BONDS AND CLIMATE CHANGE

THE STATE OF THE MARKET IN 2012

A USD174BN CLIMATE-THEMED BONDS UNIVERSE

Climate Bonds INITIATIVE

HSBC

Prepared by Climate Bonds Initiative.

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The time has come to mobilise bonds for climate investment

Bonds will play a crucial role in financing the transition to a low-carbon, climate-resilient economy. Investor interest in the asset class is growing, but what is the current investment opportunity already out there?

This report, commissioned by the HSBC Climate Change Centre of Excellence and prepared by the Climate Bonds Initiative, presents a first estimate of the outstanding global bond market size linked to key climate change themes, and examines future drivers and trends in the short term.

In spite of the financial crisis, institutional investor commitment to action on climate change has grown not fallen. Back in 2009 at the Copenhagen climate summit, 187 institutions with over USD13trn in assets under management (AUM) supported a statement asking for robust policy action. By the time of the 2011 Durban conference, this backing had increased to 285 institutions with over USD20trn in AUM.

Importantly, this call for clear policy and market frameworks that enable investments in low-carbon growth is moving from the high-level policy arena to the details of asset allocation. At Durban, a group of leading insurers with AUM of more than USD3trn specifically called for "a significant increase in global bond issuance to be dedicated to finance for an acceleration of the transition to low-carbon growth"[1].

Sizing the bond universe

This report aims to deepen the current understanding of the climate-themed bond market by addressing four key questions:

- How big is this market?
- What are the key investment themes?
- Where are the main regional markets?
- What is the market outlook?

The global bond universe was screened for climate change solutions in seven key themes: energy; transport; buildings and industry; finance; waste; water; and agriculture and forestry. Only bonds issued since 2005 were included as this is the year the Kyoto Protocol came into force and the climate change agenda gained prominence. The use of proceeds for the bonds identified was analysed and supplemented primarily by revenues for corporate issuers or other factors such as the generation mix of utilities. Bonds were then assigned to categories based on the relative strength of their alignment with climate themes. Fully dedicated bonds were classified as 'climate-themed bonds'.

1 Climatewise, Call to increase opportunities to make low-carbon fixed income investments, December 2011

"Investor interest in the links between bonds and climate change is growing"

Why bonds and climate change?

Bonds are particularly suited for providing the capital for the long-term environmental infrastructure required to build a low-carbon, climate-resilient economy. The extra upfront investments are often balanced by much lower operating costs, particularly in the building, energy, industrial and transport sectors.

It is estimated that around USD10trn in cumulative capital investments will be required globally between 2010 and 2020 to drive low-carbon energy alone[2]. The historical 60:40 split between debt and equity means that cUSD6trn could be required in terms of bank loans as well as bonds.

The success of climate policies has meant that key clean technologies are now reaching a stage of maturity appropriate for greater bond investment. From a regulatory perspective, new financial regulations (such as Basel III) could result in a shift to more capital-market funding of project finance transactions. Basel III could discourage banks from holding longer-term loans on their balance sheets, prompting increasing costs, reductions in the term of loans and introducing greater refinancing risk.[3] In addition, changing asset allocation strategies are generating greater demand from investors such as pension funds and insurance companies who need long-term fixed-income investments to match their liabilities.

Finally, institutional investors are extending the integration of sustainability factors beyond listed equities into other asset classes, creating appetite for bonds linked to climate change.

2 HSBC, Sizing the Climate Economy, September 2010
3 See Standard & Poor's, Basel III and Solvency II regulations could Bring a sea Change in Global Project Finance Funding, 14 October 2011

At USD174bn, a broad and deep universe

There are some USD174bn in over 1,000 climate-themed bonds[4] outstanding from 207 issuers. Corporates – included listed, state-owned and private companies – account for 82% of the total, followed by development banks and financial institutions (13%), project bonds (3%) and municipal bonds (2%).

Beyond this core universe, we believe that there could be another cUSD204bn of outstanding bonds from issuers with more than 50% of revenues and activities linked to the climate economy. In addition, we also identified a further cUSD373bn of bonds as 'conditionally-aligned'. These are from sectors or technologies that are core to the climate economy, but where more disclosure is required to determine which bonds should be included in our universe. Examples Include biofuels, hydro, waste and water. More transparency from issuers could bring some of these into the climate-themed bond universe.

4 Calculated as of February 2012 with only amounts outstanding from bonds issued since 2005

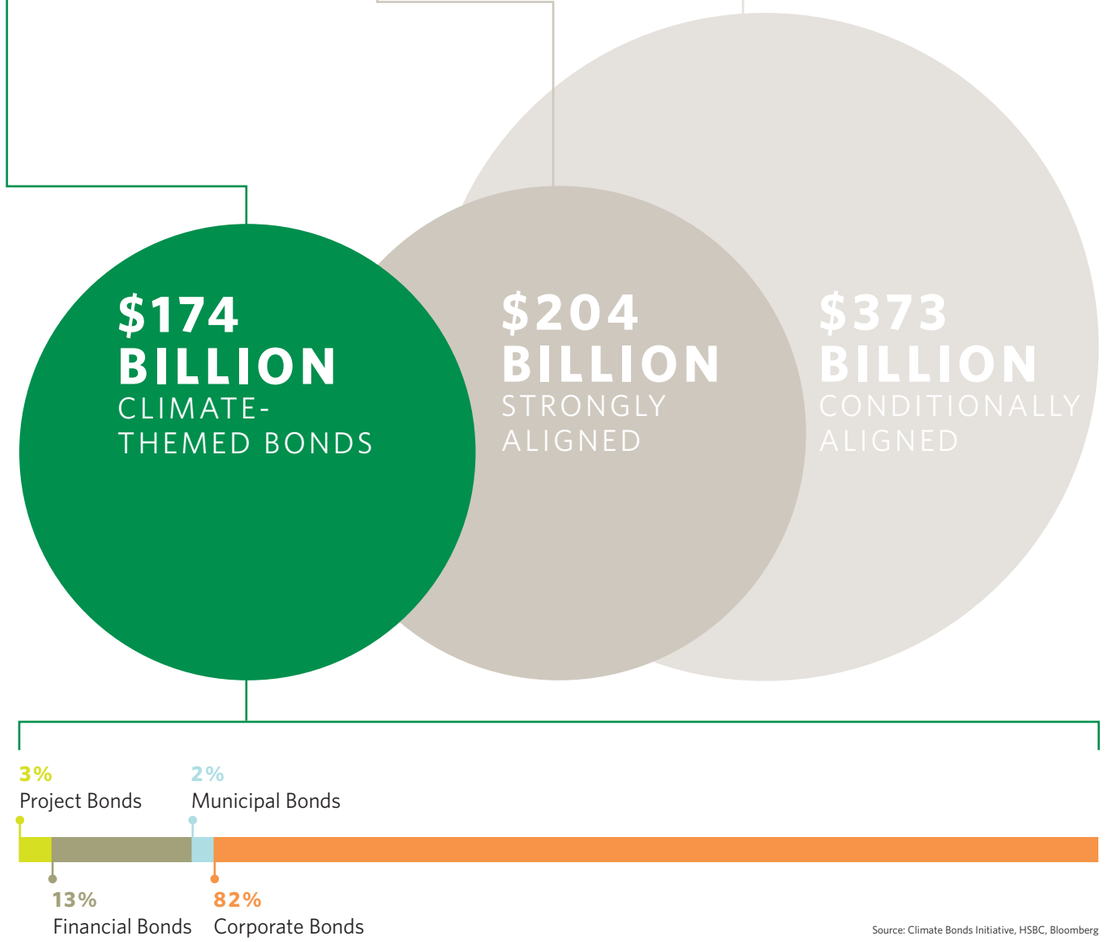
Climate-themed bonds

FULLY ALIGNED:
bonds that are labelled green/climate and bonds from issuers or projects which are wholly dedicated to climate-related activities;

Where future growth could come from

STRONGLY-ALIGNED:
bonds from issuers that have revenues or other relevant metrics greater than 50% dedicated to climate-related activities.

CONDITIONALLY ALIGNED:
bonds from issuers whose contribution to the climate economy is conditional on factors such as feedstock, size, and specificity of activities.



Source: Climate Bonds Initiative, HSBC, Bloomberg

Bonds across the Climate Economy

Energy:

- Fully aligned activities include: renewable energy sources, nuclear and biomass for heat and electricity.
- Bonds linked to large hydropower in tropical regions not included due to potentially high carbon footprints.
- Bonds linked to the expansion of wind and solar power account for two-thirds of the USD29bn in energy bonds.
- Large corporates including Sunpower, Solarworld, Goldwind, Sinovel and Suntech have issued cUSD1.5bn in the past year.
- Project bonds make up 20% and include Topaz Solar Farm, Genesis Solar, Desert Sunlight, Alta Wind and Shepherds Flat.

Transport:

- Includes transport modes with relative carbon efficiency as well as manufacturers of low-carbon biofuels and vehicles.
- Rail is the largest constituent accounting for over 95% of climate-themed bonds.
- Rail is included for its clear carbon outperformance: in the UK, rail is 40% as carbon-intensive as conventional gasoline automobiles, and at least four times less carbon-intensive than heavy trucks for freight transport.
- Coal freight was excluded where explicit.
- Growth expected as sales of fuel-efficient, hybrid and electric vehicles increase and electric vehicle infrastructure expands.

Buildings and Industry:

- Includes technologies and projects designed to improve the energy efficiency of buildings and industry.
- Majority of the cUSD1.5bn climate-themed bonds issued by LED manufacturers.
- USD691m of US municipal bonds issued through a range of initiatives to retrofit residential and commercial buildings.
- Large corporates such as GE, Schneider Electric and Siemens have an opportunity to issue asset-linked bonds to be included in the universe.

Water:

- We screened for sustainable climate-resilient water management systems, technologies and infrastructure.
- USD196bn of bonds issued by water utilities and US municipals deemed conditionally-aligned.
- Issuers could link bonds more clearly with water conservation and flood prevention measures.

Agriculture and Forestry:

- Includes paper and wood product manufacturers, forest management companies and organic seeds and fertilizers.
- USD730m of climate-themed bonds identified.
- Very few bond-issuing companies generate 100% revenues from sustainable agriculture and forestry practices.
- No bonds linked to halting tropical deforestation exist yet.

Waste and Pollution Control:

- Includes companies providing recycling services or recycled products as well as filters and end-of-pipe GHG emission reduction systems.
- Climate-themed bonds are calculated at USD1.2bn.
- USD163bn of conditionally-aligned issuance is from US municipals designated for 'pollution control'.
- Growth expected in bonds for waste-to-energy technology.

Climate Finance:

- Climate-themed bonds dominated by the 'green' labelled programmes of MDBs (USD7.2bn), and Eurofima (USD15bn).
- MDBs with labelled bond programmes include Asian Development Bank, European Investment Bank and the World Bank as well as Norway's Kommunalbanken and India's Renewable Energy Development Agency.
- The insurance sector could play a dual role both as an institutional investor and as an issuer.

Low-carbon transport and energy account for the bulk of issuance

The climate-themed bond universe is dominated by the transport and energy sectors, which together make up 85% of the total. Beyond the climate-themed bonds, there are baskets of other bonds that represent future expansion if the proceeds were clearly dedicated for low-carbon, climate-resilient purposes such as in the energy, waste and water themes.

Broader and deeper than expected

What is significant about these findings is that they present a climate-themed bond market that is both broader and deeper than expected. The reality is that the transition to a low-carbon, climate-resilient economy will develop on the back of key parts of current infrastructure (such as rail and water), supplemented by extensive additional investment in low-carbon energy, efficiency improvements in buildings and industry as well as sustainable forests and agriculture.

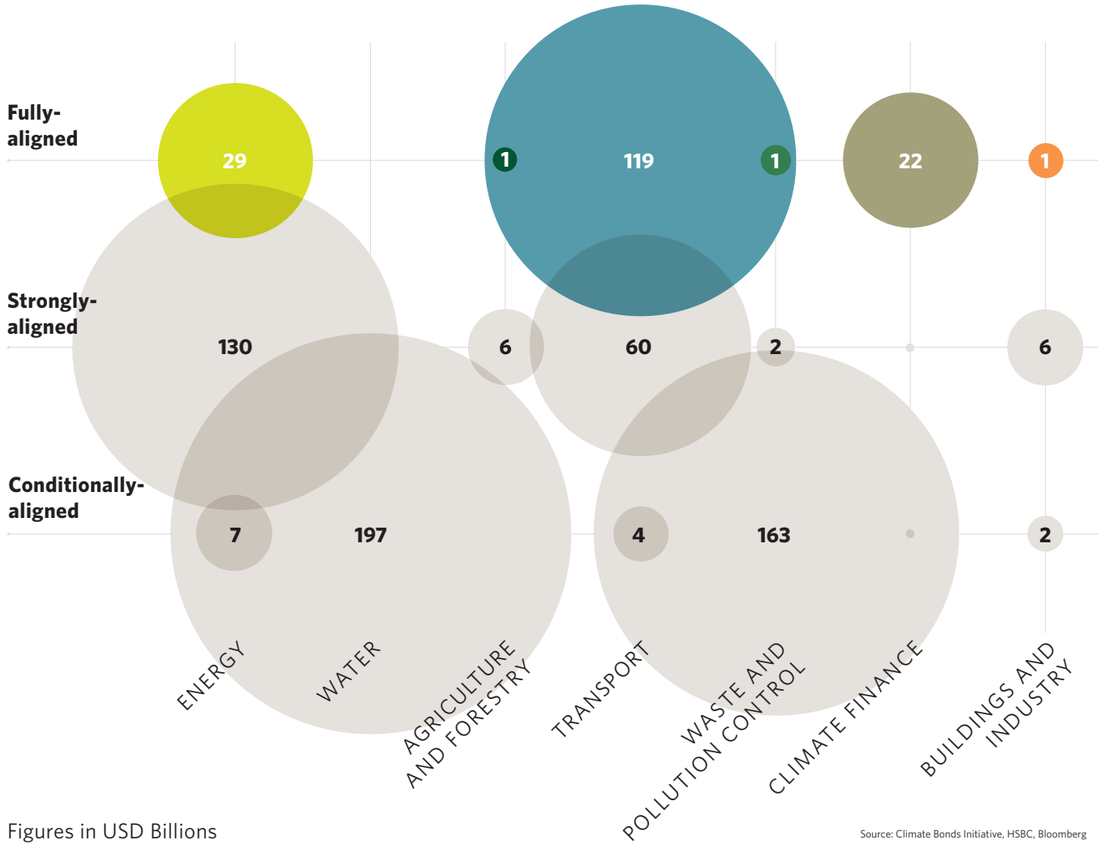
This report thus re-frames the scope of the investable universe for climate-themed bonds – and could help to overcome perceptions among investors that this market is niche and lacking both scale and liquidity.

In the pipeline

We expect further growth in the climate-themed bond market over the coming year. Indeed, a number of bonds were issued between our cut-off date of February 2012 and publication. Key trends to watch include:

- a broader range of issuance from public finance institutions, such as the recent ZAR5.2bn bond from South Africa's Industrial Development Corporation.
- progress in resolving the regulatory obstacles to the concerns over PACE bonds in the USA. The value of PACE bonds could grow to an annual USD12bn market over the next decade – if current regulatory issues are resolved[5].
- growth in the project bond market building on market momentum in the USA and, potentially the EU's project bond initiative.
- expansion in the corporate bond market particularly from energy utilities and industrial energy efficiency corporates.

5 Johnson Controls, Institute for Building Efficiency, 2010

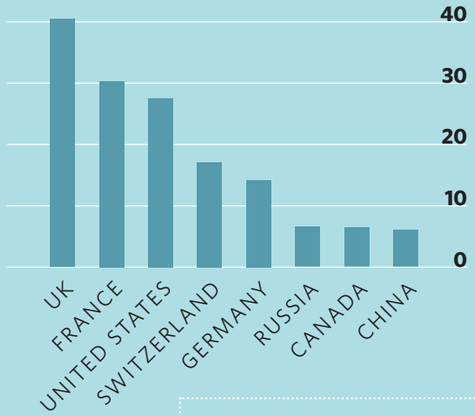


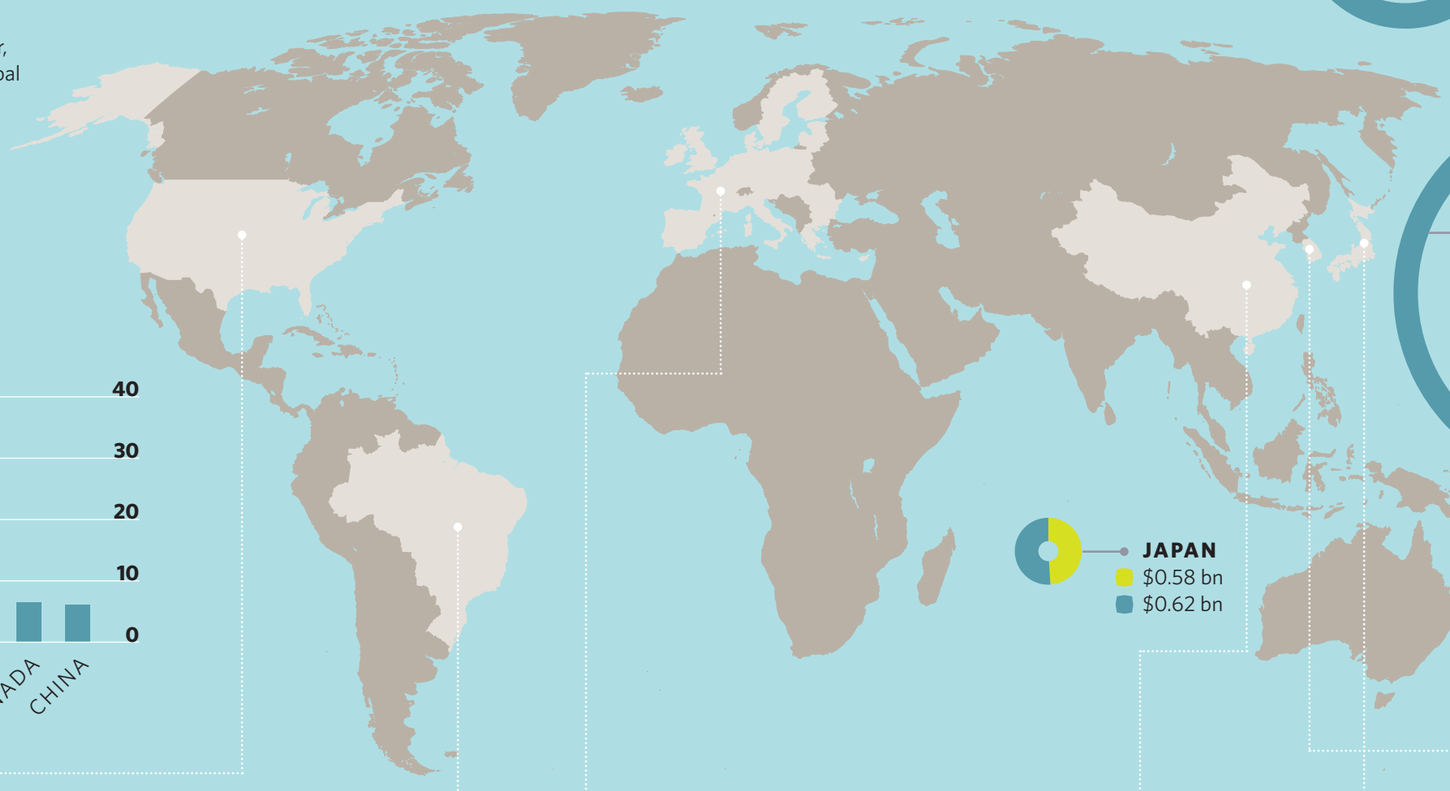
Figures in USD Billions

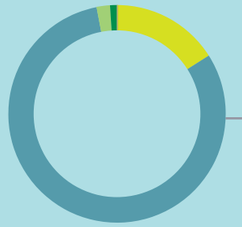
Source: Climate Bonds Initiative, HSBC, Bloomberg

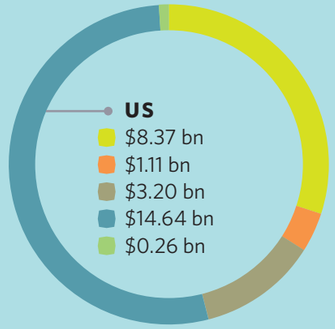
Across the regions

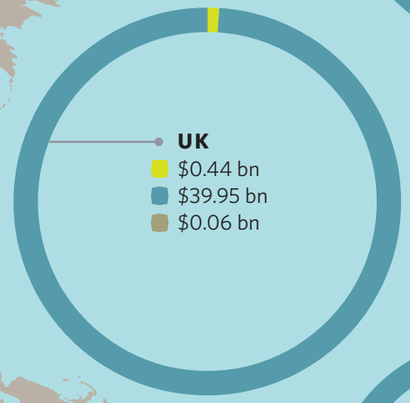
UK institutions have issued the largest amount of climate-themed bonds, with 23% of the global total. France comes in second with 17%. Together, Europe accounts for 67% of the global market, followed by the USA (17%), and Russia, Canada and China all at around 3% each.



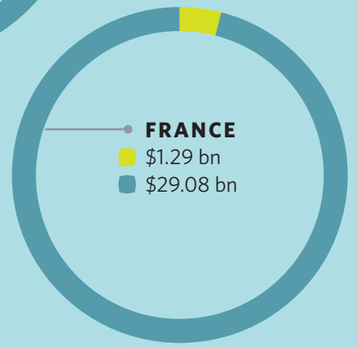








Source: Climate Bonds Initiative, HSBC, Bloomberg



USA: project bond leadership
The USA is the 3rd-highest issuer of climate-themed bonds, with the municipal market being a key feature. We expect US States will issue public revenue bonds to finance further investments in water resource management with necessary climate resilience measures such as planning, flood control and wastewater treatment. Capital for clean energy will be also be a priority. The solar project bond market could grow on the back of the successful Topaz offering – a USD850m bond issued in 2012 with no government guarantees. However, a promising market in Property-Assessed Clean Energy (PACE) bonds is currently slowed by a Federal Housing Finance Agency ruling.

Brazil: expansion ahead
Climate-themed bonds from Brazilian issuers amount to approximately USD1bn. In future, Brazil's national development bank (BNDES) could be at the forefront of climate-themed bond investment. In February 2012, BNDES launched lines of credit for the Brazilian Climate Fund with subprograms including efficient transport modals, efficient machinery and equipment, non-hydro renewables, waste-to-energy plants, and combating desertification. Bonds for forest conservation backed by REDD carbon credits or local governments are being explored but are unlikely to be available in the short-term.

Europe: largest issuance
Europe's leading position in climate-themed bonds is explained by the large volume of outstanding issuance for rail infrastructure. But large utilities are now starting to tap the bond market to finance the expansion of renewable energy. In the climate-themed universe, the most notable project bond issuance was the partially-guaranteed USD260mn Andromeda solar bond, issued at the end of 2010. The European Union has also established a project bond initiative to channel public funding into the enhancement of credit ratings for energy, transport and ICT infrastructure.

China: low-carbon growth potential
A growing renewables sector has contributed 80% of its total of USD6bn. Local issuance by renewable energy companies increased fourfold in 2011 to USD4.3bn. The offshore renminbi bond market in Hong Kong could see future issuance from state-owned rail companies as well as being tapped by large energy conservation groups and renewable manufacturers. Four local governments – Guangdong, Shanghai, Zhejiang and Shenzhen – have also received the green light to pilot municipal issuance this year, pointing towards opportunities of linking low-carbon city development to the bond market.

South Korea: green growth
Although currently ranked only 20th in the current climate-themed bond universe, South Korea represents an innovative market for future growth. In 2009, the government launched its five-year Green Growth plan which targets spending at 2% of GDP and provides incentives for companies certified as having 30% of sales from green technologies or projects. To date 66 companies have achieved certification[6] – investors in these companies also receive tax incentives[7]. This opens up opportunities for investors to gain exposure to cleantech sectors such as fuel-cells and electric vehicles.

6 www.greencertif.or.kr
7 OECD, Korea's green growth strategy, August 2011

Japan: a key source of demand
We estimate that Japan has around USD1bn in climate-themed bonds. But Japan plays another important role – as a source of demand for 'green' labelled bonds from multilateral development banks. Japanese underwriters and arrangers have been prominent in the issuance by World Bank, IFC, EIB and EBRD bonds targeting domestic 'Uridashi' retail investors. New domestic issuance is also likely as the government announced discussion to legally establish the debt seniority of corporate bonds from renewable electricity providers ahead of other unsecured debt.

Growing the market requires standardisation and aggregation

This report has identified a climate-themed bond market that is both broader and deeper than expected. Issuance of climate-themed bonds is continuing in key regions. But innovative solutions are needed if we are to finance the transition to a low-carbon, climate-resilient economy.

Below are three key ways of accelerating investor engagement and market expansion.

1. Standardise and certify

Clear market norms build confidence. Third-party certification of climate-themed bonds based on agreed standards could both reduce reputational risks and enable market liquidity. It would also make positive screening easier for those investors concerned with the macro risks of climate change. From this report, key priorities would be the waste and water sectors.

2. Aggregate to scale and index

Tapping the institutional investment market requires suitable deal flow, with sizes over USD500mn. Currently, we have identified 103 bonds over this threshold (77 transport, 11 energy and 14 finance). Aggregation vehicles are therefore required in order to refinance the climate economy. These would take assets off bank balance sheets, lower the cost of capital, recycle funds into new investments and issue securities at scale to achieve entry onto indices tracked by large investors.

3. Structure to investment-grade

Policy risk is a major constraint to investment in the climate economy. Governments and public finance institutions can help to counter this through a number of measures including:

- Issuing government climate-themed bonds to provide a direct link to climate policies or public subsidies. Australia is doing this via its Clean Energy Finance Corporation as is India with IREDA.
- Providing insurance and other guarantees in relation to policy risk. For example, the German government currently provides guarantees for power purchase agreements.
- Giving fiscal support for qualifying bonds. The US government, for example, awards tax credits for clean energy bonds from local governments; the South Korean government offers tax incentives for investors in 'green' certified companies.
- Allocating public capital to enhance the credit of qualifying bonds, for example, by taking first loss positions or providing guarantees. This is what Italy's Export Credit Agency, SACE, did with the 2010 Andromeda bond; the EU's project bond initiative is also targeted at responding to this need.

"Recognising the extent of the climate-themed bond universe will help investors appreciate the scale and liquidity available."

www.climatebonds.net

The Climate Bonds Initiative is an investor-focused not-for-profit, promoting a rapid transition to a low-carbon economy. www.climatebonds.net.

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