



# Financing Sustainability

## Triggering Investments for the Clean Economy

European Political  
Strategy Centre

Faced with the already tangible effects of climate change, dwindling global competitiveness, and the pressures of the 'fourth industrial revolution', one of the main goals of the Juncker Commission is to **accelerate the modernisation of Europe's economy**, making it more sustainable, low-carbon, energy and resource-efficient, in a socially fair manner. This is all the more relevant following the United States' unilateral decision to withdraw from the 2015 Paris Agreement on climate change. **The EU now has a unique window of opportunity to take the global lead on sustainable finance and position itself as the investment destination for low-carbon technologies**, securing a substantial competitive advantage.

However, the scale of investment required to enable a sustainable transition is so great that it can only be achieved with the broad backing of public and private actors at all levels. This is still far from materialising at the necessary scale. **Short-term profits continue to prevail over longer-term interests, placing future jobs and well-being at risk.**

In line with its ambitious international commitments, the EU has a responsibility to contribute to a fundamental **remodelling of the financial system** and the **creation of real incentives** to encourage a large-scale shift in investments and a recalibration of business models **towards a more future-friendly capital allocation.**

### Sustainable finance is a pre-requisite for more jobs and growth

Enabling Europe's 'sustainable transition' by substantially refocusing economic and financial systems is a must for the EU to ensure the competitiveness of its industries and drive job creation over the longer term, while continuing to offer Europeans a fair, healthy and good-quality living environment.

### Transparency is a must

Investors need access to high-quality data on sustainable investment opportunities for effective capital allocation. Yet, today, there is a lack of adequate and consistent information on the impact of positive green or social measures or on the climate risk exposure of portfolios. This prevents actors throughout the investment chain from seizing the opportunities of the transition, while increasing the risk of green-washing.<sup>1</sup>

### Current rules of the game are ill-suited

Although investors and bankers have started to steer away from the most carbon-intensive assets, they still fail to sufficiently integrate wider sustainability factors into investment and financing decisions. Lack of long-term vision and common definitions and standards mean capital markets remain under-utilised to redistribute funds from unsustainable investments towards future-friendly ones.

### All hands on deck

There is an urgent need to better translate international and European sustainability goals into mainstream public and private investment plans and financial terms, such as risk, return and cost. This requires an overarching vision for sustainable finance at EU level, addressing all links of the financial value chain – consumers, retail banks, management boards of institutional investors, regulators, supervisors and national governments.

EPSC Strategic Notes are analytical papers on topics chosen by the President of the European Commission. They are produced by the European Political Strategy Centre (EPSC), the European Commission's in-house think tank.

### Disclaimer

The views expressed in the EPSC Strategic Notes series are those of the authors and do not necessarily correspond to those of the European Commission.

# Financing the economy of tomorrow

## A necessary transition in support of job-creating growth

With a few notable exceptions, there is increasing realisation that our economic growth models, our ways of living and working, are rooted in excessive short-termism, and are simply not sustainable. The dominant systems of production and consumption are showing their cracks, while niche innovations – both technological and social – are disrupting old economic paradigms, diverting jobs away from traditional sectors. All the while, an energy and climate crisis unfolds,<sup>2</sup> the impacts of which are increasingly wide-ranging and observable on ecosystems, the economy and society.<sup>3</sup> **Our planet cannot continue to sustain our current lifestyle without major repercussions.**

**The international community has acknowledged the need for profound change:** first with the adoption of the 17 Sustainable Development Goals (SDGs) in September 2015; then with the global COP21 deal on climate change in December 2015, which commits to limiting global warming to well below 2 degrees Celsius (°C) above pre-industrial levels. The EU was a driving force behind these agreements.

*'We are aware today of the risks that lie in store for us tomorrow, and we can prevent them. **It is a question of political will and of action.***

*We must and we can hand over to future generations a world that is more stable, a healthier planet, fairer societies and more prosperous economies. This is not a dream. This is a reality and it is within our reach. But we need to step up the pace, because the hands of the clock are turning faster and faster.'*

*European Commission President Jean-Claude Juncker, November 2015, COP21 meeting in Paris*

Even so, the United Nations Framework Convention on Climate Change (UNFCCC) estimates that the commitments made in Paris may only suffice to cap the global temperature increase to around 2.7 °C above pre-industrial levels.<sup>4</sup> This would have even more wide-ranging implications on the environment, water and food supply, migration, security, and economic growth.<sup>5</sup> **Without immediate action, it is estimated that the overall cost of climate change would be equivalent to losing between 1 and 4% of global GDP each year, now and for the foreseeable future.<sup>6</sup>**

**This highlights the urgency of shifting towards new, sustainable growth models** that combine economic, social and environmental considerations in a holistic way, that respect planetary boundaries and reduce the negative impacts of global warming, while at the same time, making existing infrastructures more resilient.

### Box 1: What exactly is 'sustainable finance'?

Sustainable finance refers to any form of financial service integrating environmental, social or governance (ESG) criteria in business or investment decisions, for the lasting benefit of both clients and society at large. It should be oriented towards long-term societal objectives and proactively foster a more sustainable economic, social and environmental development (i.e. one that does not lead to economic and financial melt-downs; that addresses rising social inequalities and respects planetary boundaries). This also includes increasing awareness of and transparency regarding 'sustainability' risks that may have an impact on the stability of the financial system.

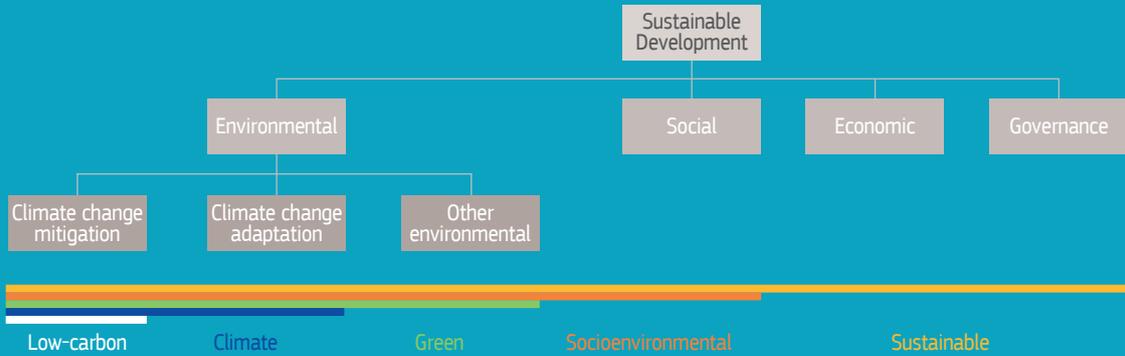
Sustainable finance includes a strong '**green** finance' component, referring to capital raising and financial investments flowing into projects, products and companies that support the development of a more environmentally-friendly, low-carbon and climate-resilient economy. It is in this last area that specific commitments and deliverables have been identified under the COP21 Paris Agreement. And this is where the largest investment efforts will be required.

Other sustainability criteria are most often complementary and less prominent. Nonetheless, they can potentially contribute directly or indirectly to the transition towards a new economic model and should therefore not be neglected. Increased attention to corporate social responsibility, for instance, makes environmental, social and governance matters more enforceable, rendering firms more accountable, and the overall financial system more stable.<sup>7</sup> The universally agreed United Nations Sustainable Development Goals can be 'markers' or 'orientation points' in this regard.

The fact that there is **no clear global definition of low-carbon, green or sustainable finance**, and no global standards about what should or should not be considered as a 'green' investment could be seen as an issue as it could undermine **confidence among economic actors on the direction of travel for the next decades and act as a barrier to the scaling up of sustainable finance initiatives.** Among some countries, the very concepts

of sustainable or green finance are still politically contentious,<sup>8</sup> with countries and organisations using the same terms to refer to different things and for very diverse levels of ambition (China’s green bond guidelines, for instance, include ‘clean coal’, while the question of whether nuclear energy should be considered as sustainable has also stirred many debates).<sup>9</sup>

**Figure 1: Defining sustainable finance**



Source: United Nations Environment Programme Inquiry

## Major investment needs

For the transition to happen successfully, the **investment needs are vast** – the largest share of which will be for low-carbon energy infrastructure, both for generation and distribution.<sup>10</sup> For instance, the share of renewable energy sources in electricity generation needs to almost double by 2030 in order for the EU to meet its 2030 energy and climate targets.<sup>11</sup>

However, developing a modern economy that creates sustainable jobs and growth goes well **beyond increasing investments that can be directly linked to low-carbon sectors** such as renewables. A profound transformation of the fundamentals of our society is needed: changing the way we live and work, making our cities smarter, with improved communications and digital networks, making our mobility systems and buildings more energy-efficient, and modernising industrial infrastructures, production processes and business models across all sectors.

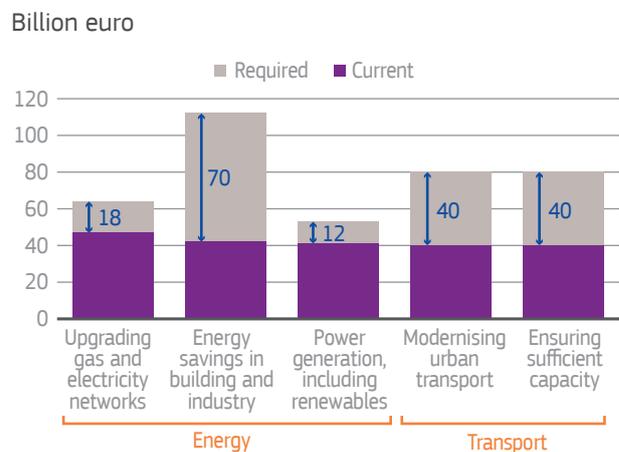
Estimates suggest that **realising the Sustainable Development Goals will require annual investments in sustainable infrastructure worth around 4.7-6.7 trillion euro** across countries, sectors and industries between now and 2030.<sup>12</sup> This represents roughly double the current levels of investment being made in all types of infrastructure, which stand at around 2.8 trillion euro per year.<sup>13</sup> The additional cost primarily reflects important delays that the global economy has accumulated in renewing unsustainable infrastructures in developed countries and financing new infrastructures in developing economies.<sup>14</sup> The *incremental* cost of actually reallocating funding to low-carbon infrastructure – compared to merely investing in traditional infrastructure – is relatively low, at around 5% of total project costs – or roughly 3.8 trillion euro over 15

years,<sup>15</sup> and is markedly lower than the estimated cost of delaying the low-carbon transition.

In Europe alone, the European Investment Bank estimates the annual investment needs in the energy sector to reach 230 billion euro; a gap of 100 billion euro per year compared to current investments. Modernising Europe’s transport sector, including funding alternative fuels infrastructure, would require an additional 80 billion euro annually (Figure 2).<sup>16</sup>

The above figures clearly suggest that long-term investments in concrete projects aimed at modernising the economy and making it low-carbon, more resilient, energy-efficient and socially-fair will need to take place at a far greater scale and pace over coming decades.<sup>17</sup>

**Figure 2: Investment needs in the EU’s energy and transport sectors**



Source: European Investment Bank

## Box 2: How to invest in the low-carbon and circular economy of tomorrow?

The vast majority of clean economy investments are made by governments, corporations, private equity and venture capital firms. Nonetheless, people and organisations of all shapes and sizes can include sustainable investments in their portfolios – from individuals investing in pension funds, to local retail banks advising their clients, or SMEs seeking funding for their green enterprises.

Recent developments with regard to sustainable financial instruments include:

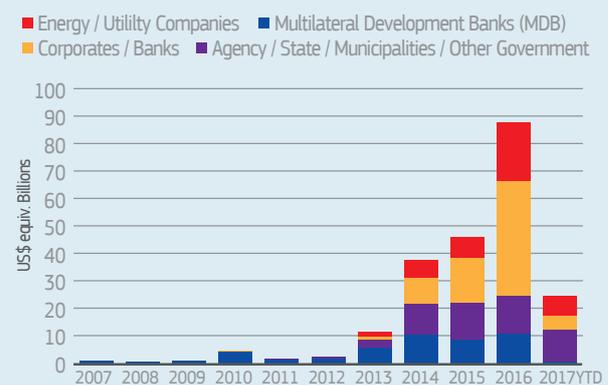
**a. Green bonds:** These allow entities looking to finance green initiatives to borrow money from investors for a defined period of time at a fixed or variable interest rate. They are different from regular bonds in that their label signifies a commitment to exclusively use funds raised to finance or re-finance ‘green’ projects, assets or business activities. There are currently no global standards about what should or should not be considered a qualifying green investment. Nonetheless, more than half of emitted green bonds have been reviewed or certified by external parties in accordance with the voluntary [Green Bond Principles](#) (GBP) or the Climate Bonds Standards (CBS), which are key frameworks for labelling green bonds.

First issued in 2007, by the European Investment Bank, green bonds have experienced significant and rapid growth – nearly doubling between 2015 and 2016 to reach 92 billion US dollars (Figure 3), so that they now constitute a large chunk of financing for clean energy investment. **Nonetheless, green bonds still only represent 0.13% of the overall bond market**, with just 24 countries worldwide having green bond issuers.<sup>18</sup> Just last year, **Poland became the first sovereign to issue a green sovereign bond**.<sup>19</sup> In 2016, the **Dutch Rabobank Group’s Obvion sold its first green bonds backed by mortgages on energy-efficient homes** that have certified energy-efficiency levels. This provides investors with instant proof of the asset’s ‘green’ status thanks to the existence of an official energy label.

**b. Equities and index funds:** Equity is stock or any other security representing ownership in a company, which can be bought via the stock exchange. This is thus a riskier option than a bond because if the company’s value decreases after the purchase, the investor loses wealth. Many publicly-traded companies operate in the clean economy domain, such as solar panel manufacturers or battery storage developers, so the opportunities are plentiful. And, if investors do not wish to bet on a specific company, they can instead choose to put their capital in an index fund. This is a portfolio of securities representing a particular market or industry, or a portion of it. Clean index funds might include a broad spectrum of technologies and/or geographies, or they might focus on one technology and/or geography.<sup>20</sup> In 2016, the **Luxembourg Stock Exchange launched the Luxembourg Green Exchange (LGX)**, the first platform dedicated exclusively to green securities. Issuers must provide additional information on listed securities to access the platform, including disclosure on the use of proceeds (which must be in line with the Green Bonds Principles, Climate Bonds Standard or equivalent), an external review on the quality and management of the use of proceeds and yearly ex-post reporting.<sup>21</sup>

**c. Green lending:** Other interesting private sector initiatives are also burgeoning, such as energy-efficiency loans and mortgages that are linked to the energy-efficiency labelling of buildings. An initiative of the European Mortgage Federation and the European Covered Bond Council is looking to create a standardised ‘energy-efficient mortgage’ based on preferential interest rates for energy-efficient homes and/or additional funds for retrofitting homes at the time of purchase. The project will explore the link between investing in energy efficiency, borrowers’ reduced probability of default, and the increase in value of energy-efficient properties.<sup>22</sup>

**Figure 3: The rapid growth of the green bond market**



Source: Bloomberg and World Bank, April 2017

**d. Green securitisation:** Securitisation refers to the process of transforming a – potentially very large – pool of separate illiquid assets into tradable securities. It allows loans to small-scale projects to be aggregated to reach an adequate size for bond markets. In the case of ‘green’ securitisation, the investors’ returns on the securities are drawn from the cash flows of the underlying low-carbon assets. The same could apply to other sustainable projects, such as social housing.<sup>23</sup>

Of course, these ‘direct’, ‘labelled’ ‘sustainable’ investments are only a small piece of the picture. To finance sustainable investments, the entire spectrum of financing possibilities is in fact available, with the limitation that scale might be (much) smaller. Many investments towards a more sustainable future are also being made by companies themselves investing in new, more resource-efficient business models, in more sustainable production processes, or in the development of innovative green technologies that will deliver the transition. Thus, **financing sustainability is not and should not be looked at as a ‘niche’ market, with a narrow focus on green bonds or sustainably-labelled index funds.** It is also about reallocating capital towards longer-term climate-friendly activities, and about integrating sustainability into all types of investments and within the mainstream financial products and services.

## Changes underway

### Global institutions and EU spearheading

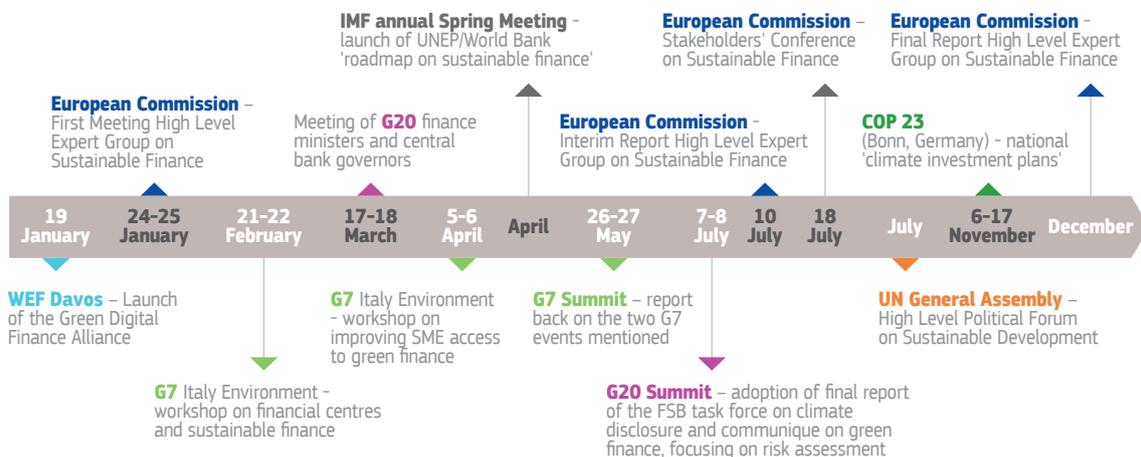
In the aftermath of the COP21 international agreement on climate change<sup>24</sup> and the adoption of the United Nations Sustainable Development Goals, ‘sustainable’ or ‘green’ finance is increasingly recognised as playing a crucial role in enabling the necessary transformation of the economy.

In particular, the work initiated by the United Nations Environment Programme on the ‘**Inquiry into the Design of a Sustainable Financial System**’<sup>25</sup> in the run up to Paris COP21 played an important role in raising awareness among international stakeholders regarding the importance of the financial system in mobilising capital towards a green and inclusive economy.

Since then, most relevant global institutions have done some work on the matter<sup>26</sup> and this trend is expected to continue throughout 2017 (Figure 4) – although there is a risk that the level of progress could be undermined, at least in part, by the decision of the US Trump administration, on 1 June 2017, to unilaterally withdraw from the Paris Agreement.<sup>27</sup>

At their Hangzhou Summit on 4-5 September 2016, the **G20 Leaders** acknowledged the importance of green finance, underlining that efforts should be made to *provide clear strategic policy signals and frameworks, promote voluntary principles for green finance, expand learning networks for capacity-building, support the development of local green bond markets, promote international collaboration to facilitate cross-border investment in green bonds, encourage and facilitate knowledge sharing on environmental and financial risks, and improve the measurement of green finance activities and their impacts.*<sup>28</sup>

**Figure 4: Defining moments for sustainable finance in 2017**



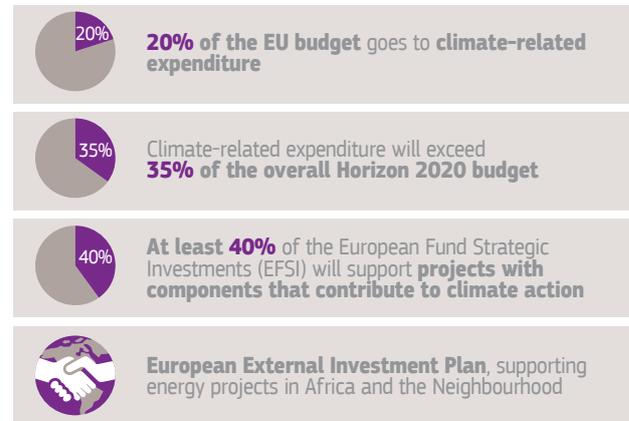
Source: European Political Strategy Centre

The EU on the other hand has already tabled far-reaching policy proposals to support the transition to a more sustainable future (Figure 5). Flagship initiatives include: the **Energy Union**, which contains measures to promote energy efficiency and the development of low-carbon, renewable energies; the **Circular Economy Strategy**, which aims to achieve a transition towards a resource-efficient economy; the **Innovation Union**, which supports the early development of new technologies, namely in the climate and socio-environmental domain; the **Digital Single Market**, which seeks to promote the effective use of information and communication technologies to address societal challenges in transport, energy, climate, and resource efficiency; the **Pillar of Social Rights** aimed at supporting fairer and better-functioning labour markets and welfare systems; or the **Skills Agenda**, which aims to help the workforce adapt to the transition.

These policies are backed up by large-scale funding and investment strategies (Figure 6). First of all, the EU has worked resolutely to mainstream sustainability throughout its spending, with one fifth of the Union budget dedicated to climate-friendly expenditure.

Secondly, under the umbrella of its **Capital Markets Union Agenda (CMU)**, it is supporting the design of a financial system that better supports sustainable investments.<sup>29</sup> Indeed, as part of this agenda, the European Commission has pledged to improve the overall investment regulatory environment, help investors to make better-informed investment decisions, promote the development of the European green bond market – as well as of other environmental, social and governance investments – and support longer-term and sustainable infrastructure financing. The latter is namely done via the **Investment Plan for Europe** and, in particular, the **European Fund for Strategic Investments**, which aims to boost levels of investment in the EU in general and orient them

**Figure 6: Large-scale EU financial support towards a more sustainable economy**



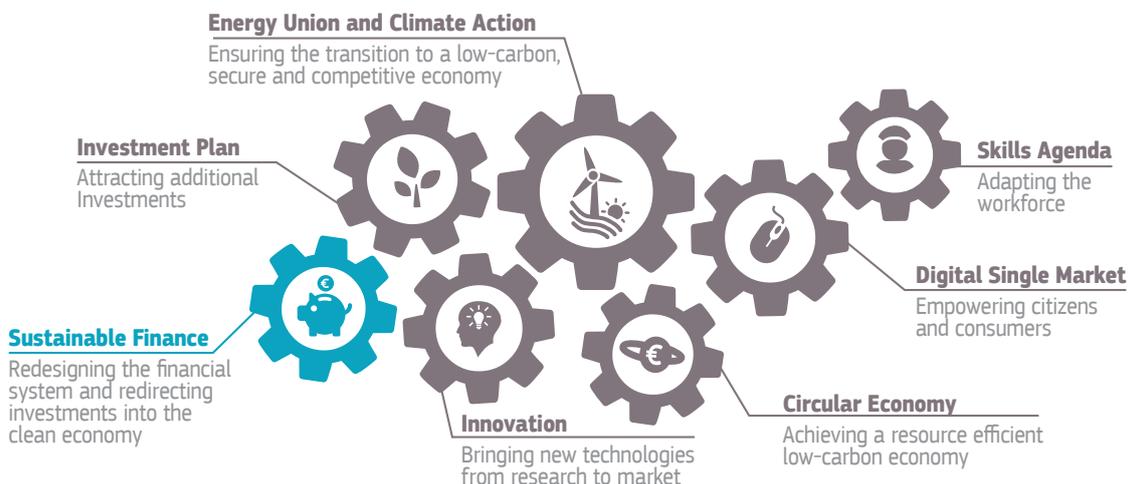
Source: European Commission

towards more sustainable activities. At least 40% of this Fund, which seeks to mobilise at least 200 billion euro of investments overall, will go towards climate-related action.

In addition, the Capital Markets Union Agenda includes a number of smaller but important initiatives designed to correct current imperfections in EU regulations that have been holding back investments. For instance, it proposes to lower the increased capital requirements imposed on banks in the wake of the financial crisis, and which had reduced their ability to lend.<sup>30</sup> It also reduces high risk charges for qualifying equity and debt investments in infrastructure projects and in **European Long-Term Investment Funds (ELTIFs)**,<sup>31</sup> as these were hampering longer-term investments, especially by insurance companies.

Finally, the EU's efforts are not limited to domestic policies, and the recently established **External Investment Plan** is set to mobilise investments and leverage funds worth up to 44 billion euro towards sustainable development in Africa and the EU Neighbourhood.

**Figure 5: Modernising the economy: Sustainable finance is major cog in the wheel**



Source: European Commission, European Political Strategy Centre

## Gradual shift among private investors

While public finance will play a key role in mobilising and guiding capital, the scale of investment needs is so large that it will inevitably also have to rely on large-scale private sector engagement, and in particular from the institutional investor sector.<sup>32</sup> **Capital markets will have to be mobilised to ensure a substantial re-focusing of investments from high to lower-carbon technologies and to projects that generate higher social impact.**

Although gradual, this shift is starting to materialise, with a number of important financial actors adopting climate-aligned investment models. Following the COP21 meeting, 27 global investors – for the most part European – with assets worth over 10.3 trillion euro under management, signed a common ‘Green Bonds Statement’, committed to ‘grow a large and robust market that makes a real contribution to addressing climate change’.<sup>33</sup>

Nonetheless, to date, **sustainable flows and stocks remain marginal to the deployment of capital worldwide.** Less than 1% of global bonds are labelled ‘green’; less than 1% of holdings by global institutional investors are environmentally-friendly infrastructure assets, and only a small fraction of bank lending is explicitly classified as ‘green’ according to national definitions<sup>34</sup> – although, of course, this does not preclude ‘green’ investments from being undertaken using standard financial instruments.

## A matter of competitiveness and opportunities

The transition towards a more sustainable, low-carbon and modern economy will not only significantly reduce the EU’s carbon footprint and help to achieve international climate change goals; it will also **boost the competitiveness of the economy as a whole** by lowering energy prices and improving the efficiency of production processes and of underlying infrastructure. Past experience in the EU provides ample evidence that the low-carbon transition is fully compatible with economic growth (Figure 7).

Migrating towards more sustainable economic production and consumption modes will **enable households to make important savings in their everyday spending,<sup>35</sup> improve their health and living conditions, and open up significant new job opportunities.**

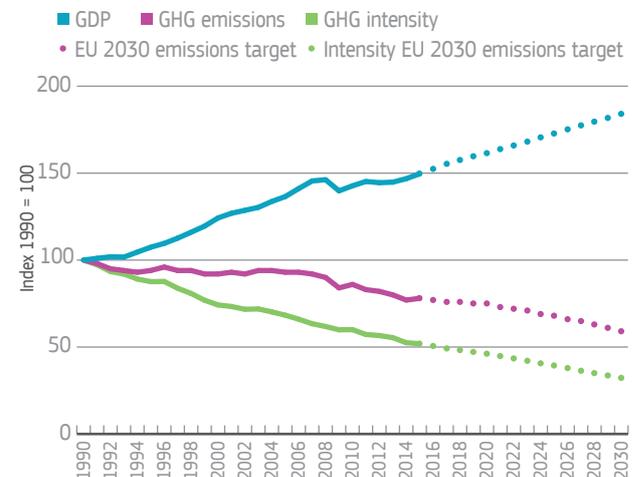
The development of renewable energy sources and energy-efficient products and services has already led

to the creation of new businesses and jobs throughout Europe. More than one million workers are employed, directly or indirectly, in renewable energy-related sectors<sup>36</sup> and around one million in energy efficiency-related sectors.<sup>37</sup>

Access to sustainable finance can support the scaling up of such endeavours. It can help start-ups bring innovative technologies to market maturity and accelerate their uptake and deployment in Europe and worldwide, creating sustainable jobs in the industries of the future. **The more Europe succeeds in being a global leader on sustainability, making its companies in all sectors champions of the sustainable transformation, the more it will succeed in attracting green and sustainable financial inflows, generating even more growth and jobs.** This is all the more true in the context of a withdrawal of the US from the Paris Agreement and the possible backtracking on sustainable investments that will ensue on the other side of the Atlantic. But, short of providing credible sustainable financing opportunities in Europe, these industries, and the jobs that go with them, could shift elsewhere.

Finally, **developing sustainable finance is also critical to the long-term competitiveness of the EU’s financial and banking sector.** Stock exchanges, including London, Paris and Luxembourg, but also outside Europe, hope to capture a greater slice of this dynamic and rapidly developing market segment and implant themselves as the main hubs for sustainable finance in the future. In an increasingly competitive environment, Europe must build itself up as a centre of expertise capable of attracting the growing numbers of investors looking to place their funds and savings in ‘green’ investment solutions.<sup>38</sup>

**Figure 7: Economic growth and low-carbon transition are compatible**



Source: European Commission, European Environment Agency

Note: GHG = Greenhouse Gas Emissions

## Box 3: China's giant leap on green finance

Driven by concerns about the social and economic costs of China's **air pollution** and hazardous smog conditions, China is taking action to tackle the consequences of its heavily carbon-intensive growth. In a blueprint document published early January 2017, the Chinese National Energy Administration (NEA) announced that China would invest 340 billion euro into renewable power generation by 2020. Illustrating the scale of the challenge, renewables will still only account for just 15% of overall energy consumption by 2020, equivalent to 580 million tonnes of coal.<sup>39</sup>

In fact, it is estimated that China's *annual* bill to shift its economy towards more sustainable energy sources stands somewhere between 270 billion to 410 billion euro over the next five years.<sup>40</sup> Public funds are only expected to contribute to these investment needs at a level of 10-15% meaning that the shortfall will have to be made up by private investment.

But China has a plan and **green bonds are at the centre of it**.<sup>41</sup> A few weeks only after the adoption of the Paris agreement in December 2015, the People's Bank of China (PBOC) outlined a new framework for the issuance of **onshore 'green' bonds** by financial institutions. This makes China the first country to establish official rules for a national market – albeit largely harmonised with international standards – as part of a broader framework focused on 'greening China's financial system' and accelerating the development of an 'ecological civilisation' by promoting economic restructuring.<sup>42</sup> The framework also includes the development of green start-ups/IPOs (Initial Public Offering), green insurance and green loans, and was formally adopted in August 2016.<sup>43</sup>

The impact is likely to be transformative for the funding of renewable energy and other climate-friendly projects in China, and will further stimulate growing foreign participation in its onshore bond market. **In 2016, China already represented roughly 40% of all green bonds issued**<sup>44</sup> (Figure 8). In achieving this, it overtook the European Investment Bank, previously the largest issuer, which raised over 15 billion euro raised across 11 currencies.<sup>45</sup>

**Establishing a green finance system is not only a national strategy** but one that China clearly intends to develop on an international level, as signalled ahead of the **G20 Summit in Hangzhou** in September 2016, during which the importance of international collaboration on green finance was highlighted in the Leaders' Communique.

**Figure 8: Asia overtakes Europe on green bond issuance**

Issued bonds, in billions of US dollars



Source: Climate Bonds Initiative

## Overarching framework needed

**Although a lot is happening in the field of sustainable finance, there is a lack of a clear, unifying framework aimed at promoting a more long-term climate-consistent and socially fair capital allocation.**

The absence of a strategic overarching EU sustainable financial policy and regulatory framework gives the sense that sustainability is still a peripheral issue and not yet a core driver for national and regional governments, management boards of financial institutions, or top executives to integrate environmental, social and governance issues in their everyday investment decisions.<sup>46</sup>

Many Member States have only very limited or no legal and financial incentives to discourage investments that are in clear contradiction to the EU's sustainability targets or to promote investments in sustainable development. And, when measures do exist, there is little coherence among Member States.

Financial markets are very complex, involving a broad diversity of actors, each with very different knowledge and understanding of how financial markets operate (Figure 9). The behaviour of these actors is very much influenced by the wide variety of **regulatory measures that have been developed over time** by different instances.

# EPSC Strategic Notes

It will therefore be important to screen these measures and the effects they have on the different actors of the financial value chain, so as to **better align actions at all levels with the EU's long-term strategies**. A holistic approach is needed so that the financial dimension is appropriately connected to the sustainable one.

**Long-term consistency and coherence** between the overall climate and energy frameworks, on the one hand (including circular economy measures, innovation policies and conditionality with regard to the use of EU-funds, which should be in line with Paris COP21 commitments), and, on the other hand, the Capital Markets Union (and financial regulation in general) are therefore crucial. Timing and credible implementation matter as well.

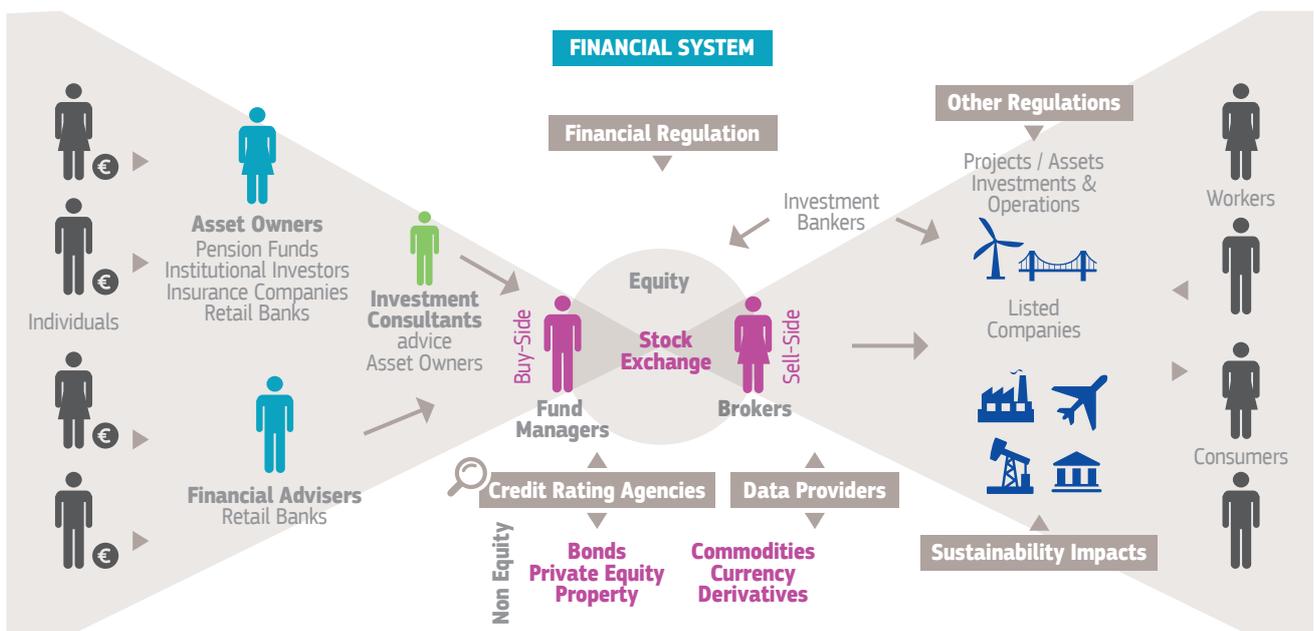
Efforts to streamline both sets of frameworks require a comprehensive assessment of a wide range of regulations and should cover questions such as:

- Should climate change or sustainability considerations be integrated into the **euro area's monetary policies**, for instance by exploring the option of 'green' expansionary monetary policies?
- Do the EU's **state aid guidelines and procurement rules** – including the 2014 guidelines on state aid for environmental protection and energy, aimed at promoting a gradual shift to market-based support for renewable energies – facilitate or hamper the transition towards a new economic model?

- Are existing **prudential rules** for banks and insurance companies, the **capital and liquidity requirements**, adequately pricing risk so that they are correctly internalised and provisioned against? To what extent can a better identification of climate and other ESG-risks be factored in so that access to capital for low-carbon investments could be made cheaper? And would this, in turn, not create new risks?
- Should **risk assessment provisions** be designed to look backwards, based on historical performance, or can they be made more forward-looking, integrating climate considerations?
- Do **accounting rules (IFRS)** and processes for investors such as pension funds, sovereign wealth funds or public-private-partnerships integrate sustainability sufficiently? And how are they interpreted by the competent authorities?
- Is there a broader role for **European Supervisory Authorities**? Do the mandates of the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA), and the European Securities and Markets Authority (ESMA) enable/oblige/require them to sufficiently take into account sustainability risks in order to ensure the financial soundness of the financial institutions themselves and to protect users of financial services?

**Figure 9: How your money is put to work**

An overview of the multiple actors in the investment chain



Source: Aviva Investors, European Political Strategy Centre

## Box 4: Coordination will be of the essence

As part of the Action Plan on building a Capital Markets Union, the European Commission has set up a **High-Level Expert Group on sustainable finance**,<sup>47</sup> comprising 20 policy leaders from civil society, the finance sector and academia, with a view to making recommendations towards a comprehensive EU strategy on sustainable finance. The aim of the Group is to investigate ways to better integrate sustainability into the functioning of the financial system (namely looking at the issues of incentives along the investment chain, a more comprehensive approach to sustainability risks in prudential and regulatory frameworks, and time horizons in the EU financial system), to expand markets dedicated to green and sustainable assets, and to channel capital to new sustainable projects and initiatives in line with EU policies.

The Group is due to issue an interim report in June 2017 and propose operational policy recommendations by the end of 2017. The European Commission will draw on these recommendations to determine how to integrate sustainability considerations into the EU's rules for the financial sector. This marks an important step in the follow-up to the EU's 2030 Agenda for sustainable development as well as to the Paris Agreement on climate change.

**The establishment of such a platform is an important step in itself and one that could be continued and scaled up for new purposes in the future, as an open space for policymakers, regulators, financial actors, investors and project promoters in need of financing, to come together to monitor markets and risks, identify regulatory barriers and discuss specific policy needs and reforms.**

Similar platforms already exist at Member State level – e.g. in the **Netherlands**, where the central bank, De Nederlandsche Bank launched the **Platform for Sustainable Finance** in 2016.<sup>48</sup> At EU level, a '**Circular Economy Finance Support Platform**' was also set up by the European Commission and the European Investment Bank (EIB) in January 2017. It brings together national promotional banks, institutional investors, innovators and other stakeholders, to raise awareness of circular economy investment opportunities. It also seeks to enhance the links between existing instruments (such as the European Fund for Strategic Investments (EFSI) and the EU Finance for Innovators (InnovFin) initiative backed by Horizon 2020), potentially develop new financial instruments for circular economy projects, promote best practices, and provide advice on structuring and bankability.

Furthermore, a **multi-stakeholder platform** is being launched following the European Commission's November 2016 Communication 'Next steps for a sustainable European future European action for sustainability',<sup>49</sup> tasked with following up and exchanging on best practices with regard to the implementation of the **Sustainable Development Goals**, across sectors, at Member State and EU level.

While all these initiatives are important, **coordination will be of the essence.**

## Unlocking investments for the future

Investments in support of sustainable infrastructure and the low-carbon transition have been held back for a number of reasons, not least because the investment climate in the aftermath of the financial crisis has not been propitious. Private investment, in particular, has been slow to recover.

But **the 'low-carbon' infrastructure of the future also has some intrinsic characteristics that have traditionally discouraged investments.** These include heightened risk perceptions and transaction costs,<sup>50</sup> as well as uncertainty surrounding future returns on investment. These barriers are largely due to an **absence of available**

**or historic data** to evaluate risks or future cash flows linked to largely untested or unfamiliar business models.

Moreover, it is **not always easy for investors to find attractive investment opportunities** with low-carbon – or broader sustainability characteristics, such as social or governance-related – because of a lack of visibility or of aggregation mechanisms enabling the scaling up of such investments. Here, the absence of universally agreed and comprehensive standards for 'green' investments is also an issue, as is the weak expertise of administrations to integrate low-carbon specifications into public procurement and tenders.<sup>51</sup>

Although the obstacles and market failures along the investment chain are multiple, many can be fairly easily addressed, through an all-encompassing combination of policy measures, regulatory actions and incentives.

## Integrating long-term risks and opportunities

Convincing all actors of the investment chain that sustainable development is in their economic and financial interests – rather than a sunk cost – remains a key challenge.

**The financial system has been structured around short-term frameworks and horizons.** This is particularly true of capital markets, where the **primary concern is typically making a fast profit.** Financial rewards are linked to quarterly or annual reporting and meeting short-term goals; prudential requirements are essentially geared towards ‘surviving the next twelve months’; and rating agencies most often only look ahead to the next three to five years.

**In stark contrast, the majority of physical assets have a life span of at least ten years, and the most pressing environmental and social challenges are long-term ones:** the climate transition; management of natural resources; demographic trends and ageing; and technological change. Yet, **financial actors are quite simply not supporting informed, efficient capital-allocation decisions that integrate longer-term risks and opportunities into investment decisions.**<sup>52</sup>

A recent Global Climate index,<sup>53</sup> which rates the world’s biggest asset owners (pension funds, insurers, sovereign wealth funds, foundations and endowments) on their success at managing climate risk within their portfolios, confirms that, even if a majority of investor heavyweights now recognises the financial risks of climate change, **there is still ‘enormous resistance’ to actually managing climate risks.** 40% of asset owners show no evidence of any action at all to manage these risks – as such, ‘gambling with the savings and financial security of millions of people’.<sup>54</sup> On a positive note, **Europe is clearly leading the way,** accounting for 20 of the 34 top asset owners in terms of managing climate risks (Box 5).

To challenge the status quo, a **better pricing and integration of the financial impacts of climate change** is needed, while **addressing market players’ time horizons for decision-making** (through training, values, remuneration policies, etc.). Policy measures must also seek to accompany the transition: costs can be high in the short and medium term, in particular if the transition occurs abruptly – and all the more so in sectors and regions with high carbon intensity. Among financial actors, insurers will probably be the most directly affected, as they are exposed to market repricing and portfolio losses. But as sectors are increasingly interconnected, there can be consequences for the whole economy (Figure 10).<sup>55</sup>

### Box 5: Climate risks will have consequences for the whole economy

Climate change risks are multiple and have the potential to significantly affect all actors in the investment chain. Impacts will not only manifest themselves in the longer term; there can also be significant near-term financial implications,<sup>56</sup> even if these are not always immediately visible.<sup>57</sup>

Climate risks include **immediate physical risks** linked to the impacts of climate- and weather-related events happening today on existing assets. These can affect the financial value of assets and generate insurance liabilities.

**Liability risks** relate to the parties who have suffered loss or damage from the effects of climate change and are seeking compensation from those they hold responsible, or against organisations having insufficiently disclosed material financial risks.

Then, there are **transition risks**, i.e. financial risks that could result from the process of adjusting towards a lower-carbon economy. This is particularly the case if the transition is not managed in an effective, predictable manner, thereby increasing the number of **stranded assets** as investors divest their funds from carbon-intensive sectors towards low-carbon ones.

These transition risks depend on how climate policies are tailored, but can also result from disruptive technological improvements or innovations that support a swift transition, thereby shifting supply and demand for certain commodities and affecting the financial competitiveness of whole sectors.<sup>58</sup> This is the case, for instance, for the automotive sector, where combustion engine vehicles are likely to be replaced by electric cars, with new players entering the market and old players disappearing. The value of future potentially stranded assets cannot be estimated with precision, as much will depend on the ability of carbon-intensive sectors to reinvent themselves and the uncertain response of financial markets once the transition is engaged.<sup>59</sup>

Against this backdrop, the clarity of understanding that investors have about climate risks will be key. Increased climate awareness has already triggered a number of **divestment initiatives**<sup>60</sup> although this remains marginal compared to overall investment flows.



But, far from only naming and shaming companies lagging behind, **disclosure can also provide reputational rewards for leading companies**, thereby encouraging a greater offering of sustainable projects. This, in turn, could foster increased managerial and shareholder engagement. What's more, by facilitating benchmarking with other organisations, the disclosure of climate and other sustainability risks would enable companies to assess their level of contribution towards EU-led climate targets or other environmental, social and governance objectives, and to access standardised information to 'green' their processes, including procurement.

An additional impulse could be provided through clarifying **fiduciary rules** and integrating a sustainability dimension in them. Today, these rules – which are basically designed to make sure that financial managers act in the best interest of the company they work for – are often vague and general, and counterproductive when it comes to sustainability issues due to the frequent assumption that 'sustainability deducts from performance'.

Enhanced transparency, combined with standardised and commonly accepted definitions and metrics, would also **encourage a more effective dialogue between companies and banks, insurers and investors**. It could help to shift institutional investors from short-term index-based investments towards more active investment policies and result in the **integration of sustainability into the algorithm programmes of investment traders**.

Currently, it remains difficult for investors to benchmark green investments against standard ones, as comparable pricing mechanisms and indices are lacking. Major stock market indices are not in line with the aim of limiting climate change.

They remain overexposed to fossil fuel and carbon-heavy technologies, while renewable energy and low-carbon technologies, such as electric cars are under-represented.<sup>63</sup> In recent years, a number of private initiatives have seen the light, ranging from 'green building rating systems' to **specialised sustainability rating agencies and index providers**,<sup>64</sup> assessing companies' economic, environmental and social values and performance, and their ability to benefit from opportunities and manage risks in the mid- to long-term. The problem, here again, is that the criteria used and the underlying data are rarely aligned, which detracts from comparability, creating confusion and affecting the credibility of such schemes.

Finally, **by increasing availability of data, supervisory authorities could develop climate stress tests** focused on the sectors that are most exposed. The ongoing work of **credit rating agencies** to incorporate environmental and climate risks into corporate credit rating would be hugely facilitated as well. This would provide tools for **monetary policy authorities** and public authorities in general, to better integrate climate impacts in modelling and in their forecasting processes.

**Initial steps to further transparency with regard to sustainability issues have been taken, including at EU level.** Among others, there has been the adoption of EU legislation requiring pension funds to consider taking into account environmental, social and governance (ESG) factors in their investment strategies<sup>65</sup>; the Shareholders Rights Directive, requiring corporate and investor disclosure of such factors; as well as a Directive on the disclosure of non-financial information, that will be evaluated in the course of 2018 and for which non-binding guidelines are being prepared.<sup>66</sup> **However, these advances need to be mainstreamed across organisations and sectors.**

### Box 6: How complexity science can help to better deliver sustainable finance

Complexity science – i.e. the scientific study of complex systems – can help to increase comparability between sectors and facilitate the assessment of risks and opportunities, thereby delivering useful information to investors and regulators.

For a start, when applied to climate risks, the complexity science approach can help to disclose the complex 'invisible' links between players across the financial value chain, and between these financial players and actors in the 'real economy'. It therefore makes it easier to understand who is directly or indirectly exposed to climate risks, and where to focus policy efforts to address issues in a more targeted way.

Risk exposure can be assessed more precisely thanks to a more 'granular' approach, decomposing organisations into parts and fine-tuning climate exposure assessments up to the level of specific plants. For instance, rather than generally categorising companies like Shell or BP as 'fossil fuel companies', such assessments can also consider where they have also invested in renewables and other sectors. Taking account of all this disaggregated information helps to provide a clearer picture of the 'real' exposure of a given company.

Along this vein, a recent report by the Financial Stability Board Task Force on Climate-related Financial Disclosures<sup>67</sup> recommends **applying disclosure requirements to organisations across sectors and jurisdictions** with regard to the following information: (1) the organisation's governance around climate-related risks and opportunities; (2) the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning; (3) how the organisation identifies, assesses, and manages climate-related risks; and (4) the metrics and targets used to assess and manage relevant climate-related risks and opportunities. The EU will have to consider how to apply such requirements and whether to make them mandatory or not (see also Box 7).

It needs to be emphasised, however, that effective disclosure of the carbon intensity of companies cannot be done overnight and it **will take time before systems and/or processes can be developed and implemented at company-level**. It will take even more time before different initiatives can be streamlined to allow comparability and benchmarking, and to create a group of users that put these reports into practice and challenge the policies in place.

Finally, disclosure requirements will have to be complemented by additional work **on clarifying definitions and standards**, as well as on tools for the proper **verification and certification** of green financial instruments, without, however, creating too many additional administrative burdens.

### Incentivising the transition at all levels

Shifting finance towards more sustainable investments will also require smart policies and incentives to create more engagement within broader society and across all sectors.

Initiatives should in particular target the **local level**, as this is increasingly where the transition will happen, with local actors, SMEs and citizens becoming more and more involved through community initiatives enabled by the spread of digital technologies, or as 'prosumers' (whereby they can e.g. produce, store and even sell their electricity rather than simply buying it). **Ensuring that these increasingly empowered consumers and local actors are offered the possibility to make long-term investments towards a sustainable future** (e.g. by investing in solar panels or biomass electricity production units, or when choosing their retail banks and pension funds) should be a priority.

Nowadays, there is often a **mismatch between the average size of green projects (often small to medium-sized) and that of typical investments from large institutional investors**.<sup>68</sup> Here, innovative financial engineering, fintech (see Box 8) and the creation of platforms can play a key role, **bringing local financial actors, project developers and other stakeholders, including consumers, together at an early stage**. They can serve to aggregate smaller investment projects into larger products to achieve sufficient scale, thereby reducing transaction costs and increasing the attractiveness of smaller projects for investors, while facilitating the flow of capital towards SMEs and local projects.

### Box 7: Case study: The French Energy Transition Act

Some EU Member States have already developed more detailed provisions on disclosure requirements. This is particularly the case of France that has included some provisions in its Energy Transition Act.<sup>69</sup> **French institutional investors and asset managers will have to disclose how they take into account environmental, social and governance (ESG) criteria in their investment strategies**, including a detailed assessment of climate-related considerations.

Listed companies and large non-listed firms will also be required to report on the climate change implications of their activities and the measures to reduce them. The companies have to explain their strategy with regard to ESG factors, describe the criteria, the assessment methodology and the underlying information, and how this affects the firm's investment policy and/or its engagement strategy. Reporting requirements are adjusted for smaller companies.

The Transition Act does not, however, at this stage impose any particular methodology or specific metrics to be reported by the targeted entities, allowing for innovations and the development of best practices in the coming years.

These developments have already triggered a lot of discussion on the way forward within the affected companies, and stimulated the development of specialised consultancy firms, as well as additional academic research.

**Retail banks also have a key role to play** given their ability to reach out to local communities. They could help to channel **household savings** and local investments towards low-carbon, energy-efficient and long-term infrastructure by offering sustainable retail or packaged investment products (e.g. **energy-efficiency loans** and **mortgages** that are linked to the energy-efficiency labelling of buildings,<sup>70</sup> loans for retro-fitting houses, for decentralised energy power generation, or for low-emission mobility or smart city investments). This would also **help to create jobs and growth where people live**. But for this to actually start happening, fiscal incentives and/or awareness-raising measures, such as adapted information and labelling initiatives, will be required to boost initial demand for these products.

**New business models** will also be needed in the financial sector. Banks already increasingly have to deal with ‘product as a service’ business models, for example, where customers no longer make one lump sum payment for a product at the point of sale, but continue to make payments for the lifetime of the product. Cash flows are becoming more important than the underlying value of the asset and contracts are becoming a much more important part of doing business, as is the creditworthiness of customers. On the other hand, the development of second-hand markets for products in a circular, resource-efficient economy increases their value and prevents them from being depreciated to

zero, as does design for reuse and recycling. These are new issues for the financial sector to grapple with and for which exchange of best practices and the creation of platforms (such as the Circular Economy Investment Platform, see Box 4) can be extremely useful.<sup>71</sup>

On the supply side, it will also be important to better **promote potential investment opportunities**, by demonstrating business cases and showcasing good projects. The creation of a robust pipeline of low-carbon and circular projects, inspired by the European Investment Project Portal (EIPP), could trigger additional interest and attract furthermore mainstream investors.

Finally, next to private capital, **public capital should also be redirected towards sustainable investments**. Public balance sheets need to be mobilised more effectively to increase investments. Public procurement, which accounts for 14% of EU GDP or around 2 trillion euro, could be used more widely as a tool to accelerate the transition towards a low-carbon and circular economy. EU institutions themselves can lead by example, by housing staff in state-of-the-art energy-efficient buildings or by pursuing the roll-out of zero-emission vehicles in their fleets. A broader and more holistic approach at national level could be triggered by requesting Member States to **develop national ‘capital-raising’ plans** to gather funds for the implementation of their climate and energy targets.

### Box 8: Implications of fintech for sustainable finance

Financial technology (‘fintech’) is emerging as a major disruptor of every aspect of today’s financial system. Covering anything from mobile peer-to-peer payment platforms, to crowdfunding, virtual currencies and distributed ledger technologies, fintech both threatens the viability of traditional financial sector business models, and offers new opportunities to reach out to unconventional players in the investment value chain.

Fintech seeks to offer an alternative to established, centralised services, through disintermediation, using new technologies, including mobile and digital technologies. It seeks to reach out directly to start-ups, SMEs and retail clients to mobilise capital and support their ventures. It democratises lending and investments by simplifying processes, lowering costs and increasing capital efficiency. By offering smart contracts through blockchain immutable distributed ledgers, fintech allows real economy assets, infrastructures and processes to interact with the financial system in predictable ways and with business models that were unheard of ten years ago.<sup>72</sup>

Many of fintech’s basic features are inherently aligned with key sustainability factors. For instance, decentralisation and increased access can enable better financial inclusion of under-served groups. Fintech also has the **potential to increase transparency and market integrity** (e.g. supporting reporting and disclosure responsibilities, as well as verification and certification activities), **improve risk management** (e.g. including integration of environmental and social risks) **and support more refined choices as to how to allocate funds** (e.g. towards sustainable investments). However, for this to materialise in practice, this also means ensuring that the fast-growing fintech market integrates sustainability principles so as new capital is directed towards the long-term sustainability of the real economy, rather than steered towards short-term profits. For this to happen, policy interventions will be required on the supply side and – given the complexity of the fintech system – this will have to be developed using a multidisciplinary, partnership approach that involves the financial sector, as well as computer scientists, lawyers and other relevant actors.

Synergies between private capital and public finance instruments can spark additional investments as well.

**Public-private partnership schemes and risk-sharing mechanisms in cooperation with the European Investment Bank**, such as the European Fund for Strategic Investments (EFSI), and through locally available funds, such as the European Structural Investment Funds (ESIF), can help banks to reach the necessary scale. This involves new approaches to help project developers confronted with a multitude of requirements to simplify procedures through one-stop shops (Investment Plan with its Advisory Hub) or Single Investment Teams for big investments for which different EU-rules apply.

## Conclusions

Money will always flow to where it is best served. Without action, capital flows will continue to flow massively towards investments offering short-term wins, neglecting the much-needed longer-term investments in more resilient, energy-efficient, low-carbon infrastructures. With this bias, European businesses and societies will have a hard time making the transition towards a modern economy, impacting negatively on growth and jobs in the future.

**Europe needs a policy and regulatory framework that ensures financial flows do not take place to the detriment of its future.** Small steps, if taken in a timely manner, can do a lot to ensure the transition is successful, while also opening up new opportunities for European financial markets, businesses and consumers. In fact, many of the measures and tools needed are already there and available. What is lacking though is a **fundamental change in mind-set** to ensure that sustainability and forward-thinking becomes enshrined in all policies and investments.

Sustainable finance **cannot be developed as a niche**. Simply trying to expand the share of green bonds will not suffice to reach the scale of investment required to achieve the objectives Europe has committed to under international agreements such as the United Nations 2030 Agenda or the COP21 Paris agreement. To make an impact, sustainable finance **must be integrated into financial decisions at every level**. From the regulators, supervisors, asset owners, investment consultants, retail bankers, insurers, fund managers, brokers and CEOs, down to the consumers – everyone should be tuned in to the same agenda.

This means **making available the necessary data on investments and risks** to enable comparability and well-informed choices, and providing the right incentives to reorient investments. This will be essential to scaling

up and connecting green projects with green finance and, ultimately, contributing to more and better jobs and growth.

**Work must start now.** Investment decisions taken today can take many years to materialise, especially for large-scale infrastructure projects, and the transition towards a fully-fledged sustainable financial system might take 20-30 years.

**The role of the European Commission – as a legislator and facilitator, able to influence all actors involved throughout the finance and banking value chain – will be key.** But it must ensure stronger linkages between its overarching climate and sustainability goals and other policies, including Investment Plan for Europe and the Capital Markets Union to ensure that financial flows are redirected. European Union programmes and policies should be put to the ‘sustainability test’ to make sure they are embedded in long-term thinking. Moreover, a comprehensive EU strategy must also take into account possible negative consequences of the transition towards a more sustainable financial system (e.g. risks of stranded assets) and be taken forward hand in hand with other global initiatives.

Finally, against a backdrop of indignation against financial markets considered to have played a central role in triggering the economic crisis, and amid growing concerns about the future, **sustainable finance is a tool that should be vastly expanded to contribute to building trust and confidence between citizens, businesses and financial institutions.**

## Notes and References

1. Greenwashing refers to when a company or organisation spends more time and money claiming to be 'green' through advertising and marketing than actually implementing business practices that minimise environmental impact.
2. Intergovernmental Panel on Climate Change. '[Fifth Assessment Report](#)', Cambridge University Press, 2014.
3. European Environment Agency, '[Climate change poses increasingly severe risks for ecosystems, human health and the economy in Europe](#)', 25 January 2017.
4. United Nations Framework Convention on Climate Change: '[Global Response to Climate Change Keeps Door Open to 2 Degree C Temperature Limit](#)', 30 October 2015.
5. European Political Strategy Centre, '[The Road to COP21: Game Changers for European Climate Strategy](#)', Strategic Note #9, 25 November 2015.
6. HM Treasury, '[Stem Review on the Economics of Climate Change](#)' October 2006.
7. United Nations Environment Programme (UNEP) Inquiry, '[Sustainable Finance? A Critical Analysis of the Regulation, Policies, Strategies, Implementation and Reporting on Sustainability in International Finance](#)', February 2016.
8. G20 Green Finance Study Group, '[Green Finance Synthesis Report](#)', 5 September 2016
9. United Nations Environment Programme (UNEP) Inquiry, '[Definitions and Concepts, Background Note](#)', September 2016.
10. United Nations Conference on Trade and Development (UNCTAD), '[World Investment Report 2014 – Investing in SDGs: An Action plan](#)', 2014.
11. European Commission, Staff Working Document: '[Impact assessment on the revised rules for the electricity market, risk preparedness and ACER](#)', SWD(2016) 410 final, 30 November 2016.
12. Equivalent to 5 to 7 trillion US dollars, according to estimates in: McKinsey, '[Financing change: How to mobilize private sector financing for sustainable infrastructure](#)', McKinsey & Company Center for Business and Environment, January 2016.
13. Equivalent to 3 trillion US dollars, according to estimates in McKinsey, op. cit., January 2016.
14. Canfin-Grandjean Commission, '[Mobilising Climate Finance – A roadmap to finance a low-carbon economy](#)', June 2015.
15. Equivalent to 4 trillion US dollars over 15 years, according to: New Climate Economy (NCE), '[Infrastructure Investment needs of a Low-carbon Scenario](#)', Global Commission on the Economy and Climate, 2014.
16. European Investment Bank, '[Restoring EU Competitiveness](#)', 2016
17. Organisation for Economic Cooperation and Development (OECD), '[Progress Report on Approaches to Mobilising Institutional Investment for Green Infrastructure](#)', September 2016.
18. Climate Bonds Initiative, '[Green Bonds Highlights 2016](#)', January 2017.
19. Climate Bonds Initiative: '[Poland wins race to issue first green sovereign bond. A new era for Polish climate policy?](#)', 15 December 2016.
20. European Commission: '[Study on the potential of green bond finance for resource-efficient investments](#)', November 2016; and Sopher, P., '[4 ways to invest in the low-carbon economy](#)', in GreenBiz, 18 May 2015.
21. Climate Bonds Initiative, '[The Role of Exchanges in accelerating the growth of the Green Bonds Market](#)', 2017.
22. Cf. initiative by the European Mortgage Federation and the European Covered Bond Council to create a standardised 'energy efficient mortgage' based on [preferential interest rates](#) for energy efficient homes and/or additional funds for retrofitting homes at the time of purchase. The project will explore the link between energy efficiency and borrower's reduced probability of default and the increase in value of energy efficient properties.
23. Climate Bonds Initiative, '[Green Securitisation: unlocking finance for small-scale low carbon projects](#)', 2017.
24. Of which 'making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development' is one of the core objectives outlined in Article 2(c).
25. UNEP Inquiry. '[The Financial System We Need. Aligning the Financial System with Sustainable Development](#)', October 2015.
26. The EU's Finance Ministers (Ecofin Council) discussed the issue of sustainable finance for the first time in April 2016.
27. For more, see: European Political Strategy Centre (EPSC), '[The Trump Presidency: Policy Outlook, Scenarios and Possible Implications for the EU](#)', 14 February 2014.
28. G20 [Leaders' Communiqué](#) Hangzhou Summit, par. 21, September 2016.
29. European Commission, '[Action Plan on Building a Capital Markets Union](#)', September 2015.
30. European Commission, '[Consultation Document: Capital Markets Union Mid-Term Review](#)', January 2017.
31. European Long-Term Investment Funds or ELTIFs are a new type of collective investment framework allowing investors to put money into companies and projects that need long-term capital. They 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.
32. Organisation for Economic Cooperation and Development (OECD), '[Mapping Channels to Mobilise Institutional Investment in Sustainable Energy](#)', An OECD Report for G20 Finance Ministers and Central Bank Governors, Kaminker, C. (Ed.), Green Finance and Investment, OECD Publishing, Paris, 2015.
33. Climate Bonds Net : '[Institutional Investors Issue Paris Green Bonds Statement](#)', 9 December 2015.
34. Solheim, E. (United Nations Environment), Opinion: '[Fintech should be eco-friendly](#)', in Financial Times, 14 October 2016.
35. The Energy Union Package alone would lead to savings of 6% in annual household expenditure, according to COM(2016)769.
36. EurObserv'ER, '[The State of Renewable Energies in Europe](#)', <https://www.eurobserv-er.org/>
37. European Commission, '[Study on Assessing the Employment Impact of Energy Efficiency](#)', COM(2016)860, November 2016.
38. Cf. [City of London](#): Green Finance Initiative; [Paris](#); [Luxemburg Stock Exchange](#) announced the launch of a new platform for trading environmentally-friendly securities on 4 October 2016.
39. Reuters, '[China to plow \\$361 billion into renewable fuel by 2020](#)', 5 January 2017
40. Tee Choon Hong, Growth Crossings. The Economist, '[How to Grow a Market](#)', estimates the bill to stand at 2-3 trillion Chinese Yuan Renminbi.
41. Ibid.
42. People's Bank of China, '[Guidelines for Establishing a Green Financial System](#)', 2016.

43. This figure includes bonds that do not meet international definitions of green (e.g. reduced-emissions coal, large hydro and grid connection projects not linked to renewable energy). If one does not take these 'excluded bonds' into account, China still accounts for 27% of green bonds issued.
44. Climate Home, '[China is taking the green bond market by storm](#)', 17 January 2017, based on figures compiled by Climate Bonds Initiative and China Central Depository and Clearing Company (CCDC).
45. European Investment Bank: '[Climate Awareness Bonds](#)', February 2017.
46. There is, at EU level, a Directive on the disclosure of non-financial information, that will be evaluated in the course of 2018 and for which non-binding guidelines are being prepared.
47. Announced in the European Commission [Communication on accelerating implementation of the Capital Markets Union \(CMU\)](#) of 14 September 2016.
48. De Nederlandsche Bank: '[Platform voor Duurzame Financiering](#)
49. European Commission, '[EU's implementation of the Sustainable Development Goals \(SDGs\)](#)', SWD(2016) 390 final, November 2016.
50. Organisation for Economic Cooperation and Development (OECD), op. cit., September 2016.
51. Canfin-Grandjean Commission, op. cit., June 2015
52. High Level Expert Group, Reasoned Summary of the 1 pager contributions of the Members and Observers of the HLEG on sustainable finance
53. Asset Owners Disclosure Project: '[Global Climate Index 2017](#)'; 26 April 2017, and The Guardian, '[Most global investors recognise financial risk of climate change, report finds](#)', 25 April 2017.
54. Ibid.
55. Bank of England, '[Let's talk about the weather: the impact of climate change on central banks](#)', Sandra Batten, Rhiannon Sowerbutts and Misa Tanaka, Staff Working Paper No. 603, 20 May 2016.
56. Financial Stability Board, Recommendations of the Task Force on Climate-Related Financial Disclosures, 14 December 2016.
57. European Systemic Risk Board, '[Too late, too sudden: Transition to a low-carbon economy and systemic risk](#)'. Reports of the Advisory Scientific Committee No 6 / February 2016.
58. For example, oil and gas sectors alone account for 12.5% of FTSE 100 index (31 March 2016).
59. Organisation for Economic Cooperation and Development (OECD), '[Divestment and Stranded Assets in the Low-carbon Transition](#)', October 2015. According to this report, the **International Energy Agency's 2°C-compatible 450 Scenario** estimates the amount of stranded assets – defined as those which do not recover "all or part of their investment during the time that they are operational" – to be on the order of USD 304 billion by 2035 (IEA, 2014). The **Climate Policy Initiative's** Financial Impact of the Low-Carbon Transition provides estimates of stranding in power generation and gas and coal sectors as suppliers to the electricity sector (CPI, 2014). Spanning the same period as the IEA, CPI estimates that USD 50 billion will be stranded in power generation,<sup>2</sup> USD 600 billion in coal, and USD 400 billion in gas.
60. By the end of 2015, more than 500 organisations with 3.4 trillion dollars in assets have pledged to divest from fossil fuel companies: [www.350.org](#)
61. Bloomberg New Energy Finance: 'New Energy Outlook 2016', June 2016.
62. See G20 [Leaders' Communique](#) Hangzhou Summit, par. 24, September 2016 and European Commission, 'Report on Fossil Fuels', Internal Staff Working Document, 2015, which finds that fossil fuel use is by far the primary source of global greenhouse gas emissions and yet the world continues to provide large subsidies to the sector (as an illustration, according to a European Commission Report on Fossil Fuels (Internal Staff Working Document, 2015), 30 billion euro were spent on fossil fuel subsidies in the EU in 2012 and 405 billion euro in G20 countries.
63. <sup>2</sup> Investing Initiative: '[Assessing the Alignment of Portfolios with Climate Goals: Climate Scenarios Translated into a 2°C Benchmark](#)', Working Paper, October 2015.
64. Credit Suisse: '[Sustainability Ratings & Indices](#)'.
65. [IORP II](#): Directive of the European Parliament and of the Council on the activities and supervision of institutions for occupational retirement provision.
66. [Directive](#) 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, OJ L 330, 15.11.2014.
67. Report published as part of a consultation process leading up to the G20 Summit in July 2017. More info on the Task Force on Climate-related Financial Disclosures, see: <https://www.fsb-tcfd.org/>
68. High Level Expert Group, Reasoned Summary of the 1 pager contributions of the Members and Observers of the HLEG on sustainable finance.
69. Art. 173 in the 'Loi relative à la transition énergétique pour la croissance verte'
70. Cf. initiative by the European Mortgage Federation and the European Covered Bond Council described in Footnote 22.
71. [ING Bank](#) Economics Department, Rethinking finance in a circular economy, May 2015
72. United Nations Environment Programme: '[Fintech and sustainable development: Assessing the implications](#)', December 2016.