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DISCUSSION PAPER MAY 2016

## CLEAN ENERGY LIFT OFF – CAPITALISING EUROPE’S ENERGY UNION

Tom Jess, Ingrid Holmes, Sam Maule

### Executive summary

- The investment landscape has changed following 2015’s historic Paris climate change deal, which demands climate action further and faster than anything previously agreed. For the European Union (EU) a reasonable working assumption is that a near-zero-emission economy must be delivered by 2050.
- It is estimated that the transition to a low carbon economy in Europe will require annual investment of €200bn in infrastructure, including power generation (a mixture of renewables and gas), networks (gas and electricity) and energy efficiency in the next decade. Against this backdrop it is notable that European clean energy investment has been on a downward trend over the last 5 years. In 2015 investment stood at just \$39.8bn (~€34.3bn) which is less than a quarter of the total needed and significantly down from its 2011 peak of \$116bn (~€100bn).
- Austerity policies in Europe combined with the reduced availability of bank debt and the shrinking balance sheets of European energy companies mean that new sources of finance are needed to close this gap. There is a need to continue to diversify away from traditional sources of finance and focus on mobilising new sources of private capital to support the investment needed to deliver Europe’s low carbon transition in line with 2030 and 2050 goals.
- Two major EU initiatives - the Energy Union and the Capital Markets Union - hold the key to reversing the downward trend in clean energy investment. The Energy Union can and must deliver the climate-resilient infrastructure



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pipeline that institutional investors seek in order to ‘shift the trillions’ and tackle dangerous climate change. The Capital Markets Union must deliver the tools and institutional arrangements required to ensure investors can deploy capital confident in the knowledge that their investments will remain productive throughout their expected economic lifespan through being resilient to climate risk.

- Innovation in the capital markets has begun connecting investors to clean energy and wider clean infrastructure projects, meeting demand from institutional investors and beginning the process of scaling up investment in low carbon infrastructure. Major innovations include: increased direct investment by institutional investors into infrastructure; launch of European Long-Term Investment Funds; ongoing growth of the green bonds market; and the emergence of Yieldcos.
- Public finance will be critically important in further accelerating this innovation process. Publicly owned banks, including the European Investment Bank (EIB), but also national development banks, can play a key role in targeted risk-sharing with the private sector. Examples include:
  - Supporting innovation in financial instruments – Green Bonds: the EIB is the world leader in issuing green bonds, other public banks (including national development banks) and private entities need to be encouraged to follow EIB’s lead; new Public Private Partnerships (PPPs): the UK’s Green Investment Bank pioneered new approaches to PPPs in the UK through coinvestment in public infrastructure with institutional investors.
  - Supporting technology and business model innovation - leading by example through supporting deployment of first of a kind investment in new technologies and business models will be critically important moving forward. Germany’s KfW Bankengruppe was an early investor in Germany’s offshore wind market and supports the country’s energy efficiency programme in partnership with commercial banks.
  - Credit enhancement - Credit enhancement is a targeted form of risk-sharing. One very successful example is the EU Project Bonds Initiative. These bonds use European Commission-sourced funding to provide credit enhancement to infrastructure projects. They were for example used to finance the Greater Gabbard wind farm offshore transition line.
  - Aggregation functions - The UK Green Investment Bank was originally conceived as an ‘aggregation vehicle’ that would raise debt on the



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capital markets and be used to invest in a range of green infrastructure projects on behalf of bond and equity holders, just as the EIB currently does. More public and private aggregators will be needed, especially to support investment in high decentralised energy infrastructure, including energy efficiency.

- The investment gap cannot be closed solely by focusing on increasing the supply of willing capital. Major efforts must also be made to increase the supply of appropriately designed and structured infrastructure projects. As such, both financial and energy regulators will need to consider how to match the supply of finance from the private sector to investable low carbon infrastructure projects.
- European decision-makers must ensure the next phase of development of the Capital Markets Union introduces a set of actions that accelerate the reorientation of capital to support the delivery of low carbon infrastructure, including delivering an Energy Union in line with 2030 and 2050 goals. In doing this both initiatives can have high chances of succeeding in their main aims. The following suggestions are made as to how this can be achieved:
  - **Planning an energy system for the future and managing risk.** The energy system is going through a rapid process of innovation and change. The National Energy and Climate Plans being developed by Member States need to be resilient to this change to be credible. Planning needs to identify early on the external factors that can influence the delivery of these plans and propose possible remedies.
  - **Having a plan for financing.** As part of the implementation of the National Energy and Climate Plans, the Commission should require Member States to develop National Financing Strategies (capital raising plans to secure the infrastructure investment needed), as is already happening in a number of Latin American countries. The Commission and public banks should also continue to facilitate the development of the green bond market through promoting contract standardisation, green bond standards and other activist measures to scale up green-asset backed securities.
  - **Ensuring that climate-related risks are sufficiently visible to investors.** This will require a focus on ensuring appropriate disclosures on physical, transition and liability risks are made both by companies and by financial institutions. It will also require ensuring



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that screens are applied to manage asset stranding risks at range of venues, including for example within the new securitisation regulation and when projects are submitted to the infrastructure hub linked to the European Fund for Strategic Investment (EFSI).

- **Ensuring that public funding is targeted to support infrastructure investment that helps not hinders delivery of the low carbon economy.** This will require refocusing the EFSI to explicitly focus on delivering an Energy Union line with 2030 and 2050 climate and energy targets. It also indicates a need to look again at how the Cohesion and Structural Funds and Connecting Europe Facility are allocated within Member States; this is something that could be addressed in the upcoming review of the Multi Financial Framework. The EIB and national public banks will need to move towards explicitly aligning their portfolios to delivering climate-resilient investment, and become fully 2°C compatible.
- **Enabling better tracking of progress in delivering 2030 goals.** A clear view of progress in meeting the EU’s clean energy investment targets is needed. This can enable timely interventions in the market, including development of new financial products and incentives to ensure the EU’s energy transition gets and then remains on track. It will require the collection and aggregation of country level public and private investment data into a public database. The EU should require countries to report on their progress in meeting 2030 investment goals (for greenhouse gases (GHGs), renewable energy and energy efficiency) as part of the Planning and Reporting requirements linked to governance of the 2030 targets. This could include reporting on emissions reductions, GW of clean energy deployed (or saved) – but should also involve reporting on the amount of capital deployed, both from private and public sources.

## 1. Introduction

**The investment landscape has changed following 2015’s historic Paris climate change deal, which demands climate action further and faster than anything previously agreed.** The Paris Agreement strengthen the global goal, first championed by the EU, to keep global temperature increase below 2°C and to pursue efforts to limit it to 1.5°C. It added a more specific target to achieve global peaking of GHG as soon as possible and to reach GHG emission neutrality in the second half of the century. **For the EU a reasonable working assumption is that a near-zero-emission economy must be delivered by 2050.**



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**Against this backdrop it is notable that clean energy investment to decarbonise the energy system – the ‘backbone’ of wider economy decarbonisation - has declined in the EU since its peak in 2011 and is now at its lowest level since 2005. More needs to be done to reverse this trend. Two major EU initiatives - the Energy Union and the Capital Markets Union - hold the key to achieving this.**

Launched in 2015, the EU’s Capital Markets Union initiative aims to better connect savers and investors with opportunities to invest in the real economy. The initiative has a strong focus on shifting capital to better support investment in infrastructure and SMEs<sup>1</sup> to support jobs and growth<sup>2</sup>. The Capital Markets Union also explicitly recognises the role institutional investors can play in filling the infrastructure investment gap. In parallel to this initiative, one of the EU’s most high profile infrastructure investment programmes, also launched in 2015, is the Energy Union. The EU’s Energy Union vision is bold, envisaging a fundamental transformation of Europe’s energy system<sup>3</sup>. The aim is to see Europe transition away from an economy driven by fossil fuels, reliant on old technologies and based upon a centralised, supply-side approach and instead shift towards an energy system that is consumer focused and driven by demand-side solutions, smart technologies and digital innovation. The vision includes a continent-wide energy network with coordinated national energy policies, removal of market barriers and a robust governance system capable of attracting large scale investment.<sup>4</sup> The Energy Union is also one of the key vehicles through which the EU will meet its clean energy and climate targets<sup>5</sup> and wider obligations under the Paris Agreement. It has been estimated that meeting these goals will require around €2.5trillion in investment by 2030<sup>6</sup>.

**The Energy Union can and must deliver the climate-resilient infrastructure pipeline that institutional investors seek in order to ‘shift the trillions’ needed to tackle dangerous climate change. The Capital Markets Union must deliver the tools and institutional arrangements required to ensure investors can deploy capital confident**

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<sup>1</sup> This paper focuses specifically on the Capital Markets Union’s role to support investment in infrastructure rather than SMEs

<sup>2</sup> European Commission (2015) Green Paper Building a Capital Markets Union - COM(2015) 63 final

<sup>3</sup> European Commission (2015) A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy; European Commission (2015) State of the Energy Union 2015

<sup>4</sup> European Commission (2015) A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy

<sup>5</sup> Decarbonising the energy sector, through the Energy Union, is key to reducing greenhouse gas emissions and transitioning to a low carbon economy. A fully decarbonised power sector will play a central role, offering the prospect of partially replacing fossil fuels in transport and heating; COM (2011) - A Roadmap for moving to a competitive low carbon economy in 2050

<sup>6</sup> C. von Hirschhausen, F. Holz, C. Gerbaulet and C. Lorenz (2014) European Energy Sector: Large Investments Required for Sustainability and Supply Security. DIW



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in the knowledge that their investments will remain productive throughout their expected economic lifespan through being resilient to climate risk.

This paper explores how the Capital Markets Union with the Energy Union can be aligned to deliver sustainable growth in the EU. It sets out how aligning these agendas can be both a means to secure the required investment in low carbon, climate-resilient infrastructure such as clean energy but also manage the risk of asset stranding that will come from investing in infrastructure that is inconsistent with the EU's need to become near-zero-emission by 2050.

## 2. A snapshot of current EU clean energy investment

### Overarching trends relating to EU investment in clean energy

It is estimated that the transition to a low carbon economy in Europe will require annual investment of €200bn in infrastructure, including power generation (a mixture of renewables and gas), networks (gas and electricity) and energy efficiency in the next decade<sup>7</sup>. Capital is available to meet these investment needs, yet although at the end of 2015 global clean energy investment had reached a record high, **European investment in clean energy has been on a downward trend over the last five years. In 2015 investment stood at just \$39.8bn (~€34.3bn), down from its 2011 peak of \$116bn (~€100n)<sup>8</sup>. In contrast, in 2015 China invested more than \$100bn (~€86.2bn) in renewable energy, low carbon services and energy-smart technologies, more than double that of the EU.** As a proportion of GDP, the EU invests approximately 0.2% of its GDP in clean energy, compared to more than 0.9% of GDP in China. In addition, China has been investing proportionally more in clean energy than the EU almost every year since data collection began in 2004 and the investment gap is widening. Figures 1a & b show these trends.

### Renewable energy

For EU renewable energy sources the outlook generally remains weak. In 2015 onshore wind saw \$14.5bn (~€12.5bn) of investment, a slight increase of 6% on 2014, while solar and biomass saw only \$6.5bn (~€5.6bn) and \$2.8bn (~€1.9bn) of investment respectively<sup>9</sup>. That being said, EU investment in offshore wind doubled to

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<sup>7</sup> European Commission (2015) A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy

<sup>8</sup> While much of the explanation for the falling investment levels is policy uncertainty that in turn has reduced investment appetite in the region some is due to falling technology costs. See 2 degrees investing initiative (2016) Measuring progress on greening financial markets, which shows that on a global scale, solar investment levels have more or less stagnated since 2010 while annual solar PV capacity deployment has doubled.

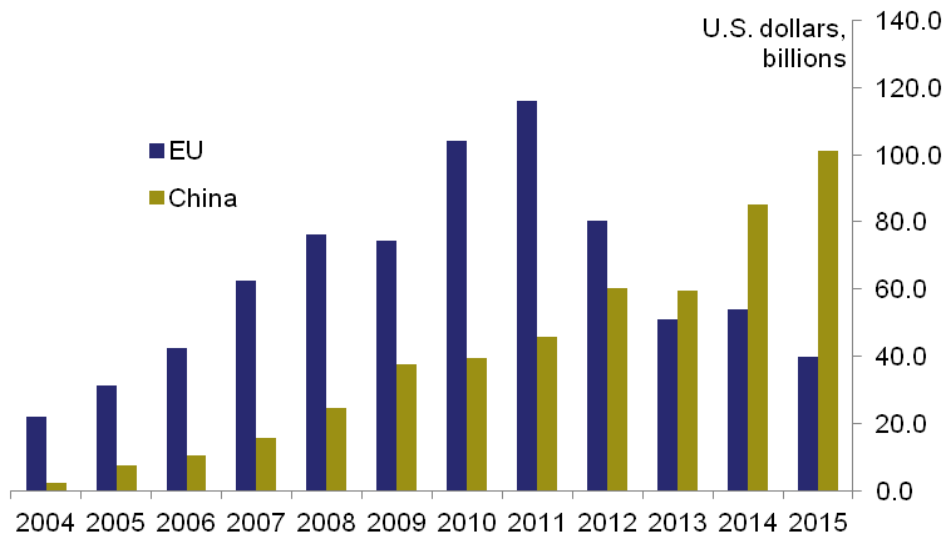
<sup>9</sup>The European Wind Energy Association (2016) Wind in power 2015 European Statistics



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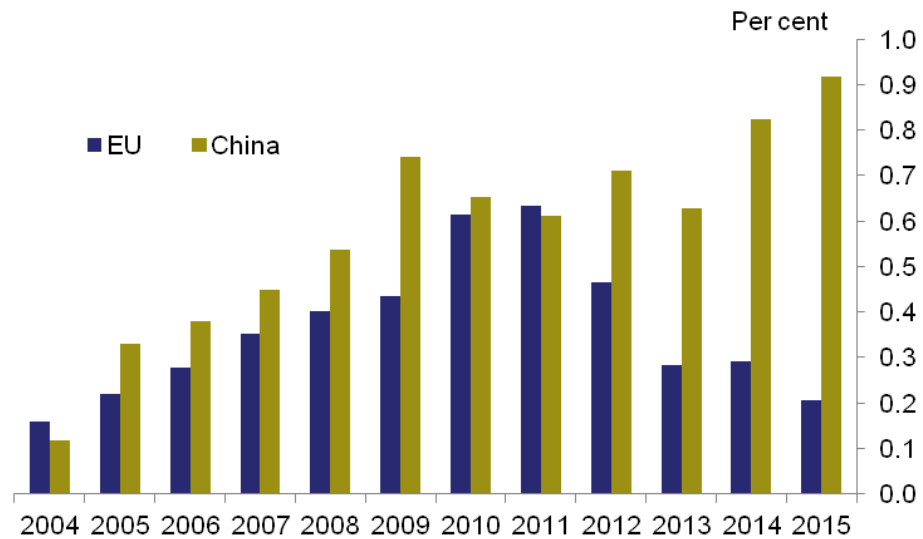
\$14.8bn (~€12.7bn) in 2015, due to investment in Germany, the UK and the Netherlands where policy support currently remains robust.<sup>10</sup>

Figure 1a: Annual clean energy investment in the EU and China (\$bn)



Source: Bloomberg New Energy Finance

Figure 2b: Annual clean energy investment in the EU/China as a proportion of GDP (%)



Source: Bloomberg New Energy Finance

<sup>10</sup>Bloomberg New Energy Finance (2016) online - <http://about.bnef.com/press-releases/clean-energy-defies-fossil-fuel-price-crash-to-attract-record-329bn-global-investment-in-2015/>



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The overall fall in investment in clean energy is predominantly due to policy changes, such as the introduction of renewable energy taxes in Germany and uncertainty generated by continuous amendments to existing policies in other Member States. These changes have damaged investor confidence and reduced the attractiveness of the EU region to investors<sup>11</sup>. For example, in Germany reduced support for solar and uncertainty about the implementation of a new auction system for wind from 2017, meant that clean energy investment fell by 42%.

### Energy efficiency

Looking at energy efficiency, approximately €60-100bn<sup>12</sup> needs to be invested annually in buildings alone to achieve Europe's 2020 energy efficiency targets, with current investments at less than half this amount<sup>13,14</sup>. Looking forward to 2040, the International Energy Agency (IEA) estimates that an average of \$200bn (€172.4bn) of investment in energy efficiency is needed across the economy to meet the 2°C global temperature increase goal set out in the Paris Agreement. This equates to, at least an eightfold increase in energy efficiency investment compared to 2013 levels<sup>15</sup>. The European Commission recognises this investment gap and sets out the need for a fundamental rethinking of energy efficiency<sup>16</sup>.

### Wider clean energy infrastructure

Looking more broadly at electricity transmission and distribution grid investment requirements, estimates vary widely. For example, the IEA estimates €229bn is needed to 2030 while the European Commission estimates €316bn to 2030<sup>17</sup>. A mixture of Connecting Europe Facility funding to incentivise investment in cross-border infrastructure and regulated investment in national transition and distribution grid will be needed. Instruments to help facilitate direct investment by institutional investors, such as the Project Bonds Initiative (discussed later) will also be important. Current revisions to the Internal Energy Market will make or break the ability of European markets, as well as investors, to deliver the investment needed and fulfil the European Commission's vision of a smart and integrated low carbon energy system in Europe.

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<sup>11</sup>REN21 (2015) Renewables 2015 Global Status Report

<sup>12</sup>COM (2012) Consultation Paper: "Financial Support for Energy Efficiency in Buildings"; and EURIMA (2012). Financing Mechanisms for Europe's Buildings Renovation.

<sup>13</sup>DIW (2013) Financing of Energy Efficiency: Influences on European Public Banks' Actions and Ways Forward

<sup>14</sup>BPIE Estimates based upon 2011's "Europe's Buildings under the Microscope: A country-by-country review of the energy performance of Europe's buildings"

<sup>15</sup>IEA (2014) Special Report: World Energy Investment Outlook

<sup>16</sup>See COM(2015) 80 final

<sup>17</sup>A summary of the various estimates is shown in C. von Hirschhausen, F. Holz, C. Gerbaulet and C. Lorenz (2014) European Energy Sector: Large Investments Required for Sustainability and Supply Security. DIW





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### Current sources of energy finance

The ability of traditional sources of energy finance to meet these very significant investment needs has diminished in recent years. Energy utilities have cut back sharply on capital investments, notably into renewables, in order to shore up balance sheets and protect their credit ratings. This has been compounded by disruption to business-as-usual operations that has made it increasingly difficult for these companies to raise capital (see Box 1). As a result, aggregate capital investment in renewables by the seven leading utility companies in Europe (SSE, Iberdrola, Enel, EON, RWE, Energias de Portugal and Electricite de France) fell from \$12.3bn (~€10.6bn) in 2010 to \$8.1bn (~€6.9bn) in 2013.

#### Box 1: Disruption to the energy utility business model

The utility companies and independent power producers that have built and financed most power plants in Europe have developed their corporate and financial structures around fossil fuel generation. A raft of EU climate and energy policies have driven technological innovation in the renewable energy sector and led to a decline in the traditional model of power generation (see Box 2). With higher capital and lower operating costs, renewable energy has inherently different financial characteristics to that of fossil fuel generation. Many of the incumbent energy companies have failed to adapt to these changes, resulting in a very significant erosion of income and share value. Thus, the shift towards clean energy is putting significant strain on traditional business models: during 2008 to 2013, the top 20 energy utilities in Europe saw over half of their €1 trillion market value wiped out.<sup>18</sup>

This disruption to traditional business models and the subsequent strain on energy utility companies is most evident in Germany. In the face of GHG cuts, falling electricity demand and the phase-out of nuclear energy, the utility sector commissioned and built increased amounts of renewable energy assets, but also GHG-emitting coal and lignite power generation plants. In 2014 Germany's biggest utility E.ON posted losses of €3.2bn to its European business, as the shift to renewables and increased energy efficiency squeezed earnings away from the traditional fossil fuel based power generating business<sup>19</sup>. In late November 2014, E.ON announced it would separate its power generation, energy trading and oil and gas business into a new entity next year, while keeping power grids, renewables and energy services. Significant concerns remain about the future performance even of the remaining E.ON business, as it will be saddled with significant debt. Similarly, aware of the changing operational landscape in

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<sup>18</sup> See <http://www.economist.com/news/briefing/21587782-europes-electricity-providers-face-existential-threat-how-lose-half-trillion-euros>

<sup>19</sup> See <http://www.ft.com/intl/cms/s/0/307a0008-c7c2-11e4-9226-00144feab7de.html#axzz3ZkQOZDIA>

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Germany, the Swedish state-owned energy utility Vattenfall signed an agreement in April 2016 to sell its German lignite assets – 4 mines and 9000 MW of power generation capacity<sup>20</sup>.

### Box 2: The evolving European energy sector: Five major policy-driven advances<sup>21</sup>

1. **Decarbonisation** – there is a rising penetration of low-carbon generation and a move away from high carbon alternatives.
2. **Decentralisation** – an increasing amount of energy generation is connecting to the local distribution networks unlike traditional utility power and a move away from centralised nuclear power generation in some markets.
3. **Integration of variable renewables** – an increasing volume of variable renewables has demanded more flexible and resilient energy networks to balance supply and demand. Cross-border connections are becoming increasingly essential to integrate European energy markets.
4. **Consumer digital revolution** – There is an increasing availability of digital technologies open to consumers providing them with information, choice and the flexibility to manage demand, however take-up has been slow.
5. **Integration of sectors** – A central component of longer term energy policy in many member states is decarbonisation of heat and transport through electrification. An increasing integration of the sectors will require coherent infrastructure planning to avoid stranded assets and wasted costs.

Commercial bank lending to energy infrastructure projects has also been squeezed. The introduction of regulatory reforms to curb excessive leverage (under the Capital Requirements Directive (CRD IV), which implemented Basel III rules) reduced bank lending to the sector<sup>22</sup>. In Europe, between 2009 and 2012 banks reduced their gross lending by 9.5%, accumulating cash and interbank assets instead<sup>23</sup>. During this time the EIB became the largest investor in renewable energy in Europe<sup>24</sup>.

### The investment gap

As noted above, investment in clean energy is on a downwards trajectory and a significant gap exists between the €200bn of annual investment in clean energy infrastructure needed and the current level of investment supplied. Austerity policies

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<sup>20</sup> <http://news.cision.com/vattenfall/r/vattenfall-to-sell-german-lignite-operations,c9957628>

<sup>21</sup> S. Skillings, T. Dimsdale, Manon Dufour (2015) Market Design for the Energy Union. E3G

<sup>22</sup> Linklaters (2011) Basel III and project finance; McKinsey (2010) Basel III and European banking; NortonRoseFulbright (2015) An introduction to Basel III - its consequences for lending; G20 (2013) Long-term investment financing for growth and development.

<sup>23</sup> Bank for International Settlements (2014) Banks and capital requirements: channels of adjustment

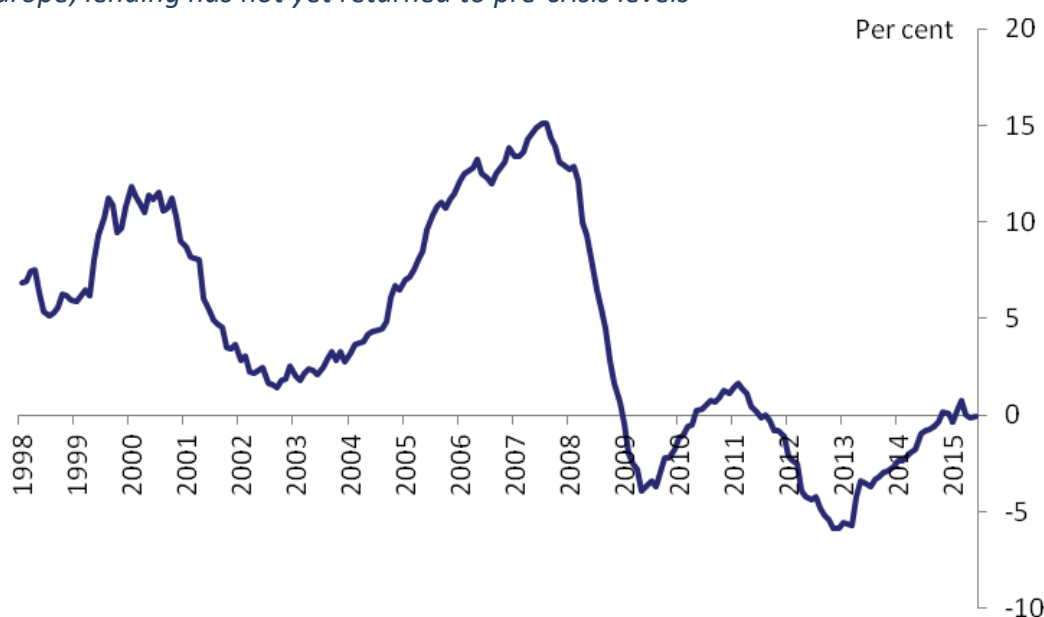
<sup>24</sup> IJ Global Project Finance & Infrastructure Journal data (accessed March 2016)



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in Europe combined with the reduced availability of bank debt (see Figure 2) and the shrinking balance sheets of European energy companies mean that new sources of finance are needed<sup>25</sup>. While commercial bank lending is starting to return to infrastructure projects<sup>26</sup>, it is clear there is a need to continue to diversify away from traditional sources of finance and focus on mobilising new sources of private capital to support the investment needed to deliver Europe's low carbon transition.

*Figure 2: Year on year % change in loans from MFIs to non financial corporates in Europe; lending has not yet returned to pre-crisis levels*



**Source:** European Central Bank

### 3. Diversifying and increasing access to finance

#### **The role and growing appetite of institutional investors**

There is growing appetite among institutional investors for infrastructure assets. The long-dated nature of the investments at a time of extended volatility in equity markets, the ongoing low-interest rate environment for sovereign bonds<sup>27</sup> and the steady and predictable income stream mean they are a good match for institutional investors such as pension funds, insurance companies and sovereign wealth funds. This is because these investors tend to have long-dated liabilities (e.g. cash flows from pensions at retirement and life insurance payouts). Low carbon infrastructure assets can be particularly good fit for the needs of these investors because once constructed,

<sup>25</sup> NortonRoseFulbright (2015) European energy infrastructure opportunities – ‘This lack of investment has been exacerbated by austerity measures in most if not all Member States.’

<sup>26</sup> Discussions with Allianz and with Green Investment Bank

<sup>27</sup> OECD (2015) Mapping Channels to Mobilise Institutional Investment in Sustainable Energy



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operational risk is generally low since low carbon infrastructure assets are not subject to fuel price volatility and are commonly supported through long-term contract structures such as Power Purchase Agreements or regulated returns.

**According to analysis by Linklaters, \$1 trillion (~€86.29bn) is at the potential disposable of institutional investors over the next 10 years, specifically for infrastructure investment in Europe. This is likely to be an underestimate, given that the insurance industry alone has committed £25bn (~€21.5bn) to infrastructure investment solely in the UK over the next 5 years<sup>28</sup>, but is useful to know since it confirms that the capital from institutional investors is available and ready to deploy to the right projects.**

In addition, a growing number of investors recognise that climate risk is real and are demonstrating an increased willingness to act to manage that risk. Examples include the Principles for Responsible Investment's Montreal Pledge, which commits 120 investors, managing portfolios totalling US\$10 trillion (~€8.6 trillion) to measure and publicly disclose their carbon footprint on an annual basis. The Global Investor Statement on Climate Change has brought together almost 400 investors, representing over US\$24 trillion (~€20.7 trillion), to pledge to increase low carbon and climate resilient investments. The Portfolio Decarbonisation Coalition, a rapidly growing movement to decouple emissions from growth, enables investors to act on the Montreal pledge by measuring, disclosing and reducing the carbon footprint of their portfolios. More infrastructure portfolios are now offering energy efficiency and climate resilience as selling points<sup>29</sup>. Finally, the green bond market continues to grow (discussed in more detail later) as does clean energy investment with total institutional investment, just in European renewable energy projects, increasing from €300m in 2004 to €6bn in 2015<sup>30</sup>.

While the overall investment in clean energy infrastructure is a fraction both of total assets under management by institutional investors<sup>31</sup> and of the capital that needs to be deployed to deliver a low carbon economy, it does demonstrate the growing appetite for such assets. The following subsections set out the variety of investment approaches and opportunities being used to harness this demand and deliver investment in clean energy.

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<sup>28</sup> See Aviva media centre online from 2013 - <http://www.aviva.co.uk/media-centre/story/17250/aviva-commits-500-million-to-invest-in-uk-infrastr/>

<sup>29</sup> As of November 2015 BlackRock now manages more than \$200bn of assets across environmental, social, and governance and impact investment portfolios - <http://www.businessgreen.com/bg/analysis/2433413/blackrock-climate-change-has-hit-the-mainstream>

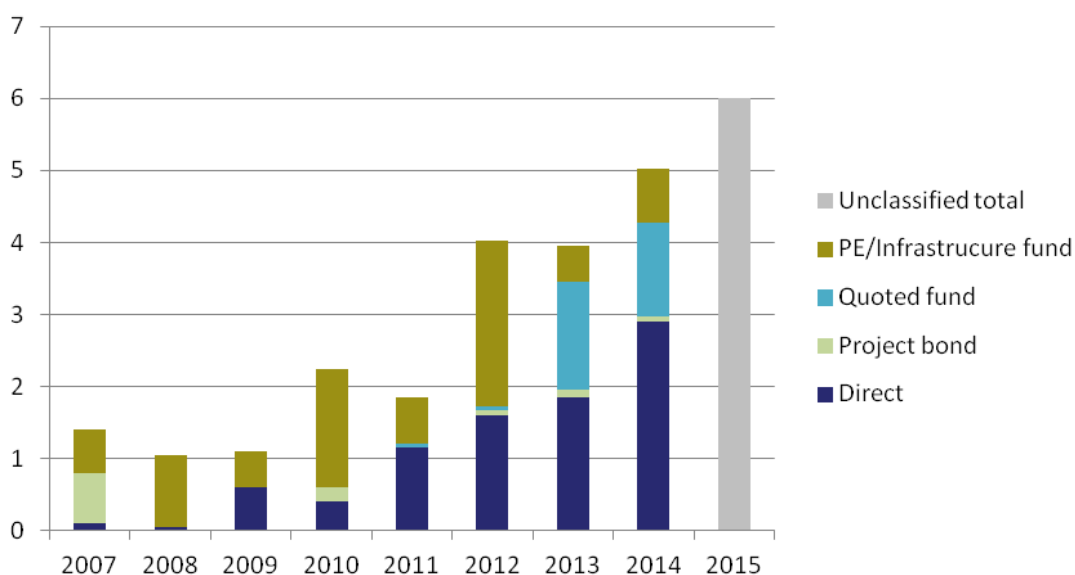
<sup>30</sup> <http://www.euractiv.com/sections/energy/wwind-energy-investment-ahead-curve-320285>

<sup>31</sup> In the OECD countries alone, institutional investors held over \$90 trillion in assets in 2013, however within European institutional investor's portfolios the share of "climate-friendly" assets is only 1-2%

### 3a. Direct investment

Direct infrastructure investment, including into clean energy, has been growing over the past few years. Since 2014, it has become the largest source of institutional investment into European renewable energy projects (see Figure 3)<sup>32</sup>. However, this still makes up a very small proportion of direct investment in infrastructure overall. Across all infrastructure between 2012-2013, greenfield investment (new projects such as the Gode Wind deal) made up only 22.3% of all projects. The balance consisted either of brownfield investment (7.4% - purchase of existing assets such as the UK High Speed Rail 1 deal<sup>33</sup>) or refinancing of operational assets 70.3% (securitised debt refinancing of Peel Ports<sup>34</sup>).

Figure 3: Institutional investment in European Renewable Energy Projects, 2007-2015, \$bn



Source: Bloomberg New Energy Finance

Growing interest in direct investment into clean energy is still generally undertaken only by larger institutional investors. This is especially the case for greenfield projects as the risks associated with the development and construction of projects, require significant time, expertise and capital to assess and price. This means deals must generally be over a minimum size of €100m-€250m to be considered attractive. In 2015, four Danish pension funds invested €600m in the Gode Wind offshore wind

<sup>32</sup> BNEF (2015) Global trends in renewable energy investment 2015

<sup>33</sup> High Speed 1 is the railway between St Pancras in London and the Channel Tunnel and connects with the international high-speed routes between London and Paris, and London and Brussels. See <http://highspeed1.co.uk/> for more details

<sup>34</sup> Linklaters (2014) Set to revive – Investing in Europe’s infrastructure



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park and the German insurer Allianz completed a string of wind farm and solar park purchases<sup>35</sup>. Public finance risk-sharing instruments will be important to continue to connect new institutional investors to such investment opportunities. The Project Bonds Initiative, discussed later, is an example of this type of approach.

Institutional investors are less able to invest in strategically important, high value, smaller scale investments (in energy efficiency for example) through direct investment. Similarly smaller, more fragmented, investment funds are often not a good match for the direct investment approach. As such, other solutions are also needed. One option is to consider vehicles for aggregating these smaller investments into larger bundles suitable for institutional investors (an example is the Pensions Infrastructure Platform in the UK). Others options are European Long-Term Investment Funds (ELTIFs, which aggregate funds to match investment needs) and asset-backed securities.

### ***3b. European Long-Term Investment Funds (ELTIFs)***

ELTIFs are a new type of collective investment framework allowing investors to put money into companies and projects that need long-term capital<sup>36</sup>. ELTIFs are aimed at investment fund managers who want to offer long-term investment opportunities to institutional and private investors across Europe, e.g. in infrastructure projects. To benefit from this cross-border passport the new funds will have to meet rules designed to protect both investors and the companies and projects they invest in. The ELTIF Regulation came into force in June 2015 and was applicable from December 2015, so it is still early days in understanding the impact of this framework approach<sup>37</sup>.

### ***3c. Green bonds***

Green bonds are a debt instrument available to investors which have expanded rapidly in recent years. They have been defined as “fixed income securities issued in order to raise the necessary capital for a project which contributes to a low carbon, climate resilient economy”<sup>38,39</sup>. Their emergence has been described as “one of the most significant developments in the financing of low-carbon, climate-resilient investment opportunities”<sup>40</sup>.

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<sup>35</sup> BNEF (2015) Global trends in renewable energy investment 2015

<sup>36</sup> See [http://europa.eu/rapid/press-release\\_MEMO-13-611\\_en.htm?locale=en](http://europa.eu/rapid/press-release_MEMO-13-611_en.htm?locale=en)

<sup>37</sup> See [http://ec.europa.eu/finance/investment/long-term/index\\_en.htm](http://ec.europa.eu/finance/investment/long-term/index_en.htm)

<sup>38</sup> OECD (2012) The role of institutional investors in financing clean energy

<sup>39</sup> Corporate bonds, project bonds, asset-backed securities, and sub-sovereign bonds that finance investment in green infrastructure assets can all be defined as green bonds

<sup>40</sup> 2015 Report prepared by the Climate Change support team of the United Nations Secretary General – Trends in Private Sector Climate Finance



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By 2015, \$42bn (~€36.2bn) of labelled green bonds had been issued globally, up from \$37bn (~€31.9bn) in 2014 and \$11.5bn (~€9.9bn) in 2013<sup>41,42</sup>. It has been estimated that almost half (45.8%) of labelled green bond proceeds have been used to finance renewable energy. The second biggest use of proceeds relates to energy efficiency (20%)<sup>43</sup>. The EIB is the world's largest green bond issuer and kicked off the market in 2007. As of the end of 2015 it had €11.8bn outstanding in green bonds<sup>44</sup>, highlighting its efforts to spur further sustainable growth of the green bond market. The funds raised via these issues are earmarked for renewable energy and energy efficiency projects<sup>45</sup>.

Green bonds were initially conceived of as a way to get institutional investors comfortable with making investments into low carbon infrastructure<sup>46</sup>. While the market is not regulated, the Climate Bonds Initiative has developed an industry-backed voluntary Climate Bonds Standard to provide clear 'use of proceeds' rules, i.e. clarifying what is meant by green to build market integrity<sup>47</sup>. Separately, the Green Bond Principles are voluntary processes and guidelines that recommend transparency and disclosure and promote integrity in the development of the green bond market by clarifying the approach for issuance of a green bond<sup>48</sup>. Today around 60% of green bonds are independently verified<sup>49</sup> and there is an ongoing debate about whether the public sector might support the development of standards<sup>50</sup>. Outside of the EU, there are divergent views on whether standards should be mandatory<sup>51</sup>. For example, China

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<sup>41</sup>See <https://www.climatebonds.net/>

<sup>42</sup>Climate Bonds Initiative (2015) 2015 Green Bond Market Roundup - - It is noted that In addition to the labelled market, there is a much larger universe of bonds that finance climate mitigation and adaptation that are not labelled as green. As of June 2015, this additional unlabelled climate bond universe stood at \$532 billion

<sup>43</sup>Climate Bonds Initiative (2015) 2015 Green Bond Market Roundup

<sup>44</sup>Environmental Finance online (2016) <https://www.environmental-finance.com/content/news/eib-issues-its-first-green-bond-of-2016.html>

<sup>45</sup>[http://www.eib.org/investor\\_relations/cab/index.htm?lang=en](http://www.eib.org/investor_relations/cab/index.htm?lang=en)

<sup>46</sup>Mirova (2015) Investing for a Low Carbon Economy.

<sup>47</sup>See <https://www.climatebonds.net/standards>

<sup>48</sup>See <http://www.ceres.org/resources/reports/green-bond-principles-2014-voluntary-process-guidelines-for-issuing-green-bonds/view>

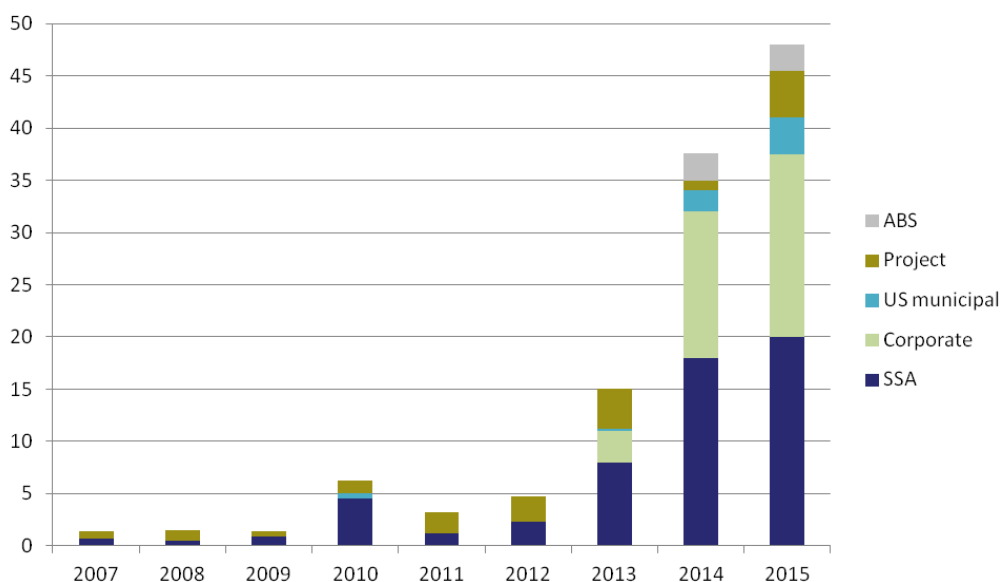
<sup>49</sup>Climate Bonds Initiative and HSBC (2015) Bonds and Climate Change the state of the Market 2015

<sup>50</sup>SWD (2015) 184 final - Feedback Statement on the Green Paper "Building a Capital Markets Union" – 'a majority of respondents saw the role of the European Commission in possible future rules of a facilitative nature and measures to prevent abuse of ESG initiatives ('greenwashing').'

<sup>51</sup>In December 2015 China has launched its national green bond standards. The Green Projects Catalogue, developed by the People's Bank of China's Green Finance Committee, provides a set of standards for screening which assets and projects are eligible to be financed using green bonds. <https://www.environmental-finance.com/content/news/china-releases-national-green-bond-standards.html> This was one of the subjects of discussion at a Green Bonds conference hosted in Mexico City in March 2016.

has issued its standards through regulation on Green Bonds and Mexico is in the process of defining it<sup>52</sup>.

Figure 4: –Global Green Bond Issuances 2007-2015, By Type, \$bn



Source: Bloomberg New Energy Finance (SSA is supranational, sovereign and agency)

Despite the growth in green bonds since 2007, they currently account for less than 1% of the estimated \$100 trillion (~€86.31 trillion) global bond market<sup>53</sup>. Therefore green bonds only offer a very small pool of assets through which institutional investors can invest in the low-carbon economy. The market must increase in size to increase impact and reduce the liquidity concerns. There are a number of measures that the Commission, governments and public banks can deploy to enable this to happen (see Box 3). There is widespread support for such efforts coming out of COP21 in Paris, during which 27 global investors who manage over \$11.2 trillion (€10.1 trillion) in assets issued the ‘Paris Green Bonds Statement’ committing to support policies that drive the development of long term, sustainable global markets in green bonds as part of climate finance solutions.

### 3d. Yieldcos

Innovation within the equities market has led to the development of yieldcos in recent years. These are listed equity funds that pool cash-generating infrastructure projects that generate a predictable cash flow. Yieldcos have a similar structure to master limited partnerships (MLPs) which originated in the early 1980s, yet unlike

<sup>52</sup> Kidney et al (2015) Growing a Green Bonds Market in China  
<https://www.climatebonds.net/files/files/Growing%20a%20green%20bonds%20market%20in%20China.pdf>

<sup>53</sup> Mirova (2015) Investing for a Low Carbon Economy





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MLPs, yieldcos have no technical restrictions on asset or income composition<sup>54</sup>. They have therefore predominantly become an attractive financing vehicle for renewable energy projects such as solar and wind generation.

Their popularity has grown rapidly since 2013, particularly in the US with similar products (quoted projects funds) in the UK. At least 12 yieldcos have emerged, raising more than \$13bn (~€11.2bn) through Initial Public Offerings<sup>55</sup>. In October 2015, yieldcos had raised more than \$28bn (~€24.17bn) for the renewable energy industry<sup>56</sup>.

Yieldcos provide a niche equity investment for institutional investors by offering stable attractive returns while also maintaining the ability to sell the shares easily with low transaction costs as they are liquid instruments traded on an exchange. The market is still relatively young; much of the growth has been prompted by investor demand for assets, which can provide a relatively high return in a low yield environment. For sponsoring companies they are a new route to raise capital. For investors (both retail and institutional) a diversified portfolio of lower-risk, high-quality assets with strong dividends is attractive<sup>57</sup>. Similar to securitisation (see Box 3) they help to reduce the cost of capital by broadening the investor base and improving liquidity. The New Climate Economy Report found that yieldcos can attract equity investment at a 2% lower cost per year compared to investment through typical project finance and in so doing can reduce the cost of renewable energy by up to 20%<sup>58</sup>. The future growth of yieldcos will be closely linked to the growth of the renewable energy market, particularly in the wind and solar sectors.

The business model of the yieldco has recently been questioned as the share price performance of yieldcos has fluctuated over time and it is uncertain how they will perform in a high interest rate environment. Yieldcos initially thrived with the share prices of the 12 largest yieldcos increasing by more than 50% by mid-September 2015<sup>59</sup>. However, rising interest rates, falling fossil fuel prices, unfavourable wind conditions and questions about the sustainability of the yieldco business model has

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<sup>54</sup> Ernst and Young (2015) The YieldCo structure - [http://www.ey.com/Publication/vwLUAssets/ey-yieldco-brochure/\\$FILE/ey-yieldco-brochure.pdf](http://www.ey.com/Publication/vwLUAssets/ey-yieldco-brochure/$FILE/ey-yieldco-brochure.pdf)

<sup>55</sup> BNEF (2015) Global trends in renewable energy investment 2015

<sup>56</sup> Bloomberg online (2015) <http://www.bloomberg.com/news/articles/2015-10-13/yieldcos-that-reaped-28-billion-shunned-by-enel-edp-in-europe>

<sup>57</sup> See Ernst & Young (2015) Yieldco Structure: Unlocking the value in power generation assets [http://www.ey.com/Publication/vwLUAssets/ey-yieldco-brochure/\\$FILE/ey-yieldco-brochure.pdf](http://www.ey.com/Publication/vwLUAssets/ey-yieldco-brochure/$FILE/ey-yieldco-brochure.pdf)

<sup>58</sup> New Climate Economy (2014) Better growth, Better Climate

<sup>59</sup> United Nations (2015) Trends in private sector climate finance

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lead to falling share prices for yieldcos in the US.<sup>60,61</sup> Those in Europe have not seen the same fall in value as those in the US, however questions about the yieldco model have been raised. The extent to which yieldcos will be attractive to investors during a period of rising interest rates is unknown<sup>62,63</sup>. The response to the yieldco model does show institutional investor's demand for more liquid vehicles enabling investment in the low carbon sector. However, the outlook for the growth of yieldcos is uncertain.

### Box 3. The potential of green asset-backed securities to expand the green bond market

Two types of green asset-backed securities (ABS) exist. First, ABS with cash flows backing the issuance arising from green assets with the proceeds raised from investors for the issuance allocated to green assets. This type of green ABS is suitable for new green asset classes, including renewable energy. Where energy savings are guaranteed, such as through energy performance contracts, energy efficiency projects can also be highly suitable<sup>64</sup>. Second, ABS with the cash flows backing the issuance arising from non-green assets (or a mix of green and non-green assets) but with proceeds raised from investors for the issuance allocated to green assets. This type of green ABS is suitable within existing asset classes that are already being securitised, including for example mortgages to green buildings, loans to electric vehicles and hybrids and loans to green SMEs.

Securitisation of such assets can make such investments appealing to institutional investors as they pool a range of smaller assets. This increases the size of the transactions, lowering fees and increasing liquidity. Such aggregation is particularly helping for expanding sources of finance for distributed renewable energy and energy efficiency projects, as they are often to small scale for a single bond issuance.

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<sup>60</sup> Environmental Finance online (2015) <https://www.environmental-finance.com/content/news/renewables-developers-look-alternatives-to-yieldcos-says-cohnreznick.html>

<sup>61</sup> Financial Times online (2015) <http://nicosiamoneynews.com/2015/12/01/yieldcos-creating-a-monster/>

<sup>62</sup> European Commission DG CLIMA (2015) Shifting Private Finance towards Climate-Friendly Investments

<sup>63</sup> In April 2016 SunEdison filed for Chapter 11 bankruptcy after aggressive growth plans came unstuck. See <https://www.environmental-finance.com/content/news/ef-briefs-sunedison-bncr-jlen-world-bank-capital-stage.html> although issues appear to go wider than it simply being a Yieldco

<sup>64</sup> <https://www.climatebonds.net/policy/policy-areas/market-development>. An example of this is the WHEEL initiative, which is the first secondary market for energy efficiency loans see <http://www.naseo.org/wheel>



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Two key areas of intervention can be considered by the European Commission and/or Member State governments to further grow the market in ABS. First, supporting the development of standardised contracts for new, green assets to aid bundling and using public bank finance in a number of ways to support early market development. As examples, for new asset classes, public institutions could offer direct financial support to existing private market efforts on standardisation of financial contracts for green assets (solar, wind, energy efficiency) and establish public-private initiatives and working groups to mainstream this approach. Strong involvement of the private sector will be key to ensure standardised contracts are attractive to private sector lenders<sup>65</sup>. Second, further support from public banks (EIB and national public banks) could provide a major boost in a range of ways including: offering preferential rates to encourage increased green lending with standardised contracts; public banks supporting the establishment of green warehousing facilities<sup>66</sup>; and providing credit enhancement to reduce risks to investors and/or acting as a cornerstone investor in early deals to support market development.

### **Scaling up the investment and meeting the demand of institutional investors**

**Innovation in the capital markets has begun connecting investors to clean energy and wider clean infrastructure projects, meeting demand from institutional investors and beginning the process of scaling up investment in low carbon infrastructure.** This process now needs to be accelerated if the estimated €200bn needed in annual clean energy investment, in addition to investment in wider infrastructure, is to be met.

**It is important to recognise that this gap cannot be met solely by focusing on increasing supply side investment. Major efforts must also be made to increase the supply of appropriately designed and structured infrastructure projects.** Without a sufficient pipeline of such projects, the cost of building up the in-house technical capacity needed to undertake such investments will be difficult for investors to justify, therefore deterring action. As such **both financial and energy regulations will need to consider how to match the supply of finance from the private sector to investable low carbon infrastructure projects.** At the top level, decision-makers must ensure the

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<sup>65</sup> This is not required for green mortgages and green car loans, as the standardised contracts that are already developed for non-green loans in these asset classes can be used. EU policymakers could use their convening power to encourage harmonization of standard contracts throughout Europe, working with the private sector.

<sup>66</sup> <https://www.climatebonds.net/policy/policy-areas/market-development>. An example of this is the WHEEL initiative, which is the first secondary market for energy efficiency loans see <http://www.naseo.org/wheel>



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next phase of development of the Capital Markets Union introduces a set of actions that accelerate the reorientation of capital to support the delivery of low carbon infrastructure, including a delivering a low carbon Energy Union. In doing this both initiatives can have high chances of succeeding in their main aims.

#### 4. The opportunity - linking the Capital Markets Union and the Energy Union

Current European infrastructure investment still has yet to reach its pre-crisis levels: in 2015 infrastructure investment was still 20% lower than 2008 levels<sup>67</sup>. Despite this, as noted above **a 'pot' worth at least \$1 trillion (~€86.29bn) is available from institution investors over the next 10 years, specifically for infrastructure investment in Europe.** These investors have a particular interest in infrastructure investments as they offer attractive asset yielding, long-term, steady returns<sup>68,69</sup>.

In addition to the general trend of growing demand for infrastructure investment, **an increasing number of investors are aware that current business models and wider economic activity predicated on unlimited natural resources are not sustainable and are creating systemic risks<sup>70</sup>.** With recent reports by the Bank of England and European Systemic Risk Board also emphasising the impact of climate change on the economy, it is clear that climate risk – and the need to manage it - is well and truly on investors' radars<sup>71</sup>. Institutional investors are already showing a growing appetite for investment in clean energy infrastructure, with increasing direct infrastructure investment and a growing green bond market. **Yet overall investment is a fraction both of total assets under management and of the capital that needs to be deployed to deliver a low carbon economy.**

Innovative investment instruments are going some way to harness demand from investors. They offer many advantages to the current dominant financing models and scaling up such approaches will be crucial to securing sufficient investment to ensure the EU can meet its climate and energy targets in 2030 and 2050. However, the lack of a supply of appropriately structured projects is a further major hurdle that must be overcome before sufficient finance can be channelled into infrastructure. **This challenge should be reframed as an opportunity to link the EU's most high profile infrastructure investment programme (the Energy Union) with the initiative which**

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<sup>67</sup>IJ Global Project Finance &Infrastructure Journal data (accessed March 2016)

<sup>68</sup>Linklaters (2014) Set to revive – Investing in Europe's infrastructure

<sup>69</sup>Europe remains a global infrastructure giant, offering favourable opportunities to private investors looking for assets yielding long-term, steady returns – Linklaters (2014) report

<sup>70</sup>I. Holmes (2015) Future-Proofing the EU Capital Markets Union. E3G

<sup>71</sup>Linklaters (2014) Set to revive – Investing in Europe's infrastructure

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aims to better connect savers and investors with opportunities to invest in the real economy (the Capital Markets Union).

There are already promising signs of links emerging between the initiatives. As set out above, capital markets are already innovating, and the Capital Markets Union initiative has put forward a series of reforms that will reinforce this process of change. They include the following.

- **The Capital Markets Union includes a focus on increasing direct investment by insurers and pension funds in infrastructure.** It was known as far back as 2011 that Solvency II regulation and pension industry-related proposals would need to be reviewed to ensure that, while they act to address systemic risks in the financial system, they are also structured so as not to unduly restrict institutional investors' ability to invest in these long-lived infrastructure assets<sup>72</sup>. The moves to reform prudential regulation for insurers (Solvency II) under the Capital Markets Union to facilitate infrastructure investment at a price that fairly reflects risk has been critically important<sup>73</sup>. A similar approach is also needed for Pensions Funds under IORP II, although concerns about EIPOA's Holistic Balance Sheet proposals impairing the ability of pension funds to invest in long-dated assets including infrastructure will need to be reconciled within that process.
- **The Capital Markets Union supports the development of instruments which harness investment to deliver environmental sustainability.** The primary example cited is the Capital Market Union's support for development of the green bond market<sup>74</sup>. There now needs to be a careful consideration of the role the European Commission can play in facilitating further growth of the green bond market. As outlined above, the use of high-quality securitisation as a means to aggregate small-scale investments in decentralised energy and energy efficiency into large investable pools should be encouraged. In addition, moves to reboot securitisation markets under the Capital Markets Union<sup>75</sup> present an opportunity to scale up ABS that could transform the green bond market in a material way. The proposed securitisation regulation should include measures to screen projects for 2050-compatibility. This could include for example provisions to require Securitisation Special Purpose Entities, originators and sponsors of energy-related infrastructure projects to set out within standardised disclosure templates how securitised assets fit with the delivery of national and EU climate

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<sup>72</sup>E3G (2011) Financing the decarbonisation of European infrastructure - [e3g.org/docs/E3G\\_Financing\\_the\\_Decarbonisation\\_of\\_European\\_Infrastructure.pdf](http://e3g.org/docs/E3G_Financing_the_Decarbonisation_of_European_Infrastructure.pdf)

<sup>73</sup>European Commission (2015) Action Plan on Building a Capital Markets Union; COM (2015) 6588/2 - [ec.europa.eu/finance/insurance/docs/solvency/solvency2/amendment/20150930-amendment-to-the-delegated-act\\_en.pdf](http://ec.europa.eu/finance/insurance/docs/solvency/solvency2/amendment/20150930-amendment-to-the-delegated-act_en.pdf)

<sup>74</sup>European Commission (2015) Green Paper Building a Capital Markets Union

<sup>75</sup> See [http://ec.europa.eu/finance/securities/securitisation/index\\_en.htm](http://ec.europa.eu/finance/securities/securitisation/index_en.htm)

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goals to manage the risk of investors being sold securities backed by assets that become stranded under forward climate policies.

Whilst encouraging, this initial progress must be further built upon, both to track progress and accelerate the realignment of capital from a high to a low carbon economy, and enable the EU to meet the demands of the Paris Agreement. **This will require explicit links to be made between the Capital Markets Union and Energy Union initiatives to ensure delivery of one initiative reinforces delivery of the other.**

### **The role of public finance in connecting private capital to projects**

The 'glue' that will hold these two initiatives together is publicly sourced finance, which will provide important risk-sharing capital to accelerate the deployment of private sector investment in low-carbon infrastructure. Publicly owned banks, including the EIB, but also national development banks, can play an important role in targeted risk-sharing with the private sector. Examples include:

- **Supporting innovation in financial instruments** - the EIB is the world leader in issuing green bonds and other public banks (including national development banks) and private entities need to be encouraged to follow the EIB's lead; in particular by playing a more activist role in promoting green ABS. For example, the UK's Green Investment Bank pioneered new approaches to public private partnerships (PPPs) in the UK through coinvestment in public infrastructure with institutional investors<sup>76</sup>.
- **Supporting technology and business model innovation** - leading by example through supporting deployment of first of a kind investment in new technologies and business models will be critically important moving forward. Germany's KfW Bankengruppe was an early investor in Germany's offshore wind market and supports the country's energy efficiency programme in partnership with commercial banks.
- **Credit enhancement.** Credit enhancement is a targeted form of risk-sharing between the public and private sector. One very successful example has been the EU Project Bonds Initiative. Project Bonds use European Commission-sourced funding to provide credit enhancement to infrastructure projects, whose debt is effectively divided into two tranches: senior and subordinated. The credit enhancement underlies the senior debt and therefore improves its credit quality, offering peace of mind to institutional investors. In this way high quality public private partnerships (PPP) can be constructed to attract private finance from institutional investors. Project Bonds were used to

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<sup>76</sup> See for example the GIB-Aviva public-private hospital energy efficiency investment programme <http://www.greeninvestmentbank.com/news-and-insight/2014/uk-green-investment-bank-announces-programme-of-support-to-finance-nhs-energy-efficiency/>



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finance the Greater Gabbard wind farm offshore transition line<sup>77</sup>. The 2014 mid-term evaluation of the programme recommended an expansion beyond its existing scope to include more explicitly renewable energy and social sector projects<sup>78</sup>.

- **Aggregation functions.** The UK Green Investment Bank was originally conceived as an ‘aggregation vehicle’ that would raise debt on the capital markets and be used to invest in a range of green infrastructure projects on behalf of bond and equity holders<sup>79</sup>, just as the EIB currently does. Today, the Green Investment Bank has worked to aggregate investments to match financing through innovations such as the Greencoat Fund<sup>80</sup> (a yieldco) and its street lighting loan product<sup>81</sup>. Also in the UK, the Pensions Infrastructure Platform (PIP) is working with asset managers to become a direct infrastructure investor on behalf of UK pension schemes into UK infrastructure<sup>82</sup>. More public and private aggregators will be needed, especially to support investment in high decentralised energy infrastructure, including energy efficiency. Public banks are likely to be important, as are third party private sector finance providers such as ESCOs.

In the end however, these are ad hoc interventions and instruments developed and deployed on a case by case basis, albeit by institutions that do have some sense of the long-term challenges facing the economies in which they operate. **Scaling up low carbon infrastructure investment and returning Europe to growth through better connecting investors and savers to projects is a long-term task, and a longer term approach to risk-sharing is needed to ensure success.**

### Increasing investor confidence through developing a strategic approach

Greater policy clarity, long term objectives and strategic long-term plans, set both nationally and aggregated by the European Commission to give an EU-wide snap shot, will do much to build confidence among the investment community that the EU is

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<sup>77</sup> Two rounds of financing have been undertaken – demonstrating strong investor demand. See <http://www.eib.org/infocentre/press/releases/all/2013/2013-204-institutional-investor-support-for-greater-gabbard-offshore-transmission-link-encouraged-by-first-use-of-project-bond-credit-enhancement-scheme-in-uk.htm>

<sup>78</sup> Ernst & Young (2014) Ad-hoc audit of the pilot phase of the Europe 2020 Project Bond Initiative – Final Report  
[http://ec.europa.eu/dgs/economy\\_finance/evaluation/pdf/mid\\_term\\_eval\\_pbi\\_pilot\\_phase\\_en.pdf](http://ec.europa.eu/dgs/economy_finance/evaluation/pdf/mid_term_eval_pbi_pilot_phase_en.pdf)

<sup>79</sup> Green Investment Bank Commission (2010) Unlocking investment to deliver Britain’s low carbon future

<sup>80</sup> Global Capital Finance in collaboration with Clean energy pipeline (2014) The European renewable energy investor landscape

<sup>81</sup> See <http://www.greeninvestmentbank.com/media/5243/gib-market-report-low-energy-streetlighting-feb-2014-final.pdf>

<sup>82</sup> See <http://www.pipfunds.co.uk/> Insert link to PIP



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serious about meeting its climate and energy targets. Such an approach will also enable investors to allocate capital to low carbon projects with sufficient confidence that the policy environment will remain consistent and supportive throughout the lifetime of the investment<sup>83</sup>. Lessons on how to achieve this can be learned from a number of Latin American countries which are now starting to develop National Financing Strategies<sup>84</sup>. For instance, Chile and Mexico are currently developing National Financing Strategies which consider the role of public banks and specific finance instruments (such as green bank functions and guarantees) in meeting their climate change and development objectives. Combined with the development of a pipeline of investable projects, **National Financing Strategies can increase the efficiency with which capital is matched to infrastructure projects, accelerating the deployment of capital needed**. Some investors have already asked countries to take this kind of approach, arguing that Member State governments should be required to develop national capital raising plans informing the Commission how they intend to finance the delivery of a zero-carbon economy and meet, for example, the UN Sustainability Goals<sup>85</sup>.

### Aligning public banks to 2°C

There is much to applaud in the EIB's, and many of the EU's national public banks, approaches to Climate Action. However, in the aftermath of the Paris Agreement a step-change in approach is needed.

- **Solvency:** To properly risk-manage solvency and reputation in the face of increasing climate risk, public banks need a formal view on the potential within their portfolios for asset stranding. As such, there is a strong case for developing internal-use scenarios for a 2, 4, 6°C global temperature increase to stress test portfolios and get a snapshot of weaknesses and indicators for strategy development going forward.
- **Strategy:** Climate risks are wider than just a single project. Strategic country-level views are needed on forward infrastructure investment needs to ensure sufficient adaptation and mitigation planning is done. A stronger market-making role will also be required to strengthen the low carbon investment pipeline and accelerate the transition.
- **Safeguards:** At the project level, screening criteria need to be updated in line with best practice on climate resilience. Public banks should consider a collaborative approach to developing next generation safeguards to manage climate risk over a

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<sup>83</sup> Green Growth Platform 2015 - Financing a Low Carbon Energy Union

<sup>84</sup> A National Finance Strategy (NFS) aims to empower countries to define their overall low-carbon and climate-resilient development objectives and set out potential means to finance them. The focus is on how international and national public finance can be deployed alongside policy initiatives to maximise the 'crowding-in' of private capital to deliver climate compatible development aims.

<sup>85</sup> Aviva (2014) Sustainable Capital Markets Union Manifesto





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range of temperature increase scenarios in a project and also portfolio level. They could include assessing:

- The likelihood that adverse impacts will occur during the life of a project financed asset;
- Project site susceptibility to raised sea levels;
- Operational impacts of climate change e.g. unplanned outage due to water unavailability;
- Likelihood of increased frequency of adverse weather events;
- Likelihood of political conditions for legislation/new climate-related legislation impacting on project costs/value;
- Whether best-alternative low carbon options have been considered.

### **Extending the lifespan of the EFSI and making it explicitly focused on delivering an Energy Union in line with 2030 and 2050 targets**

The EFSI is an initiative launched jointly by the EIB Group, European Investment Bank and European Investment Fund, and the European Commission to help overcome the current investment gap in the EU by mobilising private financing for strategic investments. It is a €16bn guarantee from the EU budget, complemented by a €5bn allocation of the EIB's own capital. By March 2016, 26% of EFSI-related investment was in energy-related projects<sup>86</sup> and much has already been done through the EFSI regulation to align investment with the EU's 2030 climate and energy targets<sup>87</sup>. The next step could be to extend the lifespan of the EFSI from 2018 to 2030 and re-setting its aims to explicitly focus on delivering a low carbon Energy Union. Making the link explicit would have a strong confidence-signalling effect given that achieving this will require investors supporting new types of technology and business models that implicitly carry more risk.

## **5. Moving forward**

There are clear signs of growing investor appetite to invest in infrastructure as a means to increase investment returns and to manage climate risk. A failure to capitalise on this appetite would be a missed opportunity. To drive sustainable growth, the Capital Markets Union must, in the next stage of its development, be explicitly linked to driving investment into the Energy Union and introduce practical initiatives to ensure this can happen. Developing new routes to finance this energy infrastructure under the Capital Markets Union will, in doing so, boost sustainable

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<sup>86</sup>See <http://www.eib.org/efsi/>

<sup>87</sup>For example the regulation states it should support projects that “are consistent with Union policies, including the objective of smart, sustainable and inclusive growth, quality job creation, and economic, social and territorial cohesion.” See <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1017&from=EN>

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growth. We make the following recommendations which should be considered in the next phase of implementing both the Energy Union and Capital Markets Union and also public finance reforms.

1. **Planning an energy system for the future and managing risk.** The energy system is going through a rapid process of innovation and change. The National Energy and Climate Plans being developed by Member States need to be resilient to this change to be credible. Planning needs to identify early on the external factors that can influence the delivery of these plans and propose possible remedies. In addition, consideration needs to be given to how the energy and wider infrastructure requirements will be financed<sup>88</sup>.
2. **Having a plan for financing.** As part of the implementation of the National Energy and Climate Plans, the Commission should require Member States to develop National Financing Strategies<sup>89</sup> (capital raising plans to secure the infrastructure investment needed), as is already happening in a number of Latin American countries<sup>90</sup>. The Commission and public banks should also continue to facilitate the development of the green bond market through promoting contract standardisation, green bond standards and other activist measures to scale up green-asset backed securities.
3. **Ensuring that climate-related risks are sufficiently visible to investors.** This will require a focus on ensuring appropriate disclosures on physical, transition and liability risks are made both by companies and by financial institutions (discussed in a forthcoming E3G paper). It will also require ensuring that screens are applied to manage asset stranding risks at range of venues, including for example within the new securitisation regulation and when projects submitted to the suggested infrastructure hub linked to the EFSI.
4. **Ensuring that public funding is targeted to support infrastructure investment that helps not hinders delivery of the low carbon economy.** This will require refocusing the EFSI to explicitly focus on delivering a low carbon Energy Union. It also indicates a need to look again at how the Cohesion and Structural Funds and Connecting Europe Facility are allocated within Member States; this is something that could be addressed in the upcoming review of

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<sup>88</sup>For example Member States should direct network developers to base infrastructure planning and prioritisation on scenarios that meet EU climate and energy targets, to meet the demand (and recognition of asset stranded risk) from both public and private investors - as shown in E3G (2016) Energy Union Choices: A perspective on infrastructure and energy security in the transition

<sup>89</sup>Major infrastructure investors are already calling for such Capital Raising Plans to be developed. See Aviva Sustainable Capital Markets Union Manifesto.

<sup>90</sup>See <https://www.e3g.org/showcase/international-climate-finance2>

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the Multi Financial Framework. The EIB and national public banks will need to move explicitly align their portfolios to delivering climate-resilient investment and become fully 2°C compatible.

5. **Enabling better tracking of progress in delivering 2030 goals.** Given the value at risk<sup>91</sup> resulting both directly and indirectly from the misallocation of capital, there is a need to have a clear view of progress in the EU in meeting low carbon investment targets. This can enable timely interventions in the market, including development of new financial products and incentives to ensure the EU's energy transition gets and then remains on track. It will require the collection and aggregation of country level public and private investment data into a public database. Nowhere is there a comprehensive publicly available overview of this<sup>92</sup>. The EU should require countries to report on their progress in meeting 2030 investment goals (for GHG, renewable energy and energy efficiency) as part of the Planning and Reporting requirements linked to governance of the 2030 targets. This could include reporting on emissions reductions and GW of clean energy deployed (or saved) but should also involve reporting on the amount of capital deployed, both from private and public sources.

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<sup>91</sup> Simple macroeconomic modelling undertaken by the Economist Intelligence Unit has indicated severe losses to the global capital stock by the end of the century as a result of climate change. Their models showed average losses of \$4.2tn (€3.7tn) (compared to the \$143tn (€125.8tn) total stock of managed assets) and that under 6°C scenarios, around one-third of capital stock would be lost by 2100.

<sup>92</sup> Every year organisations such as REN21 and Bloomberg New Energy Finance publish an update on the amount of capital deployed to renewable and broader clean energy investment globally. The IEA and other institutions publish data on the amount of capital that needs to be deployed to avoid dangerous climate change. Better data would enable the Commission to identify whether further interventions are needed under the Capital Markets Union, or other initiatives, to accelerate the redeployment of capital from the high to low carbon economy.