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Green Infrastructure Bonds: Accessing the scale of low cost capital required to tackle climate change

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Summary

1. There are a wide variety of different “green” or “climate” bonds, but in terms of the quantum of investment generated, green infrastructure bonds are likely to be the most widely applicable and scalable.
2. Green infrastructure bonds are asset-backed corporate bonds issued to refinance operational cash-flow producing low carbon infrastructure. They would be rated by ratings agencies and issued at a sufficient scale to be liquid.
3. Their development is important for a number of reasons: to access the sheer scale of capital required for our low carbon transition; to reduce the average cost of capital; to create a credible, low cost exit for construction phase capital, as well as for the longer term project finance debt held by banks with constrained balance sheets; and to match stable long term returns from operational infrastructure with the growing liabilities held by pension funds and insurance companies.
4. The green infrastructure bond market needed to access institutional investors at scale does not yet exist in any significant form. The Green Investment Bank could, however, have a potentially important role in helping to speed up the creation of a liquid market. It could do this by improving the risk profile of green infrastructure bonds through temporary holdings of first-loss tranches from early bond issuances. After helping the market gain familiarity, the Bank could then sell back bonds into the liquid market that it had helped create.
5. Measures to reduce policy risk and improve the revenue certainty of low carbon assets will improve the credit rating of a bond and lower the average cost of capital. Although green infrastructure bonds could be successfully issued under current UK market arrangements, the work of electricity market reform (EMR) in improving revenue certainty could further improve the cost of capital and help ensure that green infrastructure bonds match the risk-reward profile of institutional investors.

References:

1. Green Investment Bank Commission (2010) Unlocking investment to deliver Britain's low carbon future.
2. Climate Change Capital & E3G (2009) Accelerating Green Infrastructure Financing: Outline proposals for UK green bonds and infrastructure bank
3. E3G (2010) Green bonds: The missing piece of the jigsaw.
4. Veys, A. (2010) The Sterling Bond Markets and Low Carbon or Green Bonds. (E3G, UK).
5. Helm, D., Wardlaw, J., & Caldecott, B. (2009) Delivering a 21st Century infrastructure for Britain. (Policy Exchange, UK).

“Green” bonds

There are a wide variety of different “green” or “climate” bond proposals, including green infrastructure bonds, Green Investment Bank (GIB) bonds¹, green retail bonds², green gilts³, multilateral development bank green bonds⁴, corporate green bonds⁵, green sectoral bonds⁶ and index-linked carbon bonds⁷. All could have a role in helping to raise finance for different parts of our low carbon transition.

But, in terms of the quantum of investment generated, green infrastructure bonds are likely to be the most widely applicable and scalable. This is because they are a relatively simple and proven way of raising capital and use existing commercial structures.

Green infrastructure bonds

Green infrastructure bonds are asset-backed corporate bonds issued to refinance operational cash-flow producing low carbon infrastructure. They would be rated by ratings agencies and issued at a sufficient scale to be liquid⁸. They have characteristics that are similar or identical to existing infrastructure, project or utility bonds issued to refinance “traditional” or “conventional” forms of infrastructure either on a project-by-project basis or across asset portfolios.

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The development of these debt products for low carbon infrastructure is important for a number of reasons, but four stand out:

First, they will enable project developers and sponsors to access the deep pools of capital available from institutional investors and the debt capital markets. This is perhaps the only source of capital large enough to finance the scale of low carbon infrastructure investment required given constrained bank and utility balance sheets, and the high returns that smaller private equity investors seek⁹.

6. International Emissions Trading Association (2010) Green sectoral bonds.
7. Mainelli, M., Onstwedder, J., Parker, K., & Fischer, W. (2009) Index-linked Carbon Bonds – Gilty Green Government. (Z/Yen Group, UK).
8. Likely to be at least several hundred million pounds per issuance
9. Ernst & Young (2010) Capitalising the Green Investment Bank; Green Investment Bank Commission (2010) Unlocking investment to deliver Britain's low carbon future.

In the last two years various studies have shown that at least £200 billion of low carbon infrastructure investment is required in the UK between now and 2020.¹⁰ Ernst & Young estimates that traditional sources of capital for low carbon investment in the UK – ranging from utilities’ ability to finance from balance sheet through to project finance and infrastructure fund support – amount to only £50–80 billion over the next 15 years.¹¹ Facilitating access to the debt capital markets can play a significant role in closing this gap. For example, in 2008 approximately £3 trillion of long term assets were held by UK pension funds and insurance companies.¹² Allocating a small proportion of this total over the coming decade, say 4 to 5 percent, to low carbon infrastructure could close the gap in capital required.

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Despite this, low carbon infrastructure projects are generally unable to access capital held by institutional investors. This is because projects tend to be financed one-by-one in bespoke structures and institutional investors are highly unlikely to invest in this way and directly into individual projects¹³. Given current structures and the way in which institutional investors operate and invest, this is unlikely to change.¹⁴

Second, by enabling access to low cost, low risk capital, green infrastructure bonds can reduce the average cost of capital for our low carbon transition. Reducing the average cost of capital on a £200 billion infrastructure programme by 1 percent would reduce interest payments by £2 billion per annum. Given that the cost of project finance debt is approximately 7 percent and the median yield for conventional energy utility bonds is 4 percent¹⁵, a 1 percent or greater reduction in the average cost of capital would appear possible.

Third, a liquid market in green infrastructure bonds creates a credible and lower cost exit for construction phase capital, as well as for the longer term project finance debt held by banks with constrained balance sheets. This exit will

help to increase the speed at which capital can be recycled back into construction and also help to attract additional construction phase finance. Investors are more likely to invest their capital in construction if there is a credible and predictable low cost exit once assets become operational.

“By enabling access to low cost, low risk capital, green infrastructure bonds can reduce the average cost of capital for our low carbon transition.”

Fourth, these debt products can help match stable long term returns from operational infrastructure with the growing liabilities held by pension funds, insurance companies and other institutional investors.¹⁶ There is a large and growing appetite for debt products issued on the back of secure index-linked cash flows, for example RPI-linked Feed-in-Tariffs.¹⁷

Priming the market

The green infrastructure bond market needed to access institutional investors at scale does not yet exist in any significant form. This is largely due to the immaturity of the low carbon sector itself – in terms of the technologies, policies and financial intermediaries involved. Low carbon infrastructure is uniquely dependent on policy instruments that are considered “innovative” and lack a long term track record, have associated political and policy risks (e.g. Spanish FITs), while frequently being complex and volatile (e.g. UK Renewables Obligation). These differences are complemented by the greater technological risks associated with constructing and operating new low carbon technologies in often difficult environments (e.g. UK offshore wind).

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References:

10. Helm, D., Wardlaw, J., & Caldecott, B. (2009) Delivering a 21st Century infrastructure for Britain. (Policy Exchange, UK); Ernst & Young (2010) Capitalising the Green Investment Bank; Green Investment Bank Commission (2010) Unlocking investment to deliver Britain’s low carbon future.
11. Ibid.
12. Veys, A. (2010) The Sterling Bond Markets and Low Carbon or Green Bonds. (E3G, UK).

13. Hamilton, K. (2010) EU energy policy agenda and finance: Working summary. (Chatham House, UK).
14. Ibid.
15. Climate Change Capital analysis
16. Hamilton, K. (2010) EU energy policy agenda and finance: Working summary. (Chatham House, UK).
17. Bloomberg New Energy Finance (2010); Inspiratia (2010).

The low carbon sector is, however, developing rapidly on almost every front. As it expands and experience grows (financial, technological, operational, and policy-related), the way low carbon infrastructure is financed and treated is likely to become more “normalised” or “mainstreamed”. As part of this ongoing development, a liquid market in “green” infrastructure bonds could develop organically overtime without state intervention or support. However, this may occur much more slowly and expensively than is desirable for two reasons:

First, without liquidity few investors will want to buy green infrastructure bonds and without buyers, few will want to issue them, which will in-turn, result in little liquidity. This cycle can be broken through a temporary intervention that aims to support initial bond issuances so that the market can reach a self-sustaining critical mass with a sufficient number of buyers and bond issuers.

Second, when first created new debt products are often conservatively priced by market participants due to an insufficient track record, an illiquidity premium and a lack of associated financial and credit metrics.

Infrastructure funds

Infrastructure funds, into which institutional investors also invest, are another way for capital to be deployed into low carbon infrastructure. This a complementary conduit for the capital held by institutional investors, but does not replace the need for a liquid market in infrastructure bonds to refinance operational low carbon infrastructure.

“These debt products can help match stable long term returns from operational infrastructure with the growing liabilities held by pension funds, insurance companies and other institutional investors.”

This is for the following reasons:

- Infrastructure funds, especially those that specialise in energy and low carbon infrastructure, often focus on construction or pre-construction phase equity finance because of the higher returns, rather than on the debt refinancing of operational assets. The risk-reward profile is therefore different from safer green infrastructure bonds.

- Institutional investors can and want to deploy capital directly and easily into liquid, rated and asset-backed bonds without the need for additional and expensive intermediaries such as fund managers.¹⁸
- The amount of capital available to infrastructure funds is dwarfed by that allocated to the asset-backed corporate bond market. For example, \$35.9bn was raised by infrastructure funds worldwide in 2007¹⁹ (prior to the financial crisis), of which a small proportion was allocated for energy-related infrastructure in Europe. In contrast, £73bn of European energy utility bonds were successfully issued in 2009²⁰.

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Green Investment Bank

The proposed UK GIB could play a role in helping to speed up the creation of a liquid market in green infrastructure bonds. It could do this together with the European Investment Bank and other public financial institutions. There are two broad types of temporary intervention that could undertaken:

- **Monoline** – the GIB could act as a bond insurer. For example, it could provide a paid-for investment grade wrapper around the issuance of green infrastructure bonds.
- **Purchase sub-tranches of subordinated debt from early bond issuances** – the GIB could improve the risk profile of green infrastructure bonds by temporarily taking some first-loss layers from early bond issuances. This would lower their price and help the market gain familiarity. After this has been achieved, the GIB could then sell back bonds into the liquid market that it has helped create.

Of the two options – a monoline or temporarily purchasing subordinated debt – the latter has the benefit of helping the market gain familiarity with a new type of bond with a distinct credit character, instead of an asset with the GIB’s credit character (which could be the same as HMG if the GIB possesses an explicit or

References:

18. Hamilton, K. (2010) EU energy policy agenda and finance: Working summary. (Chatham House, UK); Bloomberg New Energy Finance (2010); Inspiratia (2010).

19. Inderst, G. (2009), “Pension Fund Investment in Infrastructure”, OECD Working Papers on Insurance and Private Pensions, No. 32, OECD.

20. Climate Change Capital analysis

implicit Government guarantee). This is important if we are to create a liquid market independently of a long term government intervention. In addition, buying bonds could be quickly organised and would have the added benefit of being a truly temporary (e.g. 3–5 years compared to 20–30 years) and more flexible type of intervention with a built in exit strategy.

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The other role of the GIB in kick starting a liquid green infrastructure bond market could be in helping to structure the first issuances. To ensure liquidity, issuances will need to be of a sufficient size and bonds will need to be rated. The GIB could support this process and might be able to help encourage the pooling of assets to improve risk profiles and ensure sufficiently sized issuances.

Electricity Market Reform

The primary difference between green infrastructure bonds and traditional forms of infrastructure bond are the unique risks associated with the underlying asset and its cash flows. Low carbon infrastructure is generally much more dependent on income generated through subsidies, regulations, obligations and incentives that are created by public policy, whereas conventional infrastructure is generally significantly less so.

“Measures to reduce policy risk and improve the revenue certainty of low carbon assets will improve the credit rating of a bond and lower the average cost of capital.”

All things being equal, measures to reduce policy risk and improve the revenue certainty of low carbon assets will improve the credit rating of a bond and lower the average cost of capital. Although green infrastructure bonds could be successfully issued under current UK market arrangements, the work of electricity market reform (EMR) in improving revenue certainty through the

reform of subsidy mechanisms, whether via Fixed Feed-in-Tariffs, Contracts for Difference or a Regulated Asset Base, and the introduction of a carbon price floor, could further improve the cost of capital and help ensure that green infrastructure bonds match the risk-reward profile of institutional investors.

Conclusion

Green infrastructure bonds, issued to refinance operational cash-flow producing low carbon infrastructure, are essential if we are to access the low cost capital needed to deliver our transition to a low carbon economy. Without a liquid market in them, finding the capital required will be significantly harder and also more expensive.

The proposed GIB can play an important role in helping to quickly create a liquid market in these new, but also simple and proven, debt products. Measures to reduce policy risk and improve the revenue certainty of low carbon assets are also important, and can help ensure that green infrastructure bonds match the risk-reward profile of institutional investors.

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