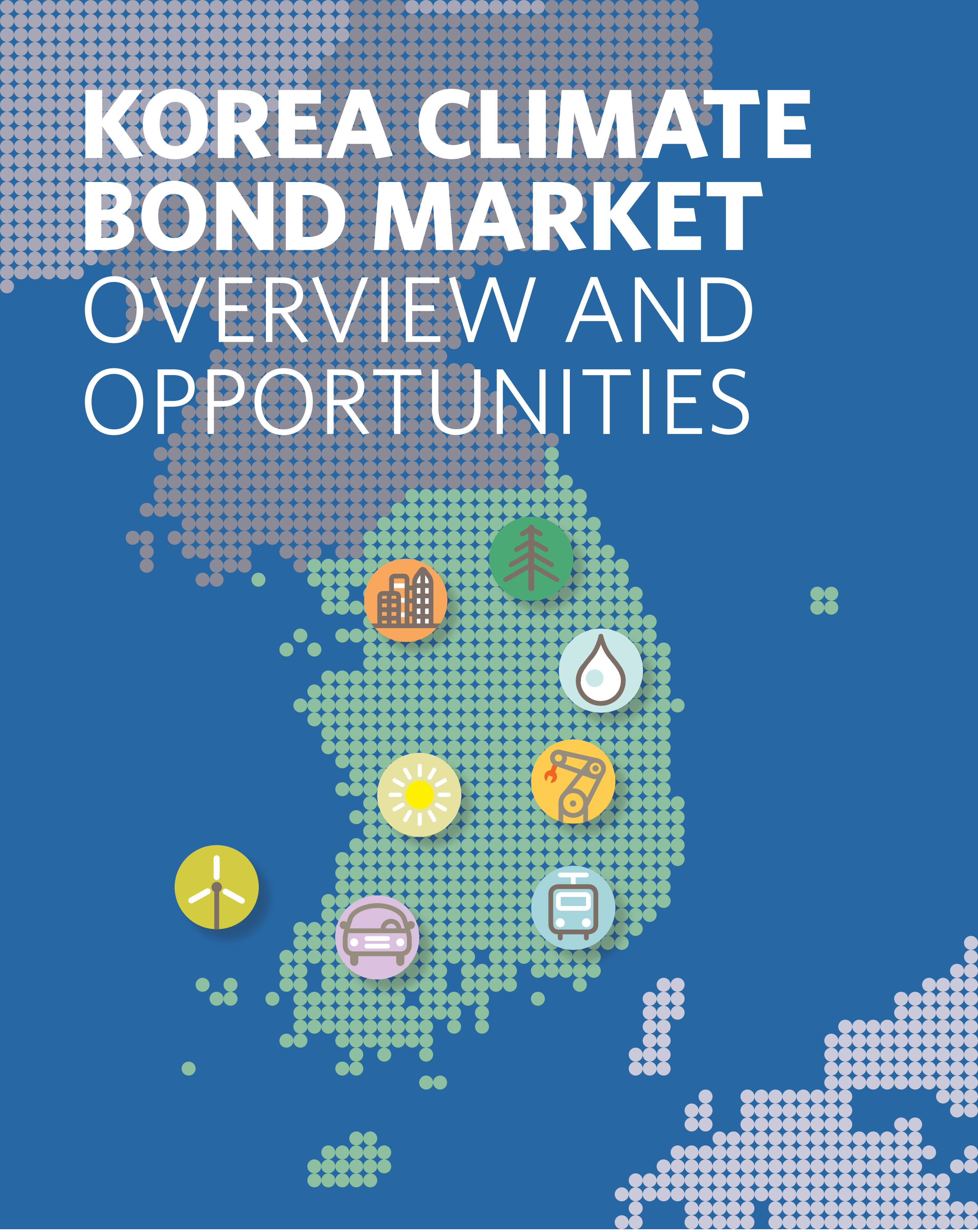
KOREA CLIMATE BOND MARKET
OVERVIEW AND OPPORTUNITIES



Prepared by Climate Bonds Initiative.

Commissioned by SK Securities.

The global green and climate bond market

This is our first report specifically dedicated to climate bonds in Korea published in collaboration with SK Securities.

In Korea, there has been a marked shift towards a more progressive policy stance to address climate change – the government has committed to reducing Korea's GHG emissions by 37% against business as usual by 2030[1] and in 2015, it became the first country in Asia to implement an emissions trading scheme.

Despite increasing political impetus behind green and climate policy, Korea has been slow to develop a climate bond market with only four issuers to date.

Korea has a strong bond market standing at approximately USD1.6trn outstanding – with annual issuance volumes of USD700bn making it one of the largest bond markets in the world. Given its strong financial system and industrial economy, Korea has the opportunity to become a leader across the Asian region in green finance and in climate solutions.

This report aims to mobilise this market by providing information about the climate bond market and the oportunities and potential for growth in Korea.

For climate bonds to make a real difference in mitigating climate change both globally and in Korea, they should be financing assets and projects in line with the steep emissions reduction trajectory needed to achieve a rapid transition to a sub-2^{O} Celsius world.

This will require wholesale economic and business model shifts – not just incremental improvements. Investment undertaken by all sectors, therefore, needs to be ambitious and accelerate from the current trajectory. Kickstarting a large and active climate bond market in Korea will be a positive step in this direction.

Terminology

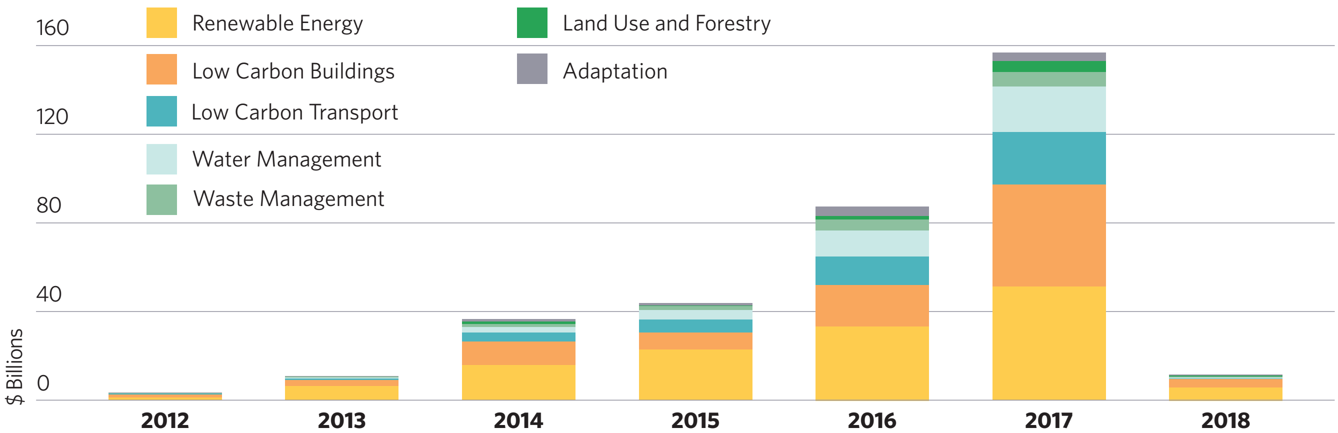
Green bond / Climate Bond

Green bond is the term used to describe all bonds labelled as 'green', 'climate', 'environmental' or similar where bond proceeds are directed to projects or assets with environmental benefits. Globally, the term 'climate bond' is used interchangeably with the term 'green bond'. For this report, the term 'climate bond' will be used.

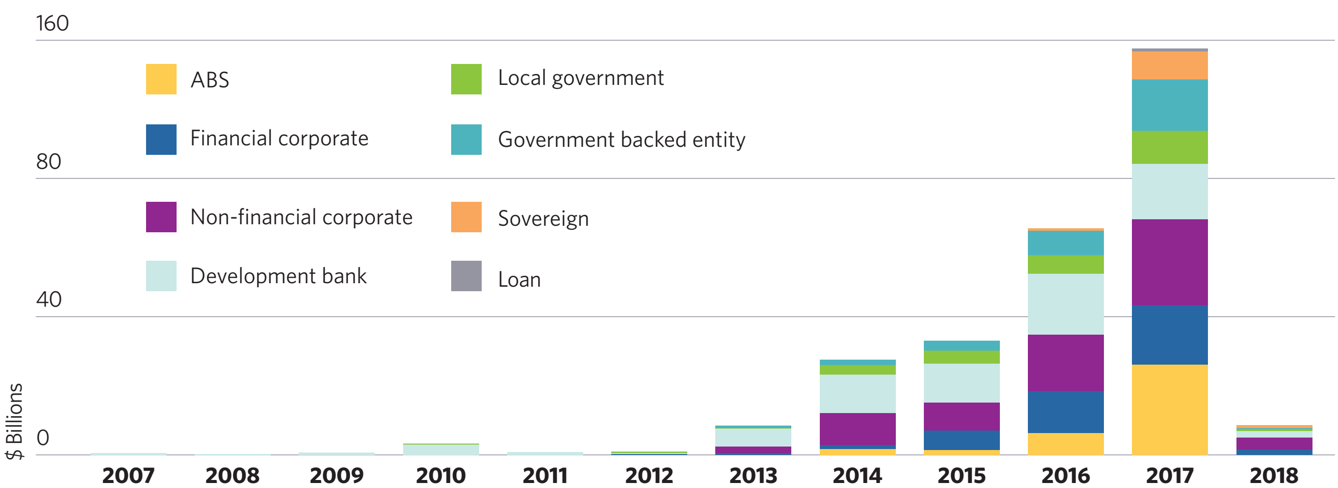
Certified Climate Bond

A Certified Climate Bond is a bond with a 'green', 'climate' or similar label where the use of proceeds has been certified under the Climate Bonds Standard as being in line with a low carbon climate resilient economy. Certification is undertaken against sector criteria such as Solar or Low Carbon Buildings.

Green bonds by use of proceeds



Green bonds by issuer type



Overview of the global climate bond market

The climate bond market emerged in 2007 with the European Investment Bank's first 'Climate Awareness Bond' and was continued by other development banks. The World Bank launched the "Strategic Framework for Development and Climate Change" in 2008 to confront climate change and designed their first Green Bond. From 2007 through 2012, the market mainly featured issuance of climate bonds by Sovereign, Supranational and Agency (SSA) actors such as the European Investment Bank, the IFC and the World Bank, along with a few local government funding agencies, municipalities and national development banks.

With growing market appetite for climate bonds there has been increasing diversification of issuers and investors participating in the climate bond market. 2013 and 2014 saw more active participation from private sector issuers, including the first corporates and banks leading annual issuance to rise from just USD3bn in 2012 to over USD155bn in 2017, with issuance occurring in 16 of the G20 markets.

In the early stages of the market, proceeds were primarily directed to renewable energy projects. As the market has grown, it has also diversified with a range of different project types being financed – particularly in the transport and water sectors (see chart on page 2).

Maintaining market integrity

The environmental credibility of the climate bond market is underpinned by voluntary guidelines and standards, as well as by rules and regulations in some jurisdictions.

In order to provide credibility to the market, the Climate Bonds Standard was first published in 2011 and then followed by The Green Bond Principles (GBP) in 2013.

The GBP are a set of voluntary guidelines put together by market participants that recommend transparency and disclosure, and promote integrity in the development of the green/climate bond market.

The Climate Bonds Standard and Certification scheme aims to provide the market with assurance around the environmental credentials of the labelled green/climate bonds by developing clear criteria for what qualifies as a climate bond, and having approved external organisations (verifiers) check compliance against the criteria.

The Scheme is fully consistent with the GBP but goes beyond it by providing sector-specific criteria for what is green, while the

The Climate Bonds Standard builds on the Green Bond Principles

	Green Bond Principles (GBP)	**Climate Bonds Standard**
Objective	Supports standardisation and best-practice in the green bond market particularly around transparency, management of proceeds and reporting. The GBP does not take a position on which green technologies, standards, claims and declarations are optimal for environmentally sustainable benefits but refers to external parties for guidance in this regard, including the Climate Bonds Initiative.	A science-based tool that allows investors and intermediaries to assess the environmental integrity of bonds. The certification process includes a suite of sector-specific eligibility criteria that define whether assets are green or not.
What is it?	A set of four voluntary principles that outlines good practice for the process of issuing a green bond. It is not a certification system and bonds are not 'approved' by the GBP. The four principles are: 1. Use of proceeds 2. Project evaluation and selection 3. Management of proceeds 4. Reporting	A certification label. The Standard encompasses the GBP and goes beyond the GBP by providing a set of green definitions and criteria that the issuer needs to follow to get the certification. As such, a Certified Climate Bond is also in alignment with the GBP, but not vice-versa.
Project Categories	Climate change mitigation, adaptation and environmental projects. Social projects are covered by the Social Bond Principles.	Climate change mitigation and adaption projects. Does not include social projects.
How is alignment determined?	Issuers can use an external party or self-declare that a bond is in line with GBP	The Climate Bonds Standards Board awards Certification
Is external review required?	The GBP recommends that an issuer's process is supplemented by an external review – either through a second opinion or third-party verification.	CBI certifies the external verification report.
Any penalty involved if violation of green criteria?	Issuers are exempted from liability if there is a violation of GBP.	Climate Bonds Standards Board will withdraw the Certification and make an announcement if there is any violation.

GBP provide broad categories of what types of projects can be financed with green/climate bonds as examples for issuers (see table above).

Korea within the global climate bond market

Korean climate bond issuance to date has been small with just six bonds issued by four different issuers.

Korea's first climate bond was a USD500m deal issued at the early stages of the market by **Korea Export-Import Bank (KEXIM)** in 2013. Proceeds finance renewable energy projects, water projects, energy efficient lighting and UN CDM related projects[2].

While the initial KEXIM deal was a success, it wasn't until 2016 that they followed through with their second deal. In August 2017, KEXIM issued it's first Indian Rupee denominated bond (INR3bn/USD50m).

Hyundai Capital Services, the leasing subsidiary of car manufacturing giant Hyundai Motor Company, made news headlines in early 2016 with a USD500m deal – the first corporate climate bond out of Korea. Proceeds finance leases on hybrid and electric vehicles.

2017 has seen two new issuers enter the market. The first was **Korea Development Bank (KDB)** with a USD300m deal financing solar, wind and biomass power facilities. This was an important deal because it signalled more active engagement from government institutions in Korea – often an important step in bringing awareness to the local market.

The second was from **Hanjin International** which issued a USD300m bond to refinance the costs associated with a LEED Gold building. While the building is in the US, the entity is owned by Korean Air and this particular bond was guaranteed by KEXIM.

In November 2017, Korean power utility KEPCO made an announcement that it intends to issue a green bond but had not yet done so by the time of publication.

While this is a small market in a global context (see map), within Asia-Pacific, it is the fifth largest climate bond market after China, India, Japan and Australia. Korea has the potential to be a leader in this space – particularly in driving best practice.

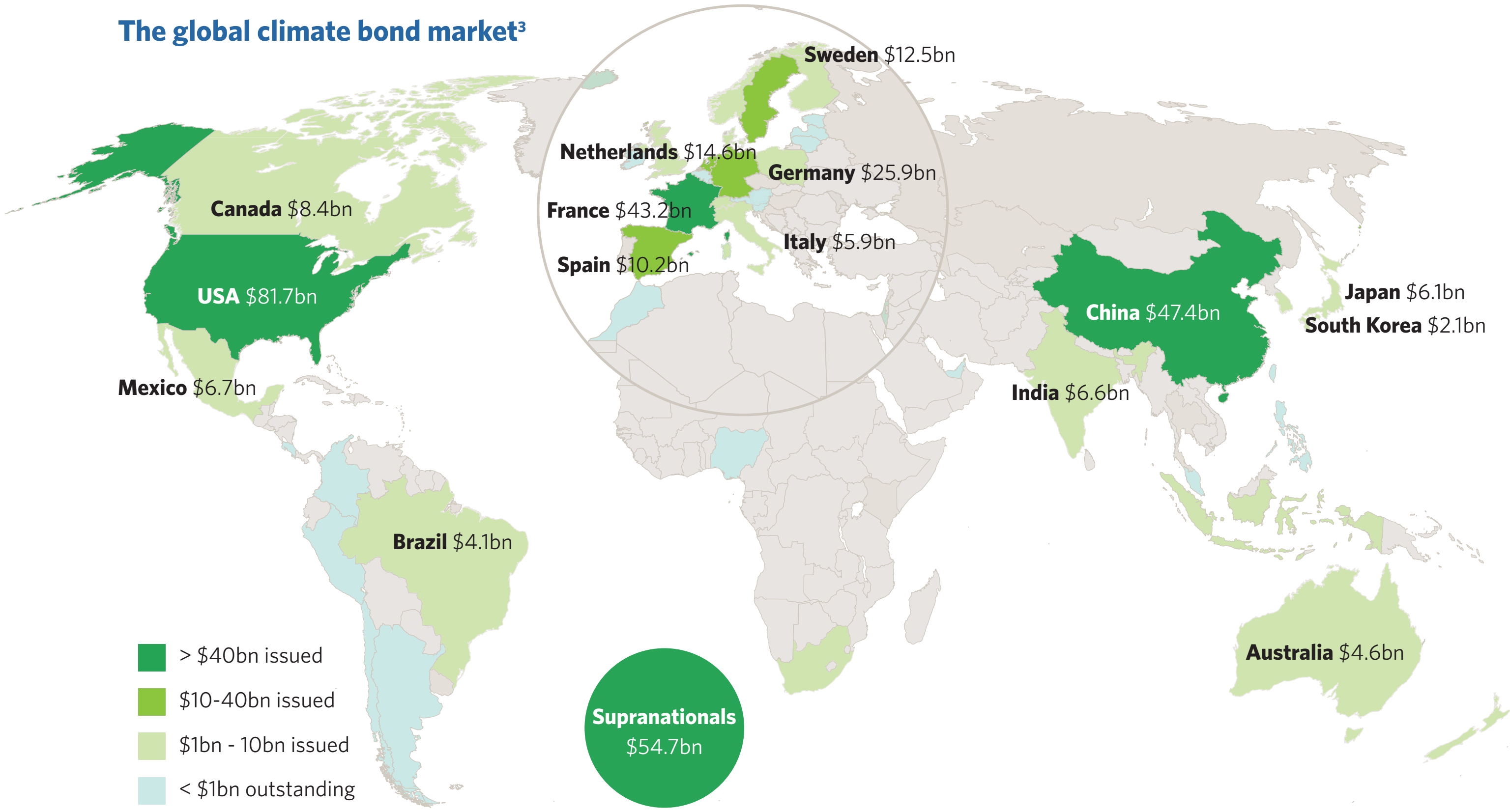
Climate-related developments in Korea to date

While the climate bond market may be small, Korea has been active in implementing climate mitigation policy. The general population is supportive of climate policy after noticing climate shifts over the last decade including, anecdotally, fishermen catching subtropical fish from East Sea which used to be filled with cold water fish and the disappearance of outdoor icerinks in Seoul.

In 2015, Korea became the first country in Asia to implement an emissions trading scheme. There was absolute and unconditional support for the Korean emissions trading scheme(ETS) bill as it was passed with 148:0 vote. 151 MPs cast their ballots with 3 blank ballots in the Korean Parliament on the May 2nd, 2012. The Korean Green Growth Act was legislated in 2009 and acts as the legal foundation for the ETS.

The Korean ETS is now the second largest in the world after the EU ETS, and only one of the few that are fully functioning at the national level. The Korean ETS is a 600 million ton market with carbon price of USD20, much higher than the EUA price. Under the Korean ETS, the implicit price floor of carbon is USD10, and the ceiling USD30 so as to avoid the market meltdown in case of global recession.

The global climate bond market[3]



Kickstarting a climate bond market in Korea

Overview of the Korean bond market and history

Korea's history in growing a bond market is evidence that the climate bond market could grow very rapidly.

The Korean debt capital market has played an important role as a funding source for both the private and public sector in Korea.

In the past, government and public bonds accounted for the vast majority of issuance in Korea, beginning with the issue of nation-building government bonds in 1949 in order to supplement the fiscal deficit.

A period of market reforms and gradual market liberalization led to the rapid growth of the Korean bond market in the 2000s.

Issuance volumes increased 221.1% between 2000 and 2013 from KRW 470.2tn (USD385bn) to KRW 1,510tn (USD1.4tn). As a proportion of GDP, bond issuance increased from 74.0% in 2000 to 105.7% the end of 2013.

The types of bonds issued have also diversified, ranging from bank bonds to corporate bonds. Currently, there are five broad bond categories– government bonds, municipal bonds, special bonds including monetary stabilization bonds (MSB), bank bonds and other financial bonds, corporate bonds and asset-backed securities (ABS).

In 2000, special bonds and corporate bonds accounted for the largest share of the market at 21.6% each, followed by financial bonds (15.7%), Korea Treasury Bonds (KTBs – 15.2%), and monetary stabilization bonds (14.2%).

However, in 2013, KTBs accounted for the largest share (30.0%), followed by special bonds (23.2%), financial bonds (17.2%), and monetary stabilization bonds (10.7%).

In 2013, issuance of KTBs had nearly doubled from 2000 levels, while the percentage of corporate bonds has shown a steady upward trend since 2009 after recovering from a continuous decline that began in 2000.

The main bond investors in Korea are institutional investors.

Opportunities in Korea

In 2017, Climate Bonds Initiative carried out a study that identifies bonds that are financing low carbon infrastructure but are not labelled as green[4].

In Korea, a universe of USD18bn in bonds outstanding was identified that are not labelled as 'climate' but are financing climate infrastructure – this covered a range of rail transportation, energy and forestry sectors.

This is one measure of the future potential for the Korean market but the true potential could be much greater as this measure does not adequately capture financial institutions or property - both sectors could be a large source of climate bond issuance in the future. Korea is in a strong position to grow its climate bond market based on the following factors:

- **Strong and functioning bond market**: Korea has a large and active bond market with corporate and sovereign issuers. It also has the regulatory and market infrastructure in place to ensure that the market functions efficiently.
- **Bankable projects and robust project pipeline:** Korea is one of the most industrialised global economies and has a strong potential issuer base in electric vehicles, LED lighting and other energy efficient products.
- **Strong investor base:** Korea has a strong domestic investor base with pension fund assets in excess of USD400bn[5] which could provide a large source of demand for climate bonds.
- **Supportive policy on climate change:** Since it was elected in May 2017, the Korean government has pursued much more supportive policy on climate change than the previous government with far more ambitious programmes.

Issuer	Amount issued to date (USD)	Number of deals	Year of first deal
Export-Import Bank of Korea	950m	3	2013
Hyundai Capital Services	500m	1	2016
Korea Development Bank	300m	1	2017
Hanjin International	300m	1	2017
TOTAL	2,050m	6	

Barriers to growth

- **Lack of market awareness from issuers** - particularly among bond issuers of the existence, benefits and purpose of climate bonds. Market education by important players like SK Securities as well as large benchmark size issues from issuers with high credit ratings (such as Korea Development Bank) will help to raise awareness in the market quickly.
- **Lack of awareness among investors** While the investor base is large, awareness of ESG (Environmental Social Governance) issues is still quite low. Climate bonds are a good starting point for investors with minimal experience in ESG investing as they are not complicated in structure and behave in a similar fashion to vanilla bonds. As in most countries, there are currently no ESG investment obligations or tax exemptions in place.
- **Lack of market guidance** or standards can cause confusion in the local market around what types of assets or projects can be considered green. Globally-accepted Standards such as the Climate Bonds Standard can help in this regard.
- **Slightly higher transaction costs** for green bond issuers. Particularly first-time green bond issuers may be wary of this new market. The transaction cost barrier is, however, overstated as the cost of an external review typicaly ranges between USD10,000 and USD40,000. On a USD500m deal, this is less than one basis point.
- **Barriers to issuing internationally** are present for all bond issuers in Korea. These include foreign currency risk and the lack of information available in English. While these barriers are not unique to issuers of climate bonds, given that all Korean climate bond issuers have issued internationally to date, such barriers may be particularly relevant. Experience in reducing these barriers can be gained from issuers around the world who have issued climate bonds despite similar such barriers.

Lessons learned from countries around the world

Around the world, regulators, exchanges and policy makers have started to use climate bond guidelines or other similar tools to stimulate local markets. This has largely been successful with China, India and Brazil all experiencing rapid growth following the publication of green/climate bond guidelines.

Regulation: China and India

In **China**, various regulatory authorities have played crucial roles in sparking the development of a climate bond market by releasing policies and guidance. The main bodies regulating the climate bond market in China are the People's Bank of China and the National Development and Reform Commission (NDRC). The PBoC regulates financial institutions – it released guidance on issuance of green financial bonds and the Green Bond Endorsed Project Catalogue in 2015. This provides guidance for financial institutions on how to issue a climate bond. In early 2016, NDRC released Guidance on Green Bond Issuance stating which projects are eligible as green projects, and outlining the requirements for bond issuance approval and other relevant policies.

The work of the PBOC, NDRC and the Chinese ministries and agencies, has enabled unprecedented growth of the climate bond market in China. From almost no issuance in 2015, Chinese issuance exceeded USD30bn in 2016 and issuance for 2017 could exceed USD30bn again. Furthermore, China's climate bond market could deliver upwards of USD230bn in green investments within the next 5 years.

In **India**, the Securities and Exchange Board of India (SEBI) published its official green/climate bond requirements in January 2016 after going through a public consultation in December 2015. The key features of the requirements cover the definition of green/climate bonds, external review, tracking of proceeds, and disclosure requirements, and follow the general architecture of the GBP while turning some of its recommendations into requirements.

Since the publication of the draft SEBI requirements, the Indian climate bond market has grown from USD1bn annual issuance to over USD6bn issued year to date in 2017.

Guidelines and Standards: Brazil, Japan and ASEAN

Voluntary climate bond guidelines have also been published in some countries to bring attention to the market, stimulate interest and provide specific guidance for local climate bond issuers.

Brazil's Guidelines were launched by Brazilian Business Council on Sustainable Development (CEBDS) and the Brazilian Bank Federation (FEBRABAN) in October 2016 to guide market participants in the process of climate bond issuance[6].

Japan's Ministry of the Environment published its Green Bond Guidelines[7] in March 2017 with the purpose of spurring issuance of ESG bonds and investments in them in Japan.

The **ASEAN Green Bond Standard**,[8] released in November 2017, seeks to enhance transparency, consistency and uniformity to help reduce issuance and investment costs. It builds on ICMA's Green Bond Principles, but also features requirements for continous access to information on allocation of proceeds, specifically excludes fossil fuel power generation from eligible projects and encourages the use of external reviews and more frequent reporting.

Incentives: Malaysia, Singapore

In **Malaysia**, the Securities Commission has put together a number of different incentives to spur the climate bond market in Malaysia. These include: tax deduction on issue costs of green Sukuk (Sukuk are Islamic financial instruments), tax incentives for green technology activities in energy, transportation, building, waste management and supporting services activities; and Financing incentives under the Green Technology Financing Scheme with total allocation of MYR5bn (USD1.2bn) until 2022[9]. Since these tax incentives have been put in place, two green Sukuk have been issued in just four months.

In **Singapore**, the Monetary Authority of Singapore launched the 'Green Bond Grant Scheme' to support issuers with the cost of external reviews[10]. The scheme will cover up to 100% of the cost of certifying climate bonds up to SGD100,000 (USD73,400) per issue.

PBoC in China is *exploring* the possibility of allowing climate bonds in the bank's collateral framework as well as the integration of green lending in macro-prudential assessment frameworks.

Stock exchanges

From their unique position in financial markets, exchanges are critical actors for providing market liquidity and transparency, which give investors confidence that the climate bonds they buy can be traded. Exchanges, therefore, are facilitating a robust climate bond market development. They have been actively promoting the climate bond market in a number of ways:

- Establishing green/climate bond lists and developing related guidelines
- Supporting indices and ETFs
- Fostering market education and dialogue

The first green bond segements launched in 2015 on the Oslo, Stockholm and London stock exchanges. In 2016, the Luxembourg Green Exchange (LGX) was launched. The Mexican Stock Exchange (BMV) and the Shanghai Stock Exchange were to first to launch climate bond segments outside of Europe. Borsa Italiana, Taipei Stock Exchange and the Johannesburg Stock Exchange all followed suit in 2017. Most recently, Japan Stock Exchange Group launched a green and social bond segment in January 2018.

First stock exchanges with a dedicated green bond list/segment

Exchange	Type of dedicated list/segment	Launch date
Oslo Stock Exchange	Green Bonds	January 2015
Stockholm Stock Exchange	Sustainable Bonds*	June 2015
London Stock Exchange	Green Bonds	July 2015
Mexico Stock Exchange	Green Bonds	August 2016
Luxembourg Stock Exchange	Luxembourg Green Exchange	September 2016

* Including bonds related to climate change mitigation, adaptation, enhancing or protecting biodiversity.

The road ahead: next steps and actions for Korea

The Korean climate bond market has all the underpinnings of strong growth ahead – it has a strong bond market, issuance from key state-back institutions, strong climate commitments and a large local investment market. This makes Korea a prime candidate to lead climate bond market growth in the region.

In order for the market to reach its full potential, actions can be taken by government and regulators as well as investors.

For government/regulators

Strategic issuance from sovereign or public entities

Sovereign issuance can help to develop the market by providing a nascent climate bond market with the scale and liquidity it needs to encourage trading and facilitate price discovery. A sovereign climate bond can also provide a signal to market participants, raising the profile of climate bonds with other potential issuers, such as corporates and commercial banks, as well as open up the market to new investors with portfolios allocated to sovereign debt.

Develop national green finance guidelines to promote best practice and raise awareness

The development of country-level climate bond guidelines and national standards could help to support corporate issuers and give confidence to investors. Guidelines are emerging in an increasing number of markets, with Chinese and Indian regulators leading the way. In some countries, guidelines have been developed by the government while in others, stock exchanges have developed climate bond segments and listing requirements which also provide some guidance to issuers.

Tax incentives

Korean regulators could look to providing tax incentives for investors in domestic climate bonds. Additionally, regional governments can use tax incentives to encourage more local retail bonds. This is happening in the US where tax incentives are provided for investors in the municipal bond market as well as specifically for climate bonds in Malaysia and Singapore (described above).

Strong market signals from central banks

Central banks can play a leading role in climate bond market development, both because of their dedicated role in maintaining financial stability and well-functioning financial markets to support long-term economic growth, and for the huge amount of assets they can leverage. In the UK, the Bank of England has made statements about the mainstreaming of green finance and climate bonds and recommended green/climate bonds as a climate investment opportunity for asset managers and insurance firms.

Investors:

Advocate for scale-up of green bond issuance

As investors become more interested in buying green labelled debt products, they need to become more engaged to ensure that investments that meet their criteria are available. This can be done, for example, through active engagement with the government to ensure the adequate (sustainable) development of infrastructure.

Investors also have an opportunity to act collectively on this issue through platforms such as the PRI, the Institutional Investor Group on Climate Change and the Green Infrastructure Investment Coalition (a joint project of the PRI, UNEP, and the Climate Bonds Initiative, among others).

At COP21 in Paris, institutional investors representing USD11.2tn of assets under management committed to grow a climate bond market.[11] The insurance industry reiterated its commitment to increase climate smart investments tenfold by 2020.

Support market standards

Common, consistent standards can strengthen transparency around green projects and facilitate better decision making on future infrastructure investment. Investors can support market standards through investor statements and through their own investment policies – for example, by committing to buy climate bonds only where best practice standards have been followed.

Climate Bonds Initiative work in China

The Climate Bonds Initiative has been active in the growth of the Chinese green/climate bond market since 2016. This has included a series of reports as well as discussion with government ministries, issuers and other market participants.

In March 2014, the report "How to Grow Green Bonds in China" was published followed by "Growing a green bonds market in China: Key recommendations for policymakers in the context of China's changing financial landscape" in 2015.

In early 2016, a series of discussion papers was published with International Institute for Sustainable Development (IISD) on prospects for the Chinese green bond market.

In late 2016, the **China Bond China Climate-Aligned Bond Index** was launched by Climate Bonds, China Central Depository & Clearing Corporation (CCDC), Climate Bonds Initiative (CBI) and CECEP to bring visibility to labelled and unlabelled climate bonds in ChinaMark.

In 2017, the first Chinese Certified Climate Bond was issued by China Three Gorges followed by one from Industrial and Commercial Bank of China (ICBC).

CBI's ongoing work in China includes an annual report and quarterly newsletters as well as discussions with key regulatory authorities, issuers, market participants and banks.

ENDNOTES

1. http://www4.unfccc.int/ndcregistry/PublishedDocuments/Republic%20of%20Korea%20First/INDC%20Submission%20by%20the%20Republic%20of%20Korea%20on%20June%2030.pdf

2. https://www.icmagroup.org/Emails/icma-vcards/KEXIM_External%20Review%20Report.pdf

3. Figues are cumulative amount issued in USD since 2007, includes matured bonds. Data as of 1 March 2018.

4. Bonds and Climate Change: State of the Market 2017

5. http://www.aist.asn.au/media/13242/FORUM%201A%20-%20THE%20ASIAN%20PENSION%20LANDSCAPE_Vanessa%20Wang.pdf

6. http://cebds.org/en/publicacoes/guidelines-for-issuing-green-bonds-in-brazil-2016/#.WgAG-ohx3b0

7. https://www.env.go.jp/en/policy/economy/gb/guidelines.html

8. http://www.theacmf.org/ACMF/upload/ASEAN_Green_Bond_Standards.pdf

9. https://www.sc.com.my/post_archive/malaysias-first-green-sukuk-under-scs-sustainable-responsible-investment-sukuk-framework/

10. http://www.channelnewsasia.com/news/business/mas-to-offset-cost-of-issuing-green-bonds-with-new-grant-scheme-8603578

11. https://www.climatebonds.net/files/files/Paris_Investor_Statement_9Dec15.pdf

The Climate Bonds Initiative, founded in 2009, is the only organization in the world dedicated to mobilizing the USD 100 trillion bond market for climate change solutions.

It is an investor-focused international not-for-profit that promotes investment in projects and assets necessary for a rapid transition to a low-carbon and climate resilient economy. The strategy is to develop a large and liquid Green and Climate Bonds market that will help to drive down the cost of capital for climate projects in developed and emerging markets.

Climate Bonds established the Climate Bonds Standard & Certification Scheme in 2011, aiming to provide trusted green definitions and make it easy for investors to identify and invest in green investments. Through its annual State of the Market report, it tracks and analyses the development of labelled green bond market and unlabelled climate-aligned bond market.

The data from this report as well as daily tracking of the green bonds market is used by multiple indices, such as MSCI and S&PDJI. Climate Bonds has provided policy support for governments in various regions/countries including Europe, China, India, Brazil and Mexico, and has been working with regulators in China for over 3 years.

The Climate Bonds Initiative is a special member of the Green Finance Committee of China Society of Finance and Banking.

SK Securities is a leading securities firm, and one of the largest bond underwriters in Korea. The Korean bond market at USD 2 trillion is the third largest in Asia after China and Japan. SK Securities is a member of SK Group, one of top 3 conglomerates in Korea along with Samsung and Hyundai.

SK is one of the top 50 business entities according to Fortune Global 500, and has more than 70,000 employees and 113 offices worldwide with annual sales of USD 150 billion. SK comprises 95 subsidiary and affiliate companies that share the SK brand and culture. It changed its name from Sun Kyoung to SK in 1997.

While SK's largest businesses are primarily chemical, petroleum and energy industries, it also has Korea's largest wireless mobile phone service provider, SK Telecom, and provides services in construction, shipping, marketing, telephone, and high-speed Internet service, inter alia.

SK is the world's second largest memory semiconductor manufacturer. SK and Samsung, supply 72% of global DRAM and 50% of NAND Flash chips. SK is the only chip manufacturer in a consortium that included Apple and Bain Capital the recently-acquired memory chips division of Toshiba.

This report was prepared by the Climate Bonds Initiative.

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