERAGE RATIO (%)**		123%

EU LIQ1: LCR disclosure template					
EUR million		Total unweighted value	Total weighted value	Total unweighted value	Total weighted value
		30 September 2018		30 June 2018	
Number of data points used in the calculation of averages		12	12	12	12
HIGH-QUALITY LIQUID ASSETS					
1	Total high-quality liquid assets (HQLA)		131,624		128,963
CASH-OUTFLOWS					
2	Retail deposits and deposits from small business customers, of which:	390,165	28,113	388,048	27,843
3	*Stable deposits*	290,350	14,517	289,565	14,478
4	*Less stable deposits*	93,387	11,981	92,517	11,866
5	Unsecured wholesale funding	327,617	121,110	327,961	121,838
6	*Operational deposits (all counterparties) and deposits in networks of cooperative banks*	216,719	54,024	216,693	54,028
7	*Non-operational deposits (all counterparties)*	103,635	59,822	104,299	60,842
8	*Unsecured debt*	7,264	7,264	6,969	6,969
9	Secured wholesale funding		11,366		10,743
10	Additional requirements	99,384	23,559	98,930	23,466
11	*Outflows related to derivative exposures and other collateral requirements*	10,597	10,597	10,716	10,716
12	*Outflows related to loss of funding on debt products*	354	354	330	330
13	*Credit and liquidity facilities*	88,434	12,609	87,884	12,419
14	Other contractual funding obligations	9,561	8,810	9,679	8,940
15	Other contingent funding obligations	130,297	6,059	127,686	5,429
16	**TOTAL CASH OUTFLOWS**		199,017		198,258
CASH-INFLOWS					
17	Secured lending (eg reverse repos)	86,348	15,461	81,325	14,999
18	Inflows from fully performing exposures	40,593	30,443	39,611	29,337
19	Other cash inflows	204,729	42,679	205,894	42,863
20	**TOTAL CASH INFLOWS**	331,670	88,584	326,831	87,200
EU-20a	***Fully exempt inflows***	0	0	0	0
EU-20b	***Inflows Subject to 90% Cap***	0	0	0	0
EU-20c	***Inflows Subject to 75% Cap***	322,964	88,584	318,388	87,200
			TOTAL ADJUSTED VALUE		TOTAL ADJUSTED VALUE
21	**LIQUIDITY BUFFER**		131,624		128,963
22	**TOTAL NET CASH OUTFLOWS**		110,433		111,059
23	**LIQUIDITY COVERAGE RATIO (%)**		119%		116%

EU LIQ1: LCR disclosure template

EUR million		Total unweighted value	Total weighted value	Total unweighted value	Total weighted value
		31 March 2018		31 December 2017	
Number of data points used in the calculation of averages		12	12	12	12
HIGH-QUALITY LIQUID ASSETS					
1	Total high-quality liquid assets (HQLA)		126,157		121,387
CASH-OUTFLOWS					
2	Retail deposits and deposits from small business customers, of which:	385,323	27,493	381,713	27,150
3	*Stable deposits*	288,412	14,421	285,523	14,276
4	*Less stable deposits*	91,442	11,698	91,237	11,628
5	Unsecured wholesale funding	329,241	122,128	330,734	120,966
6	*Operational deposits (all counterparties) and deposits in networks of cooperative banks*	217,628	54,263	220,596	55,006
7	*Non-operational deposits (all counterparties)*	104,694	60,946	103,355	59,175
8	*Unsecured debt*	6,920	6,920	6,784	6,784
9	Secured wholesale funding		9,948		9,543
10	Additional requirements	101,666	23,380	105,031	23,736
11	*Outflows related to derivative exposures and other collateral requirements*	10,776	10,776	10,615	10,615
12	*Outflows related to loss of funding on debt products*	133	133	294	294
13	*Credit and liquidity facilities*	90,756	12,470	94,122	12,826
14	Other contractual funding obligations	9,298	8,571	8,810	8,094
15	Other contingent funding obligations	124,501	4,198	121,880	2,749
16	**TOTAL CASH OUTFLOWS**		195,718		192,237
CASH-INFLOWS					
17	Secured lending (eg reverse repos)	77,694	14,439	76,567	14,917
18	Inflows from fully performing exposures	38,328	28,094	37,053	26,937
19	Other cash inflows	208,307	43,440	212,590	44,341
20	**TOTAL CASH INFLOWS**	324,329	85,972	326,210	86,195
EU-20a	***Fully exempt inflows***	0	0	0	0
EU-20b	***Inflows Subject to 90% Cap***	0	0	0	0
EU-20c	***Inflows Subject to 75% Cap***	315,966	85,972	317,548	86,195
			TOTAL ADJUSTED VALUE		TOTAL ADJUSTED VALUE
21	**LIQUIDITY BUFFER**		126,157		121,387
22	**TOTAL NET CASH OUTFLOWS**		109,746		106,041
23	**LIQUIDITY COVERAGE RATIO (%)**		115%		114%

Information on the Liquidity Coverage Ratio ING Group

In the LCR calculation the possible impact on collateral outflows is taken into account via the outflows allocated through the Historical Look Back Approach (HLBA) and the 3-notch downgrade.

Measurement and monitoring of LCR for significant currencies is in place with separate limit setting (See Funding & Liquidity risk in the ING Group Annual Report – Risk management paragraph). These limits are an integral part of the funding plan of the bank.

The LCR management framework is based on the legal entity structure of the group (NV Solo and subs). At consolidated level adjustments are made for surplus liquidity not (fully) available due to local transferability restrictions. Group Treasury (GT) is responsible for the liquidity management of the liquidity buffer and manages this throughout the organization.

The HQLA reflected in the quantitative overview, represents a major part of the liquidity buffer of the Group. It should be noted that next to HQLA, other assets and facilities are available which contribute to the counterbalancing capacity of the Group, such as retained securitizations.

As part of the liquidity buffer management, ING Group monitors the existing asset encumbrance. Encumbered assets represent the on- and off-balance sheet assets that are pledged or used as collateral for ING Group's liabilities. The presented templates of ING Group's encumbered and unencumbered assets are based on the CRR (Part Eight) and the Regulatory Technical Standards (RTS) for disclosure of encumbered and unencumbered assets.

In 2018, the median asset encumbrance ratio for ING Group is 19%.

ING Group: Encumbered and unencumbered assets

2018 median	Carrying amount of en-cumbered assets	Fair value of en-cumbered assets	Carrying amount of unen-cumbered assets	Fair value of unen-cumbered assets
Assets of ING Group	**101,510**		**794,223**	
Equity instruments	6,789	6,789	7,876	7,876
Debt securities	12,996	12,726	70,826	71,470
of which: covered bonds	382	380	8,795	8,824
of which: asset-backed securities	1,060	1,060	3,871	3,973
of which: issued by general governments	5,431	5,292	48,596	48,744
of which: issued by financial corporations	6,093	5,990	18,588	18,612
of which: issued by non-financial corporations	1,139	1,111	1,730	1,745
Other assets	81,460		716,208	
of which: loans on demand	1,493		39,015	
of which: loans and advances other than on demand	78,180		628,322	
of which: mortgage loans	64,668		286,992	

ING Group: Collateral received

2018 median	Fair value of encumbered collateral received or own debt securities issued	Fair value of collateral received or own debt securities issued available for encumbrance
Collateral received by ING Group	**90,483**	**50,549**
Loans on demand		
Equity instruments	13,003	5,154
Debt securities	77,167	45,299
of which: covered bonds	1,585	425
of which: asset-backed securities		1,125
of which: issued by general governments	62,833	30,868
of which: issued by financial corporations	10,715	9,798
of which: issued by non-financial corporations	3,435	3,060
Loans and advances other than loans on demand		
Other collateral received		
Own debt securities issued other than own covered bonds or asset-backed securities		
Own covered bonds and asset-backed securities issued and not yet pledged		48,179
TOTAL ASSETS, COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED	191,993	

Encumbered assets/collateral received and associated liabilities ING Group		
2018 median	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered
Carrying amount of selected financial liabilities	**133,533**	**165,585**
of which: derivatives	13,611	8,219
of which: repurchase agreements	64,857	87,050
of which: collateralised deposits excl. repurchase agreements	24,303	27,435
of which: covered bonds	25,792	36,160
of which: asset-backed securities	5,672	6,770

Information on importance of encumbrance ING Group
ING Group manages it balance sheet prudently whereby a variety of funding sources is readily available. Given this situation, the level of encumbrance of ING Group's balance sheet is relatively low.
Encumbered assets on ING Group's balance sheet comprise to a large extent mortgages and other loans which are used as cover pool for covered bond programs issued by subsidiaries in the Netherlands, Belgium and Germany, as well as external securitisations and other types of collateralized deposits. Of the total encumbered assets of the Group, EUR 80 billion are loans and advances, mostly mortgages, that serve as collateral for these type of liabilities. The cover pool assets are not considered encumbered when the securities are retained within ING Group. The issued securitisations and especially the covered bonds have over collateralisation, meaning that the assets in the cover pool are higher than the issuance.
Furthermore, assets are encumbered as a result of the repo- and securities lending business and cash and securities collateral posted for derivative and clearing transactions in which pledging collateral is a requirement. As part of its normal securities financing and derivatives trading activities ING enters into standard master agreements such as ISDA and Global Master Repurchase Agreements (GMRA), which contain Credit Support Annexes (CSA) or other similar clauses. Under the terms of these contracts ING could be required to provide additional collateral in the event ING is downgraded by one of the established rating agencies. Refer to the paragraph Counterparty Credit Risk.
The main part of ING Group's repo- and reverse repo activities are short-term dated. Repo transactions are mostly conducted with securities which have been obtained as collateral in reverse repo transactions, which are not recognized on the balance sheet. Where securities recognized on the balance sheet have been used in a repo transaction, these remain recognized on the balance sheet and are reported as encumbered.

Non-Financial Risk

The table below shows the distribution of the gross loss amount for non-financial risk events by the Basel risk categories. The Basel risk categories (i.e. Basel event type classifications) include the risk areas set out in the Non-Financial Risk chapter. The event loss is presented in the year of discovery of the individual events.

Distribution of gross loss* by risk category	2018	2017**
Business disruption and systems failures	1	1
Clients, products and business practices	16	115
Damage to physical assets	2	1
Employment practices and workplace safety	7	2
Execution, delivery and process management	24	55
External fraud	20	20
Internal fraud	2	
Total	**72**	**194**

* Loss amounts for events with an individual loss ≥ EUR 5,000.
** Due to recoveries and the development of loss amounts over time, the figures of previous years can be subject to change.

In 2018, the internal event losses were mainly in the categories Execution, Delivery and Process management (33%), External fraud (28%) and Clients, Products and Business practices (22%). These amounts do not include additional losses to events that were reported before 2018, which include the settlement of EUR 755 million reached with the Dutch Public Prosecution Service, related to an event first identified and internally reported in 2016.

The 2017 losses to events are lower than previously reported due to a net release of provisions amounting to EUR 10 million. In 2017, the highest loss amounts were in the risk category Clients, Products & Business Practices (59%) and Execution, Delivery & Process Management (29%).

Whistleblower

ING deems it important that any employee can report, anonymously or not, alleged irregularities ('Concerns') regarding accounting or auditing matters, as well as Concerns of a general, operational and financial nature within the company, in accordance with its Whistleblower Policy. ING exercises the utmost care with regard to the confidentiality of such a report or the anonymity of the employee, within the limits as defined by applicable laws and regulations. ING will not discharge, demote, suspend, threaten, harass or in any other way harm the employment status of a Whistleblower who has reported a Concern in good faith or of an employee who participates or has participated in an investigation following a reported Concern.

Concerns are recorded in accordance with specific categories, as represented in the table. These are limited to concerns reported through the dedicated whistle-blower channels as alternative to standard reporting and escalation channels. The Concerns are reported periodically (in numbers and on content, if necessary) via the Head of Compliance up to the level of the Supervisory Board.

Whistleblower concerns

Number of cases	2018	2017
Breach of Orange code or unethical behaviour	45	19
Bribery / Corruption	-	1
Customer suitability	1	-
Financial Economic Crime	6	1
Fraud / Theft	2	9
Privacy or (client) confidentiality	1	3
Other breach of any external law / regulation	18	66
Retaliation	2	1
Total	**75**	**100**