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## **THE ROLE OF INSTITUTIONAL INVESTORS IN FINANCING CLEAN ENERGY**

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## What is the financing challenge?

1. Decarbonising the world's energy system while providing energy access for all will require enormous investments. Achieving this economy-wide transformation will require cumulative investment in green infrastructure in the range of USD 36-42 trillion between 2012 and 2030, *i.e.* approximately USD 2 trillion or 2% of global GDP per year. Today, only USD 1 trillion is being invested annually. Therefore, a USD 1 trillion investment gap exists that needs to be addressed.<sup>1</sup>

2. In the nearer term, and focusing on the power sector alone, the IEA projects that USD 6.35 trillion in total investment will be required from 2010-2020 to reduce energy related CO<sub>2</sub> emissions 50% by 2050 compared to 2005 levels (IEA, 2012). Decarbonising the power sector in this manner will require switching from traditional fossil-fuel plants to a mix of renewables, nuclear and fossil-fuel plants equipped with carbon capture and storage (CCS). These are formidable numbers, but such investment levels are well within the capacity of capital markets if the risk-adjusted returns are available.

3. The challenge policy makers face is that new capacity will be built either way. If it is not clean, it is likely to be around for a very long time. The estimated lifetime of a coal-fired power station is 40-60 years. About 60% of power plants in service or under construction today are projected to still be in operation in 2035, which will mean that the majority of power sector emissions in that year are already "locked in", unless future policy changes force early retirement of existing plants or their retrofitting with CCS. Unless clean alternatives become more competitive, such stations will be run for the duration of their economic lives (OECD, 2011). This is a matter of concern, given that the OECD *Environmental Outlook to 2050* (OECD, 2012) projects that in the absence of new policies; energy-related CO<sub>2</sub> emissions are expected to grow 70% by 2050.

4. So the policy environment in place today really matters. Energy sector investment will not wait for policy makers. Delaying policy changes that would put a price on carbon makes the costs of future action much more expensive, in part because of the need to write-off stranded assets. This is reasonably well known and forms the basis of significant policy advice provided by the OECD and the IEA (OECD, 2011). A robust carbon price and a consistent, clear policy environment is the cornerstone of any investment-grade clean energy policy.

5. But pricing carbon may not be sufficient. Even if governments were to improve the coherence and ambition of their climate policies, they cannot assume that capital will flow in the quantities needed and in the timeframe required. There are aspects of the investment environment that also need to be improved if clean energy is going to be an attractive proposition for some of the large pools of capital managed by institutional investors.<sup>2</sup> That is the subject of this paper.

## Who are the institutional investors and what are their requirements?

6. Though governments understand that decarbonising the world's energy system will require large sums, many are also realising that further recourse to private capital is required. Public finances have become strained in many developed countries and bank lending for long-term project finance has become tighter as the Basel III banking rules are introduced. The demise of AAA-rated monoline insurance companies<sup>3</sup> has also frozen capital markets for infrastructure, depriving the infrastructure market of a

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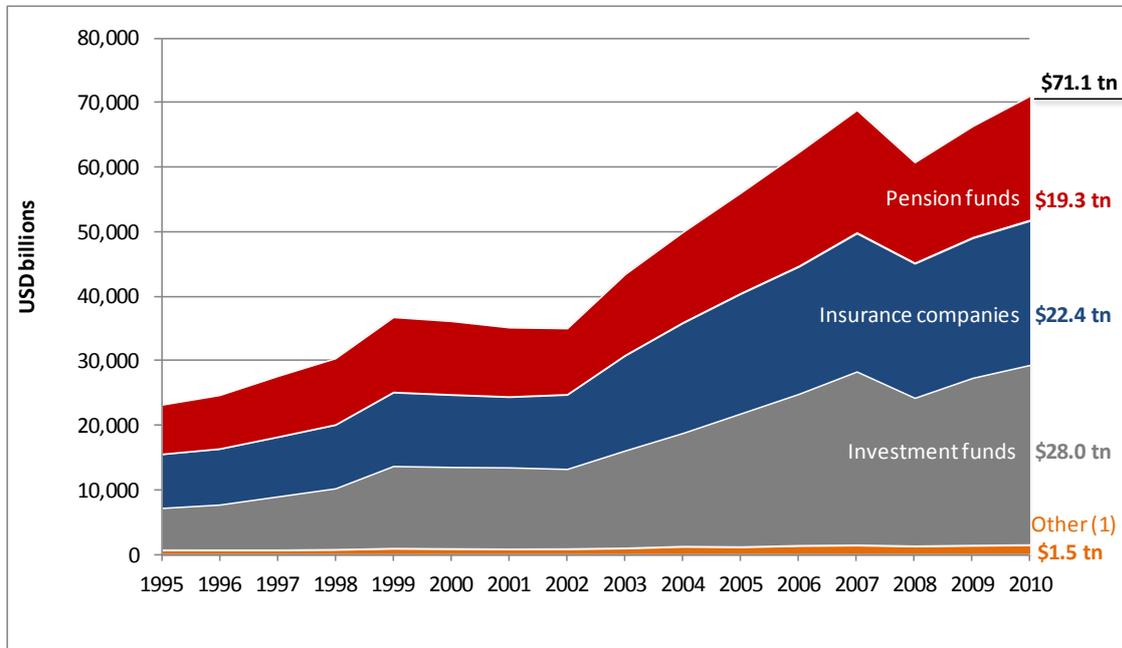
<sup>1</sup> B20 Task Force on Green Growth Recommendations to the G20 Los Cabos Summit (2012, forthcoming); Calculation based on World Economic Forum Analysis; HSBC, *Sizing the climate economy*, 2010; HSBC, *A Climate for Recovery*, 2009; BCG, *The Global Infrastructure Challenge*, 2010.

<sup>2</sup> The focus of this paper is on clean energy, defined by Bloomberg New Energy Finance as bio energy, geothermal, hydro, marine, solar, wind and energy smart technologies.

<sup>3</sup> Monolines are specialised insurance companies which provide guarantees and thereby credit enhancement to bond issuers.

limited but valuable source of financing. Consequently, with their USD 71 trillion in assets, institutional investors potentially have an important role to play.<sup>4</sup>

**Figure 1. Relative Share and Total Assets by Type of Institutional Investors in OECD, USD Bn (1995-2010)**



Source: OECD Global Pensions Statistics and Institutional Investors databases and OECD estimates<sup>5</sup>

7. Given the current low interest rate environment and weak economic growth prospects in many OECD countries, institutional investors are increasingly looking for ‘real’ asset classes which can deliver steady, preferably inflation adjusted, income streams with low correlations to the returns of other investments. Clean energy projects that are ‘bankable’<sup>6</sup> can provide institutional investors with investments which may combine these sought-after characteristics. They can offer stable and predictable cash flows (when backed by long-term contracts with investment grade counterparties), often with inflation protection (e.g. with indexed tariffs). Wind and solar projects also have an estimated 25-year lifespan, with manufacturer warranties, long-term contracts with power purchasers and government support. These attributes suit the long-term investment horizons of this class of investors. Further, the cost of clean energy technologies continues to decrease and efficiencies have scaled up. Solar panels have decreased in cost by 75% in three years. In 1985, the average yield from an onshore wind farm was 21%; in 2012 it is 34% (BNEF, 2012).

<sup>4</sup> Though the term ‘institutional investor’ covers a wide range of organisations (including endowments and foundations, sovereign wealth funds etc.), the focus of the report is on pension funds and insurance companies. The OECD is collecting statistics on these institutions, undertaking extensive analysis on their investments and is currently drafting policy options relating to pension funds and green infrastructure to be discussed at the G20 Leaders Summit in June 2012.

<sup>5</sup> Other forms of institutional savings include foundations and endowment funds, non-pension fund money managed by banks, private investment partnership and other forms of institutional investors. Although Sovereign Wealth Funds have less available capital compared to other institutional investors, with assets under management of approximately USD 5 trillion globally, they are increasingly being approached for funding green ventures.

<sup>6</sup> Specifically, a project/technology that has obtained a high level of confidence from lenders and project developers and is at a suitably advanced stage of development to be ready to enter into commercial production.

8. However, like all investors, institutional investors make their judgments on the basis of risk-adjusted returns, the regulations that govern them and the information available. Neither regulations nor the information about the risks of clean energy technologies are ideally aligned with a clean energy future. That is not to say that private capital isn't flowing into clean energy investments. In December 2011, Bloomberg New Energy Finance recorded the trillionth dollar of investment in renewable energy, energy efficiency and smart energy technologies since its records started in 2004 (BNEF, 2012). But only a fraction of these funds is coming from institutional investors.

9. The OECD estimates that less than 1% of pension funds' assets globally are allocated *directly* to infrastructure investment, let alone to clean energy projects.<sup>7</sup> Likewise, insurance companies' direct allocations to infrastructure projects remain in the billions of dollars, compared with total industry assets of around USD 19.3 trillion.<sup>8</sup>

10. The main exposure of institutional investors to clean energy projects has so far been via holdings of the debt and equity of listed utility companies. Indeed, the primary source of capital for investment in low carbon power generation to date is the balance sheets of the electric power utilities and developers. However, the scope for this source of funding to grow is constrained by the willingness of institutional investors to purchase new debt and equity issued from the utility companies, which in turn depends on the state of their balance sheets and their consequent credit rating.

11. Institutional investors may also be increasing their exposure to clean energy and other 'green' assets by adopting an SRI (socially responsible investing) or ESG (environmental, social and governance) investment approach. However, when 'green investing' is made in the name of SRI or ESG, it may not be particularly focused on green or climate change investments, as these approaches tend to be an 'overlay' process to standard investment policies without targeting particular green assets.<sup>9</sup>

12. The key to knowing how much finance from institutional investors is really reaching clean energy and to estimating the financing gap is tracking the capital that institutional investors can provide via *direct* investment in these projects. These investments are typically made through financing vehicles such as green bonds or private equity-style investments—yet outside the largest pension funds and insurance companies, asset allocation by institutional investors into the types of direct investment that can help close the clean energy financing gap remains very limited. Barclays (2011) estimates that of the capital required to fund low carbon infrastructure up to 2020, EUR 2.2 trillion<sup>10</sup> will need to be financed by sources such as institutional investors external to the entity procuring or developing the project. How to stimulate these direct investments by institutional investors is the focus of this report.

### **Why are the sums so small and what are the barriers to increasing them?**

13. It is important to stress that many barriers apply to direct investment into infrastructure-style projects more generally, whether or not the project is 'green'. Given that clean energy investments are generally a subset of infrastructure investments, one approach is to first consider why institutional investors have shown limited interest in this sector, before trying to understand their reservations toward green projects such as clean energy.

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<sup>7</sup> Excluding indirect investment in infrastructure via the equity and debt of listed utility companies and infrastructure companies. See (OECD 2011) 'Pension Funds Investment in Infrastructure: A Survey'.

<sup>8</sup> See OECD (2012b, forthcoming) "*The Role of Institutional Investors in Financing Clean Energy*" for detailed descriptions of pension fund, insurance company and sovereign wealth fund investments to date in clean energy.

<sup>9</sup> See OECD (2012c, forthcoming) "*Defining and Measuring Institutional Investors' Allocations to Green Investments*".

<sup>10</sup> In Europe (EU 25), China, India, USA, Japan, Canada and Australia.

14. Barriers to infrastructure investing are numerous and were highlighted by the OECD in a recent report (OECD, 2011b). They include the following:

#### *Lack of Infrastructure Pipeline*

15. For infrastructure projects to be attractive, they ideally need to be part of a long-term strategy. If they are piecemeal and sustained policy support for them is in doubt, investors will remain wary. A long-term plan (for around 10-20 years) with high levels of transparency and evidence of good co-ordination between different levels of government (and in some cases, inter-country cooperation in regional settings) can make a big difference. Well-structured public-private partnerships (PPPs) can help develop a 'pipeline' supply of investment opportunities. This has been achieved in some OECD countries but is the exception, not the rule.

#### *Lack of Investor Capability*

16. Infrastructure investments frequently involve very large projects with high up-front costs. The risks associated with them are often specific to the project. In addition, infrastructure entails a whole new set of risks which need analysing. Examining these project-specific risks is very different from analysing listed companies and requires dedicated resources that can take years to build up, and which many smaller institutional investors in particular are lacking. An additional issue for institutional investors is the lack of objective, high-quality data on infrastructure investments. This makes it difficult to assess the risk in these investments and to understand the correlation with the investment outcomes of other assets. Without such information institutional investors are reluctant to make allocations.

17. The long-term nature of infrastructure investments may also run up against the short-term incentives driving institutional investors. Pension funds and insurance companies are, at least in theory, long-term investors, but often face short-term performance pressures, which may be preventing them from investing in long-term assets, such as infrastructure.

#### *Regulatory Barriers*

18. In some countries there are regulatory barriers which prevent institutional investors, such as pension funds, from investing in these assets. These may take the form of bans on unlisted or direct investments. While investment restrictions are important to protect pension fund members, particularly in developing economies, an unintended consequence may be a barrier to investment in infrastructure. In addition, international accounting and funding rules may also be inadvertently discouraging institutional investors from investing in longer-term, illiquid or riskier assets, such as infrastructure projects. The recent move towards fair value accounting has brought a greater focus on short-term market fluctuations, and some would argue that this has been to the detriment of the long-term investment horizon.

19. Fair valuation is also at the heart of risk-based funding and solvency regulations as applied in certain countries to pension funds and as is envisaged in the Solvency II framework for European insurers (which is also being debated for the pensions sector). Solvency II aims to reduce the risk exposure of European insurance companies through more stringent capital standards. Among other aspects, such regulations apply a different capital charge to different investments depending on their perceived riskiness. There is a concern that this could discourage investment in the long-term bonds and private equity structures which provide financing for infrastructure projects.

#### *Lack of Suitable Investment Vehicles*

20. Only the largest pension funds have the capacity to invest directly in projects. Smaller pension funds in particular require pooled investment vehicles. Collective investment vehicles, such as

infrastructure funds, have been available to smaller institutional investors, but problems with high fees and extensive leverage have made these less popular since the financial crisis.

21. There is also a lack of debt instruments, such as bonds for institutional investors to access infrastructure projects, particularly for clean energy. This is notable since bonds remain the dominant asset class on average in portfolio allocations of pension funds (50%) and insurance companies (61%) across OECD countries.<sup>11</sup> HSBC and the Climate Bonds Initiative estimate the outstanding amount of bonds “strongly aligned” with the climate economy at USD 390 billion<sup>12</sup>. Their largest sectors are transport at USD 191 billion and clean energy at USD 175 billion. Given the scale of the USD 95 trillion global bond markets in 2010, clean energy bond issuance remains but a drop in the ocean.

22. In addition, a specific issue relating to clean energy investments is that the size of the bond issuances tends to be too small for institutional investors who are looking to invest larger sums of capital. Veys (2010) and others warn that the minimum typical issuance size for an institutional investment grade bond offering is about GBP 300 million.<sup>13</sup> Barclays (2011) point out that the absence of secondary markets for green project finance debt has restricted capital provision from private investors and institutions (excluding direct lenders such as corporate and investment banks). For example, asset backed securities<sup>14</sup> or bonds, which allow investors to access secondary markets, make up less than 3% of green asset financing.<sup>15</sup>

### **Particular problems posed by clean energy infrastructure**

23. In addition to the general problems surrounding institutional investors’ allocations to infrastructure investments, there are also specific problems with clean energy investments which need to be addressed. Some of these have been outlined in the OECD’s ‘*Framework for Green Infrastructure Investment*.’<sup>16</sup>

24. Many of the factors that weigh against institutional investors taking more interest in clean energy infrastructure can be broadly described as different species of risk.<sup>17</sup> Most institutional investors are looking to make clean energy investments via well known debt instruments, such as bonds. Most require that these bonds carry at least investment grade ratings. Institutional investors rely on agencies’ ratings to give them guidance and comfort especially in new, fast-moving areas. However, risks specific to clean energy related projects make this vital investment grade rating difficult to secure. Ratings agencies are (naturally) conservative, particularly when trying to assess very long-term projects or contracts, and especially if there is a limited long term-performance history on which to draw. The only way around this is to find a credit-worthy entity prepared to step in and take the risks. There are few such non-government

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<sup>11</sup> OECD Global Pension Statistics and OECD Global Insurance Statistics (2010).

<sup>12</sup> HSBC and Climate Bonds (2012 forthcoming)

<sup>13</sup> HSBC and Climate Bonds (2012 forthcoming) write that tapping the institutional investor market requires deal flow of minimum \$300m or preferably \$500m.

<sup>14</sup> Asset-backed or securitized bonds have specific assets whose revenues pay the interest and principal. An ordinary bond’s payments are generally guaranteed by the company that issues them. In asset backed or securitized bonds a set of revenue generating assets are put into a special purpose company and these assets pay the bond holder their interest and principal.

<sup>15</sup> (EU 25) only between 2004 and 2009, Source: Barclays and Accenture (2011) based on BNEF data.

<sup>16</sup> Corfee-Morlot et al. (2012 forthcoming) “Towards a policy framework for green infrastructure investment.” An OECD Working Paper, Paris

<sup>17</sup> For a comprehensive risk mapping report see Standard & Poor’s and Parhelion Underwriting Ltd. who identify the barriers that prevent investment by institutional investors, and categorize perceived risks  
[http://www.parhelion.co.uk/pdf/Parhelion\\_Climate\\_Financing\\_Risk\\_Mapping\\_Report\\_2010.pdf](http://www.parhelion.co.uk/pdf/Parhelion_Climate_Financing_Risk_Mapping_Report_2010.pdf)

backed entities in existence which makes it likely that governments or multi-lateral agencies will have to shoulder these risks if they wish to mobilise the very significant sums required.

#### *Weak or non-existent environmental policies*

25. One of the biggest barriers to pension funds and other institutional investors moving into clean energy investments is the lack of a meaningful carbon price confounded by a lack of clarity and consistency in terms of government commitments to environmental and climate policy. Institutional investors, such as pension funds and insurers, will not invest in projects or assets solely because they are green. These investments must deliver risk-adjusted returns which are commercially competitive with existing high carbon investments.

26. Today's low carbon prices are insufficient to attract investors to riskier newer alternatives, making investment in more conventional options, such as natural gas, more likely. While gas is a less carbon intensive option than, for instance, coal, it perpetuates the on-going lock in to fossil fuel based energy systems.

27. A first step to integrating climate change externalities into markets is to examine where existing policies may prove harmful (*e.g.* subsidies related to fossil fuels).<sup>18</sup> Institutional investors are certainly being given the wrong policy signal when governments are spending USD 400-600 billion on fossil subsidies (which includes USD 45-75 billion in OECD countries) compared to USD 66 billion on support for renewable energy in 2010.<sup>19</sup>

#### *Risks caused by unpredictable policies*

28. Difficulties in implementing first-best policies to price carbon on a genuinely global basis have meant that many clean energy projects still need support measures in order to be commercially viable. Ideally, such support measures would be transparent, predictable and of long enough duration to match the long-term characteristics of the new infrastructure that is needed. The long timeframes required for infrastructure project development makes businesses and investors particularly vulnerable to regulatory changes – such as the retroactive changes to solar policy introduced in Spain and other European countries in 2011. Policy risk remains high on the watch list of many institutional investors, since experience with the evolving regulatory framework for climate change has generated substantial policy uncertainty and financial risk for investors in new (*e.g.* low-carbon) technologies and infrastructure.

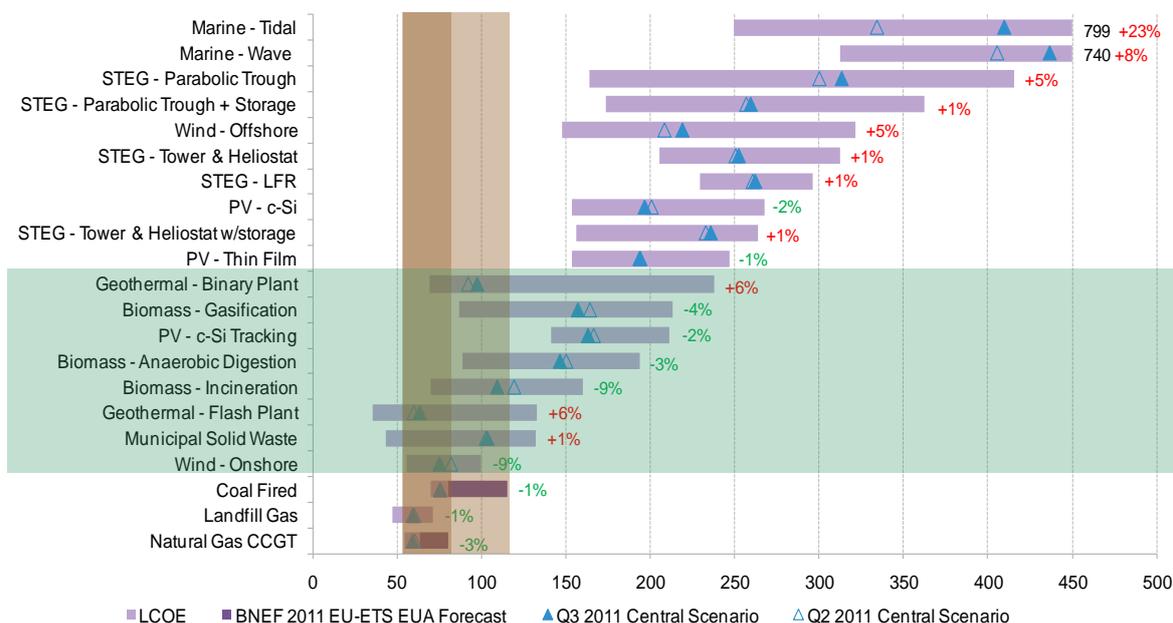
29. Although clean energy technologies, particularly solar photovoltaics and onshore wind, continue to fall in price and approach competitiveness with fossil-fuel power (as shown in Figure 2), and efficiencies continue to increase, some of the government support measures that would ensure that the sector maintains its growth trajectory are currently being wound back.

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<sup>18</sup> *Ibid.*

<sup>19</sup> The OECD published data in 2011 on fossil fuel support for producers and producers in 24 OECD countries. This amounted to an annual value of about between USD 45 billion and USD 75 billion in recent years. According to the IEA, fossil fuel consumer subsidies in developing countries stood at USD 409 billion in 2010, as measured by the price-gap approach. The value of fossil fuel producer subsidies in non-OECD countries remains a 'known unknown', but IISD Global Subsidy Initiative puts the value of fossil fuel production subsidies worldwide at USD 100 billion as a minimum per year. See OECD-IEA Fossil Fuel Subsidies and Other Support webpage: [www.oecd.org/iea-oecd-ffss](http://www.oecd.org/iea-oecd-ffss); IEA WEO 2011 for renewables.

**Figure 2. Levelised Cost of Electricity Q4 2011 (\$/MWH)**



Source: Bloomberg New Energy Finance *Input to OECD Workshop: Catalysing Investment in Low-Carbon, Climate-Resilient Growth* (November, 2011) Note: % change is from Q2 2011. Dark brown reflects competitiveness of technologies with fossil fuel generation without a carbon price, light brown with a carbon price. Carbon forecasts from the BNEF European Carbon Model with a 2020 horizon \$74/tCO<sub>2</sub>. Coal and nat gas prices from the US Department of Energy EIA Annual Energy Outlook 2011. The levelised cost of electricity (LCOE) of a given technology represents the price at which a project owner can sell power and earn an acceptable return on his original investment.

30. Indeed, clean energy investment fell sharply “squeezed by policy uncertainty” in the first quarter of 2012 according to Bloomberg New Energy Finance.<sup>20</sup> The weak first quarter 2012 number was attributed to the destabilising uncertainty over future clean energy support in both the EU – driven by the financial crisis – and the US – driven by the expiry of stimulus programmes and the electoral cycle.<sup>21</sup>

31. The unintended consequences of ownership regulation also need to be considered. For example, ‘unbundling’ policies<sup>22</sup> preventing ownership of energy production and distribution companies could require institutional investors to divest some of their holdings.

### *New technology*

32. Although clean energy tends towards becoming less and less policy dependant as the costs continue to decrease, clean energy investments are still riskier than established carbon intensive technologies. *Technology risk* – i.e. the risk that the system being installed does not work as specified - is one of the main barriers for large institutional investors financing clean energy projects. In many cases there is little data about the long term performance of low-carbon projects; they are often not “utility-scale”; their value is uncertain and therefore perceived to be risky. The result is much higher returns and

<sup>20</sup> BNEF Press Release 12 April 2012 <http://bnef.com/PressReleases/view/208>.

<sup>21</sup> In the US, the key support mechanism for wind (the Production Tax Credit) is due to expire at the end of 2012 unless Congress agrees to extend it; while in Europe, governments in key countries such as Spain, Italy, Germany, Poland and the UK have announced cuts in incentives for renewable power projects, in some cases leaving investors guessing about their likely future returns.

<sup>22</sup> Contained in Chapters IV and V of Directive 2009/72/EC on electricity, Chapters III and IV of Directive 2009/73/EC on gas and Article 3 of Regulation 714 of 2009 on electricity (“Third Energy Package”).

financing costs are required compared with a conventional energy utility-scale plant. This is particularly a problem for technologies (such as wave power) at the pre-commercialisation phase.

#### *Other risks particular to clean energy*

33. *Buyer risk* – the risk that there won't be a buyer for the electricity - is a major barrier to clean energy investing. This lack of certainty is a major risk for financing low-carbon projects. Where the projects are located in developing economies, currency and political risks may also be involved. Qualifying as investment grade is often an issue for clean energy investments, with ratings agencies typically awarding BB or lower ratings for wind and solar project bonds (Firelake Capital 2012).

34. Linked to this, and of particular concern for securitization of clean energy assets, such as wind, is *volumetric risk*. Often the risk from onshore wind and solar plants comes after the project is operational and is tied to production volatility. Compared to a conventional power plant, where the production is typically of a known quantity, the variables for renewable energy alternatives and the lack of historical data on them can make it difficult to assess production output (Firelake Capital 2012).

### **Making Progress**

35. The preceding discussion of barriers raises, at first sight, a series of 'Catch 22' challenges: for instance, if there was a robust carbon price, clean energy would be more competitive and a variety of risks would be reduced. In the absence of robust carbon prices, special policies may be needed to tip the balance – but special policies increase regulatory risks. It is very easy to keep returning to a relatively simple menu of first-best policy advice. But that is not the world we live in.

36. On the other hand, even in a second or third-best policy world, there are large pools of capital that need stable, long-term investment opportunities. And whatever the policy settings, demand for energy will grow, so investments in energy infrastructure will be made one way or the other. How clean that infrastructure is will depend on all the policy interventions and omissions in place as well as the economics of the industry. *So the sharp question is: in the absence of climate policy certainty, can steps be taken immediately to increase the flow of capital to the clean energy sector without prejudice to the longer term development of climate policy?*

37. The answer is *yes* – and there has been some progress. For example, to encourage institutional and other investors to increase their allocations to infrastructure projects, governments in countries such as Australia and Canada have announced clear project pipelines. Meanwhile, major pension funds, insurance companies and sovereign wealth funds have recently made significant commitments to clean energy projects and have come together to improve their capability and knowledge and to use their long-term potential to invest in infrastructure and green projects.<sup>23</sup> The 2011 Global Investor Statement on Climate Change was supported by 285 investors representing assets of more than USD 20 trillion.

38. On the innovative financing side, the growth of a nascent market for green bonds is an interesting development. Bonds align well with the high capital expenditure and low running cost of clean energy projects, can provide the long-term, low-cost capital needed for corporate expansion or to free up capital for new developments, and fit within the asset allocations of institutional investor portfolios. Triple-A rated "portfolio-linked" issuances from the pioneering 'green' or 'climate' bond programmes of multilateral development banks have been requested and snapped up by institutional investors. There appears to be a growing appetite from the investment community for investment grade bonds that target the low-carbon

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<sup>23</sup> E.g., via the Long-term Investors Club, Institutional Investors Group on Climate Change (IIGCC) or Climate Wise.

economy. Five of the world's largest insurers, for example, called in December 2011 for governments to create more low-carbon bonds so they can invest in such a market.<sup>24</sup>

39. There are also encouraging developments with several governments (including the UK and Australia) setting up 'green banks' which are likely to issue such bonds in future or develop other vehicles for using public finances to work with and leverage private capital to fund key clean energy and other green projects. Governments, multilateral development banks and other public sources are also working on risk mitigation and credit enhancements tools (the European Project Bond Initiative being an interesting example) to ensure that institutional investors gain access to financial vehicles with the appropriate risk-return profile. Specialist underwriter Parhelion (2012) has proposed the creation of a public / private funded Green Insurance Agency to make available to investors insurance policies to underwrite the specific risk of changes in policy and other insurance policies that the private sector are unable to do on a standalone basis. There is a strong case to be made for governments to increase efforts to pool public funding to leverage private investments, in part by scaling up risk mitigating public finance mechanisms and co-investment funding structures. Targeted use of public finance should also move away from a project-by-project to a portfolio approach, to ensure there is catalysing support for initial project and program development.

40. In addition to these governmental initiatives, asset-backed securities (including covered bonds) issued by banks or the corporate sector have potential, if backed by public sector or corporate balance sheets. Standards to verify the environmental benefits of such bond issuance are also being developed (see the Climate Bonds Initiative) which should aid confidence in the market.

41. Initiatives such as these can be built on and encouraged – and more can be done. Over and above the vital issue of overall climate policy signals, more discussion and analysis is needed on the following questions if institutional investors are to play an expanded role in financing clean energy projects:

- *What are the most efficient and effective financing tools, public finance mechanisms and co-funding structures for leveraging private sector financing? How can successful experience with such tools and mechanisms be scaled up and applied more widely?*
- *What are the implications of financial regulations such as Basel III and Solvency II for the financing of clean energy? How can governments and financiers work together to address any possible constraints they might impose?*
- *Could encouraging institutional investors to provide financing via utility companies balance sheets be an efficient way to provide clean energy financing?*
- *Given that bonds remain the dominant asset class for institutional investors, which mechanisms could governments provide to increase fixed income allocation to green investments? How can securitisation be harnessed to scale up the green bond markets?*
- *Are standards for clean energy investment vehicles required? If so, who might play a useful role to move these forward? How can data be better collected and monitored to provide transparency about the performance of green investments?*

42. The OECD continues to work in these areas<sup>25</sup> and it is hoped that the analytical report on which this discussion paper draws (OECD, 2012b –forthcoming) will provide a platform to spark further ideas and debate on the topic.

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<sup>24</sup> <http://www.climatewise.org.uk/news/2011/12/5/creating-long-term-value-insurers-ask-for-action-so-they-can.html>

<sup>25</sup> Notably the Organisation has been requested to draft policy actions to support pension fund investment in green infrastructure for the forthcoming G20 Leaders' Summit.

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