

# GREEN BONDS IN PUBLIC-PRIVATE PARTNERSHIPS

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## Abstract

The 2008 global financial crisis not only marked a turning point in regulation and practices for capital market participants but it also changed the behaviour of financial players. Investors and financial institutions are currently more concerned about where they allocate their funds, which has proven to be a challenge for public-private partnerships (PPPs) in need of debt financing to develop green infrastructure projects.

This paper proposes green project bonds as an alternative way to finance “green” PPPs by engaging capital markets. For procurers to effectively include green bonds in their current tendering activities, they need to understand both the opportunities and underlying risks stemming from the inclusion of this type of securities as a financing tool. In order to prompt higher investments into green projects, public procurers will have to implement a series of changes in their current practices that will guarantee fair competition and lower costs.

**Keywords:** Public-Private Partnerships, Green Bonds, Project Finance, Tenders, Risk Sharing

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# THE VALUE OF GREEN BONDS IN TRIGGERING SUSTAINABLE PUBLIC-PRIVATE PARTNERSHIPS (PPPs)



## 1.0 The Value of Green Bonds in Triggering Sustainable Public–Private Partnerships (PPPs)

Today's financial markets represent a perfect environment for the increase of green bond financing for large-scale infrastructure projects. While the green bond concept itself is not a novelty in the international landscape, the appetite for this type of security seems to be increasing. In fact, 2014 is expected to set a record in both the number of issues and the overall capital raised (Lee, Myles, Thomas, Varriale, & Young, 2014). Green bonds have been previously issued in countries like Canada, the United States, England and South Africa, and companies are expected to make pioneering issuances in the upcoming months in a number of emerging countries<sup>1</sup> (Global Capital, 2014). Therefore, it is worthwhile to explore the causes of this increase, especially when international financial markets have traditionally seen these bonds as burdensome due to the lack of benchmark indices for evaluating performance and limited liquidity.

The above-mentioned situation comes after a challenging period for fixed-income instruments that started in the aftermath of the 2008 global financial crisis. This worldwide debacle not only marked a turning point in regulation and practices for market participants but it also changed the behaviour of financial players. In particular, investors and financial institutions are now more concerned about where they allocate their funds, as stricter capital requirements are being put in place and new regulatory measures, like the introduction of the leverage ratio in the Basel III framework, restrict excessive debt exposure. In consequence, PPPs—in particular those implementing innovative technologies with unproven environmental performance and uncertain financial returns—have been struggling to find debt financing.

In contrast, some innovative initiatives have been fostering the development of a deeper green bond market. For instance, The Climate Bonds Initiative (CBI) introduced international standards serving as a baseline to recognize and label green infrastructure projects. The methodology is built on clearly defined solar, wind, green building and transport thresholds. It also establishes methodologies for efficiently measuring the results achieved from their implementation (CBI, 2014b). Once a project has been certified as green, the bonds can receive the “green” label. These types of bonds are no different from any other regular project bond, sharing the same financial features but lacking the liquidity and benchmarks other, more mainstream, fixed-income instruments enjoy in capital markets.

The Environmental, Social and Governance (ESG) Business Case Evaluator is an alternative tool developed to recognize green and socially responsible investments. (Heartland, 2014) Planned to be implemented by the Canadian Impact Infrastructure Exchange (CIIX), it serves as an analytical device for institutional investors to value the environmental, social and governance benefits generated from any particular infrastructure project. This in turn will improve investors' willingness to channel resources into these ventures, as clearly defined standards will create confidence in the green credentials of the asset. Tools like this are crucial to increasing the funding of green projects and creating awareness in capital markets about the additional benefits offered by green bonds.

This paper proposes green project bonds as an alternative way to finance green public-private partnerships (PPPs) by engaging capital markets. In most of the world, PPPs still rely heavily on bank lending to meet their financing needs. However, in the light of Basel III and the ensuing EU Directives (and similar legislation elsewhere), the underlying volatility of banks' lending appetite can make the cost of financing prohibitive, especially during market stress and extensive bank deleveraging.

Green bonds have the potential to bridge this funding gap. Investors are attracted by projects with a stable revenue stream. In addition, through green bonds they can get exposure to sectors that would be difficult to achieve through mainstream financial instruments. However, for green PPP projects to be bankable in the first place, legal, political, commercial and financial risks need to be appropriately allocated between public and private parties. Moreover, the deal structure has to be based on stable revenue streams that extend over 10 to 30 years. Structuring PPPs is therefore a particularly challenging task since future revenue streams are notoriously difficult to forecast (the variables and uncertainties are vast). This makes the need and the potential for green bonds particularly valuable for financing infrastructure.

<sup>1</sup> Energia Eolica, a private sector clean energy generator in Peru has announced the first green bond issuance in Latin America to be placed in December 2014.

The paper opens with the key characteristics of bond financing which include (but are not limited to) maturity risks, credit quality, transaction size, cost of carry, delivery and revenue stream uncertainties. The discussion will then move to examining the procurement and PPP governance structures that need to be in place for bankable and profitable PPPs. This includes options for public authorities to mention the possibility and acceptability of bond financing solutions at the launch of the preliminary request for proposals. The paper will also cover options for bank or bond financing to be further examined when shortlisted suppliers are invited to bid.

# FINANCING PPPs



## 2.0 Financing PPPs

PPPs bring together the skills and resources of both the public and private sectors, and distributes the share of risks and responsibilities among the stakeholders. This enables governments to derive the gains from the expertise of the private sector, and, most importantly, opens up new sources of funds for the delivery of public services which otherwise could not have been funded due to shortage of capital or funds.

### 2.1 Common Methods of Financing PPPs

Some of the most common financing/funding mechanisms for PPPs and infrastructure projects are discussed below (World Bank, 2014b).

#### Government Funding

Traditionally, governments have funded some or all of the capital investment in a project and brought in the private sector to achieve efficiency and value for money. This generally occurs when a government sources the civil works for the project through traditional procurement and then brings in a private operator to operate and maintain the facilities or provide the service. Similarly, in build-operate-transfer and design-build-operate projects, the operator is paid a lump sum for completed stages of construction and then receives an operating fee to cover operation and maintenance of the project.

#### Corporate or On-Balance Sheet Finance

In certain cases, the private participant may finance some of the capital investment for the project and raise the required investment through corporate financing—which involves getting finance for the project based on the balance sheet of the private operator. This mechanism is generally deployed when the cost of the financing is not significant or when the private participant is large enough to fund the project from its own balance sheet.

#### Project Finance

Project financing normally takes the form of limited recourse lending to a specially created project vehicle (special purpose vehicle or “SPV”) that has the right to carry out the construction and operation of the project. The SPV will be dependent on revenue streams from the contractual arrangements and/or from tariffs from end-users that will only commence once construction has been completed and the project is in operation. It is therefore a risky enterprise, and before they agree to provide financing to the project the lenders will want to carry out extensive due diligence on the potential viability of the project and a detailed review of whether project risk allocation protects the project company sufficiently.

### 2.2 Common Sources of Financing for PPPs

A PPP project will involve financing from various sources, in some combination of equity and debt. This section looks at some of the main sources of financing below (World Bank, 2014c).

#### Equity Contributions

Project sponsors are the investors in the project company that are likely to be providing expertise and some of the services to the project company (such as construction or operations services). Sponsor funding is generally through equity contributions in the project company through share capital and other shareholder funds. Equity holds the lowest priority of the funding contributions in a project and bears the highest risk: it therefore potentially receives the highest returns. Equity contributors in project-financed transactions might include the project participants, local investors, the host government, the grantor, other interested governments, institutional investors and bilateral or multilateral organizations.

### **Debt Contributions**

Debt can be obtained from many sources, including commercial lenders, institutional investors, export credit agencies, bilateral or multilateral organizations, bondholders and sometimes the host country government. Debt contributions have the highest priority among the invested funds and the repayment of debt is generally tied to a fixed or floating rate of interest and pre-agreed periodic payments. The source and type of debt will have an important influence on the nature of the debt provided. Commercial banks are desirable as long term debt providers, given their flexibility in renegotiating loans and reacting to new or unforeseen conditions. This flexibility may not be available, for example, from bondholders. Another source of project debt is equipment suppliers. Suppliers will provide financing in order to sell their equipment, and may provide more aggressive terms accordingly.

### **Bank Guarantees/Letters of Credit/Performance Guarantees**

Bank guarantees form an important part of project financing, allowing counter-parties immediate access to payment without the cost of locking up cash. Such guarantees may be “on demand” or only payable once the default is proven in court, adjudication or arbitration. A bank issuing a guarantee, letter of credit or performance bond will fix the amount and obtain a counter indemnity from the customer, possibly secured against fixed or floating charges or cash deposits. The issuer will be entitled to convert the counter indemnity payments into loans or demand immediate repayment.

### **Bond/Capital Markets financing**

Bond financing allows the borrower to access debt directly from individuals and institutions, rather than using commercial lenders as intermediaries. The issuer (the borrower) sells the bonds to the investors. Rating agencies will assess the riskiness of the project and assign a credit rating to the bonds. This will signal to bond purchasers the attractiveness of the investment and the price they should pay. Bond financing generally provides lower borrowing costs, if the credit rating for the project is sufficiently strong. Rating agencies may be consulted when structuring the project to maximize its credit rating. Bond financing provides a number of benefits to projects, including lower interest rates, longer maturity (which can be very helpful given the duration of most of these projects) and more liquidity.

### **Mezzanine/Subordinated Contributions**

Located somewhere between equity and debt, mezzanine contributions are accorded lower priority than debt but higher priority than equity. Use of mezzanine contributions (which can also be characterized as quasi equity) allows the project company to maintain a greater debt-to-equity ratio in the project. Mezzanine financing for project-financed transactions can be obtained from shareholders, commercial lenders, institutional investors and bilateral and multilateral organizations. Mezzanine contributors will be compensated for the added risk they take either by receiving higher interest rates on loans than the senior debt contributors and/or by receiving partial participation in the project profits or the capital gains achieved by project equity.

## **2.3 The Role of Multilateral Development Banks in PPP/Infrastructure Financing**

The global financial crisis of 2008 resulted in strains on traditional sources for financing for PPPs, and for infrastructure financing in particular. While government budgets have been overstretched, the crisis and resulting tighter regulatory requirements also resulted in a constrained ability of banks—which have conventionally played a leading role in structured finance—to provide long-term financing. The crisis also reduced their risk tolerance and shortened their lending horizon. This, together with the need for sustainable and balanced global growth, calls for greater attention to policies and instruments that can lower risk and strengthen the confidence of investors over a long-term horizon.

To attract private finance sometimes requires closing the financial viability gap (that is, between costs and expected revenues), using public resources complemented by legislative and institutional improvements to catalyze private financing.

Official sector entities such as multilateral development banks (MDBs) can play a useful catalytic role, helping to share risk with private investors to enhance the viability of investments. MDBs can help their clients attract additional financing from the private sector through a combination of the following: strong financial position; preferred creditor status; technical expertise; prudent risk-management policies; credible application of well-understood standards in project design, execution, and corporate governance; a long-term perspective; and cross-country experience (Chelsky Morel, & Kabir, 2013).

To this end, Buitter and Fries (2002) suggest a useful framework identifying several types of potential “additionality” that can be achieved through the MDBs for financing PPPs and infrastructure. According to their framework, MDBs can contribute their own funding and help build the confidence necessary to attract private sector funds through a diverse range of financing and mobilization instruments. The additionalities that can be achieved by the MDBs for attracting commercial funding are:

- a) *Financial additionality*—Relates directly to the capacity of MDBs to contribute their own funding and help build the necessary confidence to attract commercial funding through a wide range of financing and mobilization instruments and degree of engagement such as investment/project loans, equity investments and risk-mitigation guarantees.
- b) *Design additionality*—This contribution derives from the technical expertise that MDBs can bring to projects to improve their “bankability” or attractiveness to private sector investors, and can occur through promoting efficiency, transparency, and adherence to accepted standards in project design, including environmental standards. By bringing enhanced transparency, sound practices, and internationally accepted standards to projects, these interventions address certain information asymmetries faced by potential investors, helping to reduce risk and attract investment.
- c) *Policy additionality*—Can be derived from the support that MDBs provide to improve the policy and regulatory environment for investment and to mitigate the risk of significant policy reversals. MDB policy-based lending can contribute to enhancement of the environment for productive investment at the macro or sectoral level, thereby helping to attract additional financing, particularly from the private sector.
- d) *Demonstration additionality*—Refers to the potential for projects supported by official sector entities to illustrate the possibilities of success.

The MDBs provide an opportunity to develop and deploy instruments to catalyze the private finance sector and crowd in investments into green projects that cannot be solely funded by governments and/or other traditional means of financing.



# PROJECT BONDS

## 3.0 Project Bonds

### 3.1 The Case for Project Bonds

The stricter regulatory and capital requirements put in place since the 2008 financial crisis (such as Basel III) have limited banks' appetite to finance long-term infrastructure projects. As a result, numerous, otherwise viable projects could not be implemented. Even projects that had access to bank financing experienced a decline in their bankability due to unfavourable lending terms. The need for alternative means of financing has become even more pressing in recent years as governments realized the potential of infrastructure investment as a way to boost economic growth, especially in Europe's current recessionary economic environment.

At the same time, institutional investors, including pension funds and sovereign wealth funds, have recognized the appeal of infrastructure as a new asset class providing them with a long-term investment solution to match their long-term liabilities and also a unique way to diversify their portfolios from mainstream capital markets. Nasser Malik, head of global structured debt at Citigroup, told Bloomberg in 2013 that "there is a rising demand on the part of U.S. insurance companies, money managers and pension funds for quality infrastructure and project finance projects" (Bakewell, 2013).

However, even these sophisticated investors are facing difficulties accessing this market due to the limited investment opportunities and financial instruments available. Project bonds, a more easily accessible and tradable security, can bridge the gap between capital markets and infrastructure projects. Through bond financing, issuers can achieve lower interest rates and longer maturities as opposed to bank financing. For investors, the appeal of project bonds is further enhanced by the current environment of weak returns on treasury and corporate bonds. As Mike Wilkins, senior project finance analyst from Standard & Poor's, put it, "compared to yields on sovereign and corporate debt and volatile equity markets, infrastructure bonds can appear very attractive" (Thompson, 2013). Especially at the early stages, public sector support is essential to make project bonds more prevailing in financing infrastructure. While project bonds have a large untapped potential, challenges still exist that need to be overcome before their use can be more widespread (see Section 3.2, "Underlying Risks in Bond Financing" for more information).

#### Main Characteristics

Project bonds differ in many ways from more mainstream ways of financing infrastructure (such as bank loans). These differences do not necessarily make them a riskier financing solution (the notable underlying risks will be discussed later), but they suggest that procurers need to ensure that they have the required in-house expertise to understand the specificities of bond financing and are prepared to meet the requirements of capital market involvement.

- **Size:** The size of the project largely determines whether project bonds can be considered at all as a means of financing. In general, a large issue size—in excess of EUR 100 million (European PPP Expertise Centre [EPEC], 2012)—is a requirement due to the inherent complexity of the structure but also to make the issue more attractive for investors. Very large issues can form the basis of public offerings reaching out to a wider range of investors and increasing liquidity. Otherwise, a private placement could also be an option involving only a few investors (or even one).
- **Investors:** Institutional investors such as insurance companies, pension and sovereign funds are the main buyers of project bonds having the appetite and expertise needed for such long-term investments.
- **Costs:** The costs involved in the preparation and implementation of bond financing are normally higher than that of bank financing. The additional costs originate from legal fees associated with meeting various regulatory requirements, preparing placement documentation and acquiring the credit rating for the issue. Higher costs are another reason why a larger deal size is crucial for bond financing.

- **Bankability:** Not all infrastructure projects are financially bankable with appealing returns, but in some cases they serve an important social and/or environmental purpose financed and maintained with government funding. On the other hand, projects using bond financing have to be financially viable with a stable revenue stream that attracts the interest of capital market investors. If the project would otherwise fail to fulfill these criteria, it can also be achieved through credit enhancements.
- **Liquidity:** Project bonds are generally tradable on secondary markets, which enable investors to exit their positions before maturity. In the case of bank financing, the loan originator has no or very limited possibility (for example through securitization) to take the loan off its balance sheet. Liquidity is an important advantage of bond financing, especially due to the long-term nature of infrastructure projects.
- **Time:** Bond financing takes longer to implement than arranging financing through a bank. This is mainly due to the strict requirements of issuing a tradable security to the capital markets engaging regulators, credit rating agencies, underwriters and gauging investor interest and pricing the offer accordingly.

## 3.2 Underlying Risks in Bond Financing

While project bonds present several benefits and advantages, the inherent challenges should nevertheless be considered when choosing this route of financing infrastructure. Project bonds are seen by some investors as one of the riskiest type of bond instruments. This assessment is largely influenced by the fact that particular risks exist in this asset class that the majority of capital market investors do not have the necessary expertise to evaluate and manage accordingly. Making investment decisions based solely on rating/yield without analyzing the underlying project might not be a prudent approach to investing in this asset class.

The procuring government authority needs to have the necessary expertise to adequately evaluate project bonds proposals, taking into consideration some of the unique risks in this type of structure. Also, as Katrina Haley, managing director of structured bonds at HSBC, points out, “Before taking the capital markets route, the issuer has to be confident that when the project gets to the stage where it needs finance, the institutional investor base is there to provide it” (quoted in Thompson, 2013). The following points need extra attention in case of project bond financing.

**Construction Risk:** Construction risks include cost overruns, longer than planned construction time, failure of the project to meet specific requirements and non-compliance with standards. The main causes could be aggressive budgeting and scheduling, bureaucracy and lack of sufficient expertise of the contractor, among others. Investors require stringent security measures and guarantees to minimize construction risk. Charles Halam-Andres, managing director of Scotia Capital, highlighted that for example solar and biomass projects in Canada have not been financing project bonds due to the market’s discomfort with their construction risk (quoted in Mclaughlin, 2011). While construction risks can be contained with the appropriate safeguards in place, the involvement of more risk-averse investors can be encouraged by having two bond issues: one in the pre-construction phase with a short maturity and another one post-construction maturing at the end of the project. Investors unwilling to take on construction risk would invest only in the second issue.

Also, through a hybrid financing structure using both bank and bond financing at different stages of the project life cycle, construction risk can be excluded from the bond issue. In this case a bank loan covers the pre-construction financing needs of the project, thus taking advantage of the improved lending conditions and appetite of banks to source short-term loans. Post-construction financing is accomplished through a project bond issue with a lower yield compared to project bonds with construction uncertainties priced in.

**Placement risk:** Similarly to other fixed-income new issues, the final price of project bonds is only determined at issuance. Due to the inherent volatility in capital markets, the price investors are willing to pay for an issue on one particular day might change notably the next, resulting in pricing uncertainty during the financing process. As the procuring authority normally bears this risk, the involvement of financial experts at an early stage is strongly advised. While for bank financing the pricing risk is only created by the changes in the relevant reference rate, with

project bonds any changes in both the reference rate and risk spread are a source of risk. With firm commitment, underwriting this risk can be transferred to the underwriters, in which case they would offer to purchase the entire issue size. Investment banks are normally hesitant to offer this service unless the deal is heavily oversubscribed confirming significant investor interest.

**Negative carry:** Through the sale of bonds at issuance procurers immediately receive the funding for the full life cycle of the project. As the construction process can last an extended amount of time this funding is used only gradually, possibly stretching over several years. However, the interest payments on the bonds are due for the entire issue size from day one. Procurers invest the excess proceeds in order to partially cover their liabilities to investors, but the rate they receive is usually lower than what they have to pay on the bonds. This discrepancy is called the negative carry, affecting the bankability of the entire project. This has been considered to be a major barrier preventing project bond financing from becoming more widespread. However, there have been several recent examples of how bond financing can be structured in a way to avoid the cost of carry. The solution can be a delayed drawdown through forward purchase bonds like the one implemented by the Scots Road Partnership Finance project. In this case the issuer sells the bonds, and buys them back at a fixed interest rate, before reselling them at that same fixed interest rate in portions throughout the project's lifetime (Young & IFLR, 2014).

### 3.3 Credit Enhancements

Institutional investors have been predominantly interested in project bonds with at least a credit rating of "A." The mandate of these investors largely defines the required credit rating and risk/return characteristics of their investments. Long-term bonds with a rating below "A" might not be suitable for their portfolio objectives. This is especially true for European insurance companies, which under Solvency II have a much larger capital requirement for securities with ratings below "A" (Matsuda & Thompson 2013). On the other hand, some of these long-term infrastructure projects, particularly green infrastructure that require new and/or untested technologies, might struggle to get an "A" credit rating without credit enhancements in place. The same applies to PPP projects, where typical ratings are around "BB+" / "BBB-", below the ideal "A" range (EPEC, 2012). High credit ratings are preferred during the initial stages of the life cycle of a new asset class, as this way investors are more comfortable taking on the additional uncertainties surrounding new products. Also, high investment-grade ratings will allow these project bonds, and particularly green project bonds, to be regarded and categorized by investors as high-quality papers. As the asset class matures, expanding the range of products with a wider distribution of ratings could be explored if justified by investor demand.

Before the 2008 financial crisis, issuers frequently used bond insurance provided by "AAA"- rated monoline insurance companies to enhance the rating of their fixed-income issues. During the crisis, monoliners suffered significant losses due to their large exposure to securities linked to U.S. mortgages. This resulted in a series of downgrades, which eventually brought the credit ratings of monoliners below those of the insured bonds and led to the collapse of these insurers. Since then, the need for some form of credit enhancement has been evident. Some experts believe that the inherent risks in infrastructure are too big for investors to bear without credit enhancement similar to "AAA" monoline guarantees (Bowman, 2013). There have been some public and private initiatives to fill this gap. Following are the more prominent and current examples.

**The Europe 2020 Project Bond Initiative (PBI):** It is a joint initiative by the European Investment Bank and the European Commission. Its purpose is to stimulate capital market financing of large infrastructure projects, mostly PPPs, in the energy, transport, information and communication technology sectors. PBI provides partial credit enhancement by separating the bond issue into a senior and a subordinated tranche. Through guaranteeing the subordinated tranche, which could be in the form of a loan or contingent credit line, the credit rating of the project could be increased to "A"/"AA", which would make investors comfortable to hold the bond over the long term. Currently, the initiative is in its pilot phase expected to provide credit enhancement for nine projects in six different countries including the A11 Belgian motorway link and the Castor underground gas storage project in Spain (European Investment Bank [EIB], 2014).

Hadrian's Wall Capital (HWC): This is a market-based solution to enhance project bond financing of greenfield and brownfield PPPs. The debt is divided into an "A" tranche (financed through the bond market) and a "B" tranche (financed through the loan market). The "B" tranche is held in the fund of Aviva Life & Pensions, making it a first loss cushion. Normally the "A" tranche represents 75 per cent of the financing, the "B" tranche 10 per cent and the remaining 15 per cent is the equity. The project rating is expected to increase to at least "BBB+" (Matsuda & Thompson, 2013).

### 3.4 Green Project Bond Issues

The potential of project bonds for the financing of green infrastructure has been recognized through the increasing number of new issues worldwide. As Thomas (2014) suggests, deals like these are "the accumulation of project finance, environmental, and investor consciousness trends taking place globally." Below are a few of the more recent examples of green project bonds.

**North Island Hospitals Project—Tandem Health Partners:** This was the first green bond issue to finance a PPP in North America and the first to finance infrastructure in Canada. The issue size was CAD\$231.5 million with a maturity of 32 years with a credit rating of "AAA" (as annual service payments are done by the province of British Columbia). It was heavily oversubscribed due to strong investor interest in the deal. A wide range of investors were represented, from insurance companies, fund managers and other usual buyers of PPP project bonds. The project includes designing, building and maintaining of two "green" hospitals with LEED gold certification and strict energy and greenhouse gas targets (B.C. Ministry of Finance, 2014).

**Eglinton Crosstown—Ontario:** Green municipal bonds were issued by Ontario to provide financing to transit and other environmentally friendly infrastructure projects, making it the first government in Canada to issue green bonds. The issue size was CAD\$500 million heavily oversubscribed (orders for CAD\$2.4 billion) by investors worldwide. The maturity of the bond was four years (Ontario Ministry of Finance, 2014).

**Luz del Norte project—OPIC:** The Overseas Private Investment Corporation (OPIC) recently issued its first so-called "green guarantees" (i.e., green project bonds) financing the construction of a photovoltaic power plant in Chile (CBI, 2014c). Once finished, it will be the biggest of its kind in Latin America. The issue size was US\$47.3 million with a maturity of 15 years. The bonds satisfy the Green Bond Principles developed at the beginning of the year (White House Press, 2014).

# DESIGNING PPP CONTRACTS



## 4.0 Designing PPP Contracts

### 4.1 Criteria for Bankable and Successful PPP Projects

Due to their complexity and lengthy implementation, there are several things that may go wrong in the development of infrastructure projects via PPPs. If the green component is added into the PPP-based infrastructure recipe, the outcome is a riskier scenario, with technology-performance risks and increased costs usually arising from the use of untested equipment and design processes. Since the establishment of the first PPPs in the early 1990s, a number of failed attempts in setting up PPPs have taught investors and borrowers to recognize potential threats and consequently to develop better project-assessment methods underlying their funding decisions.

Governments and private companies involved in procurement have learned as well from previous mistakes. As a result of better legal, technical and financial advice and the use of standardized documents, procedures and incentives, they now structure PPPs delivering higher quality levels in public services. Nonetheless, as mentioned before, this has not kept banks from reducing their involvement in PPPs, especially after the last financial debacle that brought increased capital measures to improve the resilience of licensed financial institutions (LFIs). In particular, Basel III is deemed to be a barrier for banks' engagement in PPP funding, as they are confronted by new liquidity and stability ratios that make long-term investments undesirable when trying to meet capital adequacy ratios (Reviglio, 2012).

On practical grounds, the impact of the reduction in the amount of financing provided by banks is still inconclusive. At least in Europe, data published by EPEC showed that in 2013 PPPs achieved bank funding of EUR16.3 billion, a 27 per cent increase compared with 2012, when PPPs raised EUR12.8 billion in financing (EPEC, 2013). Although the increase was significant, it did not reach the EUR18 billion thresholds seen in 2010 and 2011, not to mention pre-crisis levels. From the demand side, institutional investors seem to be the best candidates to fill the gap left by LFIs, as their investment profile is naturally matched with PPP-led infrastructure projects. Insurance companies and pension funds usually have a long-term investment horizon and are willing to diversify their exposure with relatively low-risk assets. These are ideal needs to be fulfilled with the cash-flow stability and long tenure of green bonds issued by secure contractors.

Besides the immediate prestige and market recognition obtained from investing in resource-efficient projects, green infrastructure assets have shown to have additional value for insurance companies, especially when costs for damages caused by extreme weather conditions have rocketed in recent years. The insurance industry reports that claims linked to natural disasters increased substantially, from US\$15 billion in the period 1980–1989 to US\$40 billion in the decade 2000–2009. The situation seems now to have been exacerbated, with recently issued data revealing insurers paid more than US\$70 billion in climate change damages between 2010 and 2013 (Allianz, 2013). Therefore, the need to increase funds to green projects is obvious, and insurance companies are eager to fund projects with balanced risk-sharing structures and high probabilities of repayment in order to achieve future savings on their claims.

In day-to-day project finance jargon, a project is said to be “bankable” when risks have been properly allocated according to each side's capacities and as a result of a judicious negotiating process (World Bank, 2014b). A PPP project usually faces different types of risk, each with the potential of affecting the project in a different degree. A line should be drawn between those risks that could be minimized by implementing active strategies (endogenous) and those risks factors that may jeopardize the project's success and cannot be controlled by the partnership (exogenous) (Bin, Akintola, Edwards, & Castle, 2005). In general, endogenous risks have been minimized when government steps in and provides financial support to assure bidder engagement and increased chances of funding. This may come either through funded tools (like subsidies, grants, equity or debt) or indirect mechanisms (such as guarantees, insurance, or indemnities). In contrast, exogenous risks cannot be circumvented—minimizing their impact will require risk-management strategies as well as efficient risk-sharing mechanisms to efficiently allocate these risks among the parties involved in the project.

When it comes to efficient risk sharing, the ideal situation requires (contrary to the belief that private entities should absorb all project risks) a significant government capital stake in the project to guarantee equitable risk distribution and both parties' commitment towards a project's accomplishment. There is no silver bullet defining the extent of government involvement across risks: the answer will depend on which side is the most prepared to avert a particular adverse scenario, in case it is confronted (OECD, 2008). As a starting point to achieve adequate risk sharing, the following table illustrates the reader with the main risks borne by parties involved in PPPs:

**TABLE 1: CATEGORIZATION OF RISKS FACED BY PPPS**

Type of Risk	Commercial	Supply	<ul style="list-style-type: none"> <li>- <b>Force Majeure risk</b></li> <li>- <b>Credit risk:</b> Which side is facing this risk?</li> <li>- <b>Project risk:</b> design and construction, operation, maintenance, output quality, contractor failure, interest rate, security risk, technology risk, etc.</li> </ul>
		Demand	<ul style="list-style-type: none"> <li>- <b>Fee structure:</b> Received from government or final user?</li> <li>- <b>Demand:</b> Guaranteed or customer based?</li> </ul>
	Macroeconomic		<ul style="list-style-type: none"> <li>- Aggregate demand risk</li> <li>- Interest rate risk</li> <li>- Liquidity risk</li> <li>- Exchange rate risk</li> </ul>
	Political		<ul style="list-style-type: none"> <li>- Different investment preferences of alternating governments</li> <li>- Expansionary anti-crises policies raising the cost of financing</li> <li>- Risk of expropriation</li> </ul>

Source: Burger, Tyson, Karpowicz, & Delgado Coelho (2009).

From a project bond perspective, to be bankable also means the ability to raise funds, regardless of their nature, without any major issues and in a timely and cost-effective manner. In other words, it requires that the bond issuer hold a credit rating high enough to be considered “investible” in capital markets. When it comes to investment strategy, one of the aspects institutional investors usually look at is the credit rating levels provided by credit rating agencies. This information is a judgment of the private company's probability of repayment when the security is issued against the contractor's balance sheet, or the Special Purpose Vehicle (SPV) when the bond repayment is linked to revenues generated from the project assets.

Unfortunately, history shows green project bonds only occasionally reach investment-grade rating levels (BBB-/Baa3 or higher) and the majority of them fall under the unrated credit rating umbrella (BBB-/Baa3 or lower). Research published by Standard and Poor's supports this statement, as data from the last 20 years shows 67 per cent of the total projects assessed rated lower than investment grade (Burnett, 2014). To address this situation, some experts suggest the involvement of development banks to boost credit ratings and generate liquidity. The Green Investment Bank in the United Kingdom is a good example of this, acting as a credit enhancer and liquidity provider through temporary holdings of lower equity tranches and performing pilot operations to increase the market's depth (Caldecott, 2011). Existing alternative credit enhancement tools like insurance and monolines were discussed as well in previous sections and have traditionally constituted an efficient mechanism to tackle this issue.

## 4.2 How to Include Project Bonds in Pre-Tender and Contract Design Phases?

Public authorities face different challenges when trying to include bond financing in their infrastructure procurement activities. When it comes to assessing and defining the right financing mechanism, the process of including bonds is paramount, specifically in the pre-tender and selection phases of a procurement process. Eventually, the decision to choose bonds over alternative financing tools, such as bank and government loans, will require active participation from bidders and the inclusion of combined bank loan and bond proposals in the pre-tender phase (EPEC, 2013).

Bond financing will be ruled by the contracting law in force in the country where the project will be developed, and the guidelines followed to award contracts by those procurement authorities. In general, as happens in most countries, contracts are awarded based on costs, and usually the most cost-effective bid will be chosen as the most economically advantageous. Nonetheless, to understand how funding costs can vary between bank loans and project bonds it will be necessary to discuss the underlying diligence behind each tool.

**Including a bank loan:** Occasionally, bidders do not have the financial strength to fund the project on their own and appeal to commercial banks to secure financing. In these cases, they must include a reliable loan commitment in their project proposals, as part of their funding strategy. When they accept to finance a certain project, financial institutions define the credit attributes and the conditions for accessing the loan by issuing a fund commitment sheet. As the loan is going to be disbursed after the contract has been awarded, banks usually face an opportunity cost since they need to set aside the required funds for periods of six to twelve months. This missed opportunity to allocate these resources into longer-term investments is represented in increased funding costs for bidders, as banks will translate these risks into higher interest rates and strict conditions for loan disbursement.

**Structuring a bond issuance:** Unlike bank financing, using bonds to finance projects has the benefit of higher liquidity and lower costs with a credit rating assigned to larger issues. In addition, bond issuance is beneficial to achieve longer debt tenures compared to bank loans, in particular as part of a private placement to institutional investors like insurance and investment funds. The downside of bond offerings is represented in the structuring costs and stringent requirements to comply with international markets standards.

As a first step to initiate an offering, the bidder will appoint a leading investment bank (or a syndicate of banks) to structure and to price the bond. The underwriter usually only commits itself to a “best efforts” agreement, in which case it does not provide any guarantees that the full issue size will be sold to investors. Besides the obligatory contractual duties required for supporting the issuance, the mandate letter issued by the investment bank will include market deliberations such as the target investors, marketing strategy, target rating, target price, suggested guarantee schemes, fee structures and listing locations.

From the PPP perspective, the main challenge of bond financing stems from the fact that SPVs are created as entities solely for building and management tasks and in consequence lack assets and a financial track record. This particular characteristic makes it necessary for sponsors to back up the bond issuance by using their financial capacity in order to attract investors. When the parties involved in the PPP lack financial credibility, public international finance institutions like the World Bank usually support the issuance with guarantee schemes.

### 4.3 The Efficient Way to Embed Project Bonds With Infrastructure PPPs

**Aspects suggested to procuring authorities:** When opening and tendering project proposals, public authorities should be aware of the following considerations, as they may hinder some bidders from participating in the tendering process and limit the competitive potential of procurement activities:

- *Bidders’ potential to issue bonds:* Depending on their size, experience and banking relationships, some bidders may find themselves in a disadvantageous position to attract investment banks and deal with the required conditions for the bond’s placement. Therefore, contracting authorities should clearly specify the weight and importance of bond financing in their initial tender conditions and provide bidders with information to help them decide when responding to a call.
- *Bond issuance usually takes more time than bank lending:* The structure and requirements of bond placement involve assessment and cooperation from different parties (e.g., rating agencies, government, investment bank, bidders) instead of a bilateral negotiation held by the bidder and the financial institution when bank loans are used to fund the project. This fact increases the time needed to get financing when bonds are used, and accordingly requires that public authorities evaluate the suitability of this tool for the project’s needs.

- *Pricing volatility*: Directly related to the bond time schedules, using this type of financing mechanism creates a pricing risk derived from the changes the bond pricing bears from the moment the bid is accepted to the time the bond issuance is performed. Procuring authorities should be aware of this risk and adopt measures to address it..
- *Specific financing mechanisms for each project phase*: As projects go through different phases, each of them with its own characteristics and risk structure, an appropriate financing mix would require a proper use of the benefits offered by public authorities, banks and investors to leverage the risk and return profile of the venture. To specifically address this, the Bank of International Settlements (BIS) has proposed a methodology for procurers to define the adequate financing mix during the planning, construction and operational phases of an infrastructure project (BIS, 2014).

# GREEN CAPITAL MARKETS



## 5.0 Green Capital Markets

According to estimates from the International Energy Agency (IEA), the world requires the investment of an additional US\$36 trillion in clean energy through 2050—or an average of \$1 trillion per year over the next 36 years to ensure that we meet the 2010 agreement to limit the increase in global temperature of 2 degrees Celsius above pre-industrial levels to avoid the worst of climate change impacts. This new investment will not only cut down greenhouse gas emissions in half by 2050, but will also provide benefits including significant returns in the form of reduced fuel costs (total fuel savings estimated at \$100 trillion between 2010 and 2050), and millions of new jobs worldwide due to the greater job creation potential of energy efficiency and renewable energy compared to fossil fuels (Fulton & Capalino, 2014).

This enormous appetite for finance in clean energy and climate adaptation, coupled with the regulatory restrictions due to the crisis and a growing concern on the climate change front from all actors, has led to the opening of a niche capital market that over the years has achieved credibility. Indeed, it has led to the formulation and adoption of the Green Bond Principles, 2014 (Ceres, 2014) and the launch of green bond indices by many companies such as Barclays PLC, Bank of America Merrill Lynch and the S&P Dow Jones Indices in 2014 (Cherney, 2013). Both of these trends suggest an increasing demand among bond buyers for environmentally friendly investments.

It is estimated that the total value of outstanding green-related bonds as of 2014 stands at US\$502.6 billion made up of over 1,900 bonds from approximately 280 issuers. The issuance of bonds with a climate-based theme has been steadily increasing over the years, with a record issuance in 2013 of US\$95 billion as compared to an approximate US\$30 billion issue in 2005 (CBI, 2014a).

The Climate Bond Initiative describes the climate-themed bond market as a universe that is composed of a subset of specialized bond markets used to finance growth. These subsets are:

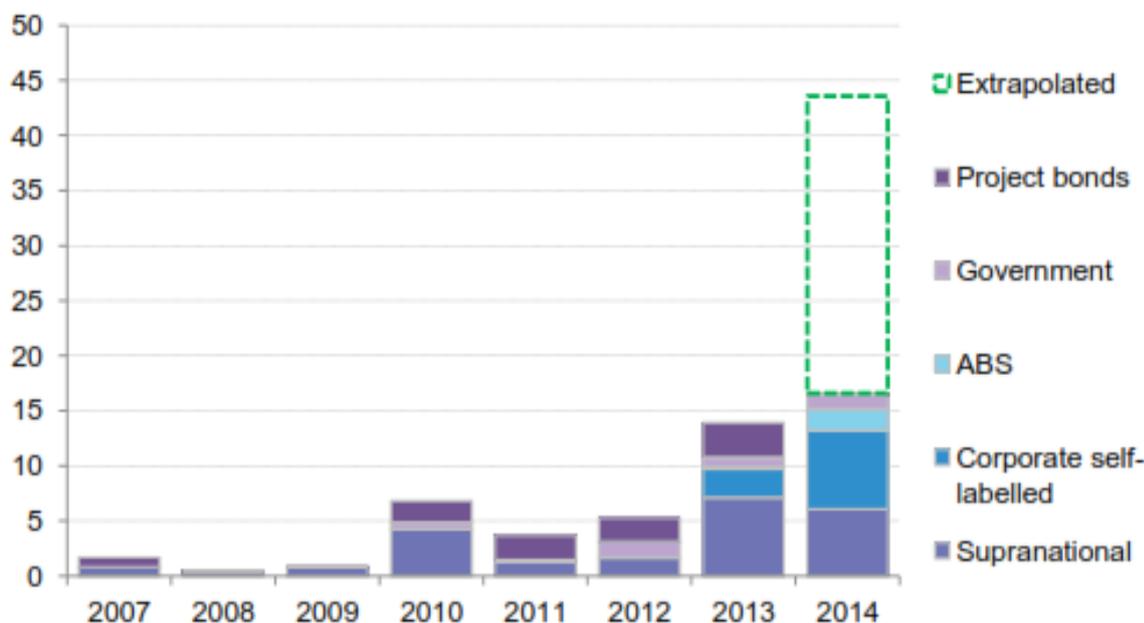
- a) Core Investible Universe—This subset of climate-themed bonds represents the proportion of the market that could be permissible investments for the majority of mainstream investment-grade portfolios.
- b) Project Bonds—These bonds finance specific projects and, as suggested by the name, repayment is made from the project cash flow rather than the balance sheet.
- c) Green Bonds Market—bonds that have been labelled and marketed as green bonds.

Of the total of US\$502.6 billion in bonds outstanding in the climate-themed bond market, the core investible universe accounts for \$236.6 billion of the total, with \$7.8 billion and \$35.83 billion to project bonds and green bonds market respectively.

In 2010, the labelled green bond markets were a niche market being led by a number of MDBs such as the World Bank. The International Bank for Reconstruction and Development (part of the World Bank) and the International Finance Corporation (IFC) have been key players in developing the global green bond market and helping it become a mainstream capital market (World Bank, 2014a).

It is projected that in 2014, total volume of green bond issuance could surpass US\$40 billion in comparison to the US\$14 billion issued in 2013 (Bloomberg Finance L.P, 2014), and it is predicted to reach the US\$100 billion mark in 2015 driven by the entry of new issuers, new instruments such as innovative asset-backed securities and credit enhancements. In 2013, labelled green bonds entered the spotlight with US\$11 billion issued in 2013 (over three times the issuance of any year previous) and US\$18.35 billion issued up to June 10, 2014. The issuer base also expanded to include corporates and municipalities (CBI, 2014a). However, as discussed above, the IEA estimates for investments for climate resilience totalling US\$36 trillion by 2050 show the huge gap that needs to be filled. At the same time, this investment offers huge opportunities for the growth of the green capital markets through mobilizing the low-cost financing bond market for the realization of a low-carbon and climate-resilient economy.

A look at Figure 1 shows the gradual growth of the green bonds market and it can be observed that the market has seen the participation of the private sector through the issuance of corporate green bonds since 2013 and catalytic to the growth of the market.



**FIGURE 1. HISTORICAL GREEN BOND ISSUANCE BY TYPE (IN US\$ BILLION)**

Source: Bloomberg Finance L.P. (2014).

An important feature of the market’s growth since 2013 has been the entrance of asset-backed securities and corporate self-labelled bonds in the evolving and growing market and the rising share of issuance of corporate self-labelled bonds (Bloomberg Finance L.P., 2014).

There is a critical urgency to develop new ways to finance low-carbon and climate-resilient economies to minimize the impacts of climate change. The green bonds market presents itself as a vehicle for raising the much-required capital to finance public service delivery through a PPP model and as discussed in the earlier section, the forecast need for US\$36 trillion in investments in clean energy to halve emissions by 2050 presents an even-greater opportunity for the market to mature and grow. This is evident from the fact of the adoption of the Green Bond Principle 2014, recognizing the need to streamline and standardize the market and from the launch of multiple indices for green bonds. Finally, the entrance of corporate self-labelled bonds in the market is evidence of the growing interest in this type of financing from investors and a signal of the growing complexity of the market.

## Conclusion

As previously discussed, the current year will not only set a record for the number of green bond issues, but undoubtedly it will also mark a precedent in the way these types of securities are regarded by institutional investors. Even though barriers like low liquidity, lack of benchmark indices and dependency on external guarantees remain, if green bonds are to become a mainstream instrument for financing PPPs, the actual scenario requires public authorities to be knowledgeable on their use and adapt their procurement processes for the inclusion of this type of debt.

In leveraging private sector investment in green infrastructure, public procurers will have to take an active role in defining parameters, assessing risks and including incentives for the inclusion of green bonds in tender proposals. Public authorities should also put efforts on creating linkages with different capital market actors as a way to increase investor confidence and private sector participation in PPPs. Governments often underestimate their power to make things happen, especially when officials lack the expertise to understand and regulate new business lines and structure infrastructure deals.

This paper has shown that tender procedures have not been modified to create a space for including green bonds as an alternative financing tool, neither are public and private parties putting significant efforts to create efficient risk-sharing structures. If governments are committed to channelling more private investment into green infrastructure projects, they need to have an open-minded attitude to adopt the changes needed for making green bonds a cheaper and easier way to finance green PPPs.

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