



CLIMATE
POLICY
INITIATIVE

Risk Gaps: First-Loss Protection Mechanisms

Climate Policy Initiative

Morgan Hervé-Mignucci
Gianleo Frisari
Valerio Micale
Federico Mazza

January 2013

A CPI Report

Descriptors

Sector	Finance
Region	Global
Keywords	Green investments; Risk mitigation instruments
Related CPI Reports	Risk Gaps: A Map of Risk Mitigation Instruments for Clean Investments Risk Gaps: First-Loss Protection Intstruments
Contact	Gianleo Frisari gianleo.frisari@cpivenice.org Morgan Hervè-Mignucci morgan.herve-mignucci@cpivenice.org

Acknowledgements

The authors thank the following organizations and professionals for their collaboration and input: Sujata Gupta of the Asian Development Bank, Alexandre Chavarot of Clean Infra Partners, Michael Eckhart from Citigroup, Sean Kidney and Nick Silver from Climate Bonds Initiative, Murray Birt of Deutsche Bank, Christopher Knowles and Olivier Thiele of the European Investment Bank, Marc Bajer and Severin Hiller of Hadrian's Wall Capital, Jeffrey Sirr from Munich RE.

Finally the authors would like to acknowledge inputs, comments and internal review from CPI staff: Yu Yuqing (Ariel), Shobhit Goel, Brendan Pierpont, Gireesh Shrimali, Ruby Barcklay, Tom Heller, David Nelson, Elysha Rom-Povolo, and Tim Varga. In particular, we'd like to thank Jane Wilkinson and Barbara K. Buchner for their ongoing advice and guidance.

About CPI

Climate Policy Initiative (CPI) is a policy effectiveness analysis and advisory organization whose mission is to assess, diagnose, and support the efforts of key governments around the world to achieve low-carbon growth.

CPI is headquartered in San Francisco and has offices around the world, which are affiliated with distinguished research institutions. Offices include: CPI Beijing affiliated with the School of Public Policy and Management at Tsinghua University; CPI Berlin; CPI Hyderabad, affiliated with the Indian School of Business; CPI Rio, affiliated with Pontifical Catholic University of Rio (PUC-Rio); and CPI Venice, affiliated with Fondazione Eni Enrico Mattei (FEEM). CPI is an independent, not-for-profit organization that receives long-term funding from George Soros.

Copyright © 2013 Climate Policy Initiative www.climatepolicyinitiative.org

All rights reserved. CPI welcomes the use of its material for noncommercial purposes, such as policy discussions or educational activities, under a [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License](https://creativecommons.org/licenses/by-nc-sa/3.0/).

For commercial use, please contact admin@cpisf.org.



CONTENTS

1	INTRODUCTION	4
2	FIRST-LOSS PROTECTION MECHANISMS FOR PROJECT BONDS AND CLOS	5
3	KEY LESSONS FOR EFFECTIVE FIRST-LOSS PROTECTION MECHANISMS	8
	3.1 Matching investors' required risk-adjusted returns	8
	3.2 The role of credit rating agencies	9
	3.3 The cost of first-loss protection mechanisms	9
	3.4 Options for financing first-loss protection mechanisms	10
	3.5 Risks induced by first-loss protection mechanisms	12
4	UNLOCKING THE TRANSFORMATIVE POTENTIAL OF CREDIT-ENHANCED DEBT SECURITIES	13
5	FINAL REMARKS	14
6	REFERENCES	15

1 Introduction

In the wake of the global financial crisis, traditional sources of finance for large-scale, emissions reduction assets (i.e. project developers, banks, and public budgets) are facing very high capital constraints. At the same time, the need for capital for low-carbon infrastructure has grown significantly. The International Energy Agency estimates that halving carbon dioxide emissions by 2050 would call for approximately USD 36 trillion to fund infrastructure investments for energy generation and use alone, above a business-as-usual scenario (IEA, 2012). The gap between what is getting funded and what is needed will widen under today's market conditions and as new financial regulations are enforced (in particular, Basel III and Solvency II¹).

In order to unlock green finance, instruments are needed to: **(1) render investments attractive to previously untapped sources of finance** — such as institutional investors² — and **(2) free up resources for traditional sources of climate finance, particularly, those on banks' balance sheets.**

First-loss protection instruments support both these goals by shielding investors from a pre-defined amount of financial losses, thus enhancing credit worthiness, and improving the financial profile of an investment. They directly mitigate a project's financing risks by transferring a portion of the potential loss to the sponsor offering the protection that can take the form of a funded contribution to the investment (such as a cash injection) or an unfunded guarantee or credit line to be drawn upon when needed. By making projects more appealing to mainstream investors (or by aggregating them under the same mechanism), they also mitigate the perception of liquidity risks.

First-loss protection mechanisms may encourage capital release, in which capital previously committed for commercial or regulatory reasons becomes available for new uses. Amongst others, they can be applied

through two different mechanisms: the first mechanism uses project finance solutions as an alternative to bank loans (i.e. project bonds), while the second mechanism sets up dedicated investment vehicles such as collateralized loan obligations (CLOs).

Project bonds tap resources directly from investors in capital markets, either through private placements or through public offerings into wider markets. However, the current market share of project bonds, with USD 17.5 billion, is still much smaller than the market share of loans, with USD 327 billion (Eckhart, 2012). This is because infrastructure investors continue to favor bank financing given a loan's higher flexibility, in general, and banks' higher appetite for risk, which results in lower pricing of the borrowed capital and thus lower financing costs.

On the other hand, the idea behind CLOs is rather straightforward. Banks sell some of their outstanding loans to a dedicated entity that then issues bonds or notes to investors (pension funds, insurance companies, hedge funds, etc.) sliced up in tranches of different risk and return profiles. These tranches are differentiated by their level of seniority.³ The banks' balance sheets are freed up of these loans, leaving them able to lend the proceeds to new projects. Used this way, **CLOs could thus release capital, free up liquidity, transfer credit risk, and improve banks' and other lenders' control of their balance sheets.** However, setting up a CLO alone is not usually enough to attract buyers, as the loans underlying them are often associated with too much perceived risk.

Under current market conditions, investors are not purchasing project bonds and collateralized loan obligations (CLOs) for clean investments at the level we would hope to see.

For green investments, before either of these investment instruments may appeal to institutional investors, banks and project sponsors need to improve the credit worthiness of underlying projects, as both project bonds and CLO securities would very likely be rated as below

1 Incoming regulations governing the banking sector, under the BASEL III framework, will strongly penalize illiquid assets on banks' balance sheets (Linklaters, 2011) and exclude them from the assets available to cover liquidity needs in addition to demanding their full risk-weighted capital coverage. Similarly, the EU Solvency II Directive will impose more stringent capital requirements on insurance companies investing in riskier and less liquid investments such as infrastructure and renewable energy assets.

2 The term 'institutional investors' includes mainly pension funds and insurance companies, but also endowments, foundations and sovereign wealth funds. "With USD 71 trillion in assets under management, they can certainly play a major role in meeting the climate investment challenge (OECD, 2012a)".

3 The priority order with which cash flows originating from the pool of loans are distributed to investors. Usually, senior investors will have to be satisfied in full before other investors can be compensated even partially. They distinguish between senior tranches, mezzanine and junior tranches, and equity positions.

investment grade.⁴ First-loss protection mechanisms are a means to achieve this as they can deal with some of the main barriers hindering the engagement of institutional investors in large-scale, low-carbon investments. That is, they can overcome “the absence of liquid, investment grade asset-backed securities and a small secondary market” (Wilkins, 2012).

However, designing effective first-loss protection mechanisms to unlock finance for green infrastructure can be a complex task. The architects of these instruments must not only understand the impact on the credit worthiness and on the financial profile of the investment, but also look at the cost at which the mechanisms can be provided, at the most effective ways to finance and offer them, and at the risks that they may, in turn, induce.

In this paper, we highlight elements integral to the effectiveness of first-loss protection instruments which seek to enhance project’s credit worthiness, paying special attention to issues likely to challenge implementation, and understand whether new instruments could themselves create additional risks. In chapter two, we provide a more detailed definition of first-loss protection instrument and discuss two different proposals to enhance, respectively, project bonds and collateralized loan obligations. In chapter three, we identify key lessons to improve the effectiveness of first-loss protection instruments emerging from investors’ needs, and from previous and on-going initiatives (we discuss two examples in Box 1), with particular attention to the role of credit rating agencies, the costs sustained by the providers and the market’s appetite for such instruments. Finally, in chapter four, we assess the transformative potential of the instruments proposed within the wider financial context that green infrastructure investments are currently facing.

Like the other *Risk Gaps* reports (Frisari et al., 2013), this work draws from a literature review and, most importantly, direct conversations with investors, insurers, researchers, and financiers participating in workshops focused on investments in green infrastructure projects and related risks (CPI, CBI, 2012), and on the key issues that first-loss protection mechanisms should be able to face.

4 Standard & Poor’s rating distributions in October 2011 show that only 16% of project finance loans have a rating of A or higher (Wilkins, 2012).

2 First-loss protection mechanisms for project bonds and CLOs

A first-loss protection mechanism refers to any instrument designed to insure the amount of capital which is exposed first should there be a financial loss on a security, including equity, debt, and derivatives instruments.⁵

First-loss protection mechanisms can address several financing risks and may be structured in several different ways. They can, for example, be **insurance mechanisms** such as monolines — insurance companies that specialize in providing insurance to debt security providers who are liable to pay investors compensation — no matter the cause of loss. These mechanisms can also take the form of **cash facilities or guarantee mechanisms** based largely on precedents in the securitization space, such as excess spread (the difference between the gross yield on the pool of securitized assets and the vehicle’s cost of financing), cash provisions (unencumbered liquidity pools or contingent credit lines available in case of liquidity needs) or overcollateralization (which occurs when more collateral than needed is posted to secure financing). Without them, investors owning equity positions or the most junior tranches would typically have to bite the bullet and accept losses on their invested capital.

Two recent proposals have applied the concept of first-loss protection within the specific context of infrastructure and climate-related investments. We analyze their main elements briefly in the following paragraphs.

The European Commission – European Investment Bank Project Bond Initiative (EC-EIB PBI) aims to support the credit rating of individual infrastructure projects⁶ with a guarantee facility that, depending on the project specifics, can take the form of a funded subordinated debt tranche (a direct loan from the facility to the project that would be repaid only after the Senior Bonds have been serviced — hence the subordination), or of a contingent credit line (a credit line made

5 The term security indicates any form of financial instrument usually including equity, debt, and derivatives instruments.

6 During its pilot phase (2012-2013) the PBI will not include any renewable energy generation projects; however renewable energy will potentially be included in the final form of the facility or in a similar product with a similar structure, once the pilot phase is complete (EIB, 2012a). As green investments are not expected to require any ad-hoc changes to the PBI structure; we conduct our analysis in the report assuming they will be financed with the same credit enhancement mechanism.

available on demand in case of contingencies that, once claimed, can be converted into a subordinated loan). As a claim that is senior to equity investors but junior to debt investors, the EC-EIB facility can improve the coverage of the senior debt⁷ and improve the bonds' credit rating to a rating above the investment grade level (typically A- or higher), in line with institutional investors' minimum requirements (EC, 2012b; Wilkins, 2012). The facility's structure could potentially be used to finance projects at an early stage of construction as well as those seeking refinancing capital. That said, the PBI's actual mandate is to finance the construction of new assets and as such, fully-built projects in the operation phase would not typically be considered.

Figure 1 illustrates how the mechanism works. New infrastructure projects (Infra projects) benefiting from credit enhancement, either as the "sub loan or credit line," would be able to issue new, single project bonds⁸ with an investment grade level that could be sold to institutional investors. Whether these investors will have the appetite for such securities is uncertain. However, more than half of the respondents — investors, banks, developers, associations, and governmental bodies — in a public consultation held before the launch of the initiative responded positively on this point (EC, 2012b). The facility is financed by a capped contribution from the EU budget and by the EIB, which will manage the funds, assess the projects, price the loans, and absorb the risks beyond the EU funds. Importantly, pricing will be set to guarantee commercial competitiveness of the facility, and not on a fully concessional basis (EIB, 2012a).⁹ In its current pilot phase, the PBI is expected to finance between EUR 4.5 and 5 billion worth of project bonds.¹⁰

Another alternative, interesting for its ambitious scale, has been proposed directly by the financial sector (by Michael Eckhart, Global Head of Environmental

Finance at Citigroup), aiming to achieve similar credit rating enhancements but by slightly different means. **Sustainable Development Bond Assurance Corporation (SDBAC)** would establish a **dedicated monoline entity to provide first-loss insurance to various project finance collateralized loan obligations** (Eckhart, 2012).

Figure 2 depicts the interactions between the stakeholders likely to be involved in the SDBAC mechanism. An aggregator (the Global Development Funding Corporation, or "GDFC" in the chart) would buy or securitize project loans issued by local banks to fund green infrastructure projects, aggregate them in a CLO vehicle, and then market its more senior tranches to institutional investors.

First-loss protection, by means of full financial insurance, would enhance the credit worthiness of the entire securitization structure and is expected to render the CLO senior tranches more appealing to pension funds and insurance companies.¹¹ In addition, the SDBAC mechanism would insulate underlying projects from policy and market risks by insuring their power purchase agreements (PPA) against government decisions that repeal agreed tariff systems or when off-takers default on payments. At this stage, a combination of public and private resources would finance the facility, with different types of institutions providing support for activities in developed and developing markets, with grants and concessional finance playing a larger role in the latter. One option, as depicted in Figure 2, might be to call upon the Green Climate Fund to finance the insurance and reserve fund for the projects in developing countries (Eckhart, 2012).

Experience shows that providing effective first-loss protection instruments is difficult. **Extensive and generous protection instruments may induce moral hazard behaviors among investors** (e.g. an opportunistic behavior by agents who are incentivized to act in riskier ways since the negative effects of their actions are suffered by the protection provider); in turn, instruments that offer very limited protection or have little scope may fail to appeal to buyers in the market. At the same time, the costs associated with providing these structures and the price charged to investors must be enough to remunerate the provider without pricing the instrument out of the market.

7 Debt coverage is the amount of cash available to cover both capital and interest payments due to lenders. As the seniority of loans determines the priority with which debt payments are paid, different classes of seniority may have very different debt coverage metrics.

8 During the pilot phase, each project will issue a single bond. The aggregation of several projects into a single issue (i.e. securitization) could be a feature of the facility's final structure (2014-2020). If this were the case, it would likely need to be set up by, or outsourced to (EIB, 2012a), a bond aggregator facility.

9 PBI will not be a profit seeking initiative but its revenues are envisaged to cover the costs (both in terms of capital and services) sustained by its providers.

10 The total includes an expected leverage factor of private funds over public resources (EU+EIB) of 5 times and will cover transport, energy and telecommunications sectors.

11 Similarly to the PBI, the aim is to allow the senior tranches of the CLO to reach an investment grade rating.

Figure 1 - Stakeholder mapping for the EU - EIB PBI (as of June 2012)

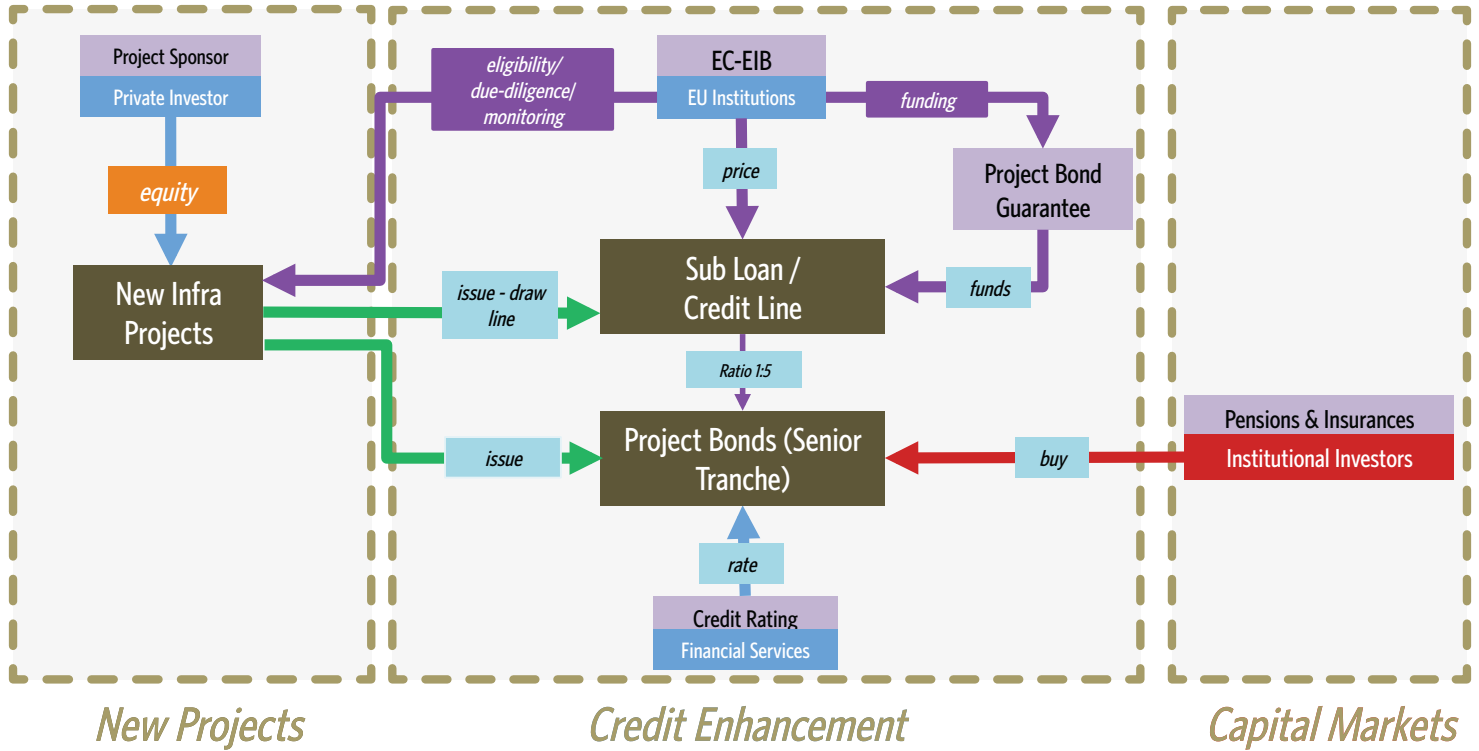
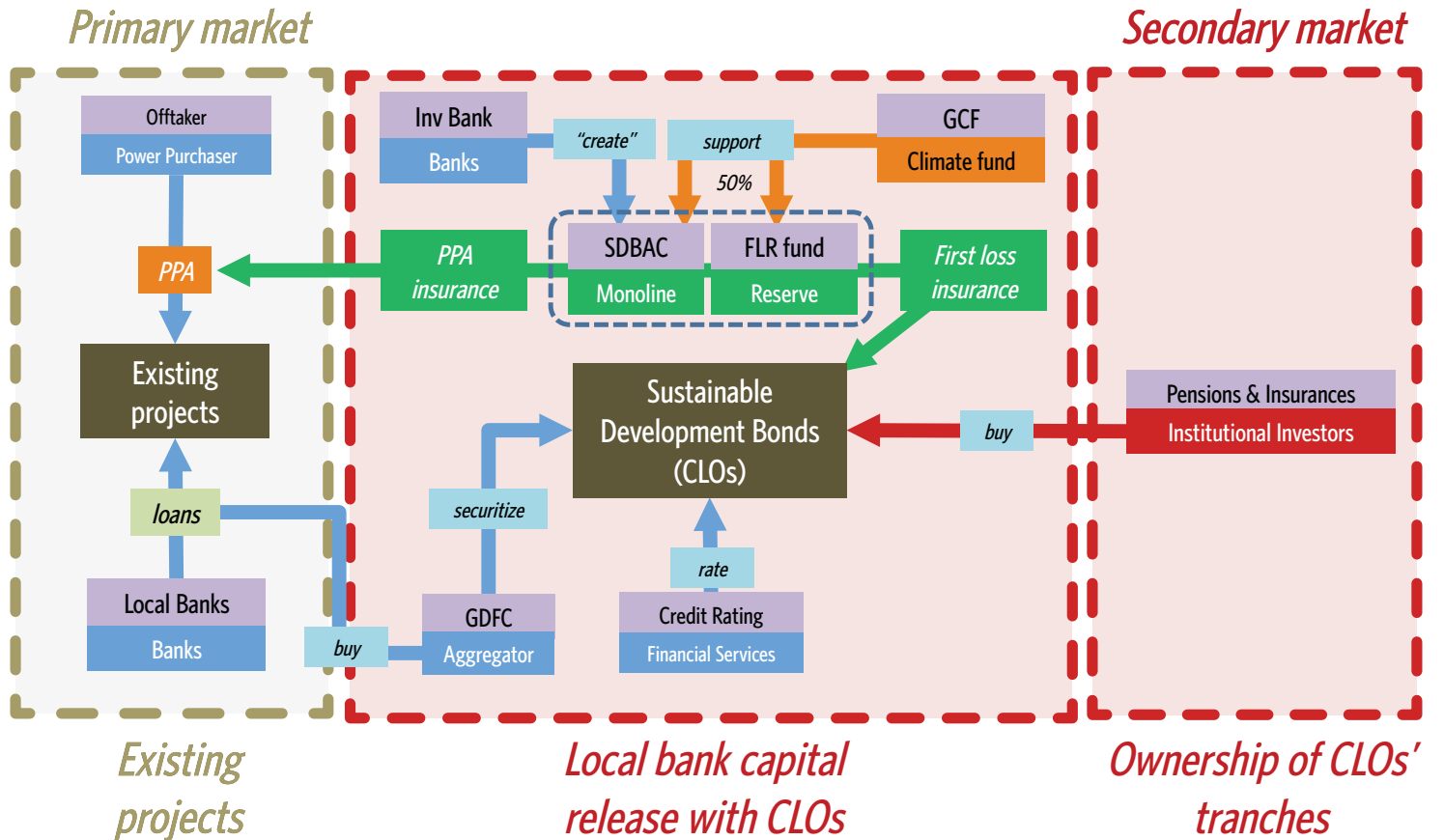


Figure 2 - Envisaged stakeholder mapping for the SDBAC (as of June 2012)



3 Key lessons for effective first-loss protection mechanisms

Effective first-loss protection mechanisms for green investments should:

- match investors' required risk-adjusted returns;
- allow credit rating agencies to rate project bonds or pools of loans as investment grade investments;
- be provided at prices competitive with investment alternatives in the market;
- mitigate the risks induced by the mechanism itself;
- be provided under a "green agenda" to ensure resources are mobilized for climate friendly investments.

In the next sections, we turn our attention to the most important design elements of first-loss protection instruments and evaluate how the PBI and SDBAC instruments perform against these.

3.1 Matching investors' required risk-adjusted returns

In order to appeal to institutional investors, the credit enhancement from first-loss protection mechanisms' should match investors' required risk/return profiles compared to their business-as-usual asset allocation, and be more convenient than other available risk mitigation alternatives options (such as surviving¹² or new monoline insurers, letters of credit, etc.).

We have grouped investors' requirements around three dimensions: return requirement, risk tolerance, and investors' unique circumstances.

First-loss mechanisms should render returns sufficient to attract institutional investors. Recently, yields from

12 Several large monoline insurers were hard hit by the subprime crisis in 2007-2008 and many ceased to exist: American Municipal Bond Assurance Corporation (AMBAC) filed for bankruptcy protection in November 2010, MBIA lost its crucial AAA rating in April 2008 and was rated speculative grade in June 2009. Currently, Assured Guaranty is the highest rated insurer active in infrastructure finance (AA-/Aa3). As of early 2012, Goldman Sachs is contemplating the launch of a new monoline (PFM, 2012).

renewable energy project debt have been slightly higher than investment grade corporate debt,¹³ making them, purely from a return perspective, a potential candidate for institutional investors, or at least for those with an appetite for the renewable energy sector. In addition, within CLOs, different tranches can have different risk/return profiles that can be designed to appeal to different types of investors. Nevertheless, issuances of project debt and institutional investors' interest have been minimal to date (Eckhart, 2012), suggesting that even when adjusted for risk, projected returns are not yet competitive with other investment alternatives.

First-loss protection mechanisms should aim to protect institutional investors from exposure to project-specific risks. Avoiding construction risk is often a core requirement for most institutional investors — who, as a consequence, get involved only during the refinancing stage once construction is completed.¹⁴ Interestingly though, the EU-EIB PIB challenges this current practice and aims to engage institutional investors in the first financial closing of projects, betting on their willingness to take direct exposure to projects whose construction is not yet completed.¹⁵

On the other hand, assessments about whether the SDBAC proposal significantly changes risk allocation can only be made once the investment vehicles have been drawn up and the parameters of the actual first-loss protection mechanisms established. At this stage, some open issues remain around the design of actual investment vehicles. These include questions about possible levels of diversification of CLOs,¹⁶ whether they will be cash or synthetic (CLOs whose underlying assets are derivatives contracts [usually credit default swaps] instead of cash securities), and the optimal mix of policy, technology, geography, and sector risk. In particular, the large presence of developing countries in the mix might demand a premium to be added to the

13 For the US market, Mintz, Levin (2012) indicates a spread over Libor between 1.75% and 3.25% for mature REs (Onshore Wind and Solar); at the same time BBB corporate bonds yield a spread over US Treasuries between 1.8% and 2.5% (Bloomberg) [We note that for most of 2011, the difference between Libor and Treasuries has been smaller than 0.2%].

14 Typically, as the construction phase is completed and assets enter in operation, sponsors look to replace initial financing (usually bank loans) with long term cheaper debt that should match, at least in theory, institutional investors risk appetite.

15 We do not rule out the possibility that construction risk will be transferred from investors to other parties through risk transfer tools, such as Engineering and Procurement Contract (EPC).

16 Precedents in the securitization space (mortgage-backed securities) have shown that the analysis of the correlations among underlying assets is critical.

structure covering for the additional perceived risks. Similarly, regarding the first-loss protection instrument itself, the extent of coverage, the size of the first-loss insurance, and the ultimate holder of the equity portion are yet to be determined. Each of these elements will influence the cost of financing, as well as the amount of risk, that is actually transferred.

Institutional investors' unique circumstances should be taken into account when structuring guarantees and CLOs, as should their interactions with first-loss protection mechanisms themselves.

Issues that need to be addressed include the length of investment horizon, tax considerations, asset liability management practices, regulatory constraints such as *Solvency II*,¹⁷ environmental and climate mandates, etc. In particular, the liquidity of a secondary market for project bonds and CLOs might prove critical for the involvement of some institutional investors. In this respect, while the SDBAC proposal aims to re-ignite a currently dormant secondary market in project bonds,¹⁸ in the case of the PBI, the current credit enhancement interventions are on a project-by-project basis and would have little impact on the liquidity in the secondary market.

3.2 The role of credit rating agencies

Effective first-loss protection mechanisms need to encourage credit rating agencies to rate project bonds or pools of project loans as investment grade securities. Issuers pay credit rating agencies to perform due diligence on the assets, and investors significantly rely on their ratings to screen potential opportunities; these agencies thus have the power to exclude whole classes of investments from investors' consideration. According to credit rating agencies, the credit enhancement offered by the PBI can improve ratings by **decreasing the probability of default** and in the case of default, **reducing the "loss given default"**¹⁹ for the senior lenders. The impact is higher in case of unfunded guarantees/credit lines (as opposed to funded ones)

17 Solvency II is the incoming regulatory framework for the European insurance industry. It aims to streamline the way that insurance groups are supervised and recognizes the economic reality of how groups operate; to strengthen the powers of the group supervisor, ensuring that group-wide risks are not overlooked; to ensure greater cooperation between supervisors. The Directive is expected to be applicable from 1 January 2014 (www.ec.europa.eu).

18 By buying pre-packaged diversified securities, institutional investors would indirectly help promote secondary trading of the underlying project bonds.

19 This reflects the difference between the face value of the investment on a 'going concern basis' and the amount that is recovered once a default occurs.

as these would make emergency funds available to projects facing liquidity shortages in both construction and operation phases (especially for projects with volatile cash flows); and, in case of default, the undrawn funds could be used to repay senior debt first, potentially zeroing the loss given default (Fitch 2011, Moody's 2011). To date, no credit agency has made comment on the SDBAC proposal.

Still — especially in the eyes of insurance providers — **the approach of credit rating agencies is far from perfect; these agencies should consider whether the investments cover risks adequately, not just whether they provide full financial guarantees** (which is their standard default). The sole focus on the ability of a project's cash flows to meet debt service obligations induces credit rating agencies to largely prefer full financial guarantees, instead of mechanisms that insure against or mitigate specific risks. Particularly in the current financial environment, offering full financial guarantees is beyond the resources of most institutions,²⁰ which could unnecessarily exclude climate-related investments from fair consideration. Finally, as discussed in greater detail later, full financial guarantees also carry significant issues of moral hazard by attracting low-quality projects and, at the extreme, can even increase the overall risk profile of the project.

In order to avoid an extra layer of cost, due diligence delays and potential negative credit ratings, some project bonds and CLO marketers may also resort to private placements,²¹ allowing them to sell large portions of debt issues directly to institutional investors with the ability to analyze individual projects and the appetite to hold illiquid assets. However, this significantly narrows the number of potential investors to large institutional investors only.

3.3 The cost of first-loss protection mechanisms

The experience of past CLOs for projects, the lack of surviving monolines after the demise of mortgage-backed securities, and the economic and financial crisis all suggest that **it would be quite expensive to increase the credit worthiness of pools of loans (or of project bonds) for green infrastructure projects in both developed and developing countries.** According to Project Finance Magazine, "before 2007, a credit

20 Please see the details on capital requirements for monolines in footnote 25.

21 This refers to offering financial securities through private offerings to a selected number of investors, as opposed to offerings made to the general public.

enhancement of around 7% was required to support a AAA rating for clean investments, but the required enhancement [in 2011] is over 25%" (...) making the transaction "almost certainly non earnings-accretive for banks" (PFM, 2011b).

Cost components for both monoline insurers and guarantee providers include due diligence, credit rating agency fees, structuring costs, marketing support, and more importantly, the cost of the required capital.

However, interestingly, apart from the novel character of some renewable energy technologies and the risk added by ever-changing support policies, insurance providers see no deviation between climate resilient infrastructures and conventional (i.e. non-green) ones in the overall costs of structuring project bonds and CLOs.

However, it is unlikely that factoring in the cost of first-loss protection mechanisms into the pricing would make these securities competitive in the market.

There is an obvious need for a sponsor. The case of the Asian Development Bank India Solar Power Generation Guarantee Facility (ADB PGG Facility) - detailed in Box 1 - clearly suggests that, **in the context of the Indian renewable market, this partial risk guarantee²² was too expensive to find any buyers when provided on a commercial basis.** The guarantee only became competitive (thus favoring its uptake) when the UK Department of Energy and Climate Change (UK DECC) injected grant money, halving the cost of the service.

On the other hand, the recently launched **Aviva Investors Hadrian Capital Fund 1** (see Box 1) aims to provide credit enhancement service to European infrastructure projects (including green infrastructures) while targeting returns in line with the markets. The fund will strive to increase the exposure of pension funds and insurance companies in project debt by actively structuring deals to create tradable securities. The amount and nature (in terms of geography, technology, policy regime) of the renewable energy projects that the fund will be able to make available to institutional investors will prove whether and how green infrastructure investments can compete in the capital markets without concessional support.²³

22 Different from a first-loss protection, a partial risk guarantee doesn't transfer all the risks from the investor to the sponsor but shares them (according to the specific terms of the facility) on an equal basis.

23 Despite counting among its investors two development banks (EIB and DBJ), "the fund is targeting an "attractive risk adjusted yield over the life of the fund" (Aviva, 2012) that in current markets roughly correspond to a minimum target return of 8% per annum (HWC, 2012b).

3.4 Options for financing first-loss protection mechanisms

In their current form, both the PBI and SDBAC instruments assume that an external institution would finance the extra costs associated with first-loss protection mechanisms.²⁴ In our assessment, to be suitable for this role, candidate institutions should meet several criteria, including the following.

1. **They should meet the capital requirement** mandated by regulators and credit rating agencies. This is critical for the monoline insurance providers²⁵ but also makes it challenging to achieve good returns (PFM, 2012);²⁶
2. **They should obtain sufficiently high credit ratings** demanded by institutional investors: The extent of credit enhancement for the insured bond ultimately relies on the credit quality and capital adequacy of the institution that is the payer of last resort;
3. **They should have a "green agenda"** with a long-term commitment to support emissions reduction investments; and
4. **They should hold sufficient financial expertise** to mitigate the risks addressed. In particular, the nature of the sponsor's involvement is as important as the extent of non-monetary support provided (know-how, project appraisal, and risk management expertise) for the success of such investment vehicles.

Apart from the sponsors envisaged in the two case studies, we find that development banks and institutions whose agenda includes capital release into financial systems (for example, the International Monetary Fund, the European Central Bank or the U.S. Federal Reserve) could be potential sponsors. Once more details on the design and operation of the proposed structures is available, it will be important to investigate whether those sponsors would charge a fair price for the mechanisms (on either a commercial or concessional basis), and whether these instruments will manage to attract developers without incentivizing only low-quality projects.

24 The European Commission and the Green Climate Fund, respectively.

25 Moody's and S&P indicate that prior to applying for a credit rating, start-up monolines aiming to achieve credit ratings of A or above (upper investment grade) should achieve, at a minimum, equity capital of USD 500 million, and have a senior management structure with a proven track record in providing such insurance, in addition to a period of operating history (Moody's, 2006; S&P, 2011b).

26 Regulatory capital is typically constrained to very safe but low yielding investments (such as treasuries and government bonds).

Box 1: Examples of implemented credit enhancement initiatives

ASIAN DEVELOPMENT BANK PARTIAL CREDIT GUARANTEES FOR INDIA'S NATIONAL SOLAR MISSION

In January 2010, the Government of India launched the Jawaharlal Nehru National Solar Mission (NSM) to promote the commission of 20,000 MW of solar power by 2022. Of this overall capacity, 1000 MW in both photovoltaic solar and Concentrated Solar Power (CSP) have been awarded to private developers and should be financed mainly with private resources. At launch, it was thought that the Feed-in-Tariff scheme and the Renewable Purchase Obligation regulation would be enough to support private investments; however, the technology, policy, and commercial risks perceived by commercial banks and investors were too high to prompt them to commit resources with a 20-25 year-time horizon (UK DECC, 2012).

The Asian Development Bank subsequently partnered with commercial banks to offer a risk-sharing facility that guarantees up to 50% of the present value of a project's loan. To improve the coverage effectiveness, but mitigate moral hazard issues, the partial risk guarantee, which is different from first-loss insurance, covers against all possible risks within 90 days from the event (ADB, 2011a) but shares the eventual loss in equal parts with the commercial banks. As such, it aligns public and private investors' interests. In essence, the facility replaces 50% of project debt with typical ratings of B/BB with Asian Development Bank's AAA credit rating, lowering the cost of debt financing and lengthening its tenor up to 15 years.

The facility, approved in April 2011 for a total of USD 150 million over three years, had to be financed by Asian Development Bank Private Sector Operations Department (PSOD) which therefore charged a commercial fee for the guarantee. However, the guarantee's price proved too high when compared with the fees investors were willing to pay. A USD 10 million grant¹ from the International Climate Fund (ICF) halved the fees charged, reducing them to between 0.87-1.25% per annum (plus an upfront fee of 0.2%).² Given the purely commercial basis of the initial fees, this case suggests that commercial initiatives of this kind would struggle to find a market for their services. As of June 2012, two banks have been approved as partners of the facility and two projects (for a total of 35 MW) have applied for the financing.

AVIVA INVESTORS HADRIAN CAPITAL FUND 1

Aviva Investors Hadrian Capital Fund 1 (AIHCF1) is an infrastructure fund that applies the same credit enhancement structure as the PBI to a broader set of infrastructure investments — including renewable energy ones — on a purely commercial basis. Managed by Hadrian's Wall Capital and backed by Aviva Investors, the EIB, and the Development Bank of Japan (DBJ), the fund has just achieved its first closing with a total of GBP 160 million and will ramp up the portfolio in coming months. It will invest mainly in subordinated notes (rated around BBB-/Baa3) of infrastructure projects in regulated assets such as public buildings, transport and utilities with roughly 10% aimed to solar, wind and energy from waste (HWC, 2012a). Given the minimum rating requirements (around BBB-) of its eligible investment universe, the fund is expected to invest only in mature renewable energy technologies in established policy frameworks — that is, the lower risk end of the green infrastructure space. The fund's goal is to enhance project debt to investment grade level, by injecting capital for 10% of the value of the project in notes that will be senior to equity sponsors and junior to institutional investors. The market will determine the subordination margin³ that the fund could earn and this, together with the fees for the structuring, placing and marketing of the transaction, will drive the pricing of the credit enhancement.

1 The GBP 6 million grant was part of a wider GBP 15 million ICF package directed to support ADB risk mitigation efforts between 2011 and 2014. It was approved by UK Department of Energy and Climate Change in the first quarter of 2012 (UK DECC, 2012).

2 Depending on the technical form chosen for the guarantee and the timing of cash disbursements, there might also be Commitment fees, Stand-by fees. More details on pricing are available in ADB, 2011b.

3 This is the excess return that the market awards to more speculative investments over investment grade ones.

3.5 Risks induced by first-loss protection mechanisms

First-loss protection mechanisms are not a one-size-fits-all remedy for projects whose credit worthiness is below the investment grade level. Some risks remain.

The operational structures of some monoline insurance companies, including the structure outlined in the SDBAC proposal, are geared towards providing compensation based on a loans' financial performance, and do not address or manage underlying risks directly. This can potentially even increase the overall risk level of the project, as the lower attention directed towards managing individual specific risks increases the probability and severity of their occurrence (CBI,CPI, 2012). At the same time, as there is no aggregation of bonds in the proposed structure of the PBI, we expect there would be no pre-packaged diversification benefit for investors who subsequently need to screen and analyze each deal separately in order to build a diversified project bond portfolio.

Moreover, **first-loss protection mechanisms can create extra risks that need to be borne, allocated to a third-party, or managed in a cost-effective manner. Crucially, first-loss protection mechanisms can create moral hazard** (attract developers and banks with very risky projects) and may conflict with other direct risk mitigation instruments, such as traditional forms of insurance.

In the case of the SDBAC proposal, part of the moral hazard risk is mitigated through the offer by the SDBAC **to insure underlying power purchase agreements.**

This shifts part of the remedy-seeking process from the investor to the structure itself and reduces the conflict of interest.²⁷ Even so, however, some moral hazard remains if the banks originating the loans to be securitized do not retain any of the project risks.

In the case of PBI, the likelihood of moral hazard is low, as the mechanism only insures part of the loss of the senior debt tranche and does not absorb any losses associated with the equity tranche. This minimizes the risk of perverse incentives to run any sub-standard project (as was the case with subprime mortgages fully insured by monolines).²⁸ Conversely, the facility does

not directly address other issues that could similarly constrain the bonds' rating and investors' subsequent involvement — the quality and creditworthiness of the off-taker, sovereign and policy risks, as well as construction and operational risks.

Finally, we note that, in the past, most mortgage-backed securities structures collapsed because of **disruptive derivatives activities**.²⁹ It will be important to consider whether this risk is tangible for new project finance CLOs, and whether it can be sufficiently regulated or addressed in the case of emissions reduction project CLOs. Failure to do so could entail significant potential reputation risk, and more tangible financial losses, for the stakeholders.

27 In this case the provider of the first-loss protection coincides with the entity entitled to influence and approve the drafting of the power purchase agreement and then seek redress if the obligations under the contract are not honored.

28 The risk of moral hazard has been quoted by the EC as the main reason for not considering a full debt service guarantee, as a monoline insurer would do (EC, 2011).

29 See for reference, the collapse of several monolines of good standing in 2008 due to the unconstrained size of the derivatives market which dwarfed the cash market against which it was referenced.

4 Unlocking the transformative potential of credit-enhanced debt securities

In this chapter, we assess the transformative potential of the instruments proposed within the wider financial context that green infrastructure investments are currently facing.

Effective first-loss protection mechanisms have the potential to help solve the overarching green infrastructure financing problem, beyond the immediate release of local banks' capital.

However, to leverage their transformative potential, first-loss protection mechanisms must appeal to investors and the banking sector, must be available while need is high, and mobilize the freed-up capital towards green investments.

Unless first-loss protection mechanisms and their underlying objectives appeal to investors and the banking sector, they will not create liquidity on banks' balance sheets nor will they mobilize resources at scale for green infrastructure investments. In the case of both the PBI and SDBAC proposals different groups of financial intermediaries have to be engaged: initial lenders, originators, banks (as arrangers of the financing and marketers for the bonds), and investors. While emissions reduction project CLOs should theoretically be attractive to banks eager to alleviate their balance sheets, the details of individual pools originated, and the appetite of the capital markets for these pooled securities, will determine the success of the initiative.

Emissions reduction project CLOs and first-loss protection mechanisms need to be established quickly while there is urgent need and high demand.

Structuring individual emissions reduction project CLOs themselves requires a considerable investment of time, and the short history of similar vehicles suggests that project finance CLOs have a fairly high rate of failure (see for reference the issuance of Gable Funding CLO structured by the Lloyds Banking Group in March 2011).³⁰ This means there are obvious tensions between

30 In March 2011, Lloyds Banking Group held investor roadshows for Gable Funding, a USD 2.45 billion AAA rated (and A for a fourth tranche) project finance CLO that effectively repacked around 60 of its loans to UK low risk

setting up new institutions offering the required level of first-loss protection, and having the instruments ready within the right timeframe.

It is also difficult to assess if first-loss protection mechanisms are a real game changer. A number of factors will have bearing on their potential to scale and the outcomes to which proceeds are directed.

In their current and envisaged forms, provided that the targeted resources are mobilized (as in the case of the contribution from the Green Climate Fund for example), we estimate that **the potential of the SDBAC proposal to achieve scale is significant, but so are the issues and the complexities that its proponents will have to face.** As for the PBI, its current potential to mobilize resources for green investments is limited by the constrained scope of the pilot phase (covering only transmission, transport and broad-band European infrastructure). However, the EC and EIB aspire that, should the pilot phase be completed successfully, the scale and scope of the facility would be increased to include, among other kinds of projects, renewable energy generation (EC, 2012b; EIB, 2012a).³¹

For the SDBAC proposal in particular, unless specific strategies are adopted to direct the uses of proceeds, there is a risk that banks may reallocate capital toward a wide range of investment outcomes. Some of these could lead to adverse climate outcomes, such as decisions to fund GHG-emitting projects (e.g. coal-fired plants), while others may be unrelated (financing hospitals, for instance). Banks could also use increased liquidity to exit from project finance activities if the profitability of new emissions reduction projects do not keep pace with the loans sold off. At this stage, it is not possible to assess how tangible this risk is, and we note that such an outcome would defeat the purpose of creating such complex and costly arrangements. A number of possible strategies could help to link secondary market transactions to action in the primary debt markets, to tap the leverage potential of increased liquidity:

- **Require banks to earmark part or all of the proceeds from capital release to new emissions reduction projects.** Particular stakeholders such as the sponsoring institutions

profile assets. The deal was credit enhanced with a 25% first-loss piece and a yield reserve account close to 10% the size of the issue. Despite this, the CLO did not attract investors (PFM, 2011a and PFM, 2011b).

31 In a public consultation performed by the EC, investors have expressed interest for more sectors to be included in the PBI: Social infrastructure (25%), Renewables (16%), Water and Waste (13% and 6%) (EC, 2011).

paying for the mechanism, or umbrella organizations of climate-committed institutional investors, could be well positioned to make purchases contingent on uses. Alternately, banks could choose to earmark independently.³² However, earmarking may only be partially effective as banks could find clever ways to circumvent such constraints.

- **Aggregate projects at different stages of development into collateralized loan obligations.** Institutional investors tend to shy away from construction risks, while credit rating agencies are likely to downgrade ratings for these kinds of investment vehicles. Diversification benefits embedded in pooled investment vehicles that combine loans issued by projects at different stages of development would offset the impact of new projects and strongly mitigate this risk.
- **Extend the scope of the capital release beyond clean investments.** There is a risk that institutional investors may not be willing to pay a premium for loans to clean investments or may see a lack of diversification when investing in these investment vehicles. An alternative to the proposals could be to allow banks to sell loans beyond emissions reduction projects to CLOs (hospitals, airports, and other infrastructure projects). Associating a broader capital release with a capital release for new emissions reduction projects could increase the transformative potential of the mechanism.

5 Final remarks

First-loss protection instruments can make green investments more suitable for a wider base of financial investors, institutional ones in particular, by mitigating project financing risks, enhancing their credit profile, and improving liquidity. To be effective, however, credit rating agencies need to judge that these instruments significantly improve the project's credit worthiness. At the same time, they need to appeal to financial markets (banks and investors). To reach their potential, these instruments require sponsors with substantial resources, financial expertise, and a committed green agenda. In addition, the costs and complexity entailed must be contained to make the instrument competitive with investment alternatives and with the cost of the risks they mitigate.

It is too early to conduct a full evidence-based assessment of the effectiveness of new risk mitigation instruments; without a longer history of risks and experience with the instruments, there are just not enough evidence and data. **This paper aims, instead, to highlight the design issues we consider critical for effective risk solutions for low carbon investments. We hope to prompt a debate amongst practitioners, investors, and policymakers around these recommendations.**

While there is real potential for first-loss protection and similar credit enhancement tools to mobilize resources at scale for green investments, whether or not financial sponsors, developers, banks and investors opt to invest in them will ultimately prove these instruments' effectiveness.

³² An example of voluntary earmarking is Green Investment Schemes for state-level Kyoto Protocol AAU trading. The use of such proceeds from trading is rather opaque to properly track end uses and evaluate the effectiveness though.

6 References

- ADB. 2011a. "ADB's Solar Power Generation Guarantee Facility in India." Asian Development Bank <http://www.adb.org/sites/default/files/solar-power-guarantee-facility.pdf>
- ADB. 2011b. "Key Terms and Conditions for the Solar Power Generation Guarantee Facility." Asian Development Bank. <http://www2.adb.org/Documents/Supplementary-Appendices/44941/44941-01-IND-SA.pdf>
- ADB. 2012. "India Solar Generation Guarantee Facility." Asian Development Bank. <http://www.adb.org/site/private-sector-financing/india-solar-generation-guarantee-facility>
- Aviva. 2012. "Aviva Investors announces first close of infrastructure debt fund, Aviva Investors Hadrian Capital Fund 1", Aviva Investors. http://www.avivainvestors.co.uk/media-centre/2012-archive/xml_027993.html
- BNEF. 2010. "Crossing the Valley of Death." Bloomberg New Energy Finance. <https://www.bnef.com/WhitePapers/download/29>
- Climate Bond Initiative, Climate Policy Initiative, 2012. "Renewable Energy Policy Risk Insurance: a way forward". Report from roundtable held at Bank of America Merrill Lynch (BoAML) on 27 June 2012, London.
- DBAM. 2009. "US GAAP - FASB 157-4, Fair Value Measurement". Deutsche Insurance Asset Management.
- DB. 2011. "Solvency II and Basel III: Reciprocal effects should not be ignored". Deutsche Bank Research.
- EC. 2011. "Europe 2020 Project Bond Impact Assessment - EC Communication". European Commission. http://ec.europa.eu/economy_finance/financial_operations/investment/europe_2020/documents/sec2011_1237_en.pdf
- EC. 2012a. "The Project Bond Initiative - Investment Needs". European Commission. http://ec.europa.eu/economy_finance/financial_operations/investment/europe_2020/investment_needs_en.htm
- EC. 2012b. "Public consultation on the Europe 2020 Project Bond Initiative: Key messages". European Commission. http://ec.europa.eu/economy_finance/consultation/pdf/bonds_consultation_en.pdf
- EIB. 2012a. "Personal Communication on November 15th". European Investment Bank, 15 November 2012.
- EIB. 2012b. "An outline guide to Project Bonds Credit Enhancement and the Project Bonds Initiative". European Investment Bank http://www.eib.org/attachments/documents/project_bonds_guide_en.pdf
- Eckhart M. 2012. "Preliminary Concept Paper: Sustainable Development Bond Assurance Corporation." Citigroup.
- Fitch. 2011. "Fitch Ratings: Fitch Comments on EU Project Bonds Initiative". FitchRatings. http://ec.europa.eu/economy_finance/financial_operations/investment/europe_2020/documents/fitch_comments_on_eu_project_bonds_initiative.pdf
- Frisary, G., M. Hervè-Mignucci, V. Micale, F. Mazza. 2013. "Risk Gaps". Venice: Climate Policy Initiative.
- Gatti, S. 2008. "Project Finance in Theory and Practice. Designing, Structuring and Financing Private and Public Projects." *In Academic Press Advanced Finance Series*: p. 414.
- Groobey, C., J. Pierce, M. Faber, G. Broome. 2010. "Project Finance Primer for Renewable Clean Tech Project." Wislon Sonsini Goodrich & Rosati.
- HWC. 2012a. "Hadrian's Wall Capital. Providing Competitive Long Term Senior Debt: an Introduction". Hadrian's Wall Capital.
- HWC. 2012b. Personal Communication, London November 29th 2012. Hadrian's Wall Capital.
- IEA. 2011a. "World Energy Outlook 2011". OECD/IEA.
- IEA. 2011b. "Deploying Renewables 2011". OECD/IEA.
- IEA. 2012. "Energy Technology Perspectives 2012". OECD/IEA. <http://www.iea.org/w/bookshop/add.aspx?id=425>
- Lam, D., 2006. "Credit Enhancement in Securitization", Asia Pacific Finance and Development Center.
- Linklaters. 2011. "Basel III: Liquidity Rules". Linklaters.
- Mintz Levin. 2012. "Renewable Energy Project Finance in the U.S.: 2010-2013 Overview and Future Outlook". Mintz Levin, Boston. <http://www.mintz.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=231&PortalId=0&DownloadMethod=attachment>
- Moody's. 2006. "Moody's Rating Methodology for the Financial Guaranty Insurance Industry." Moody's.

- Moody's. 2011. "Europe 2020 Project Bond Initiative". Moody's Investors Services. http://www.moody's.com/researchdocumentcontentpage.aspx?docid=PBC_133841
- OECD. 2012a. "The Role of Institutional Investors in Financing Clean Energy." OECD.
- PFM. 2000. "CLOs trophobia?". Project Finance Magazine, 01 August 2000.
- PFM. 2008. "Down cycle means recycle". Project Finance Magazine, 19 November 2008.
- PFM. 2011a. "Lloyds brings cash project CLO to market". Project Finance Magazine, 08 March 2011.
- PFM. 2011b. "Gable Funding pulled". Project Finance Magazine, 12 April 2011.
- PFM. 2012. "Goldman Sachs plots monoline venture". Project Finance Magazine, 19 March 2012.
- Purka, D. 2012. "Solar Power in India: ADB's Guarantee Facility and Technical Assistance Program." Asia Clean Energy Forum, Manila 2012.
- Richardson J., M. Wilkins, V. Bruggeman, and M. Beyzh. 2010. "Can Capital Markets Bridge the Climate Change Financing Gap?". Parhelion Underwriting Ltd and Standard & Poor's. http://www.environmental-finance.com/download.php?files/pdf/4cc006c89e09a/Parhelion_Climate_Financing_Risk_Mapping_Report_2010.pdf
- S&P. 2011a. "How Europe's Initiative To Stimulate Infrastructure Project Bond Financing Could Affect Ratings". Credit FAQ, Standard and Poor's. http://ec.europa.eu/economy_finance/financial_operations/investment/europe_2020/documents/how_europes_initiative_to_stimulate_infrastructure_16052011.pdf
- S&P. 2011b. "Bond Insurance Rating Methodology and Assumptions." Global Credit Portal, Standard and Poor's. <http://www.standardandpoors.com/ratings/articles/en/us/?articleType=PDF&assetID=1245321473227>
- UK DECC. 2012. "Intervention Summary: UK-ADB Private Sector Guarantee Partnership." UK DECC. <http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/international-climate-change/4781-business-case-for-india-solar-power-generation-gua.pdf>
- WEF. 2012. "Unlocking Financing for Clean Energy in Kenya". World Economic Forum -Workshop, Nairobi, 15 May 2012. <http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/international-climate-change/5507-cmci-nairobi-workshop-summary.pdf>
- Wilkins, M. 2012. "Evaluating Investor Risk in Infrastructure Projects". Presented at: OECD Expert Meeting - Session IV - Mobilizing Private Investment in Low-Carbon, Climate-Resilient Infrastructure. Paris, 2012.
- Wynn, G. 2012. "Why project bonds are a good idea." London: Reuters. <http://www.reuters.com/article/2012/05/25/us-energy-bond-idUSBRE8400BP20120525>