

INVESTMENT IN EUROPE: MAKING THE BEST OF THE JUNCKER PLAN WITH CASE STUDIES ON DIGITAL INFRASTRUCTURE AND ENERGY EFFICIENCY

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FOREWORD BY ENRICO LETTA

The sudden lack of investments in Europe is one of the keys to understanding the severity of the economic and financial crisis which has been whipping up a great tempest in Europe since 2008. In many Member States, the significant drop in investments was either a consequence or a cause of the crisis. It is a consequence as the lack of public money forced many governments to maintain running expenses to the detriment of long-term investments. At the same time, the drop in investments can be deemed a cause as it made any strong recovery impossible at a time when, in 2015, macroeconomic conditions had improved. Zero percent interest rates, strong dollar and low oil prices should have driven recovery, yet the drop in investments has been an obstacle to this major opportunity presented to us by these favourable macroeconomic conditions.

Against this backdrop, many questions remain without clear answers with regard to what the media is calling the “Juncker Plan”. Is this investment plan able to get Europeans out of the economic rut they have become stuck in? Is it the major offensive in favour of investment that President Juncker promised to the European Parliament upon his election, or is it, in more mundane terms, merely a communication tool? What actual results can be expected? Which solutions can be implemented to get the most out of the Juncker Plan?

These questions have somewhat fallen off the radar of European and national institutions and media. The impact of the announcement has now passed and political and media attention has moved onto other issues such as Brexit and the refugee crisis. This Report by the Jacques Delors Institute follows up on the Juncker Plan to analyse its content, functioning, the main risks of its implementation and its potential long-term impact. In this Report, Eulalia Rubio, David Rinaldi and Thomas Pellerin-Carlin put forward clear recommendations to improve the Plan and conduct an in-depth examination of its potential in two major areas: digital infrastructure and energy efficiency.

Upon reading this report, I would note a few lessons that are of the utmost importance for the state of Europe today.

Firstly, the Juncker Plan is not a miracle cure. Alone, it cannot make up the investment deficit from which Europe is suffering. The resources allocated to this Plan remain very low, too low in fact given the stakes at play. Using these scant resources, the Plan intends to mobilise slightly more than €100 billion per year. Even if it were to reach its goal, it would only significantly yet insufficiently reduce an investment deficit in Europe estimated at roughly €200-300 million per year. In other words, **the Juncker Plan is 'too little too late' to remedy investment and employment issues in Europe.** By means of comparison, the American Recovery and Reinvestment Act adopted by the Obama administration in 2009 injected more than \$800 billion into the US economy between 2009 and 2013.

Who is to blame for this? The low amounts allocated to the Plan are clearly linked to the desires of some European Union Member States. The Juncker Plan is a reflection of certain Member States' reluctance to invest considerable resources to boost investment. This is not a first for Europe. In 1993, Jacques Delors, then President of the European Commission, proposed in his White Paper on growth, competitiveness and employment a major investment plan financed by a large-scale European loan. Adopted by heads of state and government leaders, it was never applied. More recently, the heads of state and government of the EU Member States adopted a Compact for Growth and Jobs in 2012. Following talks, this Compact was of a modest scale (approximately €120 billion) and for the most part based on the use of existing funds. It thereby acted more as a political communication tool than as a real investment plan.

The small size of the Juncker Plan is therefore the result of decisions made by European Union Member States. It is once again likely that these decisions were guided by an excessively narrow and short-term vision of national interests.

Despite its modest scale, the adoption of the Juncker Plan is a small victory in itself. It reflects the change in paradigm that is underway within European institutions: today, it is no longer contested that there is an investment problem in Europe, affecting all countries and not simply some Member States. Today,

there is consensus that the solution to this lack of investment requires, at least partially, action on a European scale. Today, it is clear that the economic strategy rolled out by the EU and Member States alike was a “fiscal consolidation” strategy, too focused on more or less unsuccessful attempts to reduce public spending in the short term.

Going beyond the question of its allocated amounts, the Juncker Plan presents some interesting new options. It is the most ambitious initiative currently proposed to use the EU’s budget as a guarantee with a view to mobilising private financing. Unlike previous investment initiatives in the EU (such as the 2013 decision to increase the capital of the European Investment Bank (EIB)), the Plan also aims to remove some regulatory obstacles to investment (which, in some sectors, constitute the main disincentive to both public and private investment). It pays special attention to efficiency, and not only to the volume of investments, by supporting the preparation and financial package of projects. It encourages the participation of National Development Banks (NDBs), thereby proposing a common and integrated solution to investment challenges in Europe.

While it is still too early to tell what impact the Juncker Plan will have in terms of investment and employment, the preliminary results and lessons learned from similar experiences in the past can give us a few indications. There is a significant risk that the European Fund for Strategic Investments (EFSI) will finance projects that are not very additional, with the sole aim of reaching its target amount (€315 billion mobilised). In other words, European public money would be used to finance projects that could very well have been financed by national public funds or private capital. It is therefore highly likely that the EFSI would be disproportionately beneficial to the most developed areas, which are also those with the least need for investments supported by the European public powers. Cooperation with National Development Banks is a crucial condition for the Plan’s success, yet, if it is not well organised, the EFSI could support projects that should have been financed by the National Development Bank, the EIB or existing European funds. Furthermore, it is uncertain whether the Juncker Plan will remove a considerable number of regulatory obstacles to investment, starting with the non-application of European legislation in some Member States.

The Juncker Plan does not, however, seem to have yet completely endorsed a crucial paradigm shift on the role of public authorities in stimulating useful investment. The often subconscious prejudice that there is a predetermined stock of good investments must be left behind. This static approach does not take into account the dynamic reality. A good investment project does not exist in a vacuum; it is instead built up by men and women who combine local knowledge, relevant economic analysis, an adequate regulatory framework and appropriate financing solutions. To put it simply, **public authorities must contribute to the creation of good investment projects.** While the Juncker Plan has started to embrace this reality, for instance by creating a new European Investment Advisory Hub (EIAH), the amounts allocated to the EIAH seem insufficient to cover all the tasks entrusted to it.

This report by the Jacques Delors Institute includes a set of recommendations with regard to the Juncker Plan in general, as well as on specific cases concerning the financing of digital infrastructure and energy efficiency. These recommendations aim to get the most out of the Juncker Plan, in order to help it to reach its targets in terms of investments, job creation and support of the European Union's political objectives.

The two case studies also provide a precious overview. In terms of both energy efficiency and digital infrastructure, the main cause of the lack of investment is the unfavourable, fragmented or uncertain regulatory framework. This reinforces the conviction that the third pillar of the Plan is the one that is supposed to have the strongest impact on investment. The case studies also highlight that EFSI funding, in relation to other sources of financing in the EU, may play a key role in supporting small-scale projects for the future. If it is used strategically, it can help to step up the digital, environmental and energy transition, so that the EU can be ready to face future challenges.

Probably one of the most interesting aspects of the Juncker Plan is its long-term scope. If it is ultimately successful, it could, in the long term, give rise to a welcome change in the EIB's practices, currently too reluctant to finance high-risk projects out of fear of losing its triple-A rating. The Juncker Plan could also lead to more solid and institutionalised forms of cooperation between the EIB and National Development Banks. It could also be used as an embryo

for a future stabilisation mechanism for the Euro area, as stated in the Five Presidents' Report.

The Juncker Plan's intuition has been very good and for this reason any failure of the plan would be fatal. We are on a knife's edge. It must succeed. At all costs.

Enrico Letta
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former Italian Prime Minister*

EXECUTIVE SUMMARY

1. Investment in Europe: making the best of the Juncker Plan

By Eulalia Rubio

1.1. Investment in Europe: facts, trends and on-going debates

- Europe suffers from an investment gap estimated at around €200-300 billion per year. Sluggish growth is the most important driver but empirical studies point at four additional factors: a slow process of deleveraging by households and non-financial corporations, the fragility of banks translating into a lack of finance for certain market segments and countries, high levels of political and economic uncertainty and the impact of fiscal consolidation processes on public investment.
- Closing the EU investment gap is crucial to revive short-term growth but also to attain other EU long-term objectives. More investment in intangibles is essential to enhance Europe's medium-term productivity growth. Significant investment is also needed to accompany the shift towards a low-carbon economy: according to the European Commission, an increase of public and private investment of around €270 billion annually will be required over the next four decades to finance the backbone of efficient, low carbon energy and transport infrastructures.
- The crisis has triggered changes in the structure and composition of the EU financial system. These can be summarized in two: a progressive fragmentation of the euro area financial system and the growing reluctance of European banks to finance high-risk investment, due to the processes of deleveraging and the introduction of stricter capital and liquidity requirements.

- Investment in Europe has been also penalized by cuts in public spending. The fall in public investment was significant during the period 2010-2012. Since then, the levels of public investment have improved in the EU as a whole but not in the euro area, where public investment remains 12% below the level of 2007. Drops in public investment are particularly marked in Ireland, Spain, Greece, Portugal and Cyprus.
- Growing fiscal constraints have led to a paradigm shift as regards to the use of public resources to promote investment. Direct financing is leaving room to the use of 'financial instruments' aimed at catalysing private investment. While the use of these instruments reports major benefits, it also entails new risks and challenges, such as the risk of crowding out private financing or more administrative and technical complexity.

1.2. The EU Investment Plan: assessing risks and opportunities

- The Investment Plan for Europe is a comprehensive agenda to tackle the multidimensional problems affecting investment in Europe. Its main goal is to mobilize up to €315 billion of additional investment between 2015 and 2017 but the Plan has also other objectives, such as improving the quality of project preparation, increasing the efficiency of public investment or creating a more investment-friendly regulatory environment.
- It is too early to assess the functioning and impact of the Investment Plan for Europe. However, preliminary evidence as well as previous experiences with similar instruments point at **nine major implementation risks** that can threaten the success of the Investment Plan within the initial three-year period.
 1. Although the performance of EFSI is encouraging so far and the target of €315 billion of mobilized investment seems attainable, all seems to indicate that **the Plan will not be sufficient to close the EU investment gap.**
 2. Given the pressures to attain the €315 billion goal and the broad and flexible definition of 'additionality' included in the EFSI regulation,

there is a risk that EFSI ends up being used indiscriminately to expand all types of normal EIB and EIF operations.

3. There is also a concrete **risk of re-nationalisation**; in particular, of seeing the EFSI being used to back projects co-financed by a National Promotional Bank (NPBs) that would have been anyway financed by the NPB alone.
4. **EFSI is likely to benefit disproportionately some countries**, particularly those having sophisticated financial markets and previous experience in running EIB projects
5. While, so far, the number of low-carbon projects supported by EFSI is encouraging, **nothing guarantees that the Fund will provide a sustained support to low-carbon projects over the whole investment period.**
6. The **combination of EFSI with Cohesion and Structural Funds** offers interesting opportunities but **will be technically and administratively complex**. This might translate into very few tangible results at the end of the initial investment period (that is, end of 2017).
7. **Investment platforms present potential advantages but can also entail some risks**. If the EFSI guarantee is given directly to them, this will permit a more flexible deployment of funds but will also imply a loss of control over the selection of single projects (which will be done by the platform's governance body, and not the EFSI Investment Committee).
8. In the absence of clear 'carrots' or 'sticks' to induce reform **lack of progress in the third pillar of the Plan (fostering investment-friendly regulatory reforms) is a serious risk**
9. The **new European Project Portal (EIPP) will have a marginal impact on investment** unless accompanied of mechanisms to standardize information and help potential investors assess the risks and economic returns of the projects.

1.3. Making the best of the Investment Plan: ten policy recommendations

Grounded on the previous analysis, this study formulates **ten concrete proposals for action** to be implemented within the initial investment period:

- **Recommendation 1: Ensure that the budget of the European Investment Advisory Hub (EIAH) is commensurate to the needs.** We propose in particular to increase the contribution of the EU budget to EIAH from €30 million/year to at least €40 million/year.
- **Recommendation 2: Establish a stable network of national EIAH offices covering the whole Union.** The EIAH plans to build a network of national offices but the approach is rather voluntarist and based on the establishment of different cooperation agreements. We propose a stable and homogeneous network, with a national EIAH office in each EU member state acting as both the national point of entry for EIAH’s potential beneficiaries and as provider of EIAH services. The creation of this network should be complemented with reinforced support to countries having less technical capacity to structure projects. In particular, we suggest the creation of a program to encourage the exchange of staff between NPBs involved in the provision of EIAH services.
- **Recommendation 3: Ensure consistency with Europe’s low carbon goals.** We propose in particular to: give to the removal of fossil fuel subsidies high priority in the ‘third pillar’ agenda; devote an important part of EIAH resources to support the structuring of low-carbon projects and mainstream climate and energy efficiency considerations into the appraisal of EFSI projects.
- **Recommendation 4: Define geographical indicators at both aggregate and sectoral level.** The EFSI steering board should make use of its capacity to define indicative geographical diversification and concentration targets, and take the appropriate actions to reach these targets at the end of the investment period.
- **Recommendation 5: Exploit synergies between the EIB and NPB in the co-financing of EFSI projects.** To facilitate cooperation, we

propose delegating the monitoring of the EFSI projects co-financed by a NPB to the national bank. We also suggest granting the EFSI guarantee to NPBS only for financing trans-national investment projects or projects located outside the Bank's national territory.

- **Recommendation 6: Provide further guidance for the combination of ESI-EFSI funds.** The European Commission has recently published a note providing some guidance but it does not seem sufficient. Further guidance and technical support (through the Fi-Compass, inserted into the EIAH) should be offered to ESI authorities to combine both instruments - and in particular, to structure 'layered funds' with ESI and EFSI contributions.
- **Recommendation 7: Clarify the conditions of eligibility for investment platforms.** Only those platforms presenting some minimum standards in regards to their governance should be eligible to receive the EFSI guarantee
- **Recommendation 8: Complement the European Investment Project Portal (EIPP) with mechanisms for standardization.** Examples of standardization measures are the establishment of a database of standardized credit information on SMEs or, in the field of energy efficiency, the development of on-line tools to measure and compare the energy efficiency performance of corporate and buildings.
- **Recommendation 9: Promote the creation of transparent and well-designed national and regional public project infrastructure pipelines.** We propose in particular imposing as a rule the systematic involvement of NPBs in the partnership bodies supporting the definition of national and regional ESIF programs and defining some minimum standards of transparency and eligibility criteria in the procedures for selection of ESIF projects.
- **Recommendation 10: Set up complementary measures to boost public investment.** We propose broadening the scope of the 'investment clause' within the Stability and Growth Pact, establishing a common

public investment vehicle for the euro area and diversifying the purchase of assets in the context of the ECB quantitative easing program.

1.4. Looking ahead: discussing possible long-term scenarios

- If EFSI is successful within the initial investment period, public authorities might decide maintaining the scheme for a renewed period. If this happens, it would be highly desirable that Member States reconsider the possibility to put money into EFSI's capital.
- In the long term, EFSI will probably favour the intensification and expansion of cooperation initiatives between EIB and NPB. However, it is very unlikely that it leads to the creation of a hierarchically-based system of public investment banks in Europe, structured around the EIB as the central node.
- EFSI could also become the seed of a future euro area stabilization capacity, as foreseen by the Five Presidents' Report, but this would require important changes in its size, functioning and governance. This option would be more feasible if the goal is to create a fiscal mechanism to boost the euro area aggregate demand than if the fiscal capacity is understood as a cross-country shock absorbing mechanism.

2. Developing digital infrastructure in Europe: can the Juncker Plan play a role?

By David Rinaldi

2.1. Why prioritize digital infrastructure

- Digital infrastructure *empowers* citizens and businesses by offering all the services, opportunities and information which are available through the Internet. The European Commission has recognized that the availability of high-speed networks in Europe is a prerequisite for the digital economy to flourish and an essential part of the overall strategy for achieving job creation and economic growth.
- The ability of our economies to remain competitive globally, to grow and to promote job creation depends on how Europe will manage its digital

transformation. Besides providing a short-term boost to the economy, investments in NGA infrastructure creates the groundwork for long-term improved growth and productivity gains. It is estimated that broadband networks contributed to as much as 20% of total productivity growth in Europe and have the potential to add 0.5-1.5% to the GDP of the Union.

- As investment in infrastructure has lengthy payback periods and very low financial returns in certain scarcely populated areas, direct public intervention by means of financial instruments is advisable. Research highlights that the cumulative economic gains from universal high-speed broadband deployment are 32% above the total EU investment cost.

2.2. Digital infrastructure: where do we stand?

- Full coverage of basic broadband, i.e. the first of the three Digital Agenda targets for broadband was met. Nevertheless, Europe still lags behind other industrialized economies in the deployment and adoption of NGA networks. The actual take-up of broadband remains rather limited, particularly for fast and ultra-fast connections.
- There is a divide in terms of digital infrastructure deployment between member states, and even a more worrisome **divide within member states**, between urban and rural areas.
- The demand for connectivity has risen and will rise even faster in the near future. There are at least three crucial factors which will drive up the need for high-performance digital infrastructure in the near future: 1) the **advent of the IoT** will see an increase of connected devices and apps (about 8.5 billion connected devices by 2019); 2) **an increase in the number of users** (about 100 million new users by 2019), and 3) the **changing nature of usage**, with video traffic and Cloud-based services which will become more and more prominent. Broadband infrastructure needs to keep pace with these growing demands for broadband internet access.
- The regulatory framework in Europe is largely responsible for under-investment in NGA networks. The lack of a Single Market for Telecoms,

the absence of a common framework for spectrum allocation, the service-based competition approach and general regulatory uncertainty are the main obstacles to mobilizing private investment for broadband infrastructure.

2.3. Investment needs and gaps

- The investment gap is sizable. Data for the 2007-2013 period shows that level of capital expenditure (CAPEX) in wireless infrastructure grew by over 70% in the U.S., while it declined in Europe. The studies we surveyed point out that the estimated investment need to achieve the Digital Agenda targets and deploy world-class NGA technology is likely to be in the order of € 200 billion.
- About € 22 billion of public funds (mostly ESIF and NPBs) and about € 85 billion of private investment have already been allotted to digital infrastructure development. That results in an investment gap of roughly € 95 billion.
- ESIF planned financing for 2014-2020 and the limited CEF funds for transnational broadband projects do not appear adequate that to help catching up with more connected countries or to address the rural divide.

2.5. How can the Juncker Plan be of help?

- Up to December 2015, out of the 42 projects approved by the EIB in the Infrastructure and Innovation Window of the EFSI guarantee, only three consist of digital infrastructure roll-out. Two in France and one in Italy. According to the data available, the average leverage effect is in the order of x11.2.
- Preliminary evidence suggests that EFSI-backed projects in digital infrastructure are additional in the sense that, like any other EIB operation, they intervene in areas and sectors where the level of investment is actually sub-optimal. However, these first three projects do not meet the additionality clause *stricto sensu* as, so far, the EU guarantee was employed by the EIB not differently than other normal operations. Telecom Italia as

well as regional and national French authorities have a track record of similar activities financed by the EIB.

- There is a concrete risk that the EU guarantee ends up benefiting disproportionately those countries which have experience in running EIB projects, which would leave certain countries behind.
- Additionality can still be detected and achieved thanks to: 1) the improved leverage on private investment, which can allow the financing of a higher number of projects, and 2) additionality in technology, in the sense that, thanks to the support of the EFSI, infrastructure projects are more likely to take place with more costly, ‘future-proof’ technologies.
- The case study puts forward five recommendations:
 - 1. Delivering on the third pillar.** As the first barrier preventing private investment in NGA technologies is linked to the unfavourable, fractionalized and uncertain regulatory framework, achieving a Single Market for Telecoms and a reform of radio spectrum allocations are the two crucial aspects where political consensus should be found pressingly.
 - 2. Coupling CEF and EFSI for transnational projects.** Since there is a relative liberty in the type of instrument to be used to allocate the € 170 million available for broadband deployment in the CEF framework, it is essential to create an interplay between CEF debt instruments and EFSI financing in order to amplify the otherwise limited contribution of CEF to the deployment of transnational projects in core infrastructure.
 - 3. Creating ad hoc Investment Platforms for projects in rural areas.** Special efforts, driven by national public authorities in cooperation with EU institutions, should be put in place in order to facilitate private investment where it is absent; investment platforms can serve this purpose and bring together public sector institutions, firms and investors to work together for a specific geographic area. We recommend two models for Investment Platforms that help channelling financial resources for NGA technologies in rural areas: the French *syndicat mixte* model and the energy efficiency fund model.

4. Combining digital with energy transition. As the physical roll-out of broadband infrastructure is the primary cause of the high cost for network development, it is appropriate to coordinate work in public infrastructure to reduce the cost of networks' physical deployment. Particular synergies should be explored between the modernization of infrastructure for electricity distribution and the roll-out of fibre networks.

5. A closer focus on financing for digital infrastructure from the side of the European Commission, which could be achieved by including a session on investment data on the Digital Agenda Scoreboard, by improving Cohesion Data with more precise information on ICT projects, and by creating a Digital Infrastructure Financing Group to bring together the expertise of both the private and public sector and investigate the way to improve on the financing of digital infrastructure in less-covered countries and disadvantaged regions.

3. How can the Juncker Plan unlock energy efficiency investment in the short and long term?

By Thomas Pellerin-Carlin

3.1. Why prioritize energy efficiency

- Energy efficiency investments aim at delivering an energy service, such as heating, but in a more efficient manner that leads to less energy consumption. As such, energy efficiency development is critical to help the EU achieve its objective to deliver sustainable, secure and affordable energy for all. It makes the energy system more sustainable as reduces the consumption of coal, oil and gas, thus reducing both local air pollution and the global pollution of greenhouse gases that trigger climate change. The energy system becomes also more secure as it allows the EU to rely less on imports of coal, oil, gas and uranium from foreign countries, particularly from Russia. Last and not least, as less energy is needed, the energy bill paid by the consumer diminishes accordingly, ensuring that energy remains or even becomes affordable for all households and businesses.

- The EU has three energy targets. Two focus on the reduction of greenhouse gas emissions and the rise of renewable energies, and are legally-binding at the EU and/or the national level. This is not the case for the third EU energy target that is a purely indicative target for energy efficiency. It is therefore critical for the EU to propose incentives, such as EFSI's support, to public and private actors as to enhance the chances of the EU energy efficiency target being effectively reached.
- Energy efficiency investments are virtually always profitable, but their payback times vary drastically, from a few months to a couple of decades. This payback time is significantly influenced by the evolution of the end-user price for energy that is itself driven mainly by a mix of global prices and policy decisions.

3.2. Energy efficiency investment: where do we stand?

- The European Commission estimates that energy efficiency investments of over 100 billion euros a year are needed to allow the EU to reach its energy efficiency target. The investment gap is currently estimated to be in between 38 and 54 billion euros/year.
- Many EU public financing tools already exist. The practical choices on whether and how to use such tools mostly lies in Member States. The current situation is a lack of correlation between where EU money on energy efficiency is actually spent, and where energy efficiency needs are.
- The regulatory framework in Europe is largely responsible for under-investment in energy efficiency. First and foremost, the EU energy efficiency legislation is poorly enforced in virtually all EU Member States. This creates useless uncertainties slowing-down energy efficiency investments in Europe. Second, both the EU and many Member States continue to subsidise fossil fuels, thus spending public money in a way that is detrimental to energy efficiency investments.

3.4. How can the Juncker Plan be of help?

- The Juncker Plan can be used to test innovative ways of financing and/or performing energy efficiency. For instance, ensuring that energy consumption data is accessible by everyone, and most notably by energy efficiency providers, can only help in diminishing the vast pool of profitable energy efficiency projects that exists but remains untapped because of lack of access to relevant information. The Juncker Plan can also experiment the roll-out of new financing methods, such as on-bill repayment and on-tax finance.
- The Juncker Plan cannot solve the energy efficiency investment gap on its own, but it can be of help, in particular in the Central-Eastern European Member States. Focusing EFSI on boosting energy efficiency in those countries is critical as it allows investment where the needs are the greatest, as they inherited very inefficient energy systems from the Soviet regimes. It is also critical as those countries are the ones most exposed to energy security concerns: esp. a disruption of gas supply from Russia.
- Profitable energy efficiency projects do not exist in a vacuum, they are created at the junction of an energy efficiency beneficiary, an energy efficiency provider, and an adequate financing method. The Juncker Plan can therefore help in creating more and better energy efficiency projects in Europe. In concrete terms, it is critical to ensure that the budget of the European Investment Advisory Hub (EIAH) is commensurate to the needs, and that it is for instance used to hire specific members of staff with a specific knowledge of energy efficiency and a good understanding of the energy efficiency situation in specific EU Member States, most notably in Central and Eastern Europe.

INTRODUCTION

Weak investment in Europe is a major source of concern. Six years after the start of the crisis, investment is still 12% below 2007 levels in the EU and more than 15% below 2007 levels in the euro area, which means that Europe suffers from an investment gap equivalent to around 200-300 billion/year. Among experts and policymakers, there is general agreement that this investment gap constitutes a significant drag on growth and holds back Europe's growth potential in the long-term.

To close this investment gap, the new European Commission launched a reflection with the member states that culminated in 2015 with the adoption of a major Investment Plan for Europe, the so-called "Juncker Plan". Composed of three pillars, the centrepiece of the Plan is the European Fund for Strategic Investments (EFSI), a program backed by a 21 billion-euro guarantee (16 billion coming from the EU budget and 5 billion from the EIB's own capital), which has to allow the EIB mobilize up to € 315 billion of additional private investment in Europe.

When first announced in November 2014, the Juncker Plan was met with a cold reception. Many experts were disappointed by its size and ambition, and criticized in particular the tiny amount of public funding involved in the Plan. They deplored the Commission and member states' lack of appetite for a massive public investment plan and questioned the capacity of the Plan to make a significant impact on growth and jobs.

More than one year later, the Juncker Plan has become a tangible reality. EFSI is already functioning and the European Commission is adopting some of the initiatives foreseen in the third pillar of the Plan. It is time to ask ourselves what we can expect from this Plan and how to ensure that it delivers the best possible results.

This is exactly the goal of this Report. We do not pretend to discuss the merits of the Juncker Plan vis-à-vis other possible EU investment plans, but rather to assess the strengths and weaknesses of the Investment Plan in its current form. The structure of the report is as follows. After a summary of the main debates on investment in Europe (Section 1.1.), we identify various implementation risks that can threaten the success of the Investment Plan within the initial three-year period, and discuss different options for implementation, particularly in regards to the coordination between the EIB and the National Promotional Banks (NPBs) and the co-financing between EFSI and other EU spending programs (Section 1.2.). Grounded on this analysis, we formulate ten policy recommendations with concrete proposals for action to be adopted within the initial investment period that we believe can help secure the success of the Plan in the short term (Section 1.3.). We then discuss the potential long-term impact of the Plan, by paying particular attention to two possible long-term scenarios: a) the possibility that the Plan leads to the establishment of a permanent EU investment scheme based on a stable, federal-based articulated system of public investment banks in Europe and b) the possibility that EFSI becomes the seed of a future euro area macro-economic stabilization capacity (Section 1.4.). Finally, through two case studies, we provide a more on-the-ground analysis of the possible contributions of the Juncker Plan in two specific areas: energy efficiency and digital infrastructures (Sections 2 and 3).

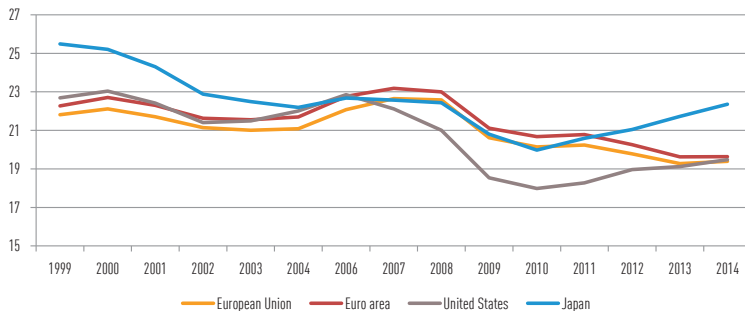
1. Investment in Europe: making the best of the Juncker Plan

by Eulalia Rubio

1.1. Investment in Europe: facts, trends and on-going debates

Investment constitutes an important component of aggregate demand, accounting for around 20% of real GDP in Europe. Despite the ECB's quantitative easing program, historically-low interest rates and a weak development of the euro exchange rate, investment in Europe remains markedly below its pre-crisis levels, even seven years after the start of the crisis. Even more worrying, unlike other economies that experienced major investment shortfalls following the crisis, the investment gap in Europe is not closing (see Figure 1). According to the European Commission's most recent forecast¹, the rate of investment slightly improved in the first quarter of 2015 (1.4% q-o-q in the euro area and the EU) but declined again in the second quarter (-0.5% in the euro area, - 0.1% in the EU).

FIGURE 1 ▶ Investment levels (Gross Fixed Capital Formation as % of GDP), 1999-2014



Source: Eurostat.

1. European Commission, "European Economic Forecast- Autumn 2015", in European Economy 2015, num 11.

In this context, a discussion has emerged about the magnitude of the EU investment gap, its causes and the way to close it. This discussion takes place against the background of secular trends affecting investment in advanced economies, such as the shift of the location of investment to emerging economies, the growing importance of intangible investment and the declining share of highly investment-intensive industrial sectors (OECD: 2015)². In Europe, it is also shaped by discussions about the changes in the structure and composition of the European financial system, the impact of the new EU fiscal rules on public investment and the benefits and drawbacks of using financial instruments to mobilize private investment.

1.1.1. Estimating and explaining the EU investment gap

Following the financial and economic crisis of 2007-2008, investment levels in Europe dropped precipitously and are still depressed. In 2015, investment was still 12% below the 2007 levels in Europe (in volume), and more than 15% below 2007 figures in the euro area. Comparing current levels with 2007 levels is somehow misleading, because investment rates were abnormally high in the years preceding the crisis (over 22%GDP at the peak of the credit and housing boom in 2007). However, the decline in investment has not been limited to the housing sector. Besides, empirical analysis made on the basis of long-term historical trends reveals that the level of investment in Europe today is below its long-term historical average.

Different estimations have been made of the magnitude of the investment gap. The European Commission assumes that the EU investment level should be at least 21% of GDP to be sustainable in the long term. On this basis, it estimates the investment gap at €270-330 billion per year³. Independent experts provide similar estimates. The think tank Bruegel considers that the gap for the EU15 is of about €260 billion/year (€160 billion when excluding residential investment), and of about €20 billion for the EU-12 (the member states having joined the EU since 2004)⁴. The German Institute for Economic Research (DiW Berlin)

2. OECD, "Lifting Investment for Higher Sustainable Growth", in OECD Economic Outlook, volume 2015/1.

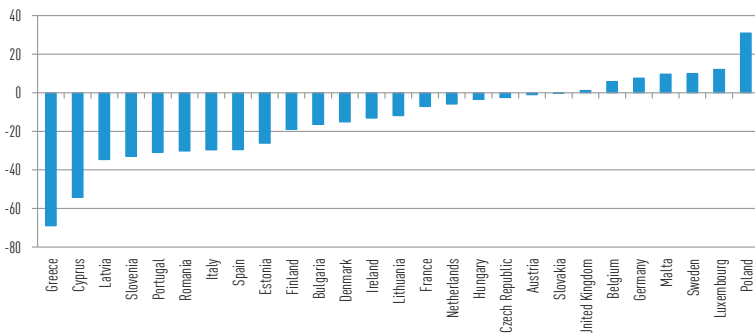
3. European Commission and European Investment Bank, *Why does the EU need an Investment Plan?*, Factsheet one.

4. Grégory Claeys, Pia Hüttel, André Sapir and Guntram B Wolff, "Measuring Europe's investment problems", Bruegel blog post, November 25, 2014.

has estimated that the euro area investment gap was of about 2% of euro area GDP between 2010 and 2012; that is, €190 billion/year approximately⁵.

The aggregate investment gap hides important cross-country differences. As shown in graphic 2, Greece, Cyprus, Latvia, Portugal, Romania, Slovenia and Spain have registered the largest declines, with levels of investment being currently over 30% below 2007 levels. At the other extreme, five EU countries (Poland, Luxembourg, Sweden, Germany and Belgium) have now a level of investment superior to their 2007 levels. The weakening of investment has been broad-based, affecting residential investment (housing), corporate investment (machinery and equipment) and infrastructures, but the extent to which these various sectors have been touched also varies across countries. Some countries have experienced major declines in investment in machinery and equipment, but relatively modest declines in infrastructure investment (e.g. Greece, Latvia), or even increases in infrastructure investment over the last six years (e.g. Bulgaria). In other countries the opposite is true: major falls in infrastructure investment are accompanied by minor declines in corporate investment (e.g. Spain, Estonia) or even a full recovery of pre-crisis corporate investment rates (e.g. Ireland, Slovakia). Finally, in countries such as Italy, Slovenia or Portugal, drops have been significant in both categories of investment.

FIGURE 2 ► Gross fixed capital formation, difference 2007-2015 in constant prices (in percentage terms)

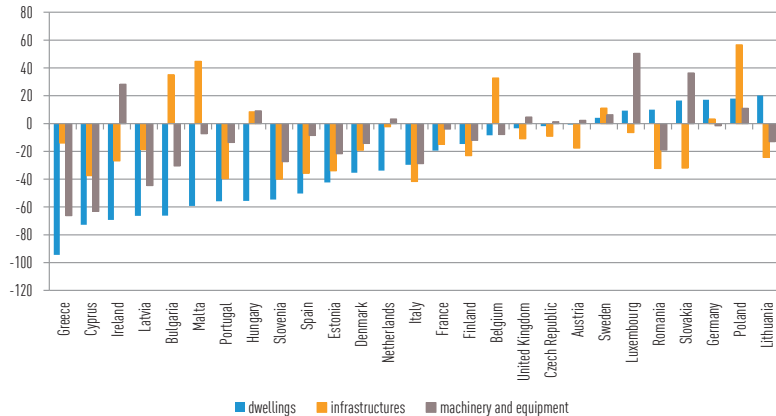


Source: Eulalia Rubio, based on AMECO data.

5. Guido Baldi, Ferdinand Fichtner, Claus Michelsen and Matthe Rieth, "Weak Investment Dampens Europe's growth", in DIW Economic Bulletin, *Economic Impulses in Europe*, vol. 7, 2014.

INVESTMENT IN EUROPE: MAKING THE BEST OF THE JUNCKER PLAN

FIGURE 3 ▶ Investment per sector, difference 2007-2015 in constant prices (in percentage terms)



Source: Eulalia Rubio, based on AMECO data.

There are multiple causes behind the EU investment shortfall. Sluggish growth is the most important driver, which means that growth recovery is ultimately the most important policy response to that. While this is true, weak investment is precisely one of the factors hampering growth. One can therefore argue that Europe is today affected by a negative spiral of low investment and low growth, which can be only broken by a combination of specific policy actions to stimulate both investments and growth (structural reforms, growth-friendly fiscal consolidation, actions to strengthen EMU governance and reduce uncertainty).

Apart from weak market prospects, empirical studies point to four additional factors explaining the low investment levels in the EU, and in the euro area in particular (Buti and Mohl: 2014, OECD: 2015, Barkbu et al.:2015)⁶. First, the process of deleveraging by households and non-financial corporations has been slower in the euro area than in the US or the UK⁷. This has negatively affected

6. Marco Buti and Phillip Mohl, *Lacklustre investment in the Eurozone: is there a puzzle?*, VOX CEPR's Policy portal, 4 June 2014; OECD, *op. cit.*; Bergljot Barkbu, S. Pelin Berkmen, Pavel Lukyanstau, Sergejs Saksonovs and Hanni Schoelermann, "Investment in the euro area: why it has been weak?", *IMF working paper*, WP/15/32, February 2014.

7. European Commission, *European economic forecast autumn 2014*.

investment, as private actors have cut investment and other forms of spending to fund the repair of their balance-sheets. Second, whereas the investment crisis has not resulted from a generalized lack of finance, the supply of finance has constrained investment in certain market segments and countries. In particular, the fragility of banks following the financial and sovereign debt crisis together with the adoption of reforms tightening banks' capital and liquidity requirements have translated into either reductions in lending or changes in the risk profile of asset holdings. Small and medium-sized companies in peripheral euro economies have been the hardest hit, but also long-term investment projects have suffered from the shift in banks' investment behaviour. Third, high levels of policy and economic uncertainty are also impeding investment in the EU. Downside risks to the growth outlook remain significant because of the external environment, but also because of the possibility that the structural, fiscal and institutional reforms that are necessary to complete EMU could stall. Finally, the processes of fiscal consolidation have also affected capital formation in EU. Although public investment accounts for about 10-12% of total investment in EU economies, it is a significant source of finance for some types of investment (particularly infrastructures – see Section 1.1.4 below).

1.1.2. The challenge of enhancing Europe's medium-term productivity growth

The recent investment gap should be examined against the background of more secular trends underlying growth and productivity in Europe. Over the last decades, advanced economies have registered a secular decline in output and productivity growth, triggered by various factors (a slowdown in technological progress, a structural shift to lower productivity sectors, shrinking working-age populations and very high levels of public debt among others). Against this backdrop, many people fear that the current post-crisis slowdown will be more than a temporary hangover, and that advanced economies will enter into a long period of low growth, what is usually referred as “secular stagnation”⁸.

Europe has strong reasons to be concerned by the threat of secular stagnation. Before the crisis, growth rates and productivity growth were already lower in Europe than in the US. In particular, Total Factor Productivity growth (TFP growth) – the main growth driver for economies at the technological frontier

8. Coen Teulings, Richard Baldwin, *Secular Stagnation: Facts, causes and cures*, VoxEU.org eBook, CEPR Press 2014 ()

– has been persistently lower in Europe over the last decade⁹. In addition to that, demographic prospects are more worrying than in other advanced economies and debt-to-GDP ratios are particularly high.

To combat the risk of secular stagnation, Europe needs to improve its medium-term productivity growth prospects. Investment is crucial in this respect, but the latter should take place in those areas providing the greatest productivity payoffs. In the case of Europe, many experts consider that the main reason for the collapse of TFP growth is the failure to invest in the intangible assets of the economy (Gorning and Schiersch: 2014, Aiginger et al: 2015, Van Ark: 2015)¹⁰.

BOX 1 ► What are ‘intangible investments’ ?

The capacity to produce and compete in advanced economies is increasingly driven by intangible assets, also known as knowledge-based capital (KBC). KBC comprises different types of assets. One widely accepted classification groups them in three types (OECD 2013¹¹): computerized information (software and databases), innovative property (patents, copyrights, designs) and economic competences (firm-specific human capital, networks of people and institutions, organizational know-how increasing the firm’s efficiency).

Intangible investments refer to those investment-like activities used to increase and renew the knowledge capital stock of a company or a country. Some of these investments are treated as ‘fixed capital investments’ in national accounts and corporate balances, but many of them are not. In particular, since the implementation of ESA2010 in September 2014, firms’ purchases of software programs and licenses and expenditures in research and development (R&D) are recorded as ‘fixed capital investment’ in EU national accounts¹². Expenditure on marketing, market research, in-house training or managerial skills are not treated as ‘investment’ in national accounts.

9. Between 1999 and 2007, TFP growth in the EU-28 was 0.6 percent (two thirds of the US growth rate at 0.9 percent) and only 0.4 percent in the euro area (less than half of US growth rate (Bart van Ark: 2015).

10. Martin Gorning and Alexander Schiersch, “Europe’s investment slump”, in *Economic impulses in Europe*, DIW Economic Bulletin, vo. 4, Num. 7, July 2014; Karl Aiginger and Jürgen Janger, “Intangible and green investment for restarting growth”, in Austrian Federal Ministry of Science, Research and Economy, *Investing in Europe’s Future: Restarting the growth engine*, Vienna, June 2015.

11. OCDE, *Supporting Investment in Knowledge Capital, Growth and Innovation: Introduction and overview*, Paris: OECD, October 2013.

12. ESA2010 (European System of National and Regional Accounts) refers to the new harmonized methodology used for the production of national accounts data in the European Union (EU). Implemented since September 2014, one of the main changes introduced by ESA2010 is the fact of treating R&D spending as ‘fixed capital investment’.

Estimations on intangible investment are difficult to make but a series of comparable estimates has been put together as part of various EU-funded projects¹³. These estimates show that the investment intensity in intangibles (that is, the level of investment in intangibles relative to market sector GDP) is lower in the EU-15 than in the US (see Table 1). While the intensity is below that of the U.S. in all categories, it is particularly weak in R&D and other innovative property, as well as organizational capital. It should also be noted that the gap with the US on intangibles is worsening over time. Between 2001 and 2010, the US saw a sharper increase in intangibles intensity, rising by 3 percentage points against a rise of 1 percentage point in Europe (Van Ark:2015).

TABLE 1 ► Investment intensity of intangible assets (level of investment as a percentage of market sector GDP) in EU-15 and US, 2003-2007

	EU-15	USA
Computerized information	1.6	2.1
Scientific R&D	1.7	2.6
Other innovative property	1.7	2.7
Market research and advertising	1.3	2.1
Training	1.3	1.8
Organisational capital	2.5	3.5
Total intangible capital	10	14.7

Source: Van Ark (2015), based on data from Corrado, Haskel, Jonas-Lasinio and Iommi (2013).

Closing the gap in intangible investment requires action in various fronts. It is important for instance to prevent further cuts in public spending on basic research as a result of fiscal consolidation processes. Having said so, most of Europe’s investment gap in intangibles is related to private sector investment, requiring structural reforms to enhance competition and allow new innovative firms to enter in the markets, as well as specific measures to foster private investment in R&D (such as tax incentives, or specific public guarantee

13. In particular, the Intan-Invest project discussed in Carol Corrado, Jonathan Haskel, Cecilia Jona-Lasinio and Massimiliano Iommi, “Innovation and Intangible Investment in Europe, Japan and the United States”, *Oxford Review of Economic Policy*, 29 (2), 2013, pp. 261-286.

schemes to mobilize risky investment). A well-trained workforce is also a precondition to innovate and make appropriate use of the new knowledge capital. In this respect, labour and education policies should be also part of the strategies to shift EU towards a knowledge-based economy.

Whereas a specific effort to boost intangible investment is warranted, other measures are also important to boost EU's medium-term productivity growth. First of all, there is still much potential to unleash productivity gains from regulatory reforms. Secondly, some tangible investments can provide major productivity payoffs. This is particularly the case for trans-national infrastructures, which play a crucial role in ensuring the mobility of production factors and the interconnection between EU economies

1.1.3. The imperative to shift towards a low-carbon economy

Another major imperative to increase investment in Europe in the years ahead is the need to accelerate the transition towards a low-carbon economy. This requires substituting on a large scale the existing in-built infrastructure (in the energy, transport, water and building sectors) into more efficient, low-carbon and climate-resilient infrastructure (see Box 1). Notice that many of the investments required to complete this transition have a dual dividend: they provide a benefit for the environment but can also render Europe's economy more cost-efficient and help maintain or enhance Europe's competitive advantage in certain sectors (i.e. wind industry, energy efficiency).

BOX 2 ▶ Definition of “low carbon, climate-resilient infrastructure investments”

The OECD defines low-carbon, climate-resilient infrastructures as those infrastructures that either help mitigate greenhouse gas emissions (e.g. low-carbon energy production and transformation, low-emission transportation systems, carbon capture and storage, investments to improve the energy efficiency of buildings and firms) or those that will support adaptation to climate change (e.g. in the water, forestry, urban development or in-built infrastructures). This type of investment may be directed at renovation of existing infrastructures (“brownfield investments”) or at the building or extension of new infrastructure (“greenfield investments”).

The volume of investment needed to achieve this transition is significant. The Commission’s Low Carbon Economic Roadmap calculates that an increase in public and private investment of around € 270 billion annually will be needed over the next four decades to finance the backbone of efficient, low carbon energy and transport systems¹⁴. Different studies that look into investment needs highlight that a majority of capital investment is likely to be concentrated in a few key areas. These include renewable energies and electricity infrastructures capable of higher shares of renewables (grids, transmission, storage); energy savings in the housing stock and industry as well as low-carbon transport infrastructure (Medarova-Bergstrom, K. et al 2013)¹⁵.

Given the magnitude of the infrastructure needs and the context of fiscal constraints, such transformational change will require large-scale private sector engagement. Private engagement in these areas is however constrained by various factors. A main obstacle is the lack of effective carbon pricing, which distorts the cost of clean versus polluting infrastructure. Low-carbon projects are also particularly vulnerable to regulatory changes and lack of long-term policy orientation, as they are subjected to strict regulatory requirements and sometimes benefit from public support – in form of tax allowances, subsidies or others. They also face higher technological and operational risk than conventional projects. Finally, markets for low-carbon technologies and projects are rather new, and are characterized by important information and awareness gaps. In some cases, potential investors have difficulties to assess the long-term benefits and are not aware of the existing funding opportunities. In certain sectors (i.e., energy efficiency), the average size of the projects is small, inducing high transaction costs which makes less interesting for conventional investors (i.e. banks) to get in.

Setting an effective carbon price and creating a stable, long-term, appropriate policy framework in sectors such as energy and transport is essential to bring private investment to low-carbon technology and infrastructures. In addition to that, the use of the so-called ‘financial instruments (see Box 3) can help catalyse private investment to low-carbon projects by reducing the financial risk

14. European Commission, *A Roadmap for moving to a competitive low carbon economy in 2050*, COM (2011) 112 final, 8 March 2011.

15. Medarova-Bergstrom, K, Volkery, A. Sauter, R, Skinner, I. Nuñez-Ferrer, J. (2013) *Optimal use of the EU grant and financial instruments in the next multiannual financial framework to address the climate objective*, Final Report for DG Climate Action of the European Commission, Institute for European Environmental Policy, London/Brussels.

associated to this type of projects. Apart from reducing the financial risks of these projects, through the provision of targeted technical assistance financial instruments can also tackle the information problems and lack of expertise that hamper investment in low-carbon projects, as well as helping develop new financial models for this type of projects. Finally, whereas the private sector is expected to provide the bulk of funding, the public sector will continue to play a critical role in directly financing certain low-carbon, climate-resilient infrastructure projects. Medarova-Bergstrom et al (2013) note that grant finance will remain the main type of public financial support for a number of low-carbon transport systems as well as for the majority of risk prevention and adaptation projects (areas in which more experimentation and pilot-testing is needed before market commercialization).

1.1.4. Changes in the European financial system

While the crisis has triggered a debate about the magnitude of the investment gap, it has also prompted changes and reflections about the structure and composition of European financial systems. The short-term effects of the crisis can be summarized in two points: a progressive fragmentation of the euro area financial system, and the growing reluctance of European banks to finance high-risk investment due to the processes of deleveraging and the introduction of stricter capital and liquidity requirements.

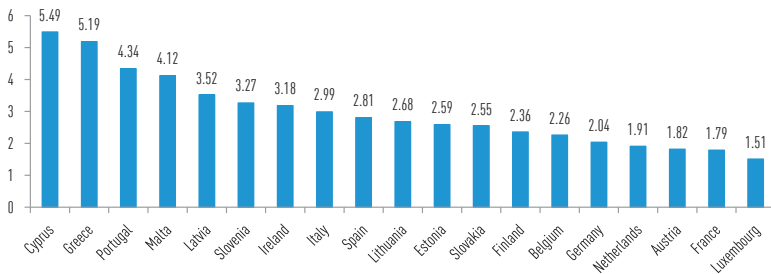
With regards to the first, whereas euro area bank retail systems have never been fully integrated, before the crisis there were significant inter-bank flows across euro area countries. Since the crisis, these credit flows have suddenly stopped and risk aversion and uncertainty have accentuated the ‘home bias’ of investors (Fernández de Guevara et al.: 2013)¹⁶. Returning to the pre-crisis situation is not desirable, as the crisis has shown the dangers of unsustainable growth based on foreign credit. Having said so, further integration of euro area financial and capital markets is important to share financial risks and ultimately render the euro area more stable. Rather than integration through inter-bank flows, what it is needed in the future is integration through more

¹⁶. Juan Fernández de Guevara, Robert Inklaar and Joaquín Maudos, “The impact of the financial crisis on financial integration and investment in the European Union”, in EIB, *Investment and Investment Finance in Europe*, 2013.

stable flows of investment, such as cross-border bank loans, cross-border corporate bond holdings and cross-border equity.

As regards the second point, the crisis has highlighted the vulnerability of a system that is strongly dependent on bank financing. In Europe, around 80% of debt financing to the economy is provided by banks, in contrast to the US where bank financing represents around 20%. There is now a general consensus on the need to promote the role of capital markets in Europe, and in particular the development of equity financing. The commission has launched an ambitious project on this purpose (the Capital Market Union project – CMU) and there also seem to be incipient signs of a shift of EU private corporates from bank lending to market funding¹⁷. However, it is important to recognize that the full implementation of CMU will take long time, and that bank intermediation will continue to play a major role in financing Europe’s economy, particularly in local markets and for SMEs. In this respect, one should note that there are still persistent cross-country differences in the cost of borrowing across the euro area, affecting in particular small and medium enterprises (see Figure 4).

FIGURE 4 ▶ Average interest rates applied to loans for non-financial corporations in Europe (February 2015)



Source: PwC, inspired on ECB data (PwC, *Capital Markets Union: Integration of Capital Markets in the European Union*, September 2015, p.33).

17. European Commission, *European Economic Forecast*, autumn 2015, p. 60.

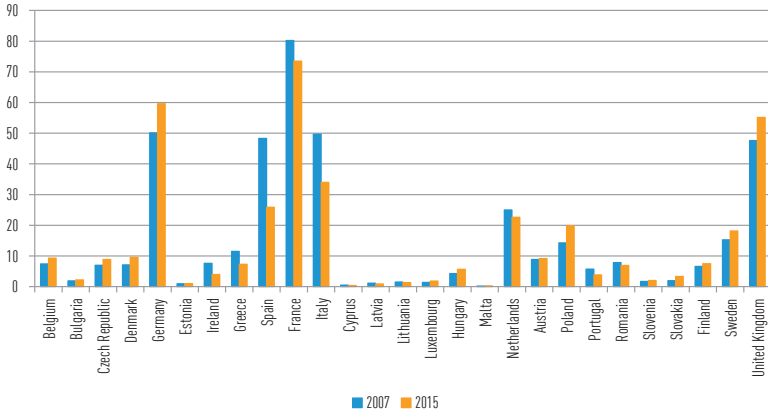
1.1.5. The impact of fiscal consolidation efforts on public investment

The crisis has also resulted in major fiscal consolidation efforts in almost all developed economies. These efforts have been significant in the euro area periphery countries (Greece, Ireland, Italy, Portugal, Spain), forced by the markets and/or the ‘Troika’ rescue programs to apply harsh austerity measures. As a result of this, from 2009 to 2013 the fiscal effort as an aggregate in the peripheral countries was as large as almost 10 percent of GDP (Truger: 2015)¹⁸

Public investment has been particularly penalized by fiscal consolidation efforts. According to the OECD, between 2010 and 2013 investment has accounted for about one quarter of fiscal consolidation efforts undertaken in developed countries, and in some countries the impact has been much larger (e.g. two-thirds of the consolidation undertaken in Spain). The largest cuts in public investment took place between 2010 and 2012. Since 2012, public investment has gradually improved, to the point that today (that is, in 2015), the volume of public investment in the EU is roughly equivalent to that of 2007. The same however cannot be said as regards to the euro area: in 2015, public investment in constant prices in the euro area was still 12% below the level of 2007. The drops in public investment are particularly marked in Ireland (-48% from 2007 to 2015), Spain (-46,5%), Greece (-36,4%), Cyprus (-32,1%), Portugal (-33,5%) and Italy (-31,6%). This contrast with the situation in other euro area countries, where public investment is now much higher than in 2007 – see Figure 5 and Table 2.

¹⁸. Truger, Achim, “Implementing the Golden Rule for Public Investment in Europe. Safeguarding public investment and supporting the recovery”, Materialien zu Wirtschaft und Gesellschaft Nr. 138, Working Paper-Reihe der AK-Wien, 2015.

FIGURE 5 ► Expenditure in ‘gross fixed capital formation’ by government, 2007 and 2015 (in constant prices)



Source: Eulalia Rubio, based on AMECO data.

TABLE 2. ► Government gross fixed capital investment in the euro area, % change from 2007 to 2015 (in constant prices)

COUNTRY	% CHANGE	COUNTRY	% CHANGE
Belgium	25.8	Lithuania	- 12.5
Germany	18.9	Luxembourg	33.2
Estonia	6.2	Malta	16.6
Ireland	- 48.0	Netherlands	-9.5
Greece	- 36.4	Austria	3.5
Spain	- 46.5	Portugal	- 33.5
France	- 8.4	Slovenia	20.1
Italy	- 31.6	Slovakia	71.4
Cyprus	- 32.1	Finland	12.7
Latvia	- 22.9		

Source: Eulalia Rubio, based on AMECO data.

The evidence presented above leads to two questions: how much worrying is the downward trend in public investment in the euro area as a whole, and whether or not we should be worried by the drop in public investment in the euro area periphery.

With respect to the first, although public investment represents a minor part of total investment (about 10-12% of total investment in Europe), the observed trend with public investment in the EMU is worrying. To start with, public investment in Europe has been in a downward trend since the 1980s, declining from rates of around 4% to the current rates of 2% of GDP approximately. In addition to that, the euro area is particularly concerned by the risk of secular stagnation and in terms of demand stabilization, the fiscal multiplier associated with government investment spending is higher than for other types of public spending (OECD: 2015; IMF: 2014). In this context, an increase in public investment in the euro area seems particularly recommendable – all the more that, in the current circumstances of very low interest rates for public sovereign bonds, such an increase would pay off for itself.

With respect to the second question, one might argue that the decline of public investment in the euro area periphery partly reflects a correction for overinvestment during the boom years. However, all sectoral areas of expenditure (and not only public infrastructures and amenities) have suffered important investment cuts¹⁹. Cuts have been particularly severe in public R&I expenditure. A study by Veugelers shows that the crisis has in fact widened the gap between EU countries in R&I: whereas “innovation leaders” (such as Denmark, Finland, Germany) increased public expenditure on R&D during the crisis by more than their increase in other expenditure categories, innovation-lagging and fiscally weak countries (such as Italy, Spain or Greece) cut their public research and innovation (R&I) budgets even more so than other parts of their budgets²⁰.

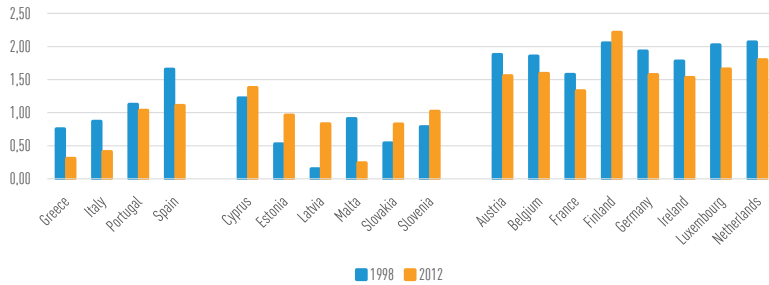
A growing EU divide in public investment, in particular in areas such as research and innovation, is worrying. It is even more worrying if the divide

19. Francesca Barbiero and Zsolt Darvas, “In sickness and in health: protecting and supporting public investment in Europe”, Bruegel policy contribution, 7 February 2014.

20. Reinhilde Veugelers, “Undercutting the future? European research spending in times of fiscal consolidation”, Bruegel policy contribution, 9 June 2014.

occurs within the euro area, as competitiveness divergences can endanger the sustainability of the area in the long term. Having said so, there is also evidence of a low efficiency of public investment in these countries. As shown in figure 6, the four southern euro area countries (Greece, Italy, Portugal and Spain) score quite badly in terms of ‘government effectiveness’ and, contrary to what has happened to most of their Eastern and Central European counterparts, the situation has worsened over the last decade.

FIGURE 6 ► Government effectiveness in euro area countries, 1998 and 2012



Source: World Bank Governance dataset. Indicator ranking from - 2.5 to 2.5.

To sum up: there is a case to support the recovery of public investment in the euro area periphery but any measure to boost investment in these countries should be accompanied by measures to improve the quality of public governance and, in particular, the procedures for ex-ante assessment, planning and implementation of public investment projects.

1.1.6. The growing use of ‘financial instruments’ in the EU

Growing fiscal constraints have also led to a change of paradigm as regards to the way of using public resources to promote investment. In particular, there is growing emphasis on the need to shift from a logic of direct public financing to a logic of catalysing private investment through the use of the so-called ‘financial instruments’ (FIs) (see Box 1). This idea is particularly dominant in EU discourses. Since the start of the crisis, the use of financial instruments has become very attractive as a way to expand the reach and increase the effectiveness of the EU budget without increasing its size.

BOX 3 ➤ What is meant by ‘Financial Instruments’ (FIs)?

The term ‘Financial Instruments’ (FIs) is used in EU documents to refer to instruments providing financial support in non-grant forms that are backed by the EU budget. The type of financial support provided can be very varied: it can consist of loans, guarantees, equity participation or other risk-sharing facilities (i.e. project bonds).

The use of FIs is not new in Europe. The first use of these instruments dates back to more than ten years ago, and during the previous programming period (2007-2014) there were at least 25 different types of FIs at work. The new financial framework (2014-2020) has merged some of the FIs, reducing the number of centrally managed FIs to 6. The latter does not include FIs used in external action, nor some special initiatives that have been created outside the MFF during the last years (such as the European Energy Efficiency Fund – EEEF – created in 2011, or the Marguerite Fund, created in 2008).

FIs are usually implemented by financial institutions on behalf of the European Commission. Many of them are implemented by the EIB or the EIF (such as the loan guarantee instrument for TEN-T, the risk-sharing facility for R&D projects or the InnovFin SME guarantee facility). Apart from those FIs that are centrally managed, member states can spend part of their structural and cohesion funds envelope through Financial Instruments. Those FIs will be then managed by national/regional authorities, either directly or with the help of a financial intermediary, such as the EIB, a national or regional investment bank or a commercial bank.

The use of financial instruments reports major benefits in terms of leverage effect and the sustainability of the invested public funds (due to their revolving character). It is also deemed to increase the efficiency of public spending, by imposing discipline to the beneficiary (which has to pay back the loan received). More generally speaking, it allows the public sector to confine the use of grants to the financing of projects having very low or negative economic return, while using market instruments to support projects having positive economic returns but being unbankable because of the risk entailed.

Despite these advantages, the use of FIs also entails some risks and challenges. Studies and reports evaluating the functioning of FIs during the last

2007-2013 EU Multi-annual Financial Framework²¹ raise some caveats, particularly as regards to the following points:

Weak rationale and ‘added value’ – Evaluations of the 2007-2013 period report various cases in which FIs were used in the absence of clear market failures constraining private financing, thus crowding out private investment. They also put into evidence the dubious ‘added value’ of some European FIs that overlapped with similar schemes at national level (i.e. the SME guarantee Facility – SMEG-, providing support to SMEs).

Overlap and lack of synergy between different FIs and between them and other types of EU financial interventions. Evaluations also reveal the existence of overlap between different European FIs targeting the same beneficiaries and areas (particularly instruments in support to SMEs), as well as inconsistencies and lack of synergy between different types of EU financial interventions (EU budget grants, EIB loans and FIs).

Weak reporting/control structures. During the 2007-13 period, FIs were developed on an ‘ad hoc’ basis. As a result of this, in some cases their governance and implementation structures were ill designed to guarantee the EU’s steering capacity and democratic control over the use of EU resources. Limited data availability and the complex nature of the instruments also resulted into important limitations for reporting, monitoring and evaluation.

Large cross-country variation in the use of FIs. During the 2007-13 period there were also substantial differences in the use of FIs across countries. For instance, reports on the use of FIs under shared management (that is, financed by Structural and Cohesion funding) show a strong concentration in a few member states, with Poland, France, Italy, the UK and Germany accounting for 75% of all structural funding contribution to FIs by the end of 2011. Unsophisticated financial markets, weak administrative capacity and lack of

21. Jorge Núñez Ferrer et al., *The implications for the EU and national budgets of the use of innovative financial instruments for the financing of EU policies and objectives*, Study, European Parliament, May 2012; Peter Schneidewind et al., *Financial engineering instruments in cohesion policy*, Study, European Parliament, May 2013; James Spence et al., *Overview of financial instruments used in the EU multiannual financial framework period 2007-2013 and the Commission’s proposals for 2014-2020*, Study, European Parliament, March 2012.

know-how in the use of market-based instruments may explain the low take-up in certain member states.

Weak visibility and lack of awareness. Finally, there is also evidence of low levels of absorption for some FIs during the period 2007-2013, mostly related to a lack of awareness among potential recipients about the existence and availability of such instruments.

Most of these problems have been corrected with the new generation of FIs put into place for the 2014-2020 period. The number of FIs for competitiveness and cohesion has been reduced from 25 to 6²² and an appropriate cross-policy grouping of FIs has been proposed to avoid overlaps and enhance consistency. In addition to that, a new EU Financial Regulation has been approved, including for the first time a special chapter on “financial instruments” that details the conditions for the use of FIs and some common rules concerning their governance, management and reporting/evaluation. Among other things, for instance, the new Financial Regulation conditions the establishment of FIs to the elaboration of an ‘ex ante evaluation’ identifying market failures and sub-optimal investment situations and demonstrating the ‘added value’ of using FIs to address these failures. It also enhances the duties of reporting and evaluation.

The new Fund created under the EU Investment Plan (the EFSI - European Fund for Strategic Investments), while presenting many of the features characterizing FIs - in particular, the fact of being supported by the EU budget - has not been legally defined as ‘Financial Instrument’. This implies that the Fund is not submitted to the obligation of ‘ex ante’ assessment’ set up in the Financial Regulation.

The decision of excluding EFSI from the application of the Financial Regulation seems to respond to the Commission and EIB’s willingness to guarantee maximum flexibility and a fast deployment of the new Fund. While this is understandable, the lack of *ex ante* assessment should be logically compensated by an extra effort to guarantee an effective ongoing monitoring and ex post assessment of the ‘additionality’ and EU added value of the Fund (see § 2.2.).

22. That is, excluding FIs used in external action.

1.2. The EU investment plan: assessing risks and opportunities

The EU Investment Plan is a comprehensive agenda to tackle the multidimensional problems affecting investment in Europe. Structured in three inter-related pillars (see Box 4), its main objective is to help close the current EU investment gap by mobilizing up to 315€ billion of additional private investments over 2015-19. But the Plan has also other objectives. It aims at improving project preparation and financial structuring. By encouraging the involvement of NPBs and co-financing with EU cohesion and structural funds, it is expected to improve the coordination between different sources of public financing in Europe. There is also a general expectation that the Plan will contribute to attain important EU long term goals, such as raising EU's medium-term growth potential and accelerating the transition towards a low-carbon economy. Finally, through its third pillar, it is also aimed at creating a more investment-friendly regulatory framework at both national and EU level.

BOX 4 ► The EU Investment Plan

The "Investment Plan for Europe" (so-called 'Juncker Plan') is one of the first major political initiatives of the Juncker Commission. Announced in November 2014, the Plan aims to bridge the gap between the abundant liquidity in global capital markets and the pressing need for investment in Europe. It proposes to do so through action in three interrelated strands:

The **first strand** is devoted to mobilize additional investment through the establishment of a new Fund for Strategic Investments (EFSI) and some complementary measures (such as the commitment to double the use of financial instruments within structural and cohesion policy).

EFSI is not, properly speaking, a Fund but a program backed by a 16 billion guarantee from the EU budget, complemented by a €5 billion allocation of the EIB's own capital. On the basis of this guarantee, the EIB will issue additional bonds for an amount of around three times the guarantee provided (€60 billion – internal multiplier of 3). The funds thus raised will then be used by the EIB (or the EIF) to invest in high-risk projects of EU interest, taking a first-loss position so as to attract private investment by four times the amount invested (€315 billion – external multiplier of 5). Around three quarters of the investment will go to finance 'strategic' investments of European interest and one quarter will be devoted to improve access to financing for SMEs and mid-caps.

The **second strand** of the Plan includes targeted initiatives to make sure that this additional investment meets the needs of the real economy. In particular, it foresees the creation of an EU Investment Project

Portal (EIPP) to provide visibility to ongoing and future projects across the Union and an EU Investment Advisory Hub (EIAH) providing advice and technical assistance for project structuring.

The **third strand** is devoted to improve the investment environment, by removing barriers to investment at national level and further reinforcing the Single Market in certain specific sectors (creation of an Energy Union, Capital Markets Union and Digital Union in the short-medium term).

The announcement of the Plan in November 2014 opened up a wide debate about, among others, the scope and expected leverage of the Fund, the risks of crowding out, its governance structure and the size and nature of the guarantee attached to it. Many of these questions have been already settled but others are still relevant. In the following, we will discuss what we believe are the main short-term risks for implementation as well as the potential opportunities opened by the Plan.

1.2.1. Not sufficient to close the investment gap

When the proposal of EFSI was presented, many experts raised doubts about the capacity of the new Fund to mobilize the expected multiplier effect of 15, which implies a total volume of €315 billion of mobilized investment. The EIB always reassured on that, pointing out that the leverage effect of 15 is a prudent estimate based on historical experience.

The performance of the Fund so far is quite encouraging. Between April and January 2016, EIB has committed €7.5 million on behalf of EFSI to 126 projects accounting for a total estimated investment of €50 million. The approval of the EFSI guarantee is pending for some of these operations²³, but if these projects are confirmed, this will be equivalent to an external multiplier of 6.6 instead of 5. If this trend is maintained, the target of €315 billion will be largely surpassed. However, even if this happens, and even if some progress in the third pillar of the Plan may also be expected, it is very unlikely that the EU investment plan alone suffice to close the investment gap in Europe. As seen

²³ In order to secure a quick implementation of the Juncker Plan, before the establishment of the new Fund the EIB started to frontload financing for projects susceptible to receive the EFSI guarantee. These projects fulfil all the requisites to receive EIB support, and the idea is that, in case they are not granted the EFSI guarantee, they will be financed by EIB under normal procedures.

in Section 1.1., according to most experts this gap is of around €200-300 billion per year.

Other measures to boost investment in Europe therefore seem necessary. As the focus of the Juncker Plan is on mobilizing private investment, what seems more reasonable is to envisage some complementary actions to boost public investment. In this respect, some experts have recommended complementing EFSI with a European Fund to support public investment. There are different proposals in the air, but in essence most of them envisage a Fund that would play a redistributive role, transferring resources from countries having more fiscal space to those being fiscally constrained²⁴. Another option is to give to all governments more fiscal leeway to finance growth-enhancing investment. The latter could be done by enhancing the scope of the ‘investment clause’ included in the Stability and Growth Pact or including a ‘golden rule’ to safeguard public investment from the calculus of deficit levels and mid-term budgetary objectives in the application of the Stability and Growth Pact and the Fiscal Compact²⁵.

1.2.2. Lack of additionality

As seen above, it is quite probable that EFSI attains the target of €315 billion mobilized investments. In fact, most independent experts consider that the main risk is that the Fund attains this figure by mobilizing investments not really ‘additional’ – that is, investments that would have anyway taken place in the absence of EFSI.

Since the announcement of EFSI, there has been a vivid debate about the importance of ensuring ‘additionality’. Two risks have attracted particular attention: the risk that EFSI finances operations that could have otherwise been financed by the private market alone (that is, the risk of crowding out private investment instead of crowding it in) and the risk that EFSI ends up being used by the EIB to extend its normal operations rather than to finance new types of activities.

24. See for instance the proposals from Enderlein and Pisani-Ferry (2015).

25. See for instance Goulard and Monti (2014), Maystadt (2014) and Truger (2015).

In principle, the way to avoid these two risks is by confining the use of EFSI to the financing of high-risk projects. The EIB already finances some high-risk projects (defined as “special activities” in EIB jargon²⁶) but these represent today a minimum part of the total EIB’s activity (around 6% of total EIB signatures). The EU guarantee should permit the EIB to expand these types of activities. Indeed, the Bank foresees to push the level of special activities in 2016 and 2017 to an average of 30% of total EIB signatures²⁷.

This idea is clearly reflected into the EFSI regulation. Art 5.1. states that EFI projects “*shall typically have a higher risk profile than projects supported by EIB normal operations and the EFSI portfolio shall have overall a higher risk profile than the portfolio of investments supported by the EIB*” (see Box 5). However, a strict focus of EFSI on high-risk projects could pose problems. The number of these projects ready to be implemented over the next three years might be quite limited, and insufficient to reach the target of 315 billion. A rigorous approach on ‘additionality’ could hence hamper the capacity of the Fund to have a massive impact on investment, growth and employment, thus questioning its ultimate ‘*raison d’être*’.

To avoid this, the EFSI regulation has opted for a larger definition of ‘additionality’. According to article 5.1., EFSI can finance projects having a lower risk profile if the latter is required to address market failures or sub-optimal investment situations, *providing that the projects cannot be carried out in the three-years period of EFSI coverage, or not to the same extent, by the EIB, the EIF or under existing Union financial instruments without EFSI support*. In other terms, the EIB can use EFSI to expand EIB and EIF normal activities, under condition of proving the existence of a market failure or sub-optimal investment situation (a condition which is basically met by all EIB and EIF operations, given the public mission of the Bank).

26. EIB special activities include two different things: a) loan, guarantee or equity operations where the bigger risk is entirely borne by the EIB and b) operations where the risk is shared with third parties (typically the EU budget under agreements with the Commission). Examples of b) are InnovFin for innovation projects, JEREMIE for SMEs, Private Finance for Energy Efficiency (PF4EE) or the Loan Guarantee Instrument for Trans-European Transport Network Projects (LGTI).

27. EIB group, *Operational Plan 2015-2017*, Luxembourg, April 2015.

BOX 5 ▶ Definition of additionality (art 5.1 EFSI regulation)

Art 5.1 For the purposes of this regulation, additionality means the support by the EFSI of operations which address market failures or sub-optimal investment situations and which could not have been carried out in the period during which the EU guarantee can be used, or not to the same extent, by the EIB, the EIF or under existing Union financial instruments without EFSI support. Projects supported by the EFSI shall typically have a higher risk profile than projects supported by EIB normal operations and the EFSI portfolio shall have overall a higher risk profile than the portfolio of investments supported by the EIB under its normal investment policies before the entry into force of this Regulation.

The projects supported by the EFSI, while striving to create employment and sustainable growth, shall be considered to provide additionality if they carry a risk corresponding to EIB special activities, as defined in Article 16 of the EIB Statute and by the credit risk policy guidelines of the EIB

EIB projects carrying a risk lower than the minimum risk under EIB special activities may also be supported by the EFSI if the use of the EU guarantee is required to ensure additionality as defined in the first sub-paragraph of this paragraph.

While this broader approach to ‘additionality’ might allow EFSI to have a significant impact on aggregate investment, it also renders the assessment of “additionality” more difficult. Without a clear strategic orientation, we can end up in a situation in which EFSI is indiscriminately used to expand all type of normal EIB and EIF operations. In other terms, there is a need to further concretize which types of ‘normal’ EIB and EIF investment projects, or which areas of intervention are important enough (or ‘strategic’ enough, to use the EFSI jargon) to be upscaled with the help of EFSI over the next three years. The role of the EFSI Steering Board in defining and adjusting the investment guidelines will be crucial in this respect.

1.2.3. Risk of re-nationalisation

Whereas the EFSI regulation stresses the need to ensure additionality with respect to both private finance and existing EIB and EU interventions, little attention has been given to the need to ensure ‘additionality’ of EFSI with respect to national public investment.

The EFSI regulation says practically nothing on that, except for some mentions in the preamble of the regulation on the fact that EFSI “*should not be a*

substitute (...) for products provided by national promotional banks or institutions” (recital 23 of the preamble) and “should complement, and be additional to, ongoing regional, national (...) programmes” (recital 42 of the preamble)

The absence of debate on this topic is striking, given longstanding discussions on the ‘added value’ of EU spending and the stress put in other EU policy domains to ensure that EU investment is ‘additional’ to national public investment. In many spending areas, additionality vis-à-vis national spending is guaranteed by a focus on activities or projects having clear cross-national externalities (typically, cross-border infrastructures) or providing economies of scale. In other areas it is assessed on more general basis. In cohesion policy, for instance, the principle of additionality means that cohesion spending should not substitute or replace national equivalent expenditure by a member state. Compliance with the principle is assessed by looking at aggregate levels of public investment at national level.

Clearly, risks of substitution are more visible in areas dominated by public grants, than in the context of EFSI, which is basically an instrument to catalyse private investment. However, they might also be situations in which EFSI substitutes to national spending. The clearest case is in EFSI operations co-financed by National Promotional Banks (NPBs). It should be noted that EFSI regulation allows the EIB to grant a guarantee under the counter-guarantee of the EU to National Promotional Banks co-financing EFSI projects (art 10.2 c). This implies, in practice, that NPBs can enjoy from the benefits of a guarantee that is ultimately backed by all EU taxpayers. While this makes full sense in cases when the National bank uses this guarantee to finance projects having a clear European dimension (e.g. cross-border investment, or investment located outside the territory of the national bank), it is less straightforward in cases in which the EU guarantee serves to back projects that would have anyway been financed by the NPB alone.

1.2.4. Risk of geographical concentration

There is also a risk that EFSI disproportionately benefits some countries/regions. In particular, some experts fear a concentration of EFSI projects in those countries having more sophisticated financial markets and more stable political and economic contexts. Four factors might play in this direction.

First, whereas the EFSI regulation makes some references to the need to be consistent with the EU objective of territorial cohesion as well as to avoid EFSI-supported operations to be concentrated in any specific territory, EFSI's main goal is to increase the aggregate level of investment in Europe. The EIB knows that, and it knows it will be mainly judged on the total volume of investment mobilized (and more particularly, on its capacity to attain the figure of € 315 billion of mobilized investment). Accordingly, it will logically have a tendency to privilege projects that are ready and well-prepared. This will benefit those countries having more technical capacity – at both the public and private sector – to use financial instruments and structure high-risk projects.

Second, the Fund is conceived as an instrument to attract private investment. The amount of projects financed in a country or region will ultimately depend on the existence of potential investors willing to investing in it. This will probably penalize certain countries presenting high levels of political and economic uncertainty, or having unreliable and ill-conceived sectoral policy frameworks.

Third, there is also a risk that, as a result of the strong involvement of NPBs in the functioning of EFSI, the latter mostly benefits those countries having powerful National Promotional Banks. If one looks at the existing experiences of joint co-financing funds (Marguerite Fund, EEEF), the core investors, together with the EIB and the Commission, have been major NPBs such as KfW (Germany), CDC (France), CDP (Italy), ICO (Spain) and PKO Bank Polski SA (Poland). And these are the same Banks that have announced the biggest participations to the EFSI project so far (see Box 6).

BOX 6 ➤ **Announced national contributions to EFSI via National Promotional Banks**

To date, eight countries have announced that they will participate in the EFSI via their NPBs. The amounts announced are as follows:

- Bulgaria (Bulgarian Development Bank): €100 million
- Slovakia (Slovenský Investičný Holding and Slovenská Záručná a Rozvojová Banka): €400 million
- Poland (BGK and PIR): €8 billion
- Luxembourg (SNCI): €80 million
- France (CDC and BPI): €8 billion
- Italy (CDP): €8 billion
- Spain (ICO): €1.5 billion
- Germany (KfW): €8 billion

In addition, the United Kingdom announced in July that it will co-finance £6bn (€8,5 billion) in EFSI projects. The UK contribution is not via an NPB.

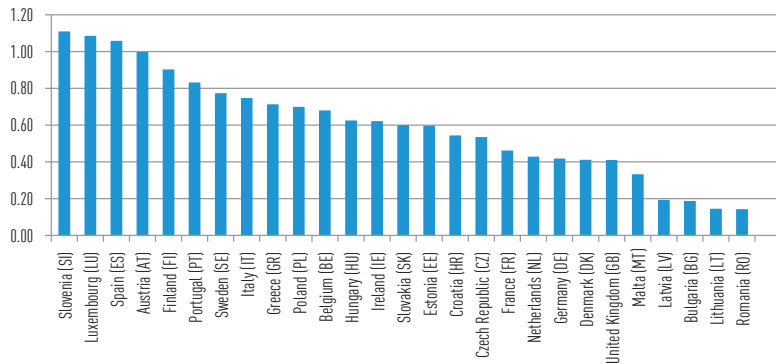
Finally, the implementation of the so called ‘investment clause’ of the Stability and Growth Pact might influence the distribution of EFSI investment. This clause allows a member state co-financing an EFSI project to deviate temporarily from its Medium-Term Budgetary Objective (MTO), or from the adjustment path towards it, to accommodate the costs of the investment²⁸. This possibility, however, is only open for countries under the preventive arm of the Pact and whose GDP growth is negative or remains well below its potential (resulting in a negative output gap greater than 1.5% of GDP). Thus, many of the EU countries presenting the largest public investment gaps (such as Greece, Cyprus, Spain or Portugal) are excluded from the benefit of this clause.

As a result of these four factors, some experts fear a concentration of EFSI investment in Central and Northern European countries at the expenses of Southern and Eastern Europe. While this risk exists, a look at the current geographical distribution of EIB financing seems to nuance its importance. In effect, whereas most EIB funding follows a demand-driven approach,

²⁸. Apart from establishing an upper limit of 3%GDP for the nominal deficit, the Stability and Growth Pact obliges all member states to pursue a medium-term budgetary objective (MTO) defined in structural terms. In particular, all member states should commit to attain and maintain a structural deficit (net of cyclical and one-off measures), not superior to 1% GDP. Those member states that have not yet reached their MTO are obliged to follow an ‘adjustment path’ implying the reduction of the structural deficit by at least 0.5% of GDP per year.

poorer countries are not particularly disadvantaged in terms of EIB allocation. Indeed, Southern European countries (Spain, Portugal, Italy and Greece), receive important amounts of EIB funding per capita. It is less the case however for Central and Eastern European Countries, and particularly for countries such as Bulgaria, Romania, Lithuania, Latvia and Malta. The tiny amount of EIB investment per capita these countries receive seems to indicate the existence of country-specific obstacles to private investment in these countries, which may hamper their capacity to benefit from EFSI. Besides, it should be also noted that EIB normal investment is more fairly spread among countries than EIB investment on special activities (that is, high-risk projects). The experience with the EU Risk Sharing Finance Facility (RSFF) illustrates this fact: after two years of operations, the bulk of RSFF finance went only to two countries, Germany (25.7% of total investment) and Spain (14.3%)²⁹.

FIGURE 7 ▶ EIB investment per capita (2010-2014)



Source: EIB statistical report 2014.

If we look at the list of EIB projects submitted to EFSI approval until now (January 2016), we can observe some worrying trends. Among the 42 projects approved under the window “infrastructure and innovation” (see Figure 7), only three are located in Central and Eastern Europe. Some of the euro area

29. EIB, *Evaluation of activities under the Risk-Sharing Finance Facility (RSFF)*, April 2010.

countries most hit by the crisis are benefiting well from the Fund (Spain, Italy, Ireland) but others not (Portugal, Greece).

TABLE 3 ► List of EIB operations submitted to approval for EFSI – infrastructure and innovation window (until January 2016)

COUNTRY	NUMBER OF EIB OPERATIONS SUBMITTED FOR APPROVAL FOR EFSI
France	7
Italy	7
UK	7
Spain	6
Ireland	3
Denmark	2
Croatia	1
Belgium	1
Finland	1
The Netherlands	1
Finland	1
Poland	1
Slovakia	1
Sweden	1
Germany/France	1
France/Belgium/EU	1
TOTAL	42

Source: European Commission.

Note: some of these projects are pending approval for the use of the EU guarantee.

TABLE 4 ► List of EIF equity signatures and debt transactions operations approved for EFSI (until end of September 2015)

COUNTRY	NUMBER OF EQUITY SIGNATURES	NUMBER OF DEBT TRANSACTIONS	TOTAL
Multi-Country	15		15
France	3	1	4
Italy	2	2	4
Germany	3		3
UK	2	1	3
Czech Republic		1	1
Luxembourg	1		1
Poland		1	1
The Netherlands	1		1
TOTAL	27	6	33

Source: EIF.

Note: some of these projects are pending approval for the use of the EU guarantee.

The EFSI governance bodies have some tools at their disposal to react if the risk of geographical concentration materializes over time. EFSI Regulation allows the Steering Board to adjust the project mix in regards to sectors and countries in line with development of market conditions and of the investment environment (art 5.2.). It can also define indicative geographical diversification and concentration guidelines to avoid excessive concentration at the end of the investment period (Annex II).

In addition to these ‘top-down’ mechanisms, some ‘bottom up’ initiatives can also help mitigate the risk of geographical concentration. Given that part of this risk comes from differences across countries in the capacity to use financial instruments and structure high-risk projects, it would be important that the new European Investment Advisory Hub (EIAH) compensate for that by providing specific attention to these countries. For the moment, it seems that concerns about the geographical distribution of EIAH services have been absent in the reflection about the goals and design of the new Hub. Indeed, since the service is expected to build upon the cooperation with National and Regional Promotional Banks to expand its coverage across the territory, there

is the risk that EIAH perpetuates existing cross-country inequalities in the supply of technical assistance and advisory support.

1.2.5. EFSI investment inconsistent with EU's climate goals

There is a general expectation that EFSI not only serves to boost investment, jobs and growth in the short term but also contributes to attaining important long term EU goals, such as raising EU's growth potential, accelerating the transition towards a low-carbon economy or favouring the integration of EU financial markets. While in theory short-term and long-term goals are compatible, in practice there might be some tensions between them. A purely counter-cyclical approach recommends prioritizing the quick deployment of EFSI, and this implies focusing on mature, ready-to-be-implemented projects having significant short-term effects on growth and employment, at the expense of others requiring more efforts of structuring and providing important long-term benefits but weak short-term return.

This might be particularly penalizing for low-carbon projects. They provide important long-term benefits but not necessarily major short-term gains in terms of growth and jobs. Besides, markets for low-carbon technologies and projects are rather new; which means that the identification, preparation and structuring of those projects is longer and more complex than for ordinary projects. In addition to that, one should note that the attainment of the EU's climate objectives not only requires an increase in investment in low-carbon infrastructures and technologies, but also a stop to investment in high-carbon intensive infrastructures. As some of these infrastructures might have significant short-term economic returns, an EFSI purely inspired on a short-term logic might end up financing an important number of these projects.

It is difficult to assess the importance of this risk. If we look at the performance of EFSI so far, the picture is mixed. 17 out of the 42 EIB operations approved or currently under assessment for EFSI support are in the field of climate/energy, and the overwhelming majority correspond to low-carbon projects (see Table 5). The balance however is less positive if one looks at the transport sector (see Table 6): the EIB has currently 8 transport projects under assessment: three of them consist into the construction/widening of a motorway and none is a "smart and sustainable urban mobility project", despite the fact that the

latter is a priority area for investment according to the EFSI regulation (see Box 8).

TABLE 5 ► List of EIB operations approved or under assessment for EFSI on energy/climate (until January 2016)

	RENEWABLE ENERGY	ENERGY EFFICIENCY	SMART GRIDS	GAS INFRASTRUCTURE
UK	3	2	1	
France	2	1		
Denmark	2			
Italy		1	1	
Belgium	1			
Germany	1			
Ireland	1			
Spain				1
Sweden	1			
TOTAL	11	4	2	1

Source: European Commission, The Investment Plan for Europe. State of play 13 January 2016 – Energy and climate action.

TABLE 6 ► List of EIB operations under assessment for EFSI support on transport (as of January 2016)

	IMPROVEMENT INLAND WATERWAYS	CONSTRUCTION/WIDENING OF MOTORWAY	ACQUISITION OF NEW STOCK FOR RAIL SERVICES	IMPROVEMENT OF ROAD AND RAIL ACCESS TO PORTS	GREEN SHIPPING	TRANSPORT INFRASTRUCTURE (NOT SPECIFIED)
Italy		1	1			
France		1				
Slovakia		1				
Spain				1	1	1
The Netherlands	1					
TOTAL	1	3	1	1	1	1

Source: European Commission, The Investment Plan for Europe. State of play 13 January 2016 – Transport.

In any case, nothing guarantees that the Fund will provide a sustained support to low carbon projects over the whole investment period. A necessary condition for that to happen is the existence of sufficient demand for this type of investment over time and across countries, and capacity to structure bankable, high-quality projects. A combination of national regulatory reforms and targeted technical assistance in certain countries and sectors – such as energy efficiency and sustainable transportation – seems essential.

In addition to that, it should be noted that the procedures for the selection of EFSI projects are ‘carbon-neutral’. There are no sectoral pre-allocation quotas, and EFSI project proposals are appraised and selected by a committee composed of independent experts (the Investment Committee) using a ‘scoreboard’ defined by the Commission through a delegated act (see Box 7). The scoreboard values the contribution of projects based on the attainment of EFSI policy objectives but the list of EFSI objectives and priority areas is very large (see Box 8) and projects in ‘low carbon’ sectors (energy efficiency, renewables, sustainable transport) are not prioritized³⁰. Finally, as climate considerations are not mainstreamed in the appraisal and selection of all projects, projects having a significant carbon footprint can eventually receive EFSI support.

BOX 7 ➤ **The scoreboard of indicators**

The scoreboard of indicators builds on the EIB’s 3-pillar value added assessment framework (3PVA). It is composed of four pillars of indicators, which are assessed individually without aggregation into one single rating. The EIB calculates the scores for each pillar and values for each indicator, and sends them to the Investment committee. The Committee uses this information to prioritize projects, assigning equal importance to each pillar.

Pillar 1 – Contribution to EFSI policy objectives

- **Contribution of EFSI objectives:** all projects must contribute to at least one of the 7 general objectives listed in article 9 of the Regulation.
- **Key objectives:** each general objective is composed of a number of key policy areas (27 in total). Projects in these key policy areas will have more points.

³⁰. To be precise, environmental considerations will be taken into account when assessing the contribution of the project to growth (see box 7) but it is not clear how exactly this will be applied in practice and which effect it will have in the selection of projects.

Pillar 2 – Quality and soundness of the project

- **Growth:** impact on growth will be quantified (where possible) by using the economic rate of return (ERR), but classification will take into account sectoral considerations. In particular, those sectors being less environmentally sustainable will only be financed if they have an ERR of at least 7-10%, whereas projects with long-term climate benefits might be financed with an ERR of 3.5-5%.
- **Promoter capabilities:** qualitative judgement on the promoters' ability to deliver the project in a timely, efficient manner.
- **Sustainability:** sustainability of the project in environmental and social terms.
- **Employment:** employment generated during construction and operation phases.

Pillar 3 – Technical and financial contribution

- **Financial contribution:** whether the support from EFSI improves the counterparts' funding terms compared to alternative sources of financing.
- **Financial facilitation:** whether EFSI support increases the efficiency of other stakeholder support or leverages third party resources.
- **EIB contribution and advice:** whether there is an EIB non-financial contribution in form of expert input/knowledge transfer to facilitate project implementation.

Pillar 4 – complementary indicators

- **Additionality:** whether the project provides additionality as defined in EFSI regulation.
- **Macroeconomic environment:** potential impact of the project on economic disparities within the Union and long term growth potential where the project is taking place.
- **Expected multiplier effect of EFSI intervention.**
- **Amount of private finance mobilized.**
- **Co-operation with National Promotional Banks and support to Investment Platforms.**
- **Co-financing with European Structural and Investment funds.**
- **Co-financing with other EU instruments** (i.e, Horizon 2020, Connecting Europe Facility, etc.).
- **Energy efficiencies realized** (for relevant operations).
- **Climate action indicator** (for relevant operations).

BOX 8 ➤ **EFSI general objectives and priority areas (art 9.2 EFSI regulation)**

- (a)** Research, development and innovation, in particular through:
- Projects fitting with Horizon 2020;
 - Research infrastructures;
 - Demonstration projects and programs as well as deployment of relating infrastructures, technologies and processes;
 - Support to Academia including collaboration with industry;
 - Knowledge and technology transfer;
- (b)** Development of the energy sector in accordance with the Energy Union priorities, including security of energy supply, and the 2020, 2030 and 2050 Climate and Energy frameworks, in particular through:
- Expansion of renewable energy;
 - Energy efficiency and energy savings (with a focus on reducing demand through demand side management and the refurbishment of buildings);
 - Development and modernization of energy infrastructure (in particular interconnections, smart grids at distribution level, energy storage and synchronisation of networks);
- (c)** Development of transport infrastructures, equipment and innovative technologies for transport, in particular through:
- Projects and horizontal priorities eligible under Connecting Europe Facility;
 - Smart and sustainable urban mobility projects (targeting accessibility, reduction of greenhouse gases, energy and accidents);
 - Projects connecting nodes to TEN-T infrastructures;
- (d)** Financial support through the EIF and EIB to companies as well as other entities having up to 3000 employees, with a focus on SMEs, in particular through:
- Provision of working capital and investment;
 - Provision of risk financing from seed to expansion stages for SMEs, startups, small mid-caps and mid-caps companies, to ensure technology leadership in innovative and sustainable sectors;
- (e)** Development and deployment of information and communication technologies, in particular through:
- Digital content;
 - Digital services;
 - Telecommunications infrastructures of high speed;
 - Broadband network;

- f) Environment and resource efficiency, in particular through:
- Projects and infrastructures in the field of environmental protection and management;
 - Strengthening of eco-system services;
 - Sustainable urban and rural development;
 - Climate change actions;
- g) Human capital, culture and health, in particular through:
- Education and training;
 - Cultural and creative industries;
 - Innovative health solutions;
 - New effective medicines;
 - Social infrastructures, social and solidarity economy;
 - Tourism.

1.2.6. Synergies and complementarities between EFSI and Structural Funding

Another open question is whether the Commission and the EIB will succeed in creating synergies and complementarities between EFSI and other EU instruments, maximizing the impact of the public funds, or on the contrary will overlap or crowd out other existing EU programs.

The question is particularly relevant as regards to Cohesion and Structural Funds (ESIF). There are a number of differences between EFSI and ESIF (see Table 7), which indicates potential for complementarities and tensions. The Commission emphasizes the complementary nature of the two instruments and has recently published a note providing guidance on how to combine them³¹. The note suggests different possible patterns of collaboration, which can be summarized as follows:

- EFSI and ESI funds can combine at a project level, exploiting the complementarity between grants and market-based instruments. For instance, EFSI can finance the revenue-generating parts of an infrastructure project supported by ESI grants.

31. European Commission, *European Structural and Investment Funds and European Fund for Strategic Investment Complementarities: ensuring coordination, synergy and complementarities*, February 2016.

- EFSI and ESI funds can combine at a project level, but with ESI funds providing support through a financial instrument.
- EFSI and ESI funds can combine at a higher level, through a financial instrument. For instance, an EFSI investment platform can participate as investor into a financial instrument (or a 'holding fund') set up by an ESI managing authority.
- EFSI and ESI funds can combine at a higher level, through an investment platform. In this case, the Commission recommends establishing 'layered funds' in which ESI Funds take the 'first loss piece' position, EFSI and the EIB take the 'mezzanine tranche' and private investors take the 'senior' position.
- In the context of the "SME window" (the ESIF's compartment managed by EIF and providing support to SMEs and mid-caps), ESI funds can make a contribution to one of the EU-level financial instruments having received frontloaded funding from EFSI (InnovFin SMEG, COSME Loan Guarantee Facility).
- Also in the context of the "SME window", ESI funds can co-invest with EFSI in an equity or quasi-equity investment facility managed by EIF.

Among all these options, number one and four are particularly interesting, as they are those really exploiting the complementary nature of the two instruments. In particular, the use of ESI funds to absorb part of the risk of EFSI investments can be important for countries having less sophisticated financial markets and presenting higher political and regulatory risks. In these countries, ESI funds programme contributions in form of grants can be the only way to reduce the overall risks of projects and make projects bankable, thus attracting private sector to areas and sectors where they would not have invested otherwise. However, it is not clear that ESI managing authorities in these countries will find politically attractive to use ESI as a first-loss absorber. The establishment of 'layered funds' might also be technically difficult for these public authorities.

Apart from that, the combination of EFSI and ESI funds can be administratively complex. Beyond the difficulties inherent to the set up and implementation of financial instruments, it will require coordinating two different approval procedures (the approval of the use ESI funds by the competent ESI authority and the approval of the EIB and EFSI 'investment committee on the use of the EFSI guarantee) and applying different regulations for the use, monitoring and auditing of ESI and EFSI funding. During the period 2007-2013, the novelty in the use of financial instruments and lack of clear EU regulation resulted into substantial delays in the set-up of financial instruments (delays of up to 2 years in some cases)³². Against this backdrop, one might wonder whether there will be tangible results in terms of EFSI-ESI combination before the end of the EFSI investment period (that is, 2017).

32. Fiona Wishlade and Rona Michie, "Financial instruments in 2014-20: learning from 2007-13 and adapting to the new environment", paper presented at the 2nd joint EU Cohesion Policy conference, "Challenges for the New Cohesion Policy 2014-20: an Academic and Policy Debate", Riga, 4-6 February 2014.

TABLE 7 ➤ Differences between the EFSI and ESIF

	EFSI	ESIF
Objective	Increase aggregate levels of investment in Europe	Reduce territorial disparities across Europe
Funding	€21 billion of capital, leading to €60 billion of financing capacity	€454 billion
Geographical targeting	No geographical pre-allocation	Concentration on less-developed countries/regions through pre-allocated envelopes
Thematic targeting	No thematic pre-allocations/ring-fencing (although €5 billion of capital fund reserved to SMEs and mid-caps)	Ring-fencing of allocations to thematic objectives (11) and investment priorities, according to EU regulation and National and Regional Operational Programs
Financial instruments	Market instruments (e.g. loans, guarantees, equity or quasi-equity participations)	Most of the funding (>75%) spent in form of grants. Market instruments (“financial instruments”) representing around €20 billion of funding in 2014-20
Management	Centralized management (EFSI governance bodies) Project selection by EU-level Investment Committee of experts	Shared management (Commission, member states and regions) Project selection by regional and national managing authorities and implementing bodies
Time-frame	3 years (2015-2017) with option for extension	7 years (2014-2020)

Source: Eulalia Rubio.

Beyond the concrete solutions that can be used for joint financing with EFSI and ESI funds, a broader question for the long term is whether ESIF could set the basis of a more structured cooperation between EIB and DG REGIO in general.

Whereas Structural and Cohesion funds and EIB operations are the main sources of public investment in Europe, coordination between the two instruments is usually on a project basis. A study commissioned by the European Parliament in 2006 already pointed out the existence of good working

relationships between DG Regio and the EIB but based on an ‘ad hoc’, case-by-case approach; that is, focused on collaboration on individual projects for project assessments, joint financing and joint project preparation.

Things have improved a bit since 2006. Some institutional forms of cooperation have been put into place, particularly joint initiatives aimed at providing technical assistance to regional and national managing authorities (JASPERS, JEREMIE and JESSICA in 2007-2013, Fi-Compass recently). Leverage through blending EIB loans with Cohesion grants has also been enhanced, thanks to the increasing use of Framework Loans and Structural Program Loans, which allow the Bank to provide funding to public authorities for the financing of multi-project programs and to help them co-finance Operational Programs under Cohesion policy (see Box 9 for more details).

BOX 9 ► **Framework Loans and Structural Program Loans**

Framework Loans (FL) are EIB loans to public authorities for the financing of programs covering a group of typically smaller projects (with a cost below the normal EIB lending threshold of €25 million). Created in the mid-80s, FLs have grown from less than 1% of EIB operations in the mid-nineties to a level consistently over 10% since 2002, representing 16% of total EIB signatures in 2010. FL may be multi-sector loans or targeted to specific sector (i.e. a loan to finance a local renewable energy strategic plan). They can be used to co-finance projects included in Cohesion policy’s Operational Programs, but can also finance projects not receiving structural and cohesion funding.

Structural Program Loans (SPL) are EIB loans to national and regional governments to help them co-finance Operational Programs under Cohesion Policy. This type of loan has become increasingly important since the start of the crisis, helping governments with strained finances to maintain access to EU cohesion grants. In the 2007-2013 programming period, the EIB lent nearly €20 billion to national and regional governments through SPL.

Despite these changes, there is potential for improvement. To start with, there are important deficiencies in the exchange of information. At present, DG Regio officials do not have precise information of which projects included in Operational Programs are co-financed by EIB direct or framework loans, and the same is true for EIB officials regarding whether some projects benefit from

EU grants. Increasing knowledge of mutual operations could make a significant contribution to boost synergies.

Second, and partly linked to the lack of information exchange, there is no coordination at the level of planning and programming. This is in part inevitable, as the EIB and DG Regio differ significantly in terms of implementation times, schemes for deployment and selection procedures. However, both institutions have their specific know-how and strengths with regard to planning and programming, and thus they would both gain from better coordination. DG Regio, with its close relationship with national and regional authorities, has a wide and comprehensive knowledge of the overall investment needs per region and country and a working knowledge of national regulations and procedures. The EIB has a particular expertise on a variety of infrastructure-related issues, and obviously in financial engineering and the business environment.

1.2.7. Coordination between EIB and national or regional promotional banks

Enhanced cooperation between the EIB and National and Regional Promotional Banks (NPBs) is seen as a key condition for the success of the Plan. This cooperation is necessary not only to ensure an optimal use of public funds in Europe, avoiding overlap and crowding-out effects, but also to exploit complementarities in terms of competences and expertise, particularly in the provision of technical assistance.

In the past few years, cooperation between the EIB and NPBs has already expanded to cover a wide spectrum of activities, including the financing of public infrastructure operations (through the project bond initiative launched in 2011), or the joint participation in new equity funds (Marguerite Fund, European Energy Efficiency Fund). This has been in parallel with efforts to foster the exchange between NPBs and develop common positions in Europe, in particular with the creation of the European Long-Term Investment Association (ELTI). This cooperation, however, rests on an 'ad hoc' basis. In this regard, many experts believe that EFSI offers an opportunity to reinforce the partnership between the EIB and NPBs and to place it on more solid institutional basis (Valla et al: 2014).

BOX 10 ▶ What are “National Promotional Banks”?

The EC Communication on the role of national promotional banks in supporting the EU investment refers to NPBs as “legal entities carrying out financial activities on a professional basis which are given a mandate by a member state or a member state entity, to carry out development or promotional activities”.

The landscape of NPBs in Europe is very heterogeneous. All of them are fully or mostly owned by public governments, which also provide strategic direction and are often involved in the selection of board members. They differ however in terms of size, mandate, sources of funding and business models.

Some NPBs are sizable, both by global standards and relative to the size of national banking systems (German KfW, Italian CDP), whereas others are relatively small (e.g. Latvia Allum, Estonia’s KredEx).

NPBs can have a broad mandate (“promoting economic development”) or be designed to fulfil a specific mandate (e.g., UK green development bank). Some countries have several national institutions, each one with a dedicated promotional task (e.g., French CDC and BPI), whereas others have bundled different activities within a single entity. Some entities (e.g., KfW, the new British Business Bank) have a commercial arm alongside the promotional arm.

In terms of funding, most NPBs rely on a mix of funding sources, but some (French CDC, Italian CDP) are mostly funded via deposits, whereas others (German KfW, Spanish ICO) raise money through capital markets on the basis of a public guarantee.

Finally, NPBs channel promotional funds through commercial banks (second-tier lending) or lend directly to end-customers (first-tier lending). Second-tier lending is particularly dominant in countries where the banking system is strong (Germany, Spain). In other countries (e.g., Bulgaria), greater emphasis is placed on direct lending.

Sources: Valla et al (2014), Wruuck (2015)

Financial cooperation between the EIB and NPBs in the context of EFSI can take different forms. In principle, national banks can put money directly into the EFSI’s capital, but the latter is unlikely to happen as the Regulation does not give them any seat in the EFSI Steering Board if they do so. Apart from directly participate to EFSI’s capital, NPBs can participate either on a bilateral basis, by co-financing individual projects with EFSI, or on a multilateral basis, by investing together in Investment platforms eligible for EFSI support.

A hot issue at debate during the negotiations of the EFSI regulation was the extent to which NPBs could benefit from the EFSI guarantee. NPBs asked to be treated “pari passu” with the EIB when co-financing a project eligible for EFSI. While this has not been granted, the EFSI regulation allows the EIB to

partially transferring the EFSI guarantee to NPBs or investment platforms by granting them a guarantee under a counter-guarantee of the EU guarantee³³. It is not clear how will be used this option; if it will be used by default in any operation involving NPBs or only in certain cases, when it is clear that NPBs involvement provides important 'European added value'. If it is used indiscriminately, a 'crowding out' effect might occur to the benefit of the NPBs. The EFSI guarantee might end up being used to finance projects that would have anyway taken place.

Another question is how much of NPBs involvement will take place through co-financing of individual projects and how much through investment platforms. The Commission has a clear preference for the second option. It intends to promote the creation of investment platforms and has already announced its intention to reinforce existing multilateral platforms such as the Marguerite Fund or the European Energy Efficiency Fund (EEEF).

Investment platforms present potential advantages. They are a means to aggregate small-size projects; they reduce transaction and information costs and they provide a more efficient allocation of risks between various investors. Multi-country platforms can also promote cross-border project and help reduce fragmentation in Europe's financial markets, whereas thematic platforms provide scale benefits by pooling resources and expertise for a given sector. However, platforms also entail some risks. If the EFSI guarantee is given directly to them, this will permit a more flexible deployment of funds but it also entails some loss of control from the EFSI Investment Committee on the selection of single projects (which will be done by the platform's governance body). In this respect, there is a need to ensure that those Investment Platforms receiving the EFSI guarantee comply with some minimum standards, in particular as regards their procedures for the appraisal and selection of projects.

33. According to art 10 of the EFSI regulation, the EIB can make use of the EFSI guarantee to cover: a) EIB contributions to projects or investment platforms (in form of loans, guarantees, equity participation or others), b) EIB funding or guarantees to the EIF or c) "EIB guarantees to national promotional banks or institutions, investment platforms or funds under a counter-guarantee of the EU guarantee" (art 10.2 c).

BOX 11 ▶ **What are ‘investment platforms’?**

Art 2.4. of the EFSI regulation defines investment platforms as “special purpose vehicles, managed accounts, contract-based co-financing or risk-sharing arrangements or arrangements established by any other means by which entities channel a financial contribution in order to finance a number of investment projects, and which may include:

- (a) national or sub-national platforms that group together several investment projects on the territory of a given member state;
 - (b) multi-country or regional platforms that group together partners from several member states or third countries interested in projects in a given geographic area;
 - (c) thematic platforms that group together investment projects in a given sector.
-

Finally, there remain significant differences between NPB’s in Europe in terms of mandate, size, governance and funding. In this respect, as said above, a strong involvement of NPBs in the functioning of EFSI might accentuate the risks of geographical concentration if not accompanied by measures to harmonize the landscape of NPBs in Europe.

1.2.8. Lack of progress in the third pillar

The third pillar of the Plan is the one expected to have the strongest impact on investment according to the Commission. It includes two types of actions: efforts to render EU regulation more investment-friendly (single market regulation in sectors such as transport, digital or energy, but also horizontal rules concerning the provision of state aid or public procurement for instance), and actions aimed at removing national regulatory barriers to investment.

Among the first type of actions, the most important one is undoubtedly the efforts to build a Capital Market Union (CMU). In September 2015 the Commission presented an Action Plan for building a CMU³⁴. It is not here the place to comment on the content of this Plan, but it is important to notice that, while some measures included in this plan might have important short-term effect (e.g. the recalibration of the calculation of capital that banks and insurance companies should hold against infrastructure investment, through the

³⁴. European Commission, Communication “Action Plan on Building a Capital Markets Union”, COM (2015) 468 final.

review of the Capital Requirements Directive and of Solvency II) overall the project of CMU must be seen as an attempt to produce a structural, long-term transformation of the EU financial system. In this respect, many experts consider that actions to build a CMU will not trigger major short-term effects on investment³⁵.

The second type of action, on the contrary, could eventually have an important short-term impact in particular in those countries having largest investment needs (euro area peripheral countries and Central and Eastern European countries). To push member states to reform, during 2015 the services of the Commission have analysed the main challenges to investment at national level and have elaborated country-specific investment profiles for each EU member. These challenges to investment have been included as priority in the context of the 2016 European Semester, and the Country Reports of February 2016 will take stock of the progress made by national governments in this area. Despite all these efforts, however, one cannot forget that the European semester is ultimately a process based on non-binding recommendations. In the absence of a clear “carrot” or “stick”, the capacity of EU actors to induce national reforms is rather low.

Some experts have suggested the possibility to condition the disbursement of EFSI to the adoption of reforms at the national level. This does not seem possible, as EFSI investment goes to the private sector and does not seem logical to condition the support of a private project to actions taken by the public sector (even if one can argue that, when assessing the technical viability of the project, the EIB will indirectly take into account the quality and stability of the national regulatory context). This can only be envisaged for ESIF funds, granted to public authorities. In fact, ESIF are already submitted to ex-ante conditionality and in principle public authorities can risk suspension of payments if they do not adopt the required sectoral reforms (see Box 12).

35. Nicolas Véron, “Capital Markets Union: A vision for the long term”, Bruegel policy contribution issue 2015/5, April 2015.

BOX 12 ▶ **Thematic ex-ante conditionality in ESIF funds**

Occasionally applied during the 2007-13 period, the application of thematic ex-ante conditionality in ESIF (cohesion and structural funding) has been generalized in the period 2014-20. Ex-ante conditionality consists of the requirement of certain ex-ante conditions (adoption of certain regulatory changes, formulation of a policy strategic plan) which need to be in place before the disbursement of the aid and which are deemed important to guarantee the effectiveness of the EU support.

Lack of fulfilment of ex-ante conditions can lead to a suspension of the payments. However, this condition is applied in a flexible and constructive manner. Thus, where the conditions are not met at the start of the programming period, the Commission can give two years to the country to fulfil these conditions. The country then shall set out the detailed actions relating to the fulfilment of ex ante conditionalities, including the timetable for their implementation, and the Commission shall strictly monitor the compliance with the agreed timetable of implementation in the framework of its assessment of the Partnership Contract and programs.

1.2.9. Marginal impact of the European Investment Project Portal (EIPP)

Finally, the Plan also foresees the creation of a European Investment Project Portal (EIPP). This Portal is still under construction, but according to the EFSI regulation it will consist of a publicly accessible and user-friendly project database, gathering information of current and future investment projects in the Union.

The EFSI regulation stresses that the Portal will mainly have information and visibility-related purposes and that inclusion to it will in any case imply preferred access to national or EU financing. It does not say anything in regards to the criteria for inclusion to the Portal, but according to some presentations by the European Commission, they will be very light³⁶. In order to be included the Portal, the project will have to: a) be worth at least €10 million, b) be expected to start within three years of their submission to EIPP, c) be promoted by a public or private legal entity established in an EU member state and d) be compatible with applicable EU and national laws. The Commission and the EIB will also keep the right of denying the publication of a project “on legal, reputational or other grounds.” Finally, a non-refundable fee may be charged to

36. “The Investment Plan for Europe”, Powerpoint presentation by the Commissioner Katainen, 21 December 2015.

private project promoters for processing project applications for admission to the portal.

It is striking the difference between this Portal and the original idea included in the EU Investment Plan presented in November 2014: the creation of a “EU pipeline of investable projects of European interest.” This had to be more than a website to publicize projects at the demand of the individual promoters. Grounded on the belief that a major obstacle to investment is the difficulties for potential investors in assessing the risks involved in the project, the pipeline was expected to provide “independent and transparent assessments of large-scale, long-term investment projects of European interest.” It had to give a clear “credibility label” for ‘bankable’ projects of European interest.

The pipeline in its original version presented problems. To become a clear credibility label, the inclusion of a project to the pipeline would have to be submitted to a rigorous economic assessment. The latter would be very cumbersome, and eventually redundant to the ordinary EIB assessment procedure. Having said so, the assumption that inspired the original pipeline is still valid. It is dubious that the website alone will mobilize and unlock private investments, if not accompanied of mechanisms to help potential investors to assess the risks and economic viability of the projects.

1.3. Making the best of the EU Investment Plan: ten policy recommendations

The analysis from the previous section reveals the existence of various potential risks that, if not properly addressed, might endanger the capacity of the EU Investment Plan to attain the expected results. In the following, we present ten policy recommendations with concrete proposals for action to be implemented over the next two years. We believe that the adoption of these actions can help secure the success of the Plan within the initial investment period.

1.3.1. Ensure that the budget of the European Investment Advisory Hub is commensurate to the needs

As seen in the previous sections, the main challenge for EFSI is not to attain the figure of €315 billion, but to do it by financing additional investment of strategic value for Europe. The new European Investment Advisory Hub (EIAH) has to play a crucial role in this respect, helping structure a sufficient number of EFSI eligible projects across Europe.

The EFSI regulation confers many tasks to this new hub. The EIAH is built on the various existing EIB and Commission advisory services (particularly JASPERS, ELENA, EPEC, Fi-Compass and Innovfin) and thus it should continue to guarantee the support provided under those programs. Among other things, the hub shall provide support for the identification, preparation, structuring and implementation of all types of investment projects in Europe (not only those eligible for EFSI or EIB financing), provide advisory and capacity building support for the implementation of ESIF financial instruments and support national and regional authorities on the use of public-private partnerships. In addition to that, the EIAH shall provide specific advisory services related to EFSI. This includes the assistance to project promoters in developing and structuring EFSI-eligible projects, the provision of advice for the establishment of investment platforms (art 14.3 EFSI regulation), and the provision of targeted assistance for project structuring in those areas eligible for EFSI, with particular emphasis on energy efficiency, TEN-T and urban mobility (art 14.2 EFSI regulation). Last but not least, the EIAH is also supposed to reach new sectors and clients by identifying and serving new investment needs.

The preamble of the EFSI regulation emphasizes that the new services provided by the EIAH should be in addition to those already available, and that those additional services “should be adequately funded”. However, the additional dedicated financing for the EIAH will be less than €30 million per year. This amount seems clearly insufficient to cover all the additional EIAH tasks. As a matter of comparison, the size of the EIB advisory business before the creation of the EIAH (in terms of allocated staff costs and consultancy budget) is estimated in the range of €120-130 millions/year³⁷. JASPERS alone (a program specifically targeted to providing technical assistance to the 12 least-developed EU countries for the preparation of high quality major projects eligible for ESIF co-financing) has an annual budget of 30 million, financed by contributions from the EU budget and the EIB that are superior to those envisaged for the EIAH (see Table 3)³⁸

TABLE 8 ► Comparison of JASPERS and EIAH's dedicated budget (in million €)

	JASPERS BUDGET 2014	EIAH BUDGET 2014	EIAH BUDGET 2015	EIAH BUDGET 2016
EU Commission	21.7	10	20	20
EIB	7.5*	3.3	6.6	6.6
TOTAL	30.3**	13.3	26.6	26.6

Source: JASPERS annual report 2014 and Framework Partnership agreement between the EIB and the European Commission on the European Investment Advisory Hub (July 2015).

Note: *In form of in-kind contributions. **The total does not correspond to the sum of EU Commission and EIB contributions because there is an additional contribution of 1.1 million from the EBRD

As highlighted by many experts in a seminar on the EU Juncker Plan organised by the Jacques Delors Institute in October 2015, technical assistance is very time-consuming and requires strong management and professional skills. External consultancy can be helpful, but can never substitute for strong internal teams. This requires commensurate public resources. The JASPERS program, for instance, uses more than half of its budget to finance management and professional staff. The programme counts a team of 82 professional

37. Interview with a EIB official.

38. JASPERS, Annual Report 2014.

experts. The EIAH, in comparison, is expected to host roughly 50-70 additional EIB expert staff.³⁹ JASPERS is considered a successful program; evaluations report positive results. To guarantee similar success for the EIAH, we propose **to increase the annual contribution of the EU budget of EIAH to at least 40 million/year.**

1.3.2. Establish a stable network of national EIAH offices covering the whole Union

The EIAH is also expected to play a major role in mitigating the risks of geographical concentration. To this end, it is important to secure an adequate and targeted support from EIAH to those countries having less expertise in the use of financial instruments and lacking a powerful National Promotional Bank.

Currently the Hub operates mainly via the EIB headquarter in Luxembourg and the 18 EIB local offices. The EIB plans to open an office in all EU capitals within the next two years and the EIAH will certainly leverage on that to build its own network of advisory services to cover the whole EU-29. To this end, the EIB approach however is rather voluntarist and based on the establishment of different cooperation agreements depending on the type of local partner (NPBs or other service providers) and the level of engagement (see Box 13).

BOX 13 ► Cooperation between EIAH, NPBs and other local service providers

To ensure broad coverage of services provided and optimize synergies, the EIAH will offer to each NPBs three possible forms of participation:

Level 1 – Participation in knowledge/best practices sharing and dissemination

Level 2 – Acting as a local point of entry/local screening for EIAH’s potential beneficiaries and promotional and visibility actions

Level 3 – Decentralized delivery of services on behalf of EIAH

Irrespective of the form of cooperation chosen, each partner NPB and the BEI (on behalf of the EIAH) will sign an engagement letter or a Memorandum of Understanding (MoU) setting the general terms of cooperation. Participation to level 3 will be governed by a service contract.

³⁹. Interview with a EIB official.

In those countries where any NPBs are available or interested in joining the EIAH, the EIAH will seek to cooperate with similar service providers (national, regional, local authorities). In this case, cooperation will be formalized with the signature of a contractual partnership.

Source: Framework Partnership agreement between the EIB and the European Commission on the European Investment Advisory Hub (July 2015).

To secure broad coverage of EIAH services, level 3 participation (see Box 11) should be the norm rather than the exception. In other terms, **the Hub should have an office in each of the 29 member states, acting both as a local point of entry for EIAH's potential beneficiaries and as a provider of EIAH services.** The body in charge of these offices can vary from one country to another. In some countries, NPBs can play this role; in others it will be the EIB local office in charge of that. Still in others, national ESIF management authorities might act on behalf of EIAH. The financing of these offices can also vary from one country to another, and in some countries they can be co-financed by ESIF funds (particularly using part of the ESIF budget for “technical assistance”). Beyond these differences, all EIAH offices should be governed by the same service contract signed with the EIB. It is also important to confer to each national EIAH office the capacity to coordinate all the different national and sub-national services providing technical assistance for investment in the respective country. Only in this way can the EIAH effectively become the ‘single point of entry’ for the provision of technical assistance to public authorities and promoters across Europe.

The creation of this network of national EIAH offices should be complemented with reinforced support to those countries having less sophisticated financial markets and weaker public administrations, in order to reduce differences in the capacity to identify, develop and structure high-quality projects across the EU. **We suggest in this respect the creation of a program to encourage the exchange of staff between NPBs involved in the provision of EIAH services.** More EIB staff and resources should also be allocated to these countries’ national EIAH offices.

Finally, notice that the establishment of a stable network of regional EIAH offices, if built on NPBs, can constitute a first experience of stable cooperation between EIB and NPBS, and could eventually break ground for the

establishment of a more articulated system of public promotional banks in Europe in the long term (see Section 1.4.1.).

1.3.3. Ensure consistency with Europe's low carbon goals

While the main goal of EFSI is to increase the level of investment in Europe within the next three years, it will be problematic, and highly criticized, if EFSI investment is not consistent with important EU long-term goals, in particular that of supporting the transition towards a low-carbon economy. For the time being, this risk does not seem to be an issue (see Section 1.2.5). A significant number of the EIB operations approved or under appraisal for EFSI support correspond to projects having very low carbon footprints (e.g., in research and innovation, broadband) or explicitly aimed at mitigating the level of GHG emissions (renewables, energy efficiency).

Yet, one cannot guarantee that the Fund will provide sustained support to the transition to a low carbon economy over the whole investment period. To a large extent, this will depend on the capacity to generate a sustainable demand for this type of investment, and on the capacity to structure bankable and high-quality low carbon projects. One of the main reasons behind the low demand in low-carbon investment is the existence of fossil fuel subsidies or other distortions to energy prices. **Removing these fuel subsidies and distortions in energy prices should be one of the priorities of the 'third pillar' of the Plan.** In particular, the Commission should consider the removal of regulatory obstacles to low-carbon investment to be a priority when formulating country-specific recommendations and should pay particular attention to the progress made by national governments in this area when analysing member states' responsiveness to EU recommendations.

In addition to that, to guarantee a sufficient number of well-structured low-carbon projects, **the EIAH should provide reinforced advisory support and technical assistance in low-carbon investment areas.** This should be reflected in terms of EIAH's allocated staff and consultancy budget. The type of assistance provided can be varied; it can consist of the provision of technical and financial expertise for project development but also of support

to the creation of thematic low-carbon investment platforms or the creation of diagnostic tools to help investors evaluate the benefits and costs of low-carbon projects⁴⁰.

Finally, **climate and energy efficiency considerations should be mainstreamed into the appraisal of projects submitted to EFSI**. Choices made today about the types and features of new and renovated infrastructure will lock in the EU's capacity to reduce future levels of GHG emissions. It is therefore important to exclude high-carbon and low-performance energy projects from EFSI support. At present, the scoreboard includes a 'climate action indicator' and an indicator of 'energy efficiencies realized', but these two indicators are only "for relevant operations" (that is, projects on energy networks, energy generation or energy efficiency). These indicators should apply to all projects submitted.

1.3.4. Define geographical indicators at both aggregate and sectoral level

As documented in previous sections, there is a risk that EFSI mostly benefits central and northern European countries at the expenses of southern and eastern European countries. This is clearly problematic: while EFSI is not a cohesion instrument, it should not run against EU cohesion objectives, increasing existing economic gaps.

Some measures should be taken to avoid this. The most important one is to provide reinforced EIAH support to those countries having less sophisticated financial markets and weaker public administrations (see Section 5.2.). Apart from that, the EFSI steering board should make use of its capacity to define indicative geographical diversification and concentration targets, and take the necessary actions to reach these targets at the end of the investment period.

40. Such as the "Barometre Carbone", a free tool for decision making support for urban planning developed by the French NPB - the Caisse des Dépôts et Consignations (CDC) - for use in the Paris capital region (Grand Paris). The objective of the tool is to allow local decision makers to integrate the issue of greenhouse gas emissions into the development planning documents and financing contracts. The tool assists local actors in establishing an ex-ante GHG profile of their jurisdiction as well as different development scenarios.

Geographical indicators should be defined both at aggregate and sectoral levels. **At the aggregate level, EFSI governing bodies should strive to ensure that a significant part of EFSI funding goes to those countries presenting the largest aggregate investment and output gaps. At the sectoral level, it would be desirable that EFSI funding be allocated as much as possible where there are the largest sector-specific investment needs.** Thus, for instance, EFSI support to SMEs and mid-caps should go in priority to those countries where the cost of borrowing for non-financial corporations is the highest (mostly euro area peripheral countries) In the field of energy efficiency, on the contrary, EFSI investment would be more effective if concentrated on Central and Eastern countries, as these countries are those with more energy-intensive economies (and thus potential energy efficiency gains are larger there than in Western Europe) and those being more dependent on the Russian gas (and thus a decrease in energy consumption is strategically important in these countries to reduce energy security risks).

1.3.5. Exploit synergies between the EIB and National and Regional Promotional Banks in the co-financing of EFSI projects

There is much scope for cooperation between National Promotional Banks (NPBs) and the EIB in the implementation of EFSI. Being both public promotional banks, there is a clear alignment of interest in correcting market failures and promoting investment in areas of high public value. In addition to that, NPB engagement is very valuable in that it offers particular expertise and knowledge of the local context, business and investor communities as well as national policies and strategies.

Some measures could be put into place to facilitate NPB-EIB co-financing of EFSI projects. For instance, **in order to reduce the administrative burden, the EIB could delegate the monitoring of the projects co-financed with NPBs to the National Bank, on the basis of mutual recognition.** This could be the rule in those countries in which the NPBs assume the provision of services on behalf of EIAH (that is, in countries in which the NPB acts as the local antenna of the EIAH).

At the same time, NPBs and the EIB present differences in their mandates. The EIB's mission is to support growth and employment in Europe whereas

NPBs, while legally allowed to intervene outside their territory, are mandated to support growth, employment and the economic and territorial development of their own country. In principle this does not pose a problem: projects contributing to one of the objectives defined in EFSI regulation (see Box 8) are both of national and European interest. Both institutions (EFSI and NPB) pool resources to finance the project, and each one assumes their part of the risk incurred.

The EFSI regulation, however, stipulates that NPBs can in some cases be covered by the EIB guarantee provided by EFSI under a counter guarantee of the EU Guarantee. The EIB and the Commission should make a limited and strategic use of this prerogative. Granting the EU guarantee to the NPBs implies, in practice, that the risks incurred by the NPBs when financing the operation will be covered by a guarantee backed by all EU taxpayers. This should be only granted in operations having a strong European dimension, and in which the engagement of the NPBs creates positive externalities beyond its own national territory. Following this reasoning, we suggest to **grant the EU guarantee to NPBs only for financing trans-national investment projects or projects located outside the Bank's national territory.**

1.3.6. Provide information, support and further guidance for the combination of ESI-EFSI funds

As argued in section 1.2., cohesion policy managers may be reluctant to set up common projects because they will have to comply with the regulations of both instruments. This may increase the complexity of structuring and managing the project, and the risks of lack of compliance for cohesion managers.

Creating synergies and complementarities between EFSI and ESI funds is important to maximize the impact of EU funds. The European Commission has recently published a note providing some guidance to how to combine EFSI and ESIF funds. The note however is quite vague, or even silent, in particular operational aspects that are very relevant for ESI managing authorities such as the application of State Aid rules or the methods for reporting, evaluation and auditing. **Further guidance and technical support (through the Fi-Compass, inserted into the EIAH) should be offered to ESI authorities to combine both instruments.**

In particular, the Commission and the EIAH should **provide more information, specific technical assistance and guidance for the establishment of ‘layered funds’ in countries having less sophisticated financial markets and presenting higher political and regulatory risks.** The use of layered funds in these countries is very promising, as they might help attract private investment in areas and sectors where they would not have invested otherwise. ESI managing authorities in these countries, however, might find politically unattractive to use ESI as a first-loss absorber. They might also lack the technical capacity to set up a layered fund.

1.3.7. Clarify the conditions of eligibility for investment platforms

Investment platforms are in essence co-investment arrangements structured around some public actors (NPBs, the EIB and/or public authorities) with a view to catalysing investments in a set of projects (as opposed to individual projects).

Platforms are called to play a major role in the implementation of the EFSI. They can be important in helping to bundle small-size projects and pooling resources and expertise in a given sector. Multi-country platforms can also promote cross-border investment and help reduce the fragmentation of Europe’s financial markets.

When the EIB decides to intervene into a platform, the EU guarantee can be given directly to the platform or to the contribution of the EIB to the platform. To allow for a quicker and more flexible deployment of EFSI, the first option is preferable. However, this implies giving the platform a direct mandate to perform on their own the selection of individual projects. In this respect, while encouraging this option, it is important that the EFSI steering board detail the conditions of eligibility for investment platforms. In particular, **those platforms receiving the EU guarantee should present some minimum standards in regards to their governance.** Avoiding all political influence over the selection of projects was very important to give credibility to EFSI. It is just as logical to require the same condition to all platforms eligible for EFSI support. Besides, it is recommendable to establish ex-post sample controls by the Investment Committee on the projects selected by these platforms.

1.3.8. Complement the European Investment Project Portal (EIPP) with mechanisms for standardization

The European Investment Project Portal (EIPP) can provide visibility to some projects, but will do nothing to address one of the main obstacles to investment in Europe: the difficulties in assessing the risks and economic viability of potential projects. These difficulties are particularly acute among small investors, which are in fact not concerned about the Portal (as it will be open to projects of more than €10 million).

The **Commission should complement the establishment of the Portal with measures aimed at standardizing data of small sized projects in specific sectors or market segments.** An often-cited demand, for instance, is the creation of standardized credit information on SMEs. Another demand is in the energy efficiency investment market. In this sector, it is well documented that one of the obstacles to investment is a general lack of reliable and trusted energy efficient investment performance data. The Commission could address this problem by developing on-line tools to measure performance and establishing EU corporates and buildings' energy efficiency performance databases.

1.3.9. Promote the creation of transparent and well-designed national and regional public project infrastructure pipelines

Long-term infrastructure planning is a crucial tool to identify infrastructure needs and prioritise those sectors or regions whose investment is important from a public policy, long-term perspective. While the majority of the member states have long-term infrastructure plans and sectorial strategies, only a few, such as the UK and the Netherlands, translate these aggregate needs and priorities into specific commitments for investment in particular infrastructure projects through the establishment of transparent public project pipelines.

The establishment of pipelines of planned projects presents various advantages. It can help the private sector identify the projects where their participation might be mutually beneficial. It can help exploit the synergies between different sources of public financing (e.g. local, regional and national budgets, structural and cohesion funding, NPBs, the EIB). Finally, if articulated on the

basis of rigorous and transparent criteria, a public pipeline can also guarantee an efficient allocation of public resources and avoid the financing of politically motivated projects of dubious public value.

As part of the EU Investment Plan, **the European Commission should promote the creation of well-designed and transparent public project infrastructure pipelines at the national and regional levels.** In some countries, the creation of these pipelines will require fundamental changes in the modes of programming public investment. To start with, a comprehensive pipeline requires coordination and regular exchanges of information between the NPBs and ESIF authorities. The Commission could guarantee this condition by **imposing as a rule the systematic involvement of NPBs in the partnership bodies supporting the definition of national and regional ESIF programs.** In addition to that, **the procedures for the selection of projects receiving ESIF funds should be de-politicized as much as possible.** There is wide evidence of the use of ESIF funds in the past to finance expensive and visible projects of questionable public value (“white elephants”). Whereas project selection within ESIF is considered a member states’ responsibility, the Commission should establish some minimum criteria to ensure that the projects co-financed by ESIF present some minimum requisites of economic, technical and social value.

1.3.10. Set up complementary measures to boost public investment

Finally, the EU Investment Plan should be accompanied by some complementary actions to boost public investment.

First, there is a need to re-formulate **the ‘investment clause’ included in the Stability and Growth Pact.** As it is written today, it is largely ineffective as it does not cover those countries most in need of investment and the list of eligible investment is very restrictive (the clause allows EU countries to deviate from their EU budgetary objectives to provide co-financing to EU-funded projects - under ESIF, EFSI, Connecting Europe Facility or other programs). A minimum necessary step is to expand the clause to cover those countries under the corrective arm of the Stability and Growth Pact. In addition to that, the scope of the investment clause should be broadened to include other categories of eligible investment. The difficulties in deciding which expenditure

categories should be eligible are well known but they are not as important as to prevent any consideration to that.

Second, reforming the ‘investment clause’ is necessary but probably not sufficient to reverse the downward trend in public investment in the euro area. Ultimately, the decision to expand investment within the SGP rules depends of national governments. However, what we observe today is that those euro area countries more in need of investment are also those in worst economic and fiscal condition, whereas those having more fiscal space are not willing to increase their levels of public investment. To remedy that, we need a common vehicle able to channel public investment to those countries or sectors more in need of it. One option is the establishment of a “**European investment budget**”, as proposed by Enderlein and Haas⁴¹. This budget would have a double purpose: channeling funds for investment to countries or regions hit by specific shocks and supporting reform efforts through accompanying investment measures. This budget could be financed through different means (national contributions, new taxes, re-allocating existing EU budget funds), but at a moment when the cost of borrowing approaches zero, a total or partial financing through the joint issuance of new debt seems an interesting option.

Third, the ECB could reflect on the possibility to further **diversify the purchases of assets in the context of the quantitative easing program**. At present, this program is mostly based on purchases of sovereign bonds, following the share of each EMU member state in the ECB’s capital (the “capital key”). This implies that almost half of all purchases are of German and French bonds, markets that already benefit from exceptionally low interest rates. A more direct way of supporting public investment and growth is buying securities from National Promotional Banks or from the EIB. The ECB and the euro area central banks (NCBs) are allowed to buy bonds from “European institutions” (including the EIB) but only up to 12% of total purchases. NCBs can also decide to buy bonds issued by “national agencies” (including NPBs) instead of sovereign bonds to reach the pre-established volume of monthly purchases per country. However, as rightly pointed out by Szczerbowicz and Valla⁴², the list of

41. Henrik Enderlein and Jörg Haas, “What would a European finance minister would do? A proposal”, Policy paper No. 145, Jacques Delors Institut - Berlin, October 2015.

42. Urszula Szczerbowicz and Natacha Valla, *QE - “European style”: be bolder, but parsimonious!*, CEPII blogpost, 24 March 2015.

eligible agencies is very heterogeneous and includes some institutions whose debt has little to do with productive investment. As the two researchers from CEPII recommend, the ECB might be well advised to increase its purchases of bonds from EIB and to select the eligible national agencies not only according to their credit worthiness but also taking into account their economic purpose. It should be noted that the ECB seems to go in this direction already: in July 2015, it decided to enlarge the list of eligible ‘national agencies’ and 12 out of 13 new agencies included correspond to infrastructure-related issuers.

1.4. Looking ahead: discussing possible long-term scenarios

The EFSI regulation specifies that, after the three-year initial investment period, if the Fund has been successful in attaining his objectives, the Commission can propose to the European Parliament and the Council to maintain the scheme for a renewed investment period. This eventually opens the door to the establishment of a more permanent investment scheme in Europe. It is not clear which form this permanent scheme could take. The most likely scenario is an improved EFSI, with changes in the size, structure and governance to address some of the risks and problems observed in the first period. Over time, however, this permanent investment scheme in the form of EFSI may evolve towards something different. Two possible long-term scenarios have attracted our attention.

1.4.1. The Juncker Plan as the first step towards the establishment of a system of public investment banks in Europe?

A permanent EFSI will surely intensify cooperation between the EIB and NPBs. In the long term, this can lead to the establishment of more solid and institutionalized forms of cooperation.

The most radical outcome would be the creation of a ‘system of public investment banks’ as imagined by Valla, Brand and Doisy in a paper published some

months before the announcement of EFSI⁴³. Such a system would be structured around a central node (the EIB) and national entities (the various NPBs). The centre would work as a truly federal entity, coordinating the activities of the national entities with a clear European map in mind. To a certain extent it would resemble the European system of central banks, which comprises the ECB and the national central banks in the euro area.

As pointed out by Valla *et al.*, coordinating the activities of all NPBs through a system could have important advantages. It would ensure coherence and would channel Europe's excess savings towards investment in the right places across the continent. The establishment of a system of this sort would probably be conditioned to changes in the governance of EIB. Today, the EIB governing council is composed of the Ministers of Finance of all member states (which are the shareholders of the Bank) but most decisions are taken by majority vote, representing at least 50% of the subscribed capital. To be politically acceptable, a system in which EIB decisions may impose on national investment banks' decisions would probably require more qualified majorities, or a change in the way of weighting the votes (e.g., setting voting rights in line with the capital key of the EIB). But this would be a minor obstacle, compared to two other major hurdles to the establishment of a system of European public investment banks.

The first is the enormous heterogeneity that exists between NPBs in Europe. As described in Section 1.2.7., there are major differences across NPBs in terms of size, mandate, funding sources, business models and governance, and supervisory structures. Some are very similar to ordinary banks to the extent that they operate with a banking license and are covered by the ECB's single banking supervision. Others have special status and are supervised at the national level. In some EU countries there are no NPBs at all. A pre-condition for the creation of a system would be the establishment of NPBs in all 29 member states as well as some harmonisation with regards to national banks' mandates, sources of funding and structures of governance. This is very difficult to imagine, given the fundamental differences that exists among investment

43. Natasha Valla, Thomas Brand and Sébastien Doisy, "A New Architecture for Public Investment in Europe: The Eurosystem of Investment Banks and the Fede Fund, CEPII policy brief, n. 4, July 2014.

banks in Europe, which are largely a reflection of their different founding histories.

A second major obstacle is the hierarchical nature of the system. The system, as envisaged by Valla *et al.*, would imply granting an EU entity (the EIB) the capacity to impose decisions on national entities (the national promotional banks). It is unclear if there is a political appetite for such a radical move in Europe. In some countries (particularly richer countries with sizeable NPBs) this could be interpreted as a veiled way to impose fiscal solidarity in Europe. In any case, it would require a change in the EU Treaties.

In addition to these obstacles, a hierarchical system might not be the best possible outcome. As noted by Wruuck, it could have costs in terms of the collection of information about the local market situation⁴⁴. Contrary to what happens with the formulation of monetary policy (which relies on easily-available macro-economic data), a good knowledge of the local investment context is essential to define the appropriate investment strategy and identify local market failures. A centralized system for public investment could deliver well from an aggregate, macro-economic perspective but would not necessarily be able to guarantee an effective allocation of resources at the micro-economic level.

Rather than moving towards a hierarchical system for coordination, a more desirable and likely outcome for the long-term is to reinforce and expand cooperation initiatives between the EIB and NPBs. At the very minimum, one can expect that the experience with EFSI serves to increase the size of existing cross-country funds (Marguerite, Energy Efficiency Fund) and to create new thematic, cross-country platforms (linked to EFSI or otherwise). Another possibility for the long-term is to see NPBs putting money into EFSI's capital, thus converting the permanent EU investment fund into a real joint initiative. Finally, 'soft' mechanisms for coordination could be envisaged. One can imagine, for instance, the creation of a new EU advisory council on investment involving the EIB and all NPBs in Europe. Aside from providing advice to the Council, the Commission and the European Parliament on matters related to

⁴⁴. Patricia Wruuck, Promoting investment and growth: the role of development Banks in Europe, EU monitor, Deutsche Bank Research, 23 December 2015.

investment in Europe, it could serve as platform for coordinating NPB investment strategies.

1.4.2. The EFSI as the seed of a future euro area stabilization mechanism?

Another possible long-term scenario would be the conversion of EFSI into a stabilization capacity for the euro area. The Five Presidents' Report on completing the EMU⁴⁵ calls for the establishment of a "common macroeconomic stabilization function" for the euro area to better deal with shocks that cannot be managed at the national level alone. The creation of this function is foreseen for stage two (that is, after June 2017) and the report details some guiding principles that should inform the design of this capacity (see Box 14).

BOX 14 ► **Guiding principles for a euro area stabilization function (according to the Five Presidents' Report on completing the EMU)**

The Five President's Report details the following guiding principles for the design of a euro area stabilization function:

- It should not lead to permanent transfers between countries or to transfers in one direction only.
 - It should not be conceived as a way to equalize incomes between member states.
 - It should neither undermine the incentives for sound fiscal policy-making at the national level, nor the incentives to address national structural weaknesses.
 - It should be tightly linked to compliance with the broad EU governance framework.
 - It should be developed within the framework of the European Union.
 - It should be open and transparent vis-à-vis all EU member states.
 - It should not be an instrument for crisis management, but an instrument aimed at improving the economic resilience of EMU and individual euro area countries.
-

The report explicitly mentions that such a stabilization function could "build on the European Fund for Strategic Investments as a first step, by identifying

45. Jean-Claude Juncker, Donald Tusk, Jeroen Dijsselbloem, Mario Draghi, and Martin Schulz, *Completing Europe's Economic and Monetary Union*, 2015.

a pool of financing sources and investment projects specific to the euro area, to be tapped into”⁴⁶.

At first sight, it is difficult to imagine EFSI performing this function. As said above, the Fund works as a demand-driven instrument, free of any geographical or sectorial pre-allocation. It is backed by a guarantee from the EU budget, and therefore, it should logically cover the whole EU (and not only the euro area countries). One might imagine some way of accommodating this function into EFSI, but the capacity to do so depends on the type of fiscal stabilization we envisage for the euro area.

If the goal is to create a cross-country shock-absorbing instrument (that is, an insurance mechanism for euro area countries, pooling resources from all euro area member states and providing financial assistance to those affected by a shock), it is very implausible that EFSI can perform this function. This would require a strict focus on euro area countries, and thus a change in the nature of the guarantee backing EFSI (EFSI should be backed by guarantees from insured countries and not from the EU budget). It would also necessitate the introduction of strict geographical criteria for spending allocation and the introduction of conditionality to prevent EFSI allocation from undermining the incentives for sound economic and fiscal policy. In short, the very nature of EFSI would be put into question.

If the goal is instead to create a fiscal mechanism to boost the aggregate demand of the whole euro area in difficult times (e.g. recessions, periods of very low growth), then it is easier to imagine EFSI performing this function. One possibility could be to establish a euro area investment platform co-financed by EFSI and the NPBs from the euro area. This platform could be granted by an EIB guarantee on the basis of EFSI guarantee, which would allow it to perform on its own the selection of investment projects specific to the euro area. Like for the rest of EFSI projects, the selection of these projects would not be subject to geographical pre-allocation. To have a significant macro-economic impact, however, this platform would have to be quite big or at least be able to mobilize a significant part of funding in difficult times (either through increased EFSI funding or through increased contributions from euro

⁴⁶. Juncker et al., *Op. Cit.*, p. 15

area NPBs) Unlike EFSI, it should follow a pure stabilization logic, prioritizing projects having significant short-term impacts on growth and jobs at the expense of more ‘strategic,’ long-term projects.

Finally, another alternative could be forgetting the idea of using EFSI for this purpose and modifying instead the statute of the European Investment Bank to force the Bank to play a more active, anti-cyclical role in exceptional circumstances. During the current crisis, there has been some criticism of the EIB’s conservative approach and its reluctance to increase the lending capacity so as to avoid endangering its triple A. We have also witnessed how difficult it has been to reach the required unanimity among member states to increase the capital of the EIB. To prevent this from happening again, one could for instance stipulate the obligation for member states to increase the capital of the Bank up to a certain percentage, or for the Bank to increase its lending capacity, in certain circumstances. Notice that action in this case would benefit the whole EU and not only the euro area. It would be a ‘second best’ alternative to a truly euro area stabilization mechanism.

2. Developing digital infrastructure in Europe: can the Juncker Plan play a role?

by David Rinaldi

2.1. Why prioritize digital infrastructure

If moving towards a knowledge economy and re-launching economic growth are the political goals of European governments, high-quality broadband networks should be regarded as fundamental infrastructure. De facto, digital infrastructure *empowers* citizens and businesses by offering all the services, opportunities and information which are available through the Internet. The European Commission has recognized that the availability of high-speed networks in Europe is a prerequisite for the digital economy to flourish and an essential part of the overall strategy for achieving job creation and economic growth. In fact, the ambitious Digital Agenda is one of the pillars of the Europe 2020 Strategy and the goals of ensuring fast and ultra fast internet access across Europe are seen as key to the objective of promoting inclusive and smart growth. There are two specific targets concerning broadband networks⁴⁷ to be met by 2020: 1) extending broadband coverage of at least 30 Mbps to all Europeans, i.e. 100% coverage for *fast* broadband, and 2) ensuring that at least half of European households subscribe to connections of at least 100 Mbps, i.e. household penetration⁴⁸ of at least 50% for *ultra-fast* broadband⁴⁹.

To meet these targets, substantial investments are required to extend existing digital infrastructure and roll out new NGA⁵⁰ networks. To set and maintain

47. The original targets were three, but one has already been achieved. See Section 2.2.

48. Coverage identifies the number of homes and businesses that in principle have access to broadband; penetration refers instead to the actual number of subscribers.

49. There is no univocal definition of broadband and, since categories relate to the speed of data transfers, they are subject to changes over time, as technology advances. The European Commission conveniently refers to standard broadband when download speeds are between 144 Kbps and 30 Mbps, fast broadband with speeds between 30 and 100 Mbps and ultra-fast broadband for speeds higher than 100 Mbps.

50. Next Generation Access (NGA) typically refers to access speeds of at least 30 Mbps, provided by fiber or cable TV lines.

networks of high quality, *conspicuous* investment is needed; moreover because of fast-growing demand and rapidly evolving technology, *continuous* investment must be ensured.

The investment needed to update, build and maintain digital infrastructure is not only relevant to secure broadband of adequate *speed*. Investment is necessary to secure other aspects of broadband quality as well. Continuous investment is in fact needed to improve on the *latency*⁵¹, *security* and *reliability* of the lines, as more and more critical applications – e.g. self-driving cars, security devices, traffic management devices – will rely on broadband connections.

Most likely, the next wave of growth will be triggered by the advent of the Internet of Things (IoT). Over the next three years only, more than 8.5 million connected machines, sensors, data collectors and other smart devices will be installed across Europe. According to a BCG study, the IoT could contribute about €330 billion to industry revenues by 2020 and the European Commission estimates that the developments of the digital economy are worth three million new jobs. However, to fully benefit from digital transition and unleash the potential of ICT solutions in Europe, deploying appropriate infrastructure is a necessary condition.

The ability of our economies to remain competitive globally, to grow and to promote job creation depends on how Europe will manage its digital transformation. Besides providing a short-term boost to the economy, investments in NGA infrastructure creates the groundwork for long-term improved growth and productivity gains. In fact, digital infrastructure impacts far beyond the digital economy; it promotes growth in virtually all industries. Over recent years, about one third of economic growth is due to investment in ICT, which has proven to have a counter-cyclical effect and a long term impact on growth. (Wieck and Vidal, 2011). The European Commission, the EIB, and the OECD confirm that over the past decade, broadband networks have contributed to as much as 20% of total

51. Latency, usually expressed in milliseconds, denotes the amount of time it takes information to arrive from one networked device to another node. The lower the latency, the better: the majority of apps require a latency of less than 40 m. Bandwidth defines instead the amount of data that can be transferred during a second and is measured in bits per second. Together, latency and bandwidth define the speed and capacity of a network. When bandwidth is saturated, congestion occurs and latency increases; however, when bandwidth is not at peak, latency does not decrease automatically: time delay (i.e. latency) depends on the electrical characteristics of the circuit.

productivity growth in Europe.⁵² They also estimate that NGA infrastructure has the potential to add 0.5-1.5% to the GDP of the Union. (EIB, 2016)

In order to meet the EU Digital Agenda goals by 2020, it is estimated that about €200 billion in investment is needed, for an investment gap of roughly €95 billion⁵³. That equates to about one third of the total investment that the European Fund for Strategic Investments (EFSI) is supposed to mobilize over the next three years. It is unreasonable to expect EFSI alone to cover the entire investment gap in digital infrastructure, but there are indeed expectations that the European Commission and EIB flagship initiative for investment and growth can at least partly contribute to the development of world-class broadband networks in Europe.

Until December 2015, out of the 39 EFSI-backed projects approved or pending EC approval, only three relate to digital infrastructure development and ICT, and are concentrated in just two countries, France and Italy.

Direct public intervention by means of financial instruments is advisable, as investment in infrastructure has lengthy payback periods and very low financial returns in certain scarcely populated areas. Gruber, Hätönen and Koutroumpis (2014) point out that investment in digital infrastructure has relatively high economic returns and that EU subsidies to meet the Digital Agenda infrastructure objectives are to be considered as an efficient use of public funds. They analyse the returns from broadband infrastructure for the 2005–2011 period and find that the cumulative economic gains from universal high-speed broadband deployment are 32% above the total EU investment cost; in other words, for the European Union as a whole, the overall benefits outweigh the costs by 32%.

However, it is not only through direct financing that EU and national institutions can support investment in digital infrastructure. BCG (2015), Briglauer, Cambini and Grajek (2015) and CERRE (2016), among others, confirm that achieving the goals of the EU's Digital Agenda is not a matter of available technology, nor of scarcity of potential private investment; it is rather a funding

52. See EIB (2016).

53. See BCG (2015) and Section 2.3.

issue due to outdated regulation and regulatory uncertainty which curb investment in NGA networks.

In what follows, we first identify some of the most relevant trends affecting digital infrastructure in Section 2.2. and then we give an account of the estimations of investment need and gaps in Section 2.3. In Section 2.4. we review EU funding instruments for the deployment of digital infrastructure, in order to understand what might be the added value of the Juncker Plan, which we address in Section 2.5.

2.2. Digital Infrastructure: where do we stand?

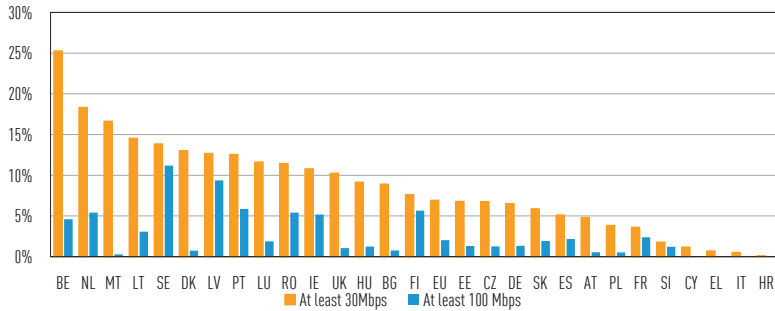
In this section we provide a brief overview of key issues about digital infrastructure in Europe. The first evidence is positive and shows a Europe that has been expanding its broadband coverage and has met the first of the three Digital Agenda targets on broadband: full coverage of basic broadband. European countries have made significant progress in network infrastructure over recent years and basic broadband coverage, since 2014, reaches practically every household in Europe. In fact, if we consider all available technologies, i.e. fixed, wireless, mobile and satellite connection, broadband coverage in Europe is no longer an issue. Broadband connection of at least basic quality reaches about 99.9% of European households. There are other aspects, however, that are less encouraging and point out the need to speed up the development of ‘future proof’ infrastructure. The following are some brief facts that impact investment levels in digital infrastructure.

The actual take-up of broadband remains rather limited in Europe, particularly for fast and ultra-fast connections.

Fixed Broadband Penetration for the whole of Europe is 30.9%, more or less in line with that of Japan and the U.S. but below that of Canada (32.8%), Korea (37.7%), Norway (38.2%) and Switzerland (47.2%). What remains especially low is the broadband penetration rate for high speed connections. The Communication Committee reports that the share of EU households with subscription to broadband of at least 30 Mbps is still below 10%, with only 7 subscribed lines per 100 inhabitants are at least *fast*. Furthermore, out of these,

just two lines per 100 inhabitants have an advertised maximum download speed of 100 Mbps or higher. In other words, a mere 2% of European households enjoy *ultra fast* broadband⁵⁴.

FIGURE 8 ▶ Fast and Ultra-Fast Broadband Penetration, 2014



Source: European Commission.

Note: Penetration is defined as subscriptions as a percentage of population.

If we look at penetration rates by country for basic broadband, we can observe that take-up ranges from around 20% in Romania and Bulgaria to the over 40% in Denmark and the Netherlands⁵⁵. More serious is instead the scene for fast and ultra fast subscriptions, which is depicted in Figure 8. With the unique exception of Belgium, where one fourth of the population enjoys a connection of at least 30 Mbps, the penetration rate of fast broadband is below 20% for all European countries and it is below 5% in Poland, France, Slovenia, Cyprus, Greece, Italy and Croatia. Likewise, for ultra-fast subscriptions, the take-up of fast broadband subscriptions in Sweden and to a lesser extent Latvia, stand out, but in all the remaining EU countries ultra-fast broadband penetration is lower than 6%, and below 1% in Malta, Denmark, Bulgaria, Austria, Poland, Cyprus, and Italy⁵⁶.

⁵⁴. See Figure A in the Appendix.

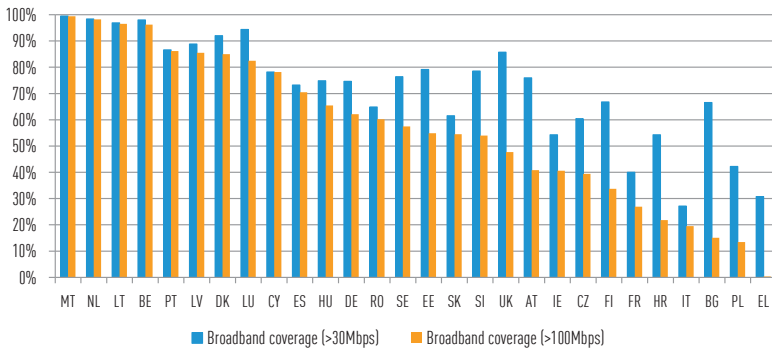
⁵⁵. See Figure B in the Appendix.

⁵⁶. In addition, Cyprus, Greece and Croatia have virtually no subscriptions for connections at 100 Mbps.

There is a divide in terms of digital infrastructure deployment *between* member states, and even a more worrisome divide *within* member states, between urban and rural areas.

As reported by the European Parliamentary Research Service⁵⁷, there are wide differences in the availability of broadband in the different regions of Europe. A first aspect of the divide relates to cross-country differences in broadband coverage and penetration. As shown in Figure 9, a divide already exists for fast-broadband, but it gets even sharper for ultra-fast connections. In Malta, the Netherlands, Lithuania and Belgium over 90% of the territory is covered with ultra-fast networks; conversely in France, Croatia, Italy Bulgaria, Portugal and Greece ultra-fast coverage is below 30%⁵⁸.

FIGURE 9 ▶ Fast and Ultra-fast broadband coverage in EU member states, 2014



Source: European Commission.

Secondly, there is a within country divide between rural and urban areas. Where population density is low and incentives for private investments are limited, such as in remote and rural areas, the availability and quality of broadband infrastructure are substantially lower than in urban areas. (EPRS, 2015)

57. See EPRS (2015).

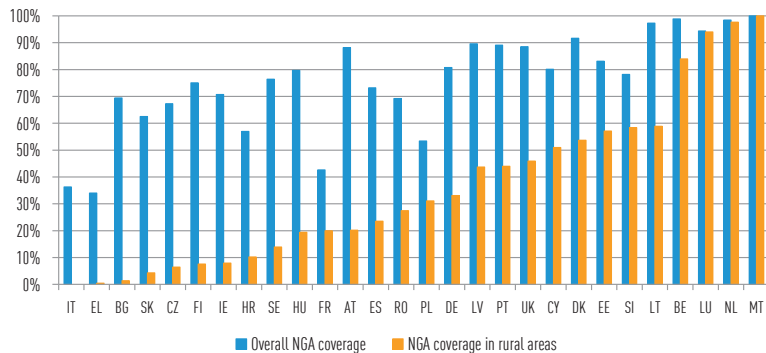
58. Figure C in the Appendix gives an account of the differences in share of fixed fast broadband penetration across Europe.

Overall in Europe, NGA technology reaches 68.1% of European households, while if we restricts our attention to rural households, only one out of four is covered⁵⁹. Figure 10 highlights how this problem, relevant for the vast majority of EU member states, is acute not only in Eastern and Mediterranean countries, but also in Austria, Ireland, Sweden, Finland and France.

Both divides pose implications for society in terms of the fair distribution of the benefits that the digital transformation can yield. The lack of infrastructure on a given territory limits the development of economically-viable industry and services and inhibits access to knowledge and information, de facto curbing the possibility of attracting investment, creating new jobs, and promoting social inclusion and skills creation. Thus, as the digital divide in terms of infrastructure can be an additional source of socio-economic divergence in Europe, it is necessary to secure flows of investment in disadvantaged areas.

The Broadband Commission (2014) reports that the cost per home connected to the fiber network ranges from €150 to €540 in urban areas, whereas it amounts to € 2700 in rural areas. This shows that the main obstacle to the deployment of ICT networks in remote and rural areas is the high cost of infrastructure; public intervention in terms of financing therefore becomes particularly valuable in low-density areas.

FIGURE 10 ► NGA Coverage in rural areas, 2014



Source: European Commission.

Note: NGA coverage includes VDSL, FTTP, DOCSIS 3.0.

59. For the year 2014, the NGA coverage for rural household is 25.1%.

Another important issue relates to the fast-rising and rapidly evolving demand for digital networks:

The demand for connectivity has risen and will rise even faster in the near future.

There are at least three crucial factors which will drive up the need for high-performance digital infrastructure in the near future: 1) the advent of the IoT will see an increase of connected devices and apps (about 8.5 billion connected devices by 2019); 2) an increase in the number of users (about 100 million new users by 2019), and 3) the changing nature of usage, with video traffic and Cloud-based services which will become more and more prominent. Broadband infrastructure needs to keep pace with these growing demands for broadband internet access.

The impact of the IoT will be massive and will affect multiple industries. Our homes, for instance, will become increasingly smart, with lighting controls, connected appliances and smart meters. Retail, logistics, industry and transports will change as well, with the progressive introduction of connected cars, traffic and passenger management tools, smart parking, car sharing, connected warehouses, smart vending machines, fully automated manufacturing, etc.

These three trends will affect ICT industry globally, and will have a great impact on the EU-wide economy. It is estimated that, because of rising consumer demand, data consumption in Europe will triple in five years. In fact, mobile data traffic grew considerably and is expected to keep growing. Cisco VNI⁶⁰ reports that in Central and Eastern Europe mobile data traffic grew 91% in 2014, compared to 'only' 45% in Western Europe. Table 8 reports estimations of the rise in internet traffic which is expected over the 2014-2019 period.

Internet traffic and the number of connected devices are expected to grow at a particularly fast pace in Central and Eastern Europe, where the estimated compound annual growth rate will be over 70% for mobile data. Mobile data traffic in the region is expected to be 14 times higher in 2019 than it was in

⁶⁰. See Cisco (2015).

2014. To give an idea of how much data will pass along digital infrastructure in 2019, the reader can figure that the gigabyte equivalent of all movies ever made will cross IP networks in Western Europe every 14 minutes, and every 21 minutes in Central and Eastern Europe⁶¹.

TABLE 9 ➤ **Rising Demand**

		INTERNET TRAFFIC PER MONTH	INTERNET TRAFFIC PER CAPITA	MOBILE DATA TRAFFIC	CONNECTED DEVICES
Eastern and Central Europe	2014	3.5 Exabytes	7 gigabytes	242 Petabytes	1.2 billion
	2019	15.8 Exabytes	32 gigabytes	3.5 Exabytes	2.1 billion
Western Europe	2014	9.6 Exabytes	23 gigabytes	341 Petabytes	1.9 billion
	2019	24.7 Exabytes	58 gigabytes	2.4 Exabytes	3.5 billion
Worldwide	2014	59.8 Exabytes	8 gigabytes	2.5 Exabytes	14.2 billion
	2019	168.0 Exabytes	22 gigabytes	24.3 Exabytes	24.4 billion

Source: CISCO VNI, 2015.

It goes without saying that to sustain this fast-growing demand, infrastructure must develop to accommodate new demand for speed. Table A, in the Appendix, gives an account of the expected development in *speed*. The greatest jump in speed is expected for mobile connections: the average smartphone connection speed in Central and Eastern Europe will basically double and pass from 7,058 kbps in 2014 to over 14,000 kbps in 2019, but will remain lower than that of Western Europe (~17,200 kbps) and North America (~19,900 kbps). Over the next five years, however, Central and Eastern Europe is expected to fully catch up with Western Europe in terms of average fixed broadband speed, which will increase more in Central and Eastern Europe (+27% to 22.2 Mbps in 2019) than in Western Europe (+13% to 21.8 Mbps in 2019)⁶².

61. Estimations by Cisco VNI.

62. CISCO VNI, 2015 Data, see Table A in the Appendix.

Revenues of telecom operators in Europe have decreased and that affects their investment decisions.

One of the most frequent observations from the side of the industry is that the inability of telecom operators to make fair returns curbs the possibility of deploying investment in new infrastructure. In fact, since 2010, mobile and fixed voice revenues have decreased by over 20% in Europe. The policy choice at the European level was to put a ceiling on roaming and other charges, and it is not difficult to establish a link between decreasing revenues and decreasing investment. The ‘Digital Agenda Scoreboard 2015 - Connectivity’ report confirms that between 2010 and 2014 the revenues of the telecommunications sector went down by 6.6%, even in a context in which mobile data grew by 36%. This result is even more striking if we compare with the US industry revenues which went up, over the same period, by 20,9%⁶³.

Thanks to a rise of approximately 18.5% in fixed broadband subscriptions, the revenues from fixed internet access increased by 7.5% from 2010 to 2014, even though the average revenue per user on internet access went down by 9%. The relation between low revenues and sub-optimal investment in infrastructure must be acknowledged.

Overall, low industry revenues and a non-favourable regulatory environment have slowed down the development of new technologies in Europe.

Despite recent progress, Europe still lags behind other industrialized economies in the deployment and adoption of NGA networks.

Even if it is true that a few EU countries enjoy first-rate digital networks (e.g. NGA coverage and adoption is higher in Sweden than in the U.S.) the Union on average remains behind South Korea, Japan and the U.S. in terms of coverage and penetration of digital technologies, such as LTE and fiber-to-the-home (FTTH) or fiber-to-the-building (FTTB). Both BCG (2015) and Yoo (2014) show how the U.S. beats the EU in many broadband metrics and that the divide is largely due to the two different regulatory approaches: the European model of

⁶³. Revenues of EU carriers declined from approximately € 246 billion in 2010 to € 230 billion in 2014; in the U.S. industry revenues grew from € 220 billion in 2010 to €266 billion in 2014.

service-based competition on the one hand, and the U.S. model of facility-based competition on the other⁶⁴.

Briglauer, Cambini and Grajek (2015) explain that the current regulatory framework for telecommunications in Europe was designed for copper-based technology and proved to be a good tool for enhancing competition in the ICT sector by facilitating entry into a market where infrastructure was already present. Now, the same body of regulations cannot provide the industry with the right incentives to invest in modern infrastructure and fibre-optic technologies.

According to GSMA (2013) the pivotal reason behind divergence between the EU and the U.S. in terms of LTE deployment is spectrum allocation. In fact, since 2008, U.S. carriers have been relying on the 700 Mhz spectrum made available through an auction in the aftermath of the digital TV transition⁶⁵. By contrast, EU carriers cannot make use of some of the lower spectrum bands as member states have lagged behind in re-allocating analogue television spectrum and a European common framework is still lacking. A lower spectrum band is apparently the most favourable for LTE deployment, but it is also true that U.S carriers have made consistent investment in LTE infrastructure in spectrum bands comparable to those which are currently available in many European countries⁶⁶. The GSMA report claims in bold that *“ultimately, the deployment of new telecommunications infrastructures depends on investment, and the data show mobile wireless investment in the U.S. has outpaced the EU”*⁶⁷.

In more general terms, one of the conclusions that we can draw is that:

The regulatory framework in Europe is largely responsible for under-investment in NGA networks.

In addition to the service-based competition model, which penalizes investments in new technology, and the inconsistent approach to spectrum

64. See Bacache et al., “Dynamic Entry and Investment in New Infrastructures: Empirical Evidence from the Fixed Broadband Industry”, Review of Industrial Organization, vol. 44, n°2, 2014 for a review of the two competition models: service-based and facility-based. In the appendix, Figures D and E show the market shares of different technologies in Europe.

65. As reported by the Federal Communications Commission, the auction concluded with 1090 winning bids and totalling over \$19.5 billion.

66. T-Mobile and Sprint deployed their LTE networks in the 1910-1915 MHz and 1990-1995 MHz bands.

67. GSMA (2013), page 19.

assignment, investment in EU is restrained by regulatory fragmentation and uncertainty.

The absence of a genuine Single Market for Telecoms means that carriers have to deal with highly fragmented national markets. Fragmentation extends to a variety of different aspects: authorizations to operate and licensing, access to key resources, universal service provisions, rules on consumers' protection, etc.

Under the current regulatory framework, which lacks a pan-European vision, operators cannot benefit from economies of scale, and growth and investment opportunities are lost. The exit of some major telecom companies from certain national markets⁶⁸ indicates how this fragmented market structure impedes the development of pan-European networks.

Furthermore, regulatory uncertainty over future technologies also hinders private investment in broadband infrastructure. For instance, the U.S. has adopted a strong commitment and a clear position on net neutrality; on the contrary, European legislation is far less clear and leaves room to different interpretations and implementations at national levels.

We can summarise the regulatory environment in Europe as follows:

The lack of a Single Market for Telecoms, the absence of a common framework for spectrum allocation, the service-based competition approach and general regulatory uncertainty are the main regulatory obstacles to mobilizing private investment for broadband infrastructure.

2.3. Investment Needs and Gaps

It becomes clear that the divergence in broadband capacity and penetration between the U.S. and the EU and the speed of adoption of NGA technologies are related to the investment divide between the two economies. As Figure 11

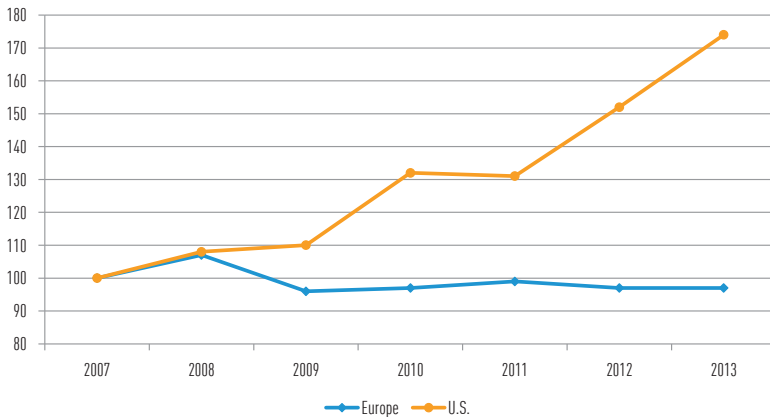
⁶⁸. Vodafone left the French and Polish markets, Orange left Austria and Switzerland, and Telefonica went out of the UK market for fixed lines.

shows, according to estimations by Goldman Sachs, the level of capital expenditure (CAPEX) in wireless infrastructure in the U.S. has grown by over 70% in the 2007-2013 period, while it declined in the EU.

This divide in investment levels is even more worrisome if consider that, historically, the EU starts from lower investment levels vis-a-vis the U.S.; in 2007, in fact, U.S. carriers invested \$129 per access path, whilst the EU average was only \$78⁶⁹.

To catch up with leading regions of the world and remain competitive, Europe must close this investment gap. The targets set out in the EU Digital Agenda, i.e. full *coverage* of 30 Mbps broadband and at least 50% *penetration* rate for connections above 100 Mbps, leave ample room for different methodologies of implementation. In the face of different technology scenarios, it is quite cumbersome to estimate the investment needed to reach those targets and equip European member states with a world-class digital infrastructure.

FIGURE 11 ▶ Investment Trends: Wireless CAPEX in Europe and the U.S.



Source: Goldman Sachs Global Investment Research.

Note: (2007 = 100).

⁶⁹ The annual telecommunications investment per communications access path was actually higher in Denmark and Slovenia than in the U.S.; Hungary, Czech Republic, Estonia, and Finland registered the lowest European investment per access path in 2007.

Table 10 provides an account of several analyses⁷⁰ carried out in recent years to assess the investment need and gap in Europe. From the various analyses we reviewed, four points emerge:

- Investment requirements crucially depend on which technology is predominantly adopted and deployed to achieve 100% coverage for broadband of at least 30 Mbps. A cost minimisation approach, implying an upgrade of current infrastructure rather than the roll-out of ‘future-proof’ networks, may well serve to tighten investment needs and budgetary means but it may endanger the fulfilment of target 2 and the possibility of promptly meeting the challenges of tomorrow. In other words, there is a trade-off between minimising investment costs and connectivity performance in the medium term. At the moment of taking the investment decision, it appears advisable to treat the two targets as a single objective and to consider also the horizon after 2020.
- Even if Table 2 seems to suggest the opposite, the studies reviewed indicate that target 2 is more costly and more difficult to achieve. If it appears that the investment needed to meet target 2 is less sizable, it is just because, to fulfil this target, simulations build on the infrastructure deployed to achieve target 1. It is substantially a matter of how you split the investment cost between the two objectives.

⁷⁰ An analysis by Hätönen (2011) estimated that the cost to reach target 1 on coverage ranges between € 55 and € 209 billion depending on different quality requirements scenarios. As the investment to fulfilling target 2 on penetration builds on the infrastructure deployed to achieve target 1, the cost to reach a 50% take-up for 100 Mbps connections, could be in the range of € 5 to 25 billion. That gives a combined investment need of € 60 to € 234 billion to achieve the Digital Agenda targets. To have an idea of the size of the challenge, it is worth recalling that the same study run in 2011 identified that the investment need to achieve basic broadband for all, i.e. the achieved target of 100% coverage of basic broadband, was only € 1 to 7 billion. A thorough forecast realised by Analysys Mason and Tech4i2 for DG Connect assesses the investment costs and the economic benefits of deploying NGA infrastructure in EU-27. The compute the total investment cost per technology to meet 100% coverage for fast broadband and most importantly they calculate a viable scenario with major intervention from the Commission and a quasi-achievement of the Digital Agenda targets that identifies the total technology in the range € 40 to 221 billion, depending on the technology adopted. On the basis of the Analysys Mason and Tech4i2 study, the European Commission gap analysis on the funding needed to meet the two broadband targets of the Digital Agenda, by means of Fibre-to-the-Cabinet (FTTC) technology is € 126,4 (min), with target 2 requiring the most conspicuous investment, i.e. € 92.4 billion. The Boston Consulting Group estimates that to meet the goals of the EU Digital Agenda, depending on the investment needs for different scenarios, the required investment ranges from € 160 to € 275 billion. Operators have already planned certain investment in infrastructure, which is estimated around €85 billion. To that we should add what has been made available so far by European institutions, which is in the order of €22.5 billion, to be allocated via EU funds by 2020. That results in an investment gap of approximately €55 to €155 billion, without including spectrum costs. EIB (2016) stresses that current infrastructure is unfit to provide the foundations for the competitiveness of European economies. It is estimated that the annual investment shortfall to reach the EU’s Digital Agenda standards in broadband, amounts to € 75 billion a year. For broadband infrastructure alone, the EIB (2016) refers to an investment gap in the range of € 30bn a year until 2020, to catch up with the leading regions in the world and taking the EU’s Digital Agenda targets as the benchmark.

- The estimated investment need is noticeable and likely to be in the order of € 200 billion. More recent estimates give higher results, which indicate that there was an underestimation of the costs for the deployment of NGA infrastructure in early studies. To have a rough idea about the investment gap to fill we can deduct the public (~€ 22 billion, mostly ESIF and NPBs) and private (~ € 85 billion) investment already planned to digital infrastructure to find out that the investment gap will be in the order of € 95 billion.
- A big share of this investment, somewhere between 65% and 80%, should be made available for project that lack financial viability, i.e. for the deployment of fixed-line, broadband and mobile networks in rural and suburban areas. (EIB, 2016)

TABLE 10 ► Investment Need and Gap to meet Broadband Targets by 2020

STUDY	INVESTMENT NEED (in billion)	ALREADY PLANNED (in billion)	INVESTMENT GAP (in billion)	OBJECTIVE
Hätönen (2011)	€ 55 - 209			Target 1
	€ 5 - 25			
	€ 60 - 234			Target 2
Analysys Mason and Tech4i2 (2013)	€ 45 (FTTC) - 250 (FTTP)			Targets 1 & 2
	€ 40 - 221			Target 1
European Commission (2015), DSM Analysis and Evidence	€34 (lower bound)			~Targets 1 & 2
	€92,4 (lower bound)			Target 1
	€ 126,4 (lower bound)	€ 21 (public inv.)	€ 105,4 (lower bound)	Target 2
BCG (2015)	€ 160 - 275	€ 85 (private inv.) € 22.5 (public inv.)	€ 52.5 - 167.5	Targets 1 & 2
EIB (2016)	(€ 75 billion/y for 2016-2020) € 375	(€ 45 billion/y for 2016-2020) € 225	(€ 30 billion/y for 2016-2020) € 150	To close the gap with leading global regions ~ Targets 1 & 2

Source: David Rinaldi's compiling.

To give an idea about how large this gap is, it corresponds to a bit less than one third of the total investment that the Juncker Plan intends to mobilise. As mentioned in the previous sections of this study, the absence of sectorial earmarking in the EFSI makes it impossible to anticipate the share of the guarantee allocated to broadband deployment. If, however, we look at the € 447 billion package presented by the Task Force, broadband projects amounted to € 26 billion, one seventeenth of the package.

2.4. Existing EU funding schemes for digital infrastructure

The standard way for an operator to fund its infrastructure is via revenue-based financing but as we have highlighted, European operators carry out their activities in a situation where revenues are low and particularly difficult to predict. Moreover, the performance of financial markets and the banking sectors has been far from rosy over recent years so that access to investment funds that provide equity and debt financing has become more prohibitive. In fact, the number one recommendation of the Broadband Commission Working Group on Financing and Investment⁷¹ is to enhance access to low-cost private sector financing. In this context the Capital Markets Union (CMU) initiative can possibly bring benefits to carriers willing to invest in Europe. The establishment of a CMU could make it easier to reach investment funds and private equity investors across Europe.

However, market solutions alone may not provide the optimal investment level. A direct public intervention that chips in to roll out digital infrastructure is well-founded when the financial return on investment differs from its socio-economic return, a condition that is commonly met in remote and scarcely populated areas, where the unit costs of network deployment are particularly high⁷².

71. See Broadband Commission, *Creating a favourable environment for attracting finance and investment in broadband infrastructure*, ITU and UNESCO, 2014.

72. If we look at the theory, when financial returns are negative or very low, but socio-economic returns are high, direct public financing by means of grants is justified. If instead the project is "bankable", i.e. has acceptable financial returns, but is exposed to regulatory, technological and operational risks, a market-base instrument is more appropriate.

Both the European Commission and the EIB have supported broadband deployment through direct subsidization and co-development; national promotional banks as well can provide additional financing to support digital infrastructure projects by means of soft or commercial-terms bank loans. In what follows, in order to determine the potential added value of the Juncker Plan for digital infrastructure, we provide an account of pre-existing and alternative European financing tools to the EFSI.

2.4.1. ESIF for Digital Infrastructure

The EU has put forward a number of support schemes to foster digital infrastructure rollout. European funds to finance digital infrastructure projects are available through the European Structural and Investment Funds (ESIF), specifically via the European Regional Development Fund (ERDF) and the European Agricultural Fund for Rural Development (EAFRD). For the programming period 2014-2020, the ESIF will allocate € 14,223 million to ICT⁷³. The total ICT budget has remained more or less in line with the previous programming period, but the budget devoted to high speed digital infrastructure networks is expected to increase sharply: from € 2,7 billion in the 2007-2013 period to € 6.4 billion in the current programming period⁷⁴: € 5 billion via ERDF and € 1.5 billion via EAFRD. However, as the share of ESIF-ICT budget that is allocated to broadband roll-out exclusively is not certain, we report in Table 10 the data for the whole of ESIF-ICT financing from 2014 to 2020. The ERDF programme is by far the main funding scheme for ITC, with over € 13 billion to be distributed by 2020, whilst the EAFRD contribute less than one billion euro. The co-financing rates of the two funds also appear to be rather different with the EAFRD able to mobilise higher shares of co-financing. The two funds together will mobilize about € 6.49 billion in national funds so that the total investment in ICT technologies by European and national institutions via ESIF amounts to € 20.71 billion.

73. The objective of ERDF and EAFRD financing for ICT is to “enhance access to and use and quality of information and communication technologies”.

74. As Cohesion Data do not differentiate between foreseen allocations to ICT and to broadband these are just estimations. The European Commission specifies broadly that “around 70% of this is expected to support digital growth in SMEs, e-government, e-inclusion, e-culture, e-health, e-justice and the development and roll-out of ICT-based innovations.” See European Commission, *A Digital Single Market Strategy for Europe - Analysis and Evidence*, SWD(2015) 100 final, page 86.

TABLE 11 ► ESIF Financing on ITC, 2014-2020

	MILLIONS	SHARE OF ICT TOTAL	CO-FINANCING RATE	
			WEIGHTED AVERAGE	SIMPLE AVERAGE
ERDF	13,308	93.57%	74.52%	70.11%
EAFRD	915	6.43%	57.12%	52.77%
TOTAL	14,223	100.00%	73.40%	68.66%

Source: David Rinaldi, based on European Commission, Cohesion Data.

Note: The unique interregional project sponsored with € 1.8 million is not included in the data presented here.

These funds are allocated with specific objectives⁷⁵; ERDF-backed projects are expected to benefit as many as 18.8 million people in rural areas, thanks to improved access (at least 30 Mbps) to ICT services and infrastructure, with greater results in terms of households reached in Spain, Greece, Italy, France, Hungary and Poland. The limited EAFRD funds aim at expanding the roll-out of broadband in rural areas for the benefit of approximately 14% of Europe’s rural citizens⁷⁶.

As highlighted in Table B in the appendix, which shows ESIF planned financing in ICT by country, the main beneficiaries of ERDF-ICT allocations are Poland, Spain, Italy, Czech Republic, France, Greece and Slovakia. For EAFRD, the main recipients are Italy, Germany, Sweden, France and Greece.

To check whether these allocations match the actual shortage of ICT networks, we plot ESIF planned financing against an index of connectivity need, defined as the complementary to 20 of the Digital Economy and Society Index (DESI) Connectivity dimension⁷⁷, so that it defines the gap from the ideally connected country. In Figure 12 we can observe that even though the sign of the correlation is positive, the variability is significant. For instance, Bulgaria, Romania, Poland and Slovakia have a comparable Connectivity standing according to the

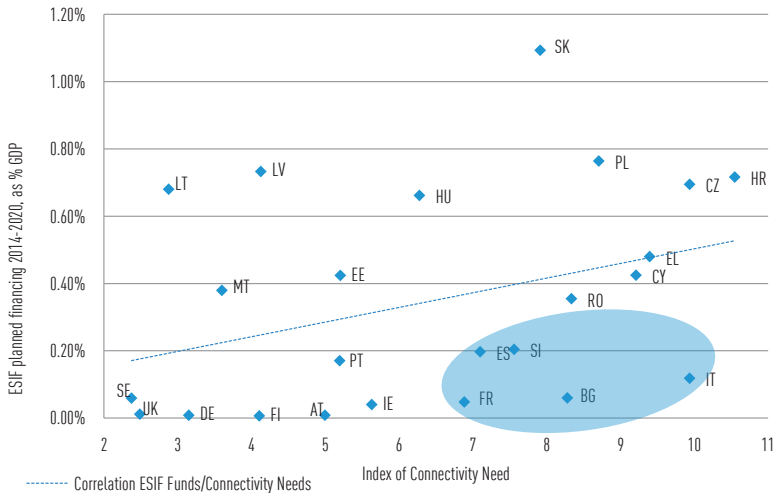
⁷⁵. See Table B in the Appendix.

⁷⁶. The percentage of the rural population expected to benefit from EAFRD-ICT projects is higher in Italy, 37.7%, Germany, 22.4%, Austria, 12.4%, Finland, 10.2%, and France 4%.

⁷⁷. The DESI Connectivity dimension runs from 0 to 20, with higher values for more connected countries. The index of connectivity need, defined as (20 - DESI Connectivity dimension) increases as connectivity decreases. DESI Connectivity by member state is reported in Figure F, in the appendix.

European Commission DESI⁷⁸, but whilst Slovakia receives about 1.1% of ESIF funds as a share of its GDP, Bulgaria receives only 0.06%, with Romania and Poland somewhere in the middle with 0.35% and 0.76% respectively. Figure 7 also highlights that to catch up with more connected countries, France, Bulgaria, Italy, Spain and Slovenia *in primis* are likely to need more funds than those allocated via ESIF.

FIGURE 12 ► Correlation ESIF Allocations and Connectivity Need



Source: David Rinaldi, based on European Commission, Cohesion Data and European Commission, Digital Economy and Society Index (DESI).

Note: ESIF planned financing refers to ERDF and EAFRD planned financing for the 2014-2020 period, as a percentage of GDP (Eurostat, 2014). The Index of Connectivity Need is defined as the complementary to 20 of the DESI Connectivity Dimension, so that it defines the gap from the ideally connected country.

2.4.2. Connecting Europe Facility for trans-national infrastructure

Of particular relevance for digital infrastructure is the Connecting Europe Facility (CEF), which has a budget that is specifically dedicated to attaining

⁷⁸ PL 11,29; RO 11,66; BG 11,71 and SK 12,08 which correspond respectively to 8,70; 8,33; 8,28; 7,91 in the index of Connectivity Need reported in Figure 12.

the goals of the Digital Agenda for Europe. The peculiarity of the CEF is in its focus on trans-European networks and the European Commission has recently released a series of guidelines on the objectives and priorities for broadband networks and digital service infrastructures in Europe.

The EU's CEF, in its budget line for telecommunications for the 2014-2020 programming period, brings to the table € 1.14 billion for strategic investment on digital matters. However, the budget allocated to the deployment of broadband infrastructure is rather limited: € 170 million, i.e. less than the 15% of the CEF budget for ICT. The bigger share of the budget, € 970 million, is dedicated to the development of Digital Service Infrastructures (DSIs)⁷⁹. It was also decided that at least one third of the CEF sponsored projects for broadband infrastructure should be reserved for broadband speeds above 100Mbps. In other words, ultra-fast broadband infrastructure may receive only as much as 5% of the CEF telecommunications budget, which is somewhat at odds with the EU's goal of achieving 50% of households subscribing to internet connections above 100 Mbps by 2020.

Originally, the CEF was supposed to be endowed with a budget of € 9.2 billion, and had proportions: a bigger share for the roll-out of high-speed broadband networks (€ 7 billion) and a bit over € 2 billion for DSI⁸⁰. It was instead decided to redeploy € 3.3 billion from the CEF budget to the EU guarantee fund backing EFSI⁸¹. By scaling down the CEF budget to build up the Juncker Plan, the potential impact of CEF funds for transnational broadband roll-out has been substantially reduced. The € 7 billion of the original proposal were estimated to leverage as much as € 50 to € 100 billion in private and public investment, while the current € 170 million budget, according to an *optimistic* estimation, can leverage a mere € 1 billion in total investment for the seven-year programming period⁸². In light of the about € 200 billion investment need, this amount is rather negligible.

⁷⁹. About 85% of the CEF ICT budget is allocated to DSIs, which are networked cross-border services for citizens, businesses and public administrations that relate to eProcurement, eHealth, identification, business mobility and open data projects.

⁸⁰. See European Commission, *Fast and Ultra-Fast Internet Access*, Digital Agenda Scoreboard, 2012.

⁸¹. See European Council, "Investing in European projects: Council adopts EFSI regulation", Press release, 25.06.2015.

⁸². See EPRS, 2015.

In addition to the very low CEF financing, a further obstacle to transnational infrastructure projects is the absence of a truly pan-European approach to telecoms regulation. In other words, the shortage of cross-border infrastructure is a direct consequence of the regulatory fractionalisation. If the Telecom Single Market is to be achieved, as consolidation in the industry will take place more at the European than at the national level, investment in trans-national networks can become a more attractive investment and transnational broadband infrastructure may be carried out by market forces. With the current regulatory framework however, there are no ways to boost transnational networks other than direct European complementary action.

2.4.3. EIB Activities prior to the Juncker Plan

Providing financing to telecoms operators is part of the EIB core business. Financing is generally channelled through corporate financing and to a limited extent with project financing. Carriers operating in the EU are the main recipient of EIB funding but over time Public-Private Partnerships have gained relevance and increased their share of funds. Overall, the EIB discouraged loans to the telecoms industry for € 3.02 billion in 2013 and a bit less in 2014: € 2.27 billion. If we look specifically at transmission and broadcasting networks, the EIB has instead increased its financing over recent years: € 0.8 billion in 2013 against the € 1.2 billion in 2014.⁸³ However, even if the financing allocated to transmission and broadcasting networks has increased, it still amounts to just 1.8% of the EIB budget. Conversely, the financing for mobile communications networks has slightly decreased⁸⁴ and in 2014 only € 0.6 billion were provided.

Coherently with its mandate of complementing private investment, the EIB has been particularly active in supporting broadband roll-out in rural areas. In 2015 for instance, just before the entry into force of the EFSI guarantee, the EIB has financed: i) a € 150 million framework loan in Germany to bring fibre-optic to rural areas of Lower Saxony, in partnership with NBank; ii) a € 150 million loan with telecom operator Elisa to upgrade and expand 4G/LTE networks in rural and remote areas of Finland and Estonia; iii) € 12 million to support the expansion of fibre optic networks in different Irish towns, iv) € 25 million

⁸³. See EIB, *Statistical Report 2014*.

⁸⁴. The share of total EIB budget allocated to mobile communications networks is 1.5% for the period 2010-2014 and 1% for 2014.

debt facility with Gigaclear plc for the roll out of ultra-fast fibre technologies within rural Britain, v) € 190 million for the deployment of 3G/UMTS and 4G/LTE technology in Poland, and vi) € 600 million to Deutsche Telekom AG for ultra-fast broadband (fibre and copper access technology).

This brief list suggests that it is not an easy mission for ESFI to provide additionality on top EIB standard operations and finance projects *“which could not have been carried out in the period during which the EU guarantee can be used, or not to the same extent, by the EIB, the EIF or under existing Union financial instruments without EFSI support”*.⁸⁵ In the next section, we will try to see whether EFSI can really play a role in promoting digital transition in Europe thanks to a push on investment in NGA technology.

2.5. How can the Juncker Plan be of help?

2.5.1. What’s in the EFSI for digital infrastructure?

As the paramount ambition of the Juncker Plan and EFSI is to mobilize private capital towards strategic investment, it is natural to expect a focus on digital infrastructure which, given its impact on growth and productivity, stands out as a strategic investment that can help enhance European competitiveness.

In fact, investment in digital infrastructure, in the framework of more general ICT investment, is one of the eligible sectors that can benefit from the EFSI guarantee as it is in line with the key policy objectives identified in the EFSI Regulation⁸⁶. Contributing to EFSI policy objectives is the first pillar of the ESFI Scoreboard⁸⁷ and a prerequisite to receiving the Investment Committee approval. The EFSI Scoreboard, which is structured in order to make sure that the EU Guarantee is directed to projects with high value added, gives also high scores to those projects which have a high economic rate of return, which is often the case for digital infrastructure.

⁸⁵ EFSI Regulation, Art 5.1.

⁸⁶ Art. 9 (e) of the EFSI Regulation identifies the development and deployment of information and communication technologies as one of the general objectives of the EFSI guarantee. The article makes explicit reference to: i) digital content, ii) digital services, iii) telecommunications infrastructures of high speed, iv) broadband networks.

⁸⁷ See Box 7, in Section 1.2.5. of this Report.

Furthermore, the EFSI scoreboard has additional complementary indicators which inform the Investment Committee on the need to prioritize projects. As the Scoreboard values projects where there is 1) additionality, 2) co-financing with ESIF or other EU programmes or NPBs, 3) contributions to tackling economic disparities within the EU, and 4) multiplier effects, investment projects which aim at deploying high-speed broadband in uncovered areas, with the joint contributions from NPBs and CEF, ERDF or EAFRD, are highly likely to receive priority.

During the first months of activity however, just few projects on broadband roll-out have been presented and considered for EFSI support. As mentioned, out of the 42 projects so far approved by the EIB in the Infrastructure and Innovation Window, only three consist of digital infrastructure roll-out. A summary of the three current projects is presented in Table 10.

At this early stage of implementation, we identify one risk and two opportunities for EFSI operations in support of digital infrastructure.

TABLE 12 ► EFSI-backed project for Broadband Infrastructure

		PROMOTER	EIB APPROVED FINANCING (EFSI)	TOTAL EXPECTED INVESTMENT TRIGGERED	STATUS	SHARE OF TOTAL COST COVERED	LEVERAGE
Italy	High-Speed Broadband (at least 50 Mbps)	Telecom Italia	~ € 500 m	~ € 1,808 m	Signed	27.65%	× 10.85
France	High-Speed Broadband (fibre in rural areas)	Syndicat Mixte Nord-Pas-De-Calais Numérique	~ € 147 m	~ € 610 m	Approved	24.09%	× 12.45
France		Alsace Très Haut Débit (public entities)	Not Disclosed	Not Disclosed	Approved		
ICT – TOTAL	3 PROJECTS		~ € 647 M	~ € 2,418 M		26.75%	× 11.21
I&I W – Total	42 PROJECTS*		~ € 5,700 M	~ € 25,000 M		22.80%	× 13.15

Source: David Rinaldi's compiling.

- **Actual risk of lack of “geographical” additionality**

It is premature to derive conclusive judgments about the geographical concentration of EFSI financing and we should not extrapolate general truth from the first three projects alone, but few observations, which take into consideration the past behaviour of the bank as well, can already be made.

It is true that Italy and France were among the countries with low NGA coverage, relatively high rural divide and Connectivity below the EU average⁸⁸, so that an intervention by means of the EU guarantee is in line with the Digital Agenda targets and with the standard additionality objective⁸⁹ of the EIB. There is, however, circumstantial evidence that these projects would have been financed anyway via regular EIB operations, even if the EFSI had not been in place.

In fact, as reported in Tables C and D in the Appendix, which show EIB financing for digital infrastructure in Italy and France respectively from 2004 to 2015, the EIB has a track record of operations in support of ICT developments in these two countries. Telecom Italia in particular, the beneficiary of the first EFSI operation in Italy, has been a major beneficiary of EIB financing over the 10 years prior to the implementation of the EFSI. At a rate of almost one project a year financed by the EIB⁹⁰, Telecom Italia has certainly developed familiarity with the EIB *modus operandi* and has been able to employ its experience to secure EFSI support as well.

Likewise, the French projects presented by platforms of public entities, namely the Syndicat Mixte Nord-Pas-De-Calais Numérique and Alsace Très Haut Débit, are not so different in spirit from the projects already financed by the EIB – € 550 million for the roll out of publicly owned ultra-fast broadband networks and the first French Project Bond in 2014, both in partnership with the Caisse des Dépôts Group (CDD); and € 36 million in 2013 to finance the first phase of the roll-out of high-speed broadband networks in the framework of a project

88. The reader can refer to Figure 10 for NGA coverage and rural area divide and to Figure F in the appendix for the Connectivity DESI index.

89. As investment projects address market failures and sub-optimal investment situations, see Section 1.2.2. and Box 5 in this Report.

90. Telecom Italia had eight projects financed in Italy and one in France in the period 2005 to 2015. See Tables C and D in the Appendix.

presented by the Syndicat des Énergies et de l'Aménagement Numérique de la Haute-Savoie (SYANE) and, also supported by the CDD with € 36 million.

In other words, preliminary evidence suggests that EFSI-backed projects in digital infrastructure are additional in the sense that, like any other EIB operation, they intervene in areas and sectors where the level of investment is actually sub-optimal, so that the risk of crowding out private capital is prevented. However, these first three projects do not meet the additionality clause *stricto sensu* as, so far, the EU guarantee was employed by the EIB not differently than other normal operations⁹¹, i.e. for digital infrastructure EFSI is not additional to EIB financing. Nevertheless, it is still possible that the additionality of EFSI financing can be found in the number of broadband projects that it will be possible to finance and in the type of technology that will be deployed, as we will explain in the next paragraphs.

The risk that we want to point out is instead linked to the geographical concentration of EFSI financing; there is in fact a concrete risk that the EU guarantee ends up benefiting disproportionately those countries which have experience in running EIB projects, which would leave certain countries behind. As we have highlighted, Telecom Italia and France regions, in partnership with CDD, have a track record of projects in digital infrastructure financed by the EIB, which is instead much less active in other member states.

From 2010 to 2015, in five European countries (Bulgaria, Croatia, Latvia, Lithuania, and Malta) there was no single EIB financed project in ICT. Two countries had a single project financed (Slovakia and Romania) while three other countries enjoyed EIB support for ICT investment only as co-financing of the National Strategic Reference Framework (Cyprus, Greece, and Slovenia).

The risk that we identify is therefore that of mobilizing capital investment only in those regions that are already familiar with EIB financial support for broadband networks. The challenge remains on how to implement EFSI also in those member states where private sector and local administrations so far haven't employed EIB financial instruments to promote infrastructure updates

⁹¹. The authors have no access to the risk profile of EFSI-backed project in ICT, so that these preliminary conclusions are based on a more general comparison between broadband projects financed before and after the introduction of the EFSI guarantee.

or deployment. As mentioned in section 1.3. of this Report, bolstering the European Investment Advisory Hub and establishing a network of EIAH country offices can facilitate the creation and development of EFSI-eligible projects in countries with a deficit in technical capacity. Also, in line with section 1.3. of this Report, setting up national and EU-wide project pipelines for digital infrastructure development, may encourage carriers and private investors thanks to the guarantee of engagement from the public sector. In addition, we will mention below how Investment Platforms for projects in rural areas may also help prevent the risk of a lack of geographical additionality.

- **Leveraging on private investment**

As stressed in the background documents of the Digital Single Market Strategy for Europe⁹², the majority of ESIF financing will be allotted in form of grants and not as financial instruments. This entails that the leverage effect on both public and private co-financing will be limited. It is estimated that if we sum up national, regional and private co-funding, the leverage effect of ESI Funds would be bound to € 9-10 billion, “falling far short from the needs to reach the EU targets for broadband coverage and take-up.”⁹³

It is exactly by employing market-based instruments rather than grants that the leverage effect increases and the investment gap can be possibly closed. The EFSI’s design, with the two layers of financial leverage and with a target share of 20% financing for EFSI-backed projects, constitutes the EFSI’s leading advantage vis-à-vis previous financing tools. With its higher leverage, EU financing through EFSI, in line with the Commission’s expectations on the Juncker Plan, can make it possible, with the same limited amount of funds, to finance more projects.

As shown in Table 13, ERDF and EAFRD grants have a leverage effect less than 2 as they are bound by the high co-financing rate, which are a core characteristics of cohesion funds. If we look instead at the provisional data from EFSI-backed projects for broadband deployment for which data is available (i.e. two projects only), we see that the leverage achieved is x11.21. There is therefore

⁹². European Commission, *A Digital Single Market Strategy for Europe -Analysis and Evidence*, SWD(2015) 100 final.

⁹³. *Ibid.*, page 86.

evidence that EFSI has the ability to mobilise larger investments in broadband network than other EU schemes. It is more complex to identify EFSI additionality with respect to standard EIB operations but also in this case there is preliminary evidence that, thanks to the EU guarantee, the leverage is slightly greater for EFSI projects than for comparable EIB projects, with similar technologies. Table C and D in the Appendix report the leverage of two EFSI projects and that of other previous EIB operations in Italy and France.

To give an idea about the value of the financial leverage provided by EFSI, we can observe that to close the entire estimated gap of € 95 billion, – under the assumption that the current average leverage remains constant – it would be sufficient to employ about € 8.5 billion in EFSI risk-bearing capacity, corresponding to € 25.5 billion in ESFI financing.

TABLE 13 ▶ Leveraging in Broadband Investment by different EU-funding scheme

	PLANNED INVESTMENT (€ Millions)	TOTAL EXPECTED INVESTMENT (€ Millions)	SHARE OF TOTAL COST OF FINANCED PROJECT	ESTIMATED LEVERAGE
ERDF	13,308	18,980	74.52%	× 1.42
EAFRD	915	1,732	57.12%	× 1.89
CEF	170	~1,000	17%	× 5.88
EFSI	~ € 647	~ € 2,418	26.75%	× 11.21

Source: David Rinaldi's calculations, based on European Commission's data.

- **Additionality in technology**

The approach of European institutions towards investment in digital infrastructure should be technology-neutral (technology-agnostic), as many different technologies advance rapidly and at the same time, the public sector can be mostly useful in setting targets for broadband quality, but leaving to the markets the choice of the technology to be implemented. However, it is also true that thanks to the involvement of European public financing and the EFSI guarantee in particular, it could be possible to mobilize more private capitals so that projects that would otherwise be too costly can finally be implemented.

In this respect, the additionality of EFSI is not to be regarded as the capacity to undertake new projects that bring fast broadband to European households, but to upgrade infrastructure projects to more costly – and better performing – technology, that would otherwise not be adopted rapidly. In other words, the EFSI guarantee has the potential to speed up the digital transition to the most modern infrastructure. If the roll-out of broadband networks constitutes a strategic and long-term investment, it is even more true that ‘future-proof’ NGA technologies, such as FTTP and FTTH for instance, are even more long-term and strategic as they can equip Europe for the challenges of tomorrow, thanks to (i) enhanced connectivity, (ii) symmetric speeds and (iii) a sustainable and non-temporary technological advancement. In the case of Germany, for instance, Heng and Laskawi (2014) report that investing in the rollout of broadband by means of copper-based infrastructure has an approximate cost of €20 billion; on the contrary, if fibre technology is deployed, the costs can raise up to about €90 billion, on top of routine maintenance. Heng and Laskawi (2014) as well as the *Increasing Investment in Germany Report*⁹⁴ (2015), highlight that given the high cost of certain infrastructure, particularly in rural areas, the investment cannot take place without the support of local, federal and European institutions. In this respect, the Juncker Plan offers a new market-oriented way in which public and private funds come together to secure future-proof technology.

2.5.2. Policy recommendations

- **Delivering on the third pillar**

As we have clarified in Section 3.2., the first barrier to private investment in NGA technologies is linked to the unfavourable, fractionalised and uncertain regulatory framework. In this context, delivering on the third pillar of the Juncker Plan (i.e., improving on the predictability and quality of regulation and removing non-financial barriers to investment) is a necessary condition to boosting private investment in digital infrastructure.

⁹⁴. See Fratzscher, Marcel et al., *Increasing Investment in Germany*, Report Prepared by the Expert Commission on Behalf of the Federal Minister for Economic Affairs and Energy, Sigmar Gabriel, 2015.

According to Briglauer, Cambini and Grajek (2015), if the current regulatory regime remains in place, continuing underinvestment in NGA infrastructure is to be expected; the consequence being a raising gap with respect to leading global regions and the non-achievement of the Digital Agenda targets.

The European Commission is very well aware of this⁹⁵ and has launched an ambitious agenda towards achieving a Digital Single Market (DSM). The DSM includes a wide range of actions in several fields; concerning investment in digital infrastructure, the most relevant dossiers are the Single Market for Telecoms, including the application of competition law, and the reform of radio spectrum allocations.

It is relatively uncontested and ascertained that the reform of radio spectrum policy is a pivotal aspect of digital networks regulation which alone could trigger private investment in new technology. In early February 2016, the Commission launched a proposal for the revision and harmonisation of spectrum allocation, which takes on board most of the recommendations identified in the Lamy report⁹⁶. By allocating the 700 MHz band (694-790 MHz) to mobile telecom operators for wireless broadband, the EU aligns its spectrum allocation policy to the world trend and sets the stage for the arrival of 5G technologies. EU carriers however are not likely to benefit from new spectrum assignments before 2020 and it is not yet clear to what extent technical conditions for effective access will be harmonized.

Spectrum management is a highly sensitive issue for member states as it is a source of significant revenues through licensing; even though the Commission plan does not foresee shifting away revenues from the national level, several member states want to retain control over spectrum management. Politico.eu reports that only Ireland, Italy and Sweden stand for improving coordination on spectrum management issues; on the contrary eight member states

⁹⁵. See Juncker's Political Guidelines for the next European Commission – A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change, 15 July 2014, Priority number 2: A connected Digital Single Market: "we must make much better use of the great opportunities offered by digital technologies, which know no borders. To do so, we will need to have the courage to break down national silos in telecoms regulation, in copyright and data protection legislation, in the management of radio waves and in the application of competition law."

⁹⁶. See Lamy Pascal, *Results of the Works of the High Level Group on the Future Use of the UHF Band*, Report to the European Commission, 2014.

are reported to be in favour of the status quo in decision-making on radio spectrum⁹⁷.

Bottom line, the European Commission has the intention to address regulatory barriers to investment and has included the DSM among its priorities; there is no shortage of policy options or recommendations to create a more favourable environment for investment in broadband infrastructure⁹⁸. What appears to be missing is the political vision at the member state level and the awareness that new digital technologies require a pan-European approach.

- **Coupling CEF and EFSI for transnational projects**

Because the allocation of the € 170 million available for broadband deployment in the CEF framework is based on the provision of financial instruments by the EIB and there is a relative liberty in the type of instrument to be used⁹⁹, it is certainly feasible for the EIB to create an interplay between CEF debt instruments and EFSI financing in order to amplify the otherwise limited contribution of CEF to the deployment of transnational projects in core infrastructure.

With the ‘Guidelines for trans-European networks in the area of telecommunications infrastructure’¹⁰⁰, the European Commission has made clear that also for the deployment of transnational infrastructure, the leading role should be taken up by private investment. First, as mentioned, part of the CEF budget

97. Member states agreed on the division of spectrum at the World Radiocommunication Conference in 2015, however disagreement remains on how to coordinate spectrum management. Member states’ positions are summarized by Politico.eu in a table on the telecoms framework review, which is available at <http://bit.ly/1Pllicco>. According to this source, the eight countries which wish to retain full control of spectrum management are Bulgaria, Cyprus, Czech Republic, Denmark, Finland, Latvia, Slovakia, and Slovenia.

98. The Broadband Commission (2013, 2014, 2014b, 2015) recommends a series of regulatory reforms to reduce regulatory risk and open up the access to additional spectrum. According to CERRE (2016), the number one priority for ICT regulatory reforms in Europe is to abandon a the legal framework based on different legislative silos for the internet, audiovisual media and electronic communications and replace it with a regulation - based on horizontal layers - that makes a distinction between digital networks and digital services. Briglauer, Cambini and Grajek (2015), without advocating for a fully-fledged facility-based competition, call for a shift from service-based competition towards a more investment friendly framework, by means of co-investment models and temporary relaxed cost-oriented pricing of fibre access. BCG (2015) proposes a strategy to unlock EU telecoms’ growth potential and investment in ICT; they suggest to i) substantially deregulating fixed-line wholesale access, ii) ensure a level playing field for network operators and Over-the-Top digital service providers, iii) modernizing spectrum policy across Europe, iv) allowing consolidation in mobile industry at the European level, v) harmonizing procedures and regulations to generate synergies between countries. Bohlin, Caves and Eisenach (2014) also support regulatory harmonization of spectrum management and recommend achieving efficient levels of consolidation. They also stress the importance of facilitating dynamic competition rather than preserving static competition.

99. Under CEF, the Commission and the EIB can finance loans, project bonds as well as guarantees for project financing in the area of telecoms.

100. See Regulation 283/2014.

was shifted to the EFSI guarantee. Second, the decision to put a ceiling at 15% of CEF ICT budget for broadband projects is in fact a neat choice that necessitates looking at sources of financing different from the CEF. In this context, EFSI can represent a good complement to increase public funding for those trans-European projects that the private sector can hardly finance because of market failures. It is therefore advisable to strengthen the links between CEF and EFSI, to prioritize transnational projects and to give instruments to Investment Platforms to ensure that projects meeting the policy objectives of both financial programmes receive priority attention. The European Commission, which is expected to promptly provide some guidelines on how to combine ESIF and EFSI, should also add detailed guidelines on how to combine these funds with the CEF.

- **Ad hoc investment platforms for projects in rural areas**

The European Commission has recognized that much of the success of the Juncker Plan depends on the correct functioning of Investment Platforms, which “*would be key to making a substantial impact on the digital sector*”¹⁰¹. As highlighted in the previous session, much of the divide which is not likely to be solved by private investment relates to the low NGA coverage in scarcely populated areas. It is therefore advisable that specific Investment Platforms address this specific challenge and attempt to attract private financing to roll-out NGA technologies in remote and rural areas.

Given the relevance of high-speed broadband for the development of economic activities, the divide between highly-connected regions and poorly covered areas represents a threat to national cohesion and should be dealt with as a matter of urgency. Special efforts, driven by national public authorities in cooperation with EU institutions, should be put in place in order to facilitate private investment where it is absent; investment platforms can serve this purpose and bring together public sector institutions, firms and investors to work together for a specific geographic area.

¹⁰¹ European Commission, *The Investment Plan for Europe – State of Play, Information and Communication Technology*, 13 January 2016.

Investment Platforms pooling projects for NGA developments can take different forms¹⁰², they can constitute a fund, a special purpose vehicle/special purpose entity (SPV/SPE), but can potentially be any different sort of agreement, between any sort of partner, for any sort of region. With a view to catalysing investments in NGA infrastructure in non-urban areas, we recommend the establishment of an investment platform which takes the form of co-investment arrangements structured around a local institution and a national or European financial institution, namely the EIB or NPBs. The types of Investment Platforms for Broadband that we recommend are based on two different models:

- The French syndicat mixte model, which is based on the legal recognition of inter-communal and multi-level associations of public authorities, represents an effective way to bring forward the interests of a specific region and join forces to define NGA projects with a viable scale. Already employed in Nord-Pas-de-Calais, Haute-Savoie and Alsace, it involves local communities for a bottom-up approach to investment projects. If framed within national investment priorities – as was the case of France with the national Government’s task force for high-speed broadband “Mission Très Haut Débit” – and if backed by the national promotional bank – as it is often the case in France with the Caisse des Dépôts – it provides the ideal setting for attracting private investment as there is a clear long-term commitment from the side of public authorities and a fertile community.
- The energy funds model, which is based on the experience of the European Energy Efficiency Fund and of the Marguerite Fund, among others. The approach in this case is top-down, as it requires the involvement and commitment of high-level financial institutions, EIB and NPBs especially. By pooling together resources from the EFSI guarantee, unspent EU funds, and EIB and NPBs budgets, the fund can act as a catalyst for capital-intensive infrastructure projects aimed at achieving the Digital Agenda targets, with a specific focus on rural and remote areas. If the fund can operate across Europe with no geographical limitation, it has the advantage of extending the contribution of NPBs – in terms of funding and know-how – out of national territories, to the benefit of those countries where an NPB is not present.

¹⁰². See Box 11 in Section 1.2.7. in this Report for a more general overview of investment platforms.

- **Combine digital with energy transition**

As the physical roll-out of broadband infrastructure is the primary cause of the high cost for network development, it is appropriate to coordinate work in public infrastructure to reduce the cost of networks' physical deployment. The European Commission has already moved in this direction with the Directive 2014/61/EU on broadband cost reduction¹⁰³ but much more could be done with improved coordination on infrastructure planning and enhanced project management promoting infrastructure sharing. Passive sharing¹⁰⁴ in particular should be encouraged as it is a cost saving tool that does not endanger competition in the way that an extensive sharing of 'active' assets could. (Broadband Commission, 2014b)

Particular synergies should be explored between the modernization of infrastructure for electricity distribution and the roll-out of fibre networks. In Italy for example, ENEL, a leading manufacturer and distributor of electricity and gas in Italy, has declared availability to start synergies with telecom operators¹⁰⁵ and to make its infrastructure available for the roll-out of fibre technology in cluster C and D, i.e. the areas at risk of digital divide¹⁰⁶. ENEL had already planned to upgrade to smart meters in vast areas of its network and could amply benefit from enhanced connectivity, which can in turn secure improvements in energy distribution and the functioning of smart grids. Electricity grids and distribution cabins are pervasive and could be used to bring fiber technology (FTTdp or FTTB).

New infrastructure is needed to deploy smart grids and smart meters in every home; fast or ultra-fast broadband should also reach all European households; it shall be possible to find synergies and build up infrastructure that serves the two purposes. For the Juncker Plan, this can mean two things: i) Investment Platforms with a thematic focus on either energy or broadband, as well as Investment Platforms with a geographic focus, should assist the design of projects that contain costs thanks to infrastructure sharing; ii) the EIB Investment Committee and EFSI Scoreboard should duly consider the added value of the

¹⁰³ See Directive 2014/16/EU, Measures to reduce the cost of deploying high-speed electronic communications networks, 2014.

¹⁰⁴ 'Passive' assets such as a mobile tower or dark fibre, whilst 'active' assets refer to electronic component or even spectrum.

¹⁰⁵ See Attanasio Paolo, *Banda Ultralarga: ecco il progetto dell'Enel per entrare in partita*, key4biz, 17 April 2015.

¹⁰⁶ The Italian Strategy for Next Generation Access Network by the Presidenza del Consiglio dei Ministri classifies the national territory in four clusters according to population density and specifies that, after consultation, no business was found interested investing in the last two clusters (C and D) for the deployment of FTTB/H networks at 100 Mbps.

projects combining digital with energy transition and back such cost-minimising projects with the EFSI guarantee.

• **Refinements from the side of the European Commission**

In order to meet the Digital Agenda targets by 2020, the European Commission could take a neater role to streamline investment in NGA infrastructure. A few technical arrangements and a specific focus on key challenges may well serve that purpose. We recommend the following:

- the Digital Agenda Scoreboard should be extended to include a section with data on financing for infrastructure; likewise, cohesion data¹⁰⁷ should better differentiate between different types of ICT investments so that EU funds targeted to fixed or mobile broadband infrastructure can be properly identified and distinguished from investment in R&D or digital services.
- the Commission, in partnership with the EIB, should set up a Digital Infrastructure Financing Group (DIFG) which should investigate the way to improve on the financing of digital infrastructure in less-covered countries and disadvantaged regions. In the spirit of the Broadband Commission Working Group on Finance and Investment - which operates within the Broadband Commission created by ITU and UNESCO¹⁰⁸ - the DIFG should bring together the expertise of the industry executives and that of policy-makers to identify actions and policies to overcome the well documented challenges inherent to obtaining financing for the deployment of NGA technologies in those European regions that are lagging behind in terms of coverage and connectivity.
- Building on the successful experience of the Energy Efficiency Financial Institution Group (EEFIG)¹⁰⁹, which brings together experts from private and public financial institutions, industry experts and representatives, civil society experts and delegates from international organizations, the DIFG could create an open dialogue and work platform with the European Commission and could be given mandate to identify actions and policies to encourage cooperation and attract finance and investment in broadband in Europe.

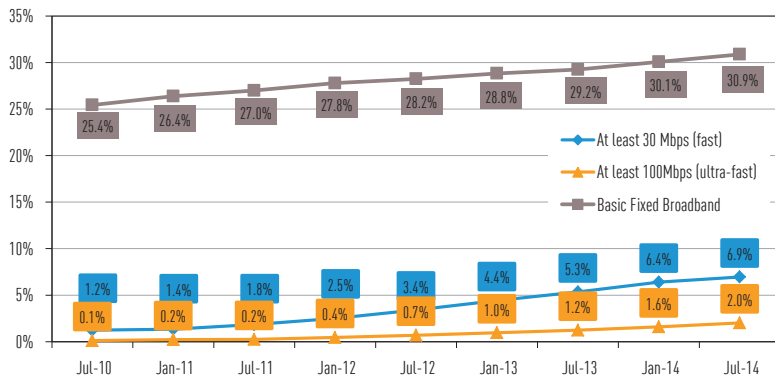
¹⁰⁷. See European Commission, [data on European Structural & Investment Funds](#).

¹⁰⁸. More information available at www.broadbandcommission.org.

¹⁰⁹. Established by the European Commission in partnership with UNEP in late 2013.

2.6. Appendix to case study on digital infrastructure

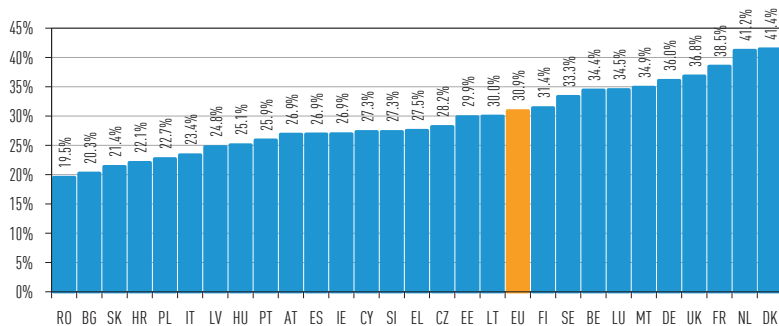
FIGURE A ▶ Fixed Broadband Penetration at EU level, 2010-2014



Source: European Commission.

Note: Penetration refers to subscriptions as a % of total population.

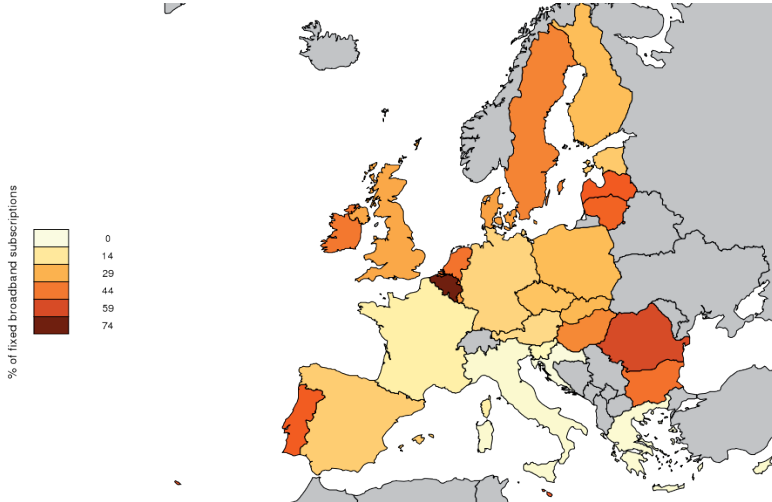
FIGURE B ▶ Fixed Broadband Penetration, 2014



Source: European Commission.

Note: Penetration refers to subscriptions as a % of total population.

FIGURE C ▶ Share of fixed broadband subscriptions >= 30 Mbps



Source: European Commission, Digital Agenda Scoreboard dataset.
Note: Broadband speed is based on advertised download speed.

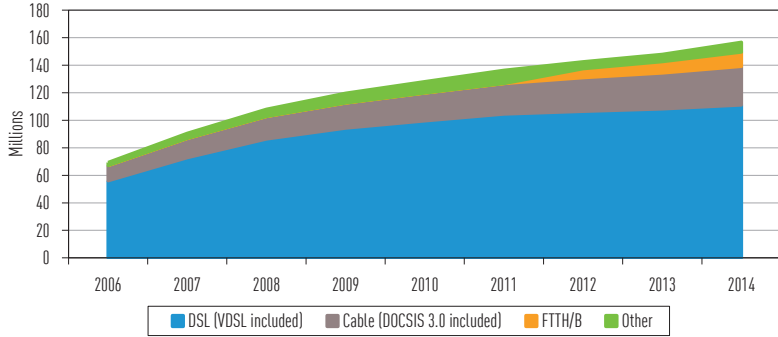
TABLE A ▶ Speed developments

		CENTRAL AND EASTERN EUROPE		WESTERN EUROPE		NORTH AMERICA		WORLD-WIDE	
Average fixed broadband speed	2013	17.5 Mbps		19.3 Mbps		17.6 Mbps		16.1 Mbps	
	2014	22.2 Mbps	+27%	21.8 Mbps	+13%	21.8 Mbps	+24%	20.3 Mbps	+26%
Fixed broadband connections faster than 10 Mbps	2014	53%		51%		58%		48%	
	2019	76%	+23 p.p.	62%	+11 p.p.	74%	+16 p.p.	68%	+20 p.p.
Average smartphone connection speed	2014	7,058 kbps		9,481 kbps		10,101 kbps		6,097 kbps	
	2019	14,316 kbps	+102%	17,196 kbps	+81.3%	19,915 kbps	+97.15	10,403 kbps	+70.6%

Source: CISCO VNI, 2015
Note: p.p. refers to percentage point change.

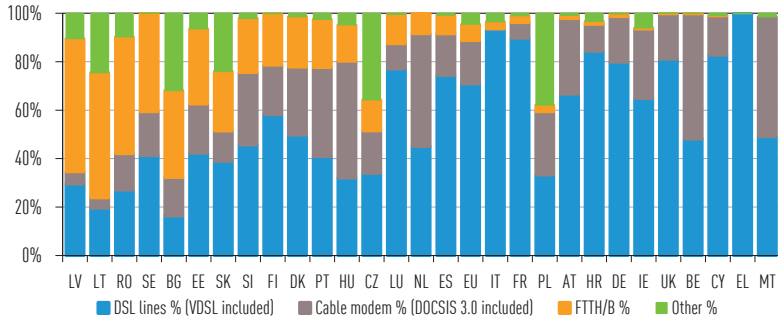
INVESTMENT IN EUROPE: MAKING THE BEST OF THE JUNCKER PLAN

FIGURE D ▶ Broadband subscriptions by technologies at EU level, 2006-2014



Source: European Commission, Digital Agenda Scoreboard.

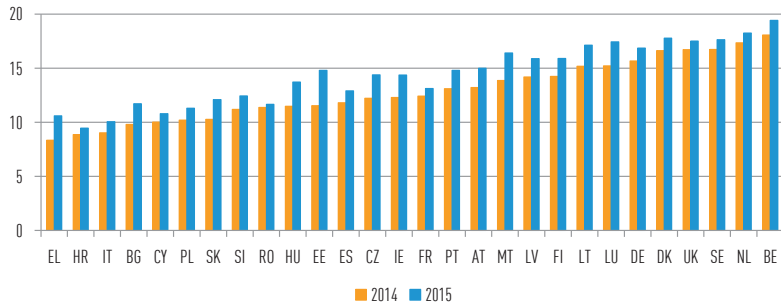
FIGURE E ▶ Fixed Broadband Subscriptions by Technology Market Shares, 2014



Source: European Commission, Digital Agenda Scoreboard.

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FIGURE F ► Connectivity Scores across Europe



Source: European Commission, Digital Economy and Society Index (DESI), Digital Agenda Scoreboard, 2015.

TABLE B ► ESIF Planned Financing 2014-2020 in ICT

COUNTRY	FUND	EU FUNDS (Million Euros)	TOTAL (Million Euros)	EU CO-FINANCING	EARDF OBJECTIVE (% of rural population)	ERDF OBJECTIVE (Number of households)
Poland	ERDF	3,137	3,712	84.50%		726,517
Spain	EAFRD+ERDF	2,047	3,023	67.70%	0.92%	4,230,516
Italy	EAFRD+ERDF	1,902	3,169	60.02%	37.70%	1,961,859
Czech Rep.	ERDF	1,074	1,824	58.87%		500,000
France	EAFRD+ERDF	1,003	2,325	43.14%	3.97%	1,039,165
Greece	EAFRD+ERDF	851	1,081	78.69%	3.23%	3,500,000
Slovakia	EAFRD+ERDF	826	975	84.71%	0.28%	50
Hungary	ERDF	689	783	88.02%		1,000,000
Romania	ERDF	532	630	84.40%		400,000
Croatia	ERDF	308	362	85.00%		315,000
Portugal	ERDF	295	348	84.82%		
UK	EAFRD+ERDF	256	441	58.03%	3.14%	67,833
Sweden	EAFRD+ERDF	253	578	43.70%	2.80%	
Lithuania	EAFRD+ERDF	248	292	85.00%	0.11%	254,000
Germany	EAFRD	224	381	58.78%	22.41%	

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Latvia	ERDF	173	203	85.00%		83,800
Estonia	ERDF	85	99	85.00%		
Slovenia	EAFRD+ERDF	76	96	79.48%	0.19%	20,800
Ireland	ERDF	75	150	50.00%		309320
Cyprus	EAFRD+ERDF	74	87	84.78%	2.15%	155,400
Malta	ERDF	31	38	80.00%		
Austria	EAFRD	27	53	50.18%	12.37%	
Bulgaria	EAFRD	26	30	85.00%	0.53%	
Finland	EAFRD	13	30	42.00%	10.22%	
EU-28	EAFRD+ERDF	14,221	20,711	68.66%	14.00%	14,564,260

Source: European Commission, Cohesion Data.

Note: The EU co-financing indicated in the Table is the simple average of the co-financing at country level. The ERDF objective, defined as “Broadband Access”, looks at how many additional households with broadband access of at least 30 Mbps are reached. The EAFRD objective, defined as “ICT Broadband”, looks at the percentage of rural population potentially benefiting from new or improved ICT services or infrastructures. There are no planned ICT projects financed by the ERDF or EAFRD in Belgium, Denmark, Luxembourg and the Netherlands for the period 2014-2020.

TABLE C ➤ EIB Financing to private ICT sector in Italy, 2004-2015

PROJECT	TECHNOLOGY	SIGNATURE DATE	EIB SIGNED AMOUNT (Million EUR)	EXPECTED TOTAL COST (Million EUR)	ESTIMATED LEVERAGE
Telecom Italia - ACCELERATED FIXED HIGH SPEED BB ROLLOUT	Combined fiber & copper	EFISI 2015	500	1,808	× 3.61
FASTWEB VERY HIGH SPEED BROADBAND	VDSL2	2013	300	750	× 2.5
Telecom Italia - Broadband Mobile Network	3G/UMTS and 4G/LTE	2013 & 2014	500		
RAI Digital Terrestrial Infrastructure	DTT network	2012	50	300	× 6
VODAFONE Universal Mobile Broadband	UMTS (3G), HSPA+, LTE	2011	400		
Telecom Italia R&D for Broadband		2011	300	581	× 1.93
FASTWEB HI-SPEED BROADBAND		2009	350		
Telecom Italia - BROADBAND DIGITAL DIVIDE		2009 & 2010	900	2,100	× 2.33
VODAFONE FIXED-MOBILE BROADBAND	Base stations and OSS	2008	350		
Telecom Italia RDI		2007 & 2008	400		
Telecom Italia Media - DIGITAL TV NETWORK	DTT service platform	2006	100	280	× 2.8
Telecom Italia - Broadband for southern regions	xDSL	2005 & 2006	700	1,700	× 2.4
Telecom Italia R&D for ICT		2005	400	600	× 1.5
TIM Mobile Network	UMTS, GPRS and EDGE	2004 & 2005	600		
TOTAL AMOUNT			5,850		

Source: European Investment Bank.

TABLE D ► EIB Financing for broadband infrastructure in France, 2004-2015

PROJECT	TECHNOLOGY	SIGNATURE DATE	EIB SIGNED AMOUNT (Million EUR)	EXPECTED TOTAL COST (Million EUR)	ESTIMATED LEVERAGE
NORD PAS DE CALAIS THD		EFSI 2015	147	610	× 4.15
ALSACE TRES HAUT DEBIT		EFSI 2015	n.a.		
AXIONE TELECOM INFRASTRUCTURE		2014	37.82		
PROGRAMME FRANCE TRES HAUT DEBIT		2014	550		
RESEAU THD HAUTE SAVOIE		2013	36.15	131.5	× 3.63
ILIAD BROADBAND II	FTTH and ADSL2+	2012	200		
ILIAD FRANCE BROADBAND ROLL-OUT	FTTH and CCNs	2010	150		
TELECOM ITALIA BROADBAND FRANCE		2006	160	600	× 3.75
TOTAL AMOUNT			1,281		

Source: European Investment Bank.

3. How can the Juncker Plan unlock energy efficiency investment in the short and long term?¹¹⁰

by *Thomas Pellerin-Carlin*

“Energy efficiency has played and continues to play a sizable role in the development of the global economy. This is nowhere more evident than in financial markets where energy efficiency is establishing itself as an important segment. Policy makers and private markets need to work further to support this essential driver of energy efficiency investment”.

Maria van der Hoeven, Executive Director of the International Energy Agency

Energy plays a central role in human economies and societies. It is, alongside labour and capital, one of the three inputs that allow a productive system to deliver an output (e.g. goods, services, etc.).

Human energy systems have undergone several revolutions in the past, with each one adding a new source of energy to pre-existing sources¹¹¹. Human energy consumption grew exponentially as the demand for and supply of energy services grew faster than energy efficiency gains. This inherited energy system is however unfit for the 21st century, for one main¹¹² reason: climate change¹¹³. Energy efficiency (EE) therefore comes as a way to limit or

¹¹⁰ The author expresses his thanks to Britta Daum for her research assistance for this paper.

¹¹¹ Photosynthesis, biomass and animal strength were the pillars of pre-industrial human societies. The industrial revolutions were powered by the addition of coal, and then oil, gas and nuclear into mankind’s energy mix.

¹¹² Other reasons could be mentioned. Fossil fuel combustion increases air pollution that, according to the World Health Organization, kills over 7 million human beings every year, worldwide. Geological constrains will lead to a peak in the global production of all non-renewable energy sources: coal, oil, gas and uranium; with this peak being likely to be reached in the upcoming decades for oil and gas.

¹¹³ The exploitation and combustion of coal, oil and gas lead to the emission of greenhouse gases. Past human emissions already triggered a rise of average global temperatures by 1°C, while the international objective reiterated in Paris in December 2015 is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C”. Around 75% of manmade greenhouse gas emissions are currently coming from the energy sector, while the remaining 25% is coming from land-uses such as agriculture and deforestation. Cf. IPCC, 5th Assessment Report.

reduce human energy consumption leading to a genuine ‘Energy Efficiency Revolution’.

The European Union has repeatedly stressed the importance of energy efficiency to make energy systems more able to provide secure, sustainable and competitive energy for all¹¹⁴. The EU also pointed out the role EFSI may play to boost energy efficiency investment.

This section analyses the rationale and the obstacles for energy efficiency investments in the EU, as well as EFSI’s potential to boost such investments.

3.1. The rationale to boost energy efficiency investments in Europe

Climate change is an ongoing manmade physical phenomenon that is already harming the world economy and international security¹¹⁵. The EU’s paramount climate objective is to reduce global greenhouse gas (GHG) emissions in a way that is consistent with limiting the rise of global average temperatures to 2°C. The EU set its own reduction targets for territorial GHG emissions that are legally binding and include national legally-binding targets for each individual member state. EE (see Box 1) is a key element to allow the EU to achieve its climate objectives. This is why the EU has specific targets on EE, even if it is not legally binding (see Box 2). The lack of legal enforceability of the EE objective increases the importance of EU financial instruments in attaining these targets. To use the ‘carrot and stick’ metaphor, though the EU lacks a stick to force member states achieve their commonly agreed target, the EU can still use a carrot.

114. European Commission, A framework Strategy for a Resilient Energy Union, 25 February 2015.

115. Thomas Pellerin-Carlin and Jean-Arnold Vinois, “2015 climate negotiations: speeding up or slowing down the energy transition”, Policy paper no. 142, Jacques Delors Institute, September 2015.

BOX 15 ▶ **The tricky definition of energy efficiency (EE)**

EE is often defined as ‘consuming less energy to deliver the same service’. Such a definition may focus on primary or final energy consumption.

Primary energy consumption accounts for all the energy humans take out from their environment to fulfill their needs while final energy consumption only accounts for the energy that reaches final consumers¹¹⁶. The difference between the primary and final energy consumption accounts for the quantity of energy that is lost by the energy system¹¹⁷.

The EU targets both primary and final energy consumption. Some EU member states have national targets focusing on primary energy consumption (e.g. Germany) or final energy consumption (e.g. France), while most of them have no specific long-term EE targets enshrined in national law.

In this study, we will use the definition of primary energy as it is the one that best accounts for climate change and energy security concerns.

It should be noted that in some legal settings¹¹⁸, EE also encompasses the production of small-scale renewable energy sources, most often for self-consumption purposes such as a solar heating system that heats water for domestic use. This method however raises statistical concerns. Following the example of the public finance principle of non-contraction between expense and spending, this study will not consider the self-consumption of an energy source as EE.

This study will also use the notions of ‘energy intensity’¹¹⁹, as well as ‘energy sobriety’¹²⁰, but will however not use the term ‘energy productivity’¹²¹.

116. EU primary energy consumption is at about 1.600 millions of tonnes of oil equivalent (mtoe), while EU final energy consumption is at about 1.100 mtoe.

117. Those losses can take many forms, from gas leaks to conversion losses within thermal power plants (i.e. most of the energy potential of coal/gas/nuclear is lost in the form of heat rather than converted into electricity) or thermal engines (i.e. most of the energy potential of gasoline put in a car is lost in the form of heat rather than converted into a mechanical force).

118. For instance for the European Energy Efficiency Fund.

119. “Energy intensity” is most often defined as the quantity of energy required to produce a given monetary quantity, such as a national GDP. In this paper, energy intensity will be used to assess which EU countries are the least energy-efficient, and therefore the most likely to benefit from EE investments.

120. “Energy sobriety” has a similar objective than EE: reducing energy consumption, but through a different process. EE aims at enhancing the efficiency of a service-providing process (e.g. a more efficient way to reach a temperature of 21°C in a given building), while energy sobriety seeks to diminish energy consumption by scaling-down or eliminating a particular energy need. For instance, heating a building to reach a temperature of 20°C instead of 21°C is an energy sobriety decision leading to a decrease in energy consumption via a change in the quality of the service provided. At the macro level, smart urban planning can limit distances between workplace and home, thus reducing mobility needs and energy consumption. The EU so-called “EE objective” is only about reaching a given quantity of energy consumption, and therefore can also be reached by energy sobriety measures.

121. “Energy productivity” is quite similar to the notion of energy efficiency but is supposedly more positive and less prone to Malthusianism, at its puts the emphasis on delivering more energy services with the same energy consumption (while EE classically means to deliver the same energy service for less energy consumption). Given the almost identical definition, only the term EE will be used in this paper. Cf. Kornelis Block, Paul Hofheinz and John Kerkhoven, The 2015 Energy Productivity and Economic Prosperity Index, Ecofys, 2015

3.2. The EU energy policy and EU targets on energy efficiency

The EU energy-climate policy rests on three key targets that respectively focus on GHG emissions, renewable energy production and EE. Achieving those targets should theoretically allow the EU to provide secure, sustainable and affordable energy to all EU consumers, citizens and businesses. Whereas the first two targets (on GHG emissions and on renewables) are legally binding, the target on EE is only indicative.

TABLE 14 ► **Targets of the EU energy-climate policy**

	2020	2030
EU territorial greenhouse gases emissions (base 1990)	20%	40%
Legal dimension	Legally binding national targets	Legally binding national targets
Share of renewables in the energy mix	20%	27%
Legal dimension	Legally binding national targets	Legally binding EU target
Reducing energy demand	20%	27%
Legal dimension	Indicative	Indicative
MAIN DOCUMENT OF REFERENCE (AND YEAR OF ADOPTION)	ENERGY-CLIMATE PACKAGE 2020 (2008)	ENERGY-CLIMATE PACKAGE 2030 (2014)

Source: Thomas Pellerin-Carlin, Jacques Delors Institute

The EE target is defined by first building a ‘business as usual scenario’ of EU primary and final energy consumption by 2020. The official EU target is to keep energy consumption 20% below this scenario, which equates to a very specific level of EU energy consumption by 2020¹²². Thus, the EU target on EE is not an objective on EE *stricto sensu*, but rather an objective to limit energy demand: it can be reached by non-EE means, like an economic crisis or changes in energy behaviours (i.e. energy sobriety).

¹²² i.e. 1.483 millions of tonne of oil equivalent (mtoe) of primary energy consumption, and 1.086 mtoe of final energy consumption.

EE presents a number of positive externalities which are often poorly accounted for: less GHG emissions, less air pollution, increased energy security¹²³, improved trade balances, reduced impacts of asymmetric shocks¹²⁴ on the EU and euro area economies¹²⁵. At the level of households and firms, investments in EE can improve individuals' purchasing power, businesses competitiveness and the EU's capacity to build a competitive EE sector¹²⁶.

Finally, it should be noted that all the positive impacts mentioned above can also be reached by non-EE measures. EE currently tends to be the most cost-effective way to reach such objectives. This may however change especially if electricity is massively generated with cheap and low-carbon technologies in the future.

Providing cheap and low carbon electricity is yet unlikely to happen on a massive scale before 2030. Indeed, most estimates see energy prices rise in the future¹²⁷. But forecasts have often been proven wrong. If current trends in decreasing costs of solar electricity¹²⁸ and battery storage continue in the upcoming decade, then EE policies might have to be modified, as they will become a less cost-competitive way to provide secure, sustainable and affordable energy for all.

123. EE is a key pillar of the EU Energy Security Strategy. EE indeed encompasses benefits for both the long-term energy security and the short-term security of supply and therefore constitutes a strategic investment. Cf. European Commission, Energy Security Strategy, 28 May 2014.

124. G. Peersman, I. Van-Robays, Oil and the Euro Area Economy, European Commission, Brussels, 25 April 2009, p. 26.

125. Euro area member states most hit by the economic crisis are also the ones where the importance of oil in the energy mix is the greatest (i.e. among the eight EU economies for which oil represents more than 42% of the final energy consumption, we find Greece, Spain, Italy, Cyprus and Portugal). Cf. Eurostat, Energy, transport and environment indicators, Luxembourg, Luxembourg Publications Office of the EU, 2011 p. 36. While energy cost is far from being the only source of economic downturn, it certainly played a worsening role, especially since those countries that, in 2008, had to face a severe recession and skyrocketing oil prices while being more dependent on oil than other EU member states. Improving energy efficiency would therefore reduce the impact of external economic asymmetric shocks on EU member states in general, and Euro area member states in particular.

126. According to the IEA's mainstream scenario (cf. NPS stat in Appendix G), global investment in end-use energy efficiency for the period 2015-2040 would amount to 20 trillion USD. If the international agreed objective of keeping global warming below 2°C were to be respected, EE investments would reach 30 trillion USD (cf. 450 stats in the afore mentioned Appendix G). Ensuring that EE products and services are firstly developed in Europe would likely give EU businesses a first-mover advantage and would help the European economy to prosper while playing a proactive role to limit global energy consumption and actively reduce global GHG emissions.

127. For the most recent estimate, cf. International Energy Agency, World Energy Outlook 2015.

128. In this respect, it should be noted that the levelised cost of solar PV electricity production in Europe has been roughly divided by three between 2005 and 2015 (cf. Appendix H).

3.3. Energy efficiency investments projects: some particularities

Investment in EE encompasses extremely different types of projects that can be distinguished according to three criterions: **size**, **motive**, and **time horizon**.

Size. Energy efficient investments have amounts varying from the smallest actions¹²⁹ to multi-million projects¹³⁰. Most however are small, way below the threshold often required to benefit directly from EU financial institutions' support¹³¹.

Motive. We can distinguish between three types of projects:

- **Unconscious** projects have EE impacts that were not pursued by the decision maker¹³².
- **Profit maximizing** ones look for the highest possible return on the shortest possible time span. They focus on the low-hanging fruits and therefore are not relatively costly but do not seize most of the entire EE potential¹³³.
- **Energy-efficiency maximizing** projects seek to optimize EE gains. Compared to profit maximizing EE investments, they tend to be more costly, lead to more energy savings and provide profit on a longer time span.¹³⁴

Time horizons. Another particularity of EE investments is that investment returns take some time to materialise, and sometimes the time exceeds internal investment hurdles. In many firms, investments in EE are only undertaken if the energy payback period is below 2-4 years. This places a relatively high hurdle rate for EE investments versus other investment types¹³⁵. The time horizon therefore not only influences whether an investment will be made or not,

¹²⁹. For instance, buying a LED light bulb for a few euros to replace an incandescent light bulb is an EE investment.

¹³⁰. For instance, modernising a power plant to boost its conversion rate.

¹³¹. For example, to benefit from the European Investment Bank's direct loans, a project needs to cost more than €25 million.

¹³². For instance, when changing the computer fleet of a company from desktop computers to laptops to foster telework, the investor is also – most often, unknowingly – performing an EE investment as laptops tend to consume much less electricity than desktop computers.

¹³³. Example of such project is an investment in a building to replace its single-glazing windows to double-glazing windows – as opposed to performing a deep renovation of the building.

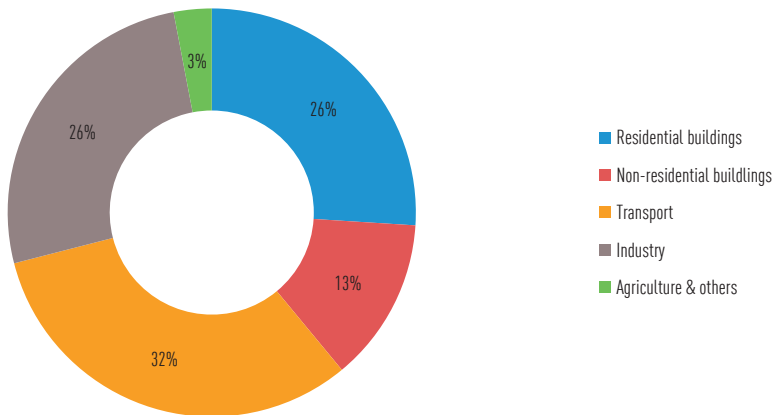
¹³⁴. A classic example of such project is 'deep renovation' in the buildings sector, or a holistic corporate energy efficiency programme for businesses.

¹³⁵. Energy Efficiency Financial Institutions Group, *Final Report*, February 2015, p. 89.

it also influences the type of investment that will be made (profit maximizing vs. EE maximizing).

One can moreover distinguish three types of EE investment sectors: buildings (where 39% of the EU final energy consumption occurs), the transport sector (32%) and those taking place in the industry (26%), (see Figure 13).

FIGURE 13 ► EU final energy consumption by sector (in percentage, for the year 2012)



Source: Thomas Pellerin-Carlin, Jacques Delors Institute, from Eurostat data.

3.3.1. Energy efficiency investments in buildings

The category of “buildings” in energy consumption databases can be broken down. About 25% of what is counted as “building consumption” does occur within a given building but has little to do with building structure (e.g. water heating, cooking, lighting and other appliances)¹³⁶. Only the remaining energy consumption (space heating and cooling) can be dealt with by changing the building.

¹³⁶. Cf. Figure I in the Appendix. Source: Diana Ürge-Vorsatz & all., *Energy end-use: buildings*, p. 663.

Building thermal isolation holds important EE gains as 75% of the EU building stock was built at a time where there were virtually no energy requirements in building codes¹³⁷. It should be noted that buildings are expected to last for more than 50 years, and that new buildings built every year represent only 1% of the existing stock. The challenge in the building sector is therefore to increase the renovation rate of buildings, currently situated at 1.2%¹³⁸ to, for instance, 3%.

The types of investment projects and investment needs vary depending on the type of building to be renovated:

- **Public buildings** (owned or operated by a public entity) represent 12% of the EU's building stock¹³⁹. EE Investment in these buildings typically takes the form of direct public investment. Member states are legally obliged to achieve a 3% renovation rate for this category of building¹⁴⁰.
- **Private residential buildings** (owned by a private entity for residential purposes) account for around two thirds of final energy consumption in European buildings. They can be highly inefficient and often have economically attractive EE investment returns for private investors, yet this market segment is highly fragmented and requires a low cost retail strategy to engage investment on a large scale. Besides, when the residence is not owner-occupied, investment is subjected to the problem of split incentives (see Section 3.5.3.).
- **Private non-residential buildings** (owned by a private entity for a non-residential purpose) mainly consist of commercial buildings such as restaurants, stores or shops. They are often managed like financial assets and have their own facilities managers. They are often larger and more energy intensive than residential building. Investment decisions are often based on short-term horizons¹⁴¹. They tend to be affected by the problem of split incentives because the businesses that uses the commercial building often does not own it.

137. Dominique Ristori, speaking at the JRC conference on "scientific support to EU growth and jobs: efficient buildings, vehicles and equipment", 2013. For an example, cf. Appendix J for the evolution of the minimal energy requirements in Germany.

138. Presentation from Caroline Simpson of the Renovate Europe Campaign, April 2013.

139. Ecofys, Ecorys & Bio Intelligence Service, Study to support the impact assessment for the EU energy saving action plan, 2010.

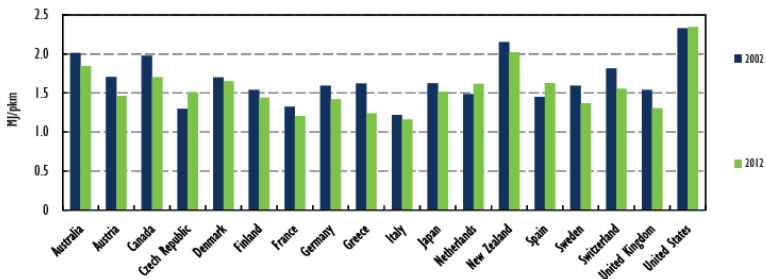
140. This legal requirement originates in the EU energy efficiency directive but is not applied to small buildings as well as historical buildings. This directive is moreover not well transposed by virtually all member states and further actions at both EU and national level ought to be taken for the 3% target even to be reached.

141. World Business council for Sustainable Development, *Energy efficiency in buildings – transforming the market*, WBSCD, 2009.

3.3.2. Energy efficiency investments in the transport sector

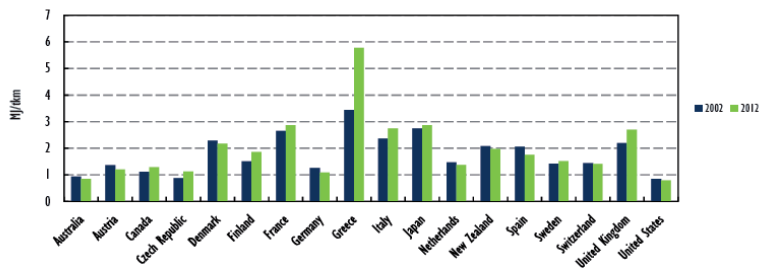
As the second most important sector of EU final energy consumption, transport is critical for EE investment. Over the past years, official statistics suggest that there have been some limited EE gains for passenger transport, but freight transport has become slightly more inefficient (see Figures 14 and 15). This available data should be reviewed after the 2015 revelations on the so-called “dieselgate”.

FIGURE 14 ► Energy intensity of passenger transport, 2002 and 2012



Source: International Energy Agency, Energy Efficiency Market Report 2015, 2015, p. 60.

FIGURE 15 ► Energy intensity of freight transport (MJ/tkm), 2002 and 2012



Source: International Energy Agency, Energy Efficiency Market Report 2015, 2015, p. 62.

EE investment on transport can be split in two separate categories:

- **Upstream investment** is an investment made by the builder of a transport system, be it a vehicle¹⁴² or a transport infrastructure¹⁴³.
- **Downstream investment** is an investment into a more energy efficient mode of transport equipment¹⁴⁴.

3.3.3. Energy efficiency investments in the industry

The EU industrial sector already makes significant EE gains, with an average increase of 1.3% every year (see Appendix 5) and is a renowned world leader in terms of EE. There are however still immense gains to be seized¹⁴⁵, especially since the 2008 economic crisis has slowed down private investment, including in EE.

Considerable efficiency energy gains can be seized, particularly in four categories of business:

- **Electricity production.** The business of generating electricity is a sector where significant gains can be achieved, mostly by improving the energy conversion efficiency rate of thermal power plants.
- **Energy intensive businesses** are businesses for which energy consumption represents a significant cost (e.g. more than 3% of the overall costs). Such companies are usually well aware of the importance of EE.
- **Non-energy intensive big companies** are big companies¹⁴⁶ for which energy costs play a marginal role. They tend not to engage in EE projects but have the financial capacity and technical expertise (often outsourced) to do so¹⁴⁷.

142. While there is currently no EU legislation limiting energy consumption, EU regulation 443/2009 limits passenger car CO2 emissions. In practice, this regulation enhances the supply of more energy efficient vehicles. It is however worth noting that vehicles built by EU companies are not the most energy efficient in the world, and that available data should be reviewed after the 2015 revelations on the so-called "dieselgate".

143. From this perspective, building highways theoretically decreases energy efficiency, notably because vehicles on highways tend to drive at a speed higher than the optimal speed, often situated at around 90 km/h.

144. For a company, renewing its transport fleet (planes, cars etc.) can therefore be considered as an energy efficiency investment as more recent cars and planes tend to be more energy-efficient than older ones.

145. Fraunhofer Institute, *Policy Report on the contribution of energy efficiency measures to climate protection within the European Union until 2050*, June 2012.

146. For the purpose of this study, an SME is defined as a company whose turnover is below €43 million while a big company is one with a turnover higher than €43 million.

147. Those engaged in energy efficiency projects often tend to be the ones for which image/branding is important. They therefore engage in EE projects not only because they are profitable in economic terms, but also because they can be used in public relations campaigns portraying the company as being a 'climate responsible company'.

- **Non-energy intensive SMEs** are small companies for which energy represents a small share of their overall cost. Such companies tend to have a very limited awareness of their potential EE gains and would therefore strongly benefit from advisory support and technical assistance. They also tend to have a limited access to equity and rely mostly on self-financing, loans and/or public subsidies to perform EE investment.

3.4. Investment in energy efficiency in Europe: current situation and investment needs

Determining the amount of money spent on EE is a complex matter as there is no standardized definition of EE investments (see Box 16). This, alongside other methodological concerns, explains why there are different estimates of the current level of EE investment, with global estimates varying from \$130 to \$410 billion¹⁴⁸.

BOX 16 ► The difficulties to estimate the amount invested in energy efficiency

Quantifying the amount invested on EE is not easy. To illustrate, if one buys a 12.000€ energy-efficient car instead of a 10.000€ conventional car, should we consider that the EE investment represents 12.000€ (i.e. the entire cost of the car), or 2.000€ (i.e. the difference between the cost of the energy-efficient car and the conventional car) or an *ad hoc amount*? If the latter is chosen¹⁴⁹, it supposes to draw a theoretical baseline scenario to be established and is based on assumptions¹⁵⁰, with virtually-all institutions having their own assumptions that are rarely made public.

¹⁴⁸ International Energy Agency, *World Energy Investment Outlook*, 2014; HSBC, Sizing energy efficiency investments, HSBC, London, 2014; IEA, Energy Efficiency Market Report, OECD/IEA, Paris, 2013; BCC Research, Green Technologies and Global Markets, BCC Research, Wellestey, 2011; Johansson & all., Global energy assessment, Cambridge University Press, Cambridge, United Kingdom and New York, pp. 1665-1744.

¹⁴⁹ This is for instance the definition chosen by the International Energy Agency. Cf. International Energy Agency, *World Energy Investment Outlook 2014*, p. 137.

¹⁵⁰ Keeping the illustration of the car purchase, the difference in energy consumption between two cars is often only one of the many differences that exist between those two cars. To establish a sound baseline scenario, all the non-energy-efficiency differences need to be taken into account. This is however complex to do, while the engine drives the car's consuming pattern, this is also influenced other factors, like the car's weight or its aerodynamics, all those elements being determined by virtually all the car components (e.g. aluminium components that are lighter than steel components, making the care more energy-efficient).

In addition to the problems of estimating the current level of investment, one should add the problems of estimating investment needs and gaps, which rest on several assumptions. In the EU, the needs are determined by political objectives: EE gains reaching 20% by 2020, and 27% by 2030¹⁵¹. According to the European commission, the amount of EE investment needed to reach these targets is € 108 billion/year. The most important effort has to be done in build-ings (€ 89 million/year) whereas € 19 million/year should be invested in indus-try¹⁵². Current investments are, according to the Commission, below half of that. Thus, the current investment gap is estimated at between 38 billion¹⁵³ and 54 billion/year¹⁵⁴. Quite surprisingly those data do not seem to account for energy efficiency in the transport sector, even if it accounts for 32% of the EU final energy consumption (see Figure 13).

According to the IEA (see Table E), self-finance is the most common financ-ing method for EE investments in OECD countries. The second most common financing method is a commercial loan, but the latter is mainly used for small-sized projects (up to \$20.000). Public loans and grants, as well as energy sav-ings performance contract, also play a significant role¹⁵⁵. Other financing meth-ods also exist¹⁵⁶.

3.4.1. A panorama of existing EU funding schemes for energy efficiency

When reflecting on the contribution of EFSI in this field, it is important to con-sider the EU funding schemes already in place. The following table provides a good - albeit non-exhaustive - overview of the existing EU funds and pro-grammes that can finance EE investments. Some of those funds/programmes are entirely or partially earmarked for EE. Some of this public money finances projects directly, others do that indirectly, or finance technical assistance.

151. It is worth keeping in mind that those objectives were set by political bargaining between policy makers, and have no relationship with what would be optimal from an economic and/or an environmental perspective.

152. European Commission, *Mobilising investment for Europe's Energy Union*, 26 August 2015.

153. European Commission, *Energy Efficiency and its contribution to energy security and the 2030 framework for climate and energy policy*, 23 July 2014, p. 13.

154. European Commission, *Mobilising investment for Europe's Energy Union*, 26 August 2015.

155. Most public promotional banks use low-interest loans to finance energy efficiency projects.

156. Energy Efficiency Financial Institutions Group, *Final Report*, February 2015, p. 79-110.

TABLE 15 ► Main EU funding schemes than can benefit to energy efficiency investments

FUNDS				
ORIGINE OF THE FUNDING	NAME OF THE FUND/ PROGRAMME	TOTAL BUDGET AVAILABLE (IN EUROS)	ENERGY EFFICIENCY	TYPE OF EE PROJECT FUNDED
EU Cohesion policy	European Regional Development Fund (ERDF)	183.3 billion (2014-2020)	16,7bn earmarked on EE (13,3bn for EE in public and residential buildings; 3,4bn for EE in enterprises, with a focus on SMEs)	General EE projects
EU Cohesion policy	Cohesion Fund	63.4 billion (2014-2020)	44bn where EE projects can get financing from (1,7bn for high-efficiency cogeneration, 2,6bn for research on low-carbon technologies, 39,7bn for energy-efficient and decarbonised transport)	General EE projects
EU Common Agricultural policy	European Agricultural Fund for Rural Development (EAFRD)	84.936 billion (2014-2020)	€870 million	Projects focused on farms (target figure: 24.000 farms)
EU Maritime and fisheries policies	European Maritime and Fisheries Fund (EMFF)	6,400 billion (2014-2020)	€113 million	Projects focus on fishing companies
EU Social policy	European Social Fund	10 billion (2014-2020)	No earmarked amount	Projects to develop EE-specific skills
EIB, Germany & Norway	Global Energy Efficiency and Renewable Energy Fund ("GEEREF")	222 million (capital)	Mostly devoted for EE & RES projects	Private equity in emerging markets
EU, EIB, Cassa Deposito Prestiti & Deutsche Bank	European Energy Efficiency Fund (EEEF)	146 million (capital)	Mostly devoted for EE but small-scale RES projects are also eligible	Energy efficiency, renewable energy and clean urban transport in the public sector
EU Environment and climate policy	LIFE	1.46 billion (2014-2017)	No earmarked amount (apart from PF4EE)	General EE projects

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EIB, LIFE	Private Financing for Energy Efficiency instrument (PF4EE)	80 million (capital)	Entirely earmarked for EE	General EE projects
Research policy	Horizon 2020	80 billion (2014-2020)	No earmarked amount	General EE projects
Energy and climate policy	European Local Energy Assistance (ELENA)	49 million (capital)	No earmarked amount	Technical assistance financed up to 90%
EIB, Council of Europe Development Bank	Joint European Support for Sustainable Investment in City Areas (JESSICA)	unknown	No earmarked amount	Technical assistance
EU	Mobilising Local Energy Investments – Project Development Assistance	unknown	No earmarked amount	Technical assistance
EIB	EIB loans	243 billion (capital)	No earmarked amount (but did lend 2,€3 billion for EE projects in 2014)	Low-interest direct & indirect loans
European Commission, EIB, EBRD	JASPER	unknown	No earmarked amount	Technical assistance

Source: Thomas Pellerin-Carlin and Britta Daum, Jacques Delors Institute, data from official websites.

The amount of ERDF and CF money differs from one member state to another¹⁵⁷. The use made by each state of this money also differs drastically¹⁵⁸.

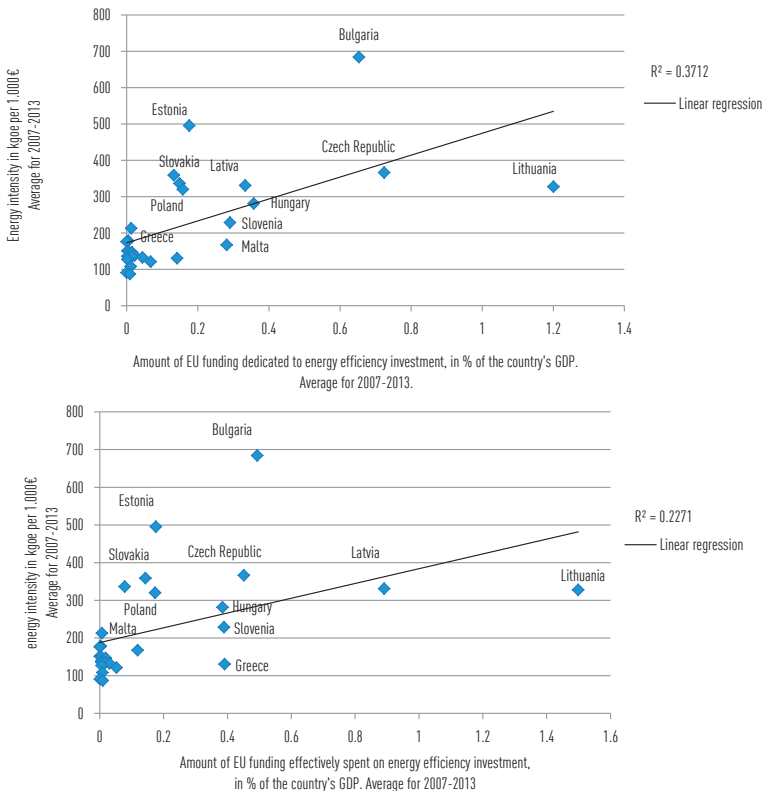
The graph below allows us to understand that the amount of EU funding from ERDF and CF that member states choose to allocate to EE is totally decorrelated from their energy intensity, especially when looking only at the

¹⁵⁷ For a detailed table on the use of ESIF money in the EU member states, cf. European Commission, *Table of ESIF contracts grants*, 23 July 2015.

¹⁵⁸ When looking at the use of ERDF and CF allocations to finance energy-related projects (mostly EE-related, cf. graph below), we notice that the share of those allocations devoted to energy differs from 6% (e.g. Greece, Croatia, Italy) to 15% (Lithuania). If we look in more detail how these funds have been used, we see that in some EU member states, they have been used to finance energy efficiency measures in enterprises (e.g. Austria and Denmark); in others the focus has been on R&I in low-carbon technologies, including energy efficiency (e.g. Estonia, Finland, the Netherlands), and finally in others the main focus has been on energy efficiency measures for buildings (e.g. Ireland, Latvia). Source: European Commission, *Monitoring progress towards the Energy Union objectives*, 18 November 2015, p. 78

Central-Eastern European member states. In other words, **EU member states with the greatest energy efficiency needs do not use EU money to foster energy efficiency**¹⁵⁹.

FIGURE 16 ► Dedicated allocation and effective allocation of ERDF and CF funding for EE¹⁶⁰ projects in EU member states, for the period 2007-2013¹⁶¹



Source: Thomas Pellerin-Carlin and Britta Daum, Jacques Delors Institute. With data from Eurostat (GDP & energy intensity) and European Commission (for the decided and effective allocation).

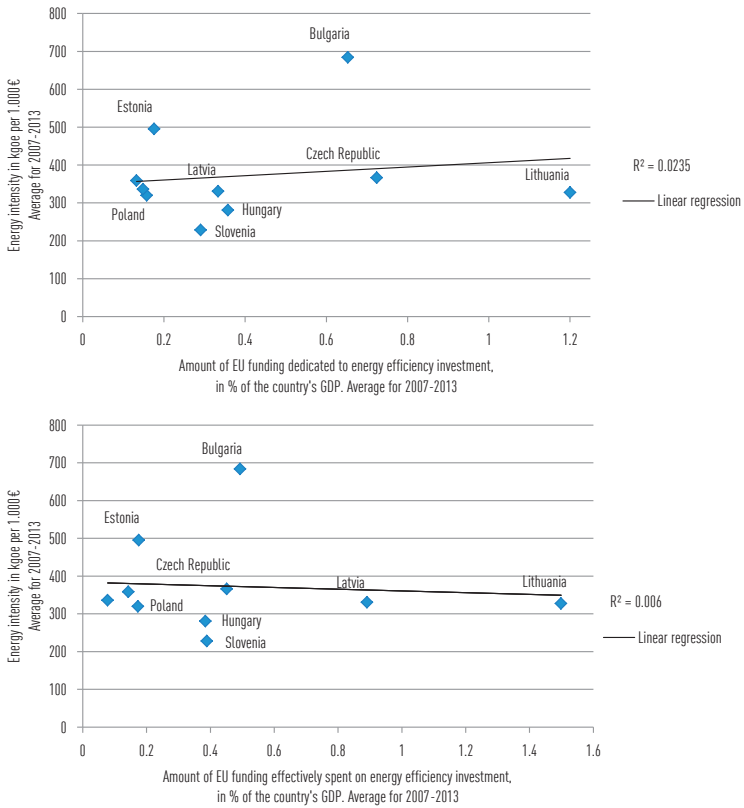
159. For a broader and detailed study on the use of EU funding for the energy transition in CEECs, cf. CEE Bankwatch Network, *Climate's Enfants Terribles*, January 2016.

160. Those data encompass "energy efficiency, co-generation and energy management". This adopts a large sensu definition of energy efficiency as no specific data is available for energy efficiency only.

161. Calculated as the average of the annual data for GDP and energy intensity for the year 2007-2013.

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FIGURE 17 ► Dedicated allocation and effective allocation of ERDF and CF funding for EE projects in the ten Central-Eastern member states¹⁶², for the period 2007-2013



Source: Thomas Pellerin-Carlin and Britta Daum, Jacques Delors Institute. With data from Eurostat (GDP & energy intensity) and European Commission (for the decided and effective allocation).

¹⁶² i.e. Czech Republic, Poland, Lithuania, Hungary, Bulgaria, Romania, Slovenia, Slovakia, Latvia, Estonia. Croatia is not considered as the time span studied here is 2007-2013.

Finally, beyond EU funding, member states have also many public support tools. Making a comprehensive survey of such schemes could be the purpose of a separate report. Here, we will only mention the public institutions most often quoted by EE experts as having among the best EE programmes: KfW (Germany), KredEx (Estonia), Caisse des Dépôts (France), Green Investment Bank (UK).

Last, and certainly not least, beyond public financial support to investments specifically targeting energy efficiency, there is a **need to further mainstream energy efficiency and environmental concerns into all investments publically supported**¹⁶³.

3.4.2. The additionality of EFSI vis-à-vis EU funding and private finance

As emphasized in Section 1.2.2., additionality is a key concern for EFSI.

Most EU and national funding currently works by using grants, subsidizing a particular project through the use of public money. Grants are a very adequate tool for financing specific EE projects, especially those targeting low-income households. Yet, many profitable EE investments are not undertaken by middle-income and high-income households as well as companies. EFSI can intervene in this instance to foster EE without the use of grants, for instance by ensuring that a lower interest rate is proposed and makes the project profitable¹⁶⁴, or via other tools (equity, quasi-equity etc.).

This is therefore not a surprise that the biggest EE project financed by EFSI in 2015 was €400 million in funding to the French Third Party Financing Bodies specialized in EE investment for condominiums¹⁶⁵. As the target group is households that have a good payback capacity, they would benefit from little-to-no EU and national grants.

¹⁶³ For a recent study on the role of public financial institutions in the low-carbon transition, and the need to achieve low-carbon mainstreaming, cf. OEDC, *Public Financial Institutions and the low-carbon transition*, 6 November 2014.

¹⁶⁴ To give an order of magnitude, in case of an energy efficiency project (e.g. deep renovation of a building) financed by a 20 years loan of 100€, if the interest rate is of 2% (like it is likely to be with EIB/EFSI loans), the total cost of the project will be of 121€ (100€ of project cost + 21€ of interests). If the interest rate is of 5% (like it may be for a classic commercial bank loan in most EU countries), then the cost rises to 158€. If the interest rate is of 8% (like it often is for commercial bank loans in countries most hit by the economic crisis, like Spain or Italy) the cost of the project rises to 201€. By providing lower interest rates, EFSI can therefore allow many profitable energy efficiency projects to start.

¹⁶⁵ European Investment Bank, *European Fund For Strategic Investment*, retrieved 23 January 2016.

The question remains: how can we avoid having EFSI crowding-out private financing? To illustrate, the modernization of the Italian steel company Arvedi is partially financed by EFSI (€100 million out of 227 million)¹⁶⁶. In this case it is likely that this programme could have been financed by private sources in the forms of loans or equity, but at a higher cost that would have obliged project managers to delay or scale-down their project.

3.5. Main obstacles hampering investment in energy efficiency

After having analysed the rationale behind EE investment and its current investment situation in Europe, this section is dedicated to analysing the main obstacles and risks that currently hamper such investment in Europe.

It puts the emphasis on the currently flawed regulatory framework that does not sufficiently¹⁶⁷ encourage, and sometimes even discourages, EE investment. Uncertainty on future energy prices, the small size of most EE projects, actor short-sightedness, as well as a poor awareness of the potential EE gains further hinder investment in energy efficiency in Europe.

3.5.1. A flawed regulatory framework

Key EU decision makers and EE experts¹⁶⁸ agree that the optimal regulatory framework is still not in place. If it were, public finance intervention for EE could be much more limited to specific sub-areas (e.g. energy poverty).

An improved regulatory framework would focus on better internalizing EE's **externalities**, dismantling **perverse incentives**, and improving legislative predictability and end-user **energy price predictability**.

Externalities. GHG emitted by human activities are triggering climate change, which increases the frequency, intensity and length of extreme

¹⁶⁶ European Investment Bank, *Arvedi Modernisation programme*, 26 February 2015.

¹⁶⁷ By 'sufficiently', we mean in a way that would be sufficient to reach the EU EE targets.

¹⁶⁸ As part of this project, the Jacques Delors Institute held a [seminar](#) in Brussels on 13 October 2015. Debates were held under Chatham House Rule, with several key EU decision makers and EE experts.

weather events. Internalising the costs of GHG emissions is now a widely acknowledged element¹⁶⁹. Accurate internalisation of the real costs of GHG emissions is difficult in practise as estimates vary immensely depending on the chosen assumptions¹⁷⁰. The current market price of the EU-European Trading Scheme (EU-ETS) is at about 8 euros per tonne of CO₂eq, and it is way below the real costs of GHG. This current carbon price is having such a little impact on EE investments that it has not even been included into the set of almost 100 drivers of EE investments studied by EEFIG.

The EU-ETS moreover covers only a minority (about 40%) of the EU territorial emissions, while the rest of the emissions are either not priced at all, or priced by national measures that are loosely coordinated at the EU level by an EU directive dating from 2003¹⁷¹ that has not been revised since then as EU-wide legislation on taxation (included energy taxation) can only be agreed by the consensus of all 28 EU member states¹⁷².

Perverse incentives. In some areas, we witness the phenomenon of public intervention favouring negative externalities instead of mitigating them. This is the case with public fossil fuel subsidies. Those subsidies are defined either *stricto sensu* as public money going directly to fossil fuel consumption (e.g. an ‘gasoline voucher’) or *largo sensu* as a specific treatment given to an energy product (e.g. less taxes on diesel, compared to gasoline).

Fossil fuel subsidies represent massive amount of money at the global level: the *stricto sensu* definition allowing the IEA to estimate it to €500 billion a year, the *largo sensu* definition allowing the IMF to estimate it to €5.000 billion a

169. For instance the Paris Climate Agreement following December 2015’s COP21 stating that the 195 countries who signed the agreement recognize “the important role of providing incentives for emission reduction activities, including tools such as domestic policies and carbon pricing”. Cf. UNFCCC, [Paris Agreement](#), 12 December 2015.

170. One can identify three key assumptions when estimating the real costs of GHG emissions’ externalities.
 1. The impact of a given quantity of GHG on climate change is far from being certain. The main scenario for the evolution of GHG emissions in a way that is consistent with limiting the average temperature increase to 2°C only gives a ‘likely’ (i.e. 66%) chance to reach the said objective.
 2. The impacts of climate change are still largely unknown with accuracy, especially if the increase of global average temperatures goes beyond +2°C. Estimates of the economic cost of climate change therefore vary a lot, hence impacting the estimated externality cost of GHG emissions.
 3. The time scale taken into consideration matters as the economic losses climate change will trigger over the next 10 years are obviously less important than the one it will bring over the next 20 years.

171. European Union, [Directive 2003/96/EC restructuring the community framework for the taxation of energy products and electricity](#), 27 October 2003.

172. See for instance the European Commission’s 2011 proposal for a revision of the energy taxation directive, that was later withdrawn as member states failed to reach a consensus on this text.

year¹⁷³. Using the *largo sensu* definition, the **IMF estimates that fossil fuels subsidies in the EU amounted to €100 billion**¹⁷⁴.

Fossil fuel subsidies act as a *de facto* negative carbon price, subsidising GHG emissions. Both national and EU levels could use their state aid powers to legally forbid any public aid subsidising fossil fuel¹⁷⁵ especially in the current context¹⁷⁶ of relatively low oil and gas prices¹⁷⁷.

Legislative predictability. Regulatory stability is considered to be the n°1 driver for the supply of corporate EE investment in companies¹⁷⁸.

The key enforcers of EU law are national authorities and they tend to poorly enforce the EU's EE legislation. For instance, the EU EE directive that entered into force in 2012¹⁷⁹ is currently¹⁸⁰ most likely inadequately transposed by 27 member states, with 20 of them having already received reasoned opinions from the European Commission that checks whether EU directive have been properly implemented.¹⁸¹ This severely hinders EE investments. To illustrate, lack of transposition of Article 8 of the said directive means that companies may not be required to perform their periodic energy audits, hence being an obstacle to making EE investment an item on the agenda of the company's decision makers.

EU policies are not duly enforced in the sector of EE - like in many other sectors. This creates further uncertainty for actors as they cannot even be sure that they will have to respect the EU directive as they are not certain that member states will transpose it¹⁸².

173. David Coady & all., "How large are global energy subsidies?", IMF Working Paper 15/105, May 2015.

174. Ambrus Barany and Dalia Grigonyté, "Measuring fossil fuel subsidies", ECFIN Economic Brief, Issue 40, March 2015.

175. From an energy efficiency perspective, any subsidy to any energy source hinders energy efficiency investment. However, EE should not be an end in itself; but a mean to an end. This is why this paper does not argue against subsidies for renewable energy sources, as it might be a useful tool to achieve benefits similar to energy efficiency.

176. This paper was written between September 2015 and January 2016.

177. To deal with specific issues, such as the cost-competitiveness of energy-intensive industries exposed to global competition or the need to aid the poor, public money could be channelled to the same actors via another channel (e.g. tax credit/tax rebates targeting non-energy elements, EE subsidies to diminish poor people energy consumption and therefore spending).

178. Energy Efficiency Financial Institutions Group, *Final Report*, February 2015, p. 44.

179. European Union, Directive 2012/27/EU on energy efficiency, 25 October 2012.

180. 18 November 2015.

181. European Commission, *Assessment of the progress made by member states towards the national energy efficiency targets for 2020*, p. 11

182. EU directive indeed only have a limited direct effect. Cf. Jean-Paul Jacqué, *Droit institutionnel de l'Union européenne*, 6ème édition, 2010, Dalloz, p. 567-571.

To foster EE investment in concrete EE projects and also in research and innovation, policy makers can send better signals to improve policy predictability. This would foster the development of EE investments as a sector where little public support from public financial institutions is needed, aside from a few exceptions (e.g. energy poverty).

Energy prices predictability. The most direct gain of an EE investment is the money saved thanks to energy savings. The economic gains of EE investment therefore rests heavily on assumptions on future energy prices.

The price of electricity and gas paid by consumers (including taxes etc.) is relatively stable over time and tends to slightly increase in Europe (see Figure L in the Appendix).

The price of oil is however subject to much more volatility on the markets. Current low oil market prices disincentive EE investments, especially in the transport sector as virtually all of its energy comes from oil.

Estimating future energy prices is a difficult task as their formation is extremely complex. This uncertainty is a genuine concern for the rationality of EE investments. Over-estimating energy prices leads to performing unprofitable EE investments, creates losses for EE performers while raising opportunity cost concerns for the whole economy¹⁸³. Under-estimating energy prices however leads to sub-optimal EE investments, undermining the medium/long-term cost-competitiveness of European businesses and households' purchasing power.

As **the end-user price is the one that matters**, energy taxation plays a positive role in boosting EE investments as it raises energy prices and diminishes uncertainty. In this regard, boosting EE can be achieved through every measure that increases the *perception* as well as the reality of high and stable future energy prices, most notably through elements impacting energy prices such as carbon pricing and energy taxation.

¹⁸³. i.e. money spent on unprofitable EE investments could have been invested in a profitable investment.

3.5.2. The small size of EE projects and their difficult aggregation

A key characteristic of EE projects is their small size and their distribution across a large number of entities, leading to fragmented and heterogeneous markets where transaction costs are high. Aggregating several small projects into one bigger pool is therefore critical to attract investors' interest. Such aggregation can occur through two main methods: bundling¹⁸⁴ and pooling¹⁸⁵. To allow for a cost-effective aggregation to take place, transaction costs ought to be lowered to encourage the emergence of low-cost retail models. This requires standardization and easier access to data.

Lack of standardization hinders EE development as having different standards make it more difficult to compare, articulate and repeat specific projects. Standardisation efforts can therefore be led by market actors and/or policy makers to deal with the standardization of processes (such as ISO 50002 for energy auditing), technical measures, or financial instruments (such as Green bonds, see *infra*, Section 3.6.2.).

Lack of energy data availability also hinders EE development. A lot of data is currently possessed by companies, most notably distribution system operators, but is not made available to EE providers. This lack of data availability makes it difficult for EE providers to identify potential customers. Aggregated and anonymized data could be made open-source - provided it respects data protection legislation. Lessons could be drawn from the US Department of Energy Buildings Performance Database as well as the Californian Public Utility Commission Project¹⁸⁶.

3.5.3. Actors' short-sightedness and split incentives

As virtually all EE projects encompass heavy and frontloaded fixed spending, the time horizons considered for those investments will dramatically impact the choice on whether such investment is to be made or not. As we have seen, in most

¹⁸⁴ Bundling refers to the aggregation of similar projects coming from distinct entities. It is made easier by new technologies, such as infra-red imaging that can help to analyse similar houses in a given area that could benefit from a similar kind of EE investment.

¹⁸⁵ Pooling refers to the aggregation of distinct projects coming from a single entity. It could for instance be a local town negotiating a contract for retrofitting their entire building stock made of very different buildings (e.g. offices, historic buildings, schools, stadium etc.).

¹⁸⁶ California Public Utilities Commission, *Energy data center briefing paper*, 2012.

companies, the time horizon considered is often limited to 2 to 4 years¹⁸⁷. This leads to a sub-optimal investment situation where there are **even ‘projects with payback periods of less than 1 year which remain outstanding’¹⁸⁸**.

Split incentives arise when the EE decision maker is a different entity than the beneficiary. This is particularly frequent in the rental housing market where two situations often occur:

- The owner decides and pays for the EE investment but has little incentives to do it as the one who will see his energy bill payments decreased is the tenant.
- The energy bill is paid by the owner. This entails that the tenant has no economic incentive to buy energy-efficient equipment or adopt an energy-efficient behaviour¹⁸⁹.

A similar issue arises within businesses and could be named “split decision-making”. It arises when staff members conscious of the ways EE could reduce energy costs for the company do not have access to the businesses decision makers (CEO, board etc.).

3.5.4. Lack of expertise and awareness of benefits

Lack of expertise and poor knowledge of existing EE investment opportunities limit EE investments in Europe. EFFIG for instance considers the lack of expertise & awareness to be the n°2 driver affecting demand for EE investments in the building sector¹⁹⁰.

This lack of expertise is particularly important within non-energy intensive SMEs. Because they are small structures, they usually have no EE expertise

¹⁸⁷ Energy Efficiency Financial Institutions Group, *Final Report*, February 2015, p. 89.

¹⁸⁸ *Ibid.*, p. 40.

¹⁸⁹ This concern is however less important than the first one as the most significant EE gains have to do with the thermal isolation of the building that is always chosen by the owner. In the case of furnished flat, the owner moreover chooses most of the appliances the tenant has access to.

¹⁹⁰ *Ibid.*, p. 16.

in-house. With EE gains remaining unaware of the SME decision makers, no EE investment are made simply because no EE investment project is being born¹⁹¹.

The lack of awareness of the non-energy benefits constitutes a further obstacle for EE investment¹⁹².

3.6. Policy recommendations

EE investments are of strategic importance for the EU. The following recommendations aim at fostering investment in EE by boosting both supply of EE solutions and demand for EE projects, as well as financing solutions for EE projects.

3.6.1. Improving regulatory framework

Setting a clear EE path at both EU and national levels

At the EU level, the EE targets are still purely indicative. Their ambition for 2030 should be increased, building on the economic rationale of EE investment as well as the outcome of COP21¹⁹³. This enhanced EE target for 2030 should be legally-binding both at EU and national levels, to promote a genuine accountability. As a result, smart legislation and action at both EU and national levels are likely to be encouraged to reach this EE target, with such decisions boosting EE investments on the ground.

191. Aware of this situation, some energy utilities may offer EE services to their customers, including SMEs. This however requires a shift in their business model as they would sell their customers an EE service that would allow their customers to consume less – hence limiting the future profits under the classic business model of most energy utilities. While some energy utilities seem to be moving in that direction, this is still not the mainstream case.

192. When EE investments are performed, they often lead to non-energy related positive externalities. When isolating a building against heat losses, while thermal isolation materials and techniques differ from phonic's (i.e. meant to reduce noise), several EE investments chosen purely for energy-related purpose do improve phonic isolation, with its impact on comfort and productivity – especially when people work within the said building. EE can also lead to changes in human behaviours. A reduced heating bill through EE can therefore allow individuals to change their behaviour as heating costs is a lesser concern than it used to be. Those behaviours can be to aerate a specific room more frequently, leading to reduced humidity levels in a way that better preserves both property value and human health.

193. UNFCCC, *Paris Agreement*, 12 December 2015.

At the national level, national - or even regional - polities should democratically adopt national - or even regional - energy strategies that set EE targets for the entire economy (like currently in France and Germany) or for specific sectors (like currently for heating in Denmark and housing in Lithuania). In order to ensure more stability, those measures should be adopted by national parliaments and would ideally be supported by political parties opposing current governments. Such legislations could also be enshrined in constitutional or quasi-constitutional law, as to ensure its primacy over ‘classic national law’ while ensuring in some cases that it would take more than a classic simple majority to overturn such legislations.

Setting floor prices for energy prices

At the EU and national levels, *de facto* floor-energy-prices can be set through the flexible use of taxes, in order to limit the uncertainty on future energy prices for end-users. Such systems could set floor prices on:

- Raw material, such as the price of an oil barrel (i.e. having a floating tax rate that *de facto* sets the price of an oil barrel at a minimum of 80€ a barrel. If, for instance, an oil barrel would cost 50€ on the market, this new taxation will be of 30€ per barrel). As an alternative, it would be possible to tax each oil barrel at a given amount, like the 10\$/a-barrel taxation recently proposed by Barack Obama in the USA.
- Final energy products, such as gasoline or heating oil.
- Carbon price, as the UK recently decided to set within the market-based EU-Emissions Trading Scheme (ETS) within the UK itself; or as France recently decided on some non-ETS sectors as part of its energy transition law¹⁹⁴.

If for political reasons, such floor prices cannot be made legally binding; it would at least be beneficial to put indicative prices, as to give a signal in particular for SMEs, local public authorities and households.

Generally speaking, national taxation schemes can be re-thought in a way that changes the repartition of taxation across sectors while keeping general taxation levels at a given level. As a rule of thumb, taxation could tax more heavily

194. République française, Loi n° 2915-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte, 17 août 2015.

elements that are largely considered to be negative (e.g. GHG emissions, pollution, energy consumption etc.), while taxing less heavily elements that are largely considered to be positive (e.g. wages). Such an approach would also entail **banning fossil fuels subsidies**.

3.6.2. Expanding and improving the use of FI for EE

Ensuring high-quality green bonds

Private finance can provide to EE projects financing solutions with lower interest rates, or equity with a less demanding return on investment. Investors may indeed accept a lower return on investment against the guarantee that their money will be spent on EE/low-carbon projects. This is the rationale behind the so-called Green Bonds, a tool that is for instance already used by the EIB to raise money on financial markets¹⁹⁵. There is indeed a strong demand from investors, as exemplified by the success of the EIB Climate Awareness Bond¹⁹⁶. Between 2013 and 2014, the market for green bonds more than tripled, from 10 billion to 35 billion USD¹⁹⁷. This could provide private financing solutions at conditions close to the ones currently provided by public financial institutions, thus allowing public money to focus on other sectors (e.g. digital infrastructure see Section 2, protection of biodiversity, climate change adaptation etc.).

A key bottleneck for the development of those green bonds is the lack of guarantee that this money will actually be used to finance projects that the investor would perceive to be 'green'¹⁹⁸. Moreover, it is currently extremely difficult for the investor to exit green bond contracts even when the use of the money is not in line with the investor's expectations.

A demanding legal clarification of what a green bond is could be done by an EU regulation or performed by market actors or stakeholders.

¹⁹⁵. European Investment Bank, *Climate Awareness Bonds*, 27 March 2015.

¹⁹⁶. European Investment Bank, *Green Bond tapped to a record EUR 2.6bn*, 15 May 2015.

¹⁹⁷. Energy Efficiency Financial Institutions Group, *Final Report*, February 2015, p. 54.

¹⁹⁸. To illustrate, green bonds may be used to finance a nuclear power plant as it is a low-carbon source of electricity. Many green bonds investors may however not consider nuclear power to be a 'green' source of electricity generation, for instance because of the nuclear waste it generates.

Develop On-tax finance & on-bill repayment in the building sector

The principle of on-tax finance is that a loan to retrofit a building is attached to the said building and paid back through the local taxes paid by the owner/tenant of the building. This mechanism can deal with the issue of spilt incentives while at the same time raising the seniority of the loan. A key example of this mechanism is the US Property Assessed Clean Energy. EFSI money might be used to finance several pilot projects experimenting the deployment of similar mechanisms in several member states, as to assess its viability in Europe.

On-bill repayment is similar to on-tax finance but the loan is paid not by local taxes but by the energy bill. This mechanism was used in the UK under the name ‘Green Deal’ but, according to EE experts¹⁹⁹, it lacked the marketing manpower to roll-it-out on a large scale. National Promotion Banks could embrace on-bill repayments and find agreements with energy utilities as those utilities may market this mechanism to their customers.

Both on-tax finance and on-bill repayment can play a big role in EE investment, particularly for projects undertaken by households and SMEs.

3.6.3. Focusing EFSI on boosting energy efficiency in central-eastern Europe

EFSI’s investments for EE should ideally focus on Central-Eastern European Countries (CEECs) as they are the ones where the greatest EE gains are likely to be seized, while also being the countries most exposed to a disruption of gas supply from Russia.

Section 1.3.6. of this Report draws on the articulation between ESIF and EFSI, which is particularly critical for this recommendation as CEECs are countries where ESIF funding is very important, with significant among of ESIF remaining unused.

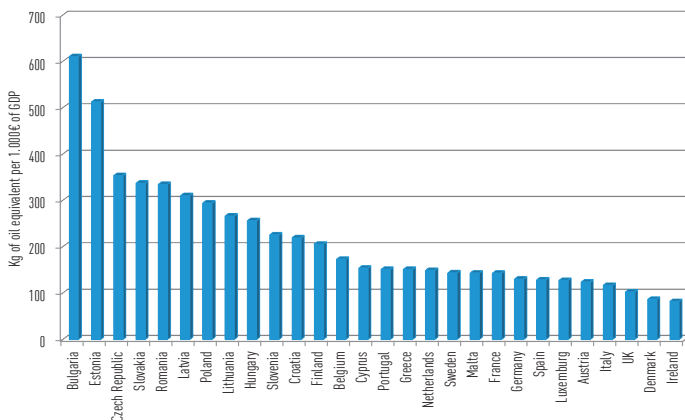
¹⁹⁹ As part of this project, the Jacques Delors Institute held a [seminar](#) in Brussels on 13 October 2015. Debates were held under Chatham House Rule, with several key EU decision makers and EE experts.

CEECs are not yet energy-efficient

Due mostly to historical reasons, EE gains in the EU tend to be greater in Central-Eastern European member states than in others. When looking at energy intensity data (see Figure 18), we see that the 11 most energy intense EU member states are the 11 member states that are the CEECs. This situation is largely caused by the fact that CEECs inherited very inefficient energy systems (e.g. inefficient power plants, inefficient buildings etc.) from decisions made under Soviet rule. Current EU funding for EE is moreover totally decoupled with the energy intensity of EU member states in general, and CEECs in particular (see Figures 16 and 17), so EFSI could be used to partially correct this element, both by acting as EFSI, and in an EFSI-ESIF collaboration.

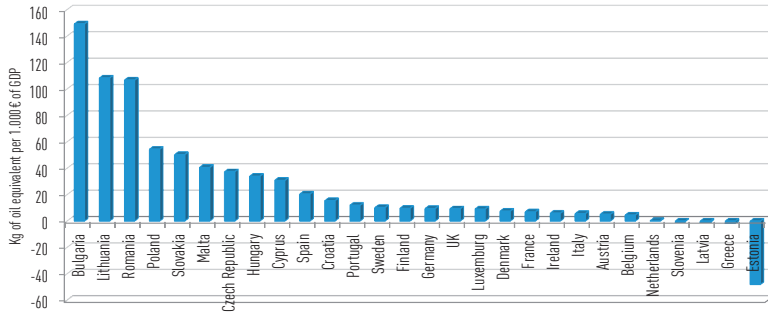
A potential counter-argument to such geographical concentration might be the fear of moral hazard. In this particular case, such fear is ungrounded for two key reasons. First, one can hardly consider those countries to be accountable for having inherited soviet energy systems. Second, most of those countries have already made significant - though insufficient - energy intensity gains at least since 2007 (see Figure 19).

FIGURE 18 ▶ Energy intensity (2013)



Source: Thomas Pellerin-Carlin, Jacques Delors Institute, from Eurostat data.

FIGURE 19 ▶ Energy intensity improvement (2007-2013)



Source: Thomas Pellerin-Carlin, Jacques Delors Institute, from Eurostat data.

CEECs are the most exposed to energy security concerns

Energy security is, together with sustainable development and competitiveness, one of the three key objectives of the EU energy policy. Its gas dimension is currently mostly being dealt with physical infrastructures²⁰⁰.

A key enhancer of sound and cost-effective energy security is the development of EE as it moderates or reduces energy demand. This element is of particular importance for CEECs for four main reasons:

- CEECs are the EU member states most reliant on Russian gas. They therefore were the ones the most hit by the 2009 gas crisis²⁰¹.
- Gas demand may rise more specifically in CEECs as a result of stronger GDP growth to be expected in those countries, as well as a potential partial switch from coal to gas to generate electricity, as to be consistent with the EU objectives of greenhouse gas reduction.

²⁰⁰ Such as reverse flows on existing gas pipeline, new pipelines linking, for instance, the Baltic countries with Poland and Finland, and new infrastructures linking some elements of the EU territory to the rest of the world via LNG terminals such as the 2015-inaugurated Klaipeda LNG terminal in Lithuania.

²⁰¹ Sami Andoura and Jean-Arnold Vinois, "From the European Energy Community to the Energy Union", Studies & Reports no. 107, Jacques Delors Institute, January 2015.

- Despite recent hopes about domestic shale gas production, there are little domestic gas resources available at an affordable price in CEECs²⁰²,
- LNG remains too costly to represent a great share of their gas consumption²⁰³.

In concrete terms, the EFSI advisory hub could hire members of staff with a specific knowledge of EE projects in CEECs while boosting project development assistance and technical assistance devoted to CEECs²⁰⁴. This should trigger more and better EE projects coming from CEECs, hence **reaching a demand-side-driven geographical concentration of EFSI's energy efficiency investment**.

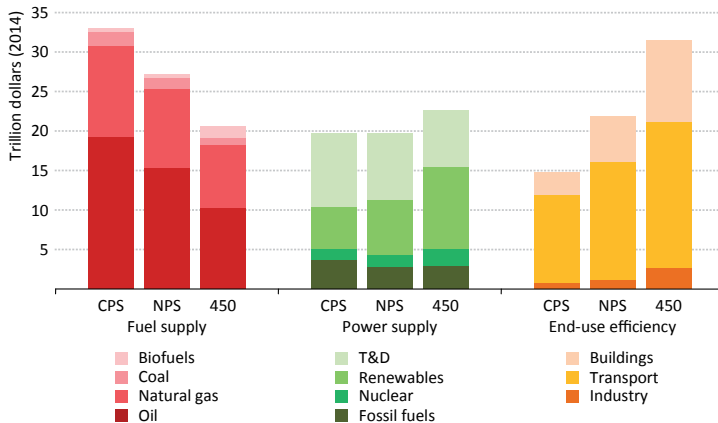
²⁰². In early 2015, all global companies engaged in shale gas exploration withdrew from Poland, as there are little-to-no significant commercially exploitable shale gas resources in this country.

²⁰³. LNG prices are still well above pipeline gas prices, leading to a situation where less than 25% of the EU importing capacity for LNG is indeed used. Cf. Figure M in the Appendix.

²⁰⁴. If one wishes to distinguish between southern and northern CEECs, the northern ones (Estonia, Latvia, Lithuania and Poland) may receive a particular attention as there have no prospects of pipelines linking them to a non-Russian gas source in the future, unlike south-CEECs that have the yet hypothetical prospects of getting most of their gas from Azerbaijan, Central Asia and/or Iran, via Turkish pipelines.

3.7. Appendix to case study on energy

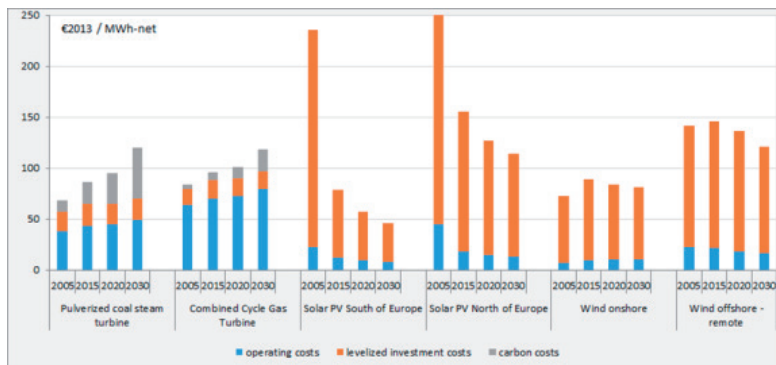
FIGURE G ► Cumulative world energy sector investment by sector and scenario, 2015-2040



Note: CPS = Current Policies Scenario; NPS = New Policies Scenario; 450 = 450 Scenario; T&D = transmission and distribution.

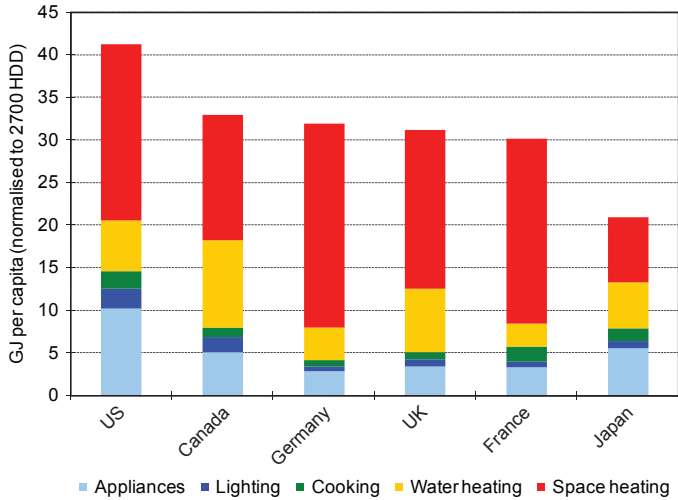
Source: International Energy Agency, World Energy Outlook 2015, p. 60.

FIGURE H ► Evolution and prospective on the evolution of levelized costs of electricity generation broken down by key cost components



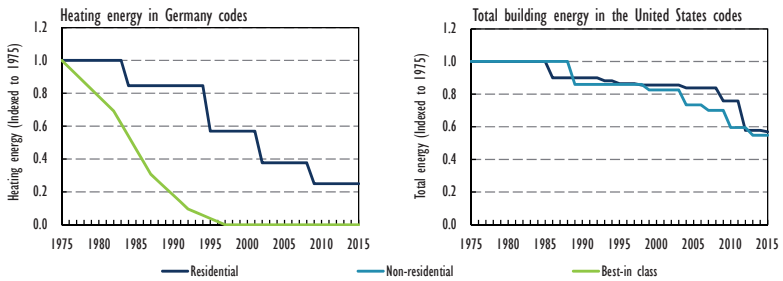
Source: European Commission, Monitoring progress towards the Energy Union objectives, Brussels, 18 November 2015, p. 70.

FIGURE I ▶ Residential energy use in different developed countries



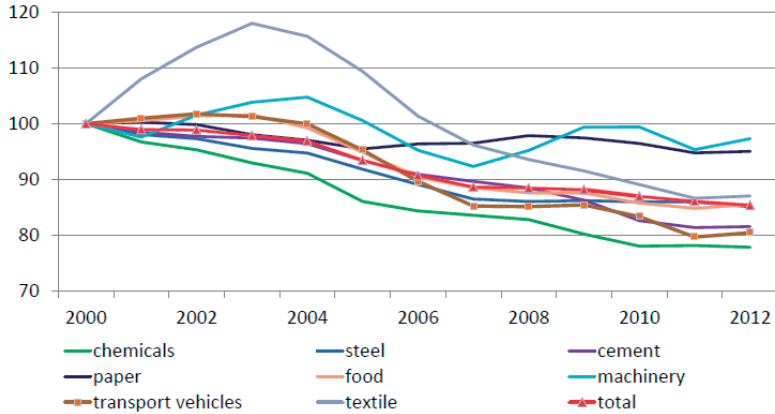
Source: Diana Ürge-Vorsatz & al., *Energy End-Use: Buildings*, p. 663.

FIGURE J ▶ Evolution of heating energy requirements in German buildings codes (left graph)



Source: International Energy Agency, *Energy Efficiency Market Report 2015*, 2015, p. 83.

FIGURE K ▶ Energy efficiency Index (ODEX) in EU manufacturing industries. Calculated by ODYSSEE-MURE project using industry data rebased from year 2000



Source: Energy Efficiency Financial Institutions Group, Final Report, February 2015, p. 37.

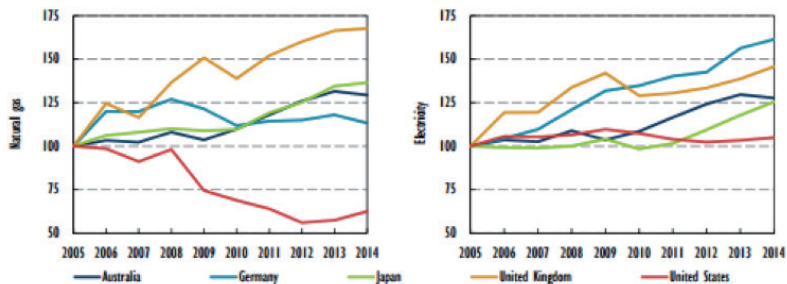
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TABLE E ► Most common energy efficiency financing methods

	Self-financing	Consumer loan	Energy savings performance contract	Energy service agreement	Property assessed clean energy	Utility on-bill financing	Public loan programmes (syndicated loans / grants)	Mortgage-backed financing
Market penetration	High	High	Medium	Low	Low	Low	Medium	Low
Market segment	All	Transport, households	Services, industry	Services, industry	Services, industry	Households, services, industry	All	Households, services
Typical project size	Unlimited	\$1 000 - \$20 000	\$0.5 million - unlimited	\$250 000 - \$10 million	\$2 000 - \$2.5 million	\$5 000 - \$350 000	\$1 000 - \$10 million	\$2 000 - \$25 000
Repayment method	-	Credit card bill, loan payment	Service contract	Terms of service agreement	Property tax bill	Utility bill	Loan payment, none for grants	Mortgage
Collateral	-	None	Equipment	Equipment	Assessment lien	Equipment, service termination	Equipment, government backing	Property
Description	Energy efficiency project is financed through savings or available cash flow.	The loans are generally unsecured and include credit card financing, bank overdraft or personal loans.	Typically an energy service company (ESCO) designs the project and assures financing in exchange for a portion of the energy savings.	A special purpose entity is set up by a third-party and takes charge of financing and monitoring. It retains ownership of the equipment.	Capital provided by local government and repaid through assessments levied on the property.	A utility or third-party covers upfront costs and charges customer on monthly bill.	Public banks offer low-interest loans, grants or underwrite loans to lower capital costs and to leverage private capital.	Home mortgage is extended to cover cost of energy efficiency.

Source: International Energy Agency, World Energy Investment Outlook, 2014, p. 152.

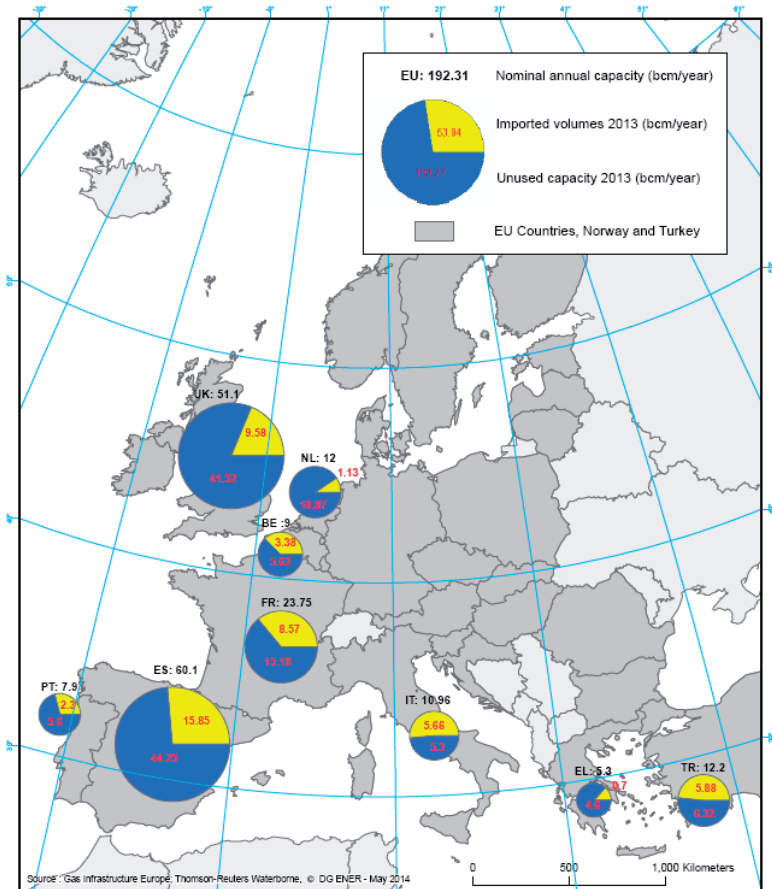
FIGURE L ► Indices of natural gas and electricity prices paid by industry and households, rebased from year 2005



Source: International Energy Agency.

FIGURE M ▶ LNG import capacities and delivered quantities in the EU, 2013

Total Europe: Nominal annual capacity = 192 bcm/y; 2013 LNG imports = 53 bcm



Source: Gas Infrastructure Europe, Thomson-Reuters Waterborn in European Commission, In-depth study of European Energy Security, Brussels, 02 July 2014, p. 54.

CONCLUSION

In his speech to the European Parliament on 15 July 2014, the then candidate for President of the European Commission, Jean-Claude Juncker, promised the establishment of “an ambitious Jobs, Growth and Investment Package”.

Many people would argue that the Investment Plan for Europe falls short of being this ambitious investment offensive. This criticism is not groundless. One of the conclusions from our analysis is that the Plan, in its current form, will not be sufficient to close the current EU investment gap - that is why we recommend complementing it with actions to boost public investment such as a re-formulation of the ‘investment clause’ included in the Stability and Growth Pact.

Having said so, we believe that the Plan’s potential is largely underestimated. It is the boldest initiative taken so far to use the EU budget as a guarantee to mobilize private financing and, if well-implemented, it might force a permanent and salutary change in the European Investment Bank working culture (moving away from its traditional risk-averse culture to finance high-risk/high-return projects). Contrary to previous EU investment initiatives (such as the 2013 decision to increase the EIB capital), it addresses the problems of access to finance but also aims at removing the various regulatory obstacles to investment - which in certain sectors constitute the main brake to private investment. It pays particular attention not only to the volume of investment but also to efficiency by providing support to project preparation and financial structuring. Last but not least, by encouraging the involvement of National Promotional Banks (NPBs), the Juncker Plan can constitute the first step towards the creation of a more integrated and coherent approach in the way of publicly promoting investment in Europe.

Our analysis also suggests that the success of the Juncker Plan within the initial three-year investment period will depend on the fulfilment of certain conditions or prerequisites. The budget of the European Investment Advisory Hub (EIAH) shall be commensurate to the needs, and reinforced advisory support shall be provided to those countries with less sophisticated financial markets and weaker public administrations. The additionality of EFSI shall be guaranteed by clarifying the conditions of eligibility for investment platforms and the conditions for granting the EU guarantee to NPBs. There should be effective progress in the third pillar of the Plan, and particular attention must be given to the removal of regulatory obstacles to low-carbon investment. Rules for projects co-financed by EFSI and ESIF should be simplified. The establishment of the European Investment Project Portal (EIPP) must be complemented with mechanisms for standardization, and the European Commission needs to promote the creation of well-designed and transparent public project infrastructure pipelines at the national and regional levels.

Finally, one should not forget that, if the Plan is successful within the initial investment period, it might open the way to the establishment of a permanent investment scheme in Europe. In the study we have discussed some possible long-term scenarios, but it is important to highlight that, at the very minimum, it would be highly desirable that member states or national promotional banks reconsider the possibility of putting money into EFSI's capital if EFSI is maintained.

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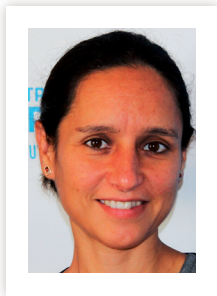
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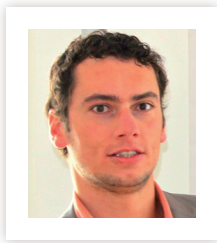
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INVESTMENT IN EUROPE: MAKING THE BEST OF THE JUNCKER PLAN WITH CASE STUDIES ON DIGITAL INFRASTRUCTURE AND ENERGY EFFICIENCY

In his speech to the European Parliament on 15 July 2014, the then candidate for President of the European Commission, Jean-Claude Juncker, promised the establishment of “an ambitious Jobs, Growth and Investment Package”. Two years later, the so-called “Juncker Plan” is a tangible reality. What should we expect from it? Is it the major investment offensive promised by President Juncker, or just a communication campaign? What improvements can be made to make the most out of the Juncker Plan?

This report analyses the strengths and weaknesses of the Juncker Plan. Based on the Plan’s preliminary results, experts’ opinions, experiences with similar instruments and two case studies, this report identifies various short-term implementation risks that can threaten the success of the Plan within its initial three-year period and formulates policy recommendations to address such risks.

The main conclusion is that the Plan will not be sufficient to close the current EU investment gap – and therefore should be complemented by other actions to boost investment. The success of the Juncker Plan might be also threatened in the absence of certain conditions. The budget of the European Investment Advisory Hub (EIAH) should be commensurate to the needs, and reinforced advisory support has to be provided to countries with less sophisticated financial markets and weaker public administrations. The additionality of the European Fund for Strategic Investments (EFSI) should be guaranteed by clarifying the conditions of eligibility for investment platforms and the conditions for granting the EU guarantee to National Promotional Banks. There should be effective progress in the third pillar of the Plan (devoted to render EU and national regulations more investment-friendly), and particular attention must be given to the removal of regulatory obstacles to low-carbon investments. Further guidance for combining EFSI and ESI funds should be provided. The establishment of the European Investment Project Portal (EIPP) must be complemented with mechanisms for standardization and actions to promote the establishment of transparent and well-designed infrastructure pipelines at the national and regional level.

The report also analyses possible long-term scenarios; in particular, the possibility that EFSI leads to the establishment of a system of public investment banks in Europe and the possibility that it becomes the seed of a future euro area macro-economic stabilization capacity.

Finally, the report provides a more on-the-ground analysis of the possible contributions of the Juncker Plan in two major areas: digital infrastructure and energy efficiency. The two case studies stress the need to deliver on the third pillar of the Plan by improving EU and national regulatory frameworks in order to remove non-financial barriers to investment. In both areas there is a concrete risk of geographical concentration but evidence also point out that EFSI can serve to help structure and finance small-sized and high-risk investment projects.

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