

Chapter 12

Utilising Green Bonds for Financing Renewable Energy Projects in Developing Asian Countries

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Chapter 12

Utilising Green Bonds for Financing Renewable Energy Projects in Developing Asian Countries

Jacqueline Yujia Tao⁴³⁴⁴

Abstract

With the market for green bonds rapidly developing in recent years, interest in this new financial instrument has also been rising. This chapter uses the Strength, Weakness, Opportunities, and Threats (SWOT) analysis to examine the strengths, weaknesses, opportunities, and threats of using green bonds to finance renewable energy projects in Asia. The potential for green bonds to become viable financing instruments for renewable energy projects is great and the market is seen to be gradually moving towards this direction. However, there remain several challenges that can be met with key supportive mechanisms. This chapter proposes a two-tiered national standards system and other supportive policies to support the building of a green bond market in developing Asia.

Keywords: Green bonds, renewable energy, financing, fixed income

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1. Introduction

As public finances become increasingly constrained, it is essential to capitalise on private markets to mobilise the required funding to unlock sufficient and well-targeted investments in renewable energy in developing Asian countries. Despite various policy incentives, renewable energy (RE) projects in Asia still face numerous challenges, particularly at the financing stage, which limit overall RE deployment in the region. While a plethora of risk management instruments are arising to improve RE project economics, a financing gap is still observed. Currently, RE projects in developing Asia are mostly financed by local bank loans (ADB, 2015), which can be poorly suited as a financing source for RE projects. In addition, an over-reliance on bank-intermediated financing subjects the borrower to a variety of potential issues such as maturity mismatch, currency mismatch, higher cost of capital, and risk of credit crunch. Thus, it is critical to source for new sources of private sector finance for RE projects.

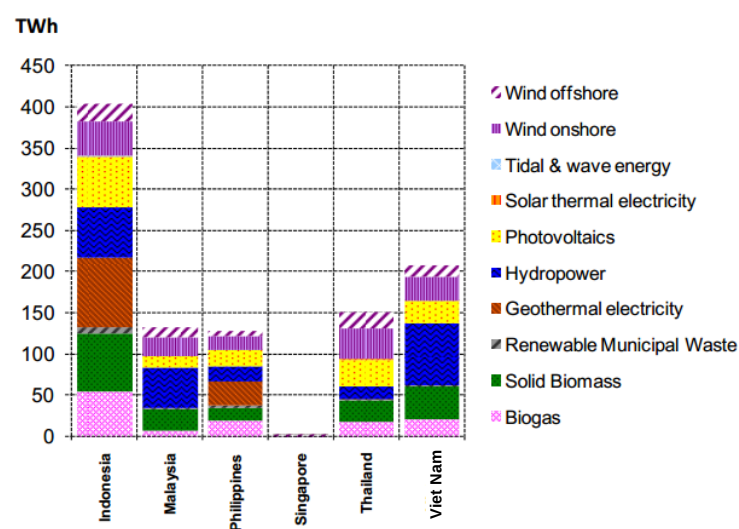
Fixed-income instruments, such as bonds, are suited for large-scale, capital-intensive infrastructure projects such as utility-scale RE projects. Current developments internationally seem to signal an interest, from both the issuers and investors, to utilise green bonds to fuel the growth of RE development.

Despite heightened interest in this new financial instrument, discussions and literature on this topic, particularly in the Asian context, are limited. Thus, this study aims to be a primer for further discussions on this topic around the region. The objectives of this study are three-fold. First, it highlights the current financing challenges faced by RE projects and the need for new financing sources for RE projects in the region. Second, despite recent interest in the rise of green bonds as a viable financing stream for low carbon investments, existing literature on this topic remains limited. As such, this study aims to provide a comprehensive overview on the green bond instrument, thereby serving as a primer for further discussions on this topic. Third, with the increased market interest in green bonds as a growing financing channel for RE, there is interest from policymakers to examine the green bond instrument and assess its viability as a financing channel for RE projects in the region. This study addresses this knowledge gap by providing analysis and facilitating discussion on the subject.

2. Literature review and methodology

Endowed with abundant natural resources, the potential for large-scale RE deployment is high. According to a 2010 International Energy Agency report (Ölz and Beerepoot, 2010), apart from Singapore, which faces serious land constraints, each Association of Southeast Asian Nations (ASEAN)-6⁴⁵ member state is capable of generating between 120–400 terawatt hour (TWh) of energy annually from RE sources by 2030.

Figure 12.1: Total Realisable Potentials* for RES-E in ASEAN-6 Countries, by Technology to 2030



ASEAN = Association of Southeast Asian Nations; RES-E = renewable energy sources for electricity; TWh = terawatt hour.

Note: *The study is conducted on ASEAN-6 countries (on all renewable energy technologies) for use in the power, heating, and transport sectors. Thus, total realisable potential in the power sector alone is likely to be less than estimates. However, given the warm climate in ASEAN, the demand for heating is limited to small proportions of industry and domestic uses.

Source: Ölz and Beerepoot (2010).

The maximisation of RE power generation could serve the multiple policy objectives of energy security, economic growth, and climate change in developing Asian states.⁴⁶ Given the attractiveness of RE, policymakers in developing Asian states are increasingly adopting policies and measures promoting RE investment and deployment (Ölz and Beerepoot, 2010). Despite such favourable policies, RE deployment has yet to realise its full potential. According to a recent study conducted by the ASEAN Centre for Energy, ASEAN countries generated 169TWh of RE in the power sector from 45.7

⁴⁵ The ASEAN-6 countries are Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam.

⁴⁶ Please consult seminal papers for a more detailed discussion of the benefits of renewable energy in developing Asian states: for example, Deploying Renewables in Southeast Asia – OECD/IEA 2010.

gigawatts (GW) of installed capacity in 2013. Under a business as usual scenario, ASEAN countries are expected to generate 399TWh of RE electricity with 149GW of installed capacity in 2035. Under an alternative policy scenario, whereby it is assumed that the official targets for RE are successfully implemented, RE installed capacity is estimated to increase to 155GW, of which 548TWh of electricity is expected to be produced in 2035. Even under favourable scenarios, the deployment of RE remains below the realisable potential for the region stipulated by the International Energy Agency report.

A recent Asian Development Bank report cites the financing gap to be a potential contributor to the current deployment shortfall (ADB, 2015). Existing literature seems to frame the financing gap using two different but interrelated aspects of RE project economics — access to finance and the cost of capital (IPCC, 2014). Access to finance refers to the pool of finances available whereas the cost of capital refers to the cost at which financing is raised.

The cost of capital, often a function of the risk and capital structure of the project, directly affects the profitability of a project, which is a key investment criterion for financiers (Eyraud et al., 2011; Sonntag-O'Brien and Usher, 2006). Wiser and Pickle (1998) proved that the reduced cost of capital could improve the RE project returns, thereby improving project attractiveness to investors. Using a discounted cash flow model, Wiser and Pickle (1998) were able to show that financing inputs, such as return on equity, debt interest rates, and debt tenure, have significant impacts on the levelised cost of energy (LCOE) for RE projects. In addition, their study showed that simply increasing the debt tenure from 12 to 20 years will reduce the LCOE for wind and solar photovoltaic power by 12% and 17% respectively (Wiser and Pickle, 1998). Their results were supported by research from the Climate Policy Initiative (Nelson et al., 2012), which stated that unfavourable financing terms, in particular the high cost of debt in India, are expected to increase RE project costs by 24% to 32% in India compared to the United States (US) and Europe. Eyraud et al. (2011) provided further support for this stand and viewed the reduction of the cost of capital of RE projects to be a significant driver for shifting investment into low-carbon projects.

Inferred from the literature, the successful deployment of RE projects would entail raising required amounts of financing at an appropriate cost of capital. For the purpose of this paper, the inability of RE projects to raise the required investment at an appropriate

cost is referred to as the financing gap. A variety of studies have viewed the financing gap faced by RE projects to be due to the nature of RE projects and the inability of existing capital market mechanisms to align to such projects. Such capital market imperfections may arise due to imperfect information, risk aversion, or agency problems (Wiser and Pickle, 1998). It has to be understood that RE projects are typically compared against conventional fossil fuel energy based projects (IPCC, 2014), which have longer track records. Compared to the mature fossil fuel energy industry, the relatively nascent RE industry faces issues regarding lack of financier familiarity, which is due to imperfect information in the industry. The lack of familiarity with RE project appraisal translates to higher perceived risks of such projects, thereby increasing the cost of capital, which may affect the project economics (Sovacool, 2009).

In addition, RE projects require a higher proportion of upfront capital costs as compared to future operations and maintenance (O&M) costs. Due to the time value of money, the front-loading of capital costs in RE projects is expected to exert a stronger negative influence on the net present value of the project as compared to large future O&M cash outflows. Therefore, RE projects suffer competitively purely due to cash-flow differences. Brunnschweiler's (2010) research piece lends support to this as his studies show that given similar financing terms, an RE project with a higher proportion of capital cost is appraised as more costly and therefore less commercially attractive to investors as compared to conventional fossil fuel based energy projects in a discounted cash flow model.

Furthermore, RE projects face more financing challenges in developing Asia given that most RE project developers are small and medium-sized enterprises (SMEs). Due to their smaller market capitalisation and possibly poorer track records, they are perceived as less creditworthy than the large conventional power generation companies (Wiser and Pickle, 1998). This limits their capabilities to both raise capital and obtain lower cost financing, which translates difficulty in reaching financial closure. Typically, larger organisations can leverage on the use of corporate finance, which are debt raised based on the balance sheet of the organisation, with the cost of financing attached to the credit worthiness of the organisation. However, smaller organisations, such as RE project developers, typically do not have the market capitalisation and the track record to rely on such financing instruments (Wiser and Pickle, 1998). These smaller organisations would

have to rely on project financing, which is debt raised on the credit worthiness of a specific project, backed by project economics alone (Wiser and Pickle, 1998). Given higher associated risks, such debt usually comes at a higher cost. Carlos and Khang's assessment of biomass energy projects in Southeast Asia (Carlos and Khang, 2008) validate such statements. Carlos and Khang (2008) examined the financing structure of typical biomass projects in the region and highlighted three main sources of finance: balance-sheet finance, corporate finance, and project finance. Their study found that while corporate finance is the most commonly used financing channel, projects utilising the higher cost project finance often face difficulties in attaining financial closure. The smaller size of RE industry players also translates to higher transaction costs (Curnow et al., 2010), which may limit both their willingness and ability to raise additional capital from external financing sources.

The relative immaturity of the level of financial development, particularly in developing countries, is said to have a widening effect on the financing gap faced by RE projects (Painuly and Wohlgemuth, 2006). The lack of financial diversification widens the financing gap as there is a lack of financial intermediation to match investments and investors with the appropriate financial instruments, which results in both inadequate access to capital and increased cost of capital (ADB, 2015; Painuly and Wohlgemuth, 2006).

Due to the bank-dominated financial system in developing Asia, local banks are the main sources of project financing in the region (ADB, 2015). As described earlier, RE projects typically require higher upfront costs and longer payback periods. This means that RE project developers typically prefer longer-term tenures of around 15–25 years (IPCC, 2014). However, local banks face various limitations when attempting to extend such long-term loans to local RE developers. For one, local banks face challenges when trying to match the maturities of their long-term assets and their short-term liabilities (Hamilton, 2010). This balance sheet constraint is further aggravated as banks, with the new Basel III regulations requiring banks to hold more liquid assets, may be reluctant to step up long-term lending for RE projects (ADB, 2015). Even prior to Basel III, local banks already faced difficulty in financing RE projects. Regional RE projects tend to carry higher risk characteristics while local banks have lending restrictions on risky assets. The resultant effect would be the outflow of domestic funds into low-risk low-return foreign

investments, while financially viable domestic projects suffer a lack of financing and thus have to gain financing at a higher risk premium from international lenders (ADB, 2015). This has led some academics to state the view that RE project structures are not well-suited for the use of bank loans, and thus, RE projects in developing countries are particularly disadvantaged on financing terms (IPCC, 2014).

Most Asian states have bank assets that account for around 80% of their whole financial system (BIS, 2014), leaving little space for the use of capital market instruments. The bank-dominated financial system has restricted the growth and development of Asian financial markets. Therefore, there is limited space for utilising capital market instruments for RE financing. Although it may be argued that this may be a symptom of the relatively small industry players in the region, the lack of market activity surrounding fixed-income markets could also be a contributing factor to the general lack of interest in tapping the capital markets.

Generally, existing literature aligns with the notion that the characteristics of RE project economics – longer payback periods, high upfront capital costs, smaller-scale projects, and higher real or perceived risks – create an investment profile that does not match the typical size of fund allocations available and the risk-return profile that investors typically require (IPCC, 2014). The financial gap created by such misalignment of RE project dynamics and capital market imperfection is further aggravated given that financiers compare RE projects with conventional power projects. Typically, under the current financing landscape, financiers would reasonably favour conventional energy projects, which have a longer track record, lower upfront costs to maintenance cost ratio, shorter payback periods, and favourable policy incentives, over RE projects (Sonntag-O'Brien and Usher, 2004). Such statements are supported by IPCC (2014), which states that one of the challenges to large-scale RE deployment was the low risk-adjusted rate of return on investment as compared to fossil fuel energy projects. Financing challenges are further aggravated by the bank-dominated financial system, which is poorly suited to finance RE projects in the region. Opening up alternative financing channels would serve to benefit RE financing in the region.

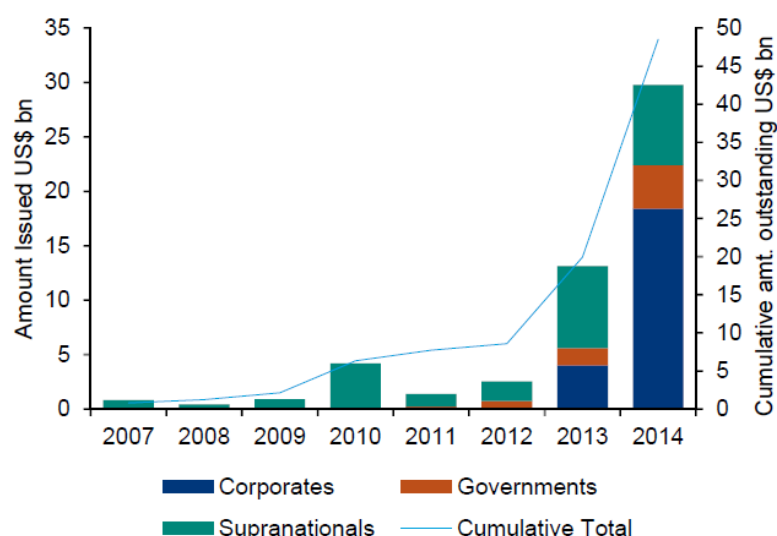
Recently, green bonds have emerged as a potential financing channel for RE financing internationally. Green bonds are debt instruments, of which proceeds are pledged to environmentally friendly projects or uses. In principle, green bonds are

considered climate themed-bonds, where proceeds were used for specific environmental causes. By design, there is to be no pricing differential between a green bond and another bond issued by the same organisation since the investors face no additional risk. As such, the critical difference between a green bond and a conventional bond would be that the proceeds raised using a green bond would have to go towards environmentally sustainable investments or projects.

The appeal of green bonds seems to stem from the tremendous investor support, particularly from institutional investors. Most of the green bond issuances were oversubscribed – mostly by pension funds, insurance companies, and asset management companies – signalling strong institutional investor appetite. Tapping into institutional investors is of particular interest given that their investment characteristics seem to align with RE investments. Institutional investors typically hold large volumes of assets, have long-term investment horizon, and, more often than not, align with certain sustainable investment mandates (ADB, 2015; Curnow et al., 2010). These characteristics make institutional investors ideal financiers of renewable infrastructure projects such as utility-scale RE projects.

The Skandinaviska Enskilda Banken AB (SEB) and the World Bank pioneered the idea of a green fixed-income product and, in 2007–2008, they jointly launched the world's first green bond. The first green bond was a product specially tailored to satisfy demand from Scandinavian pension funds looking to invest in environmentally friendly fixed-income products. Since its inception in 2007–2008, the green bond market has grown from being a niche product to a relatively mainstream financial instrument. In 2014 alone, the green bond market raised an estimated \$36.6 billion (CBI, 2014a) for low-carbon investments spanning across seven themes – transport, energy, finance, building and industry, agriculture and forestry, waste and pollution control, and water.

Figure 12.2: Size of Green Bond Market According to Issuer Type



Note: Figures as of 26 November 2014.

Source: Bank of America Merrill Lynch.

Developing Asian countries entered the green bond market only in 2013. It could therefore be said that Asia is still at a very early stage of development and that the current market conditions are still relatively immature. As of the writing of this report,⁴⁷ there are less than 10 green bond issuances in the region. Thus, there is limited scope to draw any concrete conclusions, but a general interest in the instrument could be observed. Table 12.1 lists the existing green bond issuances.

The first Asian bond issuer to tap the green bond market was the Export–Import Bank of Korea, which issued a \$500 million bond in February 2013. Following the initial issuance, other supranational, sub-sovereigns, and agencies (SSAs) such as the Export–Import Bank of India, the Development Bank of Japan and ADB began to enter the market with mostly benchmark issuances using international currencies. These green bonds are considered financial green bonds since proceeds are on-lent to eligible green projects, inclusive but not limited to RE projects.

⁴⁷ This report was written in June 2015.

Table 12.1: Green Bond Issuances (as of April 2015)

Issuing Organisation	Date of Issuance	Issuance Amount	Issuer Category	Category*
Export–Import Bank of Korea	February 2013	\$500 million	SSA	Financial Bond
Toyota	March 2014	Tranches of \$	Corporate	Corporate Bond
China’s CGN Wind Energy	June 2014	CNY1billion	Corporate	Corporate Bond
Taiwan’s Advanced Semiconductor Engineering	July 2014	\$300 million	Corporate	Corporate Bond
Development Bank of Japan	October 2014	€250 million	SSA	Financial Bond
YesBank, India	February 2015	₹10 billion	Corporate	Financial Bond
Asian Development Bank	March 2015	\$500 million	SSA	Financial Bond
Bangchak Petroleum	March 2015	B3 billion	Corporate	Corporate Bond
Export–Import Bank of India	March 2015	\$500 million	Corporate	Financial Bond

SSA: Supranational, sub-sovereigns, and agencies.

Note: *A financial bond is a bond issued by financial intermediaries, both public and private, whereby the proceeds are on-lent. Corporate bonds are bonds issued by private organisations whereby proceeds are used with the organisation.

Source: Prepared by the author.

The corporate green bond issuance pool is diverse. The first pure RE-based corporate issuance came from the People’s Republic of China’s (PRC) CGN Wind, which entered the market in 2014. Non-RE based corporate entities have also issued green bonds to support its renewable energy projects. An example would be the Thai oil company Bangchak Petroleum, which issued a B3 billion bond in March 2015. India’s Yesbank became the first corporate financial green bond issuer with its ₹10 billion bond issued to support RE deployment in the country. The heterogeneous pool of corporate issuers who are tapping the green bonds market to finance their RE projects seems to highlight the different ways green bonds can help mobilise private finance into RE projects.

This study assesses the viability of green bonds to finance utility-scale RE projects in Asia. The restriction to utility-scale projects is given since these projects are typically closer to commercial viability, have more established business models, and typically have capital requirements that meet the bond issuance requirements.

A SWOT matrix, an assessment framework that is commonly used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project, is used in this study. SWOT analysis generally involves specifying an objective and identifying the

internal and external factors that may contribute to the achievement of such an objective. The objective of this study is the reduction of the financing gap for RE projects in the region. The chapter discusses the advantages and disadvantages of utilising green bonds using a multi-stakeholder framework, where the authors consider the interest of the relevant stakeholders – for example, RE project developers, financiers, and policymakers.

3. Results and discussion

Table 12.2 provides a brief overview of the SWOT analysis. The ensuing section will discuss each component in detail.

Table 12.2: SWOT Analysis on Green Bonds

<u>Strengths</u> 1.Ability to highlight green attributes 2.Flexibility of the instrument 3.New low-cost financing channel 4.Aligned term structure 5.Increased efficiency in financial infrastructure	<u>Weakness</u> 1.Lack of robust definition of green 2.Uncertainties of a self-regulated market 3.Nascent financial instrument 4.High transaction cost 5.Lack of secondary market
<u>Opportunities</u> 1.Strong investor interest (real/perceived) 2.Strong momentum for growth 3.Presence of favourable governmental policies	<u>Threats</u> 1.Unidentified investor base 2.Lack of green bond-related expertise/infrastructure 3.Lack of favourable climate 4.Uncertainty in future the outlook

4.1. Strengths

4.1.1. Ability to highlight green attributes

When referring to green bonds, it is important to differentiate between labelled and non-labelled green bonds. Labelled green bonds⁴⁸ refer to bonds being marketed as green bonds, while the non-labelled green bonds universe refers to bonds that are used for environmentally friendly projects but are not marketed as green bonds. Labelling provides an effective way to define and distinguish green bonds as a specific sub-universe of environmental or green bonds. Thus, a particular strength of the labelled green bond instrument to the issuer is the ability to highlight environmentally friendly attributes. Firstly, the ability to highlight an issuer's green attributes could potentially help it attract

⁴⁸ Henceforth, all references to green bonds refer to the labelled green bond segment, unless specified otherwise.

investors with an environmental social governance (ESG) mandate. Issuers were previously unable to tap this market effectively due to information asymmetry and the low visibility of their bond issuance. Issuing a green bond would also increase the visibility of the bond to conventional investors, as the pool of green bond issuances is much smaller than the pool of conventional bond issuances and the investor group for both asset classes are overlapping. The ability to highlight the green attributes of green bonds could also improve its overall publicity and improve an organisation's image, thereby broadening their access to capital.

However, to protect the integrity of green bonds, the issuer, more often than not, would have to conduct extra due diligence, particularly in the form of environmental assessment, to support its green claims. Given the flat pricing policy of green bonds, the additional costs related to a green bond issuance, notably in the form of environmental assurance, verification, and communication, would have to be absorbed by the bond issuer. To compensate for the higher costs involved, the appeal of green bonds to potential issuers lies in the fact that such ventures attract new investors.

The labelling process also acts as a form of discovery tool for investors to spot green attributes, which reduces the transaction costs, particularly for ESG-mandated investors. In addition, the ability to highlight green attributes also contributes to raising public awareness on environmental and climate change issues and the green asset class. Within the Asian investments sphere, there is a lack of awareness and emphasis on ESG concerns. This is evident from the lack of emphasis on transparency and disclosure requirements on environmental issues. Furthermore, climate change concerns are not widely discussed in Asia and have far less impact on the financial sector. By highlighting green attributes, green bonds can play an effective role in inciting investor interest in green and sustainable investments, especially if they are able to offer comparable rates of returns. Such publicity programmes could also help reduce perceived risks for financiers and correct the misconception that there is a trade-off between profits and environmental sustainability.

4.1.2. Flexibility of the instrument

One of the key strengths of the green bonds is the flexibility of the instrument. This flexibility is reflected in terms of the issuer requirements, the possible types of

issuance, and the terms of issuances.

Firstly, it is important to note that any organisation is eligible to issue a green bond. The green credentials of a bond issuance are not attributed to the issuing organisation but to the underlying projects or assets linked to its issuance. While accrediting the green credentials to an underlying asset instead of an issuer opens up controversy, particularly in terms of safeguarding green claims, it serves to facilitate the active participation from a diversified spectrum of organisations. A strong argument for the case would be that all organisations would need to transit to a low-carbon society and as such, would require financing. Limiting the issuance of green bonds to 'green' organisations would therefore lock in business-as-usual operations for a variety of 'brown' organisations as they would lack the financing tools to shift to a low-carbon model. By opening up the financing channel to all organisations, it can be argued that both green and brown organisations would be better positioned and therefore have a higher likelihood to engage in environmentally friendly investments. Such an argument could be supported by green bond market dynamics, as currently a diverse group of organisations is seen tapping into the market to gain low-carbon financing.

Secondly, the flexibility of the instrument could be observed from the different types of issuance. Green bonds could be broadly classified based on the assets to which they are tied. Table 12.3 summarises the types of green bonds available.

Table 12.3: Types of Green Bonds

Types of Green Bonds	Definition
Green Use of Proceeds Bond	A standard recourse to the issuer* debt obligation in which the proceeds shall be ring fenced** to green projects.
Green Use of Proceeds Revenue Bond	A non-recourse to the issuer debt obligation in which the credit exposure in the bond is pledged cash flows of the revenue streams, fees, taxes, etc., and the Use of Proceeds of the bond goes to related or unrelated green projects.
Green Project Bond	A project bond for a single or multiple green projects in which the investor has direct exposure to the risk of the projects with or without potential recourse to the issuer.
Green Securitised Bond	A bond collateralised by one or more specific projects, including but not limited to covered bonds, asset-backed securities, and other structures. The first source of repayment is generally the cash flows of the assets.

Notes: *A debt in which the creditor has standard claims on the loan in the event of default. Terms of the claims allowed are often listed in the debt contract.

**The idea of ring fencing of proceeds refers to the fact that proceeds shall be moved to a sub-portfolio or otherwise tracked by the issuer and attested to by a formal internal process that will be linked to the issuer's lending and investment for the project.

Source: Adapted from International Capital Market Association (2015).

The diversity in the type of bond issuance ensures that a variety of financing channels could be tapped at appropriate costs. In the most direct way, renewable energy companies may wish to issue a corporate green bond to finance their projects. Other power generation organisations that wish to expand into the renewable energy sector may also issue a green bond that is tied to the renewable energy-related section of their operations.

Project bond finance presents a unique opportunity for small- and medium-sized utilities and renewable energy companies to gain financing. Project bonds allow debt to be paid off using project cash flow instead of writing it off balance sheets. As project bonds are typically asset-backed securitisation, with recourse tied to the assets of the project and not the issuing project, they are evaluated on an individual basis and often fall beyond the investment grade of BBB.

Alternatively, renewable energy projects could gain financing indirectly through green financial bonds. Financial institutions, such as private banks, may issue green bonds that will be ring fenced to financing renewable energy. The ring fencing of an available pool of credit ensures the availability and stability of the flow of funds into green energy. Upon the discretion of the financial institutions, preferential interest rates may also be offered. Government agencies may also issue green bonds to support large-scale RE projects. Innovative green bond structures, such as the green sukuk (Sharia-compliant bonds), have also steadily emerged to target different investor groups.

Lastly, financial ingenuity allows for innovative term structures of the bond instrument. For example, the convertible bond allows for the potential exchange of debt to equity under pre-determined conditions. In addition, recent financial innovations have also allowed for the floating interest rate to be pegged to environmental-related indices. The flexibility of the green bond instrument could be clearly demonstrated by the PRC's CGN Wind which issued a CNY1 billion green bond with the floating component of its 'fixed and floating' coupon rates tied to China's certified emission reduction prices.

Such flexible mechanisms are beneficial for both the RE project developers and investors. The heterogeneity within and among the different types of green bond issuers also allows for a spectrum of risk and return profiles, along with diverse capital and funding needs, which extends the credit and maturity curves. This ensures a broad

spectrum of market players is attracted into the market, which also serves to broaden the market.

4.1.3. New low-cost financing channel

As described earlier in the literature review, capital markets currently have a limited role to play in financing RE in the region. By promoting green bonds as a viable financing channel, another source of finance is raised for RE projects, increasing the pool of credit available. Moreover, green bonds can potentially offer lower cost capital terms. Green bonds, as debt instruments, are considered cheaper alternatives to equity investments. In addition, bonds are typically considered senior debt, and are therefore less costly compared to bank loans. RE project developers can thus capitalise on better financing terms provided by green bonds to improve the economic viability of their projects.

Furthermore, a large proportion of the issued green bonds are financial bonds. Financial green bonds issued would have to go into environmentally friendly projects, which eliminates or reduces financing competition from conventional fossil fuel power projects and could potentially ensure a steady flow of credit to support RE deployment.

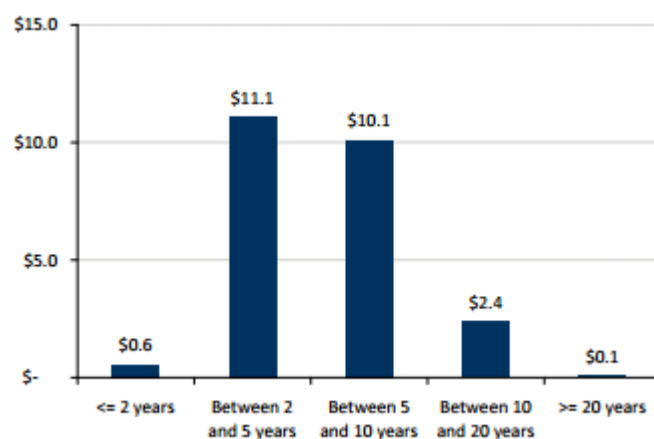
An additional benefit of green bonds as a new low-cost financing channel is its ability to attract institutional capital. Large institutional investors, such as pension funds, insurance, and sovereign wealth funds, have approximately \$80 trillion assets under management, of which more than half are held in fixed-income portfolios (OECD, 2014). These large institutional investors have a long-term risk outlook and are increasingly trying to limit their carbon exposure and climate risk exposure. An important element here is the large funds that have long-term liabilities, such as sovereign wealth funds and/or pension funds, which they would seek to balance with long-term assets. This allows institutional investors to become a more significant source of long-term investment in renewables. Green infrastructure investments, such as RE projects, offer investment opportunities for institutional investors that fit their long-term liabilities and investment mandates. The maximisation of green bond instruments to finance RE projects could drive regional and international institutional capitals that would not only offer larger pools of available credit to RE projects but also deepen the current financial system. Furthermore, the deepening of financial systems provides the additional benefit of closing the financing

gap as financial intermediation services are improved.

4.1.4. Aligned term structure

Green bonds offer a more compatible term structure for RE projects compared to bank loans. Firstly, bonds are suited for long-term financing. Typical bond tenures range between 7–15 years, aligning with the typical payback periods for RE projects. According to a Royal Bank of Canada Capital Markets report, about 87% of all green bond issuances have tenures of between 2–10 years, which align with the simple payback of RE projects in Asia (Nanji et al., 2014).

Figure 12.2: Green Bond Issuance by Tenure Duration



Source: Nanji et al. (2014).

Secondly, the green bond debt structure is aligned to the project cash flow of RE projects. This allows easier compliance with debt terms on the part of the project developer. Typically, bond financing allows for delayed principal repayments. Unlike bank loans whereby payments are made throughout the due term for both principal and interest, the principal for bonds are paid at maturity of the bond. This fits the cost structure for RE projects and allows RE projects to generate returns and cover the capital costs across a range of payback periods. To illustrate, the typical simple payback period for a solar project in Singapore is 7–8 years, which translates into 7 to 8 years of cumulative negative cash flows. The use of bond instruments would allow the project to generate excess returns before the principal repayments begin. Should the project be financed by bank loans, the project would face additional fiscal constraints for debt repayment prior to the recovery of capital.

Since bonds offer the opportunity to disperse ownership of the debt across a group of investors, financiers find it easier to invest indirectly in RE through bonds as opposed to investing directly through loans or equity ownership. Furthermore, the presence of a secondary market promotes liquidity, thereby offering financiers a short-term exit strategy. These attributes of bond issuance increase the attractiveness of RE projects to investors as issues of long payback and high upfront costs are mitigated.

However, it has to be noted that there is suppressed secondary trading of green bonds in the market. As such, this theoretical strength of the green bond instrument is not reaped under current market circumstances.

4.1.5. Increased efficiency in financial infrastructure

At its core, the green bond concept is a market innovation allowing efficient capital intermediation between investors and green or climate-related projects. Raising capital through capital markets prevents moral hazards that might occur due to strong policy directives on renewable policy and favourable fiscal incentives, which may induce banks to take on riskier RE projects in their portfolio with an overreliance on public policy support. Financing RE projects through the capital market could promote transparency in the market, thereby minimising information asymmetry in the industry. The disclosure requirements of capital markets require both project developers and financiers to provide a greater diversity of perspectives from various stakeholders, such as investors and intermediaries that could provide independent evaluation and second opinions on the projects. Furthermore, the additional transparency and disclosure requirements of green bonds would help to strengthen price discovery, information identification and risk pricing for the projects. As the market deepens, related expertise could be built internally, thereby expanding and improving the financial services sector, enforcing the strength of related infrastructure, thus contributing to the building of the national capital markets.

Taking a policymaker's perspective, the utilisation of innovative financing mechanisms such as green bonds not only facilitates the flow of private sector finance into RE deployment, but could also promote diversification of the financial infrastructure. The overreliance on bank financing, which is the current situation, creates multiple self-feeding issues that may increase the vulnerability of the existing financial system. Firstly, the domination of one financing channel may crowd out the development of other

financial markets, thereby limiting the total credit available. Secondly, the homogeneity of the financial system, with rigid risk and return structures, restricts both the borrower's and lender's pool. Thirdly, it introduces systemic risks into the financial system, thereby increasing risks of financial instability. This would, in turn, contribute to the problem of deterring active domestic private sector participation in the financial market, thereby impeding financial market development. This then, creates a self-fulfilling prophecy of a limited market. Fourthly, the heightened financial risks involved in the inherent homogenous financial system deter participation from international financial intermediaries with more sophisticated markets. Without foreign participation and the increased sophistication brought along by this participation, the developing Asian financial markets are likely to remain illiquid and small. The homogenous financial structure seems to promote a series of self-feeding reactions that could only serve to limit market growth and widen the financing gap of RE projects.

The development of green bonds could contribute to the growth of the local bond market. With the current nascent bond market in Asia, the introduction of new mechanisms may serve to deepen the market and increase interest and liquidity of the market. The growth of the capital market would also contribute to minimising the systematic financial risks. The effects of reduced systematic financial risks and more diversified financial channels would also serve to ensure the stability of financial flows into RE projects.

Lastly, green bonds could potentially help divert domestic capital back into the region. With high savings rates across the region, the region is not short of domestic capital. However, the current trend being seen is the outflow of large sums of domestic capital into the low-return less-risk overseas assets. Thus, it is important for policymakers to shift capital flows back into local investment projects. The creation of green fixed-income products, which creates investment instruments with a low-risk, steady returns paradigm, may serve to attract new domestic institutional investors, thereby facilitating the inflow of capital back into the region while expanding the available credit pool for RE projects.

4.2. Weaknesses

4.2.1. Lack of robust definition of green

A key point to note for green bond issuers is that green credentials of a green bond are based on the projects or assets linked to its issuance, not the green credentials of the organisation issuing the bond. This means that any organisation can issue a green bond, as long as they are able to prove that the bond proceeds are used for environmentally friendly purposes. This characteristic induces two main concerns regarding finances raised by green bonds: the transparency on the use of funds (referred to hereafter as financial integrity) and the environmental integrity of the bond. The financial integrity of the bond is usually ensured by earmarking the proceeds to finance environmentally friendly projects or by tying proceeds to a green underlying asset. While financial integrity does not present many areas of controversy, protecting the environmental integrity of the green bond issuance is highly ambiguous.

Although green bond issuances are mostly classified under the seven broad themes, which lay down broad categories for projects, the complex and integrated nature of environmental issues suggests that absolute definitions of what could constitute a 'green investment' may remain hypothetical and illusive. Thorny issues surrounding the discussion include what should be considered green and who should define greenness. Although there is likely to be no definite answer on what is to be considered green due to the inherent nature of environmental debates, stakeholders, in particular RE project developers and investors, are concerned given that controversies regarding the 'greenness' of the bond will likely manifest as market risks and reputational risks when they are seen to be engaging in such instruments. Other market participants viewed the lack of a robust definition of green as a potential trigger for loss of investor confidence in the green instrument.

The ambiguity surrounding environmental assessments has resulted in various controversies such as the use of green bond funding to finance a car park that resulted in environmental degradation and extensive costs. This has constantly been an area of concern for various stakeholders, with different parties attempting to provide solutions to overcome this difficulty.

4.2.2. Uncertainties of a self-regulated market

The current market situation in the international green bond market allows for any debt issuer to label its bonds green, as long as it is able to convince its investors of the environmentally friendly attributes of its underlying projects. While SSA issuances seem to generate investor confidence due to their existing project assessment criteria and transparency of reporting, corporate issuances are unable to command similar levels of investor confidence. In response to investor concerns, the green bond market entered a phase of market self-regulation.

The Green Bond Principles (GBPs) were introduced in 2014 by a consortium of financial intermediaries, with the intent of creating a governance framework to regulate and assess the environmental integrity of the green assets, thereby facilitating market development. The GBPs are voluntary process guidelines that recommend transparency and disclosure, and promote integrity in the development of the green bond market by clarifying the approach for issuance of a green bond. The GBPs are intended for broad use by the market and are meant to instil confidence into the marketplace. The voluntary standards, as set by the GBPs, are criticised as being too loose and not offering concrete standards setting purpose (see critic reports such as the ones from the Friends of the Earth and International Rivers Fact Sheet).

While commending the efforts of the GBPs in forming a broad framework that facilitates investor recognition of green bonds, the Climate Bonds Initiative (CBI) viewed the GBPs as lacking in environmental integrity assessment. As such, the CBI introduced the Climate Bond Standards and Certification Scheme as an evaluation tool for investors to assess the environmental integrity of bonds. The CBI engaged a team of technical analysts to provide expert recommendations on what could be considered environmentally friendly projects. Both market standards are constantly being examined and improved to ensure alignment with current market conditions.

To ensure the environmental integrity of the bond issuance, the engagement of third party verifiers who conduct environmental assessments of the projects was stated as best practice since the first green bond issuance by the World Bank. Third party verification was also recommended as best practice since the first version of the GBPs. Until 2014, the Center for International Climate and Environmental Research dominated all third party verifications for green bonds. As the market ecosystem expanded,

environmental expertise deepened in the market. 2014 saw the emergence of various other third party verifiers such as Vigeo, Det Norske Veritas, KPMG, OEKOM, and CH2M Hill. The increase in expertise allowed more green bond issuances to be verified by external parties, thereby ensuring quality assurance. The introduction of competitors in the industry could also lower the costs involved in getting verified by a third party auditor.

Currently, independent advisory bodies are setting voluntary standards on transparency and disclosure requirements while third-party verification plays an auditing role. Thus, while there are no established mandatory criteria as to what constitutes green or which shades of green meet the threshold, and the level of disclosure remains a corporate decision, the market attempts to catalyse issuances and investor interest by issuing a voluntary set of guidelines developed by industry participants. Unfortunately, the green bond market remains a self-regulatory market, with no penalties for non-compliance. Self-regulation in the market underscores the potential misuse of lenient best practice guidelines, which may dissipate investor confidence in the instrument, thus killing the asset class. Self-regulation also implies that all disclosures on the environmental integrity of underlying projects are voluntary, and at the organisation's discretion. This has caused concerns from various investors that the lack of measurement, reporting, and verification on the environmental impact of those green projects could lead to questions on the strength of the green bond label. Disparate reporting standards also cause various challenges when attempting to quantify absolute environmental benefits of underlying projects and benchmark best performance. Although some may argue that green bond issuers run reputational risks if proper disclosure requirements are not followed, which may, to an extent, ensure the credibility of the green label, much more could be done to safeguard the green bond label.

4.2.3. Nascent financial instrument

Being a relatively new instrument, the legal basis remains immature. To ensure the potential scalability of the green bond market, market participants have been trying to reflect on the potential legal issues associated with green bonds. Various business summits organised by market participants have highlighted the potential legal complications of green bonds. Some areas of controversies cited by legal experts include the fact that green bonds do not have a legal basis and that the procedures for a 'green

default’ have yet to be established. While such concerns are noted, established guidelines have yet to emerge from the market and the potential legal risks associated with this product remains.

4.2.4. High transaction costs

A potential limiting factor in utilising green bonds to finance RE projects would be the high transaction costs involved. Compared to bank term loans, tapping the capital markets already entail higher transactions costs. Anecdotal evidence points to the fact that even SSA issuers such as the ADB view the costs of undergoing the additional disclosure requirements for the issuance of a green bond to be potentially restrictive.⁴⁹ For RE project developers in the region who are typically SMEs, the green bond issuance process may be a prohibitive option for them to pursue.

4.2.5. Lack of secondary market

The lack of a secondary market for green bonds may limit the extent to which the benefits of a green bond could be captured. Given that the liquidity benefits of a green bond, as compared to a bank loan, translate to longer debt tenures for RE project developers and shorter payback periods for financiers, the presence of a secondary market is critical for the successful use of green bonds to bridge the RE financing gap. However, a mature secondary market has yet to develop. A possible reason for this could be that the current investor pool for green bonds is made up of mostly buy-and-hold investors. The nature of green bonds, especially the alignment of financial structures and low credit risk of SSA issuers, attracts buy-and-hold investors. A limited secondary market may also reduce the uptake of green bonds given that a natural switching process is much easier for investors.

4.3. Opportunities

4.3.1. Strong investor interest (real/perceived)

The investor base of green bonds includes ‘green’ investors and other broad-based investors who consider these new bonds as part of their expanding investment choice set.

⁴⁹ Maria Lomotan, ADB’s head of funding, was quoted in an International Financing Review article saying: ‘The process (of issuing a green bond) is a lot more demanding ... and the cost is flat.’ She also said ‘All our projects have environmental components, so we had to evaluate that versus what would be required to do this to see whether it would be feasible for the institution.’

A clear distinction should be drawn between these two groups: the former is actively in search of value in the sustainability or the greenness of the project; whereas the later group is more motivated by the search for yield. There seems to be strong investor demand, both real and perceived, for green bonds in the market. The real investor demand is demonstrated by the consistent oversubscription for green bonds being issued in the market, while the perceived investor demand originates from a series of favourable market conditions present. Firstly, investors, in particular institutional investors, are increasingly interested to invest in RE projects, as in the results of a 2013 survey conducted by Ernst and Young. Nearly one-third of institutional investors surveyed expected to increase RE investments in the next three years, and 15% expected investments to increase by over 10% (Ernst and Young, 2013). Secondly, the growth of the socially responsible investment (SRI) movements, as represented by the increasing participation of financial institutions in the United Nations Principles for Responsible Investment, seems to signal strong potential investor interest in the asset class which is dominated by SRI investors (60/40 split).

Thirdly, financial institutions in Asia are also warming up to SRI initiatives in developing Asia. A recent report by the Association for Sustainable & Responsible Investment in Asia (ASrIA) highlighted that sustainable investment assets in Asia (except Japan) have been increasing year-on-year at a rate of 22% since 2011 (ASrIA, 2014). Furthermore, with Asia offering high returns on investments (UNCTAD, 2014), conventional investors will also be incentivised to tap on the high-growth markets here. Conventional international interest in developing Asia markets could also be inferred from the growing foreign direct investment inflows despite sluggish world economy in 2014 (UNCTAD, 2014).

4.3.2.Strong momentum for growth

Another favourable external factor is the strong growth momentum currently present in both the regional and international markets. In the regional markets, investors seem to be keen on both clean energy financing and green bonds as instruments. Such sentiments were reported by ASrIA based on its surveys of 97 institutional investors in the region (ASrIA, 2014). Green bonds could then capitalise on such favourable investor sentiments to help kick-start the market for green bond RE financing.

Internationally, the growth momentum seems strong as well, with issuances tripling from 2013 to 2014. The CBI estimates global green bond issuance to reach \$1 trillion in 2020. Such estimates were supported by investor pledges to support the green bond instrument, as represented by the public pledges made by 13 financial institutions at the UN Climate Summit in September 2014 and the signing of the Investor Statement on Green Bonds and Climate Bonds by a group of 12 institutional investors with a combined \$2 trillion assets under management (CBI, 2014; BNEF, 2014). RE industry players can capitalise on the international movement given that a proportion of financiers of green bonds remain European and North American financial institutions.

4.3.3. Presence of favourable governmental policies

With green bonds gaining market interest, policymakers are also becoming increasingly keen in exploring the potential of such innovative green instruments. Explicit policy support could be seen in the case of the PRC, whereby the government agencies have worked with various think tanks and non-profit agencies to draft a public white paper exploring the possibilities and key reforms to facilitate the growth of a green bond market in the PRC (Zadek and Chenghui, 2012). Similarly, Indonesia has highlighted the building of a green bond market as a possible direction in one of its recent policy guidelines (OJK, 2013). India has also expressed implicit support for the instrument recently when the Export and Import Bank of India issued a green bond to support low-carbon projects in the country (EXIM Bank of India, 2015). With such supportive policies in place, green bond issuers could definitely ride on such positive policy incentives to raise capital for RE projects.

4.4. Threats

4.4.1. Unidentified investor base

Unfortunately, although there seems to be potential investor demand in the region for the green instrument, such demand has not been clearly identified. Assessments of investor demand for green bonds remain largely anecdotal. Investor demand has traditionally been viewed as a matter of oversubscription for a certain bond. However, one might argue that oversubscription could be a function of other factors apart from the fact that it was a green bond. Similar concerns were raised as media representations of

the investor interest for green bonds remain diverse in opinion. Media representations of investor demand range from 'deep scepticism over green investments in Asia' to 'seeing interest from some funds' (see for example, Garton, 2015). However, a general reluctance of investors to engage in green instruments seems to dominate media representations in the region, thereby questioning the hypothesis that there is strong investor demand for the product.

The SRI investors also represent a potential swing investor group. According to ASRIA's 2014 Asia Sustainable Investment Review, a large proportion of the sustainable investment assets are identified as Islamic or Sharia-compliant assets (ASRIA, 2014). These assets, considered as SRI assets, do not have a strong environmental edge to them and thus may not be a strong potential source of financiers for RE-based green bonds. As such, although the market seems optimistic about future growth prospects, specific quantifications of investor demands remain uncertain.

Lastly, while there are dedicated green bond funds such as the Calvert Green Bond Fund (CGAFX) and the Nikko AM Shenton World Bank Green Bond Fund in the international green bond market, Asia lacks such dedicated funds, further signalling weakness in estimated demand.

4.4.2. Lack of green bond-related expertise/infrastructure

Another limiting factor would be the lack of related expertise in the region. Green bond-related expertise could be decomposed into financial expertise, environmental expertise, and legal expertise.

The role of financial intermediaries in building the green bond market is indispensable. Financial intermediaries, particularly the investment banks, reacted to the demand for green fixed-income products, thereby creating the green bond instrument. SEB, as part of its due diligence, pioneered the idea of ring fencing the proceeds of green bonds to ensure traceability and governance of the use of funds. Without the financial innovations and responsiveness of such financial intermediaries, the green bond market would never have taken off. Given relatively immature capital market development in Asia, related financial expertise such as financial intermediation experience, credit rating experience, and other ancillary expertise remain limited in developing Asian states. This could affect both the quantity and the quality of the green bonds being issued in the

region. Furthermore, the lack of financial expertise in the region could potentially result in the bond issuer being unable to capitalise on the full benefits of the flexibility of the green bond issuance. Alternatively, financial expertise may come at a prohibitively high transaction cost, which may reduce willingness to opt for green bonds.

Developing Asian countries also seem to lack the related environmental expertise, in particular environmental assessment and third-party auditors for environmental reporting. Engaging international experts may increase cost, thereby adding to the already high transaction costs of issuing a green bond. Furthermore, international experts may not be able to fully capture domestic intricacies, especially when environmental issues are mostly localised in nature.

While the legal expertise is still taking formative shape at the international market level, regional legal expertise needs to develop alongside the tightening of domestic environmental law to maintain investor confidence in the green label.

While the international green bond market has moved towards standardisation and scalability in mid-2015, the Asian market remains nascent and relevant financial infrastructures are non-existent. Market standardisation is critical for the growth of a financial instrument, given that the ability to accurately assess the value of the financial instrument in comparison to a benchmark is critical for investors. The introduction of the Barclays, Merrill Lynch, and Standard and Poor's green bonds was crucial in offering a global benchmark for investors. A recent report issued by the Bank of America Merrill Lynch stated that their green bond index was able to gain a cumulative, annualised return of 6.37%, outperforming the global government and broad market indices (BofA, 2014). Such information would be valuable to institutional investors, especially fund managers, when they are attempting to understand how investments in green bonds would affect their portfolio. Currently, the Asian financial landscape lacks such benchmarking indices.

4.4.3. Lack of favourable climate

Looking back at the growth of the international green bond market, a number of different socio-economic factors could explain the demand for institutional investors in environmentally friendly fixed-income products. Firstly, unlike the equity market, which explored the notion of sustainable investing a few decades ago, the market for sustainable investment in debt markets remained relatively nascent. Therefore, there seemed to be

market for sustainable products catered to the fixed-income market in which large institutional investors have a heavy involvement.

The increasing proliferation of climate change concerns, accelerated by promotions by the media, academics, and non-government organisations, has moved climate and environment issues further up in the public agenda. The better understanding of climate-related risks has also motivated increased attention towards green energy, thereby prompting a change in investor behaviour, particularly the institutional investors that have long-term risk outlooks and are thus disproportionately affected by climate change.

Changes in the investment climate, particularly after the 2008–2009 global financial crisis, to a more risk-averse and stable growth strategy have resulted in the increased demand and expansion of relatively stable markets such as the fixed-income and sustainable investing markets. Increased regulation of financial institutions, particularly in terms of holdings in risky assets, further increased the demand for fixed-income products. These changes drove the market for green bonds. Such favourable conditions are not observed in the region, thereby drawing doubts on the viability of the green bond market taking off in the region.

4.4.4. Uncertainty in the future outlook

The last threat for green bonds pertains to the potential uncertainty in the future outlook of green bonds in the region. While 2014 could be viewed as a strong year for green bonds, market performance for the instrument in 2015 was sluggish. The total issuance to date in 2015 had mostly kept pace with issuances in 2014, far from the expected growth of \$100 billion (CBI, 2015). Such slow growth rates seem to signal the dampening of both investor and issuer interest in the product. Furthermore, this slow growth is experienced during a time of strong conventional bond issuance. Such developments pose serious threat to the future outlook of green bonds as an asset class.

4.5. Discussion

Looking at the internal attributes of green bonds, the instrument seems well positioned to act as a financing channel for RE projects in the region. The debt structure of green bonds is especially favourable for RE projects as it mitigates against investor

concerns of high capital cost and long payback periods. The flexibilities offered by green bonds could also help bridge the financing gap by allowing the structuring of the coupon to match investor requirements. Several other benefits pertaining to increased financial market sophistication and environmental awareness also contribute to making the green bond option attractive for policymakers. However, one should also note that the other benefit of green bonds is that of using traditional bond instruments. The additional benefits of the green bond as compared to the use of conventional bond instruments lie only in signalling green attributes and raising public awareness. When considered against the weakness of the instrument, the question then is, 'Is the trade-off valid?'

The green bond instrument faces inherent challenges in ensuring environmental integrity. The uncertainties of ensuring environmental integrity could be mitigated, to a certain extent, with compliance with voluntary market best practices. Such compliance measures would have to come at an additional cost, which decreases the attractiveness of issuing a green bond. In addition, the risks associated with the lack of a robust definition of a green bond could not be mitigated in full. The stringency of the voluntary market best practices, such as the GBPs, has been challenged by various stakeholders. Furthermore, being a new market instrument with relatively fluid regulations and inadequate provision of ancillary services (such as benchmarking indices), the viability of a green bond market in place of a conventional bond market could be questioned. This is particularly true for bond issuers who see no pricing benefit for going green. Although the lack of a secondary market for green bonds is not viewed as a significant problem for Asian investors, given that most regional investors are hold-to-maturity buyers, the current analysis seems to suggest that the advantages outweigh the disadvantages when looking internally at the green bond instrument.

When accounting for the external environment, green bonds face additional challenges. Strong investor interest in the product used to be a strong driving force for the growth of the market. However, such investor interest remains unquantifiable and may be illusory in the region. As such, the viability of introducing green bonds as a financing channel for RE projects may be questioned. While favourable government policies point to the possibility of kick-starting the market, support is seemingly implicit as these policies do not translate into explicit action.

Despite the current circumstances, this study offers a different opinion. This study

argues that there remains a potential for green bonds to play a role in RE financing in the region. The differentiation boils down to whether one considers green bonds to be an alternative to or complementary to conventional bonds. Taking an RE project developer's perspective, the two instruments seem to be competitive in nature, as going for either one negates the need to pursue the other. However, this study argues that for investors and policymakers, the two instruments are complementary and there is no dichotomy in developing both instruments in parallel (i.e., the creation of the green bond financing channel should not negate the value of creating a conventional bond financing channel and vice versa). This is because the value of having a green bond market for investors is in its ability to facilitate the identification of green projects that may align with the interests of the investors. The ability to identify such projects creates benefits to both conventional and ESG-mandated investors. For conventional investors, investment in green instruments allows them to possibly promote a healthy corporate image and help them improve their corporate profile. ESG-mandated investors would benefit from the increased visibility of green attributes to find investable projects that align with their mandates. The value of creating a green bond market for the policymaker is its potential to open up new financing channels to tap on new low-cost financing channels for RE projects, which serves multiple policy objectives.

This study believes that parallels could be drawn from creating an Islamic banking sector within the existing conventional banking sector in the region and creating a green bond market alongside a conventional bond market. Similar to the process of building the Islamic banking sector, ventures for building a green bond market could be done alongside the strengthening of the existing bond market infrastructure, without much additional cost to the policymakers. In addition, the creation of a green bonds market, when pursued with policies to build conventional bond markets, would serve to maximise the benefits to both markets, given the complementary nature of both instruments.

Looking at current market developments, there seems to be a parallel development of both the green bond market and the conventional fixed-income market. Moving forward, it is likely to see the green bond market in Asia developing into two separate markets with different characteristics: one targeting international investors, which are likely to be dominated by SSA issuers and denominated in international currencies; and the other targeting domestic investors, which are likely to be dominated

by corporate issuers issuing in domestic currencies. Corporate issuers seeking to tap the domestic market for RE capital investments are likely to remain a healthy mix of RE companies, conventional energy companies, and financial institutions, similar to the current situation.

5. Policy recommendations

Unlike the international experience with green bonds, the development of green bonds in Asia is likely to be more policy oriented. The international experience was very much motivated by market forces – the demand from the institutional investors that sourced supply via financial intermediaries such as the investment banks. The market then built on momentum with the active participation of various stakeholders. For the international green bond market, the market practically builds itself up.

The Asian investment scene has yet to achieve the level of financial and environmental sophistication of the international market. Thus, it is unlikely that the demand and supply dynamics that played in favour for green bonds will come into play in the Asian context within a short time frame. Furthermore, the current investment landscape does not provide an enabling environment for a green bond market to mature. Given the urgency of the required financing, the public sector would have to introduce policy incentives to nudge market players in the right direction.

This chapter's view is that for public policy to facilitate the creation of a green bond market for RE financing, it should entail a three-tiered approach (Table 12.3).

Table 12.3: Three-tiered Approach for Public Policies on Green Bonds

Create national standards and/or systems
Create incentives for green bond issuance
Create incentives for green bond investment

Source: Prepared by the author.

5.1. Create national standards/systems

One major shortcoming of the green bond instrument is its lack of robust definition of what constitutes green. The self-regulating nature of the international green bond market creates further implications, where a supranational entity should be responsible for regulating such an international market. The heterogeneity of geographical locations of green bond issuances creates further issues on establishing

mandatory standards and practices. Such shortcomings could be limited at a regional and/or national level through the creation of national standards and/or systems. In developing Asia, especially after the 1997 Asian financial crisis, financial regulation by government authorities is commonplace and is thus a widely accepted practice. Thus, the relevant financial regulators could easily take on a regulatory role for green bonds.

A potential case study for the creation of national guidelines for green projects is the Green Credit Guidelines issued by the PRC. The guidelines build on the Banking Industry Regulation and Administration Law in the PRC and aim to encourage investment in green areas by mandating banks to adopt a pro-green strategy. Although, the guidelines provide advice on what banks and/or financial institutions need to do to identify green projects and establish a Board of Directors to ultimately approve the appropriate risk mechanism, as well as the financial institutions built in to identify green projects. The regulation stops short of clearly defining what could be regarded as green projects. This study deems that regulations for green bonds should adopt a similar approach. Although it may be argued that investors would prefer a clear definition of what is green, this study's view is that due to the lack of scientific consensus and the ambiguity surrounding environmental issues, financial regulators may lack the capacity and expertise to lay down such regulations. Environmental-related government agencies constantly face similar controversies during the setting of environmental regulations and standards. As such, the financial regulator is not expected to have the relevant expertise to set such definitive standards.

This study therefore suggests the creation of a procedural approach for regulating the green bond sector. This would entail creating a set of consistent step-by-step guidelines to ensure both the financial and environmental integrity of the green bonds being issued. Such guidelines could be based on international standards such as the GBPs, or a nationally recognised scheme for identifying green investments, should that be available.

By adopting a procedural approach to regulating the sector, investor confidence in the institution would not be compromised as consistency is achieved. Furthermore, the administrative costs of such a regulation could largely be passed on to financial institutions, reducing the strain on public resources.

Care should be taken when creating such a procedural systems approach. Firstly,

the steps should not be onerous. An excessively onerous process may deter even the large SSA issuers. Thus, it is imperative that the process for green bond issuance be streamlined. As discussed in the earlier section, the market for Asian green bonds is likely to develop into two separate markets with different characteristics and different target investment groups. As such, a distinction may be made for the two groups. Secondly, the SSA green bonds are most likely investment grade bonds that target international investors. On the one hand, such bonds should require adherence to international best practice. On the other hand, corporate green bonds issued for domestic investors could abide by looser standards. Corporate issuances wishing to tap the international investor pool should also adhere to the more stringent standards. The justification of this proposal is twofold. Firstly, this conforms to existing investor expectations. International investors typically require higher standards for environmental claims. In contrast, consistent with the slower development of SRI in the region, regional and/or domestic investors seem to lack such awareness. Such an arrangement ensures that a minimum level of investor confidence is maintained, while not forcing restrictive covenants prematurely on SME issuers. Secondly, such a two-tiered approach could possibly align financial risk indicators with environmental risks. Issuers wishing to appeal to the international investor pool are likely to issue investment grade bonds. The investment grade label signals strong potential to meet financial obligations. By requiring stronger standards to be met for such bonds, the investment grade label could be extended to account for the ability to meet environmental obligations as well. This helps investors to familiarise with the instrument and also appeals to logic.

This chapter recommends that third-party environmental auditing be mandated for large issuers tapping the international market, while such restrictions be reduced to a recommendation for local investors. This way, international investor confidence is maintained, while not creating a prohibitively restrictive regime for local SMEs targeting the market. This chapter also suggests that other transparency and disclosure requirements be applied to all green bonds to maintain the integrity of the green bond label.

5.2. Create incentives for green bond issuance

The creation of a national standard and/or system puts the appropriate infrastructure in place to support the growth of a green bond market in the region. However, the existing market environment does not motivate potential bond issuers to tap the market. As such, additional incentives are needed to motivate them to enter the market. Policy support mechanisms should aim to increase awareness and interest in the green bond market, reduce additional costs associated with the issuance of green bonds, and facilitate the identification of potential investor demand. Some possible policy actions are described below.

5.2.1. Public messaging campaigns on the green bond instrument

Targeted public messaging campaigns could introduce potential issuers to the green bond instrument. Public sector agencies could also engage financial institutions to maximise the effect of public messaging campaigns. For example, government agencies could work with financial institutions to conduct seminars or roundtables discussing the use of green bonds for financing. Alternatively, the discussion could be expanded to cover climate change risk mitigation and other related topics that financiers may find interesting. Such activities not only raise awareness of the instrument to potential issuers but also create a setting for financiers and RE industry players to meet and exchange views. Such networking opportunities could indirectly facilitate more private finances flowing into the RE sector. Such activities also have the additional benefit of affecting investor demand.

Alternatively, public sector agencies can work with the investment community to map out specific and quantifiable investor demand in green bond instruments and publish related results in the public domain. Such publicly available information could spur discussions around the topic and ease concerns regarding illusory investor demand. Moreover, such studies could help policymakers grasp the investment outlook of regional investors, which will have a knock on effect on other relevant areas of policymaking.

5.2.2. Subsidising additional costs associated with green bond issuance

One major factor inhibiting participants to tap the market would be the high(er) transaction costs associated with green bond issuance. This is particularly restrictive for

corporate SME issuers. Thus, the public sector can play a role in subsidising the additional costs of issuing a green bond. It is not recommended that support beyond the additional costs be provided to ensure a level playing field for all potential issuers and the reasonable use of public finances.

5.2.3. Government-related issuances to kick-start the market

With lack of experience and expertise, additional costs related to the issuance of a green bond are likely to be high. Public sector agencies could then play a role in kick-starting the market by issuing green bonds themselves. As the number of issuances increase, related financial, environmental, and legal experiences are built up, thereby forming a pool of related expertise. As the pool of expertise deepens and a green bond-related services ecosystem forms, additional costs associated with green bond issuance will drop, thereby reducing the high transaction cost barrier for green bond issuances. In addition, public sector issuances would likely have to abide by stricter standards, thereby allowing expertise to develop based on the more stringent standards.

The experience of government-related green bond issuance could also raise interest from corporations as confidence in the instrument is built.

5.3. Create incentives for green bond investment

Investors also require a nudge to increase interest in the green instrument. Policymakers may use both carrot and stick methods to engage financial institutions.

5.3.1. Fiscal incentives

Policymakers may decide to use fiscal benefits, such as tax rebates or reduced capital and/or withholding tax, to increase the attractiveness of green bonds over other instruments. Such tax benefits increase the net returns for the investors, motivating them to take on green bond instruments. This is especially true if green bonds are perceived by investors to carry on more risk. It is important to note that green bond instruments do not carry any additional credit risk. The additional perceived risk arises due to investor uncertainty regarding the characteristics of the green instrument itself. Uncertainty may arise from two sources: the reputational risk due to uncertain green attributes; and the performance uncertainty arising due to lack of investor familiarity with the instruments.

Both uncertainties can be mitigated – the first, with the creation of national standards; and the second, with consistent and timely reporting. Similar to other fiscal incentives, the level of tax rebates is a crucial component and should be decided with care. An excessively high tax rebate may result in needless reduction in tax revenue, while a depressed tax rebate will not be able to incentivise the required action.

5.3.2. Establish green investment quotas

Alternatively, policymakers can establish green investment quotas on investors. Such a policy forcefully places a green mandate on investors, thereby ensuring a minimum demand threshold for green bonds. This ensures that there is consistent and quantifiable demand for green bond products, thereby allaying concerns from bond issuers on unsecured demand. However, this policy instrument also places an imaginary cap on the share of green bonds in the portfolio of investors as investors are seldom motivated to go beyond minimum mandates.

5.3.3. Long-term policy outlook

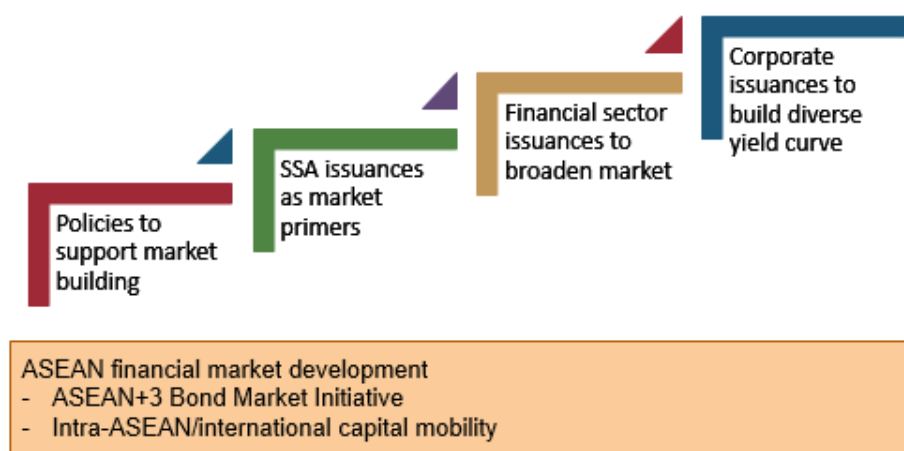
Should policymakers decide to implement the policies stated above to incentivise investor participation, it should be noted that a long-term policy outlook is needed before investors will act on such policies. Given that bond investments are typically medium- to long-term investments, short-term policies will not affect investor behaviour. This study recommends that a long-term policy outlook be provided to investors. For instance, the PRC has included the creation of a green bond market into its latest ten-year plan. Long-term policy commitments such as these are effective policy primers for investors.

5.4. Road map

Prior to large-scale issuances, favourable policies are required to create a suitable market environment for green bonds. Similar to the international development of the green bond market, SSAs should enter the market first, serving to gain experience and prime the market for future corporate issuances. As experience in green bonds builds confidence in the instrument, corporate issuers could enter the market. Financial institutions will be better placed to capitalise on this new instrument and thus enter the market after the SSAs. As financial institutions tapping the domestic investor pool achieve a degree of success, RE-based corporations can now enter the market, although other

corporations will be quick to catch up.

Figure 12.3: Road Map of ASEAN Financial Market Development



ASEAN = Association of Southeast Asian Nations; SSA = supranational, sub-sovereigns, and agencies.
Source: Prepared by the author.

Underscoring the green bond issuances would be the development of the regional financial market, particularly in the fixed-income space. Intra-ASEAN capital mobility is critical to allow regional participation as capital-rich economies are able to inject into renewable resource-rich neighbours.

Development in this manner allows for expertise and confidence to be built gradually with high-quality issuances from SSAs. As both investors and issuers gain experience in the instrument and become willing to take on more risk, high-yield corporate issuances would benefit from the established investor interest. A rush to promote corporate issuances may introduce controversy and increase investor distrust of the market. Currently, corporate green bond issuances are already facing increasing scrutiny over greenwashing claims.

6. Conclusions

This chapter has demonstrated that RE financing in Asia faces various challenges, some of which may be addressed by green bonds. However, most of the challenges may be addressed with conventional fixed-income instruments. Taking into account the internal and external challenges in building a green bond market in the region, one might argue that the creation of such a market is redundant. Despite that, this chapter argues that the green bond market and conventional bond market are complementary in nature.

As such, the strengthening and/or creation of both markets in parallel will likely reap maximum benefits. Policy instruments to facilitate green bond growth and a possible road map to development are also proposed.

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