

# Environmental policy performance bonds

*Linking public debt to CO<sub>2</sub> emissions could give governments a strong incentive to deliver on climate change action*

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The supreme decision-making body of the UN Framework Convention on Climate Change (UNFCCC), the Conference of the Parties (COP), will meet in Paris at the end of 2015 for the 21st time. The stakes are high. Climate change threatens the health and lives of billions of people. According to scientists, business as usual with uncontrolled carbon emissions could raise global temperatures by as much as 4°C by the 2080s. We cannot slow global warming without slowing CO<sub>2</sub> emissions.

Some economists forecast that hurricanes alone could cause the global economy to lose \$9.7 trillion in income in the long run,<sup>1</sup> yet experts are already betting on another climate negotiation failure. And the financial challenges are hotting up. Capital investment to address climate change is estimated at \$1 trillion per year above a business-as-usual scenario,<sup>2</sup> yet CO<sub>2</sub> prices have collapsed. Low oil prices threaten renewable investment. What sane person would invest in low-carbon scenarios?

What can negotiators do this time in Paris to renew investment in a low-carbon future? Perhaps they should look to public debt as much as private equity. As for private debt, private-sector green-bond issuers ‘promise’ investors that they will use the funds for green projects. Private-sector green-bond issuance could triple in scale this year and reach \$100 billion.<sup>3</sup> Meanwhile, since 2007, public sector debt has grown by \$57 trillion, around nine per cent per year.<sup>4</sup> Fixed-rate bonds are

growing in the corporate sector but more fixed-rate bonds in the government sector aren’t needed. There is a huge opportunity to reorient traditional government debt to help achieve CO<sub>2</sub> emission reductions. Why don’t governments use debt to ‘promise’ investors they will hold to their policies, at no cost to themselves if they keep their promises? How might this work?

## CO<sub>2</sub> bonds

We propose the creation of environmental policy performance bonds – call them CO<sub>2</sub> government bonds. The interest rates on these new bond types would be linked to CO<sub>2</sub> reduction targets. For example, governments could set a rate of return on their bonds that pays investors more when the proportion of renewable energy over a year drops below a target percentage.

Alternatively, the more a government reduces CO<sub>2</sub> emissions the less interest the government pays.

Issuing a CO<sub>2</sub> bond is a simple and effective way for governments to enhance their funding, provided they engage in reducing their own CO<sub>2</sub> emissions or increase renewable energy generation.

CO<sub>2</sub> government bonds do not require promises that the issuer will invest the money in green projects. The money can be used for any government expenditure, such as health, education or infrastructure. However, contrary to green bonds with a fixed coupon, there is a clear incentive for the issuer to reduce CO<sub>2</sub> by whatever means are available, especially ‘costless’ ones such as adhering to CO<sub>2</sub> reduction policies. Indeed, the payoff formula ensures that the proceeds of such bonds will be appropriately

ISSUERS AND INVESTORS OF A CO <sub>2</sub> GOVERNMENT BOND	
ISSUERS	INVESTORS
<p><b>Governments</b></p> <ul style="list-style-type: none"> <li>● Governments willing to signal the credibility of their green programmes</li> </ul> <p><b>International financial guarantors and co-investors</b></p> <ul style="list-style-type: none"> <li>● World Bank</li> <li>● European Investment Bank</li> <li>● International Finance Corporation</li> <li>● European Bank for Reconstruction and Development</li> </ul>	<p><b>Long-term investors</b></p> <ul style="list-style-type: none"> <li>● State pension funds</li> <li>● Private pension funds</li> <li>● Insurance companies</li> <li>● Impact investors (philanthropists, family offices)</li> <li>● Sovereign funds</li> <li>● Endowment funds, e.g. universities</li> <li>● Asset managers with a green focus</li> </ul> <p><b>Leading corporate buyers</b></p> <ul style="list-style-type: none"> <li>● Renewable energy firms</li> <li>● Companies with a green focus</li> </ul>

invested rather than resulting in under or over investment in green projects.

For example, let's assume that Germany had used such instruments in 2000. Back then, renewable energy amounted to six per cent of Germany's total power consumption and the 15-year interest rate was higher than six per cent. Suppose that the yearly payoff offered by the German government's 15-year CO<sub>2</sub> policy performance bond was zero per cent, provided Germany achieved a one per cent yearly increase in renewable energy use over 15 years (i.e. reaching 21 per cent in 2015). But if Germany fell behind with its renewable energy targets, the bond would pay the difference in percentage terms. For example, if Germany had 10 per cent renewable energy use in 2010, then the bond would pay the difference from where Germany should be (16 per cent) and where it actually was (10 per cent): a net payment of six per cent. In reality, renewables in Germany went from six per cent to 28 per cent in 2014. So Germany would have paid zero per cent for this policy performance bond borrowing over 15 years. The buyers of such debt would have been renewable investors trying to hedge their risk of policy change.

**Private and government winners**

“Les promesses n’engagent que ceux qui les écoutent” (promises bind only those who listen to them) declared Henri Queuille, a French politician. According to the UNFCCC, 33 countries have fixed CO<sub>2</sub> reduction objectives, including new joiners from the emerging world like Mexico and Russia, but no country seems to have clearly aligned financial incentives with environmental ones. We need more than government promises. CO<sub>2</sub> government bonds are one of the tools that can move from promises to commitments.

Low-carbon technologies such as geothermal, wind, tidal, wave and solar face a ‘high capital cost, low operating cost’ chasm. Low-carbon technologies are also higher risk, leading to higher interest rates when borrowing. A rational producer in the process of adding the next megawatt should select carbon-based production over renewable production based on marginal

**ADVANTAGES FOR CO<sub>2</sub> GOVERNMENT BOND INVESTORS**

INVESTOR TYPE	BENEFIT FOR INVESTOR
Insurance companies	Hedging climate risk
State pension funds	Portfolio diversification
Development banks	Environmental return
Sovereign funds	Impact investing

returns. While we do not recommend the hypothecation of CO<sub>2</sub> government bonds (i.e. where the borrower pledges collateral to secure the debt), it might be rational for governments to provide low-cost capital to producers of renewable energy. By providing incentives to early movers, governments enable faster adoption rates and cut their own long-term funding costs.

A lot of investors know that they are over-exposed to climate change risks and under-exposed to climate change opportunities. CO<sub>2</sub> government bonds could allow long-term investors, such as insurance companies or pension funds, to hedge their climate risk and eventually profit from opportunities linked to low-carbon markets.

Many long-term investors, such as public pension funds or university endowments, face public pressure to divest from fossil fuels and invest in more green products. However, they also have a duty to provide returns. CO<sub>2</sub> government bonds would allow them to decarbonise their portfolios and support public policy, but hedged against government policies changing.

**Global winners**

For such products to be successful, CO<sub>2</sub> measurements need to be trusted. Fortunately, there are reliable numbers from the International Energy Agency, national statistics offices and regional agencies such as Eurostat.

Total energy usage is well monitored. Global CO<sub>2</sub> levels are well monitored. For

the closest comparable bonds, inflation-linked bonds, investors trust governments not to lie about inflation statistics (much). On a case-by-case basis, scientists, rating agencies or other external auditors could provide additional guarantees on governments meeting, or not, their targets. GDP-linked indexed loans, which have been raised as a possible way to ameliorate Greek economic problems, are another example of policy-performance bonds. Such bonds in water or forestry might help with other environmental targets.

Now imagine COP22. With CO<sub>2</sub> government bonds we would have clear bond prices set by markets. Country negotiator A would say to B, “I see you’re keeping your promises because your CO<sub>2</sub> government bond interest payments are so low”. While B says to A, “I see you’re keeping your promises as investors now prefer your normal government bonds at lower interest rates to your CO<sub>2</sub> bonds at higher rates. That’s because they know you’ll meet your carbon targets and never pay those potentially high interest rates.”

Henry Ford said, “Coming together is a beginning. Keeping together is progress. Working together is success.” Governments came together with the UNFCCC. They have kept together through a score of COPs. Now they need to work together to align financial and environmental incentives. CO<sub>2</sub> government bonds monetise those government promises to investors and each other. ●

- 1 NBER Working Paper Series (2014), “The Causal Effect Of Environmental Catastrophe On Long-Run Economic Growth : Evidence From 6,700 Cyclones” – [www.nber.org/papers/w20352](http://www.nber.org/papers/w20352)
- 2 International Energy Agency (2014), “World Energy Outlook 2014” – [www.worldenergyoutlook.org/publications/weo-2014/](http://www.worldenergyoutlook.org/publications/weo-2014/)
- 3 Mariana Santibanez and Abhinav Ramnarayan, “Green Bond Issuance Could Hit USD100bn In 2015”, Reuters (27 March 2015) – [www.reuters.com/article/2015/03/27/green-bonds-idUSL6N0WT1XB20150327](http://www.reuters.com/article/2015/03/27/green-bonds-idUSL6N0WT1XB20150327)
- 4 McKinsey Global Institute (2015), “Debt and (Not Much) Deleveraging” – [www.mckinsey.com/insights/economic\\_studies/debt\\_and\\_not\\_much\\_deleveraging](http://www.mckinsey.com/insights/economic_studies/debt_and_not_much_deleveraging)
- 5 See: [www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx](http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx) and [www.theguardian.com/environment/2015/mar/31/us-set-to-propose-emissions-cuts-of-28-ahead-of-global-climate-treaty](http://www.theguardian.com/environment/2015/mar/31/us-set-to-propose-emissions-cuts-of-28-ahead-of-global-climate-treaty)