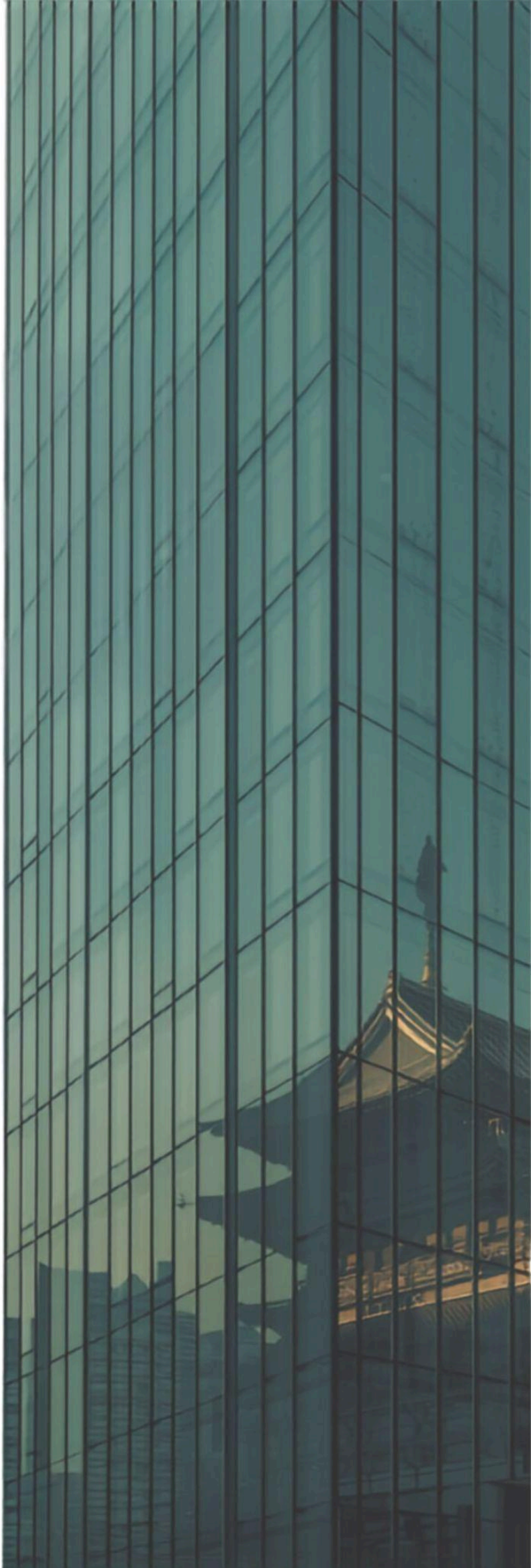
Securing the Future

Addressing Carbon Bias in the Bank of Korea's Collateral Framework

August 2026



Institute for Green Transformation

positivemoney

AUTHORS

Giwon Choi (Institute for Green Transformation), Wonyoung Cho (Institute for Green Transformation), Joe Herbert (Positive Money), and Ellie McLaughlin (Positive Money).

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Summary

This report, co-authored by the Institute for Green Transformation (Korea) and Positive Money (UK), sets out the important role of the collateral framework in the Bank of Korea's response to the climate and ecological crisis. The report expands on an earlier briefing titled *A Bolder Environmental Strategy for the Bank of Korea*, which highlighted the collateral framework as one of six recommended areas for the Bank to take action. Analysing data on collateral pledged at the Bank of Korea, a significant weighting and bias towards high-carbon assets is revealed. High-carbon assets dominate pledged collateral, while green assets represent a tiny fraction and their share is declining. Green assets also receive higher average haircuts than the average across all assets, including high-carbon assets. The report therefore proposes a set of key policy actions the Bank should take to address this carbon bias and align the collateral framework with supporting green economic transition:

1. Incentivise the growth of credible green bond markets
    - Incorporate green bonds as an explicit category in the collateral framework, to send a signal to the financial sector and stimulate the green bond market
    - Treat forthcoming Korean green government bonds as equal to standard government bonds, and ensure their eligibility across all collateral pools
    - Support the development of science-based and strictly applied green bond standards

2. Incorporate environmental considerations within short-term debt instruments
    - Pursue the issuance of green Monetary Stabilisation Bonds, due to their status as another key asset within the Bank's collateral pool

3. Adjust collateral eligibility and haircuts based on an assessment of environmental risks and impacts
    - Exclude assets associated with the most acute environmental risk from eligibility within the collateral framework
    - Develop an 'environmental factor' that applies adjustments to haircuts on assets based on environmental risk and impact metrics

4. Improve disclosure
    - Publish regular disclosures of environmental information on the Bank's collateral pool, in line with leading international standards

1. Why integrate environmental considerations in collateral frameworks?

Collateral frameworks are a key part of the implementation of monetary policy. When the central bank injects liquidity into the financial system through providing reserves to financial institutions, they often require financial institutions to pledge assets as collateral in order to guard against the risk that they become unable to repay these loans. The collateral framework is a set of rules that dictate which assets are eligible to be pledged as collateral, and the haircuts applied to assets, in order to access liquidity from the central bank. By defining which assets enable private financial institutions to access central bank liquidity, the collateral framework plays an influential role in shaping the demand for and value (and therefore yields) of different assets in the economy. Central banks can also require collateral from banks participating in the payments and settlements system, in order to guard against the risk of defaults, as is the case with the Bank of Korea.

Empirical evidence from the Eurosystem has found that eligibility of assets – including corporate credit claims and corporate debt – for use as collateral has contributed to lowering the cost of financing for those firms. Research in China has similarly found collateral eligibility of corporate bonds to lead to increased asset prices and lower financing costs. The relationship between collateral haircuts and cost of financing is more complex to measure and so less studied than asset eligibility, however, evidence still suggests that investors demand higher yields for bonds with higher haircuts. These dynamics mean that the collateral framework is not a mere risk-management device, but one axis of monetary policy that shapes the allocation of capital in financial markets. The 'market neutrality' approach taken by central banks around the world, and lack of explicit environmental considerations, tends to embed a carbon bias in collateral frameworks, with high-carbon sectors overrepresented relative to their productive contribution to the economy. This is one example of how 'market neutrality' approaches fail to fulfil their stated objective, and demonstrates the highly influential role that central banks play in materially shaping environmental outcomes through their policy decisions, including those regarding the collateral framework.

As has been noted by the Network for Greening the Financial System (NGFS), the effectiveness of integrating environmental considerations into collateral frameworks varies depending on central banks' monetary policy stances. Under conditions of lower liquidity in the financial system, the demand for central bank liquidity is increased. This is because, in the absence of abundant reserves, banks must hold more assets that can be used as collateral in order to obtain reserves when needed. This is leading to a greater focus on collateral frameworks for central banks looking to incorporate climate and nature risks into monetary policy operations. For example, in the Eurozone, where liquidity in the financial system is declining due to the European Central Bank (ECB) winding down its quantitative easing (QE) programme, the use of the ECB's collateralised lending facilities is increasing, and the ECB has implemented a 'climate

factor' as an add-on to standard haircuts (see section 4). As liquidity is declining in Korea's financial system, the Bank of Korea is shifting away from its focus on liquidity absorption, towards also supplying liquidity. This has included implementing, in 2025, a two-way system of buying and selling repurchase agreements. As in the European Union (EU), these developments heighten the importance of the collateral framework in the Korean context.

While collateral frameworks often currently favour high-carbon sectors, with the right adaptations, they can be a key tool to support investment in sectors crucial to green economic transition. For example, research on jurisdictions where green bonds have been made eligible within the collateral framework has found that this reduced the cost of financing for green projects. Only through orienting their policy tools to shift finance away from sectors driving ecological destruction and towards green transition can central banks establish the conditions for long-term price and financial stability.

This report focuses on steps that the Bank of Korea (BOK) could take to integrate environmental considerations in its collateral framework, in order to tackle carbon bias in monetary policy and support the financing conditions necessary for Korea's green economic transition.

2. How the Bank of Korea's collateral framework operates

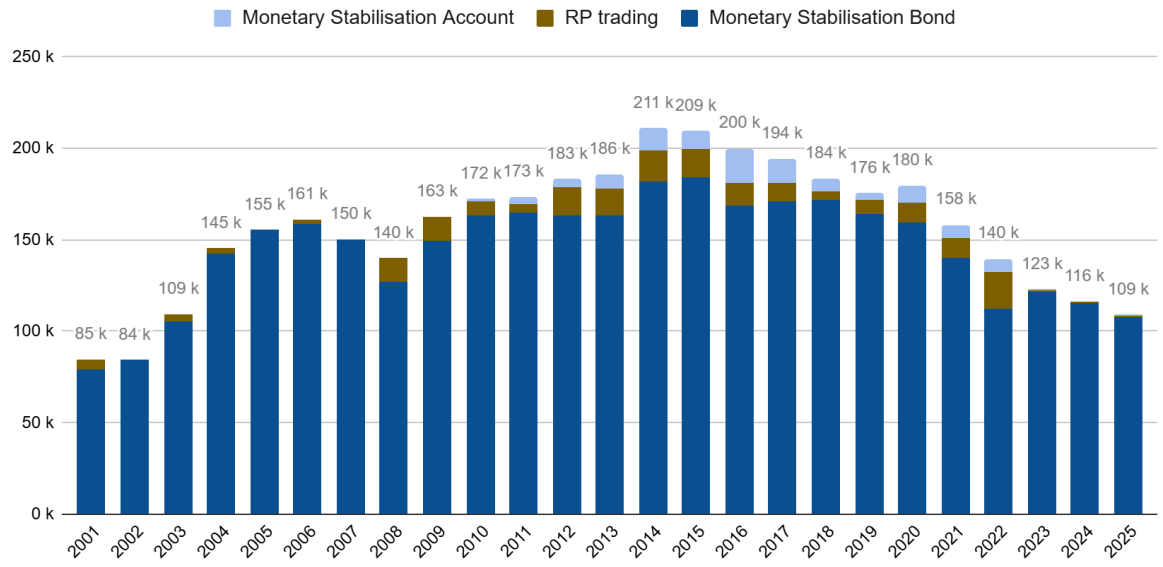
How the Bank of Korea conducts monetary policy

The BOK operates a monetary policy framework designed to achieve price stability and financial stability. Around the Base Rate set by its Monetary Policy Board, the BOK manages liquidity so that interest rates in the short-term money market – the call market in particular – do not deviate significantly from the Base Rate. Within this framework, the liquidity-provision windows and the collateral framework that underpins them serve as a central pillar; they shield the central bank from credit risk and preserve the stability of the financial system as a whole.

The BOK supplies and withdraws central bank money (reserves) through two main channels. The first is open market operations (OMOs). The BOK adjusts liquidity and interest rates by transacting securities – including government bonds and Monetary Stabilisation Bonds (MSBs)[1] – with financial institutions in the money and bond markets. Its core instrument is the repurchase agreement (repo); by buying or selling securities under an agreement to reverse the transaction after a set period, the BOK injects or absorbs short-term liquidity. Issuance and redemption of MSBs and deposits in the Monetary Stabilization Account also manage structural liquidity. Notably, in July 2025, the BOK regularised two-way repo operations to refine its liquidity management, strengthening a standing framework for managing liquidity through OMOs. Repo transactions run at around KRW 10–20 trillion annually.

[1]Monetary Stabilisation Bonds (MSBs) are debt securities issued by the BOK itself — rather than by the government — to absorb excess liquidity from the financial system. They function as a central bank liability, with maturities typically ranging from 14 days to 2 years. Comparable instruments exist in other frameworks; within the Eurosystem, for instance, the ECB is empowered to issue "debt certificates," which it did in small volumes during its early years (1999–2003) but has not issued since.

[Figure 1] Scale of BOK open market operations by instrument

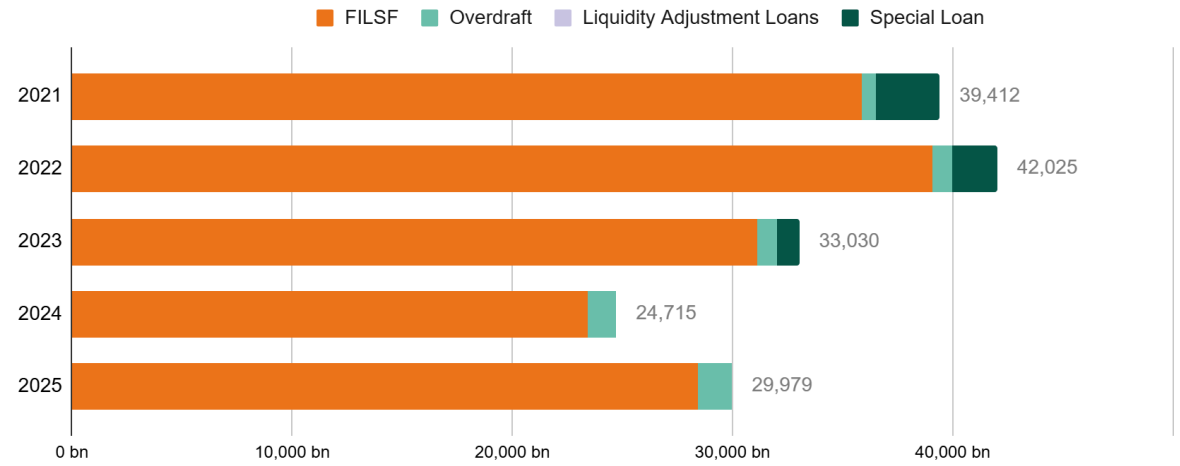


Source: authors' compilation based on 'Main Accounts of the Bank of Korea(End of)' in the BOK Economic Statistics System (ECOS); units: KRW billion.

The second channel is the BOK's lending facilities. Financial institutions draw on these facilities for funding shortfalls, temporary liquidity gaps in the settlement process, and emergency liquidity in times of crisis. As figure 2 shows, over the past five years (2021–2025), the bulk of BOK lending has been conducted through the Financial Intermediated Lending Support Facility (FILSF), which provides low-cost funding for banks lending to small and medium-sized enterprises (SMEs). Intraday overdrafts and Liquidity Adjustment Loans cover temporary settlement and liquidity shortfalls. While OMOs provide the 'standing and aggregate' window that steers system-wide liquidity, the lending facilities are the 'selective and lender of last resort' window that responds to individual institutions' funding needs and to crises; the two components are complementary.

BOK lending to financial institutions comprises bill rediscounting and securities-backed loans. However, in recent years, rediscounting has not been used at all. Total lending over 2021–2025 was KRW 169 trillion, averaging KRW 33.8 trillion per year. Some 93.4% of lending occurred through the FILSF, while intraday overdrafts (covering temporary shortfalls in the settlement of payments) and Liquidity Adjustment Loans (covering temporary liquidity shortfalls at institutions) were small. The special lending programme introduced to support firms during the COVID-19 crisis was wound down in 2024. Overall, central bank lending – which had expanded sharply during the pandemic – is now contracting and stabilising.

[Figure 2] BOK lending, 2021–2025



Source: authors' compilation based on 'KRW-denominated loans' in the BOK Economic Statistics System (ECOS); units: KRW billion.

The payment-and-settlement system and the collateral framework

The role of collateral is not confined to liquidity provision. In the retail payment system, the claims and obligations that many financial institutions exchange are netted at a given point in time and only the net balance is settled (deferred net settlement). If one participant fails to meet its obligation in this process, cascading settlement failures could put the entire system at risk. To guard against this, the BOK collects settlement collateral from participants. In line with the recommendations of the BIS Principles for Financial Market Infrastructures (PFMI), the BOK raised the collateralisation ratio each year so as to fully cover potential credit risk, reaching 100% in 2025.

As a result, the collateral collected in the payment-and-settlement domain is in fact larger than the collateral used for liquidity provision. According to the BOK, at end-Q2 2025 the collateral pledged to it by payment-system participants for net settlement, lending and repo-eligible securities amounted to roughly KRW 154 trillion. That the settlement collateral pool is the larger of the two pools analysed in this study (lending collateral and settlement collateral) underscores that the collateral framework is a core component not only of monetary policy, but of settlement stability. In short, the BOK's collateral framework operates across three domains: 1) open market operations (repos); 2) BOK lending; and 3) net settlement.

The BOK does not extend credit unsecured. When it lends, financial institutions must pledge eligible collateral, and repo operations in OMOs are likewise collateralised transactions in which securities change hands.

Developments in the BOK's collateral policy

The BOK's collateral policy has grown gradually less conservative in response to structural changes in the financial sector and successive economic crises, but it is still expanding more slowly – and remains narrower in scope – than that of other major

economies. Before the 1990s, the BOK accepted only the very safest assets – government bonds, MSBs and government-guaranteed bonds – as collateral for its lending.

Subsequently, through the 1998 Asian financial crisis and the 2008 global financial crisis, the BOK expanded its emergency and standing lending facilities – creating the intraday overdraft, Liquidity Adjustment Loan and Liquidity Adjustment Deposit schemes – and continuously widened the range of eligible collateral. Also, in response to the 2008 global financial crisis, it admitted alongside government and public bonds, Industrial Finance Bonds (KDB), SME Finance Bonds (IBK), Export-Import Bonds (KEXIM) and Korea Housing Finance Corporation (KHFC) MBS, as eligible collateral.

The lending facilities and the range of eligible collateral widened further during the COVID-19 crisis. The BOK temporarily ran a Financial Stability Special Loan facility that lent against high-grade corporate bonds, and in the wake of the 2023 Silicon Valley Bank (SVB) collapse, it substantially expanded the eligible collateral for the Liquidity Adjustment Loan on a permanent basis. The additions included bonds issued by nine major public institutions, bank bonds, local-government bonds, other public institution bonds and high-grade corporate bonds. In 2026, the BOK announced it would, for the first time, build an emergency-lending framework that uses financial institutions' loan claims as collateral. Under this measure, some corporate real-estate-backed loans and unsecured loan claims were temporarily added to eligible collateral.

Settlement collateral policy has moved in the same direction as lending policy, toward higher collateralisation ratios and greater diversification of eligible securities, in order to secure the stability of the retail payment system. Following the recommendation of the BIS Committee on Payments and Market Infrastructures (CPMI) PFMI, the BOK pushed the collateralisation ratio up by 10 percentage points each year from 2023 so as to fully cover potential credit risk, reaching 100% in 2025. Moving forward, the BOK is considering introducing a real-time gross settlement (RTGS) system that finalises settlement between institutions in real time; as it does so, the character of collateral is likely to shift from covering net-settlement risk toward supporting the central bank's intraday overdrafts.

[Table 1] Changes in BOK collateral framework over time

Before the Asian crisis (–1998)	Asian & global financial crises (1999–2019)	COVID-19 & SVB (2020–present)
Only government bonds, MSBs and government-guaranteed bonds accepted	Special banks' and public institutions' bonds temporarily admitted; standing facilities and eligible collateral expanded	Scope widened to bank, corporate and public institution bonds; credit claims (admitted on a limit basis)

Source: authors.

According to the BOK, at end-Q2 2025, payment-system participants held KRW 489 trillion of bonds, of which roughly KRW 154 trillion was pledged to the BOK as collateral for net settlement, lending and repo-eligible securities.

The BOK's eligible collateral list

Eligible collateral differs by instrument but in principle consists of securities circulating in the market (BOK Act art. 64(1)2). In an emergency context, the Monetary Policy Board may – with at least four members' assent – temporarily designate eligible assets (art. 65). By rule, foreign-issued bonds are not accepted.

The BOK's operating regulations set out categories of eligible collateral. Government and government-guaranteed bonds, the MSBs issued by the BOK, local-government bonds, and the special bonds issued by KDB, KEXIM, IBK and KHFC, are accepted as a baseline. For repos in OMOs, this is the entire universe. For securities lending in OMOs, the range is narrowest; only cash, government bonds, government-guaranteed bonds and MSBs are accepted.

Collateral for central bank lending and net settlements is broader, additionally including public institution bonds and some bank and corporate bonds. However, every security other than government, government-guaranteed, MSBs and local-government bonds must carry a rating of AA- or higher. Financial institutions' loan claims are eligible only for emergency liquidity support, based on criteria the central bank sets.

[Table 2] BOK eligible collateral by policy instrument

Domain	Instrument	Eligible categories	Note
Lending	Securities-backed loans	Government bonds, Govt-guaranteed bonds, MSBs, Local-govt bonds, KHFC MBS, KDB bonds, IBK bonds, KEXIM bonds, 9 public institution bonds, Other public institution bonds, NH (agri.) bonds, Suhyup (fishery) bonds, Bank bonds, Covered bonds, Corporate bonds	AA-↑ for non-sovereign
	Emergency lending vs. loan claims	Financial institutions' loan claims (as BOK determines)	New 2026
Settlement	Net settlement / intraday support	Same as securities-backed-loan collateral	
OMOs	Repo	Govt bonds, govt-guaranteed securities, MSBs, KHFC MBS, KDB bonds, IBK bonds, KEXIM bonds only	Bank and corporate bonds are not accepted
	Securities lending	Cash, govt bonds, govt-guaranteed bonds, MSBs only	

Source: authors, based on the BOK's latest (March 2026) Detailed Rules on Loans to Financial Institutions, OMO Regulations, Emergency-Lending Regulations, and Payment-and-Settlement Operating Rules. MSBs = Monetary Stabilization Bonds; KHFC = Korea Housing Finance Corporation; KDB = Korea Development Bank; IBK = Industrial Bank of Korea; KEXIM = Export-Import Bank of Korea; NH = Nonghyup. 9 public-institution = Korea National Railway (KNR), Korea Deposit Insurance Corporation (KDIC), Korea SMEs and Startups Agency (KOSME), Korea Gas Corporation (KOGAS), Korea Expressway Corporation (EX), Korea Water Resources Corporation (K-water), Korea Electric Power Corporation (KEPCO), Korea Railroad Corporation (KORAIL), Korea Land & Housing Corporation (LH)

Haircuts on collateral

To cover the risk of loss in lending, OMOs and net settlements, the BOK decides how much of the pledged collateral value to recognise, considering loss from price volatility, decline in value from deteriorating issuer credit, and the risk of not liquidating an asset quickly (loss on disposal). Three factors – bond type, credit rating and remaining maturity – determine the size of that risk. Haircuts are lowest for government-guaranteed securities; for bonds without such a guarantee, haircuts rise as the credit rating falls and the maturity lengthens.

Eligible collateral for lending and net settlement carries haircuts of 2 to 21 percentage points (pp). A government bond with remaining maturity of one year or less has a haircut of only 2pp, while an AA- discount corporate bond with remaining maturity of over 10 years attracts a 21pp haircut. The BOK values collateral every business day at market prices; where recognised value falls short, it requires additional securities or reallocation, and if unremedied, it recovers the loan or disposes of the collateral.

[Table 3] BOK eligible collateral for lending and net settlement, and valuation ratios (per 100)[2]

Security type	Rating	≤1y	1–3y	3–5y	5–10y	>10y
Govt, govt-guaranteed bonds, MSBs	–	98	97	96	95	93
Local-govt bonds	–	96	95	94	93	92
KHFC MBS; KDB/IBK/KEXIM; 9 public-corp bonds	AAA	96	95	94	93	92
	AA+~AA-	95	94	93	92	91
Other public-corp bonds	AAA	95	94	93	92	91
	AA+~AA-	94	93	92	91	90
Agri/fishery, bank & covered bonds	AAA	94	93	92	91	90
	AA+~AA-	93	92	91	90	89
Corporate bonds	AAA	90	88	87	86	85
	AA+~AA-	85	83	82	81	80

Source: BOK Regulations on Loans to Financial Institutions, March 2026. Higher (greener) = higher value; per 100, for coupon bonds. Discount bonds use a separate ratio (deduct 1pp for maturities over one year). Remaining maturity is as of the valuation date.

For OMOs, the same buffer is expressed as an overcollateralisation requirement rather than a valuation ratio. The range is narrower and haircuts differ. Buying under repos, institutions pledge collateral worth 102 to 112% of the purchase; haircuts of 2.0 to 10.7pp. A government bond with remaining maturity of one year or less requires 102%. KHFC

[2] A valuation ratio is not, strictly, a haircut. Some frameworks (e.g. the Eurosystem) apply a valuation markdown to certain assets before any haircut. In the BOK's framework, the ratios in Table 3 are applied directly to the daily market valuation, so the effective haircut is simply 100 minus the ratio.

MBS with remaining maturity of over 10 years requires 110%. Institutions outside the high-reliability category face up to 2pp extra (BOK OMOs Regulations art. 2(1)).

Because admission as eligible collateral and a low haircut raise an asset's market preferability, the BOK's risk-minimising framework strengthens the market's preference for government and public bonds. Even though eligible collateral was substantially expanded after 2023, the high AA- floor and high haircuts on those assets keep the relative advantage of government and public bonds robustly in place.

The BOK framework compared with major central banks

Driven by the need to expand liquidity in crises, the BOK has diversified instruments and widened eligible collateral. Its framework nonetheless retains several distinctive design features: like the US Federal Reserve, it centres its regular operations on a comparatively narrow set of highly rated securities, and it defines eligibility by category – security type, credit rating and residual maturity – rather than through an asset-level list.

The Eurosystem, the Bank of Japan (BOJ), and the People's Bank of China (PBoC) accept broad collateral even in normal times. The Eurosystem admits marketable and non-marketable assets (credit claims), with a credit standard in principle equivalent to BBB-; lower than the BOK's AA-. Whereas the BOK specifies only categories, the Eurosystem publishes a daily list of liquid marketable eligible assets in the ECB's Eligible Assets Database. A broad eligible set of assets, though, is not necessarily replicated in terms of what is actually pledged. In the Eurosystem, sovereign bonds constitute only a small share – around a tenth – of pledged collateral, as banks keep their government and public institution bonds for market use and pledge credit claims, ABS and covered bonds instead. The opposite is true in Korea, with government and public-sector securities dominating the pledged pool as well as eligible collateral.

The BOJ's eligible collateral includes corporate bonds, commercial paper (CP), foreign sovereign and supranational bonds, MBS, and even loans on deeds. The PBoC, whose eligible collateral was previously narrow, overhauled its framework in 2018 to encompass corporate and bank loan claims, high-grade corporate bonds, and green assets. The Fed, like the BOK, runs a stability-oriented system centred on government bonds and agency MBS for ordinary OMOs, but at the Discount Window accepts an exceptionally broad set including loan claims, therefore constituting a two-tier structure.

The BOK, like the Fed, has made no explicit move to consider climate change in its collateral framework, as the next section evidences empirically. This contrasts with the ECB – which in 2026 introduced reductions to collateral value based on climate risk – and the PBoC, which included green financial bonds in its policy-lending collateral with a 'first-among-equals' status.

[Table 4] Comparison of major central banks' collateral systems

	Eligible collateral in normal times	Credit claims/ Loan claims as collateral	Climate consideration
US Federal Reserve	Narrow, stability-focused	Crisis liquidity tool (Discount Window)	None (no explicit differentiation)
ECB	Broad; marketable + non-marketable (credit claims)	Accepted normally; threshold eased in crises	SLBs eligible as collateral since 2021; Climate risk reductions to collateral value from late 2026
Bank of England	Broad; gilts, mortgage assets, corporate bonds (tiered)	Accepted in normal times (loan portfolios, Level C)	Climate risk built into collateral framework: mortgage-asset measures from 2024; corporate-bond haircut add-ons & coal exclusion from 2026
Bank of Japan	Very broad (govt bonds to loans on deeds)	Accepted in normal times	Accepts Japan Climate Transition Bonds as equal to standard govt bonds (no differential haircut)
PBoC	Broad; rating-based, policy-linked	Linked to policy (PSL, MLF, SLF, etc.)	Explicit preference for green bonds
Bank of Korea	Narrowest, securities-centred	First accepted 2026, emergency lending only	None (no explicit differentiation)

Source: authors, based on ECB, Fed, BOK, PBoC and BOJ materials and EGOV analytical reports. PSL= Pledged Supplementary Lending, SLF = Standing Lending Facility, MLF = Medium-term Lending Facility

3. Analysing the environmental character of the Bank of Korea's collateral framework

The BOK has not yet implemented any measure to reflect climate and environmental factors in its collateral framework, though it has reviewed such tools. In 'Climate Change and the Bank of Korea's Response' (October 2021), using the collateral framework actively was included among available tools, including adding green bonds to eligible collateral for lending and net settlement, and to repo and securities-lending collateral in OMOs.

[Table 5] Collateral-policy options for climate response reviewed in the BOK's 2021 strategy document

Domain	Instrument reviewed	Difficulty noted
Lending	Add green bonds to eligible lending collateral	Strong green bond demand means banks rarely pledge them
Payment/Settlement	Add green bonds to net-settlement collateral	As above
OMOs	Add green bonds to repo and securities-lending collateral	Small green issuance limits policy effect

Source: authors' reconstruction of the policy review in 'Climate Change and the Bank of Korea's Response'.

The BOK has so far not implemented these measures, however. Taken together, replies to National Assembly questions and to Governor Hyun Song Shin's confirmation hearing indicate the BOK sees no need to designate green bonds as eligible collateral, because the 2023 overhaul of the facilities and money-market-stabilisation measures already brought many green bonds into the pool. It has been estimated that approximately 72.8% of domestically issued green bonds meet the BOK's eligibility criteria (as of the end of 2025).[3] The BOK holds that expanding eligible collateral for liquidity simultaneously achieves a climate-risk-mitigation effect.

This judgement is open to serious challenge. It is true that broadening eligible collateral admitted many green bonds, but it is hard to argue that the pool's environmental risk has been adequately addressed, or eligibility for environmentally beneficial assets sufficiently widened. The framework remains structurally lenient toward carbon emissions and neglectful of green assets. This report addresses the problems with the BOK's position through an analysis of the collateral framework's carbon bias.

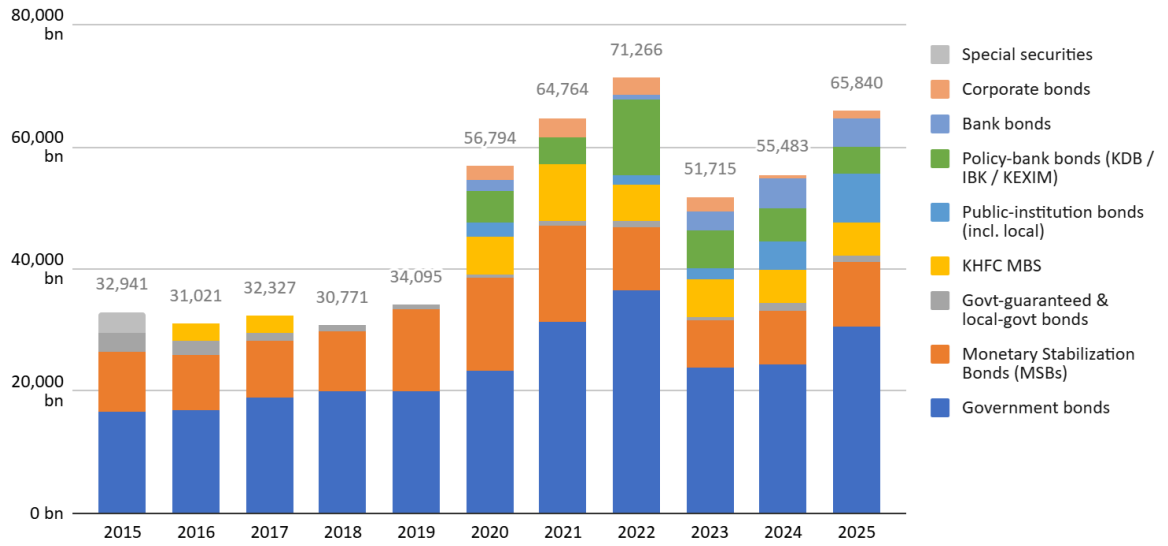
Composition of pledged collateral by asset type

Examining pledged collateral by security type, (quasi-)sovereign securities dominate. Lending collateral pledged to the BOK grew from about KRW 32.9 trillion in 2015 to KRW 56.8 trillion in 2020, peaked at KRW 71.3 trillion in 2022, contracted to KRW 51.7 trillion in 2023, and recovered to KRW 65.8 trillion in 2025. As of 2025, government bonds were

[3] This figure was provided as part of a written response to a National Assembly member's inquiries for Bank of Korea Governor Hyun Song Shin's confirmation hearing.

46.4% of pledged collateral and MSBs were 16.1% – over 60% between them – while corporate bonds were just 1.8%. Tellingly, the post-2023 expansion of eligible collateral was not filled by corporate bonds; the increase came mainly from public institution bonds (rising after 2023 to 12.0% in 2025) and policy-bank and bank bonds, while the corporate share decreased.

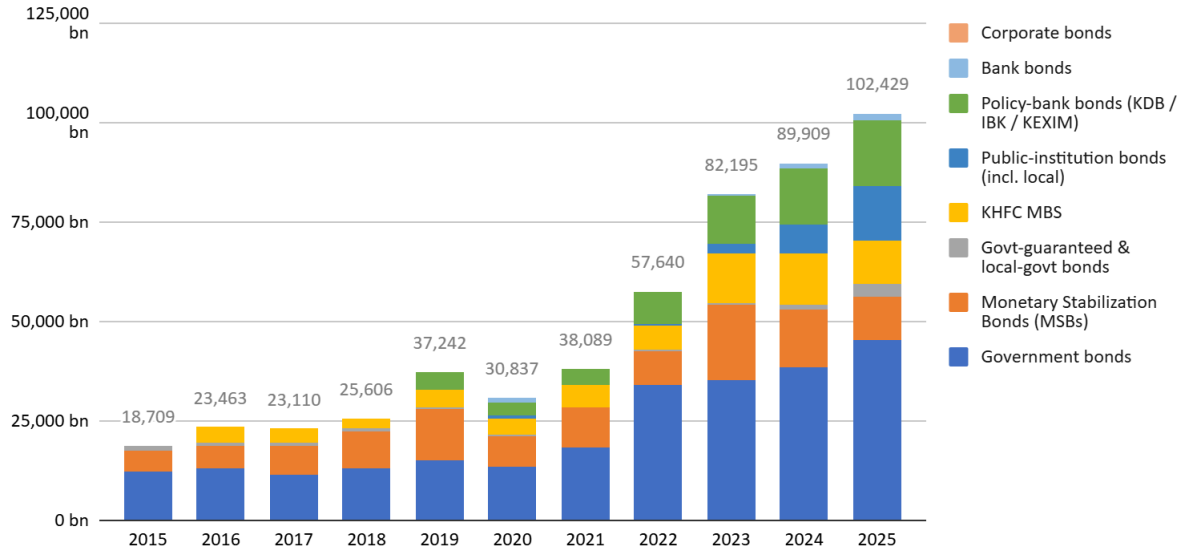
[Figure 3] Collateral pledged by asset type, lending, 2015–2025



Note: KRW billion; 15 security categories consolidated into 9; policy-bank bonds = KDB/IBK/KEXIM; public institution bonds = public-institution + other public/local-public-enterprise bonds; bank bonds include NH, Suhyup and covered bonds. Source: authors, based on materials the BOK submitted to Rep. Jung Tae-ho's office.

Pledged settlement collateral is larger than lending collateral and has grown more steeply, from KRW 18.7 trillion in 2015 to KRW 102.4 trillion in 2025, over 1.5 times the lending pool (KRW 65.8 trillion), and without the 2023 contraction. This reflects the growth of net settlement itself and the annual increases in the collateralisation ratio after 2023 under the PFMI recommendation. The tilt toward government and public bonds is even more pronounced. In 2025, government bonds (44.2%) and MSBs (10.8%) with policy-bank bonds (16.0%), KHFC MBS (10.7%) and public institution bonds (13.4%) fill essentially the whole pool, while corporate bonds are a negligible 0.2%.

[Figure 4] Collateral pledged by asset type, net settlement, 2015–2025



Note and source: as above.

Common across both pools is a strong preference for government and public bonds. Under risk-minimising rules, highly-rated, liquid, low-haircut government and public bonds form the bulk of collateral, while real-economy assets such as corporate and public institution bonds remain a minority.

These figures, however, describe collateral actually pledged by institutions. Because the BOK – unlike the ECB – does not publish the eligible-asset list, but only the criteria, the composition of the eligible universe cannot be observed directly. Even so, the composition of pledged collateral, as the joint product of the BOK's eligibility rules and financial institutions' choices, provides the best view of which assets the framework actually absorbs. The next section focuses on the 'real economy' segment (corporate and public institution bonds), to analyse the framework's carbon bias.

Analysis of the BOK collateral framework's carbon bias

As described above, the BOK's collateral valuation and haircuts are determined by only three variables: security type, issuer rating, and remaining maturity. Nowhere is there a climate, carbon, or environmental variable. The rules are 'carbon-blind': they neither explicitly penalise nor favour the carbon intensity of assets.

Under these carbon-blind rules, to minimise the market and credit risk of the collateral it prioritises, the BOK admits many bonds issued by fossil fuel firms and high-emission sectors. A security that reliably earns market returns or can be government-guaranteed is included – regardless of its associated carbon emissions – and enjoys a premium as a market-preferred asset through favourable haircuts. However environmentally beneficial an investment, if it is rated low or long-dated, it may be excluded or attract a high haircut. In effect, the market neutrality principle risks reproducing the market's carbon bias.

Korea's leading value-adding industries – semiconductors, steel, petrochemicals – are carbon-intensive, and its power sector has the lowest renewable energy share in the OECD. Korea is thus among the countries most likely to see carbon-intensive dominance projected into finance through creditworthiness and stability metrics. Yet no study has examined the carbon bias of the BOK collateral framework; a key link in this chain.

This report therefore analyses that bias from several angles: the shares of fossil fuel, high-emission and green assets in the pool; whether 'green' or 'brown' assets are in practice favoured; and whether the 2020s expansion of eligible collateral raised green bond uptake and mitigated carbon bias.

The analysis covers the BOK's flagship collateral: lending and settlement collateral. The BOK also collects collateral for repos in OMOs and treasury-agent guarantees, but eligibility there is limited to the highest-grade sovereign securities (government, government-guaranteed, MSBs, MBS) and some special bonds, so carbon bias is structurally hard to detect, amounts are small, or relevance to monetary policy is low.

This report mainly analyses the pool of collateral pledged by institutions. The eligible-collateral list is also an object of analysis, but because the BOK (unlike the Eurosystem) provides no eligible list – only broad categories and rules – the depth of analysis is limited. Pledged collateral carries ISIN codes, so issuer details can be traced via the Securities Information Portal (SEIBro).

The pledged pool is not chosen by the BOK directly; it emerges from financial institutions' own choices within the BOK's rules. But those choices are not driven by a specific preference amongst financial institutions for carbon-intensive assets; they reflect ordinary cost and liquidity optimisation. That this optimisation produces such a high-carbon pool is itself evidence that carbon bias is built into the collateral framework's current design, and responsibility for countering this bias lies with the BOK. Collateral framework eligibility and haircuts directly influence financial institutions' collateral allocation incentives, and only the BOK has the power to change this.

Favouring of particular industrial sectors

Research on the Eurosystem by Dafermos *et al.* (2021) found that the sectoral allocation underlying the ECB's eligible collateral – supposedly governed by market neutrality – does not match euro-area employment and value-added, and is considerably biased toward carbon-intensive sectors. They estimate that 59% of the corporate bonds accepted as eligible collateral were issued by carbon-intensive firms. ECB President Christine Lagarde even welcomed this research, having herself argued – along with Executive Board member, Isabel Schnabel – that the ECB's 'market neutrality' approach has failed to account for environmental risk.

Drawing on the approach of Dafermos *et al.* (2021), for this analysis we first compared the sectoral composition of the BOK's lending and settlement collateral with the sectoral shares of Korean industry's Gross Value Added (GVA). The analysis is confined to corporate and public institution bonds, for which fossil fuel-based and high-emission status can be judged via the National Greenhouse-gas Management System (NGMS).

Combining lending and settlement, this segment was KRW 23.0 trillion at end-2025; 13.7% of the total pledged collateral of KRW 168.2 trillion. The share looks small, but excluding government bonds and MSBs (over half of all collateral) it is the next-largest category. The corporate and public institution bonds analysed here – that is, those pledged as collateral – number 1,368 in total.

The electricity–gas–water–waste sector is the most favoured relative to its value-added. It contributed just 2.6% of GVA in 2024, but comprised 21.0% of the 2023–2025 collateral pool (corporate and public institution bonds) – an 8.1-fold over-representation – reflecting the large-scale pledging of KEPCO and KOGAS bonds since 2022 (the Korean state-owned electricity and gas companies, respectively). KEPCO bonds alone made up 13.2% of the corporate-and-public-institution collateral pool in 2025, and KOGAS bonds a further 4.8%.

[Table 6] Sectoral GVA contribution vs. share of pledged collateral (corporate & public-institution segment)

Sector	GVA%	Collateral%	Collateral/GVA
K Finance & insurance	5.9	24.2	4.1x
D+E Electricity, gas, water & waste	2.6	21.0	8.1x
H Transport & storage	4.5	17.4	3.9x
L Real estate	7.0	13.1	1.9x
O Public administration	6.9	12.0	1.7x
C Manufacturing	28.8	5.2	0.2x
F Construction	5.2	3.9	0.8x
J Information & communication	4.9	1.4	0.3x
G+I Wholesale/retail & accommodation	11.1	1.1	0.1x
B Mining	0.1	0.1	1.0x
M+N Business services	8.4	0.3	0.0x
R+S Culture & other	2.9	0.2	0.1x
A Agriculture, forestry & fishing	1.5	0.1	0.1x
Q Health & social work	5.8	0.0	0.0x
P Education	4.6	0.0	0.0x

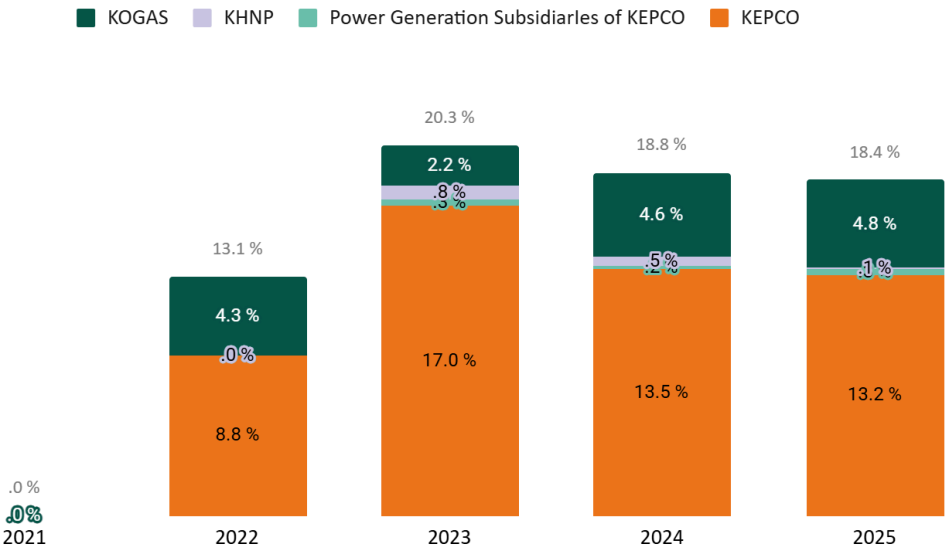
Note: GVA% = the sector's share of 2024 gross value added. Collateral% = the sector's share of the 2023–2025 end-of-year pledged lending-and-settlement pool (corporate + public institution bonds). Blue = under-representation (<50%), red = over-representation (>200%). Sectors follow the Korean Standard Industrial Classification. Source: authors' calculations based on materials the BOK provided to Rep. Jung Tae-ho and the BOK 'National Accounts'.

This equates to an implicit favouring of high-carbon sectors established by the structures of the collateral framework. KEPCO buys and sells the electricity generated by its subsidiaries (Korea East-West, Southern, Eastern, Western, and Midland Power), whose fleets rely heavily on coal and liquefied natural gas (LNG). In 2024, fossil fuels made up

56.9% of Korea's power mix, but the fossil share of KEPCO and its generation subsidiaries reached 63.4%.[4]

Major overseas pension funds and global investors have withdrawn from, or excluded, KEPCO bonds on the grounds that KEPCO continues to use coal power. Although KEPCO issues 'green' bonds for renewables and grid expansion, its financial structure and core business are indisputably tied to fossil fuels. Of the 3 trillion KEPCO bonds pledged, green bonds constituted just KRW 12.6 billion (0.4%). KEPCO has issued heavily since 2022 to cover generation-cost increases after the war in Ukraine, increasingly taking on the character of a fossil fuel subsidy to keep tariffs low.

[Figure 5] Share of major fossil fuel energy SOEbonds pledged as collateral, by year (corporate & public institution segment)



Note: %, corporate and public institution bonds within BOK lending and settlement collateral. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

Alongside electricity and gas, finance-and-insurance, transport-and-storage, public administration and real estate are also over-represented. These generate little value added but are capital-intensive or perform policy-finance functions. Infrastructure (roads, rail, airports), large-scale land and housing development, and public-finance bonds make up the bulk. These over-representations are structural public-sector features, largely unrelated to carbon.

Manufacturing, by contrast, is under-utilised relative to the value it adds; 28.8% of GVA, but only 5.2% of the pool. This is the opposite of the Eurosystem result in Dafermos *et al.* (2021), where manufacturing is over-represented, and stems from the excessively low share of corporate bonds relative to public institution bonds in Korea. Before public institution bonds were admitted in earnest, manufacturing held a substantial share, reaching 45.1% in 2021. In addition, the health–social-services–education segment –

[4] Author's calculations based on KPX (2025), 2024 Power Generation Facilities Status.

10.4% of GVA – is not captured at all, and wholesale/retail and accommodation – 11.1% of GVA – records a negligible 1.1%.

Banks tend to pledge government and public bonds first. Because they are high-quality liquid assets with very low credit risk, government and public institution bonds receive low haircuts in the collateral framework, which means that financial institutions can borrow more against them.[5] This creates a preference towards their use as collateral over other types of bonds. This preference towards government and public institution bonds causes – as a side effect – particular sectors to become over- or under-represented in the collateral pool, regardless of their value-added contribution. In Korea, the fossil fuel bonds of the electricity-and-gas sector benefit most.

A framework that prioritises protecting against risk inevitably raises the collateral preference for public institution bonds, which can become a funding advantage for particular sectors. Estimating the applied haircut by sector from the character of pledged collateral, the electricity-and-gas sector – which is overwhelmingly fossil fuel-based – attracts the one of the lowest haircuts of any sector, around 6%. By contrast, manufacturing, wholesale/retail and information-and-communication – 100% corporate bonds – are estimated at around 16%, a striking imbalance.

[Table 7] Estimated applied haircut on BOK collateral securities, by sector (2025)

Sector	Est. haircut	Public-issuance share	Balance (KRW bn)
E Water, sewage & waste	6.0%	100.0%	200
O Public administration	6.0%	100.0%	3,369
D Electricity, gas, steam	6.2%	99.1%	4,595
F Construction	6.3%	97.0%	560
L Real estate	6.3%	100.0%	3,360
H Transport & storage	6.7%	100.0%	4,424
K Finance & insurance	7.3%	97.3%	5,321
B Mining	7.5%	100.0%	35
C Manufacturing	16.0%	0.0%	766
G Wholesale/retail	16.0%	0.0%	185
I Accommodation & food	16.0%	0.0%	17
J Information & communication	16.0%	0.0%	211
M Professional & scientific	16.0%	0.0%	8

Note: estimated from the category representative values in Table 3. As each bond's remaining maturity and rating are unknown, representative values per category were derived (e.g. 6% for the nine public institution bonds, 16% for corporate bonds) and averaged, weighted by each category's balance share. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho and BOK lending regulations.

[5] In the Korean case, banks already hold sizeable government bonds and monetary stabilisation bonds for regulatory and liquidity-management purposes—these securities qualify as high-quality liquid assets under the LCR—so pledging them as collateral largely amounts to recycling paper that is already sitting on their balance sheets. For public institution bonds in particular, this preference is reinforced by explicit or implicit government backing, which confers quasi-sovereign creditworthiness and places them in the same top eligibility and haircut tiers as sovereign paper rather than in the ordinary corporate category.

Bias towards high-emission bonds

Here we assess the collateral pool's bias towards fossil fuel and high-emission industries. Again analysing corporate and public institution bonds within lending and settlement collateral, we classify them into four groups by issuer character, based on ISIN codes.

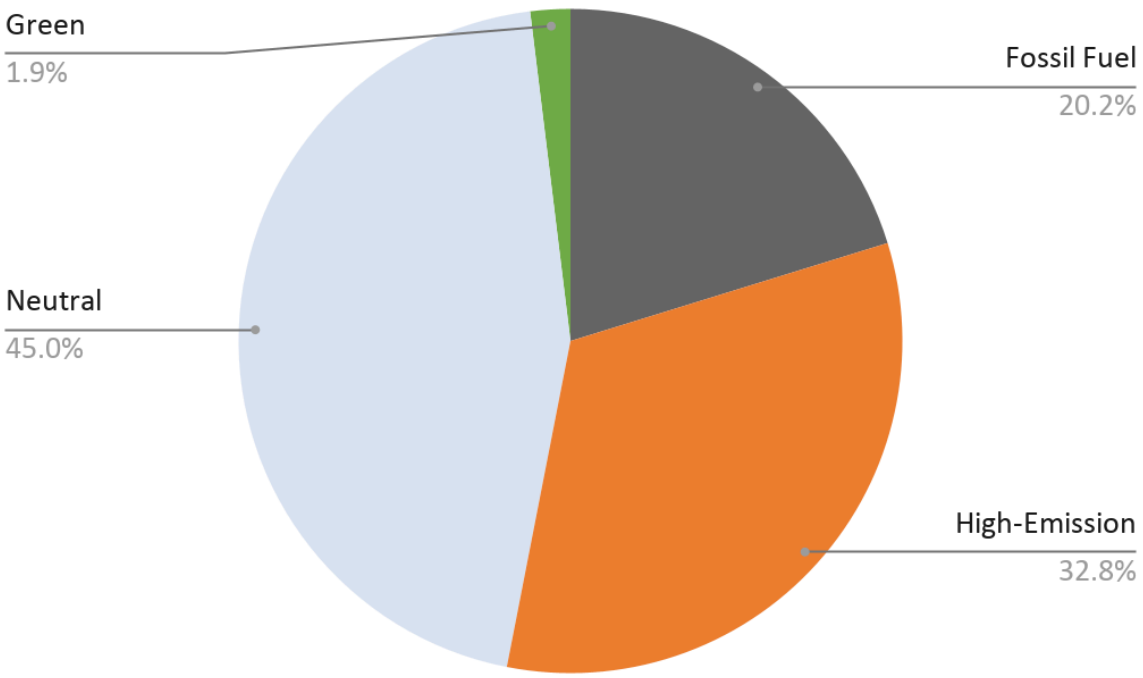
[Table 8] Classification criteria for the four collateral-asset groups

Group	Criterion
High-emission	Subject to the emissions-trading or target-management scheme (Scope 1, 2)
Fossil fuel	fossil fuel-based businesses – classified as fossil fuel even with low Scope 1, 2 emissions
Green / Sustainability	Bonds whose names carry a green or sustainability label
Neutral	Not subject to the emissions-trading/target-management scheme; not fossil fuel

Note: based on the 2024 NGMS, considering Scope 1 and 2. fossil fuel-based firms are 'fossil fuel' even with low Scope 1, 2 emissions. Holding companies are 'high-emission' if subject to the scheme, 'neutral' if not. Source: authors.

As of end-2025, more than half – 53.1% – of the corporate and public institution bonds pledged were issued by the fossil fuel and high-emission segments (fossil fuel 20.2%, high-emission 32.8%). Green/sustainability bonds accounted for just 1.9%. Fossil fuel and high-emission bonds outnumber green bonds 27.3-fold, constituting an overwhelming advantage. Most 'fossil fuel' bonds are, as noted, KEPCO and KOGAS bonds. 'High-emission' bonds are largely major manufacturers and public-sector road, transit and airport-corporation bonds.

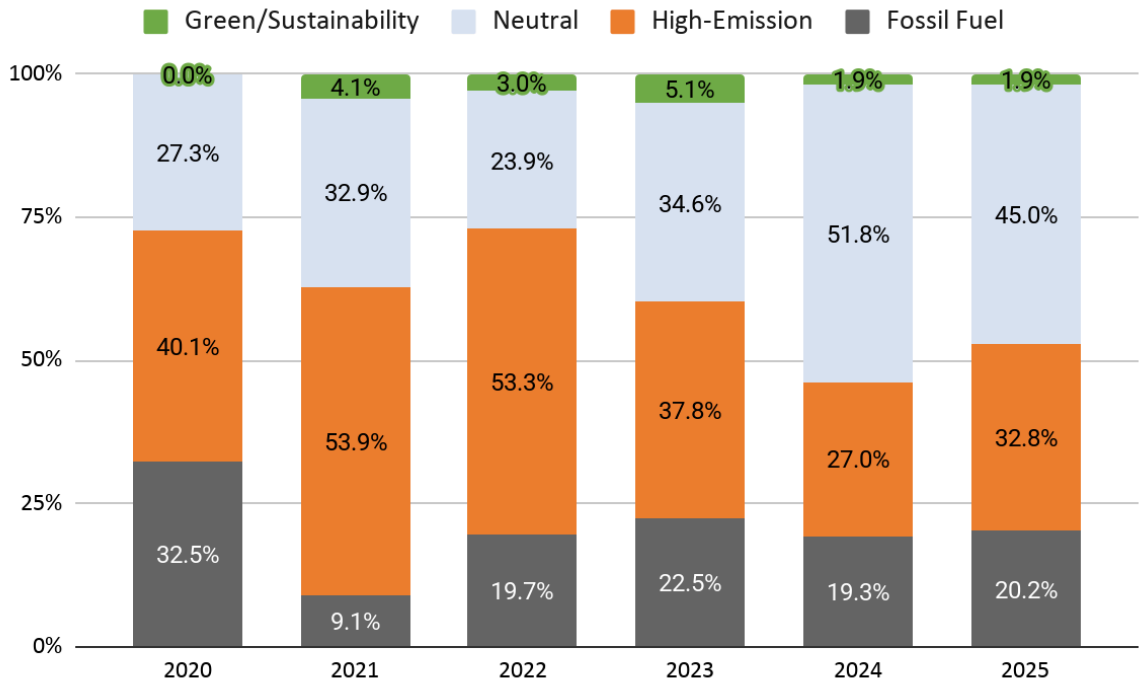
[Figure 6] Shares of fossil fuel, high-emission, neutral and green/sustainability bonds pledged as collateral (corporate & public institution segment)



Note: end-2025, public-sector and corporate bonds within BOK lending and settlement collateral; green includes sustainability bonds. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

No increase in the share of green bonds or reductions in high-emission and fossil fuel bonds is visible year to year. After the COVID-19 and SVB episodes, the BOK greatly expanded the pool, and total recognised corporate-and-public-institution collateral rose 4.5-fold from 2020 to 2025. As the pool grew, fossil fuel and high-emission holdings expanded dramatically, while green/sustainability bonds grew only marginally and their share even fell relative to 2021, when first admitted (from 4.1%, to 1.9%).

[Figure 7] Shares of fossil fuel, high-emission, neutral and green/sustainability bonds, by year, 2020–2025



Note: public-sector and corporate bonds within BOK lending and settlement collateral; green includes sustainability bonds. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

This contradicts the view expressed by the BOK in a written response to questioning as part of the confirmation hearing of the new Governor – Hyun Song Shin – that, although the BOK did not implement the 2021 strategy's green bond policy, the broader expansion achieved that goal by itself. The green share remains negligible and stagnant, while fossil fuel and high-emission holdings have expanded on a large scale, in step with the widening of eligible collateral.

Estimating BOK collateral haircuts for the fossil fuel, high-emission, neutral and green segments, the framework most favours fossil fuel bonds and most penalises green bonds. Over 2021–2025, the average estimated haircut on fossil fuel bonds was 7.2% – the

lowest of the four – compared to 11.8% for green/sustainability bonds, equating to a 4.5pp advantage. High-emission bonds, at 9.4%, enjoy a 2.4pp advantage over green bonds.

[Table 9] Estimated haircuts by segment, 2021–2025

Class	2021	2022	2023	2024	2025	2021–25 avg
Fossil fuel	16.0%	9.4%	7.5%	6.5%	6.5%	7.2%
High-emission	16.0%	12.6%	10.7%	7.2%	7.4%	9.4%
Neutral	16.0%	13.3%	8.3%	6.9%	6.9%	7.8%
Green / sustainability	16.0%	16.0%	13.7%	8.8%	9.8%	11.8%

Note: estimated from the category representative values in Table 3 (e.g. 6% for the nine public institution bonds, 16% for corporate bonds), weighted by each category's share. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

As broadly low-haircut public institution bonds flowed in from 2021, haircuts trended down overall, and the sector benefiting most from this decline appears to be the fossil fuel industry.

Green bonds are under-represented as collateral

Here we examine green bonds specifically, and their continuing under-representation in the pledged collateral pool. Since 2019, expansion of the collateral framework has brought some green bonds into eligibility. As above, the analysis covers lending and settlement collateral. Unlike the earlier sectoral analysis – which was limited to corporate and public institution bonds – it now includes every type of collateral asset, bank bonds among them. Within labelled (SRI) bonds, we count here only those carrying the "green bond" designation and exclude "sustainability bonds." This reflects both the nature of the BOK's data – which identifies green bonds as a separate category – and a methodological consideration. Sustainability bonds direct their proceeds to a mix of environmental and social projects, so their environmental portion cannot be cleanly isolated, and including them would therefore overstate the green pool.

The pledged collateral value of green bonds rose roughly six-fold, from KRW 115.6 billion in 2019 to KRW 689.3 billion in 2025, but has plateaued at around KRW 600 billion since peaking in 2023. Their share is just 0.41% of KRW 168 trillion total pledged collateral.

[Figure 8] Pledged collateral value of green bonds, 2019–2025

Note: BOK lending and settlement collateral; left axis = pledged collateral value, right axis = share of total. Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

This pledged share is markedly lower than the green share of all listed bonds. In 2025, Korea's listed green bond balance was KRW 28.5 trillion, against a total of KRW 2,908 trillion. This constitutes a 1.0% green share, 2.5 times the 0.41% green share of pledged collateral. The green share of market bonds exceeds the green share of pledged collateral every year. This suggests that the low collateral share of green bonds is not simply due to low issuance.

[Table 10] Green bond share of total bond balance vs. of pledged collateral, 2021–2025

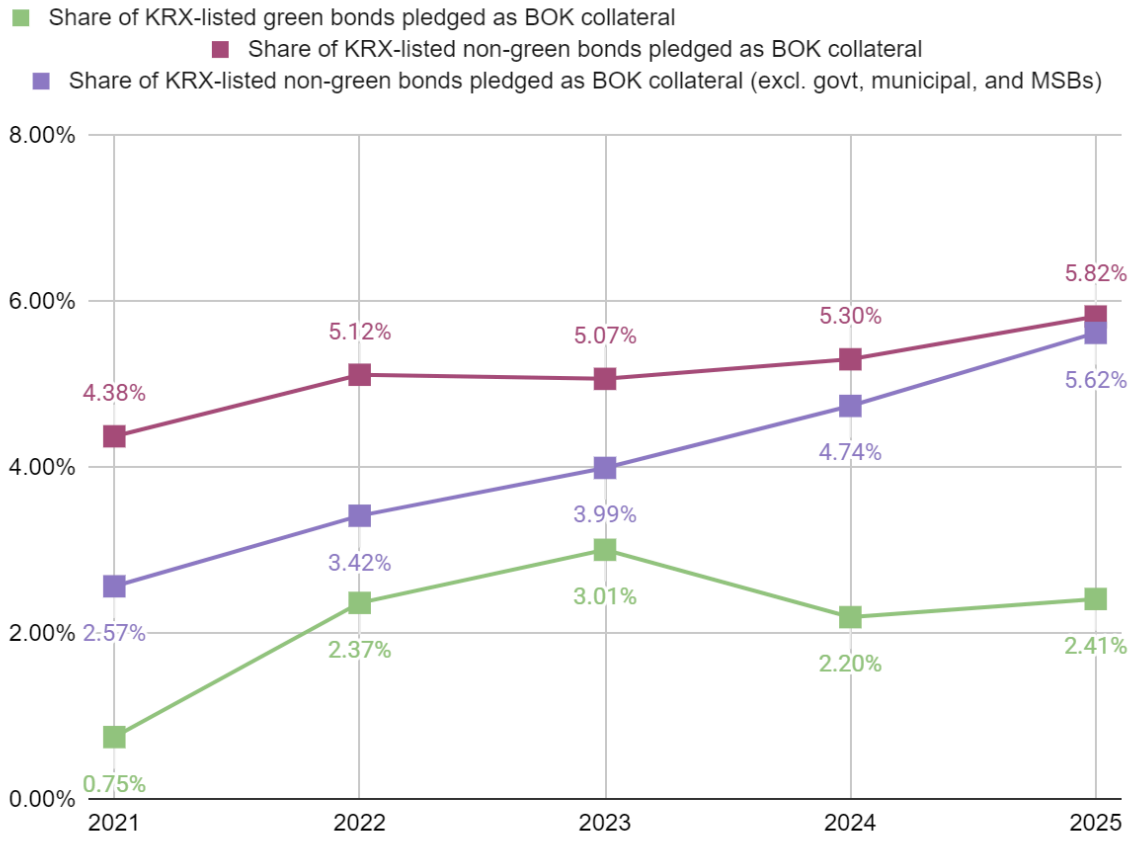
	2021	2022	2023	2024	2025
Green share of total bond balance (A)	0.63%	0.79%	0.97%	0.99%	0.98%
Green share of pledged BOK collateral (B)	0.11%	0.37%	0.58%	0.41%	0.41%
Difference (A–B)	0.52pp	0.42pp	0.39pp	0.58pp	0.57pp

Note: BOK collateral = lending and settlement collateral. Source: KOFIA Bond Information Center; green bond balances from the Environmental Responsibility Investment platform; and materials the BOK provided to Rep. Jung Tae-ho – authors' analysis.

The contrast is stark compared to non-green bonds. In 2025, 5.8% of non-green listed bonds were pledged as BOK lending-and-settlement collateral, 2.4 times the 2.41% for green bonds. The same pattern holds consistently across the past five years (Figure 9). Even excluding government, local-government, and MSBs (in which no won-denominated green bonds are issued), the share of total non-green bonds pledged was 5.6% in 2025, far above green bonds. The BOK worries that low green bond issuance limits the effect of widening eligibility. However, the fact that even the small number of

green bonds issued are pledged at a far lower rate as collateral points to systematic imbalances in the collateral framework.

[Figure 9] Pledged collateral as a share of total listed balance: non-green vs. green bonds, 2021–2025



Note and source: as above.

Green bonds' haircuts, too, are higher than those of non-green bonds, and here we can move from estimates to the BOK's actual figures. The earlier comparison (Table 10) covered the corporate-and-public-institution segment and relied on estimated haircuts, because that segment's fossil-fuel and high-emission categories are not directly reported by the BOK. It also included sustainability bonds alongside green bonds, since the underlying classification did not separate the two. For green bonds specifically, however, the BOK has released actual haircut data, allowing a direct calculation rather than an estimate. On this actual-figures basis, the average haircut on BOK collateral (lending and settlement combined) was 4.3% in 2025, while for green bonds it was 8.7% – more than double.

[Table 11] Haircuts, non-green vs. green bonds, 2021–2025

	2021	2022	2023	2024	2025
Overall haircut	3.8%	3.9%	4.2%	4.1%	4.3%
Green bond haircut	0.0%	3.9%	6.7%	5.7%	8.7%

Note: BOK collateral = lending and settlement collateral. These are not estimates but calculations based on the BOK's actual figures. Source: authors, based on materials the BOK provided to Rep. Jung Tae-ho.

Carbon bias of financial-institution bonds

Beyond corporate and public institution bonds, we assessed whether the financial-institution bonds the BOK accepts show a carbon bias. These include the special-bank bonds of KDB, IBK and KEXIM and the bank, NH and Suhyup bonds of major banks. At KRW 26.7 trillion in 2025, this segment exceeds the corporate and public institution bonds analysed above and reaches 15.9% of total pledged collateral. Because 99% of financial institutions' emissions are Scope 3 – arising outside the organisation through lending and investment – they must be assessed separately from the Scope 1 and 2-based analysis of corporate and public institution bonds.

According to a 2023 BOK report, Korea's 20 domestic banks' financed emissions totalled 157 million tCO2eq in 2023. Applying the BOK's methodology in reverse, we calculate the average carbon intensity of domestic banks' financed emissions (total financed emissions divided by carbon-related financial assets) at 13.08 (tCO2eq per KRW 100 million). Using each bank's 2023 sustainability report, we classified banks above the average as 'high-carbon banks' and below it as 'low-carbon banks'.

KDB and KEXIM, which do not disclose financed emissions, can effectively be classed as 'high-carbon banks'. Firstly, as per the BOK report, these special banks (holding around KRW 1,350 trillion in assets at end-2025) recorded higher total financed emissions (80.0 million tCO2eq) than commercial banks (66.5 million) despite holding roughly half the assets (KRW 2,480 trillion). Second, as per KOSIF's '2024 fossil fuel Finance White Paper', KDB's and KEXIM's fossil fuel investments and the fossil fuel share of their assets (KDB 8%, KEXIM 19.7%) are overwhelmingly higher than those of commercial banks (0.3–1%).

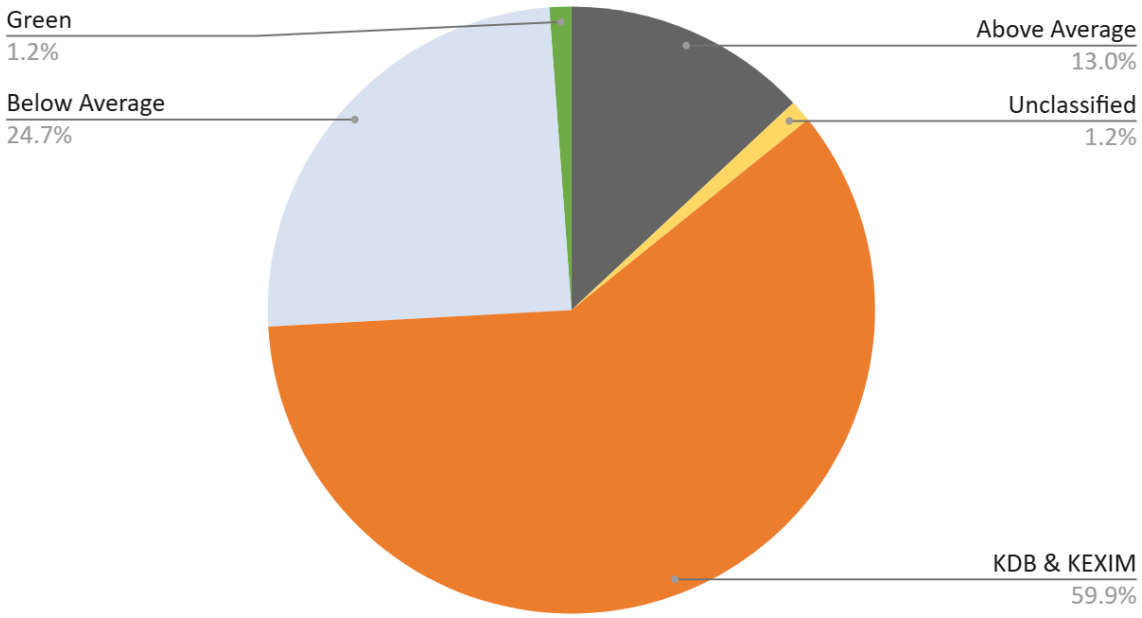
[Table 12] Classification criteria for financial-institution bonds

Group	Description	Assessment
Above average	Bonds of institutions with 2023 financed-emissions intensity above the all-domestic-bank average	High-carbon
Below average	Bonds of institutions with 2023 financed-emissions intensity below the all-domestic-bank average	Low-carbon
Green	Bonds designated as green bonds	Green
KDB + KEXIM	KDB and KEXIM bonds – neither discloses financed emissions/intensity; estimated higher than commercial banks	High-carbon
Unclassified	Suhyup Bank and Standard Chartered – undisclosed	Unclassified

Source: authors.

On this basis, financial-institution bonds also show substantial fossil fuel concentration. Bonds of 'high-carbon banks' (above average emission banks plus KDB and KEXIM) made up an average 73.0% of all financial bonds in BOK collateral over 2019–2025, compared with 24.7% for 'low-carbon banks' and just 1.2% for green bonds.

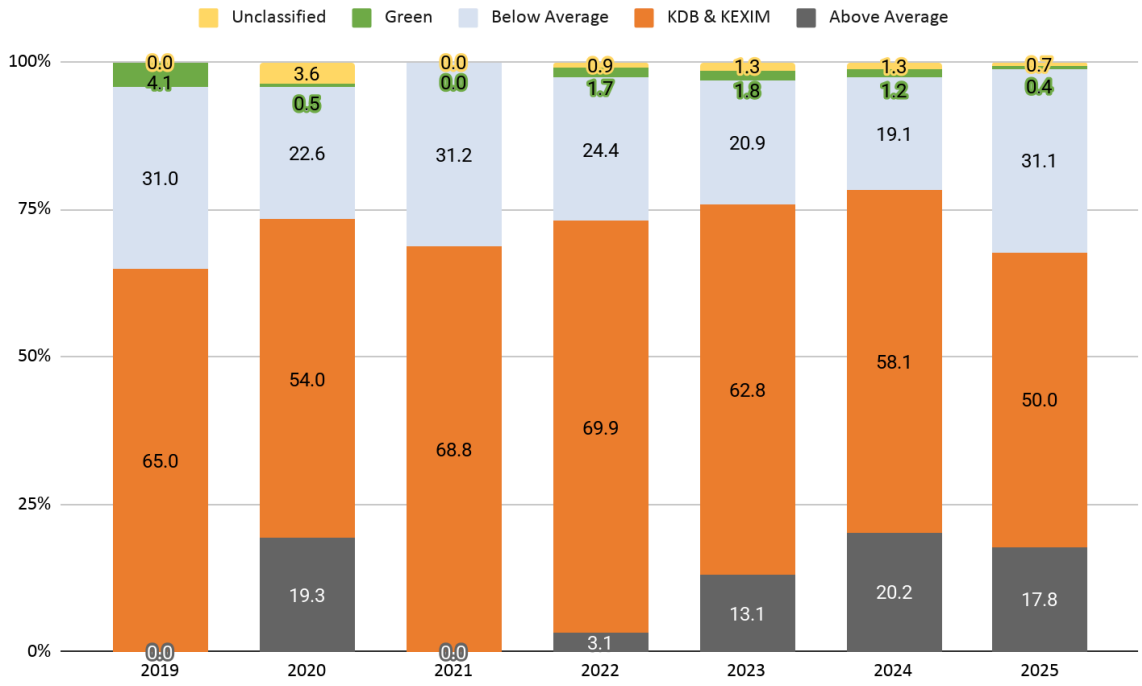
[Figure 10] Cumulative-balance shares of BOK collateral financial-institution bonds by emissions class, 2019–2025



Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

The 'high-carbon bank' share rose from 68.8% in 2021 to 78.3% in 2024, before falling to 67.8% in 2025. The 'low-carbon bank' share fell from 31.2% (2021) to 19.1% (2024), then rose to 31.1% (2025). Green bonds remained negligible – 1.7% (2022), 1.8% (2023), 1.2% (2024), 0.4% (2025) – and declining.

[Figure 11] BOK collateral financial-institution bonds by emissions class, 2019–2025 (%)



Source: authors' analysis of materials the BOK provided to Rep. Jung Tae-ho.

Synthesis of findings

The BOK currently operates a collateral framework that is – officially – indifferent to issuers' emissions. Yet, our analysis reveals a framework that in practice favours fossil fuel and high-emission bonds and penalises green bonds. This trend appears across multiple dimensions of the BOK's collateral framework.

More than half of the corporate and public institution bonds pledged as collateral are from the fossil fuel and high-emission segments of the economy, while green and sustainability bonds constitute under 2%. Relative to their total issuance, fossil fuel and high-emission bonds are pledged as collateral at a rate 27.3 times higher than green bonds. In terms of haircuts, fossil fuel and high-emission bonds are estimated to be favoured by 2 to 5pp over green and sustainability bonds.

Financial-institution bonds tell the same story. 'High-carbon banks' make up close to three-quarters of all financial bonds pledged as collateral at the BOK, with 'low-carbon banks' comprising under a quarter, and green bonds around 1%.

The government's expansion of the collateral pool has not had the effect of making it more green. Rather, fossil fuel and high-emission dominance has grown. From 2021 to 2025, fossil fuel and high-emission collateral pledged rose six-fold, but green/sustainability bonds only increased three-fold, and their overall share fell. The BOK claims its measures now bring over 70% of green bonds into eligible collateral, but the green share pledged is stuck at around 0.4% and is markedly lower than the green share of total listed bonds. The rate of non-green bonds pledged as BOK collateral is 5.8%, more than two times higher than that of green bonds, and green bonds' actual average

haircut is double the average across all bonds, meaning they are treated as a non-preferred asset.

A distinctive feature of the BOK's collateral pool is that the fossil fuel-favouring is dominated by public institution bonds. As these entered the pool, KEPCO's and KOGAS's share rose to nearly 20% of all pledged collateral. Given the fossil fuel dependency of Korea's electricity market and the large fossil fuel subsidies raised through KEPCO and KOGAS issuance, this constitutes major carbon bias: a sector generating under 3% of the economy's value added makes up over 20% of pledged collateral.

This is the paradox of the collateral framework's risk-aversion. To minimise losses, it favours highly-rated, reliable issuers and keeps eligibility narrow, sustaining a preference for government/public and large-corporate bonds. As a result, the fossil fuel dominance amongst these bonds is amplified by BOK's collateral framework, exposing the central bank and the bond market directly to high levels of climate risk.

Further, no government bond or MSB – over half of total pledged collateral – carries a green label. Korea currently issues no won-denominated green sovereign bonds, and MSBs are used heavily because of an outright shortage of government bonds in OMOs; yet these are formally emissions-neutral. Given that haircuts favour government bonds and MSBs, this also implicitly reinforces the fossil fuel dominance seen in the corporate, public-institution and financial-bond segments.

These findings make clear that a so-called 'market neutral' approach to the collateral framework does not fulfil its stated objective, with the result being a set of rules that generates more favourable financing conditions for high-carbon activities, and less favourable conditions for green investment. The collateral framework in its current form therefore perpetuates growing climate and ecological risk, which is already disrupting price and financial stability around the world, as well as enacting devastating social consequences. It therefore falls within the BOK's mandate to take action to amend the collateral framework in order to mitigate this carbon bias.

The next section considers examples of actions that have been taken by other major central banks to address carbon bias in their own collateral frameworks and integrate environmental considerations. These case studies can provide useful precedents to inform the BOK's next steps.

4. International case studies of integrating environmental considerations in collateral frameworks

Several central banks internationally have begun integrating environmental considerations into their collateral frameworks, recognising prior inbuilt bias towards high-carbon sectors and the need for collateral frameworks to reflect environmental risks and support wider green economic transition.

The ECB has been a leader amongst central banks in this area. In January 2021, the ECB began accepting bonds with coupon structures linked to sustainability performance targets as eligible collateral for Eurosystem credit operations and purchases for monetary policy purposes. The criteria for such bonds were based on alignment with the EU taxonomy regulation or United Nations Sustainable Development Goals. An explicit aim of the ECB was to drive innovation in sustainable finance instruments.

In 2022, the ECB announced a range of further measures. Key to this was a pledge to introduce concentration limits on the proportion of assets from high-carbon issuers that individual counterparties can pledge as collateral when borrowing from the Eurosystem. The ECB also announced it would make collateral eligibility conditional on issuers' compliance with the Corporate Sustainability Reporting Directive (CSRD), a key EU regulation on sustainability disclosures, and that it would consider climate risks when reviewing haircuts applied to corporate bonds. The stated objectives of these measures were to better account for climate-related financial risk on the ECB's balance sheet, as well as supporting the ECB's secondary objective to support the wider green economic transition. Importantly, the ECB described the measures as in full accordance with maintaining price stability.

Subsequent changes to the CSRD that have reduced its coverage, and delays in implementation, have led to the ECB postponing application of CSRD conditionality. The ECB also announced in 2024 it was abandoning its proposed concentration limits on high-carbon collateral, stating that the necessary 'technical preconditions' had not been met. Key to this was a lack of availability of firm-level climate data that would enable effective implementation of the measure. Instead, the ECB announced that from the second half of 2026 it would begin applying a 'climate factor' to eligible collateral. The climate factor takes the form of additional reductions to the collateral value of certain assets (adjusting haircuts) in order to reflect the exposure of these assets to high levels of risk related to climate change. From June 2026, the climate factor is applied to marketable assets issued by non-financial corporations, and is calculated based on an assessment of climate-related risks to which assets are exposed at the asset, sector, and company levels. In July 2026, the ECB announced plans to extend the use of climate factors in its collateral framework to non-financial corporate credit claims, with

implementation of this phase from end-2027, at the earliest. This will supposedly result in more than 25% of pledged collateral at the ECB being subject to a climate factor.

The ECB's adjustments to its collateral framework have formed a key part of its response to the climate and ecological crisis, alongside other policy measures such as mandatory supervisory requirements around climate risk disclosures. High-profile figures within the ECB have also emphasized the need for central banking orthodoxies to adapt to the current era of climate and ecological breakdown in numerous speeches and statements. Such actions have built the ECB's reputation as being amongst the leading central banks internationally in relation to environmental issues.

Whilst the ECB's climate factor represents the greatest progress amongst central banks in integrating environmental considerations into the collateral framework, it also has a number of limitations. The ECB has so far not applied exclusions to assets associated with the highest levels of ecological damage from collateral eligibility, leaving the climate factor alone insufficient to fully counteract pre-existing carbon bias within the collateral framework. The 'risk exposure' approach of the climate factor and absence of asset exclusions are likely to significantly limit its contribution to the ECB's wider commitment to support the transition of the European Union to reaching net zero emissions by 2050. Further, the coverage of the climate factor is currently very limited, applying only to non-financial corporate bonds, which constitute just 10% of eligible collateral and less than 2% of pledged collateral at the ECB. Again, this means the climate factor as it stands falls far short of systematically accounting for environmental risks across the entire collateral framework and incentivising investment in green assets.

The Bank of England (BoE) has also taken important steps forwards in integrating climate and environmental factors into its collateral framework. Residential mortgages form over three quarters of collateral pledged by counterparties at the BoE, with residential mortgage-backed securities and covered bonds making up the majority of marketable assets pledged. Adjustments therefore first focused on residential mortgage collateral. In 2024, three key changes were introduced. To address transition risks, minimum energy efficiency standards for mortgages eligible as collateral were raised, and haircuts increased for mortgages with lower energy efficiency ratings. To address physical risks, haircuts were increased on mortgages in areas exposed to flooding. In addition to managing risks to the BoE's own balance sheet, the changes may support the green transition by encouraging improvements in energy efficiency and flood protection. However, the potential for such adjustments to support the green transition in the housing sector is limited. If applied strongly, they could adversely impact access to finance for households in low-energy efficiency rated homes, or homes facing high physical risks from climate change and nature loss, thus reducing necessary green investments. Complementary fiscal and regulatory policies are likely to be more effective.

In June 2026, the BoE announced further climate-related measures will be applied to corporate bonds in its collateral framework from October 2026. The Bank will exclude bonds issued by corporates that derive revenue from thermal coal production from eligibility, following the approach it took when applying climate criteria to its Quantitative

Easing programme. The Bank will also apply additional haircuts to account for climate-related transition risks, however it has not yet published the finalised haircuts or how they will be calculated.

In regards to Asian central banks, the PBoC has been an early-mover on introducing environmental measures within its collateral framework, as well as a leader in green central banking policies more broadly. In 2018, the PBoC began accepting green financial bonds in their medium-term lending facility, and giving them a 'first-among-equals' status. The PBoC also began accepting green loans as collateral within their standing lending facility. Banque de France research found that the measures applied to the medium-term lending facility increased the spread between green and non-green bonds by 46 basis points. The PBoC also provides an example of how collateral adjustments can be used to complement targeted refinancing schemes designed to support green investment, with the PBoC's Carbon Emissions Reduction Facility (CERF) offering subsidised interest rates for green lending, and accepting green bonds as collateral.

Alongside these international examples of best practice, the final section reflects on the earlier collateral analysis in order to outline a set of recommended next steps for the BOK to integrate environmental considerations in its collateral framework.

5. Towards a green collateral framework for the Bank of Korea

The analysis in section 3 revealed that the BOK's expansion of collateral eligibility over recent years – encompassing a large proportion of green bonds – has not had the effect of increasing the share of green bonds in collateral pledged at the BOK. Rather green bonds' share has fallen, while institutions continue to prefer high-carbon assets, whose share in the pledged collateral pool has increased. It can therefore be said that the expansion of eligible collateral has served to reinforce carbon bias in the BOK's framework.

An important first step to begin countering this carbon bias is for the BOK to incorporate green bonds as an explicit category in the collateral framework, as well as extending green eligibility to repo-eligible securities. By doing so, the BOK would send an explicit signal to financial institutions around the treatment of green assets, which the existing eligibility expansion has failed to achieve. This could help to stimulate green bond issuance and thus improve the financing conditions for sectors important to green transition.

The announcement in June 2026 that the Korean government will begin laying the groundwork for the issuance of its first green government bonds provides a further boost to Korea's green bond market, and the BOK can support these efforts from the government to expand green finance, through collateral framework measures. The BOK should at minimum treat these forthcoming green government bonds as equal in status to other government bonds (like the Bank of Japan model), or give them a 'first amongst equals' status (the People's Bank of China's model), and ensure their eligibility across all collateral pools.

Like government bonds, our analysis found that no MSBs currently carry a green label either. Yet – supported by low haircuts – these two categories currently comprise over half of all collateral pledged at the BOK. Indeed, unlike many other countries where government bonds are primarily used for OMOs, MSBs are heavily relied upon in Korea. Accordingly, as set out in our previous briefing, the BOK should also pursue the issuance of green MSBs, to complement the government's upcoming issuance of green sovereign bonds. This represents an opportunity for the BOK to show international leadership by becoming one of the first central banks in the world to utilise short-term debt securities as an innovative green financial instrument. Currently, the Central Bank of the United Arab Emirates (CBUAE) is the only central bank exploring this policy option. Given the prominence of government bonds and MSBs in the BOK's pledged collateral pool, the issuance of green variants and inclusion of these with equal status throughout BOK's collateral framework would constitute a major step towards removing the structural bias towards high-carbon assets.

Science-based and strictly applied green bond standards are vital to the success of integrating green bonds in the collateral framework, and so expanding finance for green economic transition. Furthermore, accreditation must take into account issuer-level environmental information, to combat 'green' bonds acting as an effective subsidy for firms to extend primary operations centred on fossil fuel production or other high-carbon activities. Also, green bond accreditation must not only be accessible and affordable to large corporates, which tend to be disproportionately high-carbon, particularly in the Korean context.

To effectively address environmental risks to price and financial stability, the BOK must couple enhanced green bond issuance and eligibility with further measures relating to the treatment of ecologically damaging assets. As we have set out previously, such measures must be underpinned by a 'double materiality' analysis, which recognises not only the risks that climate and ecological crisis poses to the financial system, but also how BOK policies – such as the collateral framework through its current carbon bias – feed in to the crisis.

The BOK should incorporate climate and ecological considerations into asset eligibility, and apply an 'environmental factor' to existing haircuts. Here, the BOK can follow recent examples set by the ECB and BoE, and take learnings from the approach of each. The BOK should improve upon these existing approaches and show international leadership by calibrating haircut add-ons based on an assessment of both environmental risk metrics and the wider environmental impact of assets and issuers.

The analysis in this report shows how transition risk, stranded asset risk, and wider environmental risks are currently unaccounted for within the BOK's collateral framework and haircuts, thereby leaving the BOK's balance sheet and the wider financial system exposed to material risks related to climate and ecological crisis, and green transition. An 'environmental factor', acting as an add-on to the BOK's wider risk assessment of assets, is therefore needed to address this gap. However, to improve upon the ECB and BoE's measures, the BOK should support this risk-based assessment of collateral with wider environmental impact metrics. This is necessary for the BOK to develop a more comprehensive analysis of the environmental benefits and damages associated with different assets and to build understanding of how its policy decisions are actively shaping environmental outcomes. Given that forward-looking risk-based information can often be thin and difficult to calculate, environmental impact metrics provide an important complement to feed into the BOK's assessments of collateral.

There are a range of different sources that can be used to establish the environmental impact of assets, including: the K-taxonomy, research-led and scientific databases on corporate environmental impacts, carbon emissions data, and forward-looking transition plans. Environmental impact can also be measured across different scales, including the asset, firm, and sector level. It is important that firm and sectoral assessments are considered on top of asset level information, in order to mitigate the issue described above whereby firms are able to utilise 'green' bonds to support a wider business model centred around ecologically damaging activities (e.g. fossil fuel production).

The 'environmental factor' should operate such that assets associated with higher levels of environmental risk and impact receive a higher haircut add-on. Exclusions should be applied to assets and issuers associated with the most acute levels of environmental risk, such as the BoE has applied in relation to issuers deriving revenue from thermal coal production. The BOK would need to continually monitor the material environmental impacts of its environmental-related adjustments to collateral eligibility and haircuts, and make iterative updates over time, in order to ensure that they were calibrated at a sufficient level to account for escalating environmental risk and counteract the significant carbon bias revealed in the analysis above.

This leads to a final recommendation, which is that the BOK should regularly calculate, and publish through public disclosures, environmental information on its collateral pool. This should include information on the proportions of both green and high-carbon bonds, carbon emission metrics linked to the entire pool, and further data pertaining to key environmental impacts, such as deforestation and habitat destruction. This level of transparency is vital in order to allow public and democratic scrutiny of the BOK's progress on integrating environmental considerations in its collateral framework. Such environmental disclosures would also play a role of setting a standard of best practice that would send a signal to the wider financial sector.

6. Conclusion and summary of recommendations

Central banks around the world are beginning to recognise the importance of the collateral framework within their response to climate and ecological crisis. The analysis in this report reveals how the Bank of Korea's collateral framework is currently contributing towards more favourable financing conditions for high-carbon sectors, while acting as a structural barrier to investment in activities crucial for Korea's green transition. We refer to this as a carbon bias. Taking action to address this carbon bias is in line with the Bank of Korea's mandate to ensure price and financial stability, which is being increasingly disrupted by climate and ecological crisis. By doing so, the Bank of Korea has the opportunity to become part of a leading group of central banks internationally that are integrating environmental considerations in their collateral frameworks.

A summary of our recommended actions for the Bank of Korea is as follows:

1. Incentivise the growth of credible green bond markets
    - Incorporate green bonds as an explicit category in the collateral framework, to send a signal to the financial sector and stimulate the green bond market
    - Treat forthcoming Korean green government bonds as equal to standard government bonds, and ensure their eligibility across all collateral pools
    - Support the development of science-based and strictly applied green bond standards

2. Incorporate environmental considerations within short-term debt instruments
    - Pursue the issuance of green Monetary Stabilisation Bonds, due to their status as another key asset within the Bank's collateral pool

3. Adjust collateral eligibility and haircuts based on an assessment of environmental risks and impacts
    - Exclude assets associated with the most acute environmental risk from eligibility within the collateral framework
    - Develop an 'environmental factor' that applies adjustments to haircuts on assets based on environmental risk and impact metrics

4. Improve disclosure
    - Publish regular disclosures of environmental information on the Bank's collateral pool, in line with leading international standards

For more information, contact Joe Herbert (Positive Money) at joe.herbert@positivemoney.org.uk and Giwon Choi (Institute for Green Transformation) at giwon@igt.or.kr

Positive Money is an international research and campaign organisation working to redesign our economic system for social justice and a liveable planet. Find out more: positivemoney.org

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