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# Results and impact EIB operations signed in 2016 by policy objective 13.12 bn for Innovation and skills 21.26 bn for SMEs and midcaps finance 18.15 bn for Infrastructure 14.45 br for Environment

The European Investment Bank (EIB) is the European Union's (EU) bank. It provides long-term finance and expertise for sustainable investment projects that contribute to EU policy objectives. More than 90% of the EIB's activity is inside Europe but it is also a major financier in other parts of the world. The present report describes the EIB's 2016 operations within the EU. Operations outside the EU are examined in a separate report.



#### **EIB Operations in 2016**

In 2016, the EIB signed a total of 436 operations inside the European Union. The Bank provided EUR 67 billion of finance in total, of which EUR 59.2 billion related to the 376 new operations for which the first signature took place in 2016. The EIB's operations in 2016 contributed to all four of the Bank's public policy objectives supporting total project investment cost (PIC) for new operations of EUR 284.1 billion.

The EIB's operations support four public policy goals based on the objectives set out in the Bank's Corporate Operational Plan (COP): promotion of innovation and skills; financing for SMEs and midcaps; investment in infrastructure; and support for the environment. These goals are complemented by two cross-cutting objectives: cohesion, which addresses regional integration in all sectors, and climate action, which addresses climate change mitigation and adaptation in all sectors.



#### Promotion of innovation and skills

Investment in innovation and skills is critical to developing Europe's knowledge economy and to achieving the Europe 2020 targets.

2016 operations in support of innovation and skills amounted to some EUR 13.1 billion. New operations accounted for EUR 12.2 billion supporting a total PIC of EUR 50.2 billion.

Key results of EIB financing in support of innovation and skills are:

- More than 60 private sector companies were granted loans in support of R&D projects;
- The EIB's continued investment in ICT and broadband networks facilitated access to high speed data services for 10 million new subscribers;
- Over 770,000 students benefited directly from EIB-supported projects during 2016.

Projects through which the EIB promoted innovation and skills in 2016 include:

- A EUR 240 million loan to help finance the establishment and operations of Greece's Hellenic Foundation for Research and Innovation;
- A CHF 250 million loan (around EUR 228 million) for the CERN Large Hadron Collider;
- The EIB provided EUR 22,5 million of finance to support the ERASMUS+ programme and invested over EUR 1.456 billion in a programme to help improve the secondary school infrastructure in Italy.

A number of the EIB's innovation and skills operations also support the Bank's cohesion or climate action objectives. For example, educational projects in regional development areas or RDI projects for energy efficiency technologies.

#### SMEs and midcaps financing

SMEs and midcaps play a critical role in the European economy by generating jobs and wealth, and promoting innovation. SMEs represent over 90% of businesses in the EU and employ two-thirds of the active working population but face significant problems in obtaining access to finance. Supporting access to finance for SMEs and midcaps is a key priority for the EIB.

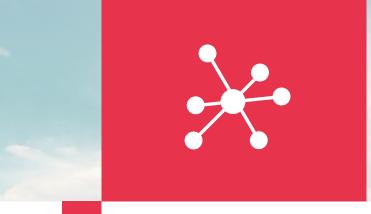
In 2016, EIB support for SMEs and midcaps financing amounted to EUR 21.3 billion. New operations accounted for EUR 18.1 billion supporting total PIC related to first signatures of EUR 105 billion. Key developments arising from the EIB's 2016 SME and midcap operations are:

- 207,000 sub-loans are anticipated over the next two years, leveraging at least EUR 36.2 billion of SME financebased on 2016 first signatures;
- Continued development of financial instruments for Horizon 2020 - the InnovFin Midcap Guarantee facility (EUR 150 million), Midcap Growth Finance (EUR 254 million), InnovFin Energy Demo Projects Finance Facility (EUR 10 million) and InnovFin Infectious Diseases Finance Facility (EUR 15 million);
- A new initiative involving EIB funding of EUR 140 million for a peer-to-peer lending platform linking investors with SMEs seeking finance.

Examples of projects that the EIB helped to finance in 2016 included:

- A EUR 200 million facility to support youth employment in SMEs in a economically weak region of Poland;
- A EUR 100 million loan to a Netherlands-based bank for a climate action scheme for SMEs and midcaps;
- A EUR 500 million credit line to support export finance for SMEs in Spain.

The cross-cutting objectives of cohesion and climate action are supported by a number of the Bank's SME and midcap operations.





#### Investment in infrastructure

Modern infrastructure plays an essential role in connecting internal markets and economies. EIB finance helps to ensure that the EU has the sustainable, efficient and well-integrated infrastructure it needs to create a 'SMART Europe'.

EIB investment in various types of physical infrastructure amounted to EUR 18.1 billion in 2016, representing some 27.1% of all EIB loans. New operations accounted for EUR 15.9 billion. EIB infrastructure finance supported the development of strategic transport (including TEN-T), energy infrastructure (including TEN-E) and various projects to promote integrated territorial development. As a result of 2016 operations:

- Over 1,500 lane-kilometres of roads and highways were upgraded or built;
- Over 1,800 km of railway tracks and over 240 stations were upgraded or built to the benefit of some 91 million additional passengers;
- Additional airport capacity of 25 million passengers per year and over 18 million additional tonnes of annual port cargo capacity were created.

Amongst the infrastructure projects supported in 2016 were:

- A loan of EUR 168 million for the expansion of Copenhagen airport;
- A EUR 1 billion loan to Rete Ferroviaria Italiana for investments in the TEN-T rail network, a key part of Europe's strategic transport infrastructure;
- A EUR 500 million loan to help with the construction of a motorway connection around Bratislava in Slovakia.

The EIB's objectives of cohesion and climate action are supported by a number of its infrastructure operations such as improved energy networks connecting regional development areas or inter-urban rail projects facilitating modal shift away from road transport.

#### **Environmental projects**

EIB lending supports the transition to a low-carbon, environment-friendly and climate-resilient economy. We back projects that promote clean air, biodiversity, sustainable transport, natural resource efficiency, and renewable energy and energy efficiency. We commit at least 25% of our EU lending portfolio to low-carbon and climate-resilient growth.

Projects in the environmental field received EIB support worth EUR 14.4 billion in 2016. New operations amounted to EUR 13 billion. EIB finance helped provide:

- The purchase or rehabilitation of over 2,300 public transport vehicles and rolling stock;
- New or improved irrigation networks covering 6,000 ha of land;
- Improved management of over 400,000 ha of forest land;
- Construction or upgrade of almost 13,000 km of water mains or distribution pipes;
- Some 4,400 MW of additional electricity generation capacity from renewable sources.

Examples of environment projects that were supported by the EIB in 2016 include:

- A EUR 180 million loan for a project to develop public transport in Helsinki;
- A EUR 120 million loan to support the implementation of the National Flood Safety Strategy (Delta Programme) in The Netherlands;
- A EUR 50 million loan to help SMEs in Portugal increase energy efficiency.

The EIB's cross-cutting objectives of cohesion and climate action are supported by a number of its environment operations such as depollution projects improving water and air quality in regional development areas or afforestation projects which sequester CO<sub>2</sub>.

#### Geographical distribution and added value of EIB operations in 2016

During 2016 the EIB was active in all EU Member States except for Latvia. As in previous years, the six largest Member States accounted for most of the EIB's investments with Spain, France, Germany, Italy, Poland and the UK absorbing almost 70% of the EIB's total finance during the year.

The EIB's 2016 operations brought significant added value to the projects selected for financing. The Bank provides long-term finance in situations where it would often be difficult, if not impossible, to obtain funding from alternative sources, and certainly not on such favourable terms and conditions. The EIB's preconditions ensure that projects are of a high quality and that they contribute to EIB and EU policy objectives. Moreover, the Bank's financial assistance often has a catalytic effect, helping to leverage additional funding from other sources. The combination of financial assistance and advisory services to project promoters is also an important aspect of the EIB added value. Last but not least, the EIB adds value through the project outputs and outcomes it supports, including positive externalities for society and the environment.

#### **European Fund for Strategic Investments**

During 2016, the EIB continued to play an important role in the implementation of the European Fund for Strategic Investments (EFSI).

EFSI was launched with the European Commission in 2015 as part of the Investment Plan for Europe (IPE) with the aim of stimulating economic recovery and growth after years of crisis and stagnation. Under EFSI, EIB Group is tasked with helping to mobilise EUR 315 billion of additional investment across the EU between 2015 and mid-2018, over and above its own operations.

From EFSI's launch in 2015 to the end of 2016, the EIB has signed 121 EFSI operations totalling EUR 14.2 billion, mobilising a further EUR 67.7 billion of related eligible investment.1

#### European Fund for Strategic Investments (EFSI) - cumulative amounts signed in 2015 and 2016 under the Infrastructure and Innovation Window (IIW)

EFSI objectives	Signed amount (EUR billion)	EFSI eligible investment mobilised (EUR billion)
Development and deployment of information and communication technologies	1.37	4.72
Development of the energy sector in accordance with the Energy Union priorities	4.76	25.50
Development of transport infrastructure, equipment and innovative technologies for transport	2.08	9.87
Environment and resource efficiency	1.05	5.16
Financial support through the EIF and the EIB to entities with up to 3,000 employees	1.73	10.81
Human capital, culture and health	0.50	3.19
Research, development and innovation	2.67	8.48
Total	14.16	67.73

<sup>1</sup> Eligible investment mobilised: eligible part of the of the overall Project Investment Cost

**EFSI** objectives

EUR 14.16 bn

Signed amount

EUR **67.73** bn

EFSI eligible investment mobilised

As a result of these EFSI operations:

- Almost 11 million additional households can access very high-speed broadband services;
- Some 30 private sector companies are directly financed for RDI projects with over EUR 64.4 billion of additional potential sales resulting from the projects;
- Some 1,000 lane-kilometres of roads and highways were upgraded or built with some 11 million additional passengers benefiting per year;
- Additional airport capacity was created for 8.4 million passengers per year;
- 6,800 MW of additional electricity generation capacity (of which 90% from renewable energy sources) with 4.9 million households supplied by the energy generated;
- Some EUR 2.5 billion has been invested in highly efficient combined heat and power (CHP) plants and building energy efficiency resulting in 1,780 GWh per year of energy savings;
- Almost 120 km of water mains or distribution pipes have been built or upgraded with over 2 million people benefiting from safe drinking water.

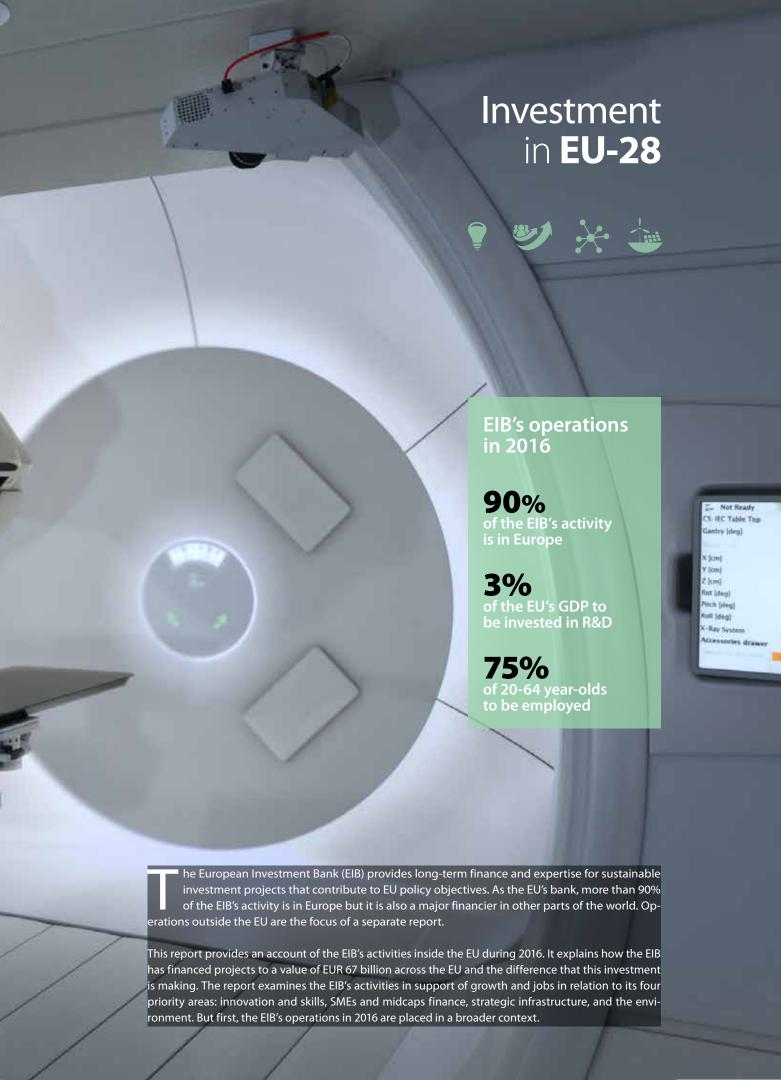
The estimated employment impact expected of EFSI operations is over 300,000 person-years temporary employment, some 42,000 full time equivalents (FTE) of permanent employment and over 500,000 jobs sustained. In addition, the EIB continued to play a key role under the two other pillars of the Investment Plan for Europe - providing technical assistance and visibility to investment projects and creating an investment-friendly environment.

# Expected impact on employment, growth and competitiveness

The creation of new jobs is vital given persistent and high unemployment rates across many EU Member States, and especially amongst young people. The EIB's investment in innovation contributes to the development of new technologies that are needed to promote Europe's long-term industrial competitiveness. In funding education, the Bank is helping to create the well-qualified workforce that is needed to develop Europe's knowledge economy as well as opening up employment opportunities for young people and others. Helping SMEs and midcaps access the finance they need in order to grow, contributes directly to job and wealth creation, whilst investment in infrastructure and the environment creates the conditions necessary for economic growth.

The EIB's operations in 2016 are expected to support some 156,000 FTE of permanent employment across the EU Member States. Around two-thirds of these jobs are likely to be in the domains of innovation and skills and infrastructure. Many will be associated with construction projects that are being financed by the EIB. In addition, the EIB's operations in 2016 are estimated to support some 1.2 million person-years of temporary jobs and to sustain over 3.8 million jobs across the EU Member States.

# 1. Introduction Financing Lundbeck's synoptic R&D activities for the 2013-2017 period for the development of new innovative patented drugs for the treatment of Alzheimers and Parkinsons diseases with high unmet medical need. EIB operations inside the EU 2016



#### 1.1 Context of the EIB's operations in 2016

#### 1.1.1 The Europe 2020 strategy and beyond

The EIB's activities are closely aligned with the EU's policy goals, known as Europe 2020, the European semester cycles as outlined in the horizontal priorities of the European Commission's Annual Growth Survey and the related country-specific recommendations to be implemented by the Member States.

The Europe 2020 strategy for jobs and smart, sustainable and inclusive growth provides the overall reference point for EIB interventions. The strategy aims to promote growth that is:

- Smart, through more effective investments in education, research and innovation:
- Sustainable, due to a decisive move towards a low-carbon economy;
- Inclusive, with a strong emphasis on job creation and poverty reduction.

These three mutually-reinforcing priorities are designed to help the EU and the Member States tackle the challenges facing Europe, and to deliver high levels of employment, productivity and social cohesion.

Europe 2020 is based on five EU headline targets which are currently measured by nine key indicators. Europe 2020The targets are:

- R&D 3% of the EU's GDP to be invested in R&D;
- Employment 75% of 20-64 year-olds to be employed;
- Climate change and energy sustainability greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than in 1990; 20% of energy from renewables; 20% increase in energy efficiency;

- Education reduce the rates of early school leaving to below 10% of pupils; at least 40% of 30-34-yearolds completing third level education;
- Fighting poverty and social exclusion at least 20 million fewer people in or at risk of poverty and social exclusion.

#### 1.1.2 EIB's mission and policy goals

The EIB's mission, according to Article 309(c) of the Treaty on the Functioning of the European Union (TFEU), is to "contribute, by having recourse to the capital market and utilising its own resources, to the balanced and steady development of the internal market in the interest of the Union". To support this overall mission, the EIB has adopted four public policy goals:

- Promotion of innovation and skills by helping to achieve the Europe 2020 target of 3% of GDP being invested in R&D, promoting broadband and creating a single digital market in Europe, and supporting innovation. In relation to skills, the EIB provides finance to develop educational and research facilities, and to support the training of young people.
- SMEs and midcaps finance the EIB supports the development of SMEs by offering loans, guarantees and microfinance through financial intermediaries. The EIB also supports midcaps investing in research and product development with loans and guarantees.
- · Investment in infrastructure by providing the finance needed to develop strategic transport links (including TEN-T), developing the infrastructure needed for competitive and secure energy supplies (TEN-E), and financing urban renewal projects including those aimed at creating smart and sustainable cities.
- Environment the EIB invests in sustainable transport, including various forms of public



transport, in projects aimed at protecting the environment, supporting the development of renewable energy with a view to achieving the Europe 2020 targets, and reducing demand for energy through energy efficiency.

In addition, the EIB has two **horizontal objectives** that cut across the four public policy goals outlined above:

- Economic and social cohesion EIB supports the EU objective of economic and social cohesion. By financing projects in less developed regions, the EIB contributes to reducing the disparities between the levels of development of the different regions of the.
- Climate action the EIB provides finance for climate mitigation and adaptation projects and activities within other projects, including climate mitigation and climate resilience investments in all sectors. This includes afforestation or reforestation as effective means of sequestering CO<sub>2</sub> from the atmosphere through natural fixation.

#### Climate action mainstreaming

The EIB integrates climate action into the assessment and monitoring methods of its investment projects in a number of ways. These include using an economic price of carbon in project appraisal, using an emissions performance standard for power generation projects, providing technical assistance to promote energy efficiency, assessing climate risks and impacts, and estimating and reporting on greenhouse gas (GHG) emissions in its investment projects in all sectors. The carbon footprint methodologies the EIB has developed are publicly available on the Bank's website. More information on the carbon footprint data of projects signed in 2016, both inside and outside the EU, can be found in the Bank's Sustainability Report 2016.

#### 1.1.3 EIB's Corporate Operational Plan

The Bank's priorities are set out in a series of threeyear rolling operational plans. The Corporate Operational Plan (COP) for 2016-18 indicated that in relation to the previous period:

The plans for 2016 are even more ambitious both in form and substance. High volumes of traditional lending, blending and advising activities are absolutely needed to make an imperative contribution to EU Policy Goals and to respect the Bank's overall responsibilities as the EU Bank.

The COP anticipated that in addition to high levels of the EIB's traditional activities, 2016 would see the significant ramping-up of the Bank's role in implementing the European Fund for Strategic Investment (EFSI) and the European Investment Advisory Hub (EIAH) activities. The Plan noted that all this would require new approaches in terms of sectors, products and clients. The specific priorities for the 2016-18 lending programme are summarised below:

- Supporting growth and job creation in the EU;
- Fostering skills and enhancing competitiveness;
- Reinforcing economic and social cohesion;
- · Addressing market failure in risk-taking;
- Reinforcing the impact of environmentally sustainable, climate-smart financing;
- Tackling the **investment gap** by mobilising private investment, whilst
- Focusing on value-added;
- Upholding the Bank's business model and status as prime issuer on capital markets.

#### 1.1.4 How the EIB demonstrates added value

The first way in which the EIB adds value lies in the preconditions for financing a project. These include ensuring that a project is sound (financially, technically, economically, environmentally, socially), imposing the highest procurement standards, and ensuring that a project promotes EU/EIB policy objectives.

The nature of the Bank's financial offer also constitutes a vital element of the EIB's added value. Because the EIB is backed by the EU-28 Member States, it can raise funding on the international capital markets at relatively low rates of interest and pass this advantage on to project promoters. In particular, the Bank is able to provide long-term loans on favourable terms and conditions. The EIB Group is now also a major provider of risk capital finance.

In many situations, the EIB provides financial assistance on terms and conditions which, due to market failure, it would be difficult, if not impossible, for companies to obtain from alternative sources. In these cases, the Bank does not compete with alternative sources of finance but rather fills the gaps in the market. EIB involvement in a project can also be important in generating a 'catalytic effect' (by assuming risks the Bank helps to leverage additional finance from other investors) or a 'top-up effect' (where the promoter had some finance in place prior to the Bank's involvement but not enough to ensure implementation).

EIB operations demonstrate added value by combining finance with an advisory role. The Bank routinely provides technical assistance on projects, ranging from help in assessing the feasibility of a planned project to advice on monitoring its economic and social impacts. The Bank also provides advice through the 'Joint Assistance to Support Projects in European Regions' scheme (JASPERS), 'InnovFin Advisory' and other initiatives such as the EIAH. The EIB's advisory role adds value by ensuring that beneficiaries are better able to access funding and proceed with viable projects. This role is examined further in Section 1.4.

Last but not least, the EIB adds value through the project outputs and outcomes it supports, including positive externalities for society and the environment. There are many projects that would not be able to proceed without EIB intervention, perhaps because public finances are so constrained that the necessary

funding is simply not available, or because the private sector considers a project as being too risky with an uncertain pay-back. For example, the EIB supports projects of common interest to several Member States that, because of their size or nature, cannot be entirely financed by the various means available in the individual Member States. In these situations, it is likely that a project such as new transport links would only proceed in a more piecemeal fashion and possibly only over a longer period of time, thereby delaying and reducing the scale of the economic and other impacts.

# 1.2 Overview of EIB operations signed in 2016

#### 1.2.1 EIB's 2016 operations by type of finance

In 2016, the EIB signed a total of 436 operations inside the EU worth a total of EUR 67 billion. The EIB's operations consist of three main types of financial instruments in terms of signed volume - investment loans, framework loans, and multi-beneficiary intermediated loans (MBILs). It also provides guarantees, and equity and quasi-equity investments.

The EIB's 2016 operations can be summarised as follows:

- 199 investment loans totalling EUR 31.9 billion. All Member States except Bulgaria, Croatia and Latvia benefited from these lending operations. The EIB provides investment loans directly to an individual beneficiary (e.g. a company). Investment loans accounted for a majority of operations by number and value in 2016. In certain cases, the EIB can also provide direct loans to midcap companies with up to 3,000 employees where the loan volume requested is between EUR 7.5 million and EUR 25 million. Otherwise these loans tend to be in excess of EUR 25 million.
- 59 framework loans for a total value of EUR
   10.7 billion. Seventeen of the EU Member States
   made use of this type of EIB financing. Under
   framework loans, the EIB finances multi-sector,
   multi-annual investment programmes, funding a
   range of usually smaller projects, by a national,
   regional or local public sector body. Framework
   loans most frequently focus on general energy
   efficiency and renewable energy, transport,

regional development and urban regeneration. In 2016, 55 million people benefited from improved infrastructure through such EIB co-financed investment programmes.

 178 multi-beneficiary intermediated loans, guarantees and equity/quasi-equity investments totalling EUR 21.3 billion.
 Multi-beneficiary intermediated loans (MBILs) are provided to local banks and other intermediaries which subsequently on-lend to the final beneficiaries (SMEs, midcaps, large businesses, public authorities, etc.) in the form of both debt and guarantees.

Overall, the number of EIB operations inside the EU in 2016 was significantly higher than in 2015 (436 operations compared with 373 operations the year before) although the amount of money involved was slightly lower (EUR 67 billion compared with EUR 69.6 billion in 2015). This implies that the average size of each EIB operation in 2016 was smaller at EUR 153.6 million than the year before (EUR 186.6 million).

#### 1.2.2 EIB's 2016 operations by policy goal

The EIB's operations in 2016 contributed to its four main policy objectives as follows:

Innovation and skills - Lending totalled EUR 13.1 billion, of which EUR 12.2 billion were for first signatures. The total project costs corresponding to new operations were EUR 50.2 billion, demonstrating considerable leverage effects (4.1) in terms of the additional finance attracted from other public and private sector sources. EIB support for innovation and skills accounted for 19.6% of its overall portfolio in 2016. Within this field, investment in R&D and the digital economy accounted for the bulk of EIB funding.

**SMEs and midcaps finance** - EUR 21.3 billion of loans, of which EUR 18.1 billion for new operations, represented 31.7% of the overall EIB loan portfolio for 2016. Financing for this policy objective accounted for the single largest share of the EIB's operations.

Infrastructure - EIB investment in various types of physical infrastructure was the second largest category of lending, amounting to EUR 18.1 billion (27.1% of all loans), of which EUR 15.9 billion supported new operations. Within this category, the EIB supported the development of strategic transport (including

TEN-T), energy infrastructure (including TEN-E) and various projects to promote integrated territorial development for a total amount of EUR 63.9 billion in terms of project investment cost.

Environment - 2016 saw continued investment by the EIB in environmental projects including schemes to promote sustainable transport, environmental protection and natural resource efficiency, and renewable energy and energy efficiency. Altogether, projects in these areas received EUR 14.4 billion of EIB financing (21.6% of the total for 2016), of which EUR 13 billion supported new operations.

EIB activity in 2016 followed a broadly similar pattern to the previous year with regard to the overall allocation of financial resources to different policy objectives. However, the finance made available for the two priorities of SMEs and midcaps and infrastructure increased slightly as a proportion of the EIB's overall lending in 2016 compared with the year before. The proportion of funding for innovation and skills and for the environment decreased slightly. Table 1.1 below provides a more detailed breakdown.

Table 1.1: Volume and project cost of operations signed in 2016 by policy objective

Policy objectives	EUR m signed (all projects)	EUR m signed (first signatures)	EUR m project cost (first signatures)
Innovation and skills	13,124	12,174	50,151
Research and Development	9,391	9,277	38,217
Education and training	3,733	2,897	11,934
SMEs and Midcaps finance	21,255	18,123	105,056
Infrastructure	18,145	15,902	63,946
Strategic transport (including TEN-T)	5,983	4,776	13,683
Competitive and Secure Energy (including TEN-E)	5,071	4,456	15,866
Integrated territorial development (including health)	7,091	6,670	34,397
Environment	14,448	12,984	64,951
Sustainable transport	4,857	4,560	21,073
Environmental protection and natural resource efficiency	4,992	4,335	27,981
Renewable energy and energy efficiency	4,599	4,089	15,896
Total (EUR million)	66,971	59,183	284,104

Note: EIB financing has been allocated proportionately across EIB policy objectives where a project contributed to multiple objectives.

The Bank's target is to ensure that at least 25% of total lending, across all its public policy areas, is devoted to climate action. In 2016 the EIB financed EUR 17.5 billion of climate action in the EU, which represents over 26% of all EU signatures.

Regarding the EIB's cross-cutting cohesion objective, some 27% of the EUR 67 billion signed in 2016 (EUR 17.9 billion) was signed under projects taking place in the less developed regions.

#### 1.2.3 EIB's 2016 operations by EU Member State

As in previous years, EIB operations during 2016 took place across most of the EU-28 Member States. In 2016, Latvia was the only country that did not make use of EIB financing. Figure 1.1 below provides a breakdown of operations by country and loan type.

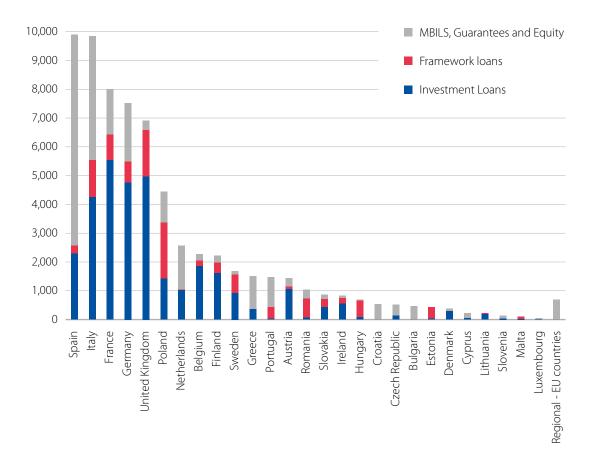


Figure 1.1: EIB signed operations in 2016 by country and loan type (in EUR m)

There are several notable aspects of the geographical distribution of EIB investments in 2016:

- As in previous years, the six largest EU Member States accounted for the majority of EIB investments.
   Taken together, Spain, France, Germany, Italy, Poland and the UK made up almost 70% of the EIB's total operations in 2016.
- In contrast, 14 EU Member States made only relatively modest use of EIB finance in 2016. Although these
  countries obtained EIB financing, in all cases the amount was below EUR 1 billion. The countries in question
  were mainly 'newer' EU Member States but Denmark and Luxembourg were also included in this category.
  The low users of EIB finance are all relatively small EU Member States.

• With the exception of Bulgaria, Croatia and Latvia, all Member States made use of the EIB's investment loans in 2016. All Member States except four (Estonia, Lithuania, Latvia and Malta) accessed the EIB's MBILs, guarantees and equity-type instruments. There was a rather more mixed picture with regard to framework loans with 18 Member States using them and 10 not doing so.

The concentration of EIB financing in the larger, and generally more prosperous EU Member States, continued a trend that has been evident for a number of years. One of the key long-term challenges facing the EIB is to increase the capacity of certain countries to absorb the types of financing provided by the Bank. This consideration applies especially to some of the EIB's equity-type instruments, the implementation of which requires considerable expertise.

However, even with debt instruments such as the framework loans, the EIB can only intervene in a way that is consistent with its mandate and prudential banking principles and if there are financial intermediaries in place with the required balance sheets and expertise. These and other factors should be borne in mind when interpreting the data shown on Figures 1.2 and 1.3 below.

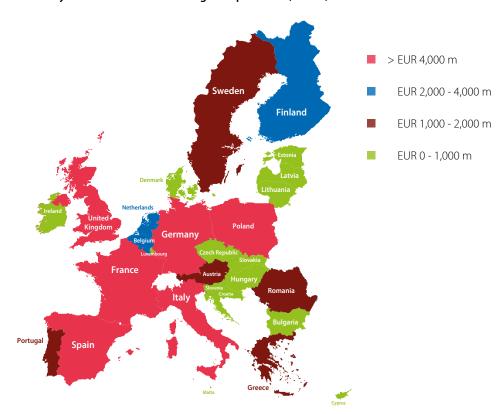


Figure 1.2: Country distribution of EIB 2016 signed operations (EUR m)

The EIB's 2016 lending activity can be related to the size of different EU Member States' populations. This is illustrated in the chart below. Among the six largest countries the amount of funding per capita is higher in southern European countries - especially Italy and Spain - and lower in Germany. Conversely, EIB finance per capita for Member States that joined the EU after 2004 emphasises the structural challenges faced by certain countries (in particular, the Czech Republic, Bulgaria, Hungary and Latvia) in trying to absorb the types of financing provided by the Bank.

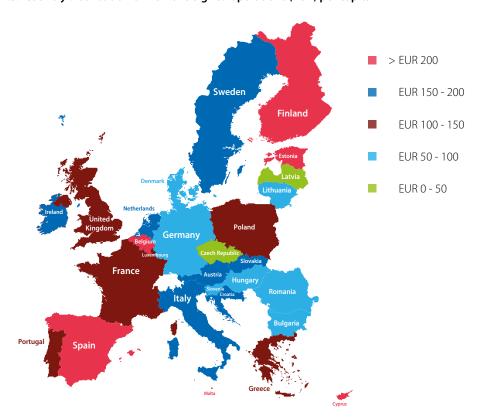


Figure 1.3: Country distribution of EIB 2016 signed operations (EUR) per capita

Note: calculation based on the total amount signed by country in 2016 divided by the 2016 country population as reported by Eurostat

A detailed breakdown of the EIB's 2016 operations by types of intervention and EU Member State is provided in Annex 1 of this report.

# 1.3 European Fund for Strategic Investments (EFSI)

During 2016 the EIB continued to play an important role in the implementation of the European Fund for Strategic Investments (EFSI).

EIB Group is tasked with delivering EUR 315 billion of additional investment under EFSI between 2015 and mid-2018, over and above its own operations. EFSI was launched with the European Commission in 2015 as part of the Investment Plan for Europe (IPE) with the aim of stimulating economic recovery and growth

after years of crisis and stagnation. It is an initiative based on a guarantee from the EU's budget and EIB finance. Finance is provided for projects which support R&D and the development of ICT; investment in the energy sector; provision of financial support for SMEs and midcaps; development of transport infrastructure; the environment and resource efficiency; and investment in human capital, culture and health.

By the end of 2016, the EIB had signed EFSI operations of EUR 14.2 billion for a total amount of EUR 67.7 billion of EFSI eligible investment mobilised. Table 1.2 below provides further details.

Table 1.2: European Fund for Strategic Investments (EFSI) – cumulative amounts signed in 2015 and 2016 under the Infrastructure and Innovation Window (IIW)

EFSI objectives	Signed amount (EUR m)	EFSI eligible investment mobilised (EUR m)
Development and deployment of information and communication technologies	1,374	4,720
Development of the energy sector in accordance with the Energy Union priorities	4,763	25,503
Development of transport infrastructure, equipment and innovative technologies for transport	2,076	9,868
Environment and resource efficiency	1,054	5,159
Financial support through the EIF and the EIB to entities with up to 3,000 employees	1,734	10,814
Human capital, culture and health	499	3,187
Research, development and innovation	2,670	8,479
Total	14,169	67,729

#### 1.4 The EIB's advisory role

In addition to its lending activities, the EIB plays an important advisory role. This role is critical in promoting access to EIB funding and ensuring that there is a solid pipeline of sound and bankable projects in Europe.

At the project level, the EIB's role involves giving technical and other types of advice to project promoters at critical stages in the project cycle, from strategic planning to implementation. In addition to this, the Bank continues to provide advisory support through the JASPERS programme which was extended during 2016 to include a greater number of EU Member States as well as pre-accession countries. In 2016, the Bank also increased its advisory role in support of the ESIF-funded financial instruments.

The EIB continued playing a role under 'InnovFin Advisory' which provides guidance to companies on how to structure their RDI projects so as to improve

their access to finance. The scheme also provides advice to improve investment conditions through activities which are not project-specific. This includes initiatives such as developing a business case for a new financing mechanism and preparing studies on increasing the effectiveness of financial instruments to address specific RDI needs.

Some of the EIB's advisory support is now being channelled through the European Investment Advisory Hub (EIAH). This initiative, which is supported jointly by the EIB and the European Commission, was launched towards the end of 2015 as part of the Investment Plan for Europe. Services available via the EIAH include project development support (from pre-feasibility to financing), advice on access to finance, capacity building, as well as more upstream or policy advice on market studies, sector strategies, and project screening. During 2016 the EIB continued to develop these and other EIAH activities.

#### 1.5 Climate action

The EIB measures its investments against two horizontal indicators, one of which is to promote actions to tackle climate change with a view to achieving the EU's targets for climate and energy by 2030. It has been estimated that meeting the climate change targets will require a total annual investment of EUR 100 billion by EU Member States.

The transition towards a low-carbon economy is not only a strategy to prevent catastrophic climate change. Climate and energy policies contribute to the Europe 2020 strategy's core objective of promoting sustainable growth. A push for renewable energies and energy efficiency — two key levers for reducing emissions — can spur innovation and create jobs. In some countries, such activities now involve very significant and growing numbers of businesses and jobs.

## 1.5.1 Strategic Context for EIB's 2016 operations in relation to climate action

The EU's Energy and Climate Framework 2030 is designed to help develop a more competitive, secure and sustainable energy system in Europe and to meet the long-term 2050 greenhouse gas reductions target. The EU climate and energy package, which was adopted in 2009, aims to promote the Europe 2020 targets, namely: reducing GHG emissions by at least 20% compared with 1990 levels; increasing the share of renewable energy in final energy consumption to 20%; and, thirdly, moving towards a 20% increase in energy efficiency.

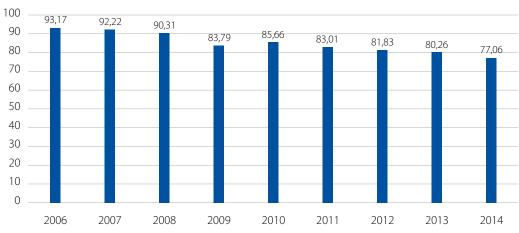


Figure 1.4: Greenhouse gas emissions (base year 1990 = 100)

Source: Eurostat

The second energy and climate headline target of the Europe 2020 strategy is to increase the share of renewable energy in gross final energy consumption to 20% by 2020. Between 2004 and 2012, the share of renewable energy increased by 70%, reaching 14.1% of gross final energy consumption in 2012. There is still some way before this target is achieved. This also applies to the third of the Europe 2020 targets which aims for a 20% increase in energy efficiency.

<sup>1</sup> European Investment Bank, 'Restoring EU competitiveness' (2016 updated version).

#### 1.5.2 Types of EIB operations in relation to climate action

It is difficult to attract private sector investment in initiatives to combat climate change because of the long-term nature of the payback and the fact that the benefits are not commercial in nature. Because of this market failure, the EIB has a key role in providing long-term finance for climate change actions.

The EIB Climate Strategy was introduced in 2015 and 2016 has seen further efforts to implement measures to reinforce the de-carbonisation path of the European economy. In line with the strategy, the EIB has shifted its lending towards high impact climate action projects, by:

- · Proactively seeking and investing in projects which bring significant mitigation or adaptation gains;
- · Catalysing and mobilising additional finance from a range of sources through financial innovation;
- Reducing financial and nonfinancial barriers to the investments needed for the transition to a low-carbon resilient economy.

The Bank is committed to providing climate action (CA) loans that amount to at least 25% of total lending across all its public policy areas. In 2016, over 26% of the total signed volume of EUR 67 billion was dedicated to climate action. Furthermore, the EIB has reinforced and prioritized support for adaptation investments and technical assistance, as well as building climate resilience into all project types. The Strategy also involves further integration of climate considerations into EIB processes and methodologies which support the focus on high impact interventions in the climate action field. The table below details the amounts signed in 2016 within the EU by climate action category.

Table 1.3: Details of 2016 signatures<sup>2</sup> within the EU contributing to climate action

CA category	Signed amount (EUR million)
CA mitigation	16,364
- of which Renewable Energy	3,488
- of which Energy Efficiency	3,453
- of which RDI	1,843
- of which Transport	6,711
- of which Afforestation & Forest Management	132
- of which Waste & Wastewater	37
- of which other categories	698
CA adaptation	1,166
Total CA	17,530

<sup>2</sup> EIB own resources

#### 1.6 Employment impact

The EIB's operations are likely to have various employment effects. The first of these is temporary employment associated with the implementation phase of projects. For example, EIB investment in new transport infrastructure, R&D facilities, schools or flood defences will lead to the employment of construction workers in a given region.

The EIB's operations in 2016 are estimated to have supported some 1.2 million <sup>3</sup>temporary jobs across the EU Member States. Around two-thirds of these jobs are likely to be in the innovation and skills and the infrastructure fields.

The second type of employment impact attributable to EIB operations is support for permanent, long-term jobs. For example, a project to develop new transport infrastructure such as rail links will almost certainly mean recruiting additional staff to maintain the infrastructure or to operate the equipment using the new infrastructure. Moreover, there could also be significant indirect or induced employment effects. In the case of this example, new jobs would be created in a

local economy because firms are able to trade more cost-effectively with key markets elsewhere. Similar types of effects can be found in the fields of innovation and skills, and the environment. For example, EIB investment in SMEs should enable them to innovate and grow, thereby creating new job opportunities. Although more difficult to measure, it is the longerterm direct and indirect or induced employment effects arising from EIB operations that are likely to be the most significant. The Bank's operations involving financing for SMEs and midcaps are likely to sustain a further 3.8 million jobs.

Table 1.3 below shows that most of these jobs are likely to be in the infrastructure and the environment sectors. Divided by the amount of EIB investment during the year (EUR 67bn), this gives a gross cost per job of around EUR 56,000. This figure compares well with benchmarks and would be lower if calculated on a net basis that takes into account other indirect employment effects (for example, additional jobs that are generated by consumption and supplier multipliers). The estimated employment figures in 2016 are lower compared to the year before mainly due to the large number of EU co-financing programs signed for the first time in 2015 which will not be reported in subsequent years to avoid double counting.

Table 1.4: Expected employment by EIB policy objective for operations with first signature 2016

Policy objective	Temporary employment (Person-years)	Permanent employment (FTE)
Innovation & skills	254,276	57,427
Infrastructure	442,640	46,443
Environment	389,122	24,629
	Jobs sustained	

Note: Permanent employment is defined as "direct long-term or permanent employment during the operational phase of the project, measured in additional or sustained full time equivalents (FTE) per year on average". Temporary employment is defined as "direct short-term employment that is required to implement a project, measured in person years for the whole implementation period."

Total temporary employment based on all types of operation, i.e. including multi-sector and multi-objective loans covering acess to finance to SMEs and midcaps.

<sup>4</sup> Employment figures distributed proportionally by EIB public policy objective based on loan amount. Figures for employment resulting from multi-sector and multi-objective operations, temporary and permanent employment figures are not presented for SMEs and midcaps finance.

Supporting jobs is, of course, vital given persistent and high unemployment rates across many EU Member States, and especially amongst young people. But the EIB also has other positive impacts on the European economy. Thus, investment in innovation contributes to the development of new technologies that are needed to promote Europe's long-term industrial competitiveness. Financial support for education helps to create the well-qualified workforce that is needed by modern economies as well as opening up employment opportunities for young people and others. Providing finance to SMEs and midcaps to enable them grow directly contributes to job and wealth creation. Investment in transport and energy infrastructure and the environment is vital to business and a precondition of Europe's overall economic competitiveness and growth.

The employment impact of EFSI operations signed in 2015 and 2016 is presented in Table 1.5 below.

Table 1.5: Expected employment by EFSI objective for operations signed by 31/12/2016

EFSI objective	Temporary employment (Person-years)	Permanent employment (FTE)
Development and deployment of information and communication technologies	32,879	1,891
Development of the energy sector in accordance with the Energy Union priorities	120,761	7,334
Development of transport infrastructures, and equipment and innovative technologies for transport	63,179	7,155
Environment and resource efficiency	37,663	2,162
Human capital, culture and health	19,052	938
Research, development and innovation	38,829	22,316

#### Jobs sustained

Financial support through the EIF and the EIB to entities	502,000
having up to 3 000 employees	

#### 1.7 The 3 Pillar Assessment (3PA)

The EIB applies high standards in its project appraisal procedures to ensure that its investments are economically and technically sound and comply with stringent environmental and social requirements. The EIB introduced its *3 Pillar Assessment Framework*, or 3PA, in 2013. In 2015 the methodology was reviewed to take into account the requirements of the EFSI regulation. The 3PA is used to assess potential operations before Board approval and identifies indicators to monitor the projects' expected results. The 3PA is structured around three pillars and is complemented by three categories of results monitoring indicators (see Figure 1.4).

Figure 1.5: Summary of the 3 Pillar Assessment Methodology

3 Pillar Assessment			
Pillar 1	Pillar 2	Pillar 3	
Contribution to EU policy	Quality and soundness of the project	EIB's technical and financial contribution to the project	



Complementary indicators			
Key project characteristics	Outputs	Outcomes	

The Bank collects three types of complementary indicators for each operation, seeking to capture the effects of its lending operations:

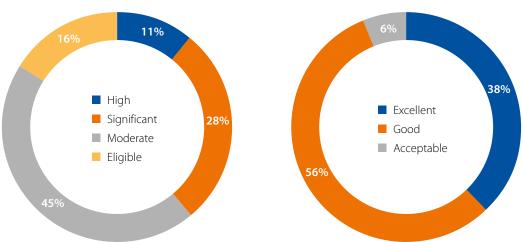
- **Key project characteristics (or core results):** these relate to the project cost, implementation period, temporary and permanent employment impact of the operation, energy efficiency savings;
- **Output indicators:** these are sector indicators that monitor the quantity of goods and services produced by the operations financed by the Bank;
- Outcome indicators: these are also sector indicators that try to capture the effects of EIB's operations on people's quality of life, the environment, the beneficiary's activity, sector, and the economy.

As can be seen from the charts below, the 3PA assessment of the projects supported by the EIB in 2016 was generally positive.

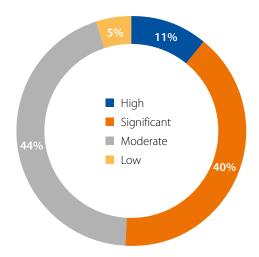
Figure 1.6: 3PA ratings for the EIB's 2016 operations

Pillar 1: Contribution to EU policy

Pillar 2: Quality and soundness of the project



Pillar 3: EIB Technical and financial contribution to the project



If the categories of 'high' (or 'excellent') and 'significant' are combined to simplify the picture, then it is clear that the EIB's new operations in 2016 scored particularly highly in terms of Pillar 2. This was also the case in 2015.



# 2. Innovation and skills



The EIB provided







#### 2.1 Research, Development and Innovation

The EIB's 2016 operations in relation to RDI amounted to EUR 9.4 billion (EUR 9.2 billion in first signatures).

#### 2.1.1 Strategic Context for EIB's 2016 RDI operations

Investment in RDI is a key driver of productivity, growth and employment. The RDI field is not restricted to investment in research and development, and promoting innovation more widely in the economy, but also includes helping to ensure that Europe has the broadband infrastructure needed by technology-based firms and others that rely on the internet to conduct business.

Notwithstanding its importance, expenditure on RDI in Europe has tended to lag behind the proportion of GDP invested by major competitors elsewhere in the world, notably countries in the Far East and the USA. The Europe 2020 strategy's objective is to ensure that the equivalent of 3% of GDP is invested in R&D.

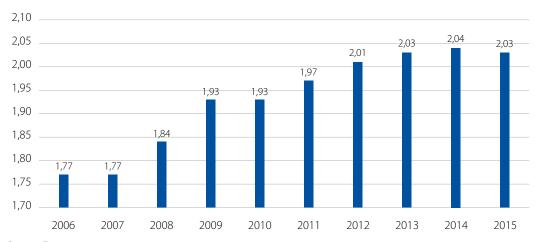


Figure 2.1: EU-28 investment in R&D (% of GDP), 2006-15

Source: Eurostat

In relation to businesses of all sizes, public sector support is needed to boost RDI investment that might not take place otherwise. Without this support the EU as a whole will miss out on positive spill-over effects from RDI and the wider benefits to society.

Investment in RDI is hindered by the high risks associated with new products and services and the fact that new innovative businesses do not have a long track-record. Moreover, high level research is increasingly costly. These are just some of the factors which have led to a market failure in finance for innovative SMEs and midcaps as well as technology companies in general. Most commercial banks have been reluctant to provide any financial support at all to such companies and those banks which are prepared to consider it impose conditions which are difficult for the companies to fulfil. Publicly-funded RDI has also been adversely affected by increasingly severe constraints on government spending. These factors affect RDI investment in varying degrees across all EU Member States. The EIB's role in promoting access to finance is treated in more detail in Section 3.



Access to fast broadband services, which is also supported by the EIB as part of the innovation and skills policy goal, is important for individuals (for example, to obtain online access to entertainment, media-rich information or engaging in online social interaction) as well as essential to modern communication activities (such as data transfers, video-calls) and e-Commerce. The 2016 Digital Economy and Society Index (DESI) which, amongst other things, measures progress in the development of broadband networks and services, indicates that although steady progress is being made, EU Member States are still at quite different levels of development.

#### 2.1.2 Types of EIB operations to promote RDI

To help achieve the EU's target of 3% of GDP invested in R&D by 2020, the EIB increased its investment in RDI in 2016. Various types of financial assistance were targeted:

- Supporting innovative firms in their development and commercialisation of new products, processes and services;
- Promoting public and private sector investment in R&D in the field of information and communications technology, life cciences, food, sustainable agriculture, forestry and low carbon technologies;
- Helping to complete Europe's digital network and create a single digital market that includes digital services.

The EIB provides loans to finance investments in RDI carried out by SMEs, midcaps, large companies and publicly-funded research infrastructures throughout the EU-28 Member States. Depending on country, nature of entity or risk level, these loans may be supported by EFSI (see Section 2.1.4), InnovFin or other mandates managed by the EIB.

During 2016, the Bank continued to implement those aspects of the InnovFin Programme for which it holds

responsibility. Under InnovFin –EU finance for Innovators a total of EUR 24 billion of funding has been allocated to support Horizon 2020, the EU's framework programme for RDI, in the 2014-20 period. There are seven InnovFin financial instruments providing a combination of loans, guarantees and various forms of risk capital finance that are needed at different stages in the value chain of research and innovation.

The average size of the EIB's RDI-related loans has halved since 2011 (from EUR 152 million to EUR 80 million) whilst the volume of loans has increased. This trend continued in 2016 and reflects the fact that the EIB is increasingly targeting smaller businesses, precisely the type of enterprises that are most negatively affected by market failures in the provision of finance for RDI. The year 2016 also saw a continuation in the tendency for the EIB to accept more of the risk associated with RDI investments.

#### 2.1.3 New RDI operations signed in 2016

The EIB's 2016 investments in RDI are particularly significant givent that progress toward the Europe 2020 goals in the RDI field has been slow. There is a real danger that as things stand, the target may not be achieved - at least by 2020 - unless there is additional investment. The EIB's new operations are likely to result in an increased volume of outputs and outcomes compared with the previous year. A selection of the key results for 2016 in this area is summarised below:



Table 2.1: Selection of expected results from new RDI operations signed in 2016<sup>5</sup>

	Outputs	Outcomes
Research & Development	Over EUR <b>19 billion</b> of investment in private sector RDI	EUR <b>87.5 billion</b> additional potential sales resulting from projects financed by the EIB
	More than <b>60 private</b> sector companies supported directly in R&D	
Innovation (incl. telecoms)	Almost <b>28,000 additional 4G sites</b>	10 million new subscribers for high speed data services
	Over 11 million additional households covered by very high-speed broadband services	Over 9 million new subscribers for high speed data services

In 2016, the EIB supported RDI projects in fields as diverse as the life sciences, software development and e-Commerce, and worked with project promoters ranging from major companies developing new technologies in the motor manufacturing sector to SMEs engaged in developing new software. Here is a selection of case studies to illustrate the different ways the EIB supported projects with a focus on innovation and skills in 2016:

<sup>5</sup> Estimations of all outputs and outcomes in this report are based on available information at appraisal stage and taking into account new 2016 operations, i.e. operations with first signatures in 2016. This estimation is not possible for some FL and Programmes Loans as the exact allocation is only known at later stages.



#### Support for Desktop 3-D Printing Technology

Ultimaker is a Dutch company founded in 2010 that designs and manufactures desktop 3-D printers. A loan in 2016 of EUR 15 million from the EIB will strengthen Ultimaker's R&D activities and help it to roll out new products. Ultimaker also launched a pioneer programme for more than 50 schools throughout the EU.

The project promoter, Ultimaker BV, offers 3D printers and associated materials, as well as open source software for the consumer-oriented desktop printer segment. It also promotes an active community platform for open innovation and online exchange amongst users. The rapidly developing market is mostly driven by the affordability of desktop 3D printers, contributing to a rapid growth of enterprises designing new products across a range of sectors and enabling them to undertake low cost and rapid prototyping of products. The open-source software (Cura), which is used to operate the printers, is compatible with a wide range of 3D printers and has become one of the most popular tools for 3D printer operation. Ultimaker has won several innovation prizes in the past and its recent model, Ultimaker 3, has been referred to as one of the best and most technologically-advanced desktop 3D printers available on the market.

The **purpose of the EIB loan** is to support the expansion of Ultimaker's R&D facility in Geldermalsen in the Netherlands and to accelerate the development of new products. The operation will also enable the company to further expand its business into international markets. A pioneer programme has been launched to donate Ultimaker 2+ printers to more than 50 schools throughout Europe in order to give young students direct experience of 3D printing. The schools will be supported with free access to lesson plans, 3D printing tutorials, and a dynamic online community.

The **EIB's contribution** of EUR 15 million to the project is through the InnovFin - EU Finance for Innovators, Mid-Cap Growth Finance (MGF) programme. The programme has the financial backing of the European Union under the Horizon 2020 Financial Instruments and supports the growth of innovative and fast growing midcaps. Among the **results expected** is a further strengthening of Ultimaker's position in the global 3D printing market, which in turn, should contribute to pushing out Europe's technological edge in the dynamically growing segment.

The project provides a clear example of how the **EIB** and **EU's policy objectives** are being promoted through support for R&D in a highly innovative firm working in a technology area that is becoming a key contributor to further innovation and growth across many different sectors of the European economy.

► EUR 180m to boost Greece's research and innovation capacity

# Hellenic Foundation for Research and Innovation

The project is financing the establishment and initial three-year operation of the Hellenic Foundation for Research and Innovation (HFRI). For the first time in Greece, a public science research council has been established based on wider European best practice. The Foundation is responsible for procuring and funding research projects, academic positions, PhD scholarships and post-doctoral fellowships, scientific equipment and a science and society awareness programme. This is directly in support of Greece's national strategy for research and innovation, and the National Growth Strategy.

The **rationale for the EIB intervention** is that the creation and operation of the HFRI will make a significant contribution to improving the research and innovation capacity of Greece whilst helping to strengthen governance of research and innovation policy. R&D expenditure in Greece stood at 0.83% of GDP in 2014, well below the EU target of 3% of GDP but a significant effort has been made to increase R&D expenditure in an extremely challenging environment. Publicly funded research is the main component of RDI in Greece, since business sector R&D is weak. One consequence of this situation is a 'brain drain' with talented researchers and scientists leaving Greece for better work opportunities abroad.

The **project promoter** is the Greek Ministry of Education, Research and Religious Affairs. **The project's aims** are to establish a transparent, excellence-driven and rigorous research grant allocation system. This will operate at arm's length from the Ministry of Education, Research and Religious Affairs, giving the scientific community responsibility for decisions as to which proposals should receive funding. The Foundation will allocate grants to basic research projects in science and engineering disciplines procured

in a competitive and transparent manner. The project is expected to make the Greek scientific research system more internationally competitive and gradually increase its capacity to absorb research grants from international sources, whilst nurturing linkages between science and the economy.

The **financing of the project** takes the form of a EUR 240 million sovereign loan to the Hellenic Republic. The project's implementation period runs from July 2016 to the end of December 2020. The total **EIB contribution** is EUR 180 million. The exceptionally high EIB co-financing rate of 75% is in line with the EIB's policy of enhanced support for Greece.

The grants made by HFRI will fund wages and other costs of projects for up to three years, helping to prevent further brain drain and restore a sense of confidence. The immediate **results expected** are an estimated 4,700 person-years of employment annually for 3 years and 15 permanent FTE posts in the HFRI. Over the longer term, impacts on economic growth, employment and quality of life in Greece are anticipated. These will develop principally through improvements in the country's research and innovation capacities and in its access to EU and international funding, notably through Horizon 2020 and its successors.

The project is very much in line with **EIB and EU policy objectives** associated with Horizon 2020 and the ESIF, and is supportive of the Bank's innovation and skills strategy. The **EIB's value added** includes technical assistance in structuring the project and in establishing the principles of good governance that feature in the finance contract. More fundamentally, it is very unlikely that the establishment and initial three-year operation of the Hellenic Foundation for Research and Innovation (HFRI) could have been financed by the Greek state alone given its difficult financial circumstances.

Investment in education and skills is critical to developing Europe's knowledge economy and to the achievement of the Europe 2020 strategy generally. Moreover, a well-educated workforce equipped with appropriate skills is not only critical to innovation, productivity and growth but also helps ensure that Europe's citizens, especially young people, have access to high quality employment opportunities.

The Europe 2020 strategy set two targets for education and skills: by 2020 the **proportion of children** leaving school early should be reduced to below 10% (the EU-28 average for 2015 was 11%) and at least 40% of 30-34 years old should have completed a tertiary or equivalent qualification (2015 average 38.4% in EU-28). Although both objectives are now within reach at the level of EU-28, it is important to remember that wide discrepancies remain between individual Member States.

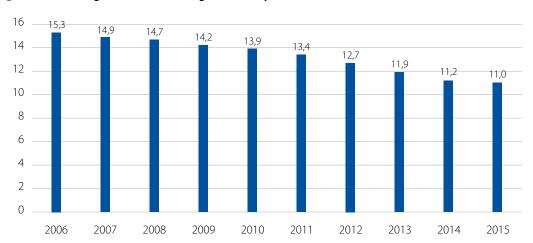


Figure 2.2: Percentage of children leaving school early in EU-28 Member States 2006-15

Source: Eurostat

#### 2.2.2 Types of EIB operations to promote education and skills

To help achieve the EU's targets set out in the strategy education and skills 2020, the EIB has continued in 2016 to focus its financial assistance on two main areas:

- Helping to ensure that Europe has leading research and teaching institutions, and constructing and modernising educational facilities;
- Supporting training and skills development for young people, and enhancing their employment opportunities;
- Supporting lifelong learning and vocational training for Europe's workforce as a whole through a range of measures.

In 2015 the EIB reviewed its existing knowledge economy lending programme and relaunched a revised facility under the title of innovation and skills which covers the Bank's activities until 2020. In the education field, a key development was to extend funding beyond initiatives targeted at young people to include vocational training and lifelong learning for all age groups. This represents a strengthening of the EIB's commitment to promoting Europe's knowledge economy as well as EU policies relating to the European Higher Education Area and the European Research Area.

### 1.2.3 New education and skills operations signed in 2016

The EUR 3.7 billion made available by the EIB for projects in the education and skills fields in 2016 was less than the year before (EUR 5.2 billion).

Nonetheless, the volume of education and skills outputs that is likely to be generated by EIB-supported projects remains very considerable. The number of additional students that are likely to be enrolled as a result of the projects signed in 2016 is forecast to increase by 46%, from 127,000 additional students in 2015 to 186,000 in 2016.

Table 2.2: Selection of expected results for education and skills new operations signed in 2016

Outputs	Outcomes
Over <b>770,000 students</b> benefit directly from EIB projects	Some <b>17,000</b> additional people will
Some EUR <b>70 million</b> of new equip- ment supplied	graduate as a result of EIB financing
Some <b>1.3 million m<sup>2</sup> of education facilities</b> built or rehabilitated	Over <b>186,000 additional students</b> enrolled



respond at European level to the calls launched by the European Investment Fund (EIF) to help implement the Erasmus+ Mandate from the European Commission. Under this Mandate the EIF provides capped guarantees and counter-guarantees to financial intermediaries for loans to students undertaking a Master's degree in another country. The guarantee scheme is complemented by a student loan operation from the EIB which enables Micro-Bank to provide loans to cover tuition fees, travel and living costs. The loans are available to qualifying students currently resident in Spain pursuing studies at Master's level in other EU countries and to foreign students coming to Spain to pursue studies at a Masters level. MicroBank will make use of CaixaBank's large network of 5,200 branches to help ensure that potential beneficiaries are aware of the student loans and to process their applications.

The **EIB contribution** to financing of the project is EUR 22.5 million in the form of a Multiple Benefimarket failures in the form of asymmetric information affect the provision of student loans as young people often cannot provide collateral and their credit rating cannot be assessed. There is an information gap between lender and borrower, combined with uncertainty about the future income streams required to repay the loan. Studying abroad exacerbates the problem. Consequently, unless parents can provide collateral and guarantees, the usual providers of loans cannot be accessed by students.

In relation to the project results, it is estimated that at least 2,000 students will benefit from this scheme. It is expected that the scheme will make a significant difference to the employment prospects of the young people in Spain who take advantage of it. Higher education has a positive impact on employment and growth. In Spain, 73% of people aged between 15 and 35 who have a first and second level HE qualifications are in employment compared with 57% of those without tertiary education.



Swansea University in Wales has seen a rapid development in recent years, with the construction of its new Bay Campus, a 20% increase in student intake and staff numbers, and a 120% increase in new research projects awarded since 2012. In order to assist the university's continuing development, the EIB is providing a loan of GBP 60 million (approx. EUR 71.2 million) for a period of 25 years to enhance both Swansea University's historic Singleton Park Campus and to expand its research facilities at its Bay Campus for a total project cost of GBP 126.3 million.

Following on from an earlier loan that contributed to the initial development of the Bay Campus, the EIB is now supporting development in both campuses that will **transform student learning through the use of modern study practices and deliver an enhanced student experience**, with better social support. The developments involve space reconfiguration and optimisation at the Singleton Park Campus, refurbishment of historic buildings and specialised laboratories and improvements in the Library. They will complement the construction of a new Computational Foundry at the Bay Campus which is partly funded by the European Regional Development Fund. Together the changes will increase collaborative research links with industry and transform Swansea and Wales as a global destination for computational scientists.

The **EIB's role** has been to facilitate financing of the developments with a long-term loan. The nature of the investment means that this will not only make an important contribution to knowledge creation, but given the university's position in the region, will also contribute to the revitalisation of local industry and employment prospects. The new investment will also reduce energy use through improved energy efficiency, which will contribute to the sustainability of the built environment.

During 2016, the EIB also provided large-scale loans to help develop secondary education infrastructure in several EU Member States. These were some of the largest loans ever granted to the education sector.



# EIB supported Hungary's programme of improvements to its school infrastructure and sports facilities

An EIB a loan of HUF 15.086 billion (some EUR 48 million) has financed the construction, modernisation and refurbishment of public education, pre-school and sports facilities in Hungary. This project supports government policies on education and skills development, promoting social inclusion, extending pre-school attendance for 3 and 4 year olds and compulsory physical education for all school children. The total cost of the project is estimated at HUF 30.172 billion.

EIB funds supported the implementation of five different central government programmes during the period 2015-18. These programmes involved the construction of classrooms and gymnasiums, the development of school swimming pools and other sports facilities with mixed school and community use and investment in pre-school facilities.

The project will extend and improve the education infrastructure and should subsequently help to increase educational attainment levels in Hungary in the areas of early childhood, primary and sports education. It thus responds to movements in population within the country, a need to improve provision for socially disadvantaged groups and a belief in the importance of physical education, both for school children and the wider population. Enrolment in schools benefitting from the EIB-supported programme is expected to increase by 3,600 pre-primary and 4,050 primary-school pupil places. Moreover, 70% of the eligible investment cost of the project is allocated to areas eligible for regional development support.

The **EIB's value-added** lies in allowing investment in Hungarian educational facilities to proceed, thereby facilitating the introduction of government policies on extending preschool attendance and promoting physical activity. EIB technical contributions were in the form of assistance with the development of monitoring and new reporting systems and support for the national reforms in public procurement. Implementation of the project will lead to 930 FTE jobs as permanent employment and will support some 1,900 persons-year temporary employment.

► EUR 48m from the EIB to finance the construction, modernisation and refurbishment of public education, pre-school and sports facilities in Hungary





## Investing in the Italian school system

There has been underinvestment in the Italian school system for some years. However, with the launch of an overall strategy **La Buona Scuola (Good School)**, aimed at improving education and vocational training, there was a need to obtain funding for schemes to upgrade and modernise the infrastructure of preschools, primary and secondary schools, and in particular, to support the infrastructure upgrade component (the National School Building Plan – 'Piano Scuola'). The EIB is helping to finance this very large investment plan.

The promoter is the Ministry of Education, University and Research (MIUR) in collaboration with the Ministry of Infrastructure (MIT) and the Ministry of Economy and Finance (MEF). The Project is expected to be completed by the end of 2018. After an initial phase, the total cost of the investment programme was extended from EUR 1.4 billion to EUR 2.6 billion, and the EIB loan from EUR 940 million to EUR 1.47 billion to cover even more schools. This is expected to benefit an additional 200,000 students.

The project is complex for various reasons, one of which is the fact that the jurisdiction for construction, ordinary and extraordinary maintenance of schools is delegated to the Municipalities and the Provinces.

Hence, an organisational structure had to be created to manage the upgrade (or even replacement) of the 41,000 school buildings in Italy (20,000 schemes). The Bank catalysed a process of co-ordinated planning amongst the various institutions involved in the investment plan, including providing input on the relevant legislative framework. The Bank's involvement, by requiring that the various actors involved in the investment plan act together, has improved the way the different funding instruments will function. Moreover, during the meetings with MIUR, the Bank requested and obtained agreement that a higher level of monitoring be planned for all investments included in the Project. An online monitoring system was specifically developed for this purpose.

The project should help to **improve education participation rates and educational attainment levels in Italy**, providing significant benefits to the wider community and local authorities. There will also be improvements in energy efficiency, security in school and quality of the learning environment in urban and rural areas. It is also hoped that this will reduce the percentage of early leavers from education and training, which, at 17% in Italy, and 24% in Southern Italy, is much higher than the Europe 2020 target of 10%. An estimated 35% of the investments will benefit less-developed regions of Italy. The project's success to date has led to the extension of its scope.



## European Spallation Neutron Source research facility, Sweden and Denmark

The EIB signed a loan of EUR 100 million (of the EUR 150 million approved) to help finance a European Spallation Neutron Source facility in Sweden and Denmark. The facility will be supported by a data management center in Copenhagen. The project has a total estimated cost of EUR 1.843 million and will make a significant contribution to European research infrastructure.

The project involves the design, construction and equipment of the European Spallation Source (ESS) research infrastructure. ESS can be compared to a large "neutron microscope" since neutron scattering enables the study of the structure and dynamics of atoms and molecules. With the world's most powerful neutron source, intensities up to 30 times higher than existing facilities will be achieved - a key element in Europe's efforts to further develop its world-leading large-scale research infrastructure.

Numerous research areas will be served including Materials Science (including nanomaterials), Energy and Climate (fuel cells, batteries, biofuels, solar energy and superconductors), Health (tissues, proteins, enzymes and other complex biological materials), Engineering (catalysers, aircraft wings, automobile engines), Chemistry (environmental friendly detergents, paints, cleaners and lubricants), and Environmental Technology (improved knowledge of water treatment and cleaner industrial processes). Each year an estimated two to three thousand visiting scientists will come to ESS to perform experiments. Most users will be based at European universities and institutes, others will be from industry.

Establishing this infrastructure would be too costly for one Member State to develop by itself. The **EIB's contribution**, alongside two other financial institutions' contributions, has been critical in allowing the construction of this Strategic Research Infrastructure to proceed.



► EUR **8m** for developments in medicine logistics

The main purpose of the project, with total costs of EUR 17 million, is to avoid errors when pharmacists or hospital wards dispense medicines to patients



## The EIB contributes to improved efficiency and safety in health systems in Finland

In a project called MED ROBOT with Finnish enterprise Newlcon Oy, a loan of EUR 8 million from the EIB has helped finance developments in the medicine logistics area involving automation solutions for the management of pharmacy and healthcare services. These improvements are promoting greater efficiency and safety in health services, initially in Finland but increasingly elsewhere. These developments are responding to a demand for solutions to manage costs in the face of ageing populations and decreasing healthcare budgets, together with an increased emphasis on medication safety and efficiency.

The main purpose of the project, with total costs of EUR 17 million, is to avoid errors when pharmacists or hospital wards dispense medicines to patients. In addition, the project supports the development

of technologies to reduce errors when patients, and especially elderly people, take their daily medicine. The developments involve: (i) storage retrieval robots for pharmacies; (ii) automated dispensing cabinets for hospital wards; (iii) intravenous compounding robots for the preparation of antibiotics; and (iv) novel software connecting the high-tech products as networks and integrating them into the hospital ecosystem. Part of the project involves the development of smart multi-dosing medicine dispensing systems and smart medicine cup holders for homecare. Thanks to Newlcon's technology, a faster service together with increased safety is expected as a result of a reduction of medicine abuse and of errors in medicine dispensing.

**EIB added value** lies in enabling Newlcon to scale up operations quickly in a fast-moving market, while also contributing to the creation of highly skilled jobs, and supporting the company's expansion its evolution from a local champion to a globally active industrial company.





'Development and deployment of information and communication technologies' by the end of 2016

was EUR 1.4 billion with an overall total of EUR 4.7 billion of investment being mobilised. The projects supported included schemes to help develop broadband networks which are expected to generate temporary employment of 33,000 person-years and some 1,900 permanent jobs during their operation phases.

The key outputs and outcomes of EFSI loans signed under this objective are summarised in the table below.

Table 2.3: Selection of expected results from EFSI operations signed under the objective 'Development and deployment of information and communication technologies' in 2015 and 2016

### 2.3.2 EFSI operations supporting RDI

EIB financing of EUR 2.7 billion has made available for RDI projects under EFSI's Infrastructure & Innovation Window (IIW) between the start of EFSI operations in 2015 and end-2016. This has helped to mobilise an additional EUR 8.5 billion of investment from other sources including the private sector. Some 39,000 person-years temporary employment and over 22,000 permanent jobs are expected to be created by the EFSI operations signed under RDI.

The EIB's loans under the EFSI objective of promoting RDI have provided direct finance to some 30 companies in the private sector potentially generating over EUR 64.4 billion of additional sales.

► EUR **2.7bn** for RDI projects in medicine logistics

Outputs	Outcomes
3,200 additional 4G sites	Some <b>840,000 new subscribers</b> for mobile data services
Almost <b>11 million additional households</b> covered by very high-speed broadband services	<b>1.2 million</b> of very high-speed broadband lines activated



# Creta Farm –innovative technology, healthy food and global expansion

The project promoter is Creta Farm, a Greek cold-cut meat and dairy food manufacturer. The company has filed some 20 patents in low-fat cold cut technology over the last 20 years. At 5% of turnover, Creta Farm spends five times more on average on R&D than its industry peers.

Several factors underpinned the rationale for the EIB operation. The project promotes RDI in Greece where the national level of R&D expenditure as a percentage of GDP is only 0.7% compared with 2% for the EU as a whole and within Greece, Creta Farm is based in a region that has been particularly affected by the economic downturn. The project aims are to develop new product lines with enhanced health or dietary properties based on Creta's proprietary "Oliving technology".

EIB financial assistance involves an EFSI operation loan of EUR 15 million which can support investments at higher risk levels than usual EIB practice. The related EFSI eligible investment mobilised is estimated at

EUR 30.87 million. Funding covers research and innovation-related CAPEX investments throughout the period from 2015 to 2018. Thanks to this funding, Creta Farm will be able to carry out the research that is needed to further develop the oliving technology, to expand further into international markets and to introduce its technology into the worldwide snackfood business. In addition, the loan is expected to have wider economic benefits. It will safeguard existing jobs and lead to increased employment in an R&D-intensive company in the agro-food industry, contribute to the expansion of the sector and will earn foreign exchange for Greece.

The EIB's value added lies in making available longer term financing than was otherwise available, providing bullet financing (where payment of the entire principal of the loan, and sometimes the principal and interest, is at the end of the loan term) and investment at a higher risk level. The project is linked to several major EU and EIB policy objectives. It is funded line with the priority areas of Horizon 2020 and the activities will also increase the technological base of EU manufacturing and the competitiveness of the European food industry.





## 3.1 Overview of 2016 signatures

Finance for SMEs and midcaps continues to represent the single largest public policy goal of the EIB, accounting for nearly a third of the overall signature volume.

## **SMEs and midcaps finance 2016**

EUR 21.3 billion of total financing (31.7% of all operations)

of which

EUR 18.1 billion for first signatures

Expected to mobilise at least EUR 36.2 billion through financial intermediaries

Sustaining over 3.8 million jobs

The EIB provides finance to SMEs through intermediated loans and a range of innovative instruments, either on its own risk or leveraging on the risk-taking capacity of third parties. The EIB's financing assistance is complemented by the European Investment Fund's (EIF) specialised products for SMEs,

including risk-sharing through guarantees, credit enhancement, intermediated equity, venture and growth capital, mezzanine finance, microfinance and social impact finance. Additional funding from the European Commission and the Member States is leveraged wherever possible.

Table 3.1: Expected results from SMEs and midcaps new operations signed in 2016

Key indicators	EUR billion	Number
Volume of loans to SMEs and midcaps supported	18.1	150,000
Additional SME finance leveraged through intermediaries	36.2	
Employment		
Jobs sustained	36.2	3.8 million

The EIB Group's support to SMEs and midcaps benefits from the substantial risk-bearing resources provided by the European Commission under the Investment Plan for Europe's EFSI.

Figure 3.1: Expected results from new SME operations in 2016

	Outputs	Outcomes
SMEs and midcaps	EUR 18.1 billion financing SMEs and Midcaps in the EU expected to leverage at least EUR 36.2 billion of SME finance	207,000 sub-loans expected over the next two years, leveraging at least EUR 36.2 billion of SME finance and sustaining over 5 million jobs
Key new initiatives and pilots for SMEs and midcaps	Continued expansion of the SME Initiative to Bulgaria, Finland and Romania, providing a guarantee capacity of approx. EUR 600 million.	First initiated in 2015, the different SME initiatives catalyse private investment and foster job creation
	InnovFin Midcap Guarantee facility (EUR 150m), Midcap Growth Finance (EUR 254m), InnovFin Energy Demo Projects Finance Facility (10m) and InnovFin Infectious Diseases Finance Facility (15m)	In addition to proving guarantees and funding to Midcaps, the InnovFin windows further aim at delivering renewable energy, hydrogen and fuel cell projects that help to bridge the gap between demonstration and commercialisation.  They also stimulate investment in research into infectious diseases
	Novel operation of EUR 140m involving a peer-to-peer lending platform linking investors with SMEs seeking finance	First time EIB provides funding to SMEs directly via an online peer-to-peer platform

European SMEs have been severely affected by the economic crisis, but there are tangible signs of a turn-around in demand and in their overall financial situation. Although access to finance for SMEs is improving, this is still a major obstacle for firms in several countries, notably in the south of Europe and in the more peripheral regions.

**Access to finance** is generally more difficult for SMEs than for larger companies. This is mainly due to financial frictions and market incompleteness to which smaller companies are more exposed. Such exposure is structural but has been exacerbated by the financial and economic crisis which has put additional burden on SMEs' access to funds.

Supporting SMEs and midcaps to enhance the overall competitiveness of the EU economy remains a central area of interest for the EIB Group. Given the market imperfections that impair financing for smaller companies and the additional impact of the crisis on different segments of SME financing, there is a clear need for public support. Such intervention must improve access to finance without distorting the market. The EIB Group acts on this principle to help mitigate the cyclical and structural bottlenecks in SME financing. The Group contributes to improvement of access to finance for SMEs and midcaps through instruments that (a) either en-

hance banks' ability to lend or (b) provide complementary sources of financing, such as credit guarantees, securitisation, microfinance and private equity/venture capital and other non-bank intermediated finance.

In line with the objectives of the Capital Market Union, the EIB continued to support the underdeveloped European Securities market via participation in securitisations targeting the SME sector. This creates a secondary market for SME loans enabling banks to obtain more liquidity and free regulatory capital, thereby enabling them to lend more readily to SMEs. With the combination of long-term liquidity provided by the EIB and EIF's longstanding market experience in providing guarantees for SME portfolios, the EIB Group participates in securitisations (funded or synthetic) of portfolios backed by SME loans/leases or other asset classes (mainly residential mortgage-backed securities and diversified payment rights) as loan substitutes for L4SMEs. Originators seek clear advantages of EIB purchases and are also increasingly focusing on synthetic securitisations (via guarantees), as they contribute to ease regulatory capital requirements.

EIB participated in 17 ABS transactions in 2016, having signed EUR 2.626m, coordinating this activity with the EIF.



out a State guarantee since 2010. Although these banks had been successfully recapitalised in December 2015, their cost of funding remains high, translating into higher cost of lending for local SMEs and the real economy. The operations primarily targeted the support of Greek SMEs and, due to their having been structured as capital market transactions, they also enabled Greek banks to raise long term funding while giving a signalling effect to private investors on the development of Greece's capital market.

Both operations have been structured as securitisations, with EIB subscribing to part of the senior notes of Asset Backed Securitisations. Through positively selected securitised portfolios, enhanced by substantial subordination, the two operations pave the way for good quality, simple and transparent structures for Greece. Alongside EIB, other International Financial Institutions (IFIs), such as EBRD, invested in the two structures. The two operations have been successful examples of the positive synergies within EIB Group, with both EIB and EIF teams collaborating for the review and conclusion of the operations.

challenging operating environment. Through this EIB operation, NBG finances eligible small and medium sized investments undertaken by SMEs and midcaps in Greece, thereby increasing the availability of affordable long-term funding and contributing to the economic development of the country and job creation. The facility also includes a component for Jobs for Youth to support youth employment in Greece. Financing of EUR 215 million was signed, with EFSI eligible investment mobilised of EUR 602 million. It is estimated that there would be about 1,520 final beneficiaries, of which 70% would be SMEs with an average loan size of EUR 100,000; 30% would be midcaps with an average loan size of EUR 500,000.

Subsequent to the successful completion of the NBG securitisation, Alpha Bank launched a similar product in which not only IFIs but also an international private investor participated. Financing of EUR 250 million was signed with an EFSI eligible investment mobilised of EUR 700 million. It is estimated that there will be some 3,275 final beneficiaries - 70% SMES with an average loan of EUR 56,000 and 30% midcaps with an average loan of EUR 500,000.

Through individual innovative operations, the EIB is also increasingly exploring ways of combining its more standard SME financing operations with support for areas of growing relevance for SMEs the process of internationalisation, youth employment, climate action and agriculture.



## Supporting employment of young people by SMEs in Poland

The Polish subsidiary of Crédit Agricole (EFL) has benefited from a EUR 200m MBIL in local currency to finance the leasing of SMEs and midcaps in the cohesion regions of Poland, some of which also hire and train young people. EFL was the first intermediary to implement the Bank's Jobs for Youth (JfY) initiative in Poland, supporting youth employment by smaller companies since 2014. Under the JfY initiative, EFL has been targeting SMEs that fulfil the following eligibility criteria: companies that (i) employ young people (at least 15 years old, and younger than 25 years old); (ii) offer vocational training/ internships/ training programmes for young people; or (iii) have cooperation agreements(s) with a technical college or school or university to employ young persons.

## SME credit line dedicated to climate action in the Netherlands

In June 2016, EIB signed a second Impact Loan with Rabobank, structured nvestments contributing to climate action undertaken by SMEs and midwith the Bank's services to identify the criteria of the portfolio and define

The organisational capacities and procedures of the promoter on sustainability matters are considered to be of a high level. Rabobank adopted a well, in order to proactively drive sustainability in their client base.



In 2016, the EIB continued to develop its cooperation with public promotional institutions (PPIs) in the EU such as national and regional promotional institutions, Member States and public authorities to channel EIB finance to SMEs and respond to calls from key EU policymakers for enhanced operational cooperation between EIB and PPIs. Signatures with PPI counterparties amounted to some EUR 5 billion, of which more than 50% was signed with national or regional promotional banks (NPBs) in several EU Member States (including Germany, Estonia, Italy, Poland, Portugal Slovakia and Spain). Cooperation with PPIs delivers high added value through effective funding support for national SME priorities and programmes, with higher transfer of the EIB's funding advantage to SMEs. By 2016, the Bank had a relationship with 20 national and regional promotional banks.



Through a EUR 500m loan signed with Rentenbank in July 2016, EIB launched the third dedicated line to finance its agricultural programme to micro-enterprises. Rentenbank, Germany's promotional bank for the agricultural sector, is an experienced and well-known counterpart of the Bank for intermediated finance to small companies, providing loans at reduced rates of interest for a variety of agriculture-related investments including renewable energies. Its range of products is geared towards production enterprises in the agricultural, forestry, viticulture, and horticulture sectors, manufacturers of agricultural investment goods, and trade and service companies related to agriculture.

Loans are also provided for projects in the food industry and other upstream and downstream companies. Additionally, investments by municipalities and other public bodies in rural areas as well as private engagement for rural development are promoted. The loans are extended through other banks involved in financing agriculture, related sectors thereof and rural areas.



This EUR 500 million loan with ICO, the Spanish Promotional Bank, is part of the Bank's response to the EU Economic Diplomacy call of March 2014 for increased EIB support for European companies' internationalisation and competitiveness. The project aims to finance the advance payment of short term invoices (less than 180 days) to exporting SMEs based in Spain under the "ICO Exporters 2016" line. A first tranche of EUR 250 million was fully disbursed in July 2016.

ICO is the financial agency of the Spanish State. It has put in place a two-step allocation process: firstly through agreements with commercial banks and secondly using the previous agreements with the final beneficiary SMEs. ICO will on-lend the Bank's funding through a revolving credit line to the commercial banks. Spanish SMEs will receive advance payment of the invoices issued as part of their commercial activity through credit, factoring or discounting lines. The importers can either be EU or non-EU based.

## 3.2 New initiatives for SMEs and midcaps

#### 3.2.1 SME Initiative rollout

Following its successful launch in 2015 in Spain and Malta, the EIB Group continued to expand the SME Initiative to new countries in 2016.

The SME Initiative is a joint financial instrument of the European Commission, the EIB Group and Member States. It aims to stimulate SME financing by providing partial risk cover for SME loan portfolios originated by financial institutions. Alongside European Structural and Investment Fund resources contributed by Member States, the SME Initiative is co-funded by the EU budget through Horizon 2020 and/or COSME resources as well as EIB Group resources. The SME Initiative covers two products:

- An uncapped portfolio guarantee for new SME loans/leases/guarantees (Option 1); and
- The participation in securitisations either through ABS investments or via guarantees – of new or existing SME loans/leases with an obligation of the originator to build up new (de-linked) SME portfolios meeting a minimum leverage factor on ESIF resources (Option 2).

The EIF is entrusted by the participating Member States with implementing the SME Initiative with the EIB. The EIB provides senior risk cover, whereas the EIF provides risk cover at upper mezzanine level.

Option 1 was brought to the market in Bulgaria, Finland and Romania, for an overall commitment of EUR 588 million, while Option 2 was deployed in Italy, aiming at future securitisation transactions in excess of EUR 1 billion.

#### 3.2.2 Support for innovation

The EIB is expanding the range of products supporting innovative projects implemented by SMEs and midcaps. Currently, four products are available under the InnovFin brand, including two exclusively for midcaps and two for which both SMEs and midcaps are eligible:

- A Midcap Guarantee facility provides guarantees and counter-guarantees on debt financing of up to EUR 50 million to financial intermediaries to improve access to finance for innovative midcaps (up to 3,000 employees)
- A Midcap Growth Finance facility offers longterm senior, subordinated or mezzanine loans from EUR 7.5 to 25 million for innovative larger midcaps (up to 3,000 employees), but also SMEs and small midcaps.
- A financing facility supporting Energy Demo Projects provides loans or loan guarantees between EUR 7.5 million and EUR 75 million to firstof-a-kind commercial-scale demonstration projects in the fields of renewable energy and hydrogen and fuel cells, helping to bridge the gap from demonstration to commercialisation. The projects may also be carried out by SMEs.
- A lending facility supporting projects focusing on infectious diseases aims to stimulate investments in the development of innovative vaccines, drugs, medical and diagnostic devices or novel research infrastructures for infectious diseases. EIB provides loans between EUR 7.5 million and EUR 75 million. Final recipients, which may also include SMEs, will be project developers that have successfully completed the pre-trial clinic stage and would now require clinical validation or be ready for laterstage clinical trials.



## **InnovFin Midcap Guarantee** with a financial intermediary in central Europe

In December 2016, the EIB signed a EUR 50m Innov-Fin Midcap Guarantee with Česká spořitelna. The purpose is to enhance Česká spořitelna's capacity to lend to innovative midcaps in need of funding for investment and working capital. EIB would provide a 50% credit risk protection, on a loan-by-loan basis of up to an aggregated loan volume of EUR 100 million.

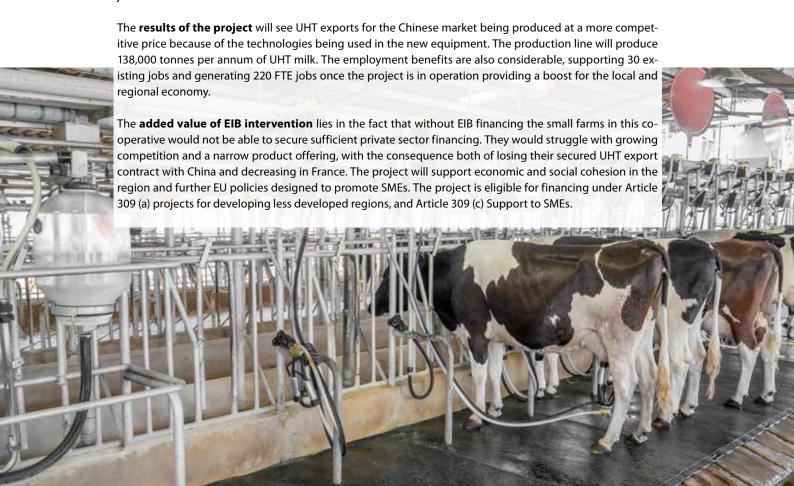
Česká spořitelna also recently signed an InnovFin SME guarantee with EIF (for EUR 100 million), dedicated to innovation financing for SMEs and small midcaps. The two guarantees are complementing each other and allow the EIB Group to cover the entire SME and midcap segments without overlaps.

## **Dairy cooperatives in France and Poland**

Due to the liberalisation of milk production in the EU through the abolition of the EU milk quota system, there is oversupply in the market. As a result, cooperatives are seeking to expand their product ranges from fresh milk to providing longer shelf life products such as milk powder and Ultra-High Temperature pasteurized (UHT) to international markets where cold distribution chains do not exist. In response to the need for such investments, the EIB signed loans with milk cooperatives in France and Poland to finance new production lines. This case study focuses on one French operation, supported by EFSI.

This project consists in the construction and operation of a dairy plant including the installation of new equipment for the production of UHT milk to benefit a number of small farms in Meautis, Basse-Normandie, a cohesion region in France. The **promoter** is a dairy cooperative, fully owned and controlled by 870 small dairy farms employing 1,280 farmers. With the abolition of the EU milk quota system, the promoter needs to diversify their product portfolio. This EIB-supported investment will develop the capacity of the farmers to access international markets for UHT as well as support the production of specialty products for infants.

The project includes installation of production and packaging lines as well as the construction of storage facilities and buildings for production and utilities on around 34km<sup>2</sup>. The new plant will have a capacity to process 180 million litres of raw milk per year. The EIB finance involves a loan of EUR 55 million to help cover a total project investment cost of EUR 128 million. The eligible investment mobilised under the EIB/ EFSI is just over EUR 124 million.



The table below summarises selected expected results from SMEs and midcaps operations.

Figure 3.2: Expected results from operations signed in 2016 providing financing to SMEs and midcaps

	Outputs	Outcomes
Key new initiatives and pilots for SMEs and midcaps	SME Initiative: EUR 710 million funding on lent to SMEs and midcaps	SME Initiative: 6,400 SMEs and midcaps obtaining access to finance
		InnovFin MidCap Guarantee: 53 midcaps obtaining access to finance InnovFin Infectious diseases: Supported increase in sales of EUR 4.1 million per year
Key new initi for SMEs	InnovFin Growth Finance: 29 patent applications per year 392, 000 Households connected to broadband 422 square meters more manufacturing capacity Obtaintion of BAT Certificate	InnovFin Growth Finance: 87,000 Households lines activated to broadband Supported increase in sales of EUR 429 million per year



## 3.3 EFSI operations to support SMEs and midcaps

By the end of 2016, the EIB had signed 121 operations for EFSI support, representing **EUR 14.2 billion of financing with a further 67.7 billion of eligible investment mobilised**. Of this, 29 operations worth EUR 1.7 billion provided financial support to SMEs and midcaps for an investment mobilised of EUR 10.81 billion with an average external multiplier of 5.7 (based on information provided at approval for signed operations). Over 500,000 jobs are expected to be sustained thanks to EFSI operations.

Figure 3.3: Expected results from EFSI operations signed in 2015 and 2016 and providing financing to SMEs and midcaps

	Outputs	Outcomes
SMEs and midcaps	58 million tons of milk powder capacity per year 5 patent applications per year 1,942 km of oil and gas pipelines constructed or renewed 12 social facilities (culture, recreation and sports) renovated or built 499,210 gas meters installed	17,500 SMEs and midcaps supported increase in sales of EUR 299 million/year 63,920 GWh/ year energy transported 40,000 visitors to new facilities 50,000 people benefitting from safe drinking water 6,000 social housing





## 4. Infrastructure

One of the EIB's four Public Policy Goals is helping to ensure that Europe has the necessary infrastructure to create a 'SMART Europe'.

The EIB's investment in infrastructure covering strategic transport, competitive and secure energy and integrated territorial development (urban renewal, including health) - is a precondition for the achievement of key objectives across a broad range of other policy areas including research and development, education and training, sustainable transport, environmental protection and natural resource efficiency, renewable energy and energy efficiency.

The EIB has a key role to play in providing long-term finance to help develop strategic transport links and other infrastructure needed to ensure competitive and secure energy supplies, and to promote integrated territorial development.

The contribution of the EIB has been especially important since the financial crisis as there has generally been under-investment in infrastructure throughout Europe both in terms of public and private investment.





Table 4.1: EIB lending activities in the infrastructure field in 2016 (in EUR million)

Policy objective	EUR m signed (all projects)	% total	EUR m signed (first signatures)	% total	EUR m project cost (first signatures)	%
Infrastructure	18,145	27.1	15,902	26.9	63,946	22.5
Strategic transport (incl. TEN-T)	5,983	8.9	4,776	8.1	13,683	4.8
Competitive and Secure Energy (incl. TEN-E)	5,071	7.6	4,456	7.5	15,866	5.6
Urban renewal (incl. health)	7,091	10.6	6,670	11.3	34,397	12.1
Total (all EIB projects)	66,971		59,183		284,104	

Note\* EIB financing has been allocated proportionately across EIB policy objectives where a project contributed to multiple objectives

The expected employment impact arising from the EIB's infrastructure investments in 2016 is very significant, exceeding **442,000 person-years of temporary employment** and some **46,000 FTE permanent jobs**.

The EIB's role during 2016 in the areas of strategic transport, competitive and secure energy supplies, urban renewal, and EFSI operations in infrastructure, are explained in the following sections.

## 4.1 Strategic transport (including TEN-T)

In 2016, EIB signatures in the strategic transport field were EUR 6.0 billion or 8.9% of all signatures.

### 4.1.1 Strategic context for EIB investments in transport

The EIB's objective with regard to strategic transport is to promote trade and support competitiveness and economic activity in all sectors of the EU economy by improving connectivity, increasing safety and environmental performance, and reducing congestion. This involves providing finance for strategic transport and TEN-T investments, completing and renewing Europe's core structural networks, improving links to ports, airports, and urban centres, and developing multi-modal platforms to support more efficient trade and logistics. The Bank's investments in strategic transport also facilitate efficient mobility for passengers and freight.

The 2011 **White Paper on Transport** ('Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System') is an important reference point for EIB operations in the strategic transport field. The White Paper sets out a roadmap consisting of 40 major initiatives for the next decade to build a competitive transport system that should increase mobility, remove major barriers in key areas, and fuel growth and help create employment. At the same time, the proposals should help reduce the EU's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. The other key goals for 2050 are:

- · No more conventionally-fuelled cars in cities;
- 40% use of sustainable low carbon fuels in aviation and at least a 40% cut in shipping emissions;
- $\bullet \ A 50\% \ shift of medium \ distance \ intercity \ passenger \ and \ freight \ journeys \ from \ road \ to \ rail \ and \ waterborne \ transport.$



In 2014, the EU launched a new **European transport infrastructure policy**. This policy aims to close the gaps between Member States' transport networks, remove bottlenecks that still hamper the smooth functioning of the EU's internal market and overcome technical barriers such as incompatible standards for railway traffic. The policy promotes and strengthens seamless transport chains for passenger and freight, while keeping up with the latest technological trends.

Taken together, these and other measures – such as the Commission's 2016 strategy for low emission mobility - are designed to result in a 60% cut in transport emissions by the middle of the century (the EIB's 2016 operations in relation to sustainable transport are explained in Chapter 5).

#### 4.1.2 Types of EIB operations to support strategic transport

In the selection of projects to finance, the Bank prioritises transport infrastructure schemes that are likely to promote:

- **Climate-friendly transport** through investment in public transport and railways, inland waterways and short sea shipping projects. The EIB is also actively seeking ways of supporting the deployment of alternative fuels.
- Sustainable and safe mobility that is economically, socially and environmentally sustainable. The
  development of sustainable urban transport and urban nodes, as well as road safety, is a key priority for the
  EIB. In urban centres, sustainable transport significantly improves the quality of life by reducing congestion,
  helping to reduce pollution levels and travel times. The Bank's investments also help to reduce the number
  and severity of accidents and to improve safety.
- Innovative transport solutions are important for the achievement of the long-term competitiveness of the EU. The Bank invests in R&D projects and the deployment of new technology that makes transport more efficient, safer and less polluting.

#### 4.1.3 New EIB signatures in strategic transport for 2016

During 2016, there were new **EIB signatures totalling EUR 4.8 billion or 8.1% of all new signatures to promote strategic transport.** Key examples of results expected to flow from these new signatures are presented in the table below.

Table 4.2: Selection of expected results from 2016 strategic transport (including TEN-T) operations based on 2016 first signatures

	Outputs	Outcomes		
Road	Over 1,500 lane-kilometres of roads and highways upgraded or built	Some 50 million additional passengers benefiting from road infrastructure per year	Over	
	Over 1,800 km of railway tracks upgraded or built	Over 90 million additional passengers benefiting from rail infrastructure per year	EUR 136 million per year	
Rail	Over 240 stations constructed or upgraded	Over EUR 21 million per year of vehicle operating cost savings	of vehicle operating	
		Over 23 million hours of time savings per year	cost savings	
Sea	Over an additional 18 million tonnes of annual port cargo capacity	An additional 16 million tonnes of annual cargo traffic handled in the terminals		
Air	Additional airport capacity of 25 million passengers per year	Additional annual passenger throughput of 11 million passengers		



## **Copenhagen Airport** expansion TEN-T

Copenhagen Airport is Denmark's main international gateway and major transport hub. The airport is one of the trans-European transport network (TEN-T) core network airports. It serves a large part of southern Sweden and northern Europe and is the largest airport in Scandinavia as well as being the sixteenth busiest in Europe. Located just 8 kilometres south of Copenhagen, the airport handled 29 million passengers in 2016. Traffic has grown at an average annual rate of nearly 3 % in recent years.

As an identified TEN-T core network airport, the project was eligible for EIB and EU backed financing. The airport is operating close to capacity and is experiencing a shortage of long-haul aircraft stands and congestion in some parts of the passenger terminals. The project promoter is Copenhagen Airports AS (CPH), a private company, in which the majority shareholder is Copenhagen Airports Denmark ApS (57.7%) and the Kingdom of Denmark is a minority shareholder (39.2%).

The project's objectives are to expand the airport to accommodate future growth in air traffic and enhance passenger service standards and operational efficiency. This will be accomplished by constructing new piers and aircraft stands, and developing critical parts of the terminal infrastructure. The project should help the airport reach its strategic target of handling 40 million passengers per annum. The expansion of Copenhagen Airport will accommodate the expected airport traffic growth for a number of years to come and enhance passenger service standards. The project could generate temporary employment of about 1,500 per year during construction, and 5,000 full-time equivalent jobs in the long-term. This is in addition to the benefits of increased capacity for passengers which will provide economic benefits to the region.

EIB financing consists of a DKK 1,250 million (some EUR 168 million) loan signed in 2016, providing added value in accelerating the investment with project works expected to finish in 2019. The project is an EFSI operation with EUR 485 million EFSI eligible investment mobilised.





# Rete Ferroviaria Italiana - investments in the Italian rail network

The project consists of approximately 2,400 schemes for the improvement and upgrading of the national railway infrastructure in Italy. The schemes are included in the Programme Contract for Investments between the Ministry of Infrastructure and Transport (MIT) and Rete Ferroviaria Italiana (RFI), the Italian railway infrastructure manager. The EIB investment relates to 16,724 km of railway lines managed by RFI used daily by more than 9,000 trains. The project is partially located on the TEN-T rail network and also in less developed areas and will support regional development by facilitating accessibility.

The schemes financed by the EIB relate to level crossing protection, noise abatement, hydrogeological and seismic risk mitigation, tunnel safety as well as station accessibility and security. These improvements will enable the Italian rail network to provide a safe, reliable, high-quality service whilst reducing environmental impact.

The EIB loan is EUR 1 billion. The loan builds on a previous EIB operation in 2015 when the Bank provided EUR 950 million to renew and upgrade the national railway infrastructure.

## **Aberdeen Harbour extension, UK**

Aberdeen is one of Europe's leading ports for the offshore energy industry. It also functions as an export port for local industry to access the global market for offshore drilling equipment (e.g. West Africa and the Barents Sea). The port is of strategic importance and is part of the TEN-T.

The port has been operating at capacity for some years. In addition, there is a growing trend for larger multi-purpose vehicles in the oil and gas sector and other industries. There is also potential for new business streams such as the decommissioning of oil and gas infrastructure and the renewables sector. The existing harbour facilities cannot accommodate this demand due to constraints with regard to accessibility and a lack of nearby land within or adjacent to the harbour. In addition, water depth in the existing harbour basin is too shallow for the larger vessels increasingly in use.

Given these considerations, the EIB supported the design and construction of a new deep-water multi-purpose port at Nigg Bay, 1 km south of the existing port, as proposed by the promoter Aberdeen Harbour Board. The new port will create additional handling capacity and provide deeper berths with improved nautical and land access to meet capacity constraints at the existing harbour. It will also accommodate the largest offshore service and support vehicles of up to 145 meters in length serving the oil and gas industry, as well as Ro-Ro and Ro-Pax ferries that provide key links to the Northern Isles.

The EIB approved a loan of GPB 200 million (some EUR 254 million) to help finance the project for GBP 408,5 million. Commercial operations are expected to start in March 2021.





## 4.2 Competitive and secure energy

The EIB's policy goals in relation to competitive and secure energy are to ensure the security of supply by: supporting projects of common interest and related energy infrastructure for gas and electricity supplies; developing electricity networks to integrate renewable energy sources into power markets; and increasing energy storage capacities, and modernising and smartening electricity distribution grids.

**During 2016 EIB signatures in competitive and secure energy totalled EUR 5.0 billion or 7.6% of all signatures.** Furthermore, during 2016, EFSI made a significant contribution with investment in some 40% of energy projects. Key activities included new investments for risk sharing notably with regard to renewables and energy efficiency.

### 4.2.1 Strategic Context - Competitive and Secure Energy

A secure and sustainable supply of energy at affordable prices is crucial to the EU's economic growth and competitiveness. However, as the EU's Energy Security Strategy points out:

- The EU imports 53% of the energy it consumes (2014). Energy import dependency relates to crude oil (almost 90%), natural gas (66%), and to solid (42%) as well as nuclear fuel (40%);
- The most pressing energy security of supply issue is the strong dependence from a single external supplier

   Russia;
- The EU's external energy purchases represents more than EUR 1 billion per day and more than a fifth of total EU imports;
- The EU's energy security has also to be seen in the context of growing energy demand worldwide, which is
  expected to increase by 27% by 2030.

The **EU's Energy Security Strategy** aims to ensure a stable and abundant supply of energy through a combination of measures: increasing energy efficiency and reaching the proposed 2030 energy and climate goals; increasing energy production in the EU and diversifying supplier countries and routes as well as negotiating effectively with current major energy partners; completing the internal energy market and building missing infrastructure links to quickly respond to supply disruptions and re-direct energy across the EU to where it is needed; and last but not least, strengthening emergency and solidarity mechanisms and protecting critical infrastructure. There are also a number of objectives relating to energy efficiency and the development of renewable energy sources (see Chapter 5).

Modern energy infrastructure is crucial for the EU to integrate its energy market and to meet its energy and climate goals. To upgrade Europe's infrastructure, it has been estimated that around EUR 200 billion is needed during the current decade to develop transmission grids and gas pipelines. However, not all investments are commercially viable and the market alone is likely to only provide half of the necessary investment.

The ElB's operations are guided by the priority corridors that have been identified in the **Trans-European Networks (TEN-E) strategy**. These corridors require major infrastructure developments to connect regions and countries currently isolated from European energy markets, to promote the strengthening of existing cross-border interconnections, and the integration of renewable energy.

## 4.2.2 Types of operations to support competitive and secure energy supplies

The EIB uses a range of financial tools to invest in the development of energy infrastructure to strengthen the internal energy market but also, through the modernisation of energy networks and improvement of energy storage, to help integrate energy from renewable sources.

The EIB demonstrates added value in supporting TEN-E infrastructure projects through its ability to provide the long-term finance needed for these types of projects on very competitive terms, by offering maturities tailored to the long construction and operating periods of the schemes concerned, and by offering structured finance as a complement to commercial bank and capital market funding.

In addition to providing various types of finance for infrastructure projects, the EIB also provides technical advisory services, particularly in less developed regions and on projects involving complex structures, such as public-private partnerships.

### 4.2.3 New signatures in competitive and secure energy in 2016

During 2016, competitive and secure energy projects accounted for EUR 4.5 billion or 7.5% of all EIB new signatures.

Table 4.3: Selection of expected results from the EIB's 2016 new operations in competitive and secure energy

	Outputs	Outcomes
Electricity and heat	745 MW electricity generation capacity from conventional energy sources  Some 530 MW of heat/refrigeration production capacity from conventional energy sources	Some 3,500 GWh/yr additional electricity and over 3,000 GWh/yr additional heat generated from conventional energy sources per year.  Over 350,000 households supplied by the energy generated
Power distribution and transmission	Some 32,000 km of power lines constructed or upgraded More than 12,900 MVA of substation capacity constructed or upgraded  Over 34 million electricity smart meters installed  Over 760,000 new electricity and 900 new heat connections to the network	Over 13,000 GWh of additional electricity and some 400 GWh of additional heat transported per year
Gas and Oil	5,500 km of gas or oil pipelines constructed or upgraded Some 11 million gas smart meters installed and more than 170,000 new gas connections to the network	Over 27,800 GWh of gas transported/ storage capacity utilisation per



The **rationale for EIB intervention** lies in the need for investment in Europe's gas distribution grids to promote competitive and secure energy supplies. In addition to this, the intervention makes a contribution to action to adapt to climate change which is also one of the EIB's priority objectives.

The **EIB loan** of GBP 150 million (around EUR 166 million) was made available in May 2016 and helps to finance WWU's investment programme for the period 2016-19. The total investment of the programme amounts to GBP 373 million and so EIB investment is around 40%. The investments are being used for the extension and reinforcement of the gas distribution network and the replacement of pipelines and other equipment. The investment is also being used, e.g., for the development of information systems and acquisition of equipment to maintain and improve the quality of WWU services.

The majority of the WWU sub-projects (accounting for 66% of the total project cost) involve upgrading the network through measures such as replacement of pipelines, local transmission systems (LTS) and other network-related assets. Around 34% of the investment is concerned with network expansion and reinforcement such as new customer connections, reinforcements, development of the local transmission systems, and the purchase of vehicles, mobile plants and new IT systems.

The various WWU investments that are being supported by the EIB are likely to have a significant impact on energy security and safety of gas supply in Wales and the South West of England. In addition to significant environmental benefits through the reduction of methane leakages and through the replacement of more expensive and polluting fuel sources (e.g. diesel and coal) by gas, the EIB-backed programme will provide reduced energy costs for households, some of which classified as fuel poor, and local businesses, thereby helping them to improve their competitiveness. Given the well-developed gas network already in place, the planned investments are the least costly way of ensuring energy supply in this part of the UK, also taking into account environmental externalities. Some 16% of the investments will take place in EIB Cohesion Priority Regions (West Wales & the Valleys, Cornwall and Devon).

Overall, the **added value of the EIB's intervention** lies in helping WWU to bring forward the renovations and upgrades of the gas distribution network which are crucial to ensuring cost-effective energy security.



## **Enedis smart meters, France**

This project is part of the largest French electricity distribution operator's nation-wide implementation of advanced meters. The Promoter is the electricity distribution company for over 95% of the users in France. In 2015, 349 TWh were distributed throughout its networks, serving some 35.6 million users.

The project's principal components are the installation of approximately 23.6 million electricity meters, the related new communication networks as well as the necessary information management system to enable and optimise the use of the new meters in line with the requirements of the relevant EU regulatory framework (Directives 2012/27/EC, 2009/72/EC and 2009/73/EC) while also allowing for further operational efficiency gains. The project will be implemented over a four year period (2016-19). The EIB approved a loan of EUR 1,435 million towards the total project cost.

For consumers, the installation of advanced meters will allow easier access to real-time consumption data thus enabling better demand management and easier supplier switching. A wider range of tariff structures will also be available for both standard consumers and social tariff customers.



#### 4.3 Urban renewal and health

#### During 2016, EIB signatures in this policy area totalled EUR 7.1 billion or 10.6% of all signatures.

The EIB's policy goals in this area are to provide financing for the development of smart and sustainable cities and urban infrastructure by:

- Encouraging more mixed-use development to accommodate higher densities and reduce the need for motorised travel;
- Improving individual building performance to reduce energy consumption and carbon emissions;
- Investing in more 'equitable' cities by, for example, financing social and affordable housing to mitigate urban poverty.

#### 4.3.1 The strategic context for the EIB's urban renewal operations

Cities are the powerhouses of economic growth, innovation and employment opportunities. Within the EU, there are approximately 930 cities with a population of more than 75,000 people. Some 72% of all Europeans live in cities and this percentage is expected to rise to 80% by 2050. However, cities are facing ever greater social challenges in respect of the environment, transport and social cohesion.

The **EU's Urban Agenda** aims to address these challenges. The Urban Agenda is a joint effort of European Commission, Member States and European Cities Networks to strengthen the recognition of the urban dimension by European and national policy. It aims to stimulate growth, 'liveability' and innovation in the cities of Europe. In the **Pact of Amsterdam**, signed in May 2016, EU Member States agreed to 'establish a more effective integrated and coordinated approach to EU policies and legislation with a potential impact on urban areas and also to contribute to territorial cohesion by reducing the socio-economic gaps observed in urban areas and regions'.

In addition to preparations for the 'Pact of Amsterdam' in 2016, the EIB participated in Habitat III, the United Nations Conference on Housing and Sustainable Urban Development held in Quito, Ecuador. This led to the submission of the New Urban Agenda by the President of the UN General Assembly which was adopted at the General Assembly Plenary held on 23 December 2016.

#### 4.3.2 Types of EIB operations to support urban renewal

Over the years, the EIB has provided financing to 16.5% of the 930 cities in the EU with a population of more than 75,000 people. Recognising the importance of smaller towns and cities, the EIB finances urban renewal investments through framework loans intermediated by regional administrations, public or private banks, and specialised enterprises such as housing companies or energy efficiency agencies. The EIB also provides financing through commercial and public sector banks to public or private enterprises delivering services in urban areas that contribute to renewal.

The EIB supports projects under the 12 **Urban Agenda partnerships/priority themes**: inclusion of migrants and refugees; air quality; urban poverty; housing; the circular economy; jobs and skills in the local economy; climate adaptation (including green infrastructure solutions); energy transition; sustainable use of land and nature-based solutions; urban mobility; digital transition; and innovative and responsible public procurement.

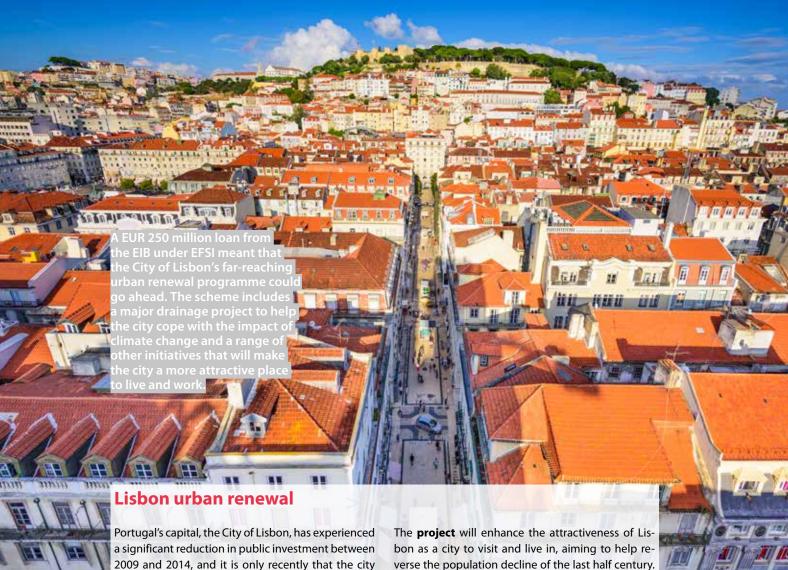
The tools employed by the Bank in support of urban renewal and health include: investment loans (normally with a project cost exceeding EUR 100 million); framework loans made directly to a city, normally to finance a 3-5 year multi-sector investment programme in excess of EUR 100 million; equity fund investment for urban development, infrastructure improvement or brownfield regeneration; and a number of other instruments such as municipal service company loans and mezzanine loans.

#### 4.3.3 New EIB signatures for urban renewal in 2016

During 2016 urban renewal (including multi-sector urban lending, social housing and health, but excluding other aspects of the urban agenda such as urban mobility, digital transition and water) accounted for EUR 6.7 billion in new operations for a total PIC of EUR 34.4 billion. Selected examples of results expected to flow from these new signatures are presented in the table below.

Table 4.4: Selection of expected results from the EIB's 2016 new operations in urban renewal (including health)

	Outputs	Outcomes	
Urban development	Over 100,000 social or affordable housing units and almost 200 social facilities built or renovated  Over 500 administrative facilities and 290 culture, recreation and sports facilities built or renovated  31,000 new refugee/asylum seeker places provided in new or refurbished reception centres or temporary accommodation facilities  Over 510,000 m² of additional building surface 6,300 km new or upgraded network- lengths of cable, plus equipment installations	Some 120,000 households in new or refurnished social and affordable housing 40,000 visitors per year to new or renovated culture, recreation and sport facilities Some 200,000 refugees accommodated by the time of project completion	Over 9 million beneficiaries of upgraded or new urban infrastructure and services
	Over 215,000 m <sup>2</sup> of new park's area created Some 650 ha of brownfield land regenerated Some 50 urban road infrastructure schemes under implementation		
Health	Some 1 million m <sup>2</sup> of health facility floor area constructed or upgraded	Over 5 million inhabitants having to improved health care services	9



a significant reduction in public investment between 2009 and 2014, and it is only recently that the city has experienced an improved financial position. In 2014, the city received five million tourists, a 14% growth on the previous year and there is evidence to indicate the city is increasingly being sought as a place of residence or second residence by citizens from other EU Member States. In this context, EIB has put in place a Framework Loan to co-finance a strategic multi-annual investment plan for the city for the period 2016-20 to help consolidate the city's recovering finances and counter the cycle of underinvestment.

The **project objectives** are supporting: (i) the development of urban infrastructure schemes located in urbanised and brownfield areas, integrated in the Urban Rehabilitation Strategy; (ii) upgrading of the drainage system of Lisbon in line with the Lisbon Drainage Master Plan 2016-2030; and (iii) construction and rehabilitation of social housing which is part of the City Social Housing Strategy.

The **EIB financing under EFSI** amounts to EUR 250 million for this project with an estimated total cost of EUR 523 million. The Framework Loan includes mainly small and medium-sized schemes (below EUR 50m). However, there will be one major scheme, the drainage system, currently estimated to cost some EUR 131 million.

The **project** will enhance the attractiveness of Lisbon as a city to visit and live in, aiming to help reverse the population decline of the last half century. The project is expected to improve energy efficiency in public buildings and reduce local emissions. The project also includes schemes improving the resilience of Lisbon against climate change. The implementation of the Drainage Investment Plan 2016-2020 will contribute, in particular, to a reduction of the frequency and magnitude of flooding in Lisbon. This project is expected to support 950 person-years of temporary employment during its implementation and some 270 permanent jobs are to be created.

The **added value of the EIB support** lies in the significant financial contribution that has enabled the City of Lisbon's renewal plans to go ahead in a situation where it had not been possible to secure sufficient public financing to proceed. The project helps to promote the Bank's objectives with regard to integrated urban development and environmental protection and is eligible under Article 309 of the Treaty on the functioning of the EU. The project's objectives are also in line with the aims of the EFSI, meeting criteria for environment and resource efficiency, developing transport infrastructure and equipment and innovative technologies for transport, and objectives in relation to human capital, culture, and health.



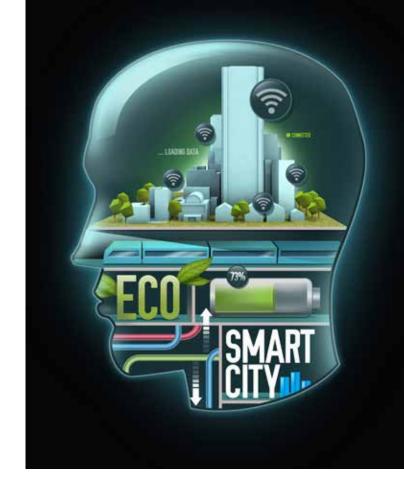


#### **Urban renewal in Malta**

As a small island Malta is constrained by the size of its economy and its geographic isolation. In addition, Malta is one of the most densely populated countries in the EU due to the large annual influx of tourists (some 1.4 million per year, 3.5 times more than the local population) and a growing influx of migrants. As a result, Malta is faced with serious congestion problems and land-use pressures, worsened by a dependence on the use of cars and buses due to under-developed alternatives, particularly in rural areas and the capital city. The country also faces challenges related to climate change notably in the efficiency and use of natural resources such as water and energy. There are also issues relating to health, ageing and promotion of the tourism sector.

To address these and other challenges, the EIB signed a loan of EUR 72 million as a multi-sector Structural Programme Loan for Malta to finance a total project cost of EUR 850 million. The EIB support is part of EU Cohesion Policy Operational Programmes that are being implemented in Malta during the 2014-20 period. Taken together, the loans and other support will support a range of initiatives to promote competitiveness, sustainability, investment in human capital, as well as urban development. Some projects will also be co-financed by the Cohesion Fund, the European Bank for Reconstruction and Development and the European Social Fund. Projects will be implemented during 2014-20 and completed by 2022. Management, operation and maintenance of the sub-projects during operation will be performed or sub-contracted by the final beneficiaries and operators.





### Smart cities, climate and circular economy in Belgium

The "Smart Cities and Sustainable Development Strategy" of the project promoter, Belfius Bank, is a response to the many challenges faced by public administrations and companies in urban environments: budget cuts, an ageing population, management of sanitary services, climate change, improving mobility, and increasing competitiveness. Belfius is a public sector bank focused on municipal and regional financing. It has already, through an earlier EIB framework loan, acted as a financial intermediary in this field. The beneficiaries of this particular intervention will be local, regional, or inter-communal public authorities, public and private service companies and organisations, and energy service companies.

This framework loan is for a new facility which includes sectors such as social and affordable housing, water, solid waste and ICT. Eligibility criteria and application procedures are also simplified for Smart Cities 2 as compared to Smart Cities 1. The project is fully in line with the Urban Agenda for the EU as set out in the Amsterdam Pact of May 2016.

It is estimated that some 2,500 person-years are expected to be employed during the construction phase and some 100 permanent jobs would be created as a result of the project. The total Project Investment Cost amounts to some EUR 400 million. The EIB approved loan is for EUR 200 million with a view to including mainly smaller investments (below EUR 50 million). Some schemes may also benefit from national and regional funding. A pipeline of over 150 investments was already being analysed by Belfius during 2016.

> ► EUR 200 million



### 4.4. EFSI operations to support infrastructure

This sub-section presents the key expected results from all EFSI operations in the field of infrastructure signed in 2015 and 2016 for over EUR 2.1 billion.

# 4.4.1 EFSI operations in the development of transport infrastructures, and equipment and innovative technologies for transport

By using the same type of indicators for expected results presented for infrastructure operations, the table below-focuses on EFSI operations signed in 2015 and 2016 in transport infrastructure, and equipment and innovative technologies for transport.

Table 4.5: Selection of expected results from EFSI 2015 and 2016 operations in transport (including TEN-T and urban transport)

Outputs	Outcomes
Some <b>1,000 lane-kilometres</b> of <b>roads</b> and highways upgraded or built, out of which 15 km of access roads to ports	Some 11 <b>million additional passengers</b> benefiting from new or improved <b>road infrastructure</b> per year
<b>22 km bus and tram lanes, metro track</b> constructed or upgraded	<b>EUR 14 million</b> per year of <b>vehicle operating cost</b> savings
Almost <b>60 stations or stops</b> constructed or upgraded	Some <b>38 million additional passengers</b> benefiting from new or improved <b>rail and urban infrastructure</b> per year
Some <b>1,200 rolling stock</b> purchased and <b>75 km of</b> railway tracks upgraded	Over 17 million hours of time savings per year
6 million tonnes additional annual cargo capacity	An additional <b>3.4 million tonnes of annual cargo</b> traffic handled in terminals
Additional airport capacity of 8.4 million passengers per year	Additional annual <b>airport</b> passenger throughput of <b>4.2 million passengers</b>

Central and Eastern Europe, is a region where large-scale investment is needed to modernise transport infrastructure. The D4R7 motorway and the expansion of Tallinn airport are strong examples of the impetus given by EFSI to infrastructure development in the region.

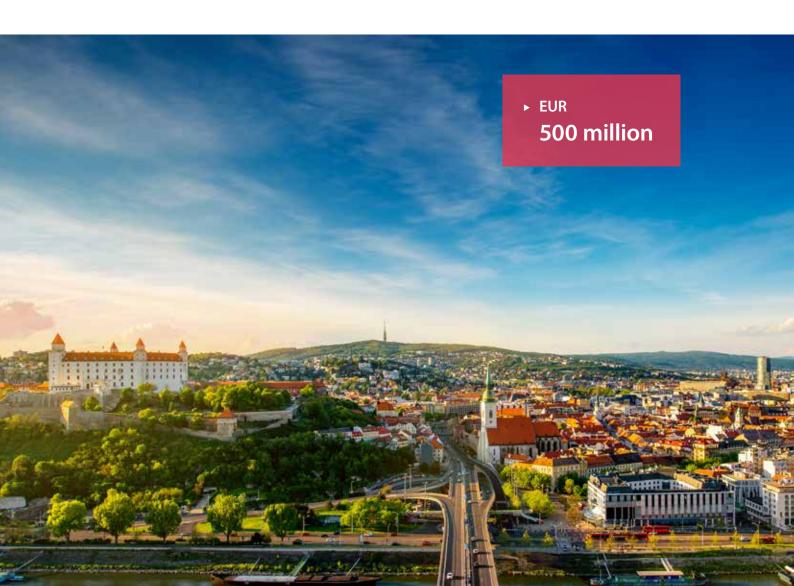
### The D4R7 motorway Public-Private-Partnership (PPP), Slovakia

An EIB a loan of EUR 500 million was approved to co-finance the design and construction of the D-4 motorway in Slovakia. The motorway completes a link of the comprehensive trans-European transport network (TEN-T) in Slovakia, and is part of the D4R7 public-private partnership (PPP). The D4R7 is an availability payment PPP covering the construction period and 30 years of operation and maintenance.

Identified as a priority project by the national government, the new 27 km section of the D4 motorway will establish connections to the R7 expressway and the existing D1 and D2 motorways. The new road infrastructure will provide increased transport capacity to

the Slovak capital and the neighbouring region, improving connectivity locally and internationally with enhanced safety and more reliable journey times.

Besides being only the second transport PPP project in Slovakia, the D4 motorway is also the country's first project to benefit from support of the EU budget guarantee under EFSI. The estimated EFSI eligible investment mobilised at the appraisal stage of this operation is EUR 638.5 million. The EIB is financing the construction of the motorway alongside, amongst others, the Slovak Investment Holding (SIH), a fund managed by SZRB AM, the Asset Management arm of the Slovak National Promotional Bank.







The project consists of a number of investments at Tallinn Airport that are aimed at improving environmental and safety performance, alleviating current congestion and accommodating future growth in traffic.

The EIB signed a loan for EUR 30 million to support this project for a total cost of almost EUR 80 million. The project will increase the handling capacity of the airport by approximately 1.2 million passengers per year. The EIB-supported works include the reconstruction of the existing runway and apron pavement, an extension and reconfiguration of the passenger terminal and the renewal and upgrade of the airside lighting system. Smaller works are the renewal and upgrade of maintenance, fire and rescue equipment and a range of other environment related airside enhancements, such as the upgrade of the storm water drainage and de-icing network, a new snow dump area and an aircraft run-up area.

The project is expected to require about 540 person-years of employment during the construction phase. Furthermore, some 50 permanent jobs will be created to run the facility once it is operational. These jobs will be sustainable over the long-term. The project will also contribute to increased productivity and hence economic growth in the area.

# Tallinn Airport expansion and modernisation

► EUR
30 million

# 4.4.2 EFSI projects in development of the energy sector in accordance with the Energy Union priorities

Selected examples of results expected to result from EFSI signatures amounting EUR 4.7 billion in the energy sector are presented in the table below.

Table 4.6: Selection of expected results from EFSI projects for 2015 and 2016 in relation to the development of the energy sector in accordance with the Energy Union priorities.

Outputs	Outcomes
<b>6,800 MW electricity generation</b> capacity, out of which <b>90% from renewable</b> energy sources	Over <b>20,900 GWh additional electricity generated</b> per year, out of which <b>85% from renewable</b> energy sources
	<b>4.9 million households supplied</b> by the energy generated
<b>560 MW of heat/refrigeration production</b> capacity, out of which <b>2/3 from renewable</b> energy sources	<b>2,900 GWh additional heat generated</b> per year, out of which <b>2/3 from renewable</b> energy sources
Over <b>11,700 km of power lines</b> constructed or upgraded	Some <b>20,400 GWh of additional energy transported</b> per year
Some <b>3,700 MVA of substation capacity</b> constructed or upgraded	
Over <b>31 million electricity and gas smart meters</b> installed	
Some <b>643,000 new energy</b> (electricity, gas, heating) <b>connections</b> to the network	
Over <b>5,000 km of gas or oil pipelines</b> constructed or upgraded	An additional <b>68,800 GWh</b> per year of <b>gas transported/storage</b> capacity utilisation
Some EUR 2.5 billion investment in highly efficient CHP and building energy efficiency	<b>1,780 GWh</b> per year of <b>energy savings</b> from efficiency measures



# Construction of a natural gas-fired heat and power plant in Germany

The EIB has granted a loan of EUR 105 million under EFSI for the construction of a 188 MWe / 192 MWth natural gas-fired heat and power plant (CHP) in Kiel,Germany. The total investment cost of the project amounts to EUR 278 million for EUR 249 million of EFSI-eligible investment mobilised. The project is composed of several mature technology components. Their combination, however, is quite unique and a response to the increased share of intermittent generation on the German system and resulting volatility of German electricity markets.

The project design seeks to maximize the flexibility in generating heat and power, in particular allowing the operator to provide stabilizing services to the grid. The project provides heat to the existing district heating system in the city of Kiel as well as electricity to the local distribution system. It substitutes heat and electricity generation

in an adjacent coal fired CHP plant which will be taken out of service soon for economic reasons, at the latest when this project starts operation.

The result will be electricity for 250,000 homes and heat for 70,500 customers. More flexible than classical combined heat and power designs, the plant will support the integration of growing intermittent renewable generation, such as wind and solar. The new plant will also emit 70 percent less carbon dioxide than the coal-fired plant it is replacing. During the construction period the project will support approximately 1,400 person-years of temporary employment.

The added value of the EIB loan lies in enabling the financing a project that is (i) large compared to the borrower size and (ii) urgent in order in order to secure energy supply. The project also contributes to the climate change objective.



#### 4.4.3 EFSI projects contributing to human capital, culture and health

EFSI was used in 2016 to invest in a number of urban renewal projects. This included cities with lower credit ratings such as municipalities or regions whose credit rating is limited by the national rating to sub-investment grade; municipal or regional companies with limited recourse to public sector guarantees, including utilities, transport companies, private social housing companies; and, companies or structures owned by associations of municipalities.

Selected examples of results expected to result from the EFSI signatures up to the end of 2016 are presented in the table below.

Table 4.7: Selection of expected results from EFSI 2015 and 2016 projects contributing to human capital, culture and health

Outputs	Outcomes
Some <b>29,000 social or affordable housing units</b> and almost <b>60 social facilities</b> built or renovated	Some <b>50,000 households</b> in new or refurnished social and affordable housing
<b>6 administrative</b> facilities and <b>20 culture, recreation and sports facilities</b> built or renovated	<b>40,000 visitors</b> per year to new or renovated culture, recreation and sport facilities
Some <b>420,000 m<sup>2</sup></b> of additional <b>building surface 5,200 m<sup>2</sup></b> of <b>new park's area</b> created and <b>100 ha</b> of <b>brownfield land</b> regenerated	Over <b>3,2 million beneficiaries</b> of upgraded or new urban infrastructure and services
6,300 km of new fibre access networks installed	
19 new or rehabilitated health facilities with 4200 beds	Over 1 million inhabitants having access to improved health care services
Additional <b>450,000 m<sup>2</sup></b> of additional <b>health facility floor area</b> constructed	





An EIB loan under EFSI is extending existing hospital facilities by providing over 900 new beds and improving access to hospital services for 500,000 people.

The project promoter, Kujawsko-Pomorskie Inwestycje Medyczne Spolka z o. o (KPIM), is a public limited liability company entirely owned by the Region and established in 2009 for the specific purpose of implementing the Region's investment programme for provincial hospitals. The project aim is to continue and finalise investments for the replacement of obsolete facilities in three provincial hospitals on the site of the existing Rydgier General Hospital. In addition, the project will complement investments in primary care, municipal and university hospitals, and hospital management support services. It also aims to increase the efficiency of, and provide access to, a broader portfolio of specialised healthcare services and improve the standards and quality of hospital accommodation. The works are expected to be completed in 2019.

EIB financing consisted of a loan of PLN 245 million (approximately EUR 53.7 million) for the period 2016-19. The project is an EFSI operation and the related EFSI eligible investment mobilised is PLN 431.5 million (approx. EUR 101.3 million). The expected results will be the construction of new buildings expanding of existing facilities to create a total of some 80 000 m<sup>2</sup> new or refurbished area with over 900 beds. This will increase healthcare capacity by almost 15 000 m<sup>2</sup> and provide better access to provincial hospital services to some 500 000 inhabitants, reduce the average length of in-patient stay (3.2 days) by around 3% and ensure a better use of physical, human and financial resources. In addition, the EIB financing will create jobs for 29 qualified medical staff during operations and 3,363 person-years of temporary employment will be supported during the construction phase of the project.

The EIB's added value lies in the provision of technical advice and the provision of funding not otherwise available to the region. The project promotes EU policy objectives in relation to less-developed regions. The project also contributes to EFSI objectives by supporting investment in the health sector.

## Kujawsko-Pomorskie Healthcare Program III

Public expenditure on health is low in Poland compared with other EU countries, as is life expectancy and the level of staffing in hospitals. Poland's bed capacity per 100,000 inhabitants is almost 25% lower than the EU-28 average.

The rationale for **EIB intervention in this case** was to help develop preventative and curative healthcare in a particular region of Poland. This project is the EIB's third health operation in the Kujawsko-Pormorskie Region. The project forms an integral part of the regional and national strategic plans for healthcare development, including the Polish National Strategic Framework for Healthcare 2014-20. Furthermore, the project complements other ongoing investments in healthcare from EU funds under the Regional Operational Programme for 2014-20, and the EIB-supported Poland Health Investment Programme.



# 5. Environment

The conservation of the EU's natural resources, the preservation of ecosystems, and the environmental performance of energy and transport are crucial to the sustainable development of Europe's economy. Over the years, the EIB has been very active in this field. This continued to be the case in 2016 with substantial investments in sustainable transport (including various forms of public transport), in projects aimed at protecting the environment, and supporting the development of renewable energy and energy efficiency with a view to achieving the Europe 2020 targets.

# **Environment 2016**

EUR **14.4** bn total financing (21.5% of all operations) of which

EUR 13 bn for first signatures and

EUR 4.6 bn on RDI and

EUR **3.7** bn for renewable energy and energy efficiency

Creating **OVER 442,000** person-years of temporary employment and some

46,000 FTE permanent jobs

#### 5.1 Sustainable transport

In 2016, the EIB's operations in the field of sustainable transport involved loans and other types of financial assistance totalling EUR 4.9 billion (of which EUR 4.6 billion were first signatures), equivalent to 7.3% of the Bank's overall operations in the year. Taking into account the funding from other sources, total project investment costs were EUR 21.1 billion in 2016.

#### 5.1.1 Strategic Context for EIB's 2016 Sustainable transport operations

At present, transport represents almost a quarter of Europe's greenhouse gas emissions and is the main cause of air pollution in cities. The transport sector has not seen the same gradual decline in emissions as other sectors: emissions only started to decrease in 2007 and still remain higher than in 1990. Within this sector, road transport is by far the biggest polluter, accounting for more than 70% of all greenhouse gas emissions (GHG) emissions from transport in 2014 (the latest year for which Eurostat data is available). Moreover, with growing demand for passenger and freight transport, the risks of pollution and congestion are increasing.

There are no particular targets in the Europe 2020 strategy related to sustainable transport. However, to increase energy efficiency in the transport sector, the EU has set mandatory emissions reduction targets for new passenger cars and other vehicles. The EU's **low-emission mobility strategy** was adopted in July 2016 and aims to ensure that Europe is competitive and able to respond to the increasing mobility needs of people and goods whilst protecting the environment against damaging emissions. The objectives of the strategy are reflected in the EIB and the Commission's Cleaner Transport Facility, also launched in 2016, to support the deployment of lower emission vehicles and their related infrastructure. The key aims of the low-emission mobility strategy are to:

- **Increase the efficiency of Europe's transport system** by making the most of digital technologies, smart pricing and further encouraging the shift to lower emission transport modes;
- Speed up the deployment of low-emission alternative energy for transport, such as advanced biofuels, electricity, hydrogen and renewable synthetic fuels and removing obstacles to the electrification of transport;
- **Move towards zero-emission vehicles.** While further improvements to the internal combustion engine will be needed, Europe has to accelerate the transition towards low- and zero-emission vehicles.

Sustainable transport is a key challenge of the EU's **Sustainable Development Strategy**. The strategy's objectives are quite wide-ranging but in relation to transport, the aim is to ensure that Europe's transport systems meet society's economic, social and environmental needs whilst balancing this against their undesirable impacts. This is to be achieved by promoting energy-efficient and more environmentally sustainable modes of transport and encouraging co-modality, i.e. optimally combining various modes of transport within the same transport chain.

The EIB's interventions in this field also support the UN's 2015 Sustainable Development Goals and its Framework Convention on Climate Change (UNFCCC). Chapter 5.3 examines the EIB's role in relation to climate change.

#### 5.1.2 Types of EIB operations to promote sustainable transport

The cost of investing in sustainable transport and the fact that the financial pay-back can be quite long-term means that it is often difficult to attract private sector investment. The EIB therefore has a key role to play in addressing this market failure.

Sustainable transport projects supported by the EIB in 2016 covered a broad range of transport modes with a particular emphasis on urban transport. In fact, the transport projects financed by the EIB are increasingly green and in 2016 the majority of transport projects fell under the sustainable transport policy objective category.

<sup>1</sup> European Commission https://ec.europa.eu/clima/policies/transport\_en



To encourage increased use of cleaner transport modes, there is a large on-going investment programme in public transport. The Grand Paris Express Network is a megaproject that includes the construction of 200 km of driverless metro lines to double the size of the existing public transport network. The new network will enhance connectivity and accessibility both amongst the neighbouring cities and between these cities and Paris. The Grand Paris Express will be the backbone of a transport-led development strategy to catalyse sustainable urban development. This strategy includes, for example, densification projects around the new metro stations.

The EIB is supporting the construction of the first phase of Line 15, an orbital line that will run from east to west around Paris, from Pont de Sèvres to Noisy-Champs. Once completed, this 33 km section will reach 22 municipalities in the south of Paris and serve more than 1 million inhabitants via sixteen newly-constructed metro stations. To date, the EIB financial assistance for the project encompasses a loan of EUR 1 billion to Société du Grand Paris (SGP), the project promoter. In parallel, the EIB is also involved in the financing of other major projects in the region, cooperating with the other stakeholders including: the City of Paris, the Ile-de-France Region,

The project's main benefits are improved travel times for more than 90 million passengers per year of the new metro line. The project will also significantly enhance public transport services for other users as it will reduce overcrowding on the existing metro lines thus improving comfort. These improvements will foster modal shift. Other economic benefits include a reduction in negative externalities such as pollutant emissions, accidents and casualties. Once operational, the project is expected to reduce emissions by more than 60 000 tons of CO<sub>2</sub> per year on average.

The project will also have a significant impact on employment: the promoters of the Grand Paris Express anticipate that the project will support around 25 000 temporary jobs per year during construction and some 850 new jobs during operation. Furthermore, research and innovation will be encouraged during the whole project cycle. The use of open data and new technologies made it possible to improve the planned transport services. The EIB's added value lies in providing the needed long-term funding at the early stage of the project's implementation at a time when financing sources were limited due to the promoter's public status. The EIB's loan thus ensured that the project was able to get off the ground.

Regarding the urban renewal agenda, the Helsinki City Transport example shows how investing in public transport systems has positive effects on social cohesion, a city's economic growth potential, recreation and climate by facilitating modal shifts to green transport solutions (such as trams and metro instead of cars). The second and third examples illustrate the variety of sustainable transport projects that were supported by the EIB in 2016.



**EUR** 180 million

### Sustainable urban transport for Helsinki

Transport networks are the backbone of cities. When transport networks are missing, inefficient or inaccessible, they are barriers to economic competitiveness, growth and quality of life. The EIB is providing a EUR 180 million loan to develop Helsinki's transport network to promote sustainable urban transport that meets current and future demand. The total project cost is estimated at EUR 407 million.

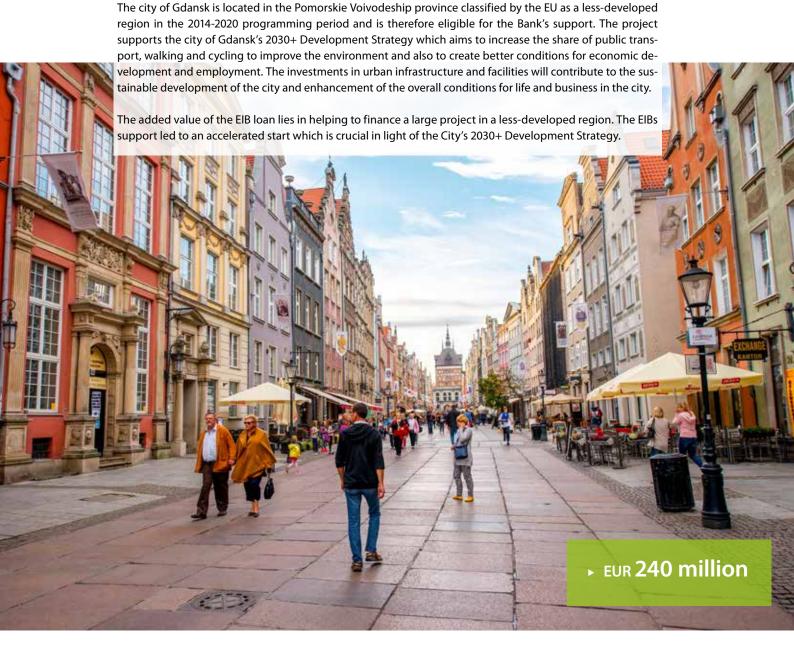
The EIB's loan will finance multiple transport schemes aimed at enhancing Helsinki's public transport network. This includes replacing existing trams with new rolling stock, extending the tram-service and refurbishing the network to provide a better quality and more reliable system. The existing trams were introduced in 1970 and have reached the end of their lifecycle. The new trams are expected to improve safety and comfort, and reduce maintenance and operating costs. The new trams will also improve the quality of public transport in terms of speed and travel time, making public transport an attractive alternative to private cars.

In addition, the improvements to the transport network are part of a transport-led development program to build new housing that will accommodate the city's rapid growth. By 2050, Helsinki's population is estimated to grow by more than a third.



# Improvments to roads, transport and urban infrastructure in Gdansk

The EIB has provided a PLN 1.09 billion loan (around EUR 240 million) to support the overall cost of a PLN 2.1 billion (around EUR 480 million) programme aimed at improving the municipal infrastructure in Gdansk (Poland). Around 75% of the investments will involve improving urban roads, 5% public transport and the remaining 20% renewal and development of urban infrastructure.



#### 5.1.3 New EIB sustainable transport operations signed in 2016

The new sustainable transport operations signed in 2016 are likely to generate a number of significant outputs and outcomes.

Table 5.1: Selection of expected results from new sustainable transport operations signed in 2016

	Outputs	Outcomes
Urban transport and rolling stock	Over 2,300 public transport vehicles and rolling stock purchased or rehabilitated	Some 510 million additional passengers' demand generated by public transport services per year (including rolling stock operations)
	More than 90 km of urban rail and bus lanes upgraded or built and almost 2,400 km of urban road built or upgraded	Almost 9 million citizens benefiting from upgraded or new urban infrastructure and services through multi-sector municipal framework loans
	165 stations or stops upgraded or built	More than 25 million hours of annual time savings

#### 5.2 Protection of the environment

The EU's environment policy is aimed at 'greening' the European economy, protecting the natural environment, and safeguarding the health and quality of life of European citizens.

In 2016, the EIB invested EUR 5 billion (of which EUR 4.3 billion first signatures), or 7.4% of total lending volume, in projects aimed at protection of the environment. Total project investment costs related to new operations amounted to EUR 28 billion in 2016.

#### 5.2.1 Strategic Context for EIB's 2016 operations to protect the environment

The **Seventh Environment Action Programme (EAP)** sets out the EU's environment policy for the period up to 2020. This identifies three key objectives: firstly, to protect, conserve and enhance the EU's natural capital; to help develop a resource-efficient, green, and competitive low-carbon European economy; and, to protect the EU's citizens from environment-related pressures and risks to health and wellbeing. The EAP foresees these aims being achieved through a number of 'enablers' including better implementation of legislation, better information by improving the knowledge base, and more and wiser investment for the environment and climate policy. The EIB has a key role in relation to the last of these critical success factors.

EU legislation has established more than 130 separate environmental targets and objectives to be met between 2010 and 2050. One of **the key Europe 2020 targets is to cut energy use to levels 20% below business-as-usual projections by 2020** (i.e. to get EU energy consumption down to a level of 1,483 million tons of oil equivalent p.a.). This implies that consumption must be a little lower than the level in the mid-1990s. Between 2008 and 2012 energy use fell by 6.2% and it has continued to fall since then.



1722.0 1750 1693.6 1693.1 1700 1656.4 1650 1599.4 1593.3 1584.0 1600 1569.1 1550 1507.1 1500 1450 1400 1350 2006 2007 2008 2009 2010 2011 2012 2013 2014

Figure 5.1: Primary energy consumption (million tons of oil equivalent)

Source: Eurostat

However, although the EU currently seems to be on track to achieve its targets, reductions in primary and final energy consumption have been mostly attributed to the slowdown in economic activity after 2008 rather than structural shifts in energy consumption. So it appears likely that achieving the Europe 2020 objectives will require stronger policy implementation and, possibly, some additional measures.

#### 5.2.2 Types of EIB operations to protect the environment

The EIB provides long-term financing and guarantees for investment in a range of projects that help to protect the environment.

In 2016, the EIB continued its support for **forestry projects**, involving the afforestation of degraded and barren areas and rehabilitating existing low productivity forests. Forests and growing trees sequester and store carbon and in this way mitigate the effects of climate change. Moreover, they help prevent harmful soil erosion and increase soil water retention capacity. This improves fresh water quality and diminishes the risk of floods. In addition to direct operations in forestry, the Bank has promoted investments in forest funds to develop a new asset class that is efficient in pooling funds for of private sector forestry investments.

The EIB's 2016 lending programme also supported the development of water resources, drinking water and waste water management. Europe faces threats from both increased water scarcity and flooding, which are further exacerbated by climate change. The EIB remained the largest debt provider to Europe's water sector in 2016. This role also included identifying new modalities to finance innovation in the water sector, for which EIB has identified significant market gaps in its contribution to the European Innovation Partnership for Water. The EIB is now revising its water strategy to increase the focus on water security and innovation.

Improved **solid waste management** supports progress towards a resource-efficient circular economy, which is high on the EU policy agenda. Increased investment in recycling and energy recovery from waste generates environmental benefits, reduces dependence on imported raw materials, and supports jobs creation and economic growth. In 2016, the Bank continued to increase its support for such investments. The Bank focused in

particular on projects that contribute to increased materials and bio-waste recycling and energy recovery from waste. Increased activities in this field led to the development of new lending products and financial instruments, including financial support for smaller projects and SMEs with different risk profiles to those the Bank normally considers in this field.

#### 5.2.3 New EIB operations to protect the environment in 2016

The new EIB operations signed in 2016 in relation to environmental protection are likely to generate a number of outputs and outcomes. A selection of the key results is summarised below:

Table 5.2: Selection of expected results from new operations signed in 2016 to protect the environment

	Outputs	Outcomes
Agriculture	6,000 ha covered by new or improved irrigation networks  Over 400,000 ha of forest land covered by improved management  44,000 ha of new forestry area planted (afforestation)  Some 1,700 km of agricultural/forestry access roads and over 1,000 km rural roads built or maintained	13m³ per hectare of yearly forest growth 92,000 ha of forest or other habitat protected
Sewerage	More than 1.5 million population equivalent of sewerage plant rehabilitated or constructed  Over 3,500 km of sewer and/or storm water pipes built or upgraded	Almost 19 million people benefitting from improved sanitation services
Waste	Over 1.1 million tonnes per year of new waste facility capacity	Almost 1 million people served by new waste treatment facilities
Water	Almost 13,000 km of water mains or distribution pipes built or upgraded  Over 1.5 million of water m3 per day from constructed or rehabilitated water treatment plants  1.6 million domestic connections to water supply created or rehabilitated	Some 20 million people benefitting from safe drinking water
Flood protection	66 km of dykes constructed or rehabilitated	Over 1.7 million people face a reduced risk of flooding



floods in 1953, the country embarked on a vast "Delta Plan" to improve its flood defences. Over the last decade climate change, new environmental standards, population and economic growth have required an upgrade of the existing level of flood protection by raising the flood protection standards to new levels.

Waterschap Hollandse Delta, the **project promoter**, is one of the 23 water authorities in the Netherlands in charge of flood protection, regional water management and waste water treatment. The area under the responsibility of Hollandse Delta is about 1,000 km<sup>2</sup> and has some 870,000 inhabitants.

The rationale for **EIB intervention** in this case is related to the scale of the flood protection works in particular. The Netherlands has to accelerate its efforts to improve the flood defences that failed to meet the new required safety standards. The investment programme also entails wastewater treatment works and water management works including pipelines and pumping stations to safeguard fresh water supply and secure water quality.

The EIB financing, which was granted in July 2016, consists of a EUR 120 million loan. The loan represents 45% of the total project cost of EUR 270 million. The project will finance the 2016-21 investment programme of Waterschap Hollandse Delta which will include the following main components:

• Reinforcement and upgrading of several kilometres of flood protection dikes between the River Haringvlient and the River Meuse, an area that lies in the south-west of the Province of Zuid-Holland;

- jk sludge treatment facility;
- Work to help ensure fresh water supply, for example for Voorne-Putten and Goeree-Overflakkee for which the existing intake points in the Haringvliet need to be relocated;

Most of the investments (70%) will be devoted to the reinforcement and upgrading of dykes as well as maintaining and improving canals, ditches, sluices and locks, pumping stations and weirs along key sections of the 364 km of primary dikes. Around 12% of the schemes are concerned with waste water treatment renovation and 16% with the projects to secure fresh water supply.

Although it is difficult to make predictions with regard to outputs and outcomes at this early stage, the project mainly concerns flood protection related investments which are part of the National Flood Safety Strategy (Delta Programme) of the Netherlands. The project is very much driven by the effects of climate change and hence also makes a substantial contribution to flood prevention and protection in the Netherlands. As such, the EIB's financing promotes the EU policy objectives set out in the Floods Directive 2007/60/EC and the Water Treatment Directive 2000/60/EC, and also the EU Urban Waste Water Treatment Directive 98/15/EC. The project will contribute to improving the quality of life of the inhabitants and the quality of the environment.

The added value of the EIB's intervention lies in enabling Waterschap Hollandse Delta to go ahead with vital projects using funding that has been made available on more favourable terms and conditions than could be obtained from sources in the Netherlands.



The EIB provided a **EUR 40 million loan** to a EUR 56 million project being implemented by the Water Development Department of Cyprus (part of the Ministry of Agriculture, Natural Resources and Environment). The project addresses the urgent objectives of improved security of supply and quality of drinking water by upgrading and optimizing the drinking water supply system for the city of Nicosia and 28 communities in the Western Province of Nicosia covering a population of about 250,000 inhabitants.

It involves the installation of around 167km of conveyor pipelines together with the construction of increased reservoir storage capacity, associated pumping stations and the necessary supporting infrastructure for the conveyance of up to 60,000 cubic meters per day of desalinated water produced at Vasilikos desalination plant, located near Limassol.

The investment project will help to increase the reliability of the water supply system in Nicosia and will ensure water security and climate change resilience in the Western Mesaoria region which is currently under severe water stress due to over-exploitation of groundwater resources and frequent droughts. The development will benefit the inhabitants by providing a safe, reliable and continuous water supply system that complies with EU objectives and standards on water quality and water resource protection and management. The project will also contribute to the compliance of Cyprus with EU legislation, particularly the Drinking Water Directive (98/83/EC) and the Water Framework Directive (2000/60/EC). The supply of safe drinkable water to the city of Nicosia and 28 Communities in the western province of Nicosia also has significant health benefits.

The **added value of the EIB loan lies** in helping to finance a project that is urgently needed to combat challenges posed by adaptation to climate change. The project can help avoid further reductions in surface ground water resources while at the same time increasing the reliability of the drinking water supply system.



# EIB helps Romania to adopt environmentally friendly measures in water sector

The EIB contributed a **loan of EUR 300 million** to a EUR 4.5 billion structural programme loan in Romania. The majority of the loan is financed by the Cohesion and the European Regional Development Fund. The loan will primarily support the implementation of the key EU Directives in water and municipal solid waste management. The project is aligned to Romania's global objective for 2020 in the field of environment and resource efficiency. The increased environmental standards are not only an objective in itself but also expected to contribute to higher living standards and more balanced regional development.

Romania has a transition period for the implementation of the **Drinking Water Directive** lasting until 2015 and **Urban Waste Treatment Directive** until 2018. The loan will contribute to Romania's compliance with these Directives. It will also promote adaptation to climate change by addressing flood risks and generally improving resilience to natural disasters. Last but not least the programme also supports the implementation of **Natura 2000** management plans, decontamination of polluted sites and the reduction of coastal erosion.

The **added value of the EIB loan** lies in helping to finance a very large and extensive project. The additional EIB funding was crucial since the transitional period for Romania's compliance with the EU Drinking Water and Urban Waste Water Treatment Directive was due to expire.



#### 5.3 Renewable energy and energy efficiency

In 2016, the EIB's operations in the field of renewable energy and energy efficiency involved loans and other types of **financial assistance totaling EUR 4.6 billion (of which EUR 4.1 billion were first signatures), equivalent to 6.9% of the Bank's overall operations for the year.** The total project investment costs related to new EIB operations were EUR 15.9 billion in 2016. Strategic Context for the EIB's 2016 renewable energy and energy efficiency operations

The further expansion of sustainable energy sources is vital to the EU in the context of climate change and Member States' reliance on imported energy. Renewable energy provides an affordable, sustainable and secure energy alternative to traditional sources, while mitigating climate change and, in many instances, reducing environmental damage. Energy efficiency not only relates to the sources of energy but also to the way energy is used. Therefore, many EIB projects focus on making buildings energy efficient and developing efficient use of energy in other fields such as transport.

The proposed **Energy Union** package adopted by the European Commission in February 2015 builds on the **Energy and Climate Framework 2030** and sets new and strengthened measures to be implemented in coming years. The EU has set ambitious targets by stipulating within the framework of the Europe 2020 strategy that 20% of energy consumption should come from renewables and that energy efficiency should increase by 20% by 2020.

The relatively slow progress so far means that achievement of the Europe 2020 target will require significant additional investment. In 2016 the EIB has continued to provide financial backing and technical assistance to energy operations aimed at achieving sustainable, secure and competitive energy for all EU Members.

#### 5.3.1 Types of EIB operations to promote renewable energy and energy efficiency

The EIB supports a wide range of projects to promote renewable energy, energy efficiency, energy networks, and energy RDI projects that help the EU meet energy and climate objectives and to boost employment. EIB-supported projects include measures to extend existing technologies to new markets, and support for new and innovative technologies, including near-zero energy buildings. The Bank remained one of the largest investor in offshore wind farms in 2016.

EIB lending to promote energy efficiency continued to increase in 2016 while the level of funding made available for renewable energy projects stayed the same as in 2015. The Bank's involvement in financing renewable energy - and offshore wind in particular – remains significant, especially as Member States continue to struggle to access the finance they need to reach their targets for 2020 renewable energy generation.



#### 5.3.2 New renewable energy and energy efficiency operations signed in 2016

The new operations signed in 2016 in relation to renewable energy and energy efficiency are likely to generate significant outputs and outcomes. A selection of the key results is summarised below:

Table 5.3: Selection of expected results from new energy efficiency and renewable energy operations signed in 2016

	Outputs	Outcomes
ity and oduction	Some 4,400 MW of additional electricity generation capacity from renewable sources  Some 380 MW of additional heat/refrigeration production capacity from renewable energy sources	More than 10,500 GWh of electricity produced from renewable sources per year 1,800 GWh of additional heat produced from
Electric heat pro		renewable energy sources per year  Some 3,4 million households could be supplied by the energy produced
<b>Energy</b> efficiency	EUR 3.1 billion of investment in highly efficient CHP and building energy efficiency	Over 2,900 GWh of energy savings from efficiency measures per year



A 150 EUR million loan under EFSI will help SATO build new near zero energy housing in the Help Helsinki area and elsewhere, and improve the energy efficiency of existing buildings. Benefits will include reduced energy consumption and improved levels of thermal comfort.

## SATO - Energy efficient residential buildings in Finland

SATO Oyj is a privately owned residential real estate investment company that was established in 1940 and is registered in Finland. Its strategy is to offer and produce rental housing and services mainly in Finland's largest growth centres.

In this project, the EIB is helping the company to promote energy efficiency. The background to this project is that by 2030, the population of the 14 biggest city regions in Finland is estimated to grow by 10%. Within Finland, increasing urbanization and migration will raise demands for small, well-located flats as those built under the programme. SATO has 25,344 rental homes in Finland's largest urban growth centres and also in Russia. On 31 December 2016, the fair value of apartments was approximately EUR 3.4 billion. Roughly 79% of all housing assets are located in the Helsinki region, with the remaining situated in the regions of Tampere, Turku, Oulu and Jyväskylä as well as in St Petersburg. New buildings, the majority developed by a third party, and a small portion purchased, will be in growth locations only.

The **rationale for EIB intervention** lies in the project supporting local, national and European objectives related to improving energy efficiency. Financing new buildings and renovating existing buildings contributes to one of the primary objectives of the EU Energy Performance of Buildings Directive (2010/31/EU) and the EIB's priority energy lending objective. The **added value of the EIB's intervention** is in strengthening SATO's investment implementation capacity at affordable terms for new energy efficient investments. The intervention is therefore likely to accelerate the transition to more environmentally-friendly buildings and to meet the increasing housing demands in urban areas.

The **EIB financing** consists of a **EUR 150 million EFSI loan** which covers the investment period 2016-19. The total investment amounts to EUR 322 million and the related EFSI eligible investment mobilised is EUR 219 million. The majority of EIB's investments (85%) are being used for the construction of several NZEB residential buildings in Helsinki and other metropolitan areas in Finland. The rest (15%) is being used for the renovation of existing residential buildings located in Helsinki, with the aim of improving its energy efficiency.

In terms of the **project aims**, the NZEB buildings will be located in the Helsinki metropolitan area (majority), Espoo, Vantaa and Tampere. All buildings will be located in major cities where 70-80% of the population is accounted for by 1-2 person households. Although the specific design will vary, the average residential building will consist of 125 apartment units, the majority of units being studios and 1-bedroom apartments with an average size of 45 square meters. The refurbishment projects will consist of several energy efficiency measures (e.g. roof, facades, heating, ventilation, piping, etc.).

The expected **outputs and outcomes of the EIB investment** are environmental benefits. Expected energy savings are estimated at 2,461 MWh/y of primary energy (an 18% reduction versus the standard for most buildings) corresponding to 460.5 t/y CO<sub>2</sub> savings once the project is implemented. Furthermore, a reduction in maintenance costs, extension of the economic life of the buildings, and thermal comfort benefits are expected. The project is also likely to generate over 1,500 persons-years of employment during the implementation of this project.



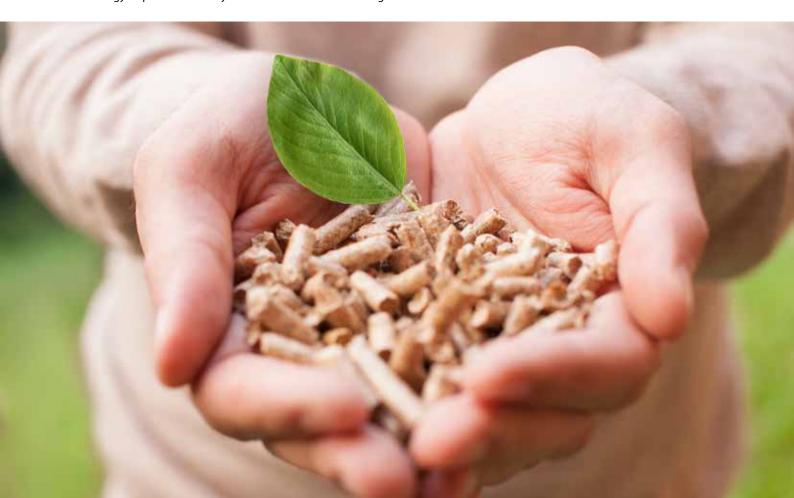
# ► EUR 75 million

# A biomass-fueled combined heat and power plant in Finland

The EIB has provided a **EUR 75** million loan to a **EUR 228** million project of Lahti Energia **OY** to develop a **Combined Heat and Power (CHP) biomass-fired plant**. The project will be implemented in two phases. First, a biomass-fired boiler will be constructed to supply over 780 GWhth/year of heat to the district heating network in the city of Lahti. This will include a Flue Gas Condenser which will maximize the efficient use of fuel energy and the efficiency of heat generation. In the second phase, subject to a positive decision in 2019, the second phase will involve adding a steam turbine and electricity generator to the system.

Due to the **deployment of modern CHP technology** based on renewable fuel, the project will eliminate an existing coal-fired unit resulting in significant  $CO_2$  savings and decreased pollution. It will also result in more efficient production than the separate generation of electricity and heat. The project should ensure a reliable heat supply to the Lahti district heating network, increasing the domestic generation of heat and electricity from renewables and promoting the diversification of the power sector in the country.

The **added value of the EIB loan lies** in helping to finance a project that is securing energy in a highly energy-dependent country in the context of climate change.



# Support for energy efficiency and renewable energy projects by SMEs in Portugal

The EIB has contributed EUR 50 million to a EUR 67 million programme for energy efficiency and small renewable energy projects, mainly in the corporate and SME sectors in Portugal.

The project involves a variety of measures such as improvements in buildings (heating and cooling, building shell, building management system and lighting), industrial energy efficiency measures, energy efficient public lighting, and small renewable energy installations for self-consumption. The BPI Group, a leading commercial bank in Portugal, is the project promoter. It has substantial experience in the implementation of funding programmes with the EIB and EIF.

The central plan which drives the strategy and measures in Portugal is set out in Portugal's National Energy Efficiency Action Plan (NEEAP). Buildings are a major focus of the NEEAP as they consume 30% of final energy and are expected to contribute 42% of the required 1.5m toe final energy savings by 2020. Taking into consideration the NEEAP and BPI's own market knowledge and position, four main areas of intervention will be funded: energy efficiency measures in buildings, and in particular the refurbishment of service buildings, such as hotels; in the industry sector, including both horizontal measures (such as electric drives, HVAC, and lighting) and industry-specific measures; in the agricultural sector (incl. irrigation, greenhouses, etc.); and energy efficiency schemes in the public sector, including energy performance contracts and public lighting.

Any investment under the loan leading to energy savings help to reach national and European targets for energy efficiency. It will therefore contribute to CO, emissions reduction, while contributing to the security and diversification of energy supply in the EU. The added value of the EIB loan lies in helping to finance multiple projects of the SME sector which might otherwise be very difficult, particularly for small businesses.



The EIB is supporting the development of a wind farm in Belgium with an approved **loan of EUR 450** million of which 50% is provided under the EFSI. The total project cost amounts to EUR 1.112 billion and the EFSI eligible investment mobilized is estimated at EUR 1.065 billion.

Under the **2009 Renewable Energy Directive**, Belgium has a target share for renewable energy of 13% by 2020. According to a recent European Commission report, Belgium has reached a share of 7.9% in 2013 which exceeds its interim target by 2.5%. With respect to electricity, it is expected that approximately 21% of electricity will need to be produced from renewable sources by 2020. Belgium achieved a share of electricity from renewable sources of 11% in 2012. Considerable additional investment is therefore required to achieve the 2020 target.

Since offshore wind is central in meeting this target, the EIB loan supports the construction of a large-size offshore wind farm with a nominal capacity of ca. 352 MW, which can be increased with control software to 370MW under specific wind conditions, located in the North Sea, 33 kilometers off the port of Ostend in Belgium. The project site occupies an area of some 40 square kilometers with water depths between 16 m and 33m. The project involves the design, construction, operation and maintenance of 44 wind turbine generators (WTG) with a unit capacity of 8.4 MW, a rotor diameter of 164 m and a hub height of 107 m, the turbines' foundation, the wind farm's inter-array cabling (medium-voltage), an installation and logistic services.

The added value of the EIB loan lies in helping to finance an urgent project, which is essential for Belgium to meet its targets under the 2020 programme in relation to alternative energy sources. Furthermore, the EIB investment was crucial as the EIB brings unmatched technical insight and experience to the transaction which helped the project reach financial close in time to meet those 2020 targets. EIB's longstanding commitment to the sector has allowed the Bank to become a reliable and trusted partner of the offshore wind industry. Understanding the ongoing technical evolution of construction methods, generation equipment, operations management and life-cycle costs is critical to fulfilling the role of ensuring continuous access to finance for developing renewables technologies. The turbine used for the wind farm is new on the offshore wind market without operational track record to date. Only one prototype of this model exists and had been certified at the manufacturer's test centre.



## 5.4 EFSI operations to promote environment and resource efficiency

The EIB's EFSI operations in the environment field totalled EUR 1.05 billion in terms of signatures and mobilised EUR 5.16 billion of investment. Some of the key outputs and outcomes that can be attributed to the EIB's EFSI operations in 2015 and 2016 are highlighted below.

Table 5.4: Selection of expected results from EFSI operations contributing to environmental resource efficiency signed in 2015 and 2016

Outputs	Outcomes
<b>4,500 ha</b> of new forestry area planted ( <b>afforestation</b> )	13 m³ per hectare of yearly forest growth
20 km of agricultural/forestry access roads and 20 km rural roads built or maintained	
<b>55 km</b> of new <b>sewer</b> and/or <b>storm water pipes</b> built, out of which 3 drainage tunnels (5.5m diameter x 6	<b>40,000 people</b> benefitting from <b>improved</b> sanitation services
km in total)	Over <b>500,000 people</b> face a <b>reduced risk of flooding</b>
Additional <b>140,000 tonnes</b> per year <b>waste treatment facility</b>	<b>970,000 people</b> served by new <b>waste treatment</b> facilities
325,000 m <sup>3</sup> of new sanitary landfill capacity	Some 130,000 additional inhabitants benefiting
Almost <b>190,000 waste collection containers</b> and <b>52</b> new or upgraded <b>collection vehicles</b>	from new <b>waste collection</b> system
Almost <b>120 km</b> of <b>water mains or distribution pipes</b> built or upgraded	Over <b>2 million people</b> benefitting from <b>safe drinking water</b>
<b>650,000 of water m³</b> per day from constructed or rehabilitated <b>water treatment plants</b>	
<b>52,000 domestic connections to water supply</b> created or rehabilitated	



The EIB's EUR 150m guarantee under EFSI will help AFD launch projects to improve quality of life in France's outermost regions.

## French overseas economic development and environmental measures

The French outermost regions (FORs) comprise island territories with a population of 2.3 million in the Atlantic, Pacific and Indian oceans, French Guiana on the South American continent, and several islands in Antarctica. Their citizens have French nationality and the territories are considered part of the EU.

The rationale for **EIB intervention** lies in the fact that the FORs lag significantly behind other EU regions economically. GDP per capita is around EUR 19,000 per inhabitant - almost 40% below the French metropolitan average - while the unemployment rate at 25% is much higher. Moreover, due to their exposed geographical locations the FORs also suffer from the impacts of climate change, the adverse effects from small and aging populations and other demographic and social problems.

To help address these and other challenges, the EIB provided the Agence Française de Développement (AFD) with an **EFSI guarantee** in January 2016 to support EUR 150 million of the AFD's EUR 450 million loan facility for economic development projects in the FORs involving an estimated overall investment cost of EUR 1,402 million. The EFSI investment mobilised amounts to EUR 1,192 million. The EIB's guarantee thus represents some 10% of the expected total project costs. The **project promoters**, who include commercial companies and the regional authorities, will be required to accept 50% risk sharing.

The EIB-backed loans from the AFD will support a range of projects in the FORs.

#### The objectives of the projects include:

 Urban regeneration schemes including social housing. For example, in Guyana there will be a focus on the regeneration of slums

- Efficient use of natural resources in the water and waste sector including investments to improve the quality of drinking water;
- Projects to promote the use of renewable energy and to develop electricity networks;
- Other projects in primary health and social care sectors, to promote sustainable transport, and increase the availability of SME finance.

Urban regeneration schemes are likely to account for around a quarter of the overall investment of EUR 1,402 million with projects to encourage the efficient use of natural resources and SME finance each accounting for a further 21%. The beneficiaries are expected to be public and private sector organisations. The average size of investments is likely to be around EUR 20 million.

The various projects should make a significant contribution to social and economic development in the FORs. Although the **outputs and outcomes** cannot be easily quantified, at least at this stage, the EIB-backed projects should improve the quality of life for FORs inhabitants as well as strengthening the physical infrastructure required to promote economic development and to attract new foreign investment. The projects are expected to employ some 7,500 person-years during implementation with many more permanent jobs to be created during operations. As such, the intervention will contribute directly to the achievement of **EIB and EU policies** relating to regional development and cohesion.

The **added value of the EIB's intervention** lies in enabling the AFD to finance additional projects that it would otherwise not have been able to support, at least within the same time fame and on the same scale, because of the lending constraints on it. The intervention has therefore helped to accelerate economic development in the FORs.





#### 6.1 Key observations: 2016

The scope of the Bank's operations has expanded in recent years generating an increase in the number of projects being monitored which currently numbers around 1,700. The complexity of the monitoring process has also increased with the addition of numerous indicators against which projects are assessed on completion. Around 200 projects reach the end of their implementation period each year, of which upwards of 85% are located in the EU. Project completion reports are prepared for all of them. It is therefore clear that monitoring represents a significant investment of time and effort on behalf of the EIB's services and that it constitutes a mainstream activity for Bank staff.

2016 confirmed that project promoters also take their reporting obligations seriously. The vast majority of documents required for monitoring reached the Bank within the deadline, meaning that the EIB's services were able to process reporting data and take any appropriate action in a timely fashion. The smooth-running of the monitoring process coupled with the efforts made by EIB services and promoters have ensured that the majority of completed projects are free of outstanding issues, receive high ratings for quality and soundness, and remain within the scope of the Bank's policy objectives or external lending mandates.

The physical monitoring of projects enables the EIB to provide an accurate account of the impact of its investments. Project outcomes are fully documented allowing the Bank to quantify the direct contribution of its investment in any given project to the appropriate public policy objectives. As the monitoring process runs its course, the documentation produced helps to tell the story of that particular project. The case studies included in this report owe much to the assiduous reporting of project promoters and EIB services alike.

It is important to note that while the monitoring process certainly helps deliver strong project outcomes, the groundwork undertaken by EIB services at appraisal continues to bear fruit in this respect. Strict screening based on advanced sector expertise means that services are able either to propose implementation support for projects which might not otherwise perform well or to screen them out altogether. The appraisal process also identifies the challenges a project is likely to face during implementation and allows the services to articulate risk-mitigating disbursement conditions. Complex and lengthy negotiations are of course a natural outcome of such procedures but the high proportion of strong ratings on project completion testifies to the value of this approach.

Relatively few projects completed in 2016 received a low quality rating which confirms the value of the appraisal, monitoring and implementation support provided by EIB services. Problems with procurement, project management and project planning are evoked along with the suggestion that more intensive monitoring and/or more stringent disbursement conditions could have led to an improved outcome.

The 2016 exercise's main purpose was to reinforce the lessons of previous years. The EIB's monitoring operations are effective in helping to deliver positive project outcomes and promoters are assiduous in meeting their obligations. Monitoring also ensures that the Bank is able to report in some depth on the impact of its investments. However, the economic and financial crisis remains a factor to be considered.

As in previous exercises, the weak economic context in which EIB-backed projects operate translates into lower than foreseen traffic volumes, passenger numbers or energy consumption and unexpected budgetary restrictions imposed in the public sector. Here are the stories of a few of the EIB's projects which reached completion in 2016. At the individual project level, the case studies presented here illustrate the high quality of the Bank's monitoring portfolio. Each project is different but each one touches the lives of EU citizens in a variety of ways by sustaining or creating jobs, providing improved educational facilities, boosting the use of renewable energy, improving the security of the energy supply or helping provide transport systems which meet the demands of the modern traveller. Whatever the specific focus of the project, the EU bank strives to ensure an environmentally-friendly, smart and sustainable outcome.



The **rationale for the EIB intervention** was to help a key player in the food sector to continue its research and innovation programme, involving both basic science and investigations that could deliver results with a more immediate application in the market, in line with the EU's research and innovation policy. The project was also able to take advantage of the EIB's position, to obtain financial terms that compared favourably with alternative sources in terms of the interest paid.

The project involved not only research centred on Puratos' own facilities but also collaboration with food research institutes elsewhere in Europe and around the world. The work focused on the taste, texture and nutrition of food, its sustainability, new production processes, additive reduction and shelf life extension.

In total, 1,851 sub-projects were launched by Puratos during the implementation of the programme in four main areas:

- Research on a new enzyme system to enhance the freshness of cakes;
- The optimisation of a cocoa bean fermentation process to reduce loss and deliver higher quality;
- Development of Ohmic heating a technology that is more energy efficient than traditional cooking and
- A process of custard cream renovation where raw materials are used that have a lower environmental impact. Puratos considers that the innovations that resulted will be important engines for growth.

The **financing of the project** involved a loan from the EIB of EUR 45 million, which at project completion represented 49% of the total project cost (EUR 91.6 million).

The **project results** were wide ranging. The investment not only safeguarded the employment of around 200 persons engaged in RDI activity, but an additional 47 R&D workers were recruited by the company during the project period while 40 more were hired by research partners associated with aspects of the project.

The promoter applied for nine patents in Belgium during the project period and the strategic innovations identified during the period are expected to achieve total sales of EUR 250 million by 2020.



The EIB is an important source of education investment in Ireland. The current programme of school investment and improvement is on its third wave of investment loans from the EIB. The first of these was successfully completed by the end of 2014, improving the education and skills of school pupils by supporting a capital investment programme that delivered a total of 41 new and renovated schools. The promoter of the project was Ireland's Department of Education and Skills (DES).

In the early 2010s, Ireland was still very much affected by the financial crisis. GDP had fallen by over 10% since 2008 and the unemployment rate had climbed to over 25%. There was also significant growth in the population of school age. In 2000, there had been 54,789 live births but 10 years later this had grown to 75,115 live births per annum. This gave rise to a need for additional places for at least 45,000 primary pupils and 25,000 secondary pupils by 2016. The rationale for EIB intervention was to facilitate the construction or renovation of the school stock at a time of constrained financial circumstances.

The EIB financing for the first project consisted of a EUR 100 million loan for a project whose final costs were EUR 212.2 million. The project led to the new build and extension of 31 primary schools and 10 secondary schools in 15 communities, some of which were in designated EU regional development areas. The schools included were subject to rigorous selection processes and there was close scrutiny of the design proposals, including the provisions for high environmental and energy efficiency standards. The Irish Government provided co-financing and trained and recruited the additional teachers needed.

The expected results of the project are a boost in Irish school capacity: an additional 15,500 pupils enrolled in primary schools (for whom 650 new teachers would be needed) while the secondary schools should have a design capacity of up to 6,650 additional students (employing at least 450 specialised second level teachers). In the longer term, there should be a wide range of benefits arising from enhanced educational provision. More immediately, the temporary employment effects were calculated to be in the order of 3,300 jobs including 2,000 direct and 400 indirect jobs in the construction industry. 650 new primary and 450 new secondary teachers would be employed on a permanent basis.

The **EIB value added** lies in helping the project to proceed more guickly than would otherwise have been the case. There was also an important development in the relationship of the EIB with the Irish authorities. The EIB's continued assistance to the Irish authorities has helped to sustain the construction of thousands more new and refurbished school places and improving the learning environment for children across Ireland. The project promotes EU and EIB policy objectives by contributing to the development of knowledge and skills, regional development and energy efficiency, but also in facilitating a positive response to the financial crisis.

#### Gas import facility in Lithuania

In 2012 Lithuania was importing nearly 80% of its energy —comprising gas, oil and electricity—from Russia. The closure of the Ignalina nuclear power plant in 2009 exacerbated this monopolistic situation. Such concentration of supply posed not only infrastructure challenges in the event of accidents or extreme weather events, but also the likelihood that prices for these imports were not competitive. The **rationale for this EIB-supported project** was to address this situation.

In June 2012, the government adopted a National Energy Independence strategy with the aim of ensuring Lithuania's energy independence by 2020. This EIB-supported project involved the construction and operation of a new liquefied natural gas import facility on the Lithuanian coast at the ice-free port of Klaipeda. **The promoter** was Klaipedos Nafta, the owner and the operator of the oil terminal in Klaipeda, which is majority owned by the state (72.3%). The project was a critical component in implementing the National Energy Independence Strategy and its completion contributed to the Baltic Energy Market Interconnection Plan (BEMIP), a regional interconnection strategy.

**The project** was implemented between 2013 and 2015 and consisted of three main components. First, a Floating Storage Regasification Unit (FSRU), a vessel 294m long, which can regasify 11 Mm³/d of natural gas. Secondly, a jetty that was connected to the FSRU, 450m long with six berthing dolphins, three mooring dolphins, a high-pressure gas platform and a service platform. Thirdly, a pipeline and associated facilities

were built, including a single 18km DN 700 pipeline, connecting the jetty to the gas network.

The **EIB loan** of EUR 87m was signed with Klaipėdos Nafta in 2013. The project cost at completion was EUR 109.4 million, significantly lower than the original estimates due to a lower cost of commissioning than anticipated (due to a reduction in gas prices). As a result the loan disbursed was only EUR 30 million, with EUR 57 million remaining unused.

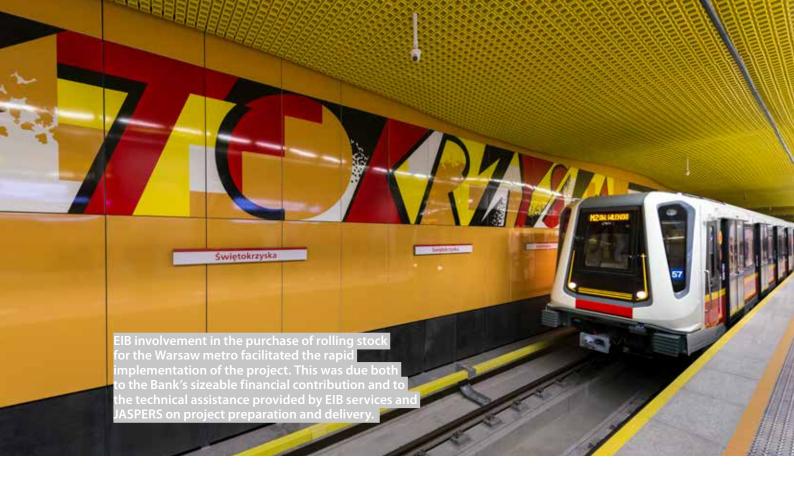
The **results of the project** were the creation an alternative energy source and increased security for Lithuania's energy supply. The Gas Import Facility achieved a regasification capacity of 10.24 Mm³/d and saw to the creation of 148 full time equivalent jobs. The **EIB's contribution** ensured the timely construction of the necessary infrastructure and the **added value** is seen in bringing transparent competition to Lithuania's gas market with national and regional consumers benefitting. The Bank also provided advice regarding regulatory, commercial and other business issues to the promoter during appraisal.

The project met the criteria to be eligible as a **Trans-European Network Energy (TEN-E) project** and was eligible under Article 309 (a) projects for developing less-developed regions and (c) common interest (energy). The financing of this project contributed to the Bank's lending priority policy on security and diversification of energy supply (including TEN-E) and regional development.



EIB investment and technical advice helped build the infrastructure necessary to introduce an alternative secure source of energy to Lithuania whilst helping to bring transparent competition to the country's gas market.





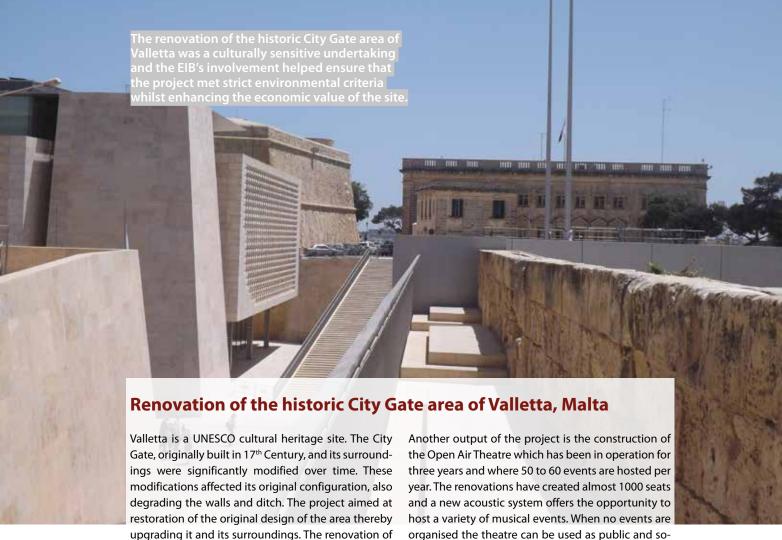
### **New rolling stock for the Warsaw Metro**

Since 2001, it has been recognised that the metro system would play a key role in the transport system of Warsaw and investment was sought to extend the metro network. In 2006, plans were developed for Warsaw's Metro Line II, at 33km long with 27 new stations. In this context, the promoter sought financing from the EIB in 2011 for the purchase of 35 single spaced 6-carriage metro trains in anticipation of Metro Line II commencing operations in 2014, by when it was estimated that **demand** for metro transport would have grown from 128 million to 179 million passengers per year, with a further growth up to 344 million per year envisaged.

As well as meeting market demand, the trains were expected to have a positive environmental impact due to the high environmental performance of the vehicles purchased and will also result in significant reductions in GHG emissions compared to alternative transport options. The energy consumption turned out to be 20% lower (1.88 kwh/vkm), partly because the trains are 25% lighter. The project also met existing strategies for sustainable development in Warsaw and was **eligible for EIB financing** as a sustainable urban transport project.

The **total project** cost of the new rolling stock at project's completion phase was PLN 1.082 million (around EUR 250 million). The EIB contributed to the project with a loan worth PLN 448 million (around EUR 103 million) toward this alongside other investors including the European Bank for Reconstruction and Development.

The **added value** of EIB investment was through its significant financial contribution, providing a more affordable loan relative to alternative funding costs. Without the EIB's investment, the project may have had to have been implemented over a considerably longer time scale. The EIB's technical assistance was also significant; EIB and JASPERS provided advice on project preparation (including upstream studies and sector work) and on project delivery, in particular with regard to the construction works of Metro line II.



The EIB supported the project on the renovation of the City Gate and the surrounding area with a EUR 40m loan in the period from 2011 to 2015 (amounting to an EIB contribution of around 45%). The project includes the redevelopment of the Valletta City Gate area supported by the Grand Harbour Local Plan. The project has 3 components:

this sensitive site had to take into account its historic

design as well as contemporary living conditions.

Renzo Piano's design was chosen and has improved

the area in terms of image and quality and increased

economic value of the site.

- The construction of the new Parliament and its "Freedom" square;
- The reconversion of the former Royal Opera House site into an open air theatre; and
- The rehabilitation of the ditch, the bridge, the city gate and of public spaces in the vicinity of the area.

In terms **outputs and outcomes** several aspects are worth mentioning. Since the gate and the ditch will be linked by a stairway and a lift with panoramic views, visitors can now descend to the depths of the ditch. Where the ditch was formerly a car park, it has been replaced by a garden, allowing visitors to conduct relaxing strolls in a cool area which escapes the heat of the island. It also provides space to conduct open-air events against the historical backdrop of the city.

Another output of the project is the construction of the Open Air Theatre which has been in operation for three years and where 50 to 60 events are hosted per year. The renovations have created almost 1000 seats and a new acoustic system offers the opportunity to host a variety of musical events. When no events are organised the theatre can be used as public and social space. The theatre will be one of the main facilities for 2018 when Valletta is the European Capital of Culture. Overall, the renovations will have a positive effect on the city by offering more recreational activities for tourists and citizens. Furthermore, it creates further business opportunities, and jobs in the city centre.

The rationale for EIB intervention and the added value of EIB investment is related to the environmental focus of the works under the project. The project design is exemplary in terms of energy, waste and water management. Stone is used for the building's façade to diminish solar heat gain and to allow natural ventilation. Stone is also effective as part of the building's geothermal heat exchanger, with 40 geothermal boreholes sunk into rock to depths of 140 m below sea level. In addition, the roof is covered with 600 sq m of photovoltaic panels - an ambitious energy strategy that allow the building to generate 80% of the energy required to heat it in the winter and 60% of its requirements to cool it in the summer months. The investment therefore supports the EIB's objectives with regard to the environment and more specifically the energy efficiency of buildings. Furthermore, the project also aims to counter the increasing urbanisation of Valletta and to preserve the natural and cultural heritage for the benefits of quality of life and tourist opportunities.

### IMPAX New Energy Investors, a European renewable energy fund

In 2007, the European Council of Ministers committed to deliver 20% of EU final energy consumption from renewable energy sources by 2020 – a significant increase from the 8.5% in 2007. Reaching a target of 34% of electricity produced from renewable sources is estimated to require around EUR 330 billion of investment over the period 2005–20. Wind has been the major beneficiary from Member State support regimes. Over the last five years, approximately 30% of all new electricity generating capacity installed in the EU has been wind energy.

Impax New Energy Investors II is a European renewable energy fund without a pre-determined country allocation. It is managed by Impax Asset Management Ltd (IAM), a private equity fund manager based in the UK. The technologies considered for investment include solar, wind and other commercially proven renewable power generation, and infrastructure assets related to renewable energy transmission and distribution. The EIB provided EUR 40m between 2011 and 2016 to the total investment of 329.8m.

As of 30 September 2016, the Fund had 14 investments (12 wind farms and 2 solar PV) with a total capacity of 523 MW, total CAPEX of EUR 900m and total equity commitments of EUR 270 m (average 30% of total project costs). The EIB eligible portion of these investments is around 73% of the capital deployed (65% in terms of total CAPEX). It corresponds to a total of 342 MW generating 971 GWh per year. Given the positive experience the EIB decided to invest in Impax New Energy Investors III which is an infrastructure fund mostly focused in the EU RE markets, with a slightly adapted investment strategy in terms of size and sector focus.

The Impax New Energy Investors II European renewable energy fund has invested in 12 wind farms and 2 solar projects. The Fund helps Member States reach national and European targets for renewable energy generation and CO2 emissions reduction while improving security and diversification of EU energy supply.

With regard to **outputs and outcomes**, during the investment period of the Fund, many European governments cut back regulatory support schemes, reducing investors' confidence in these markets. As a result, the Fund only invested in the wind sector in France, Germany, Finland, Poland and Ireland, whereas it originally had a promising pipeline of solar PV projects in Southern Europe. However, the Fund was able to deploy most of the committed capital, but with a higher concentration of wind projects and a different geographic focus than originally planned.

The rationale for **EIB intervention and the added value of EIB investment** lies in the EIB's participation in a fund which helps Member States reach national and European targets for renewable energy generation and  $\mathrm{CO}_2$  emissions reduction, while contributing to the security and diversification of energy supply in the EU. The investment is therefore of common interest with regard to the environment and more specifically in tackling climate change. The project supports the Bank's priority lending objectives concerning renewable energy.







## Annex 1 Overview of operations signed by EIB in 2016 inside the EU by country and type of financial instrument

Member States	Investme	nent Loans Framework Loans		MBILs, Guarantees and Equities		Total	
	EUR M	Number	EUR M	Number	EUR M	Number	EUR M
Austria	1,055	7	100	1	293	5	1,447
Belgium	1,853	10	190	3	241	3	2,284
Bulgaria	0	0	0	0	467	4	467
Croatia	0	0	0	0	530	5	530
Cyprus	40	1	0	0	175	3	215
Czech Republic	134	3	0	0	392	4	526
Denmark	286	5	0	0	88	2	374
Estonia	30	1	400	1	0	0	430
Finland	1,608	15	380	3	232	8	2,220
France	5,528	31	890	4	1583	16	8,001
Germany	4,759	30	720	4	2033	17	7,512
Greece	358	3	0	0	1158	8	1,516
Hungary	78	4	588	3	25	1	691
Ireland	550	6	200	1	75	4	825
Italy	4,247	35	1,298	9	4301	29	9,846
Latvia	0	0	0	0	0	0	0
Lithuania	190	1	25	1	0	0	215
Luxembourg	12	2	0	0	50	1	62
Malta	20	1	72	1	0	0	92
Netherlands	1,022	11	15	1	1528	13	2,565
Poland	1,418	15	1,950	13	1076	12	4,444
Portugal	25	1	400	3	1057	11	1,482
Romania	60	4	660	2	316	6	1,036
Slovakia	427	1	295	3	153	5	874
Slovenia	36	1	0	0	100	2	136
Spain	2,286	17	291	2	7316	26	9,893
Sweden	925	11	630.67	3	131.7	4	1,688
United Kingdom	4,968	26	1,612	3	330	5	6,910
Regional	25	1	0	0	665	13	690
Total	31,939		10,717		24,315		66,971

<sup>1</sup> Due to the fact that some operations combine several financial instruments and are cross-border, the total number of operations resulting of the distribution presented in the above table exceeds the 436 operations signed in 2016.



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# EIB operations inside the EU

Delivering on EU policies and EIB public policy goals

