

Operations Evaluation

EIB Group's Support to the European
Knowledge Economy 2007-2013

Synthesis Report

October 2015

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EVALUATION REPORT

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NOTICE

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GLOSSARY OF TERMS AND ABBREVIATIONS

3PA	3 Pillar Assessment Methodology
AGI	Action for Growth Instrument
ASAP	Amsterdam Special Action Plan
ASD	Advisory Services Department (EIB)
ASD/RDI	RDI Unit of ASD
BAT	Best Available Technology
BoD	Board of Directors
CA	Board of Directors (Conseil d'Administration) of the EIB
CAPEX	Capital Expenditures
CoE	Centre of Expertise
COP	Corporate Operational Plan
CRD	Credit Risk Department
CSES	Centre for Strategic and Economic Studies
CSR	Corporate and Social Responsibility
DAC	Development Assistance Committee (of the OECD)
EAF	European Angel Fund
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECOFIN	European Council Relating to Economic and Finance Issues
ECON	Economic Department of the EIB
EFSI	European Fund for Strategic Investments
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIBURS	EIB University Research Support
EIF	European Investment Fund
ERR	Economic Rate of Return
ESC	Economic and Social Cohesion
ESFRI	European Strategy Forum on Research Infrastructures
ESIF	European Structural and Investment Funds
ESS	Evaluation Summary Sheet
EU	European Union
EUR	Euro
IG/EV	Operations Evaluation (EIB unit entrusted with independent evaluation work)
FAFA	Financial and Administrative Framework Agreement
FP7	Seventh Framework Programme
FTE	Full-Time Equivalent
FVA	Financial Value Added
GATT	General Agreement on Tariffs and Trade
GDP	Global Domestic Product
GEF	Growth and Employment Facility
GRM	Global Relationship Manager
GVC	Global Value Chain
i2i	Innovation 2010 Initiative
ICT	Information & Communication Technology
IDM	Increased Downward Modulation
IDR	In-Depth Evaluation Report
IFC	International Finance Corporation
IFI	International Financial Institution
IFY	Investing for Youth Programme

INCO	Innovation and Competitiveness Department of the EIB
InnovFin	EU Finance for Innovators Programme
IP	Intellectual Property
IPE	Investment Plan for Europe
IRR	Internal Rate of Return
ISO	International Standard Organisation
IT	Information Technology
JASPERS	Joint Assistance to Support Projects in European Regions
KE	Knowledge Economy or Knowledge-Based Economy
KET	Key Enabling Technology
LMM	Low Middle Market
MC	Management Committee (Comité de Direction) of the EIB
MFF	Multiannual Financial Framework
Midcap	Mid-capitalisation Company
NASA	National Air & Space Agency
NPST	New Products and Special Transactions Division of the EIB
OECD	Organisation for Economic Co-operation and Development
OPEX	Operational Expenditures
OPS	EIB Directorate for Operations (as from April 2014)
OPS-A	EIB Directorate for Operations in the European Union and Candidate Countries (before April 2014)
OPS-B	EIB Directorate for Operations outside the EU (before April 2014)
PCM	Project Cycle Management
PCR	Project Completion Report
PJ	EIB Projects Directorate
PPG	Public Policy Goal
PPR	Project Progress Report
PTI	Project Team Initiative
R&D	Research and Development
RDI	Research Development Innovation
RM	EIB Risk Management Directorate
ROIC	Return on Invested Capital
RSFF	Risk Sharing Finance Facility
RSI	Risk Sharing Instrument
SET-Plan	Strategic Energy Technology Plan
SME	Small and Medium Enterprise
SNA	System of National Accounts
STTP	Strategic Transport Technology Plan
SWOT	Strengths Weaknesses Opportunities and Threats
TMR	EIB Transaction Management and Restructuring Department
ToR	Terms of Reference
TRL	Technology Readiness Level
TT	Tech(nology) Transfer
UK	United Kingdom
UMTS	Universal Mobile Telecommunications System
VA	Value Added
VC	Venture Capital
VET	Vocational Education and Training
WTO	World Trade Organisation

EXECUTIVE SUMMARY

Context, aims and methodology of the evaluation

Since the 2000s, building up a European knowledge-based economy (KE) has become a new economic paradigm for the European Union (EU). In terms of global competition, generation and diffusion of knowledge are deemed to play a crucial role in triggering sustainable and inclusive growth and fostering job creation.

This evaluation assesses the EIB Group's (EIB and EIF) support to the strengthening of the European KE over the period 2007-2013. It also proposes recommendations to improve the Group's contribution in a future increasingly focused on knowledge production, dissemination and use.

The evaluation is based on the assessment of a sample of 58 individual operations from a total portfolio of 543. Operations belong to three areas: Research, Development and Innovation (RDI), Information & Communication Technology (ICT) and Education and Training (E&T).

Overall conclusion

IG/EV concluded that the Bank performed well in supporting the EU's knowledge economy (KE).

With an average weight of 1.9% of EU KE expenditure and a total volume of loans of EUR 89bn over the period 2007-2013, the EIB lending portfolio was significant. This financial support was particularly important during the financial crisis (hence demonstrating a countercyclical role) for certain convergence countries (such as Hungary, Poland, Latvia or Portugal) and for some KE areas in those countries (e.g. education in Portugal).

The Bank's achievements, as shown in this report, are even more remarkable given that they took place over a timeframe of slightly more than a decade, and that originally the Bank was not geared towards intangible investments, which are an important part of the KE.

Three main factors made these achievements possible:

- the increased involvement and mobilisation of all parts of the EIB Group, helped by ambitious lending targets,

- the launch of new instruments able to address new financing needs, and
- the overall good performance of the KE operations supported by the Bank.

IG/EV assessed the outcomes and impacts of KE-related operations on the production and dissemination of knowledge as substantial and as contributing to the creation of a more KE-friendly environment in Europe.

On the other hand, IG/EV considers the EIB's KE strategy and organisation could be further improved, as it limits the potential contribution of the EIB Group in this field.

IG/EV therefore recommends reinforcing the role of the KE as a core component of the EIB strategy and organisation. In particular, this should include: (i) integrating the different components of the KE strategy at the EIB Group level and rationalising the underpinning documents, (ii) explicitly defining and communicating medium and long term objectives that are more outcome- and impact-oriented, (iii) aligning resources and incentives with KE goals and ambitions, and (iv) reinforcing coordination within the EIB Group.

The evaluation also identified a tension between the pressures exerted on the EIB to increase lending volumes and the need to increase the impact of KE operations. The Bank's governing bodies should provide guidance on the balance between those two objectives. The types of operations and promoters that need to be supported to achieve these two objectives are often different.

In addition, keeping high level decision makers involved in this theme is essential to maintain the momentum generated over the past years.

The key conclusion of this evaluation is that, on the whole, the EIB Group responded and geared up effectively and efficiently to the new KE imperative fixed by the EU. Nonetheless, room for improvement exists to maximise the outcomes and impacts of EIB intervention in this field and to be able to report more regularly and comprehensively on results achieved. Basing a specific strategy on the concept of KE remains relevant for the EIB Group, but a reinforcement of the KE strategy is still required.

Achievement of objectives and strategic design

KE was originally not part of the EIB's core business. Since the 2000s, strengthening the European KE has become a pivotal element of its strategy. The EIB Corporate Operational Plan (COP) fixes ambitious annual loan volume targets (e.g. EUR 16bn for KE in 2014). Specific documents dedicated to KE define wider objectives for the medium and long term (e.g. KE Reviews of May 2008 and February 2015).

The IG/EV assessment of the EIB's KE activity shows that annual COP targets were achieved and that progress was made towards the medium and long term objectives. Difficulties encountered during certain periods of time, for certain target groups (e.g. SMEs, midcaps) or certain types of products (e.g. intermediated loans) were overcome, inter alia through the use of innovative financial instruments.

These instruments were specifically designed to meet these medium and long term objectives and they rely mostly on a demand-driven approach. Yet, EIB's contribution and ability to target specific policy areas would be further improved if the demand-driven approach was to be complemented by focused financial gap analyses aimed at identifying sub-optimal investment levels as well as current gaps between potential demand and existing supply of main financial instruments (which have remained, so far, limited in scope and time).

IG/EV also observed an alignment with EU policies. However, there is still room for improving complementarity with private promoters' objectives and with national and subnational public policies. The current EIB KE strategy is also characterised by insufficient prioritisation and a variety of approaches at EIB Group level.

As a result, the EIB's potential contribution in the field of KE can be further improved.

Activities and instruments

From 2007 to 2013, the EIB Group diversified its KE-related activities in order to play a more active role in the field and to better address specific needs. It did so in several ways:

- Development of joint instruments with the EC, blending EU and EIB resources for riskier operations (RSFF/InnovFin);
- Increased implication of the EIF in the field via the participation to the RSFF/InnovFin instruments and the development of

Venture Capital (VC) and Technology Transfer (TT) activities;

- Enlargement of the scope of JASPERS to KE;
- Creation of dedicated advisory Services; and
- Increased KE related activities within the EIB Institute.

As a consequence, KE activities have seen a large increase in both scale and scope and now cover a wide range of potential clients and market needs.

Most of these KE-related activities remain concentrated on lending in five major countries (Germany, France, Italy, Spain and the UK), and in certain industrial sectors (automotive and other manufacturing in particular).

Means and organisation

The increased mobilisation in favour of the European KE is also reflected in the evolution of human resources dedicated to KE-related activities. The number of hours spent on these operations by EIB Services doubled over the period 2007-2013. On the whole, IG/EV considers that EIB Services worked together efficiently, thanks to a high degree of expertise and a good complementarity between pilot entities and other Services. However, throughout the evaluation period, means remained insufficient in light of the Group's growing ambition. Furthermore, relevant units and entities could be even better coordinated.

Performance of individual operations

For 81% of the 58 operations examined, performance against the four evaluation criteria (i.e. relevance, effectiveness, efficiency and sustainability) was either 'excellent' or 'satisfactory'. Issues linked to effectiveness (in particular non-achievement of operational objectives and unexpected changes in the scope of operations during implementation) led to a partly unsatisfactory performance rating for 7% of the operations. No operation received an overall unsatisfactory rating, but 12% were not rated for several reasons, the most important being the lack of information mainly related to aspects of effectiveness and efficiency.

This good performance relies, inter alia, on the promoters' flexibility in adapting their investments to respond to evolving market needs. In most cases, this capacity to adapt was the condition for intermediate objectives to

be achieved and for operations to remain both profitable and sustainable.

However, the evaluation of individual operations highlighted three major concerns:

- Except for the operational objectives included in the contract (immediate outputs), the expected outcomes and impacts of operations were not explicitly outlined at the onset. Outcomes and impacts were implicitly referenced in the documentation but not stated as such. This made it difficult to understand what broader effects the Bank expected of the projects. A clearer ex-ante definition of outcomes and impacts would also allow the EIB to better demonstrate and report on its contribution to stakeholders;
- Flexibility of the promoter to adapt to its operating environment is usually a good practice and has supported the effectiveness of EIB operations. However, it sometimes led to situations where the Bank had limited visibility on the detailed use of funds. This happened in those cases when the promoter changed project scope or objectives without communicating them in a timely manner to EIB Services;
- During the period evaluated, the Bank did not adequately assess and report on the outcomes and impacts of its operations. PPRs and PCRs for the most part only present a broad view of project performance. Additionally, the Bank's contractual project reporting requirements for the operations in the sample were mainly limited to direct outputs. Measurability of outcomes is expected to improve with the recent introduction of result indicators which are now required for each new operation. Furthermore, IG/EV observed that promoters often have sufficient information to assess the projects' achievement of medium and long term objectives. Synergies between EIB's information needs and the reporting that the promoter already produces in the course of its activity can still be explored.

Outcomes and impacts of KE operations

IG/EV observed substantial KE-related effects for the 58 operations evaluated.

Operations supported by the EIB contributed to the creation of a more KE-friendly business environment in Europe by reducing the digital divide, providing additional building and installation capacities for KE-related activities and offering better educational and research facilities. At the same time, these helped

maintain, secure and create RDI jobs, supported regional and local clusters, and increased the attractiveness of the city, the region or the country where they were located.

The most significant effect is, however, the additional knowledge and innovation generated by the operations supported by the Bank. This materialised, in particular, in the development of new products, new industrial processes or new services, as well as in an increase (more than doubling in some of the cases observed) in the number of patent applications. As a result, the promoters' RDI capacity increased, company portfolios diversified, new markets were penetrated and promoters' competitiveness was significantly enhanced in almost all cases.

Finally, the contribution of Bank-supported projects to the European KE also lies in the transfer and dissemination of the additional knowledge produced (in particular via increased business cooperation and further networking at sectoral, national and international levels).

However, the degree to which these positive effects can be attributed to the EIB was not quantified during the course of this evaluation.

EIB value added

The EIB's financial contribution was found to be significant in the sample. However, this financial advantage is primarily linked to the financial crisis, during which EIB loans played an important countercyclical role. The absence of special operations in the selected sample may have also influenced this average.

Beyond direct financial value added (FVA) and interest rates, EIB's lending conditions were generally considered more flexible than those of other financiers. Tenor and the wide range of financing conditions available (grace period, bullet loans, etc.) were among the key advantages underlined by promoters.

For three of the 58 operations in the sample, strong indications were found that the investments would not have taken place without EIB involvement. For a large majority of operations in the sample (80%), there were indications that EIB support allowed for maintaining the scope and timing of the investments. It was not possible to quantify the degree to which these aspects would have been negatively affected in the absence of the EIB loan. The Bank's current tools do not allow for such quantification.

On several occasions IG/EV also observed that promoters pay increasing attention to the long term relationship with the EIB. Several promoters (in particular larger corporates) acknowledged having signed a loan with the EIB even though they had no immediate funding need (at least at the time they applied for and signed the loan). For this type of client, preserving a close relationship with the EIB is more valuable in the long term (in anticipation of another economic downturn) than benefiting in the short term from a more competitive interest rate. This evolution is positive from an EIB perspective, as it gives the Bank additional bargaining power and potentially further influence on the design of the projects to better align them with the mission and objectives of the EIB and EU.

Relevance of the KE concept

Basing a strategy on the concept of KE (grouping Education, RDI and ICT) remains relevant for the EIB Group as these types of investments go hand in hand and evolve together in their contribution to KE. This is to be expected as education reinforces the knowledge base, RDI helps to expand it and ICT acts as an enabler. This proved to be true at the level of the projects supported by the EIB.

Based on the analysis and findings of the report, seven recommendations are put forward. These recommendations are further detailed in the next section of the report.

The seven recommendations

- 1. Make EIB KE strategy more robust**
- 2. Continue monitoring and revising the hierarchy of priorities to promote those areas where the potential EIB contribution is higher**
- 3. Maximise and better demonstrate EIB additionality and more generally EIB's contribution to the KE**
- 4. Align resources and incentives with KE goals and ambitions**
- 5. Reinforce the coordination within the EIB Group's organisation in the field of KE**
- 6. Continue to actively prospect for new clients and new types of transactions to maximise EIB's contribution and to better address market needs**
- 7. Start working earlier with promoters on the ex-ante definition of higher-level objectives and ex-post reporting modalities for the operations**

MANAGEMENT RESPONSE

The Management Committee welcomes the independent evaluative opinion on the EIB Group's (EIB and EIF) support to the strengthening of the European Knowledge Economy (KE) over the period 2007-2013. The evaluation had a broad scope: it covered all fields of Knowledge Economy, namely RDI (Research, Development and Innovation), ICT (Information & Communication Technology) and Education & Training, across the entire spectrum of the EIB Group's (EIB and EIF) activities (lending, blending and advisory). The report assessed the organizational and strategic as well as operational aspects, the latter focusing on lending, through the evaluation of a sample of 58 operations from a total portfolio of 543.

The Management Committee fully shares EV's view that through the continuous refinement and diversification of its KE-related activities, the EIB Group has been able to respond quickly, effectively and efficiently to changing market needs and a reinforced priority on KE at EU and Member State level. Indeed since 2007, the EIB Group's approach to supporting KE has evolved substantially, not least by an increased focus on blending and advisory as well as through a strong complementarity between EIB and EIF activities. Of particular relevance in this respect is the InnovFin agreement. Signed in 2014, InnovFin represents a new generation of well-integrated and complementary EU financial instruments and advisory Services to help innovative firms gain access to finance more easily. Until the set-up of the European Fund for Strategic Investments (EFSI), it entailed the largest joint financial instrument ever developed between the European Commission and the EIB Group for activities in the EU and H2020 associated countries.

Under the Knowledge Economy objective, EIB has also played an important role in supporting investments in Education & Training, an area that will continue to be of high significance for the Bank's activity in the future, also in the context of EFSI.

Two main areas for improvements have been identified:

1. A reinforcement of the KE strategy. The Management Committee fully shares EV's conclusion regarding the on-going relevance of a strategy based on the concept of grouping together Education, ICT and RDI. Indeed the updated Knowledge Economy review "Innovation & Skills", approved by the Board in February 2015¹, confirmed the main targets and structure of the EIB's KE programme. Secondly, it proposed changes to its lending guidelines in order to better reflect new priority areas of EU policies, such as the support of manufacturing excellence, notably in the area of Key Enabling Technologies (KETs) as well as a stronger emphasis on investments in skills. It is worthwhile mentioning that the current evaluation has included in-depth discussions with Services over more than one year. As a result, main concerns and guidance raised during the evaluation have been taken into account in the drafting of the new policy.
2. Improved measurability of outcomes in order to better demonstrate EIB additionality. The conclusions of the EV report highlight the substantial positive outcomes and impacts of the operations, notably in terms of knowledge and innovation generated by the projects in general. However, for the sample of operations evaluated, concerns were raised with regard to the unclear definition of outcomes at appraisal stage, resulting in limited visibility on the results of individual projects and lack of detail in the assessment of the impact of operations. In order to further strengthen its assessment, measurement and reporting on the results and impacts of its operations, the EIB has introduced in 2013, as part of the 3 Pillar Assessment Methodology (3PA), a set of output and outcome indicators. This change was, however, not reflected in the evaluation, as the sample of projects was dominated by operations dating back to the earlier years of the period 2007 to 2013. Currently some 70 indicators have been identified for KE alone. Thanks to these improvements, the Services were able to include in the forthcoming report "EIB Operations inside the EU – 2014" expected results of operations approved within the EU in 2014, on a sector by sector basis. In the future, this will also include outcomes from the portfolio of operations already financed. On-going further refinement of measurability of outcomes notably in the context of EFSI will take into account the recommendations of the current evaluation.

¹ <http://www.eib.org/infocentre/publications/all/developing-innovation-and-skills-for-smart-growth-in-europe.htm>

Taking into account that evaluations are by nature rather ex-post than forward looking and in view of the current speed of evolution of EIB activities, the recommendations (notably regarding improved monitoring, measurement and corresponding indicators) made in the report are already in the process of being implemented. The findings of the current Evaluation give useful indications to support the Bank in its current efforts to further its contribution to the KE also in the light of the shift of emphasis on the financing of higher risk/higher additionality projects in the context of EFSI. A follow-up action plan for the implementation of the action points as entailed by the Management response will be further developed after Board approval.

TABLE OF RECOMMENDATIONS AND MANAGEMENT RESPONSE

Based on the findings and conclusions of the report, EV makes the following seven recommendations. They are categorised according to the latest typology adopted by IG/EV for the follow-up of recommendations, i.e. in terms of strategy, organisation and operations.

If these recommendations are endorsed by the Board, the Bank will have to make concrete proposals on how to best implement them. To facilitate the process, and building on discussion with the Services during the course of the evaluation, IG/EV elaborated several “implementation modalities”. These are outlined in Annex 7 of the report, for consideration of the Services in charge of operationalising the recommendations.

Strategy

Despite alignment with EU policies, the EIB KE strategy is characterised by insufficient internal coherence and integration at Group level. One of the major weaknesses is the absence of overarching intermediate and global objectives defined on a multi-annual basis. A step in the right direction was made with the “Innovation and Skills” KE Programme Review of 2015, which systematises eligibility rules for knowledge economy projects. However, the EIB strategic architecture relating to KE activities needs to be completed.

R1. Make EIB’s knowledge economy strategy more robust

This requires:

- R1.1 Integrating the different components of the KE strategy at EIB Group level and clarifying the status and hierarchy of the different documents defining it.
- R1.2 Explicitly defining and communicating the outcomes and impacts that the Bank is pursuing on a multi-annual basis, beyond and above annual targets in terms of loan volume and eligibility criteria.
- R1.3 Providing the KE activities with a leadership structure with clearly defined roles and responsibilities.

MANAGEMENT RESPONSE AND ACTION PLAN

PARTIALLY AGREED

The evaluation of the EIB Strategy is based on the assessment of the “Review of the Innovation 2010 Initiative promoting a competitive knowledge economy in the 21st century”, adopted by the EIB Board of Directors in May 2008 and of subsequent specific sector policy papers providing sector orientation and guidelines. However, the above mentioned policy review and sector papers have been superseded by the new KE policy: the KE Programme Review under the name of “Innovation and Skills” that was approved by the Board in February 2015. The new policy ensures that the Bank’s KE programme remains economically relevant and fully aligned with EU policies and priorities; furthermore, it has further developed and clarified eligibility rules for KE projects in line with EU and Member State policies. The new KE policy is the result of the lessons learned from financing KE projects over the past six years and it takes stock of previous similar evaluations as well as of the preliminary results – available at the end of 2014 - of the present evaluation.

In addition, the consistency of strategic objectives at Group level is also confirmed by the joint development by the EIB and EIF of innovative financial instruments aimed at addressing unmet financing needs, not least through the InnovFin programme in the field of RDI and ICT.

Objectives in terms of lending volumes are already reflected in the annual COP; in the timeframe covered by the evaluation, these have been largely met. For each individual direct operation, the adequacy of the EIB loan amount, outputs and outcomes of the projects financed are defined at due diligence stage, based on well-established criteria and monitored during project progress and upon their completion. In

addition, the new KE policy sets broad goals for the Bank's activities to support EU competitiveness. In this respect, Services do not believe that it would be realistic to add further objectives to the overall portfolio in terms of outcomes and impacts ("intermediate/global objectives") defined on a multi-annual basis above and beyond 3PA objectives and associated targets (KPIs) as currently included in the annual COP and given their review to harmonize 3PA and REM and to cater for EFSI.

During the evaluation period, the EIB approach for selecting the KE operations it would support had no clear prioritisation criteria. All the various areas currently defined as eligible were considered as equally important, even though their potential outcomes and impacts were not necessarily all equal or as significant. Since 2013, a system was introduced to define high-priority areas, including a mechanism for ongoing monitoring and revision.

R2. Continue monitoring and revising the hierarchy of priorities in order to promote those areas where the potential EIB contribution is higher

This requires:

- R2.1 Continuing to make a distinction between regular and high priority operations.
- R2.2 Continuing to revise periodically the criteria for defining higher priority operations.
- R2.3 Creating additional incentives to encourage promoters to invest in high priority areas.

MANAGEMENT RESPONSE AND ACTION PLAN

PARTIALLY AGREED

The current 3PA rating methodology foresees four rating classes (low, moderate, significant, high) in terms of expected contribution to EU policies and it allows for "profiling" each individual operation in terms of quality and EIB contribution. Furthermore, the Bank is currently reviewing and revising the 3PA methodology.

An effective way of promoting areas where the EIB potentially has a higher contribution is by working on the development of new financial instruments/products targeting higher priority areas where access to finance is difficult. Recent noteworthy examples include the dedicated products for SMEs and Midcaps within InnovFin (i.e. InnovFin MidCap Growth Finance (MGF), InnovFin MidCap Guarantee and InnovFin SME Guarantee).

The evaluation showed that the potential EIB contribution in the field of KE could increase through a better identification of: (i) specific market deficiencies by area (counterpart or sector) and (ii) modalities to prioritise and address these deficiencies. This would also positively impact additionality.

IG/EV observed in several cases that the EIB could play a stronger role to better align interests and strategies between the different stakeholders operating in the field of KE. The EIB can also help stakeholders to reinforce their orientation towards European policies, common interest and market needs.

IG/EV considers it unrealistic to set up a sophisticated system to measure market deficiencies at a European-scale, given in particular technical and cost implications. However, pragmatic solutions exist to allow the EIB to address market deficiencies and to ensure EIB additionality.

R3. Maximise and better demonstrate EIB additionality and more generally EIB's contribution to the KE

This requires:

- R3.1 Continuing to monitor, evaluate and update on a regular basis all instruments relating to KE so as to check their on-going market relevance and their contribution.
- R3.2 Increasing the number of financial gap analyses carried out by EIB Services so as to better identify market deficiencies (and those where the EIB can play a role in filling these gaps).
- R3.3 Systematising at appraisal a complementarity-check analysis with local/regional/national public policies and programmes to identify potential synergies or duplication.

MANAGEMENT RESPONSE AND ACTION PLAN

PARTIALLY AGREED

The report concludes that focused financial gap analyses conducted by the EIB have remained, so far, limited in scope and time.

It should be noted that since the early 2000s, the EIB has systematically cooperated with the Commission on the identification of specific policy areas where investment levels appear sub-optimal and additional need for finance exists. Moreover, the Bank has reacted proactively by pursuing certain target areas as well as by developing dedicated financial instruments. This is the case - for example - for the market gap assessment conducted by the High-Level Group on Key Enabling Technologies (KETs). Other areas, where similar assessments have been made, include the Strategic Energy Technologies (SETs) and the ongoing review of the EU's portfolio of the Strategic Transport Technology Plan (STTP). The results of these assessments have already been reflected in the higher priority areas identified by the Innovation & Skills policy paper.

Another notable example is the development of the two pilots under InnovFin (Energy First-of-a-kind Demonstration Projects (EDP) and Infectious Diseases Finance Facility (IDFF)), which respond to the identification of financial gaps in specific market areas; both were conducted jointly by the EIB and EC Services and IDFF benefited from RDI Advisory (now called Innovation Finance Advisory, (IFA)) support. Such advisory support (assessing financing gaps and proposing potential responses) now forms part of the InnovFin Advisory mandate launched since 2014 under InnovFin.

Finally, it should be mentioned that market studies like those proposed by EV are just one amongst a number of means through which the EIB identifies and assesses financing gaps; one such example is EIB's own market expertise and intelligence e.g. to steer origination initiatives and project identification. In addition, reviews of key sectors are regularly updated, published internally and taken into account for refining the Bank's KE policy.

Organisation

The KE has become one of the highest priorities for the EIB, but the growth in resources allocated to it across the EIB has been slower than for other priorities of the Bank. There is a shortage of human resources allocated for some specific areas within this priority. Resource allocation does not seem to reflect the labour-intensive nature of some KE projects. Moreover special activities, which are more resource intensive than regular Bank operations, are also more frequent in the field of KE. Special activities are currently underutilised.

R4. Align resources and incentives with KE goals and ambitions

This requires:

- R4.1 Increasing the quantity and proportion of human resources allocated to the KE within the EIB Group in order to reflect the strategic importance of KE and the number and complexity of special activity transactions and also considering resource implications of the recommendations of this evaluation.

R4.2 Creating the necessary conditions and appropriate incentives so that EIB staff prospects, initiates, appraises, signs and carefully monitors operations with a higher potential EIB contribution.

MANAGEMENT RESPONSE AND ACTION PLAN

AGREED

Innovation will be one of the key objectives of EFSI notably under the Infrastructure and Innovation window of EFSI as well as under the SME window to be operated mainly by the EIF. The EIB Group support to that objective is expected to include the development and roll-out of new financial products, involving in principle more risk sharing. The demanding qualitative and quantitative objectives of EFSI for at least the coming three years in terms of Innovation will represent extremely powerful drivers of EIB performance and will incentivise staff to deliver at the highest standards.

The evaluation exercise showed that Services involved in KE activities work well together, but that there is space for improvement in coordination and organisation.

The RSFF/InnovFin experience, with a clear separation of responsibilities and a high degree of complementarity across the different instruments, shows the way towards a more integrated and coordinated organisation in the field of KE at EIB Group level.

R5. Reinforce the coordination within the EIB Group's organisation in the field of KE

This requires:

R5.1 Fostering more systematically knowledge sharing and exchange of information at EIB Group level.

R5.2 Reinforcing the Centre of Expertise on KE in its coordination and cross-fertilisation role.

MANAGEMENT RESPONSE AND ACTION PLAN

AGREED

Services fully share EV's positive conclusion of the efficient cooperation amongst Services and of the high level of technical expertise. Indeed a key factor in the success of the KE has been the unified approach applied in the design of EIB and EIF instruments/products, achieved for example with InnovFin, which includes a common branding of the products across EIB and EIF. The existing Centre of Expertise on KE also represents a good coordination and knowledge sharing platform across Services.

Operations

The proportion of repeat operations with a private counterpart is significant among the KE project sample (76% of the private sector operations in the evaluation sample were with repeat borrowers) This high proportion of repeat borrowers is also applicable for the entire KE portfolio. Our counterparts' willingness to establish a long term partnership with the EIB may facilitate the achievement of high lending volume targets. However, long-lasting relationships could also create crowding out or other detrimental effects on new or potential clients. These potential counterparts can often play a crucial stimulating role in the markets, as illustrated by the examples of new clients and second-tier companies within the project sample. However attracting and working with new clients is also more time-consuming.

R6. Continue to actively prospect for new clients and new types of transactions to maximise EIB's contribution and to better address market needs

This requires:

R6.1 Promoting an increasing of the share of new clients in the EIB client base, especially in those fields identified as high priority or in which market deficiencies have been flagged, while keeping in mind the implications for EIB's business model.

R6.2 Defining objectives for operational staff as regards prospection and work with new clients and monitoring the achievement of these objectives.

MANAGEMENT RESPONSE AND ACTION PLAN

AGREED

The project sample and data on which EV has based its conclusions is restricted to a sample of 58 KE projects, the majority of which date back to the early years of the period 2007 to 2013. This high share of sample projects from the earlier period might be the obvious reason why recent changes in the EIB's client base have not been fully reflected in the conclusions of the EV report.

In fact, the Bank's Operations Support division's reports for more recent years (e.g. 2014) show a different and much improved picture: 35% of KE borrowers were first-time customers in 2014 (47% if customers with no operations in the previous 5 years were included). KE projects and loans to Mid-Caps in particular, contributed more to this improvement than any other lending programme. Looking forward, it is expected that this trend will continue, notably as a result of the following changes in EIB's approach: (i) an increasing number of MGF (Midcap Growth Finance) operations targeting a new customer segment directly (i.e. innovative midcaps); (ii) The Investment Plan for Europe (IPE) and increased risk appetite; (iii) additional advisory activity; as well as (iv) the strengthening of origination capabilities in an enlarged network of external offices. In addition, an increased cooperation with National Promotional Banks (NPBs) will work towards achieving an even better result in the future. To be noted also the significant number of conferences and seminars launched by NPST since last year across Europe to market InnovFin actively. The "EIB Group Survey on Investment and Investment Finance for Europe" approved by the Management Committee on 24.06.2015 will be also an opportunity to identify ways of boosting the EIB contribution to valuable projects and promoters, including in the KE area.

The vast majority of the projects evaluated had operational objectives included in the contracts, but no explicit intermediate objectives (expected outcomes). This raises issues in terms of:

- Accountability and project reporting: Part of what the projects supported achieved remains unknown.
- Reputational risk: Part of non-measured effects could have a negative impact, unknown by the EIB.
- Evaluability: The current information produced by EIB Services does not allow to satisfactorily measure the performance of the supported projects.

In addition, unexpected changes in the scope or objectives of several operations during implementation would have deserved further attention from the Bank during implementation.

An ex-ante reinforcement of the objectives and subsequent project reporting would better allow the EIB to demonstrate and communicate its contribution to its stakeholders and the public at large.

R7. Start working earlier with promoters on the ex-ante definition of higher-level objectives and ex-post reporting modalities for the operations

This requires:

R7.1 Putting in place mechanisms for closer cooperation between the EIB and its clients to help define expected outcomes *at an early stage*.

R7.2 Seek synergies between EIB's information needs and the project reporting that the promoter already produces in the course of its activity. Although this may require additional efforts for the EIB, this would also reduce the burden on the promoters, hence increasing the perceived value of EIB loans.

R7.3 Clarifying with promoters how to address unexpected changes in the project scope or objectives occurring during implementation.

MANAGEMENT RESPONSE AND ACTION PLAN

AGREED

The Services welcome EV's conclusions with regard to the substantial positive outcome and impact observed as well as the apparent high economic, social and environmental value for the 58 operations evaluated. Services also share EV's views on the importance of measuring and communicating outcomes of the projects financed. To this end, 70 indicators on outcomes and outputs specific for KE operations have already been established. These indicators are estimated at appraisal, included in the finance contract and monitored at completion; whenever possible, indicators and information needs are adapted on the basis of the information the promoter already collects and reports internally to facilitate the project monitoring process.

SECTION 1. PURPOSE, SCOPE AND METHODOLOGY

This section presents the purpose, scope and methodology of the evaluation.

1.1. INTRODUCTION

The evaluation process and findings summarised in the present report measured and assessed the role played by the EIB Group to the strengthening of the European knowledge-based economy. On that basis, the report proposes a set of strategic, operational and organisational recommendations to improve this contribution in the renewed context of the Europe 2020 strategic framework.

The **main report** provides the summary of the main findings, their analysis, and conclusions drawn from the evaluation process. Recommendations are presented at the beginning of the report, following the Executive Summary.

- Section 1 presents the purpose, scope and methodology of this evaluation;
- Section 2 depicts the knowledge economy (KE) context and the stakeholders operating in the KE environment, with a focus on the EU and the EIB strategy;
- Section 3 is dedicated to the portfolio analysis of the KE-related activities undertaken by the EIB Group and their overall achievements;
- Section 4 provides the main findings from the evaluation sample (58 operations) and analyses how these operations performed;
- Section 5 shows the extent to which the EIB organisation and strategy enable it to reach its KE-related goals;
- Section 6 is dedicated to the main conclusions of the evaluation.

Annexes lay out the detailed analysis underpinning this study and some complementary information supporting the findings and conclusions presented in the main report. They cover:

Annex 1: The concept of KE: Historical emergence and current relevance

Annex 2: The EU and EIB policies relating to the KE

Annex 3: Portfolio review of KE-related activities (additional figures and graphs)

Annex 4: The sample: Operations evaluated

Annex 5: The sample: Findings and evidence by evaluation criteria

Annex 6: The sample: Outcomes and impacts of individual operations on the KE

Annex 7: Possible implementation modalities for the EV recommendations

Annex 8: The evaluation process

Annex 9: A methodological note on calculations relating to EIB market shares in KE

1.2. PURPOSE OF THE EVALUATION

The aim of this evaluation is twofold: (i) to measure and assess the contribution of the EIB Group to the strengthening of the European knowledge-based economy; and (ii) to propose a set of strategic, organisational and operational recommendations to optimise this contribution in the renewed context of the Europe 2020 framework and of the Investment Plan for Europe. To achieve these goals, a series of eight questions are addressed throughout the report and presented below.

The eight questions addressed in this report

- Q1: To what extent have the objectives fixed by the EIB Group in the field of KE been achieved? Were these objectives relevant and the overall EIB strategy relating to KE well designed?**
→ Addressed in sections 2, 3 and 5
- Q2: What are the activities put in place by the EIB Group in response to the request to increase its involvement in the field of KE during the period 2007-2013?**
→ Addressed in sections 2, 3 and 5
- Q3: What are the means, resources and services associated with these activities and have they been effectively and efficiently employed?**
→ Addressed in sections 2, 3 and 5
- Q4: How have the projects supported by the EIB Group in the field of KE performed with regard to the four key evaluation criteria (relevance, effectiveness, efficiency, sustainability)?**
→ Addressed in section 4
- Q5: What KE-related effects generated by the projects supported by the EIB can be observed? Could the EIB have taken additional actions to make these effects more important? Would the KE-related effects have been lower without EIB involvement?**
→ Addressed in sections 3 and 5
- Q6: How can the support provided by the EIB Group to the strengthening of the European KE be estimated and assessed?**
→ Addressed in section 3
- Q7: What are the main components of the value added delivered by the Bank to its clients in this field?**
→ Addressed in section 4
- Q8: To what extent is EIB's strategic and operational approach to the KE which groups Education, RDI and ICT under a common overarching KE umbrella still appropriate today?**
→ Addressed in section 5

1.3. SCOPE OF THE EVALUATION

Definition of a knowledge-based economy

In this report, a knowledge-based economy is defined as: “an economy relying more on intangible investments (and intellectual capabilities) than on physical inputs (or tangible investments) to trigger economic growth and job creation”².

The definition adopted by IG/EV for the concept of knowledge economy thus covers all lending, blending or advisory types of KE-related activities developed by the EIB Group (i.e. the EIB itself, plus the European Investment Fund, the EIF). These activities refer to at least one of the following three areas: RDI (Research, Development and Innovation), ICT (Information & Communication Technology) and Education & Training.

Geographical and temporal scope

This evaluation covers the same geographical scope as the EU 7th Framework Programme (FP7), i.e. all EU 28 countries, EU Candidate and potential candidate countries, as well as the Associated Countries to the FP7. Therefore this evaluation covers a total of 35 countries, labelled “EU 35”³.

The evaluation covers the period 1 January 2007 - 31 December 2013, which corresponds to the timeframe of the FP7. The choice of this period makes the current evaluation complementary to several IG/EV evaluations covering aspects of the 6th Framework Programme (2000-2006)⁴. However, in order

² This definition is close to that used in the article “Knowledge-based economy and society has become a vital commodity to countries”, published in the International Journal of Educational Research and Technology, Vol. 1 [2] December 2010: 68 - 75, where Ghirmai T. Kefela defined a knowledge economy as “one where organisations and people acquire, create, disseminate, and use knowledge more effectively for greater economic and social development”.

³ In addition to the current EU 28 countries, this includes the Former Yugoslav Republic of Macedonia, Montenegro, Iceland, Albania, Serbia, Turkey, Bosnia and Herzegovina, Kosovo, Israel, Norway, Lichtenstein and Switzerland.

⁴ “Evaluation of EIB Investments in Education and Training” (October 2006), “Evaluation of EIF Funding of Venture Capital Funds - EIB/ETF Mandate” (June 2007), “Evaluation of i2i Research, Development and

to put recent evolutions in perspective, some parts of the analysis (e.g. the review of EU and EIB policy and strategy; parts of the portfolio review) cover the 2000-2013 period.

Types of EIB and EIF activities included

All lending, blending or advisory activities carried out within the EIB Group (i.e. the EIB and the EIF) and eligible under one of the three areas of “Education & Training”, “RDI” or “ICT” are included in the scope of this evaluation, although to different degrees.

- Lending activities: all signed direct and intermediated loans contributing to the KE priority of the EIB COP (Corporate Operational Plan) are included. Between 1 January 2007 and 31 December 2013, this represents a total number of 543 projects for a total loan amount signed of EUR 89bn (see section 3 for details).
- Blending activities (which use concomitantly EIB own resources and funds from the EU budget): the conclusions and recommendations of the two evaluation reports related to the Risk Sharing Finance Facility (RSFF)⁵ issued by IG/EV in 2010 and 2013 are taken into account where relevant. The new InnovFin instrument (designed in 2013-2014 within a Horizon 2020 perspective) has also provided important lessons to this evaluation although outside its temporal scope.
- Advisory activities: JASPERS⁶ assignments delivered in the field of KE (39 completed assignments as of 31 December 2013) are analysed at portfolio level, whilst the general activities of the Advisory Services Department (ASD) and the EIB Institute related to KE are also considered, when relevant.

The following EIF activities are also part of the scope of this evaluation: Venture Capital activities which provide capital to start-up companies; Technology Transfer activities that help convert research into marketable products; Activities undertaken in the framework of the European Angels Fund (EAF); activities related to the RSFF/InnovFin instruments (RSI/InnovFin SME Guarantee).

1.4. METHODOLOGY OF THE EVALUATION

This section describes the main sources of information, evaluation modalities and the methodological challenges. More details on the methodology can be found in Annex 8.

1.4.1. Main sources of information and evaluation modalities

Organisational and strategic activities

To assess organisational and strategic activities, the evaluation analysed all EIB Group internal documents relating to KE, including the documentation pertaining to each of the KE-related initiatives, instruments and Services. The information has been complemented through three internal focus groups (two on strategic aspects, one on organisational issues). Each of these brought together a dozen EIB officers from different Services between June and September 2014. The focus groups identified elements of common understanding, but also some areas of tensions and differences in terms of perceptions and practices. Focus group results have been completed with bilateral interviews when necessary.

Operational activities

The evaluation of operational aspects focuses mainly on lending and blending activities, although it also includes some aspects of advising⁷. Three portfolio reviews have been carried out: one for KE-related lending activities, one for JASPERS KE-related assignments, and the one for the EIF KE-related activities (Venture Capital, Business Angel, and Tech Transfer).

Innovation (RDI) projects” (April 2008), “Evaluation of i2i Information and Communication Technology (ICT) projects” (February 2010).

⁵ The RSFF blends EU and EIB funds to finance below investment grade KE-related operations.

⁶ JASPERS stands for “Joint Assistance to Support Projects in European Regions”. Is the joint initiative launched at the end of 2005 by the EC, the EIB and the EBRD to assist the Member States which joined the EU in 2004 and 2007 to make effective use of Structural Funds.

⁷ The main reason for this focus is that advising activities represent only a small share of the EIB Group’s activities in comparison to lending and blending. In addition, information related to non-lending activities is much less abundant and accessible.

A representative sample of 58 operations has been set up from the total portfolio of 543 projects, reflecting the portfolio distribution in terms of areas, countries and years of signature. Each of these operations has been evaluated individually through desk reviews. A total of 171 interviews (face-to-face or by phone) were carried out in the framework of this evaluation, both with EIB officers (appraisal and project monitoring teams) and with project promoters. Site visits were also carried out for nine of these operations. For each of the 58 operations, either an in-depth report (12) or an Evaluation Summary Sheet (46) has been prepared and consulted with EIB services. The 58 operations are listed in Annex 4. In line with EV's Terms of Reference, promoter identities are not disclosed for confidentiality reasons.

1.4.2. Methodological challenges and solutions

This evaluation faced several methodological challenges:

- A wide range of projects from different areas and sectors;
- A large sample (58 operations); and
- The nature of many KE-related projects which are broadly defined, hence raising questions in terms of evaluability and measurability.

Heterogeneity of the projects evaluated

A wide range of projects covering the three different KE areas was considered in the framework of this evaluation (see Table A.5.13 in Annex 5). RDI operations that mainly consist of operations co-financing RDI programmes (and therefore labelled "RDI programme support") are usually geared towards intangible investments or OPEX (Operating Expenditures)⁸. Education and ICT projects are more often oriented towards tangible infrastructures, networks and CAPEX (Capital Expenditures). As a result, designing a common evaluation framework, comparing and aggregating data, and drawing overarching conclusions from such a diverse sample was challenging.

Sample size

The sample size (58 operations) is in absolute terms larger than samples generally used by EV. This was a deliberate choice, in order to ensure an adequate coverage of all three aspects of the vast field of KE (RDI, ICT and Education). The larger sample made the evaluation process more complex in terms of logistics, coordination and workload, both for the evaluation team and for the IG/EV counterparts in other Bank Services⁹. The large sample size also raised issues in terms of consistency checks and harmonisation of ratings.

On the positive side, the sample size provided IG/EV with a considerable amount of information to support and expand the analysis, findings and recommendations. The wide variety of projects assessed within the sample provided a more nuanced view of the Bank's KE-related activities. Furthermore, beyond the significant differences between the three KE areas, their inclusion under the same overarching KE umbrella resulted in the identification of similarities and commonalities which substantiate the merits of a strategic approach based on the concept of KE.

Sampling process

Initially, to ensure representativeness, the sampling process entailed the random selection of 80 projects among the 543 in the portfolio. Subsequently, the sample underwent two alterations:

- First, although they represent a key component of the lending portfolio, no operation financed under the Risk Sharing Finance Facility (RSFF) was included in the sample, given that this facility was evaluated by IG/EV in 2013. This evaluation covered 16 RSFF operations. The key findings and conclusions from these individual reports have been included in this report where relevant.
- Second, to better respect the overall timeframe, the sample was finally reduced to 58 operations. Most of the 22 projects withdrawn presented specific difficulties¹⁰. When reducing

⁸ Though these operations also finance tangible investments such as testing facilities or research laboratories.

⁹ Nine EIB officers were EV's counterparts for more than four projects each, which represented an important additional workload for them.

¹⁰ Some examples of the difficulties were issues in contacting promoters, interviewing EIB officers with other priorities and little time to participate in the evaluation or specific reluctance from services to interview certain promoters where the Bank's commercial relationship was considered to be at a "sensitive" stage.

the sample, the main characteristics of the initial (80-project) sample were preserved (in terms of country, year and sector distribution) but a positive bias was probably introduced.

Evaluability issues

The nature of many projects has raised important issues from an evaluability perspective. In general, to be easily and fairly evaluated, an operation requires clear and measurable objectives. This allows an accurate assessment of achievements against initial objectives. For KE projects, in particular RDI projects, there is no easy way to know in advance precisely what outputs or outcomes will eventually be delivered. Therefore, measuring the performance of such projects was especially challenging, even though ratings and evaluation framework were adapted as needed.

SECTION 2. POLICY CONTEXT, STAKEHOLDERS AND INTERVENTION LOGIC

Section 2 depicts the KE context in which the EIB Group has been operating. After recalling why building a knowledge-based economy became an economic imperative, the section maps the main stakeholders in this field. The EU and EIB strategies related to KE are then summarised with a view to reconstructing the intervention logic of the EIB Group.

2.1. RATIONALE AND KEY STAKEHOLDERS OF THE KNOWLEDGE ECONOMY

2.1.1. The driving forces of the knowledge-based economy

Technical progress

Knowledge, often referred to as “technical progress”, is considered by most economists a key element influencing productivity and economic performance, together with capital and labour (see Annex 1). An economy becomes knowledge-based when KE-related activities represent the main share of the gross domestic product (GDP) and when intangible assets become more important than tangible investments and physical goods.

Global competition

In the current, increasingly open and globalised world, competitiveness-as well as attractiveness-become an absolute imperative, both as a prerequisite to economic success and as a condition for a good insertion within the globalised economy. The majority of economists and policy makers believe that all economies should be competitive through an efficient allocation of their resources. Among these resources, knowledge features prominently, since it affects all sectors of the economy. For public institutions, the creation of an environment enabling the emergence of a robust knowledge-based economy now forms the backbone of economic policies. For private companies of all sizes, gathering, producing, mastering and converting knowledge into profitable products and services is critical to become or remain competitive in the global market.

2.1.2. Key stakeholders

The main stakeholders identified in the framework of this evaluation are: non-financial private entities (i.e. large corporates, midcaps and SMEs), non-financial public entities (at national and subnational level), private and public financial entities (i.e. investment and equity funds, commercial, promotional banks as well as other International Financial Institutions, IFIs). The key objectives of these different types of players have been identified on the basis of the sample of 58 projects, complemented by desk research¹¹.

Private sector entities

All private actors, be they large corporates, midcaps or SMEs, pursue market benefits and competitiveness objectives. An increasing number of companies are developing corporate responsibility programmes¹². This has particularly been observed among the large corporates within the evaluation sample.

Public and non-profit entities

Primarily focussed on maximising social returns, the KE-related activities of public and non-profit entities usually take place within multi-annual programmes, with a strong focus on education and research. They also play a major role in the creation of an enabling environment for the emergence and development of KE-related activities (legal and regulatory framework, spatial planning, tax regimes, fiscal incentives, etc.).

Financing institutions

Investment and equity funds as well as commercial banks are generally market oriented stakeholders and many have some form of corporate social responsibility policies. IFIs are policy-driven and normally not-for-profit organisation and aim to maximise social benefits. All these financing entities (IFIs and

¹¹ The EIB and stakeholders outside the EU are analysed in the next section.

¹² For example as highlighted by a recent study “The Business Case for being a Responsible Business” <http://www.bitc.org.uk/our-resources/report/business-case-being-responsible-business>.

commercial banks) are potential EIB competitors in the supply of funds, but at the same time they are also – and increasingly so – financing partners.

2.2. THE EU AND EIB POLICY RELATING TO KE

The EU and EIB strategies related to KE are summarised in this section with a view to reconstructing the intervention logic of the EIB Group. A comprehensive overview of the EU and EIB policy KE landscape over the period 2000-2013 is depicted in Figure 1. More details relating to these strategies are provided in Annex 2 of this report. The period covered by this policy and strategy review covers a longer period than the scope of this evaluation in order to allow a better understanding of the context in which the EIB Group carried out its activities between 2007 and 2013.

2.2.1. The evolution of the EU policy relating to KE

From the Lisbon Strategy to Europe 2020

Adopted in March 2000, the Lisbon Strategy pursued, throughout the decade 2000-2010, the overarching objective to make the EU *"the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion"*¹³. In December 2009, considering the partial achievements of the Lisbon Strategy and the evolution of the European economy, the EU Heads of States launched the "Europe 2020" strategy. Two of its five main targets are linked to the KE¹⁴.

The MFF2014-2020 and the Investment Plan for Europe

In December 2013, the European Council adopted the EU's Multi-annual Financial Framework (MFF) for the period 2014-2020. This MFF is clearly geared towards promoting a knowledge economy, with a sharp increase of the budget dedicated to "Competitiveness for Growth and Jobs" (+37.3% at EUR 125.6bn). The current EU Framework Programme for Research and Innovation is known as "Horizon 2020". It signals a fundamental evolution of the EU policy in the field, as its scope is enlarged as compared to its predecessor to cover not only R&D but also innovation¹⁵. The "Industrial Leadership" pillar aims to support and facilitate access to finance for innovative companies, in particular via financial instruments where the EIB and the EIF are expected to play an important role. The larger scope of this programme increased the opportunities for EC/EIB partnerships.

On 20 November 2014, the President of the EC, Jean-Claude Juncker, presented a new investment plan with a view to foster European economic recovery, job creation, long-term growth and competitiveness. One of its cornerstone initiatives, the "European Fund for Strategic Investments" (EFSI), is operational since mid-2015 and is expected to have a strong KE/Innovation component.

Since 2000, KE has therefore remained at the heart of EU policy and the EIB is increasingly requested to play an active role in its implementation.

2.2.2. The evolution of the EIB strategy relating to KE

For several decades and as a result of its original *raison d'être*, the EIB had a strong orientation towards tangible investments and large infrastructure projects. The growing necessity to align the EIB strategy with EU policies and with market needs led to a progressive change in its corporate culture.

From i2i to KE

Launched in June 2000, the "Innovation 2000 Initiative"¹⁶ (i2i) was conceived as the Bank's response to the Lisbon Strategy. It focussed on Education, Research & Development and ICT.

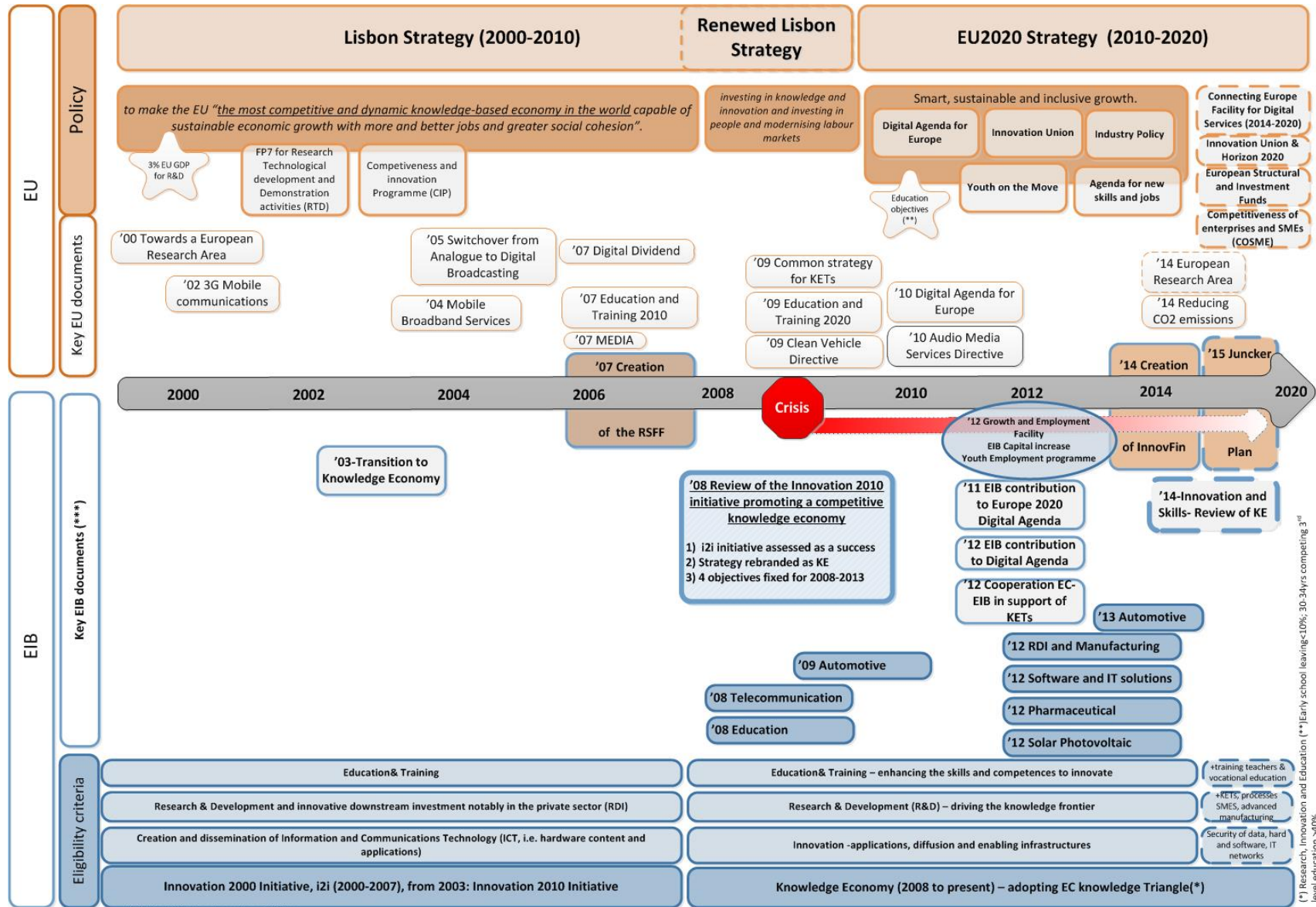
¹³ Lisbon European Council 23 and 24 March 2000 Presidency Conclusions.

¹⁴ For education, the objectives are to reduce the rates of early school leaving to below 10% and at least 40% of 30-34-year-olds completing third level education. For research and innovation, the Lisbon objective (to attain 3% of the EU's GDP to be invested in R&D) is maintained.

¹⁵ The official label for Horizon 2020 is "The EU Framework Programme for Research and Innovation" and whereas innovation was for example non-eligible under the EU window of the RSFF during the period 2007-2013.

¹⁶ Renamed "Innovation 2010 Initiative" in June 2003.

Figure 1: EU and EIB policy landscape relating to the KE
 (dotted boxes represent elements under discussion or recently approved)



The “Review of the Innovation 2010 initiative promoting a competitive knowledge economy in the 21st century”, adopted by the EIB Board of Directors in May 2008, whilst assessing the i2i initiative as a success (notably due to the early achievement of the target fixed in 2003¹⁷) rebranded the EIB strategy as “Knowledge Economy (i2i)” and fixed the four following goals to be pursued for the period 2008-2013 with a view to further aligning priorities to the renewed Lisbon Strategy:

- i. Maintain annual lending volume at EUR 10bn up to 2013 and reaching a cumulative target of EUR 60bn over the period 2008-2013;
- ii. Shift towards more private sector lending for R&D projects (focus on SMEs and Midcaps) while maintaining balanced support to larger enterprises;
- iii. Continue support to the diffusion of innovation to EU regions lagging behind;
- iv. Gradually filling the gap between standard operations and special transactions normally entailing a higher level of risk (via a systematic use of innovative financing solutions and the diversification of the EIB portfolio).

In complement to this 2008 review and strategy update, the EIB produced a dozen sector policy papers providing sector orientation and guidelines. These papers are listed under key EIB documents in Figure 1 above.

The RSFF

One of the most noticeable materialisations of the EIB Group’s higher engagement in the field of KE was the creation, in 2007, of a new financial instrument called the Risk Sharing Finance Facility (RSFF). Set up by the EIB and financially supported by the EU, the RSFF aimed at fostering additional investment in RDI in the EU. The second evaluation of the RSFF undertaken by IG/EV in 2013 concluded that this innovative financial instrument has fulfilled its role adequately, contributing to the reduction of market failures. IG/EV’s report also underlined that the RSFF had so far remained a “large-scale laboratory for RDI financing” with limited macroeconomic effects. However, the InnovFin framework created in 2014 (see “From RSFF to InnovFin” box) represents an opportunity to convert the RSFF into a fully-mainstreamed instrument able to cover RDI investment gaps on a wider scale.

From RSFF to InnovFin

Launched in June 2014 on the basis of the RSFF experience, the joint “InnovFin” initiative offers EUR 24bn of financing to foster EUR 50bn of RDI investments. It uses five instruments, each one having an own specificity:

- 1) InnovFin Large Projects aims to improve access to risk finance via loans from EUR 25m to EUR 300m for RDI projects emanating from larger firms, universities and public research organisations, research infrastructures, PPPs and special-purpose vehicles;
- 2) InnovFin MidCap Growth Finance offers loans from EUR 7.5m to 25m to improve access to finance mainly for innovative midcaps (up to 3000 employees);
- 3) InnovFin MidCap Guarantee provides, to selected financial intermediaries, EIB guarantees and counter-guarantees on debt financing of up to EUR 50m to improve access to finance for innovative midcaps (up to 3000 employees);
- 4) InnovFin SME Guarantee provides, to selected financial intermediaries, EIF guarantees and counter-guarantees on debt financing of between EUR 25,000 and EUR 7.5m to improve access to loan finance for innovative SMEs and small midcaps (up to 499 employees);
- 5) InnovFin Advisory aims to improve the bankability and investment-readiness of large projects that need substantial, long-term investments. The main targeted clients are promoters of large RDI projects meeting Horizon 2020’s societal challenges.

¹⁷ EUR 50bn for the entire decade (2000-2010) and achieved in 2007.

Recent evolution of the EIB strategy: closer EU-alignment, increased role of financial instruments and more ambitious targets

The increased focus on KE is noticeable in the different COPs, where knowledge economy is presented as a main EIB Group objective with specific performance indicators and quantitative targets since 2009 (both in terms of volume of lending for the Bank and in terms of volume of Venture Capital dedicated to KE-related operations for the EIF). However, the share of KE lending targets in the annual targeted amount of loans to be signed by the Bank has not significantly changed between 2007 and 2013 (17.1% to 17.8%).

In the most recent years, the EIB strategy related to KE has evolved in three main directions:

- An increasing focus on growth and jobs linked to the capital increase decided in June 2012.
- An even closer alignment with EU policies (evidenced by the prominent role given to joint financial instruments in relation to KE¹⁸, the Memorandum of Understanding (MoU) on KET (Key Enabling Technologies)¹⁹, the EIB role in the implementation of the EFSI, and the KE review presented to the EIB Management and Governance Board in 2015, which enlarges eligibility rules towards vocational training and KETs. This document proposed a new denomination for the KE Policy, which was rebranded “Innovation and Skills”).
- The COP 2014-2016 assigned an ambitious lending target, with an expected volume of KE-related signatures for 2014 at EUR 16bn (i.e. 25.6% of total EIB lending). This enhances the status of KE to the second highest targeted activity of the Bank, after support to SMEs).

In conclusion, since the 2000s, both the increasing willingness of the EIB Group to play a role in the KE and the EU’s messages and actions of support in this sense have given prominence to the subject, to the point where it now represents the second highest priority of the Bank.

Summary of the strengths and limitations of the EIB strategic approach (developed in section 5)

Section 5.2 analyses the strengths and limitations of the EIB strategic approach. The main conclusions of this section are summarised below as they are linked to the strategic aspects developed in this section.

- On the positive side, the Bank’s KE strategic approach is flexible and increasingly measurable. There are indications that the EIB can further contribute to an alignment of the objectives of private and public promoters, in the field of KE, with EU priorities. The Bank can reap the benefits of its balanced portfolio approach covering operations with different levels of credit risk. However, the need to maintain this balance in order to secure EIB’s AAA rating, currently a pillar of EIB’s business model, also puts limits on the Bank’s risk taking ability on a portfolio basis.
- On the negative side, the Bank’s strategic approach is weakened by the limited identification of market deficiencies that underpins it, by the plethora and lack of hierarchy in the strategic documents providing directions in the field and the differences in the interpretation and application of these directions by the various Services of the Bank. Nevertheless, efforts are being made to clarify this approach and align the different activities in this field, for example through the recent “Innovation and Skills” KE programme review. Although the alignment of EIB projects with promoters’ objectives has improved over the period evaluated, the imprecise definition of initial expectations for EIB operations is still not conducive to demonstrating additionality.

The EIB strategic architecture relating to KE activities remains therefore incomplete and could benefit from more coherence and robustness.

2.3. THE RECONSTRUCTED INTERVENTION LOGIC OF THE EIB IN THE FIELD OF KE

On the basis of the strategic elements presented above, combined with the in-depth analysis of the rationale of each individual project evaluated, the intervention logic of the EIB in the field of KE has

¹⁸ As illustrated by the evolution from RSFF to InnovFin (see box above).

¹⁹ Signed between the EIB and the EC in February 2013.

been reconstructed and is presented in Figure 2. It was discussed and validated with key EIB Services at different moments during the course of this evaluation

Contextual factors and EIB operational, intermediate and global objectives

Contextual factors (*in grey*) refer either to policy-driven factors and public actors (such as the European Council or EIB stakeholders) or to market-driven aspects (such as economic cycles, market and competitiveness gaps).

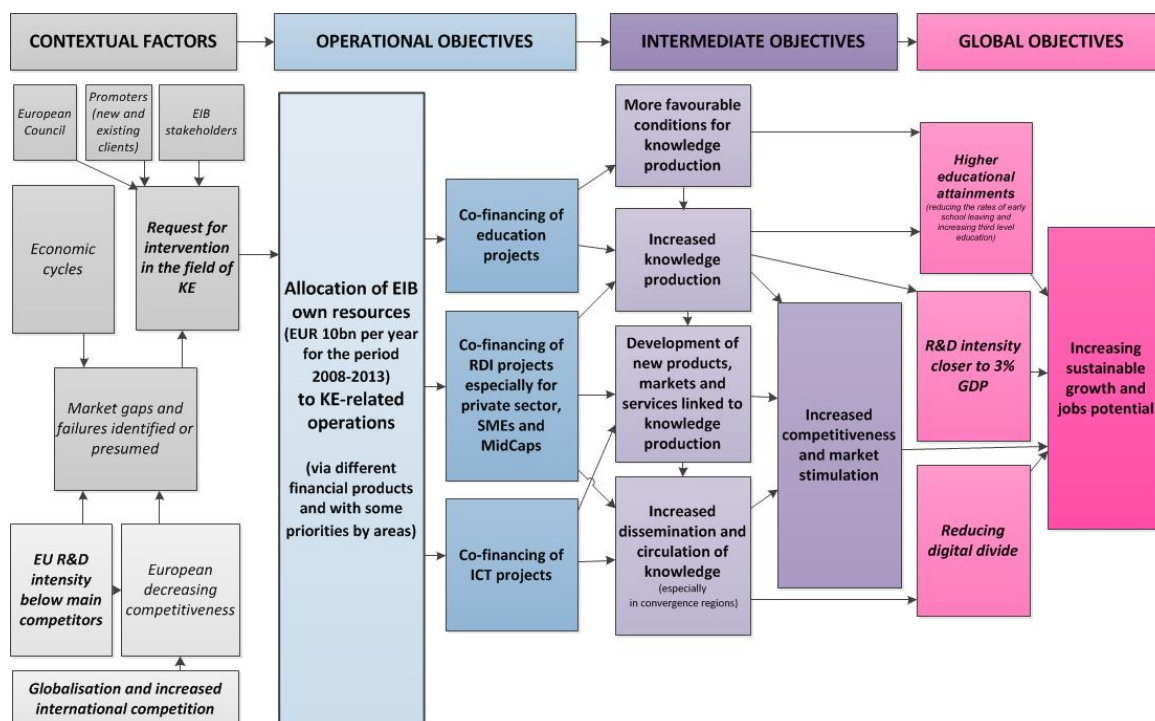
Operational objectives (*in blue*) stem from the operations the EIB decided to finance over the period 2007-2013. They are presented separately for Education, RDI and ICT projects. EIB strategic documentation did not provide a sectoral sub-division for the yearly target of EUR 10bn.

Global objectives (*in pink*) refer to the higher level aims pursued by the EIB while intervening in the field of KE. They are directly connected to the objectives of the Lisbon and Europe 2020 strategies. The Bank aims at *contributing* to the achievement of these global objectives which are also affected by factors outside the control of the Bank.

Intermediate objectives (*in purple*) as presented below have not been explicitly defined in any strategic EIB document. Unlike the other levels of the intervention logic, which are spelled out with different levels of clarity and detail in existing documents, the intermediate objectives were primarily reconstructed by IG/EV. The two main sources for the reconstruction were information gathered for each of the individual operations evaluated and discussions with the Services²⁰. Addressing market deficiencies was accepted by the EIB Services as a particularly important consideration underpinning the other intermediate objectives.

The three key elements of the knowledge circle identified in Section 4 are included within the framework of these intermediate objectives²¹. The outcomes and impacts linked to these intermediate objectives are presented in section 4 of the report.

Figure 2: Reconstructed intervention logic of the EIB Group in the field of knowledge economy



²⁰ A specific intervention logic framework has been reconstructed for each of the 58 operations of the sample.

²¹ More favourable conditions for knowledge production, increased knowledge production, development of new products, markets and services linked to knowledge production and increased dissemination and circulation of knowledge.

SECTION 3. EIB GROUP PORTFOLIO ANALYSIS

Section 3 is dedicated to the aggregated portfolio analysis of the EIB Group KE-related activities. As a first step, it analyses lending (i.e. direct and intermediated loans) and non-lending activities (i.e. advisory activities and activities of the EIF). As a second step, the EIB portfolio is assessed in terms of (i) the achievement of its targets and, (ii) its financial contribution to the European economy. Annex 3 provides the factual basis of the analysis.

3.1. PORTFOLIO REVIEW OF LENDING AND NON-LENDING ACTIVITIES

3.1.1. General trends and main characteristics of the EIB KE lending portfolio

Loan signatures 2000-2013

The portfolio review is considered in a broader perspective than the actual evaluation scope (2007-2013) and, as the policy review above, it covers the 2000-2013 period.

Between 1 January 2000 and 31 December 2013, the EIB signed loans totalling EUR 133.8bn under the i2i and the knowledge economy (KE) eligibility criteria supporting 817 projects. Of these, EUR 59.4bn has been signed under i2i (361 projects) and EUR 74.4bn under KE (457 projects). On average and since 2000, the EIB has been signing EUR 9.5bn annually under i2i or KE.

Signed amounts have grown from EUR 2.5bn in 2000 to reach a maximum of EUR 17bn in 2009 (see Figure 3). The alignment process of EIB priorities to the renewed Lisbon Strategy, in mid-2008, gave a boost to KE signatures. In 2009 and 2010, the Bank signed around EUR 16bn annually.

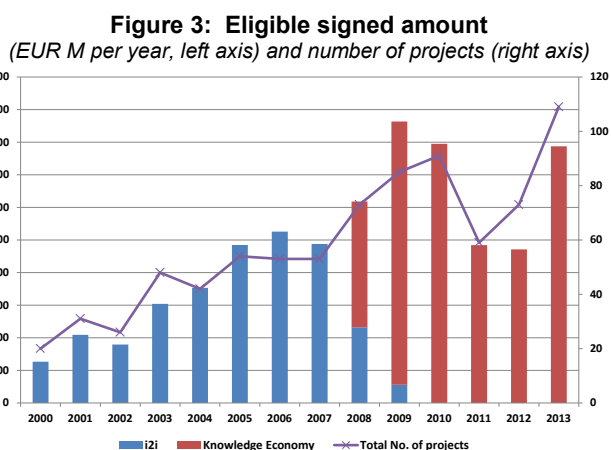
The objective fixed in 2003 to accomplish EUR 50bn for the entire decade 2000-2010 was attained in 2007. After 2009, annual signature amounts have decreased - down to EUR 9bn in 2012. This corresponds to a decrease in terms of annual targets for KE²², a reduction of RSFF transactions and, in some cases, to less attractive financial conditions offered by the Bank.

Coming back to the scope of this evaluation, between 2007 and 2013, the EIB signed an average of EUR 12.8bn of loans annually under i2i or KE. The trend line relating to the number of projects per year follows the same evolution, with a yearly number of operations largely above one hundred in 2013.

A KE portfolio concentrated on five countries

The EIB KE portfolio includes projects implemented in 35 countries with a limited number of projects taking place in multiple countries. Country distribution is heavily concentrated as 80% of signatures between 2000 and 2013 correspond to nine countries only. The top three countries are: Germany (25.9%), Spain (12.0%) and Italy (11.2%).

At the same time, geographical distribution has not been uniform during the period (see Annex 3). Loans to promoters in Germany were particularly high in the period 2004-2007, reaching more than 40% of total annual EIB loans in the KE sector. Spain and Italy had large shares in 2000 (41% and 23% respectively) but much less later on. The UK maintained a steady share, averaging 8% over the period. The evolution of France's share is more contrasted, with fluctuations between 0 and 20%. The share of the remaining Member States has remained mainly stable, averaging slightly higher than 30% - with



²² COP targets relating to KE were reduced in 2011-2012, so as to reduce the level of acceptable credit risk for the Bank.

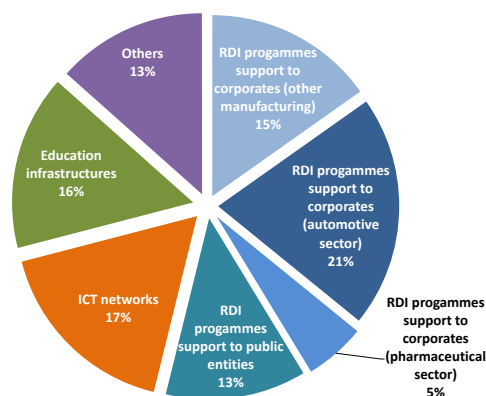
the exception of 2003 when it reached 48%. The share of non-Member States (primarily Turkey) also fluctuated between 2-10% over the period.

The automotive sector and public and private RDI covering half of the investments

A closer look at the different operations for the period 2007-2013 (see Figure 4), shows that:

- RDI programme support to private corporates represents the lion's share of the portfolio (more than 40% of the total), more than half of these operations (21% of the total) concern the automotive sector and 5% the pharmaceutical sector;
- The shares of ICT networks and education infrastructures are important (17% and 16% respectively) although, even when taken together, they still account for less than RDI programme support to private companies;
- RDI programme support to public entities represents the fourth largest share of the portfolio at 13% (i.e. three times less than RDI programme support to the private sector);
- Other projects concerned framework loans (6%), global loans (3%), innovative industrial infrastructure (2%), health infrastructures (2%) and culture and media (less than 1%).

Figure 4: Structure of KE-related lending operations by type of projects
(by loan amount signed, 2007-2013)



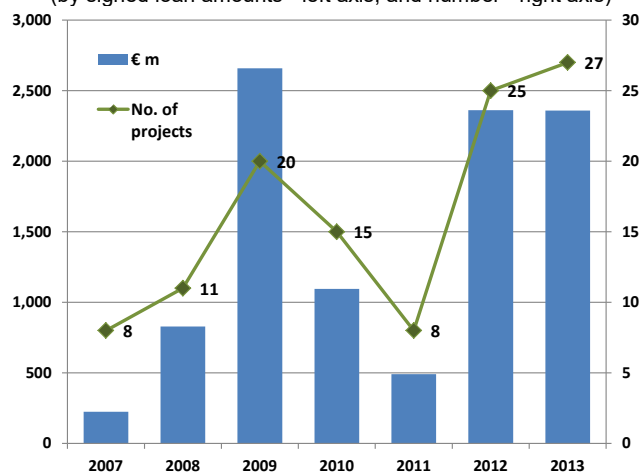
3.1.2. The EIB's blending activities, the RSFF

As depicted in Figure 5, the RSFF has had a rapid ramp up phase (2007-2009) both in terms of number of projects and amount of loans signed. In 2012 and 2013, the total amount of loans signed was close to EUR 2.5bn for a total number of operations of 25 and above.

RSFF COP targets, signed amounts and number of projects were lower in 2010 and 2011. One of the reasons for the slow-down in RSFF signatures concerned a technical problem on the EU Window of the RSFF, which limited the number of transactions on that window and led to the adoption of a "first loss piece" principle after 2011.

Overall, the RSFF initiative developed quite rapidly. RSFF operations now represent 24.8% of the number of loans signed in the Bank's KE portfolio (compared to 15.1% in 2007).

Figure 5: Evolution of the RSFF operations
(by signed loan amounts - left axis, and number - right axis)



In complement to the loans provided to sub-investment grade operations under the RSFF main compartment, the RSI (Risk Sharing Instrument) was created in December 2011. The RSI is a guarantee scheme managed by the EIF aiming to improve access to debt finance for innovative SMEs and small midcaps. This scheme has been deployed between 2012 and 2014 through 36 selected financial intermediaries across the EU. These financial intermediaries provide in return loans, financial leases and loan guarantees to innovative SMEs and small mid-caps for a total amount of guarantees of EUR 1.6bn. The RSI operations reached a wide range of countries (18 as at end of 2014) (see Annex 3, Figure A 3.4).

3.1.3. EIB'S advisory activity and other KE-related activities

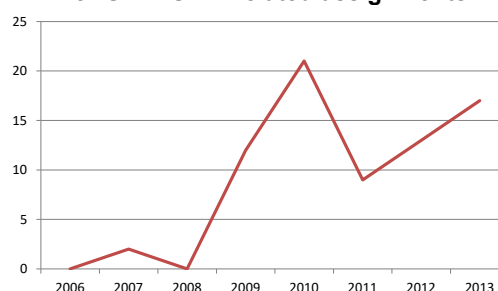
Several KE-related advisory activities were developed by the EIB Group, either in the framework of the JASPERS initiative or in connection with the setting up of the Advisory Service Department (InnovFin Advisory) and the EIB Institute. While all these Services operate within the KE space, each of them has specific objectives, mandates and governance structures.

JASPERS

During the programming period 2007-2013, JASPERS completed 39 technical assistance assignments for a total cost of EUR 4.58M²³.

Figure 6 shows a slow start (2006-2008) since at the beginning of this period, the KE was not part of JASPERS business. This changed in 2008 and the number of completed KE assignments grew very rapidly in 2009 and 2010. Since 2011, which saw a sharp decrease as compared to the previous year, KE related activity has been steadily increasing, and is currently between 10 and 20 assignments per year. These assignments have predominantly supported projects in the RDI sector (39%), but also in the ICT (29%) and culture (28%) sectors. Many concern R&D infrastructures, science parks, science museums, and broadband infrastructures providing access to high-speed internet and telecom services for rural populations.

Figure 6: Evolution of the number of completed JASPERS KE-related assignments



Assignments in Poland (32 assignments) represent 53% of the overall portfolio, followed by the Czech Republic (10%), Malta and Romania (7% each). However, a diversification of the number of countries benefiting from JASPERS' assistance in relation to KE projects is noticeable since 2012 (see Annex 3, Figure A 3.5).

Despite this noticeable expansion and relative spatial diversification, KE-related assignments still represented a stable, albeit limited share of JASPERS activity, fluctuating at around 10% of the total number of assignments since 2009 (see Annex 3, Figure A 3.6). Moreover, the comparison between the country share of JASPERS KE portfolio to the country share of EU cohesion funding related to KE highlights the fact that some countries are over-represented (in comparison to the amount of EU cohesion funding earmarked for KE), such as Poland and Malta, whereas some other countries, such as Hungary, Greece, and Slovakia, are under-represented within the KE-related JASPERS portfolio (see Annex 3, Figure A 3.7)²⁴. Further analysis would be required to determine to what extent these discrepancies may be justified. It should also be taken into account that some countries are underrepresented as the JASPERS activity in these countries only started recently and the data available reports on completed and not ongoing assignments. In addition, not all countries were eligible for JASPERS support during the period under review.

The role of the Advisory Services Department (ASD)

The new Advisory Services Department (ASD), created in 2012 within the EIB, supported four projects in the different KE-related fields as part of its pilot work programme²⁵. Since mid-2014 when a specific agreement with the EC was signed, the ASD/RDI unit has a separate work programme under the InnovFin framework to improve the investment readiness of innovative projects and the fit of the existing InnovFin financial products with Horizon 2020 policy objectives. InnovFin Advisory has today a role close to that of a market-readiness accelerator within the Bank, contributing to making segments of the markets that are not entirely mature more quickly profitable or at least allowing to further explore this

²³ Estimated total cost of assignments as provided by JASPERS. A dedicated team for KE was set up in 2010 by JASPERS but KE assignments were dealt before that to a limited extent.

²⁴ EU shares refer to the total of EU cohesion funding KE-related and for Member States benefiting from JASPERS support.

²⁵ The four projects concerned life science (tuberculosis vaccine), fuel cells, spallation source and an internet platform.

possibility. From this perspective, InnovFin can be regarded as a “financial engineering laboratory” able to develop new business models to be mainstreamed in the future.

InnovFin Advisory currently has two types of activity: Project Advisory and Horizontal Activities. Through Project Advisory, InnovFin Advisory helps specific projects and companies to have a faster and more efficient access to financing, from EIB and other sources. Horizontal Activities are used by InnovFin Advisory to perform market analysis, identify market gaps or inefficiencies and to propose solutions to improve access-to-finance conditions within specific market segments or industries covered by the Horizon 2020 programme.

Currently, InnovFin Advisory has six live Horizontal Activity mandates, covering wide ranging access-to-finance issues related to thematic areas of Key Enabling Technologies (KETs), Circular Economy, Bio Economy, Strategic Energy Technologies, Research Infrastructures and Global Health /Infectious Diseases, which each have also a project advisory component.

The EIB Institute

In addition to the lending and advisory activities, the EIB has also reinforced the role of the EIB Institute as regards its contribution to the KE. The EIB Institute has seen an increase in its KE-related activities when it assumed responsibility for the EIBURS programme. This programme, created in 2006, supports EU University Research Centres as well as research centres, foundations, and institutes working on research topics and themes of major interest to the EIB. After open calls for tender, beneficiaries can obtain up to EUR 100,000 per year, for a period of three years, to develop activities in a selected area of research²⁶. Since its creation, the EIBURS programme has financed 22 lines of research for a total committed budget close to EUR 7m. These lines of research touch upon a wide range of scientific and academic fields in connection with EIB actual or potential activities²⁷.

3.1.4. The EIF’s KE-related activities

In addition to the RSI mentioned in section 3.1.2 above, EIF supported the strengthening of the European KE with three types of activities²⁸:

- Venture Capital (VC), defined as a type of equity providing financial capital to early-stage, high-potential growth start-up companies²⁹;
- Technology Transfer (TT), defined as the process of transforming the results of R&D into marketable products and services. This is generally achieved via the collaboration between research organisations and industry, the licensing of intellectual property rights, or the creation of start-up businesses or university spin-off companies;

²⁶ These activities should be in addition to those normally carried out by the beneficiary centre

²⁷ Among the recent ones: Cost/Benefit Analysis in the Research, Development and Innovation Sector, EU IP regimes.

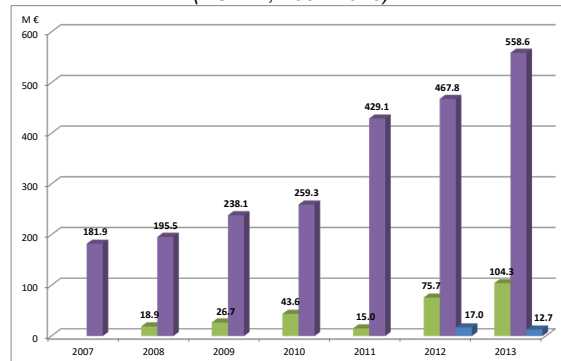
²⁸ These activities are also the only ones producing sufficient data to be able to measure their evolution over the period.

²⁹ VC is directly linked to KE since it concerns investments in companies developing new processes, new technology or new business models in high technology industries, such as biotechnology or ICT. By extension, all VC activities of the EIB have been included in the scope of KE.

- Business Angels activities: a business angel is usually a former entrepreneur or professional who provides starting or growth capital in promising ventures, and helps also with advice and contacts. To address the needs of business angels, in 2012 the EIF designed a dedicated fund, the European Angels Fund (EAF). The EAF provides business angels equity for the financing of innovative companies (in the form of co-investments).

Both VC and TT operations have risen sharply during the period 2007-2013. The amounts committed increased threefold for VC and sixfold for TT (Figure 7).

Figure 7: Amounts committed by EIF KE-related products
(EUR m, 2007-2013)



Sector-wise, projects in the ICT and life sciences (sometimes combining the two), represent more than 80% of the amounts committed, whereas clean technologies (also called “Cleantech”)³⁰ account for 12% (see Annex 3, Figure A 3.8).

The dominant position of the EIF on VC and TT

The rapid growth of VC activities made the EIF the leading player on the European VC market, with a market share of 14% (EUR 558m of signatures) on an estimated total EU VC market of EUR 4bn in 2013³¹.

Similarly, with regard to Technology Transfer activities, the EIF has become one of the main European investors, providing guidance and cornerstone funding to some highly reputed research institutes in Europe, which are becoming major players in this emerging market segment.

3.1.5. Conclusion to Portfolio Review

As a response to the imperative to play a more active role in the field of KE and with a view to addressing certain types of needs and target groups, the EIB Group has diversified its activities in several directions:

- New joint instruments with the EC, blending EU and EIB resources to allow increasing support to riskier operations (RSFF);
- Increased implication of the EIF via the participation to the RSFF/InnovFin instruments and the development of Venture Capital, Tech Transfer and Business Angels funds and agreements;
- Enlargement of JASPERS coverage to KE activities;
- Creation of dedicated advisory Services for complex KE projects;
- Reinforced role of the EIB Institute as regards KE-related activities.

All these activities have seen a significant growth in absolute figures usually combined with a wider distribution in terms of countries covered. However, in relative terms, KE-related activities remain concentrated in lending on certain countries (more than two-thirds of the lending portfolio for five countries: Germany, France, Italy, Spain and the UK), and in certain industrial sectors (automotive and other manufacturing in particular).

3.2. THE EIB LENDING PORTFOLIO IN PERSPECTIVE

The EIB’s lending portfolio is analysed in this section first against the targets set annually in the EIB COP and against broader multi-annual goals. Second, it is assessed from a macroeconomic perspective, in terms of its overall weight in the European KE.

³⁰ They includes recycling, renewable energy, information technology, green transportation, electric motors, green chemistry, lighting, greywater, and many other appliances that are now more energy efficient.

³¹ Source: European Equity and Venture Capital Association.

3.2.1. Achievement of COP targets

Two targets related to i2i and KE were fixed in the various EIB COP documents over the period 2007-2013. These are: (i) the amount of i2i/KE-related loans to be signed by the Bank and (ii) the amount of VC to be committed by the EIF. The EIF has slightly under-performed over the 2007-2013 period (commitments are below targets for four out of the seven years, see Annex 3, Figure A 3.9). Nonetheless, the Bank has over-performed, in particular during the period 2006-2009. Regarding VC, it should however be noted that the under-performance is also linked to the financial crisis where VC was not in high demand.

The share of KE within the EIB lending portfolio did not significantly increase over the period (see Annex 3, Figure A 3.13). At the same time, KE lending remained stable in comparison to economic and social cohesion (ESC) lending (the ratio economic and social cohesion lending / KE lending was approx. 1.5 throughout the period). Although ESC is the main priority for the EIB as per the statutes of the Bank, KE is often presented by the EIB as equally important in strategic terms.

3.2.2. Achievement of multi-annual goals

Beyond COP targets, the EIB Board of Directors set four broader multi-annual goals in the policy paper adopted in May 2008. These goals were presented in section 2.2.2 above. The current section outlines the extent to which the EIB KE-related lending portfolio met these goals.

Targeted lending volumes

The first goal defined in 2008 was to maintain the annual lending level for KE at EUR 10bn and to reach a cumulative target of EUR 60bn over the period 2008-2013. The 2008-2013 yearly average lending level for KE was EUR 12.8bn. The cumulative lending volume for the period was EUR 77bn, which represents +28% compared to initial targets. The first goal was therefore reached.

More private sector R&D and higher support to SMEs/midcaps

The second goal was to achieve a shift towards more private sector lending for R&D projects, with a special focus on SMEs and midcaps, while maintaining a balanced support to larger enterprises.

The overall split between private and public promoters did not change substantially in the KE portfolio during the 2007-2013 period. However, a closer focus on RDI programmes shows a shift towards private sector lending, as its share increased from 50% in 2007 to over 70% in 2013 (see Annex 3, Figure A 3.10 and Figure A 3.11).

The special focus on SMEs and midcaps is difficult to achieve in the field of KE with traditional EIB instruments. Only a very limited number of SMEs (2) and midcaps (1) were directly financed by the Bank during the period 2007-2013. In addition the proportion of intermediated operations³² in the KE portfolio was very small (on average, 3.2%) (see Annex 3, Figure A 3.12). However, as underlined in section 3.1.2 above, since the creation of the RSI in December 2011, 36 RSI guarantee schemes were signed with financial intermediaries in 18 different countries, providing support to 1376 SMEs (in the form of loan and leases totalling EUR 3.2bn)³³. The RSI thus offset to a large extent the difficulty initially encountered during the period 2008-2011 in reaching SMEs and midcaps in this area of activity. The goal fixed in 2008 can therefore be regarded as achieved. One should also consider that there might be intermediated loans for which some of the SMEs and midcaps supported are in KE-related areas but not necessarily “flagged” as such in the EIB systems.

Diffusion of innovation to convergence regions

The third goal set in 2008 was to continue supporting the diffusion of innovation to EU regions needing to catch up with those performing better. This additional support in favour of convergence regions and countries can be estimated, as illustrated in Figure 8 below, by comparing the two following variables:

1. The share of a country in the EIB KE-related lending portfolio (red curve). Germany accounts for close to 25% of this portfolio, Italy for about 13%, the Netherlands for 1% and so on.

³² Intermediated loans are EIB's main channel for reaching out to SMEs and Midcaps.

³³ As of September 2014.

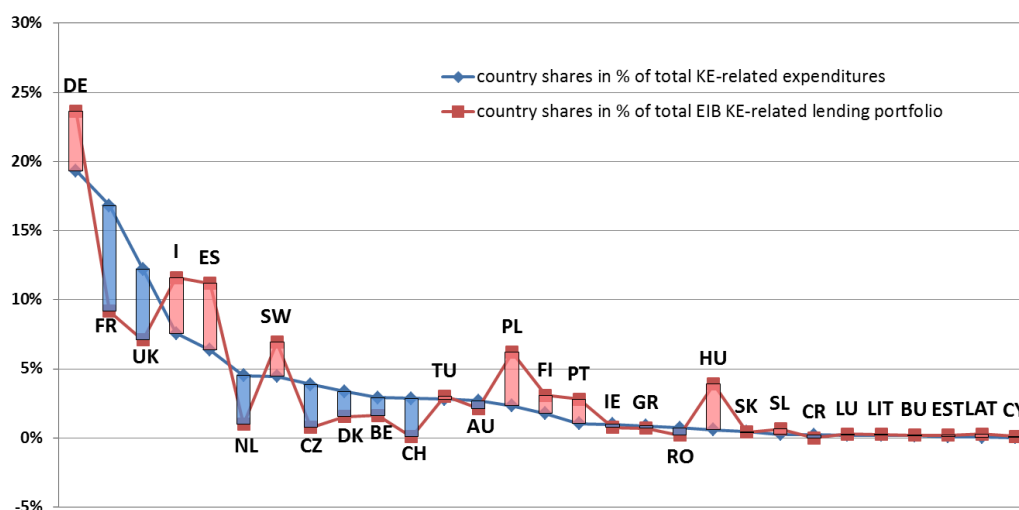
2. The share of a country in the total EU 35 KE-related expenditure³⁴ (blue curve). Germany's share is just under 20%, Italy's is about 7%, the Netherlands' close to 5%, etc.

If the percentage on variable 1 is higher than that on variable 2, a red bar appears on the graph (e.g. Germany, Italy). If the contrary is true, the resulting bar is blue (e.g. the Netherlands). In principle, if this goal would be totally achieved, the countries in convergence would all be in red whereas the non-convergence countries would all be in blue.

The comparison between these two variables therefore provides some insights into the level of financial support provided by the EIB to the diffusion of innovation. The assumption is that if a country's share in the EIB lending portfolio is higher than in the total EU-35 KE expenditure, EIB is supporting diffusion of innovation in that country. However, the extent to which the EIB lending portfolio meets the goal of the diffusion of innovation to EU regions lagging behind can only be approximated, because data on variables 1 and 2 mentioned above are available at national (not regional) level³⁵.

Based on the information in Figure 8 and the assumptions outlined above, this goal can be considered as met for some countries in convergence (such as Hungary, Portugal, Poland, Latvia and Slovenia), but not for others (Czech Republic and Romania).

Figure 8: Comparison of KE-related EIB portfolio and KE-related expenditure country shares³⁶



Portfolio diversification and use of new financial instruments

The Bank's lending portfolio also measures up well against the fourth and last goal of 2008: to systematically use innovative financing solutions and diversify the EIB product portfolio in terms of assuming higher risks. Innovative financing solutions have been largely mobilised in the framework of the implementation of the RSFF and the design of its successor (InnovFin). In addition, the proportion of operations below investment grade³⁷ in the EIB KE lending portfolio increased, from 15 to 29 % between 2007 and 2013 (see white trend line of Figure A 3.14 in Annex 3).

The assessment of the EIB lending portfolio shows that the rather ambitious annual COP targets and multi-annual goals of the KE programme have been achieved. Difficulties encountered during certain periods of time, for certain target groups (e.g. SMEs, midcaps) or certain types of products (e.g. intermediated loans) were by and large successfully overcome, inter alia through the use of innovative instruments.

³⁴ Total KE-related EU 35 expenditure is the sum of: CAPEX in education + R&D expenditure + CAPEX in the ICT sector.

³⁵ Even though for most of the convergence countries, regions in convergence cover almost all the country.

³⁶ Figure 8 includes only 29 countries since in the remaining six, no EIB operations have been signed over the period 2007-2013.

³⁷ From D- and below according to the EIB loan grading system (equivalent to BBB in Standard & Poor's rating system).

3.2.3. Weight of the EIB KE lending in the European knowledge economy

The weight of the EIB portfolio in the European knowledge economy is assessed at European and national level in terms of the three main areas of the KE (RDI, ICT and Education).

Average weight of EIB lending portfolio in EU KE expenditure: 1.9%

The EIB KE lending portfolio accounts, on average, for approximately 1.9% of EU KE-related expenditures over the observed period³⁸ (see Annex 3, Figure A 3.15). This share is much higher during the crisis period (2009-2010), up to 2.7%.

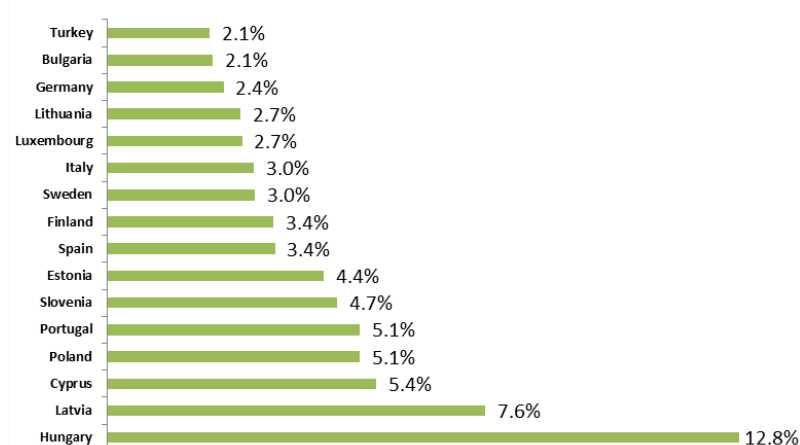
With regard to the Lisbon and Europe 2020 key objective to increase the percentage of the EU GDP invested in R&D up to 3%, the contribution of the EIB corresponds to an average increase of +0.07 point (from 2.07% without EIB lending to 2.14% with EIB lending, see Annex 3, Figure A 3.16).

Weight at country level

However, some substantial differences are noticeable between countries (see Figure 9). The weight of EIB lending as compared to total KE-related expenditure is:

- Largely above the EU 35 average in Hungary, Portugal, Poland, Latvia, Slovenia and Spain;
- Above average in eight countries, including Germany, Sweden, Italy and Finland;
- About average in Bulgaria, Austria, Turkey and Slovakia;
- Below the EU 35 average in 11 countries such as France, the UK, Belgium, the Netherlands, Greece and Romania.

Figure 9: Countries with an EIB contribution above the EU 35 average

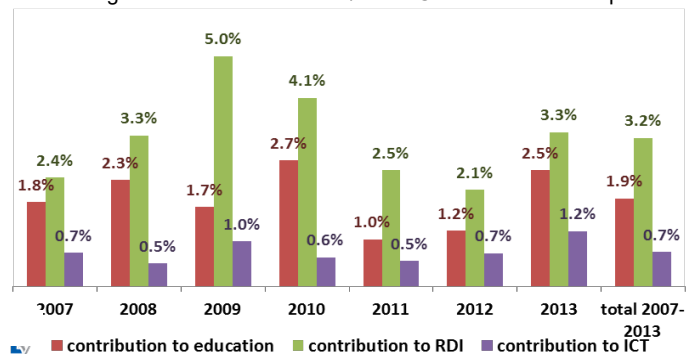


³⁸ The ratio used in this calculation is: Total EIB KE-related loans signed / total KE-related capital expenditures at the aggregate level of the 35 countries considered. Total KE-related capital expenditures correspond to the sum of Education, R&D and ICT capital expenditures. A technical note (Annex 9) provides details on the methodology used in this section.

Weight in different KE areas

The weight of the EIB lending portfolio in the three areas, of the KE varies over the period and between areas although it remains highest in RDI (see Figure 10). During economic downturn (2009-2010), the weight of EIB's lending portfolio as compared to the overall KE-related expenditure was noticeably higher, shooting beyond 4% for RDI.

Figure 10: Sectoral contribution of the EIB KE lending portfolio
(Total EIB signed loans in each sector/total EU+ sector-related expenditures)



The relative importance of EIB KE-lending is even more visible for specific areas at national level. Over the period, EIB lending represented a large part of:

- The educational CAPEX in Portugal (44%), Hungary (22.6%), Cyprus (11.4%) and Ireland (10.3%);
- The national R&D expenditure in Latvia (26.7%), Hungary (23.5%), Poland (18.5%), and Lithuania (11.0%);
- Although a little less significant on average, EIB lending to the ICT sector has been particularly important in Hungary (3.7% of the national ICT CAPEX), Bulgaria (3.5%), Estonia (2.6%), Portugal (2.0%) and Italy (1.9%).

In conclusion, the current EUR 89bn lending portfolio of the Bank represents an estimated market share of 1.9% of EU 35 KE expenditure. This is significantly higher than prior to 2000, both in nominal terms and as a proportion of total KE expenditures at that scale. This participation was particularly important during the financial crisis, hence having a countercyclical role, for some convergence countries (such as Hungary, Poland, Latvia or Portugal) and for some areas in those countries (i.e. education in Portugal).

SECTION 4. PERFORMANCE OF THE OPERATIONS AND THEIR KE-RELATED OUTCOMES AND IMPACTS

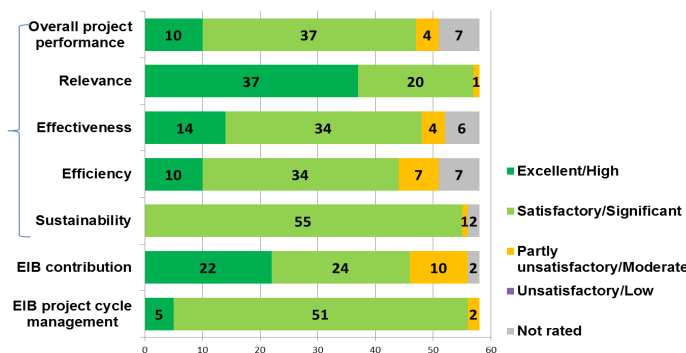
Section 4 presents the main findings from the evaluation of the sampled operations, grouped around the six evaluation criteria: relevance, effectiveness, efficiency, sustainability, EIB contribution and EIB project cycle management. For each criterion, a brief overview of the performance is provided, including some insights in the differences in performance of various project sub-groups, when relevant. In addition, a number of cross-cutting points are highlighted. A more detailed analysis of many of these points, including more examples taken from the project sample, is presented in Annex 5. In addition, section 4.8 provides an overview of the main KE-related outcomes and impacts as emerging from the operations sample. The detailed analysis is found in Annex 6.

4.1. OVERALL PERFORMANCE AGAINST EVALUATION CRITERIA

Overall, the 58 projects that were examined as part of the evaluation sample performed well in terms of the evaluation criteria. Figure 11 provides a summary of the ratings given to the projects with regard to relevance, effectiveness, efficiency sustainability, EIB contribution and EIB project cycle management.

The overall performance of 81% of the projects examined was rated as being either excellent or satisfactory. Issues linked to effectiveness led to a partly unsatisfactory performance rating for four projects. In two of these four cases, the negative rating was further accentuated by efficiency issues. The overall performance for several projects (7) could not be rated because the required information, mainly related to aspects of effectiveness or efficiency, was not available. A number of other difficulties hindered IG/EV when trying to rate the operations (see Section 1). No operations received an unsatisfactory/low rating for overall project performance or for any of the evaluation criteria.

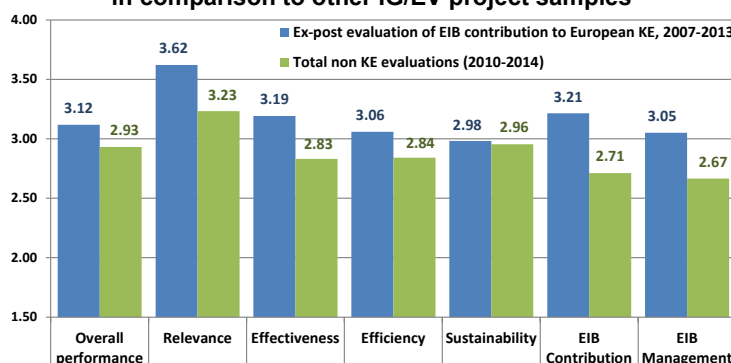
Figure 11: Overall ratings for evaluation criteria



Comparison with previous evaluation exercises carried out by EV

The overall performance of this project sample is not significantly different from the performance observed during previous evaluation work undertaken by IG/EV (see Figure 12). Average performance³⁹ is higher than for the evaluation exercises carried out since 2010 (3.12 vs. 2.93)⁴⁰.

Figure 12: Overall performance of the KE project sample in comparison to other IG/EV project samples



4.2. RELEVANCE

The projects scored particularly well in terms of their relevance to key stakeholder objectives (64% excellent, 34% satisfactory and only one operation rated partly unsatisfactory). There was a predominance of high ratings in the RDI and ICT areas. In the case of RDI, projects in the pharmaceutical sector as well as projects in the automotive and machinery sector were expected to generate benefits which went beyond the knowledge economy boundaries, thus increasing their relevance. In the case of ICT there were a large number of projects with a strong focus on convergence, rural or less developed areas, thus contributing to bridge the digital divide, a priority for both the EU and the EIB.

Only implicit alignment with EU, national, regional and local policies and other stakeholders' strategies

The alignment of the objectives of the operations in the sample with EIB and EU priorities was strong. However, this alignment was not explicitly assessed in EIB project documentation. The evidence suggests that this alignment is sought "upstream", at portfolio level, for example when identifying the EIB priorities (see Table A 5.13 in Annex 5). However, among the projects in the sample, few made an explicit attempt to describe and when possible optimise the complementarity of EIB funds with national

³⁹ To generate these figures, all excellent ratings were given a value of 4, all satisfactory ratings a value 3, all partly unsatisfactory ratings a value of 2, and all unsatisfactory ratings a value of 1.

⁴⁰ The comparison was made with the following evaluation exercises: Economic and Social Cohesion, Intermediated lending to SMEs in the EU, Energy Efficiency and Framework Loans. It should be noted that EV's interpretation of some of the evaluation criteria has slightly evolved over the recent period, making this comparison only valuable on its main trends.

or other EU interventions. An equally small number tried to include other key stakeholders in the design or during the implementation of the operation. In the case of operations supporting the public sector, this complementarity was stronger but not necessarily the result of a proactive EIB approach to maximise it. Public entities, due to their policy-oriented nature, normally pursue similar goals to those of the EIB.

EU regulation emphasises the need for complementarity. For instance, through the regulation of CO₂ emissions, the EU creates a need for companies in the automotive sector to continuously invest in R&D in order to create technologies which help meet these standards. By supporting RDI projects in the automotive sector that aim to comply with EU regulation, the EIB thus demonstrates a high level of alignment with EU policies. Hence, EIB support to the automotive sector for this type of investments not only contributes to the knowledge economy development, through RDI investments, but also contributes to important climate change priorities.

The check on complementarity between the operations supported by the EIB and national and subnational public programmes is only incidental in the appraisal. Several cases in the sample have shown that the anchorage of an operation in its socioeconomic and policy environment influences its potential impact. This evidence underlines the need for the Bank to pay increased attention to the issue of complementarity and proactively seek synergies with national and subnational policies.

Clarity of objectives

The formulation and monitoring of medium and long term objectives of the projects is problematic. The tension arises, *inter alia*, from the misalignment of information presented in the Board Report with respect to expected outcomes and impacts of the operations and the monitoring requirements that are agreed with the promoter. Although it is understood that the medium and long term objectives should not be contractually binding, they could be discussed upfront with the borrowers in order to clarify EIB's expectations and provide a more holistic view. This could facilitate project monitoring and reporting and allow the EIB to better demonstrate its contribution. In several cases in the project sample, the Board Report presented a more complete view of what was anticipated from each operation, hence creating expectations as regards the short, medium and long term goals. However, since these objectives were not formally set or even informally agreed or communicated with the promoter at the onset of projects, it was more difficult to reconstruct the objectives of each operation, in order to properly assess their effectiveness.

Interconnections across the three knowledge economy areas are frequent

Operations in the EIB's KE portfolio are tagged as having a specific focus on at least one of the three areas (RDI, ICT and education). However, the analysis of the underlying investments of each operation evidenced an implicit or explicit support of two or even all three areas of the KE. This is to be expected, as education reinforces the knowledge base, RDI helps to expand it and ICT acts as an enabler.

This implies that the choice of putting education, RDI and ICT under the umbrella of KE is a judicious choice of the Bank, even though numerous clients interviewed in the course of this evaluation do not relate to the concept of KE.

4.3. EFFECTIVENESS

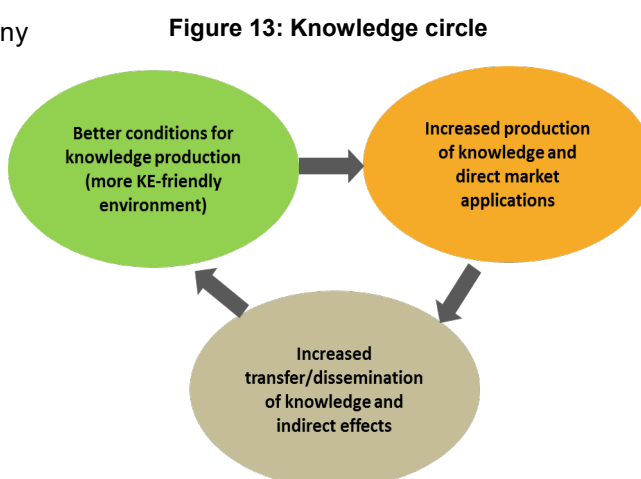
Overall the projects scored well in terms of their effectiveness (24% excellent, 59% satisfactory and 7% partly unsatisfactory). The high number of operations in the sample supporting large corporates, leaders in their sectors of activity, and in many cases with R&D intensity above the sector average⁴¹, are considered to have resulted in a higher rating for effectiveness. A relatively large share of the projects (10%) could not be rated mainly because there was not enough information available.

IG/EV usually assesses effectiveness based on the extent to which the operational, intermediate and global objectives of the project have been achieved or are expected to be achieved. The nature of many of the objectives, especially for RDI and education, makes it more difficult to extrapolate the potential achievement of the objectives which generally requires a much longer timeframe than for other EIB priorities.

⁴¹ Especially for operations in the pharmaceutical sector.

The effects of the KE operations co-financed by the EIB are presented in this section clustered around three different levels which correspond to the three phases of the knowledge circle (see Figure 13):

- Upstream of knowledge production. Many operations have first contributed to the creation of a more favourable or KE-friendly environment;
- Knowledge production. Almost all operations produced additional knowledge, developed innovative products and services;
- Downstream of knowledge production. Many operations contributed to knowledge transfer and dissemination, which triggered several indirect effects. These effects reinforced in return the preconditions for knowledge production, hence closing the circle



These three levels are closely reflected in the intervention logic (see Figure 2, Section 2.3), primarily at the intermediate objective level. These intermediate objectives are in turn linked to the operational objectives and to the global objectives. Upstream effects, knowledge production and downstream effects are summarized below in sections 4.3.1, 4.3.2 and 4.3.3. A more detailed analysis is provided in Annex 6.

4.3.1. Upstream effects - a more favourable KE enabling environment

The various projects contributed to creating a more KE-friendly environment by:

- Creating additional building or installation capacities, especially in the form of science or business parks. These new facilities attracted new start-ups or led to brownfield rehabilitation;
- Offering more and better education, teaching and research facilities, which in turn attracted more researchers and students;
- Maintaining, securing and creating RDI jobs. Net creation of jobs was identified in at least eight projects. Since many operations were under implementation during the crisis, one should consider that maintaining jobs is already a positive outcome;
- Supporting regional clusters in sectors such as life sciences, aviation, automotive, forestry etc. and thereby increasing the attractiveness of cities or regions where these are located;
- Strengthening key actors in the KE field, i.e. the promoters. Concrete examples include enhanced cooperation between different units involved in a project; the creation of new entities to articulate related activities; general improvements in the workplace of the companies, etc.;
- Granting better access to telecommunication networks (e.g. GSM coverage, high speed broadband penetration) to previously poorly-served areas, hence leading to time savings, increased productivity, new business opportunities and, not least, a reduced digital divide for the entire economy.

One area of unfulfilled potential remains the support of innovative SMEs and midcaps, through intermediated loans. The projects in the sample showed that sometimes only a small number of SMEs was reached and that the focus on *innovative* SMEs and midcaps was not systematic. However, the scarcity of project monitoring data makes it difficult to assess the impact of these projects beyond the benefit of improving access to finance.

4.3.2. Knowledge production and direct market applications

Additional production of knowledge and reinforcement of promoters' RDI capacity (or intensity) is directly mentioned in 23 projects in the sample. Outstanding examples include: the development of a new therapy to treat cancer; the application of nanotechnology principles to reduce the cost of catalysts and improve the efficiency of fuel cells; the introduction of vehicles with CO₂ emissions below the European regulatory requirements, etc. The additional production of knowledge is further evidenced by the increased number of patent applications – in some cases, a fourfold increase in less than 10 years.

The first direct effects of additional knowledge gained concern (i) the setting up of new industrial processes, specifically mentioned in seven projects, and (ii) the development of innovative products, in eight projects. Additional or more efficient services to the population (e.g. better quality of image and sound through the digitalisation of broadcasting) were also developed in the framework of many projects financed by the Bank. Beyond innovative products, processes and services, a majority of projects (31) contributed to the strengthening or safeguarding of the promoters competitive position in the market. In some cases it helped them penetrate new markets as well.

The knowledge creation and its application by the promoters increased the competition in the markets. This competition, in turn, created incentives for companies to increase their RDI intensity. This was particularly the case of second-tier companies wishing to catch up with market leaders (pattern present in 12 projects in the sample). In one specific example, EIB support to a new entrant in the market boosted research and competition in what was previously a rather oligopolistic market. Moreover support from the EIB lent visibility and credibility to this newcomer, which resulted in the signing of a concrete cooperation agreement between this company and the former dominant player for the deployment of a specific technology. The two companies are now considering a joint venture to win and implement new projects in a growing international market.

However, to nuance these positive effects, it should be underlined that several projects were mainly implemented in order to comply with new European legislation (so driven by an external factor). RDI projects are also quite sensitive to managerial and political changes which tend to affect the strategic direction of the promoters.

4.3.3. Downstream effects - knowledge dissemination and global effects

In the project sample, knowledge dissemination occurs primarily through partnerships of different kinds. The most common form of partnership is between universities or public research centres and private companies (16 projects). These are often good examples of public-private partnerships, including incubator facilities for early stage spin-offs. Although less frequent, mutually beneficial partnerships between firms and suppliers were also identified in the sample.

Knowledge dissemination was found to have positive effects on convergence and regional development in 13 projects. Three projects made a direct contribution to national R&D targets and one contributed to national telecom targets. Some of the projects supported in the area of education led to additional investments which resulted, as expected, in improvements of the educational performance and attainment, but had further reaching effects as well. In one project, the new facilities allowed children to stay at school longer (pre- and post-school care), hence providing greater opportunities for parents to work longer. This increased participation in the labour market could eventually result in impacts on productivity.

4.4. EFFICIENCY

Overall, the projects scored well in terms of their efficiency (17% excellent, 59% satisfactory and 12% partly unsatisfactory). An additional 12% of the operations could not be rated on this criterion. Project management was particularly strong across most of the operations. This is to be expected considering that: (i) the quality of the promoter is a criterion assessed at appraisal and that (ii) the counterparts for many of the private sector operations were large corporates or midcaps with a strong competitive position in their corresponding market.

Several aspects of efficiency for operations supporting intangible R&D investments were difficult to assess, particularly, project cost and timeliness. The evaluation limited itself to identifying large unjustified deviations from the initial plans for project costs and time lines.

IRR and ERR in knowledge economy operations

The EIB gives higher weight to the ERR (Economic Rate of Return, which measures the economic profitability) in comparison to the IRR (Internal or Financial Rate of Return, which measures the financial

performance)⁴², as part of its policy-oriented nature for operations covering different EIB priorities⁴³. This higher emphasis on the ERR allows the Bank to finance more innovative or more risky projects. Such projects might be less interesting for other investors from a financial perspective (i.e. in terms of lower IRR or higher risk). The relative lack of interest from other investors provides a strong argument for EIB's involvement in areas where promoters might find it more difficult to attract other funds.

Many projects in the sample show that it is not always possible to accurately calculate IRR and ERR (ex-ante or ex-post) since there is no standardised methodology for intangible investments. Intangible investments are more prominent in KE operations than for other EIB priorities. This explains why most of the operations only had a qualitative ex-ante assessment⁴⁴.

Additionally, the information on externalities and economic impact of the projects was not always consistently communicated in the EIB documentation⁴⁵. The EIB officers interviewed during the evaluation considered that it was not necessary to include this information in the project document, as it was often implicit for them since externalities were considered as sector specific and therefore applicable for all operations within each sector. Nonetheless, the absence of this information at appraisal complicated the assessment during the ex-post evaluation, since it was first necessary to identify which externalities were applicable to each operation. The externalities to be expected for sectors and sub-sectors were not documented, so there was also a need for several discussions with sector experts to have a complete view of what these were.

Although it is difficult to quantify externalities, the high economic, social and environmental value of projects within the knowledge economy was clear across the sample. Below, two examples are provided:

- i. There appears to be a high demand for EIB support in ICT investments for the rollout of telecom infrastructure. Most of the operations in the sample supporting telecom networks had strong components covering convergence, rural or less densely populated areas. Such investments contribute to bridge the digital divide, which is a priority for the EU and for the EIB, both as regards the KE and economic and social cohesion. However, those investments with a stronger contribution to reducing the digital divide normally yield a lower IRR but a high ERR.
- ii. Outcomes of investments supporting RDI in the life sciences area (e.g. the pharmaceutical sector), contribute not only to RDI objectives but they also bring wider benefits to society (i.e. potential contribution to public health).

4.5. SUSTAINABILITY

The sustainability of the operations was rated positively across almost all of the operations in the sample (94% satisfactory and only one operation rated as partly unsatisfactory). Only 3% of the operations were not rated under this criterion. In comparison to the ratings for the different criteria, there is clearly a greater share of 'satisfactory' ratings for this criterion (and less "excellent"). This is explained by the more contrasted performance of projects on various sub-criteria that are assessed as part of sustainability. For instance many of the operations supporting R&D programmes of large corporates in the pharmaceutical sector were considered to have an excellent level of physical and operational sustainability as regards the R&D activity supported. However, these companies operate in a sector which is subject to many risks that need to be constantly mitigated, thus reducing the rating.

An important factor that supports sustainability is that promoters of operations supporting R&D investments saw R&D as a strategic expenditure that would have occurred even without EIB support. R&D was viewed as a necessity first and foremost to safeguard the promoter's position in the market.

4.6. EIB CONTRIBUTION

The concept of EIB contribution covers both financial and non-financial VA of the EIB. F VA is assessed in comparison to alternative sources of funding, and by taking on board the specific features of the

⁴² This is not specific for KE, but is more emphasised in this field.

⁴³ The EIB pays more attention to the ERR as it includes not only financial but also social and environmental aspects, in line with its policy orientation.

⁴⁴ The Bank is currently working on developing a better methodology.

⁴⁵ It should be noted that externalities, which are not part of the direct objectives of the projects, theoretically have an impact on the ERR since they reflect economic, social or environmental effects that are difficult to quantify upfront.

transactions (tenor, grace period, currency, etc.). FVA also includes aspects such as the facilitating of co-financing from other sources (catalytic effect). Non-financial VA relates to any non-financial contribution to the operation provided by the EIB, which may take the form of improvements of the technical, economic or financial structuring of the project⁴⁶.

Additionality in this report refers to the capacity of EIB's intervention to generate investments that would have not taken place or where the original scope and timing would have been negatively affected without the EIB loan. Additionality is a sub-component of the EIB contribution.

In order to assess EIB contribution for each operation, results were compared with the original expectations. To ensure a consistent rating throughout the sample, similar operations were benchmarked against each other.

Overall this criterion is the one which had a larger variation in ratings across the sample (38% high, 41% significant and 17% moderate⁴⁷). The large number of operations in the sample having taken place during the crisis resulted in higher ratings for EIB contribution, since during this period the potential sources of funds for counterparts became much more limited or less favorable.

For this criterion, the analysis yielded a large number of observations that deserve to be highlighted and which are detailed in the subsequent paragraphs.

No structured approach to assess EIB additionality upfront

In three operations (5%) strong indications were found that the investments would not have taken place without EIB involvement. For an additional 80% of the operations in the sample, there were indications that EIB support allowed for maintaining the scope and timing of the investments⁴⁸. Nonetheless, it was not possible to quantify the degree to which scope and timing would have been affected without the EIB loan, as no structured approach was used ex-ante to assess expected additionality and more generally EIB contribution. The ex-ante assessment focussed rather on whether the EIB conditions were more favourable than the alternatives available to EIB clients.

EIB flexibility in adapting to promoter's market reality

The EIB demonstrated a high degree of flexibility in adapting to the internal and external changes affecting the promoters, thus facilitating the successful achievement of the objectives. Beyond direct FVA and interest rates, the EIB was generally considered as more flexible than other financial intermediaries in terms of possible loan adjustments. The maturity, tenor and overall wide range of conditions available (grace period, bullet loans, etc.) were among the key advantages underlined by promoters. Some operations could have gone ahead without EIB support, but promoters stressed that the combination of cheaper funding and flexible features allowed these operations to enlarge their scope and materialise faster. This improved EIB additionality.

Alignment of operations' goals to operational reality of promoters

In the majority of cases and for all areas of the KE, the EIB supported wider investment programme that went beyond the scope defined for the "EIB operation". The start and end of the operations were in many cases artificial from the promoters' perspective. In the case of RDI operations in the private sector, many large corporates used the EIB loan as a way to safeguard their RDI budgets, as a sort of "financial safety net". The disbursement of the loan was usually aligned with the time when additional financial resources were needed, so in reality EIB supported the promoter's overall RDI activity, rather than a defined subset.

Overall, it was observed that when the EIB Services aligned the definition of the "EIB operation" and its objectives with those of the promoters, it was easier to monitor and assess success. Reliance on the success measures used internally by the promoters to determine the degree of achievement of the objectives helped IG/EV to better assess these operations. This observation has implications on the capacity of the Bank to demonstrate and report on the outcomes and impacts achieved.

⁴⁶ This definition of EIB contribution is the one EV has used consistently in all of its recent evaluations.

⁴⁷ The rating of this criterion follows a different naming convention for the rating scale i.e. high, significant, moderate and low.

⁴⁸ A decrease in the scope would have meant that part of the investments would not have taken place.

The countercyclical role of the EIB during the crisis

For the large majority of projects in the sample, the EIB's financial contribution has been quite significant. The EIB loans played an important countercyclical role in the last crisis (as stressed, *inter alia*, in the second evaluation of the RSFF) when access to funds for promoters was more limited. This also explains why the Bank's FVA has clearly diminished since 2011, especially for large corporates, Northern Europe and certain sectors, such as automotive⁴⁹.

Limited EIB potential for non-financial contribution

The EIB technical contribution among the evaluated projects tends to be very limited, with only few examples where the EIB appraisal team has played a key role in shaping the project⁵⁰. Very often there was no EIB contribution on this aspect at all, especially in the case of large corporations which already have high levels of technical expertise and can be considered as mature and sophisticated promoters.

Catalytic or signalling effects of EIB's intervention

No evidence of a catalytic (demonstration) or signalling effect was found *ex-post* for the vast majority of the operations in the sample, despite appraisal documents mentioning it *ex-ante*. In terms of financial facilitation, catalytic effects (attraction of additional sources) were observed only in a minority of cases. When present, this effect was linked to the EIB due diligence process, which facilitated the promoters' access to guarantees or other financiers. This "EIB stamp effect" was especially noticeable in the case of the less bankable operations (typically RSFF deals⁵¹).

4.7. PROJECT CYCLE MANAGEMENT

EIB PCM was found "satisfactory" or better for all but two operations (9% excellent, 88% satisfactory and 3% partly unsatisfactory). This reflects that PCM was overall in line with the procedures and requirements valid and applied at the time. However, these ratings do not provide insight on the intrinsic quality of these procedures and requirements. The main findings highlighted below stem from the more detailed analysis presented in Annex 5.

Alignment of project monitoring with expectations set ex-ante for the operations

The objectives included in the contract signed by the EIB and the promoters were usually immediate outputs and were sometimes vaguely formulated. The contracts did not include indications of expected outcomes and impacts. This is to be expected, as the promoters would probably not commit to achieving such high level objectives, which are partially outside of their control. However, making expected outcomes and impacts more explicit would facilitate the Bank's ability to report on results to its stakeholders.

The contractual project reporting requirements that the Bank applies for most operations are generic. As a result, the PPRs and PCRs reviewed in the course of this evaluation often present only a general assessment of project success. However, during the evaluation it was also observed that promoters often had sufficient information to assess the medium and long term objectives more exhaustively than what was reflected in the PPRs and PCRs.

Risks of lack of visibility during implementation

Most of the promoters demonstrated high flexibility and responsiveness in adapting and reprioritising their investments to evolving market circumstances. This was more pronounced among private sector promoters and during the financial and economic crisis. Although adapting to an evolving environment is clearly a good practice, in some cases the promoters did not communicate the changes in the scope and focus of their programmes to the EIB. For those operations, despite changes, the alignment with EIB policies was maintained *ex-post*. However, this limited visibility created a reputational risk for the Bank, as for some periods, the Bank did not have up to date knowledge about the programmes that its loans supported.

⁴⁹ The Financial Value Added (FVA) of EIB loans is assessed in comparison to alternative sources of funding, taking on board the specific features of the transactions (tenor, grace period, currency, etc.) regarding the financial engineering of each operation.

⁵⁰ It is plausible that this non-financial contribution would have been more significant with the integration of RSFF/InnovFin operations into the evaluation sample.

⁵¹ As observed in the second evaluation of the RSFF undertaken by IG/EV in 2013.

EIB long term support through repeat operations

Many promoters value (and therefore try to establish and preserve) a long term relationship with the EIB. Some promoters acknowledged having signed a loan even though they did not need additional funding at the time they applied and signed this loan. For this type of client, preserving a close relationship with the EIB is more valuable in the long run than benefiting from a competitive interest rate. Such a strategy has been more frequently observed since the recent financial crisis and highlights the countercyclical role played by the Bank.

Additionally, it was noted that promoters are willing to undergo a more thorough due diligence process than that required by commercial banks because they anticipate a longer term commercial relationship with the EIB. This was observed with repeat promoters or those which anticipated additional loans to be signed in the near future with the EIB.

4.8. KE-RELATED OUTCOMES AND IMPACTS

The KE-related outcomes and impacts observed for the 58 operations evaluated are substantial as described in Annex 6. Operations supported by the EIB contributed to the creation of a more KE-friendly business environment in Europe by reducing the digital divide, providing additional building and installation capacities for KE-related activities, offering better educational and research facilities, whilst at the same time, maintaining, securing or creating RDI jobs, supporting regional and local clusters, and increasing the attractiveness of the city, the region or the country where they were located.

The most significant effect is however the knowledge and innovation generated by the projects supported by the Bank. This materialised, in particular, in the development of new products, new industrial processes or new services, as well as in an increase (more than doubling in some of the cases observed) in the number of patent applications. As a result, the promoters' RDI capacity increased while company portfolios diversified, new markets were penetrated and promoters' competitiveness was enhanced in almost all cases. Projects in the KE also exhibit positive externalities.

Finally, the contribution of Bank-supported projects to the European KE also lies in the transfer and dissemination of the additional knowledge produced (in particular via increased business cooperation and further networking at sectoral, national and international levels).

4.9. CONCLUSION

For 81% of the 58 projects examined, performance against the four evaluation criteria (i.e. relevance, effectiveness, efficiency, and sustainability) was either excellent or satisfactory. Issues linked to effectiveness (in particular non-achievement of operational objectives and unexpected changes in the scope of operations during implementation) led to a partly unsatisfactory performance rating for 7% of projects. The overall performance for 12% of the operations could not be rated because of insufficient information.

This good performance relies, inter alia, on the promoters' flexibility in adapting their investments to respond to evolving market needs. In most cases, this capacity to adapt was the condition for intermediate objectives to be achieved and for operations to remain both profitable and sustainable.

However, the evaluation of individual operations also highlighted three major concerns:

- Except for the operational objectives included in the contract (immediate outputs), the expected outcomes and impacts of operations were not formally set at the onset. This made it difficult to understand what the broader aims of projects were and to assess the external outcomes and impacts of the operations supported. Making them more explicit during first contacts with the promoter would be beneficial for the Bank to be able to report on results;
- The field work performed for this evaluation confirmed that promoters generally have sufficient information to assess the achievement of medium and long term goals of the projects. However, because the contractual reporting requirements of the Bank were, for most operations, very generic, the PPRs and PCRs only presented a broad assessment of project success. More reliance on reports already produced by promoters in the context of their activity is an option that could be explored;
- Although adapting to an evolving environment is clearly a good practice, in some cases the promoters did not communicate the changes in the scope and focus of their programmes to the EIB. Even though the project sample has demonstrated that despite these changes the

alignment with EIB policies was maintained ex post, this created a reputational risk for the Bank, as for some periods, the Bank did not have up to date knowledge about the programmes that its loans supported;

The KE outcomes and impacts of the operations in the sample are deemed substantial. The most significant effect is the knowledge and innovation generated by the projects supported by the Bank.

SECTION 5. ORGANISATIONAL AND STRATEGIC ANALYSIS

Section 5 presents the diversity of structures and the means dedicated to KE-related activities in the EIB Group. It also highlights the strengths and weaknesses of the current organisation and strategic approach of the EIB Group.

5.1. THE EIB GROUP ORGANISATION

5.1.1. Structures and organisation

Activities related to KE are carried out using the general EIB Group structures and organisation. Nonetheless, several organisational changes occurred between 2007 and 2013 to accommodate KE-related work.

New structures, divisions, teams and coordination mechanisms

The main changes are the following:

- KE-dedicated divisions were reinforced, as illustrated by a 26 % staff increase during the period for PJ Directorate KE-related teams (which correspond to the current INCO). However this increase is below the average staff increase for PJ as a whole (39%)⁵².
- New, units and divisions dedicated to KE-related activities were set up:
 - The New Products and Special Transactions (NPST) department was created in 2005, initially under the denomination of AGI/Action for Growth Instrument, within the OPS Directorate. Its activities are almost exclusively dedicated to KE;
 - The JASPERS team dedicated to KE was put in place in 2010;
 - The RDI unit within the Advisory Services Department⁵³ (ASD/RDI) was created in 2012, initially launched as a pilot initiative under the RSFF and rebranded as “InnovFin Advisory” in 2014⁵⁴;
 - The RSI and Tech Transfer Teams were created within the EIF in 2010;
 - The EIB Institute was created in June 2012 (enlarging and extending some of the past PJ KE-related activities). Its mission is, *inter alia*, to enhance and promote European knowledge sharing via a “Knowledge Programme”, which supports higher education and research activities within Europe, particularly in the field of Applied Economics.
- Creation or reinforcement of specific coordination and knowledge sharing fora such as the Centre of Expertise (CoE) on KE (created in December 2003 as i2i CoE and transformed into CoE on KE in October 2010) and the Innovation Working Group (created in 2012).

All these changes suggest a growing institutional engagement of the EIB Group in favour of the European KE.

Evolution of human resources

This increased mobilisation in favour of the European KE is also reflected in the evolution of human resources dedicated to KE-related activities. This can be measured in terms of number of hours spent by EIB Services on KE operations.

As portrayed in Figure 14, between 2007 and 2013, the number of hours dedicated to KE lending operations (blue line, scale on left axis) has doubled from a little more than 30,000 hours to a little less than 70,000 hours. Until 2010, the number of hours spent by Services is relatively well correlated with the annual amounts of loans signed (red line, right axis). The correlation appears less strong thereafter. After 2010, the correlation remains in place but with a one-year lag, suggesting a “calendar effect”. That

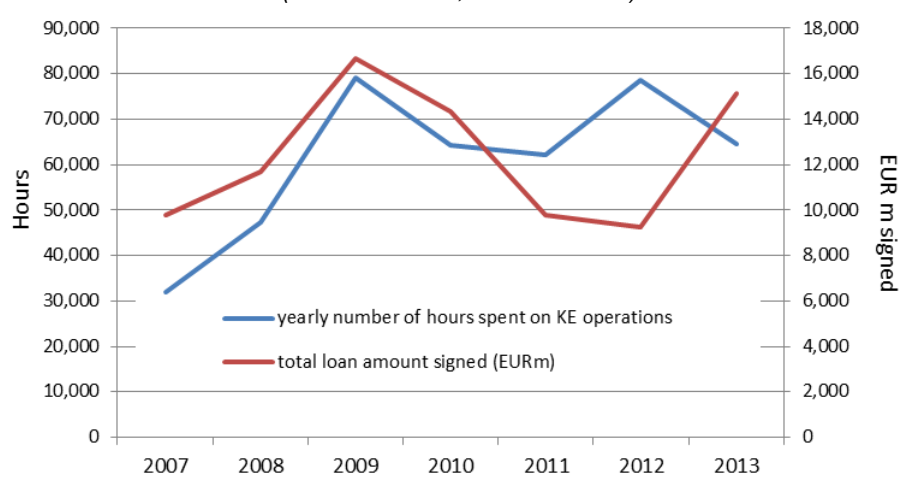
⁵² Source: EIB Projects Directorate. Such a calculation is not possible for the other EIB departments as KE operations cannot be isolated from others

⁵³ Advisory Services complement the Bank’s lending activity by providing its technical and financial expertise to clients to develop and implement complex investment projects and programmes, and to improve institutional and regulatory set-up.

⁵⁴ InnovFin Advisory aims to improve the bankability and investment-readiness of complex projects that need substantial, long-term investments. It also provides advice to improve the investment conditions for access to risk finance for Research and Innovation (R&I) through horizontal activities.

is, the evolution of number of hours spent (blue line) is mirrored in the loans signed (red line) one-year later. This might be explained by two factors: (i) the economic crisis, which led to an increase in the number of hours spent by Services to assess more complex risks and mitigants; and (ii) the increased weight of RSFF operations into the KE portfolio (given that these operations are smaller and riskier operations often negotiated with non-recurrent clients that require additional time at appraisal). On the whole, the increase in the number of hours dedicated to KE-related activities is commensurate with the evolution of volume of KE lending.

Figure 14: Evolution of the yearly number of hours spent on KE lending operations
(all EIB Services, source EIB-CS)



It is generally accepted that EIB Services spend on average more time on KE operations than on non-KE-related operations. This is due to their particular and composite nature, less straightforward or standardised than, for example, large infrastructures projects. KE-related operations can therefore be considered as particularly labour-intensive in comparison to other more classical EIB operations. The fact that the Bank chooses to continue to increase its KE-related activities, despite them being labour-intensive, further illustrates its engagement to the KE.

The increase in the number of hours spent on KE-related activities is distributed evenly between the different EIB Services (see Figure 15).

The distribution of the time spent on KE lending operations between Services is summarised in Figure 16): The Operations Directorate has the lion's share (47%) which corresponds to an early involvement and throughout the project cycle; the Projects Directorate (26%) and the Legal Directorate (13%) have a lower but still important share linked to a slightly delayed and less intensive involvement in PCM. The share of the Risk Management Directorate (8%) is in accordance with its role, limited to credit risk assessment (which is not different for KE projects and for the rest of the EIB's operations). TMR Directorate's share is 6%.

Figure 15: Evolution of the yearly number of hours spent on KE lending operations (by EIB Services)

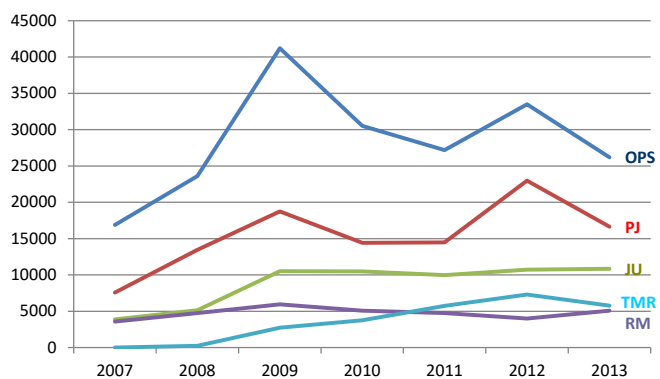
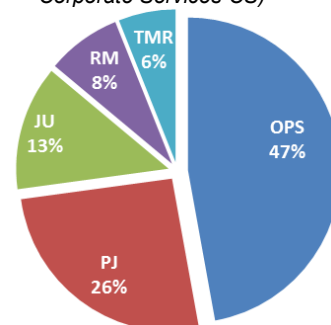


Figure 16: Distribution of time spent by Services on KE lending operations
(KE portfolio 2007-2013, source EIB Corporate Services-CS)



In addition to the number of hours spent on individual operations, several horizontal tasks are regularly undertaken by EIB staff in relation to project pipeline identification, sectoral review and guidance. EIB's increased mobilisation for the KE is thus also illustrated by the increasing number of sectoral guidance documents issued (principally by the Projects Directorate). During 2007-2013, a dozen such documents were issued - three times as many as compared to the period 2000-2006.

5.1.2. Organisational strengths

On the basis of desk reviews, interviews with EIB officers and focus group meetings, the following strengths can be underlined in relation to the EIB structure and organisation related to KE: (i) good complementarity between pilot and mainstream units and divisions; (ii) a high level of acknowledged technical expertise; (iii) good adaptability to change; and (iv) a satisfactory degree of cooperation between Services on projects.

Complementarity between pilot entities and other divisions

Within the OPS Directorate, the good complementarity between pilot entities (designing and initiating new instruments) and other divisions (which mainstreamed these instruments once they reach maturity) is illustrated by the evaluation of NPST's role. NPST develops instruments that are either operated in NPST, given their specific requirements (MGF, PBI), or those that would be rolled out to geographical teams upon completion of the pilot phase (MCG, Jessica).

Initially created in 2005 to be in charge of all RSFF transactions, this OPS department has become, since 2011, more of an internal service provider. It responds to requests for support from the geographical teams and especially deals with pilot instruments.

The piloting and pioneering role is also played since 2012 by the ASD/RDI division which has for instance recently developed a very innovative financial instrument in the field of health research (the Infectious Diseases R&D Funding Facility).

A high level of recognised expertise in the different organisation areas

The high level of recognised technical expertise acquired by the EIB Services – within the PJ Directorate in particular – is a key asset. Sector experts analyse projects at appraisal and support the promoter when required with their sectoral and technical expertise. This was acknowledged by most of the promoters interviewed and observed by evaluators in particular during interviews related to projects and focus group meetings.

An organisation opened to change

Another indication of the way in which the EIB Group is organised for the KE is its openness to change and ability to adapt, as evidenced by:

- The fast integration of KE within the scope of EIB eligibility rules and full acknowledgement of the importance of KE operations (in slightly more than a decade, as depicted in section 2);
- New structures being integrated relatively easily within the EIB organisation (e.g. AGI/NPST in 2005-2009, or ASD/RDI in 2012-2015);
- Most of the recommendations made by IG/EV for the first and second evaluations of the RSFF have been implemented by the EIB Services.

A rather efficient coordination within individual projects

The interviews and focus groups carried out for this evaluation suggest that informal and direct relationships characterise the EIB Group organisation in relation to KE. This generally allows for rapid and efficient coordination between Services. In most cases, issues relating to the due diligence process (design and scope of the project for instance), are resolved within the appraisal team as they arise.

This efficient coordination on projects is evidenced by the fact that:

- No particular tensions between Services were reported for any of the 58 operations included in the evaluation sample;
- The management of the project cycle by the EIB Services has been assessed at least satisfactory in 97% of cases within the project sample.

Even though this may not be specific to KE-related activities, the nature of KE projects, often innovative and unique, may partly explain this feature. For OPS loan officers in particular, ongoing dialogue with PJ remains decisive to understand eligibility rules and guideline documents.

5.1.3. Organisational weaknesses

On the basis of desk reviews, interviews and focus group meetings, four main weaknesses have been identified with regard to the EIB structure and organisation related to KE: (i) insufficient human resources; (ii) the untapped potential of the Centre of Expertise on KE; (iii) insufficient coordination between the EIB and the EIF outside InnovFin; and (iv) the weaknesses of the project monitoring and reporting procedures.

Insufficient human resources dedicated to KE

Evidence brought forth during interviews and focus groups demonstrate a shortage of human resources involved in KE-related activities in the EIB Group. Several important tasks are either delayed or not undertaken at all. For instance, EIB Services are facing difficulties in updating sector papers, despite requests of the Management Committee. This can be directly connected with the evolution of the headcount in the KE-related department of PJ (i.e. INCO) over the period 2007-2013; whereas the headcount of the entire Projects Directorate (PJ) increased by 39%, INCO only saw a 26% increase. This means that despite a stronger emphasis on KE-related activities, the main PJ divisions concerned by KE recorded a decline of their relative size within PJ.

The current scarcity of human and technical resources dedicated to KE is further illustrated by the difficulty of the Bank to fully capitalise on successful pilot operations. The possibility to mainstream such innovative operations is, in practice, limited. The number of hours spent by EIB Services for this pilot case is about twice the average of a standard KE operation supported by the Bank (188 compared to 98.5 staff days). If the Bank decided to enlarge the share of its portfolio for this type of innovative operation, it would require much more resources than currently allocated to KE-related activities.

The untapped potential of the Centre of Expertise on KE

In line with the business focus and risk concentration, the Centre of Expertise (CoE) on KE is mainly focussed on RDI activities and operations⁵⁵, giving little room for other areas of KE activities, in the Education and ICT sectors in particular. The CoE discussions have also been assessed as too technical and not strategic enough (both by the internal survey and by IG/EV's desk review and direct participation). Sector papers issued were discussed if deemed relevant but could be more in the focus of the debate.

Since 2014, the presence of the VP in charge of KE-related activities seems to have contributed to raising the profile of the CoE by boosting attendance⁵⁶. Room for improvement has been identified by IG/EV.

A relative lack of coordination between the EIB and the EIF

The flagship RSFF/InnovFin experience has shown that effective and efficient cooperation between the EIB and the EIF is possible⁵⁷. However, the situation is not the same for all KE-related activities. For instance, the EIB Group's front office contacts with European universities remain largely separated: on the one hand, the EIF contacts them to promote tech transfer structures or funds; on the other hand, the EIB entices them to explore potential new InnovFin deals. There is an agreement between the EIB and EIF whereby EIF consults EIB prior to contacting counterparts (basically banks and administrations of which the EIB is Global Relationship Manager (GRM). The principle of EIB non-objection and in some cases of joint approach of counterparts is encouraged).

The opportunity to present the full palette of the EIB Group's products, and better address our clients' needs, is important and the EIB Group should project the image of coordinated and united entity. Despite the agreement between the EIB and the EIF, there were some indications that coordination could still be reinforced. Although logistical reasons could explain this lack of coordination⁵⁸, the

⁵⁵ This was also one of the main feedback points received after the survey carried out two years ago amongst the CoE members.

⁵⁶ The number of participants doubled since VP's presence is regular.

⁵⁷ As demonstrated in the second evaluation of the RSFF.

⁵⁸ E.g. Difficulty to manage agenda, fix dates and right people to meet with.

difference in size between the Bank and the Fund plays a role too, as it entails a very different bargaining power vis-à-vis counterparts (as well as internally, within the Group). Finally, IG/EV also noticed that only part of the EIF KE-related activities is covered by the CoE on KE. However, the EIF divisions in charge of TT, VC and business angels could also contribute and benefit from participating in the CoE.

Project reporting modalities are often unsatisfactory both for promoters and for EIB Services

Section 4 pointed out several weaknesses in terms of project reporting. In addition, it was observed that an important share of promoters' reports do not cover all aspects identified in the initial appraisal report or are submitted with significant delays. On the other hand, promoters perceive EIB reporting as burdensome. Additional sources for meaningful project reporting seem to exist but in practice, EIB reports fail to include all this information, generating inefficiency and discontent on both sides.

In conclusion, the Bank can build on an overall good level of efficiency and expertise as well as satisfactory coordination between Services on projects. The EIB organisation as it relates to KE suffers nonetheless from a relative lack of resources. Other aspects that can be improved are: the role of the Centre of Expertise on KE; EIB Group coordination and project reporting and monitoring modalities.

5.2. EIB GROUP STRATEGIC APPROACH

5.2.1. Strengths of the EIB Group Strategic approach

According to the desk review and interviews carried out, the main strengths of the EIB strategic approach are: (i) a balanced approach in terms of portfolio; (ii) improved measurability (of achievements); and (iii) a capacity to align promoters' and EU priorities.

A balanced portfolio approach

A key asset of the current EIB approach is that it is based on a large and balanced portfolio of operations representing different levels of credit risk (see Section 3 and Annex 3, Figure A 3.14). The additional risk taken on a limited share of special operations is offset by the large volume of "plain vanilla" operations. Such a balanced approach is also characteristic of the EIF, since the Fund's lower mid-market (LMM) operations offset the higher risks taken on early-stage investments (for VC and TT).

The current EIB strategic approach relating to KE is further characterised by a set of complementary instruments able to offer clients a broad range of financial products (as illustrated by InnovFin). There is a clear distribution between the Fund and the Bank in terms of products offered. While the former focuses on guarantees and VC, the latter mostly provides loans. The distribution of roles between the Fund and the EIB is less clear in terms of companies targeted. Both the Fund and the Bank service SMEs and small midcaps. In the case of InnovFin this distribution of roles is clear, both in terms of products but also in terms of clients.

This balanced portfolio approach limits the risk that the EIB can take on any given market. A recent flagship operation signed in June 2014 illustrates the point. According to the agreement signed between the EIB and the promoter, up to EUR 75m were made available for the development of new compounds. The novelty of this transaction lies in the Bank receiving repayments if and when predefined milestone events are successfully achieved. This innovative partnership gave strong incentives to the company to invest in its development programmes, because the Bank was willing to bear such a large share of the risk. However, the Bank can only sign a limited number of such risky agreements if it wishes to preserve its AAA rating on the financial markets which is currently one of the pillars of its business model.

An increased measurability

The measurability of the EIB activity improved following the recent introduction of results indicators for EU countries. Sector specific indicators, capable of measuring the outputs and outcomes of projects are now required for each new project. A first list of indicators per sector (including for KE) was established and will be regularly updated. However, indicators only capture tangible achievements (e.g. number of patents), whereas intangible acquisition of knowledge remain harder to measure. Confidentiality issues may also limit the possibility to inform indicators that are too specific. Additionally, since this change is recent, the operations in the sample did not include these new indicators and IG/EV could not assess their use and value.

Bringing the public and private actors closer

As demonstrated in the project sample the EIB can play an important role in strengthening the linkages between public and commercial actors (e.g. technology transfer in the form of spin-offs and licensing). This is beneficial for both parties. For example, the experience of one of the projects shows that business technology transfer centres integrated in the university structure can increase the ranking and status of the university and bring significant social and economic benefits in the medium and long term. Another project showed how technology parks might link the commercial interest of private companies with expertise of research institutes and universities. Finally, the evaluation sample also included an example showing that a hands-on approach of investment funds managers with investees in the area of ICT increases the profitability of investees but also their social results (e.g. by investing in the infrastructure of rural areas).

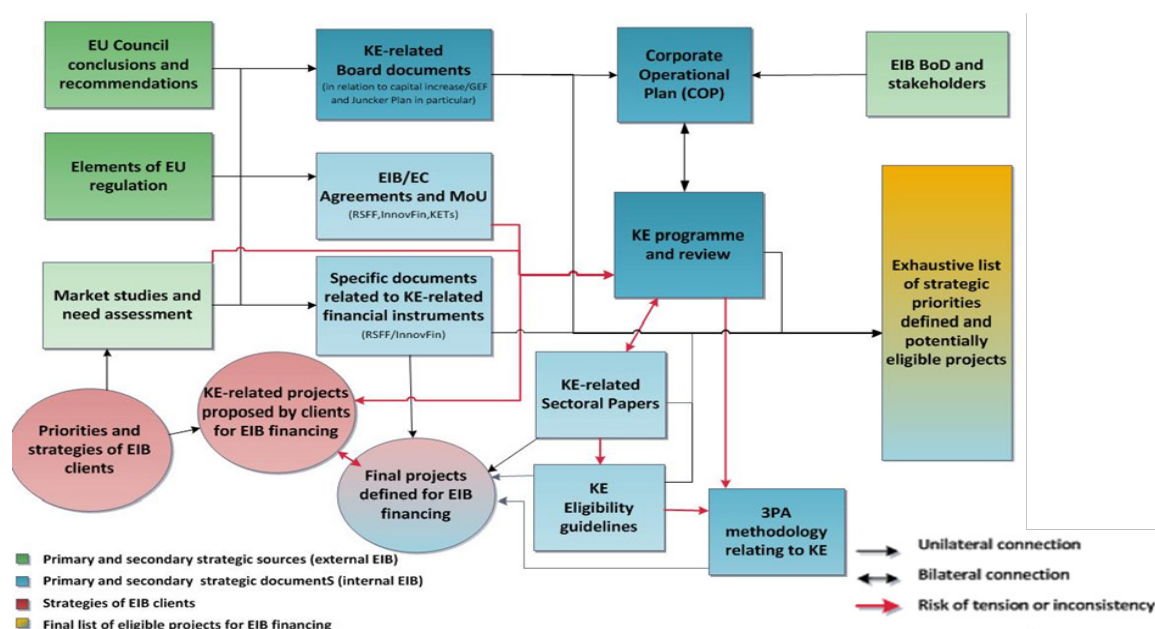
5.2.2. Limitations of the EIB Group strategic approach

On the basis of desk reviews, interviews and focus groups, four main limitations were identified with regard to the EIB strategy: (i) a series of inconsistencies in terms of design (absence of prioritisation and weak internal coherence); (ii) the variety of approaches used within the EIB Group; (iii) an insufficient identification of market deficiencies; and (iv) the limitations of the project-based approach. These are further elaborated below.

Lack of prioritisation and internal coherence

With regard to the internal coherence of EIB strategic documents, the evaluation team identified eight different types of documents containing elements of a KE strategy, which form a rather complex architecture without a clear hierarchy (see Figure 17). This abundance of sources increases the risk of inconsistency and possible tensions (represented with red arrows on the diagram). It also creates confusion on the EIB priorities. To take an example, for one single instrument (the GEF), seven broad domains have been defined as a priority. When summing up all the objectives formulated in the different types of documents, the types of projects potentially eligible for EIB support goes up to 30. Furthermore, the hierarchy and status of the eight types of documents are unclear. Similarly, none of these documents provide clear elements of prioritisation⁵⁹.

Figure 17: EIB KE related strategic documents and sources



⁵⁹ The “Innovation and Skills” KE Programme review of February 2015 represents a good step in that direction, as it clarifies and brings together in one document the eligibility criteria for KE projects.

A variety of approaches within the EIB Group

Various parts of the EIB Group adopt different approaches. Examples identified throughout the evaluation process include:

- Elements of a Group strategy remain limited in scope and scattered in parts of the EIB COP (where KE targets mix EIB and EIF goals) and in documents related to the RSFF/InnovFin instrument.
- Eligibility rules are not always consistently applied. The emphasis on convergence objectives is for instance variable: whereas bridging the digital divide is a key criterion for ICT, Services do not give the same importance to convergence for RDI projects.
- The EIF applies a counterpart-based approach according to which SMEs or midcaps are eligible to RSI/InnovFin if they meet one of the predefined criteria. Such counterpart-based approach is also applied by the Bank, but only for InnovFin Midcaps Growth Finance.
- JASPERS includes culture and cultural heritage projects under KE, whereas these are under environment for the rest of the Bank.
- Support to SMEs carrying out KE-related operations is currently not systematically identified (tagged) or monitored. Nevertheless, the share of knowledge intensive services among European SMEs and midcaps⁶⁰ (21.5%) in the total volume of intermediated operations supported by the EIB in favour of SMEs and midcaps over the period 2007-2013, represents an additional EUR 20bn.

Insufficient identification of market deficiencies

As mentioned in Section 2, although not explicitly stated, one of the key considerations of EIB involvement in the field of KE is the need to address market deficiencies.

In practice, this would imply dedicating more resources to identify the nature and extent of these market deficiencies and the manner in which the EIB Group can address them. However, for the time being, the identification of market deficiencies relevant for the EIB to tackle remains limited in scope and time. Only one market study (i.e. financial gap analysis) was carried out in 2012 and focussed on midcap financing. It provided important insights on existing market failures and on how the Bank could address them. These insights fed into the design of the instruments of InnovFin, demonstrating the importance of undertaking such financial gap analyses.

The scarcity of tailored financial gap analyses robs the Bank of important benchmarks for better measuring its additionality.

The limitations of the project-based approach

The EIB “traditional” project-based approach, which groups eligible costs to define an operation, is not well-suited for the KE. In particular as regards RDI support, the necessity to define a “project” carves out sub-components of a larger RDI programme into an artificial structure⁶¹.

From a promoter’s perspective, this approach is not intuitive and is often perceived as delaying the appraisal process. Constructing operations in this manner makes it more difficult to define objectives which respond to EIB needs and that are aligned with the objectives of the RDI programme of the promoters. This further generates a burden on the promoters to provide customised project reporting for the EIB which is not aligned with their business reality. The monitoring and evaluation of those operations become also more difficult for the Bank due to the weak project reporting and the imprecise definition of initial project objectives.

However, over the period covered by the evaluation (2007-2013) EIB’s RDI projects moved away from identifying sub-projects or expense lines to following the logic and the objectives of the promoters. This is a positive development, appreciated by the clients and which facilitates the monitoring of the operations for both parties.

⁶⁰ As defined in the European Commission’s Annual Report on European SMEs: http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/index_en.htm.

⁶¹ Seen in 18 of the 58 projects.

5.2.3. Conclusion

The Bank's KE strategic approach is increasingly measurable. It can further contribute to enhancing the synergies between public and private entities working in the KE. The Bank can continue to exploit the benefits of its balanced portfolio approach. However, it should reflect further on the desired risk balance between the operations supported, keeping in mind the need to maintain its AAA rating, a pillar of its business model.

On the negative side, the Bank's strategic approach is weakened by a limited identification of market deficiencies and by the plethora and lack of hierarchy among KE-relevant strategic documents. The lack of clarity in priorities creates differences in the interpretation and application of these directions by the various Services of the Bank. The EIB strategic architecture relating to KE activities could be made more coherent and robust. Several efforts are currently being made in this direction, for example through the recent "Innovation and Skills" KE programme review (2015).

SECTION 6. CONCLUSIONS

Seven conclusions can be drawn on the basis of the statements, findings and assessments presented in this synthesis report. They respond to the initial questions raised in Section 1. These conclusions lead to the recommendations presented in the beginning of the report.

C1. Ambitious KE-related goals were set and on the whole met, but the strategic architecture of the EIB Group can be improved.

There is a tension between the Bank's drive towards more volume and increasing the impact of its interventions.

(Based on sections 2, 3 and 5)

The weight of the Bank's KE portfolio represented on average 1.9% of the EU KE expenditure over the 2007-2013 period. This can be regarded as significant as compared to the minimal share it represented before 2000 and since it occurred in slightly more than a decade. The EIB market share is especially noticeable for certain countries, certain periods of time and certain sectors.

Although focusing on KE was originally not part of the EIB core business strengthening, the European KE has become an increasingly important element of its policy. The Board Report "Towards a Knowledge Economy" (2003) marked the formal beginning of this transition within the Bank.

Ambitious targets are fixed annually in the EIB COP, and wider objectives defined on a multi-annual basis by a specific programme dedicated to KE (as realised in the major reviews undertaken in 2008 and 2015).

These targets and objectives have, on the whole, been achieved in a satisfactory manner. There are only few exceptions during certain periods of time, for certain target groups (e.g. SMEs, midcaps) or certain types of cooperation (e.g. with banks).

Whereas the global and operational objectives of the KE strategy were clearly defined in terms of lending volume and general goals to be achieved, the intermediated objectives, supposed to detail how operational objectives will impact global goals, have so far remained implicit. Similarly, IG/EV found that all the operations in the project sample supported one or more of the KE priorities but the link between the specific operations and the different priorities was not explicit in the EIB project documentation.

Some contradictions were observed between the pressures exerted on the EIB to deliver high levels of signatures with the need to increase impact. Smaller and riskier operations tend to have more difficulties in finding alternative sources of funds and EIB's involvement helps to cover these funding gaps for these types of operations. However, these smaller operations tend to require more EIB resources. Meeting high signature targets puts pressure on the EIB Services to focus on higher volume operations, which are also usually less risky, to be able to deliver on EIB's commitments. The EIB should strive to reduce this tension.

EIB KE priorities are well aligned with EU policies. However, there is still room for improving complementarity with private promoters' objectives and with national and subnational public policies.

There is also ample room to improve the strategic approach of the EIB Group as regards the KE priority, mainly concerning the identification of market deficiencies, the prioritisation and the internal coherence of the KE strategic architecture.

Finally, whereas one of the considerations for the EIB intervention in this field is addressing market deficiencies, little evidence have been found as to the extent to which the EIB has done so.

C2. Although new types of activities and innovative instruments have been developed at the EIB Group level to better address certain target groups or specific needs, KE-related activities can still be broadened.

(Based on Sections 2, 3 and 4)

In response to the imperative to play a more active role in the field of KE and in order to address certain types of needs and target groups, the EIB Group has diversified its activities in several directions: new joint instruments with the EC blending EU and EIB money for riskier operations (RSFF/InnovFin); increased involvement of the EIF via the participation to the RSFF/InnovFin instruments and the development of Venture Capital, Tech Transfer and Business Angels funds and agreements; enlargement of the competence of JASPERS to KE; creation of dedicated advisory services for complex KE projects and of the EIB Institute.

As a consequence, KE activities have strongly grown in scale and scope, now covering a wide range of clients and market needs.

However, in relative terms, KE-related activities remain concentrated on lending in five countries: Germany, France, Italy, Spain and the UK, on certain types of project (nine out of ten are RDI programmes in support to corporates or public entities, ICT networks or education infrastructures) and on certain industrial sectors (automotive and other manufacturing in particular).

C3. Additional means dedicated to KE have been put in place and the EIB Services involved have worked efficiently together. However, these means remain insufficient with regard to the current goals and ambition of the Group and all units and entities having a role to play could be even better coordinated.

(Based on section 5)

This increased mobilisation in favour of the European KE is also reflected in the evolution of human resources dedicated to KE-related activities as measured in terms of number of hours spent for KE operations by EIB Services. Despite an overall good level of efficiency and expertise, and a satisfactory coordination between Services on projects, the EIB organisation as it relates to KE suffers from a relative lack of resources.

In addition, the coordinating role of the Centre of Expertise on KE (currently too much focused on certain fields and type of activities) as well as the organisation of the EIB Group as it relates to KE can be improved.

C4. The projects supported by the EIB in the field of KE have performed well overall although initial objectives and reporting modalities were not sufficiently explicit at appraisal.

(Based on section 4 and 5)

For 81% of the projects examined, performance was rated as being either excellent or satisfactory. Issues linked to effectiveness led to a partly unsatisfactory performance rating for 7% of the projects whereas for 3.5% the negative rating was further accentuated by issues identified under efficiency.

This good performance relies, notably, on the promoters' flexibility in adapting their investments to the evolving market needs, including and especially during the crisis. This capacity to adapt the scope of the operations to the changing environment was more visible in the operations in the private sector. In most cases, this adaptation capacity was one of the key conditions for intermediate objectives (outcomes in terms of additional knowledge produced in particular) to be achieved and for the operations to remain both profitable and sustainable.

However, the evaluation of individual operations has underlined three major concerns:

- Except for the operational objectives included in the contract (immediate outputs), the expected outcomes and impacts of operations were not formally set at the onset. This made it difficult to understand what the broader aims of projects were and to assess the externalities of the operations supported. A clearer ex-ante definition of outcomes and impacts would also allow the EIB to better demonstrate its contribution to its stakeholders.
- The contractual project reporting requirements were, for most operations, generic and therefore, the PPRs and PCRs only presented a broad assessment of project implementation. However, during the evaluation IG/EV found that the promoters had much of the information to be able to assess the medium and long term objectives.

- Although adapting to an evolving environment is usually a good practice, the lack of visibility for the EIB on these changes can create a reputational risk for the Bank as for some periods, the Bank may not have up to date knowledge about the programmes that its loans supported.

C5. The KE-related outcomes and impacts engendered by the projects supported are significant and the EIB has the possibility to reinforce them.

(Based on Sections 4 and 5)

The outcomes and impacts observed for the 58 operations evaluated are substantial and the economic, social and environmental value of these operations within the KE was high across the sample. Operations supported by the EIB have first contributed to the creation of a more KE-friendly business environment.

The most significant effect in relation to the KE is however the additional knowledge and innovation generated by the projects supported by the Bank. As a result, promoters' RDI capacity has increased while companies' portfolios have diversified, new markets have been penetrated and promoters' competitiveness was in almost all cases significantly enhanced. Projects contributed to the production, transfer and dissemination of knowledge (in particular via increased business cooperation and further networking at sectoral, national and international levels, or via effects on convergence and regional development).

Especially when the Bank has a strong competitive advantage, an early involvement or longstanding relationships with the client, the EIB can play a role to better align interests and strategies between the different stakeholders. This can reinforce the orientation of projects towards European policies, common interest and market needs.

C6. The EIB contribution is overall positive and countercyclical and encompasses both financial and non-financial aspects. There are pros and cons to focussing on repeat clients.

(Based on Section 4)

Within the project sample, the EIB's financial contribution was generally significant. During the financial crisis when access to funds was more limited, EIB loans provided a much higher FVA and played an important countercyclical role.

Beyond direct FVA and interest rates, the EIB was generally considered as more flexible than other financial intermediaries in terms of lending conditions. Tenor and the wide range of financing structures and attractive conditions available (grace period, bullet loans, etc.) were among the key advantages underlined by promoters. In addition, even for the operations that would have gone ahead without EIB support, the combination of cheaper funding and flexible features offered by the EIB was highlighted by the promoters as an aspect which allowed these operations to enlarge their scope and materialise faster. Aspects linked to financial facilitation, were highlighted as a positive aspect across most of the operations in the sample.

IG/EV has also observed on many occasions that promoters pay increasing attention to the long term relationship with the EIB. This allows the Bank to influence the design of the projects and allows it to better align them with EIB's and EU's mission and objectives. Nonetheless, if repeat clients are prioritised, this could come to the detriment of new clients. New clients have often a crucial stimulating role to play in the markets, as illustrated by the examples of new clients and second tier-companies within the project sample.

C7. Building a strategy on the concept of KE remains valid and relevant for the EIB Group.

(Based on section 2 and 4)

Grouping three different priorities (i.e. Education, RDI and ICT) under the common umbrella of the KE might at first glance appear artificial. However, despite a slight decline of its usage, the concept of KE is still relevant. Independently of whether the EIB tagged operations for only one or several of the three KE areas, they had objectives which spanned all three areas of the KE.

ANNEXES – BACKGROUND ANALYSIS AND COMPLEMENTARY INFORMATION

Annexes provide background analysis and complementary information supporting the findings and conclusions presented in the main report. They relate to

- Annex 1: The concept of KE: Historical emergence and current relevance
- Annex 2: The EU and EIB policies relating to the KE
- Annex 3: Portfolio review of KE-related activities (additional figures and graphs)
- Annex 4: The sample: Operations evaluated
- Annex 5: The sample: Findings and evidence by evaluation criteria
- Annex 6: The sample: Outcomes and impacts of individual operations on the KE
- Annex 7: Possible implementation modalities for the EV recommendations
- Annex 8: The evaluation process
- Annex 9: A methodological note on calculations relating to EIB market shares in KE

ANNEX 1: THE CONCEPT OF KNOWLEDGE ECONOMY: HISTORICAL EMERGENCE AND CURRENT RELEVANCE

Origin, formalisation and popularisation of the concept of KE

Most economists and experts share the view that knowledge has always been a key component of the production of goods and services. Although capital and labour were for a long time regarded as the main factors of production, knowledge, incarnated in the “technical progress”, has also been perceived from a very early stage as one of the key elements influencing the productivity of all factors of production. What precisely characterises a knowledge-based economy is the moment of time when the dissemination of knowledge and the diffusion of technical progress become critical for the entire economy, and when KE-related activities represent the main share of the GDP. In other words, an economy becomes knowledge-based at the tipping point where intangible assets and information become more crucial than tangible investments and physical goods.

One of the first theorists who gave a central role to technical progress is Frederick Winslow Taylor (1856-1915), who conceived and promoted in the 1880s and 1890s a "scientific management" for manufacturing industry. Scientific management, also called *Taylorism*, was originally based on analyses workflows and pursued the objective of improving economic efficiency, more especially labour productivity. It was one of the first attempts to apply science to the engineering of processes and to management. Although scientific management as a school of thought has been obsolete since the 1930-40s, most of its themes are still important parts of industrial engineering and management today, as illustrated by the need for knowledge transfer between workers or from workers into tools, processes, and documentation.

Later on, the Austrian economist Joseph Alois Schumpeter (1883-1950) also identified innovation as a critical dimension of economic change and, from a wider macroeconomic perspective, as one of the main drivers of economic cycles. He argued that economic change revolves around innovation, entrepreneurial activities, and market power. According to him, innovation-originated market power could provide better results than the invisible hand and price competition in the market. He argued that technological innovation often creates temporary monopolies, allowing abnormal profits that would soon be competed away by rivals and imitators. As a consequence, temporary monopolies can be justified to provide the necessary incentive for firms to develop new products and processes. Thereafter, an economic modelling of the key role of technical progress was made with the Solow-Swan Model (1956), a neoclassical economic model where knowledge and innovation represent a key part of long-run economic growth.

It is however only in 1962 that the concept of “knowledge economy” was properly introduced and formalised by Austrian economist Fritz Machlup (1902-1983) in his *“Production and Distribution of Knowledge in the United States”*. This book marked the beginning of the study of our post-industrial information society. Machlup started his research on the patent system, but rapidly realised that patents were only one part of a much bigger "knowledge economy." He then expanded the scope of his work to evaluate everything from stationery and typewriters to advertising to presidential addresses. He showed that at that moment in time 43% of the American labour force consisted of knowledge transmitters or full-time knowledge receivers. Indeed, the proportion of the labour force involved in the knowledge economy increased from 11% to 32% between 1900 and 1959 which represented an important shift. Beyond documenting this revolution, Machlup founded the wholly new field of information economics.

In the late 1960s, the concept was popularised beyond academic audiences by the famous management consultant Peter Drucker (1909-2005), who dedicated a full chapter of *“The age of discontinuity”* (1969) to “the knowledge economy”. According to his analysis, other than the agricultural-intensive economies and labour-intensive economies, the global economy is in transition to a "knowledge economy", which is an extension of an "information society" led by innovation. The transition requires that the rules and practices that determined success in the industrial economy need rewriting in an interconnected, globalised economy where knowledge resources become critical.

In 1995, the World Bank Institute developed a tool named KEI (knowledge economy index) for benchmarking a country's position vis-à-vis others in the global knowledge economy competition. It is an aggregate index based on the average performance scores of each of the four pillars used by the World Bank to illustrate the extent to which the country articulates strategies for its transition to

a knowledge economy⁶². According to this “Knowledge for Development Programme”⁶³, the four Knowledge Economy (KE) pillars are: “Economic Incentive and Institutional Regime”, “Education”, “Innovation”, and “Information and Communications Technologies”.

This approach was officially confirmed in 2005 by the OECD, according to which a knowledge-based economy is “an expression invented to describe trends in advanced economies towards greater dependence on knowledge, information and high skill levels, and the increasing need for ready access to all of these by the business and public sectors”⁶⁴.

The driving forces of the move towards a knowledge-based economy

Closely associated with the emergence and widespread acknowledgement of the relevance of the concept of knowledge economy is the current economic globalisation, which corresponds to an increasing interconnection and interdependence of all markets and economies over the globe. Nowadays, the globalisation process goes up to the point where almost all markets for goods or services become global and all economic players are potentially in competition or at least in interaction with one another.

If we look further ahead, globalisation itself is rooted in two main leading forces:

First and foremost, globalisation owes its origins to a widely shared belief that, thanks to a better allocation of our collective scarce resources, more competition for markets means more effectiveness and efficiency for the worldwide economy. Both on a global and national scale, this is meant to eventually lead to the creation of more and better jobs, as well as to higher growth and prosperity for all. Such a trust is closely linked to David Ricardo's comparative advantage theory (1817) that promoted free trade on the largest possible scale, based on the fundamental idea that even the less-favoured nations will gain from specialisation and internationalisation.

More concretely, this large opening of national and international markets to competition has followed several rounds of free trade agreements adopted from the 1950's onwards under the GATT (General Agreement on Tariffs and Trade) and the WTO (World Trade Organisation). Within the EU, the creation of the European single market has played a major and front-running role in the matter. As a consequence of globalisation, today the development of Global Value Chains (GVCs) allow firms and economies to “do” the part of the process that they are best at, using intermediate goods and services from elsewhere without having to develop a whole industry. According to the OECD, competitiveness in GVCs requires “strengthening factors of production that are “sticky” and unlikely to cross national borders. This implies investment in human capital and skills and high-quality infrastructure, as well as encouraging strong industry-university linkages and other tacit knowledge. The quality of institutions and government is also important”⁶⁵. This makes the necessity to invest in skills even more crucial.

In such an open and free world, competitiveness and attractiveness become an absolute imperative. Either as a prerequisite to economic success or a condition for a good insertion within the globalised economy, all economies -and most advanced ones first- have no choice but to specialise in -and dedicate most of their resources to- the sectors where they have the best chances to be or remain competitive or where they can rapidly obtain comparative advantages. For major economies, high added value and/or high knowledge-intensity are the key criteria to identify those sectors and activities, whilst supporting their development becomes essential.

As a result, acquisition of knowledge and promotion of innovation is now regarded as playing a pivotal role both for private companies and public policies. For public policies (at all geographical levels), the creation of an environment enabling the emergence of a robust knowledge-based economy became a new paradigm and now forms the backbone of economies policies in all OECD countries and especially within the EU, as illustrated by the implementation of the Lisbon Strategy since the early 2000s.

⁶² Available at : http://info.worldbank.org/etools/kam2/KAM_page5.asp

⁶³ On the basis of 148 structural and qualitative variables, this programme calculates for each country a Knowledge Economy Index (KEI) and measures its evolution over time.

See in particular: <http://siteresources.worldbank.org/INTUNIKAM/Resources/KAMbooklet.pdf>

⁶⁴ OECD, 2005, “The Measurement of Scientific and Technological Activities: Guidelines for Collecting and Interpreting Innovation Data: Oslo Manual, Third Edition”

⁶⁵ OECD, 2014, “Interconnected Economies, Benefiting from Global Value Chains”

ANNEX 2: THE EU AND EIB POLICIES RELATING TO KE

1. The EU policy relating to KE

The Lisbon Strategy⁶⁶, the main strategic framework for the development of the EU during the decade 2000-2010, pursued the overarching objective to make the EU *"the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion"*. According to the Lisbon Strategy evaluation document, despite partial achievements, this strategy "gradually developed into an overly complex agenda with multiple goals and actions and an unclear division of responsibilities"⁶⁷ whilst "important difficulties persisted". In particular, lifelong learning fell short of requirements, education and training was judged not sufficiently responsive to labour market needs, R&D spending fell short of the 3% of GDP target and innovation and high speed internet access to enhance productivity were behind schedule.

Therefore, at the European Council of March 2005, the strategy was re-launched within a general framework of Growth and Jobs and an increased focus on research and innovation, investing in people, modernising labour markets, and unlocking business potential⁶⁸.

During the European Council of December 2009, the Heads of States agreed that "policies must be refocused towards long-term reforms in a revamped new strategy". Therefore, the current "Europe 2020" strategy sets five key targets to be achieved by 2020 (where the second and the third are clearly KE-oriented and the fifth clearly dependant on RDI developments):

- Employment (75% of 20-64-year olds to be employed);
- Education (reducing the rates of early school leaving to below 10% and at least 40% of 30-34-year olds completing third level education);
- Research and innovation (3% of the EU's GDP to be invested in R&D);
- Social inclusion and poverty reduction (at least 20 million fewer people in or at risk of poverty and social exclusion);
- Climate and energy (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).

In addition, as stressed in the Europe 2020 Strategy Paper⁶⁹: "the EIB and the EIF can contribute to backing a "virtuous circle" where innovation and entrepreneurship can be funded profitably from early stage investments to listing on stock markets, in partnership with the many public initiatives and schemes already operating at national level."

More recently, on 2 December 2013, the European Council adopted the regulation laying down the EU's Multiannual Financial Framework (MFF) for the period 2014-2020.

Despite an overall reduction of the EU budget, the new MFF is clearly geared towards promoting a knowledge economy, with a sharp increase of the budget dedicated to "Competitiveness for Growth and Jobs" (+37,3% at EUR 125.6bn) and a reduced budget dedicated to "Economic, social and territorial cohesion" (-8,4% at EUR 350bn).

Under Horizon 2020, the EU Framework Programme for Research and Innovation, the "Industrial Leadership" pillar aims to support and facilitate access to finance for innovative companies, in particular via financial instruments where the EIB and the EIF, as "entrusted entities", are expected to play an important role. In addition, the scope of Horizon 2020 has been enlarged to include innovation, bringing closer the EC and the EIB approaches (whereas they were previously divergent on that point) and increasing the opportunities for EC-EIB partnerships in the field of KE.

Besides Horizon 2020, the new European Structural and Investment Funds (ESIF) programmes currently under finalisation for the period 2014-2020 will focus on four priorities, among which two are KE-related: research and innovation and digital agenda/ICT. There are therefore reasonable grounds to believe that a significant share of the ESIF budget will be dedicated to KE (a raw estimate

⁶⁶ Adopted by the European Council in Lisbon in March 2000.

⁶⁷ Lisbon Strategy evaluation document 2.2.2010 / SEC(2010) 114 final / COMMISSION STAFF WORKING DOCUMENT

⁶⁸ As illustrated in the Communication issued by the Commission to the European Council in December 2007.

⁶⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

of one third corresponds to a lump sum of EUR 100bn), which is likely to bring the share of KE into the total EU budget for the period 2014-2020 up to 25% at approx. EUR 250bn.

On 20 November 2014, the President of the EC, Jean-Claude Juncker, presented a new investment plan with a view to foster European economic recovery, job creation, long-term growth and competitiveness hampered by the financial and economic crisis. The Investment Plan for Europe includes three elements:

- The mobilisation of at least EUR 315bn in additional investment over the next 3 years, aimed at maximising the impact of public resources and unlocking private investment;
- Targeted initiatives to ensure that this extra investment meets the needs of the economy;
- Measures to provide greater regulatory predictability and remove barriers to investment, making Europe more attractive and thereby multiplying the impact of the Plan.

For the first two strands, the Investment Plan for Europe is launched jointly by the EC and the EIB⁷⁰. The EIB will contribute EUR 5bn from its own resources, accompanied by EUR 16bn in EU guarantees. The programme, including the set-up of a “European Fund for Strategic Investments” (EFSI), became operational in mid-2015 subject to the adoption of required legal instruments. By taking on part of the risk, the new EFSI aims to attract commercial and promotional banks, as well as other entities such as private sector companies. It will support investments in energy, broadband, innovation and transport infrastructure and back risk finance for SMEs; in the latter case counting also on cooperation with the EIF.

2. The evolution of the EIB strategic discourse related to KE

For several decades and as a result of its original *raison d'être*, the EIB was characterised by a strong orientation towards tangible investments and large infrastructure projects. From the 1960s to the 1990s, these types of operations represented the lion's share of its lending activity. Moving from a “bricks and mortar” culture to an innovation-centred institution was therefore not possible overnight. Nonetheless, the progressive alteration of the EIB culture was enabled, externally, by an increasing necessity to align the EIB strategy with EU policies and, internally, by a growing capacity to follow the evolution of markets' needs.

In the 1990's, a series of initiatives were launched by the European Council with a view to encouraging the Bank to support changes in the EU's economic structures. The EIB was invited to play a direct role in the framework of the Amsterdam Council resolution on Growth and Employment (June 1997). The Amsterdam Special Action Programme (ASAP) broadened the scope of the EIB's eligibility criteria to education and health and led to the EIB's recognition of the importance of human capital, illustrated by the creation of a new division in this field.

Launched in June 2000 on the basis of the ASAP experience, the “Innovation 2000 Initiative” or i2i was conceived as the Bank's response to the Lisbon process. It was at that time that KE became one of the Bank's top lending priorities and a key component of the rolling Corporate Operational Plans (COPs). Through the EIF, the EIB Group also committed new resources for Venture Capital operations geared towards innovative SMEs.

The i2i initiative targeted three sectors: education & training; research & development and innovative downstream investment (products and processes), notably in the private sector; creation and dissemination of Information and Communications Technology (ICT, i.e. hardware, content and applications). In June 2003, the Board of Governors approved the extension of the EIB lending programme, and renamed i2i as “Innovation 2010 Initiative”.

In May 2008, the overall assessment emerging from the “*Review of the Innovation 2010 initiative promoting a competitive knowledge economy in the 21st century*”⁷¹ was that the Initiative was a success in supporting public investment while leveraging private investment. The review underlined that “though difficult to quantify, the Bank had contributed to raising the productivity and competitiveness of the EU economy by investing in the knowledge and skills of people, in public and private R&D and in the innovative capacity of EU companies”. The i2i strategy was also considered successful due to the shift made in the overall lending focus to operations with a potentially higher EIB contribution and riskier operations. However, despite the early achievement of the quantitative target fixed in 2003 (EUR 50bn for the entire decade), it was deemed relevant to further align the EIB priorities to the renewed Lisbon Strategy. Endorsing the EC's concept of the Knowledge Triangle

⁷⁰ For the third strand, the EC will propose action in its upcoming Work Programme, as well as together with the other EU Institutions and the Member States in the context of the European Semester.

⁷¹ Adopted by the EIB Board of Directors in May 2008.

(Research, Innovation, and Education), the Bank reformulated the three main targeted sectors under a rebranded “Knowledge Economy (i2i)” priority based on three pillars: Education and training (with a view to enhance the skills and competences to innovate); Research and development (R&D) – driving the knowledge frontier; and Innovation – applications, diffusion and enabling infrastructures.

As renewed in 2008, the current EIB strategy related to KE essentially pursued five goals:

- Extension of the KE priority beyond 2010 with regular 3-yearly reporting;
- Maintaining the annual lending level achieved so far (EUR 10bn) as an annual average up to 2013, making the cumulative lending target EUR 60bn over the period 2008-2013;
- Shifting towards more private sector lending for R&D projects, with a special focus on SMEs and Mid-Caps, while maintaining a balanced support to larger enterprises;
- Continued support to the diffusion of innovation to EU regions needing to catch up with the best performing ones and to reflect on country- and region-specific priorities;
- Gradually levelling the field between the Bank’s conventional financing products and instruments traditionally considered as higher-risk (by a systematic use of innovative financing solutions and the promotion of diversification of the EIB portfolio).

A mid-term review of this strategy was planned for 2010 to allow for further alignment with EU policy priorities. Despite the absence of an overall mid-term review, a dozen sector policy papers updating the EIB KE policy have been issued and adopted by the EIB Board of Directors. These papers provide sectoral orientations and guidelines.

One of the most noticeable materialisation of the EIB Group’s higher engagement in the field of KE was the creation in 2007 of a new financial instrument called the Risk Sharing Finance Facility (RSFF). Set up by the EIB and financially supported by the EU, the RSFF aimed at fostering additional investment in RDI in the EU. The second evaluation of the RSFF undertaken by IG/EV and presented to the EIB Board of Directors in 2013 reached the conclusion that this innovative financial instrument has fulfilled its role in an adequate manner, contributing to the reduction of market failures by allocating additional resources to RDI. EV’s report also underlined that the RSFF had, until 2013, remained a “large-scale laboratory for RDI financing” with still limited macroeconomic effects. The new InnovFin framework created under Horizon 2020 (see box below) represents a major opportunity to convert the RSFF experience into a fully-mainstreamed instrument able to cover RDI investment gaps on a wider scale.

Launched in June 2014 on the basis of the RSFF experience, the joint “InnovFin” initiative offers, via five instruments, EUR 24bn of financing to foster EUR 50bn of RDI investments:

1. InnovFin Large Projects aims to improve access to risk finance via loans from EUR 25m to EUR 300m for RDI projects emanating from larger firms, universities and public research organisations, research infrastructures, PPPs and special-purpose vehicles;
2. InnovFin MidCap Growth Finance offers loans from EUR 7.5m to 25m to improve access to finance mainly for innovative larger midcaps (up to 3000 employees);
3. InnovFin MidCap Guarantee provides, to selected financial intermediaries, EIB guarantees and counter-guarantees on debt financing of up to EUR 50m to improve access to finance for innovative midcaps (up to 3000 employees);
4. InnovFin SME Guarantee provides, to selected financial intermediaries, EIF guarantees and counter-guarantees on debt financing of between EUR 25,000 and EUR 7.5m to improve access to loan finance for innovative SMEs and small midcaps (up to 499 employees);
5. InnovFin Advisory aims to improve the bankability and investment-readiness of large projects that need substantial, long-term investments. The main targeted clients are promoters of large RDI projects meeting Horizon 2020’s societal challenges. Furthermore, through its Horizontal Activities, InnovFin Advisory aims at assessing and improving access-to-finance conditions in areas part of the Horizon 2020 programme.

More recently, the EIB strategy related to KE has evolved in two main directions: an increasing focus on growth and jobs and an even closer alignment with EU policies.

The increasing focus on growth and jobs is linked to the capital increase decided by the European Council on June 2012⁷². Granting the Bank with additional lending capacities (EUR 50bn), this has materialised into the “Growth and Employment Facility (GEF)”. A sub-programme of the GEF entitled “the EU Innovation and Skills Initiative” provides up to EUR 15bn of loans generating up to EUR 40bn of investments. In complement to this initiative, in July 2013, the Bank launched the “Jobs and Skills

⁷² Requesting the subscribed capital of the EIB to be increased by EUR 10bn.

– Investing for Youth Programme” focused on vocational training facilities. This programme is now developed under the “Youth Employment Initiative” adopted in 2014.

Increasing willingness to even closer align the EIB strategy with EU policies is evidenced by:

- The prominent role given to joint financial instruments in relation to KE activities as illustrated by the evolution from RSFF to InnovFin (see box above),
- The Memorandum of Understanding (MoU) on KET (Key Enabling Technologies) signed between the EIB and the EC in February 2013 that aims at providing improved access to finance for investments in KETs and at preventing related activities from leaving Europe. EIB lending to KETs is expected to become a major part of the KE lending in the future.
- As mentioned above, the EIB has also acquired a key role in the implementation of the Investment Plan for Europe which aligns even further the EIB strategy with EU policy;
- the KE review presented to the EIB Management Committee in January 2015 which re-labels KE into “Innovation and Skills”.

According to both the latest Annual Reports and the Corporate Operational Plans (COPs), KE is often presented as one of the top strategic priorities of the EIB Group, on comparable terms with the other two key priorities that are “economic and social cohesion” and “support to SMEs”. In the EIB Annual Report for 2013, the section on “Developing innovation and skills for a growing economy” has been placed before the section relating to “Building strategic infrastructure” in a similar way as, in the 2012 Annual Report and for the first time ever, the section on “Unlocking Europe’s growth potential” came before to the section on “Supporting economic and social cohesion”. This increased focus on KE is also noticeable in the different COPs, where KE is presented as a main EIB Group objective with specific performance indicators and quantitative targets since 2009 (both in terms of volume of lending for the Bank and in terms of volume of Venture Capital dedicated to KE-related operations for the EIF). According to COP documents, the share of KE lending targets in the annual targeted amount of loans to be signed by the Bank has not significantly changed over the observed period, with a progression from 17.1% to 17.8% from 2007 to 2013. However, the COP 2014-2016 has assigned a very ambitious lending target with an expected volume of KE-related signatures for 2014 at EUR 16bn (i.e. 25.6% of total EIB lending, enhancing the status of KE to the second highest targeted activity of the Bank just after support to SMEs).

Although focusing on KE was not part of the original EIB culture, since the 2000s, the EIB Group’s willingness to play a role in this field has become a pivotal element of its policy, to the point where it now represents the second highest priority of the Bank.

ANNEX 3: PORTFOLIO REVIEW OF KE-RELATED ACTIVITIES (ADDITIONAL FIGURES AND GRAPHS)

As a first step, the portfolio was analysed both in terms of lending (i.e. direct and intermediated loans) and non-lending activities (i.e. advisory activities and activities of the EIF) over the evaluation period. As a second step, the EIB portfolio is assessed in terms of achievements, both from an internal perspective (i.e. against targets and objectives set by the EIB strategic documents) and from an external perspective (i.e. in terms of global contribution to the European economy).

Figure A 3.1: Overview of the KE portfolio

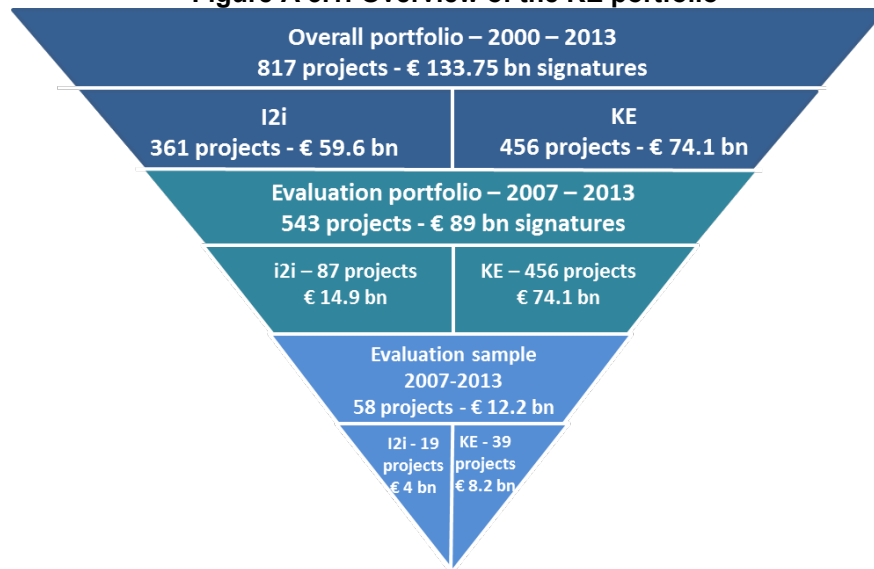


Figure A 3.2: Annual distribution by country (signed amount)

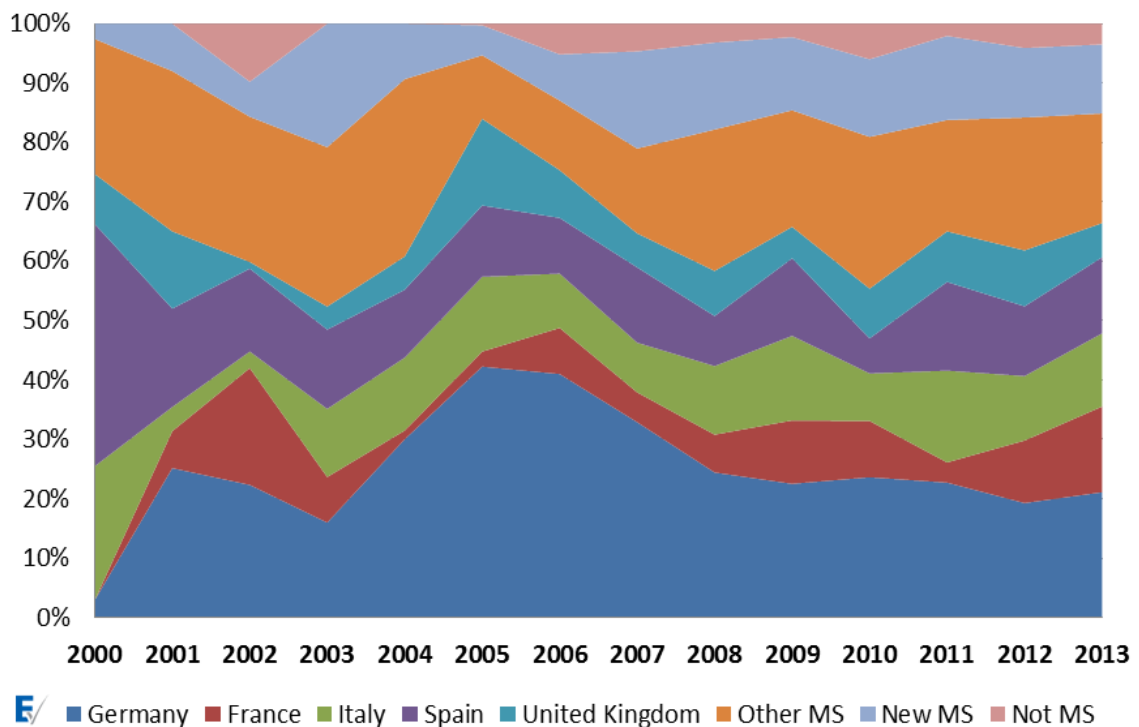


Figure A 3.3: Evolution of the RSI compartment
 (Yearly number of agreements and total guarantees provided in EUR m)

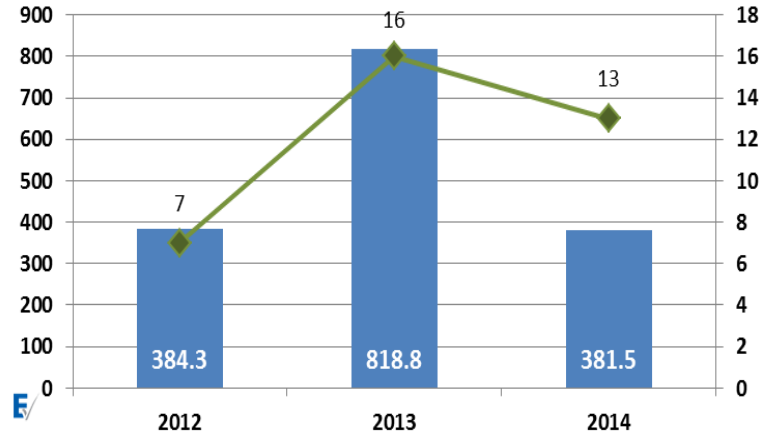


Figure A 3.4: Country distribution of RSI agreements
 (Number of agreements by country)

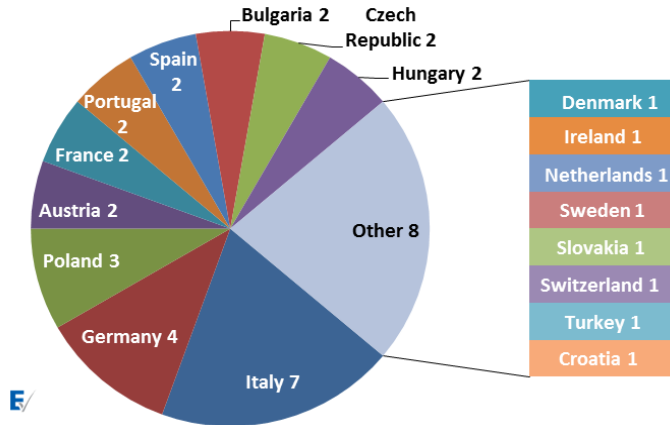


Figure A 3.5: Country distribution of KE-related JASPERS assignments
 (by country, evolution 2006-2013)

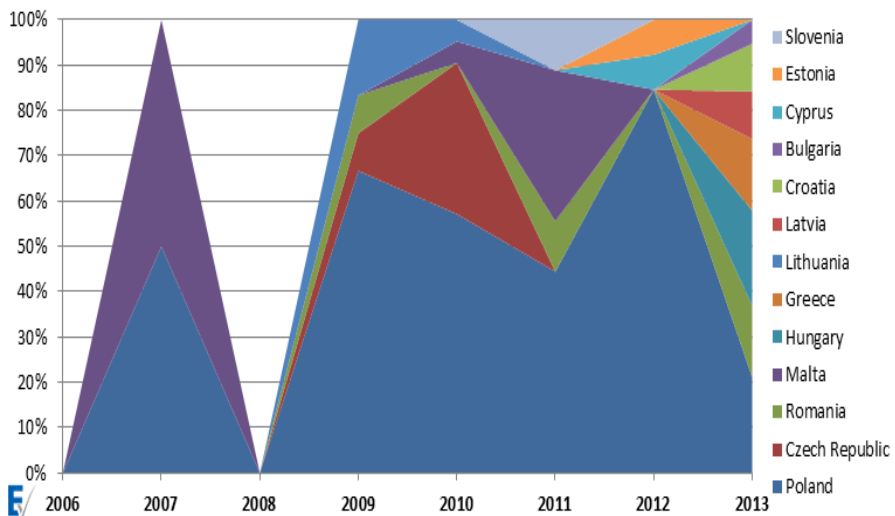


Figure A 3.6: Evolution of the KE-related assignments share within total JASPERS portfolio

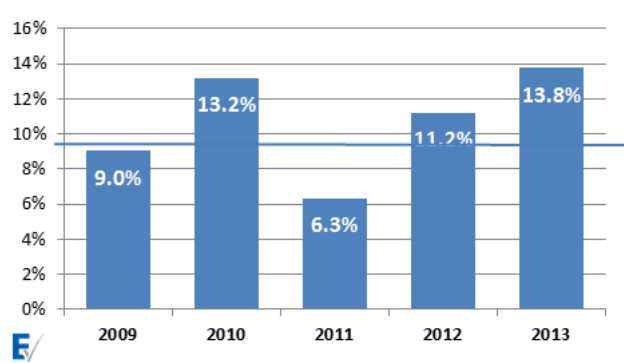


Figure A 3.7: JASPERS KE portfolio country shares compared to EU cohesion funding KE-related country shares⁷³

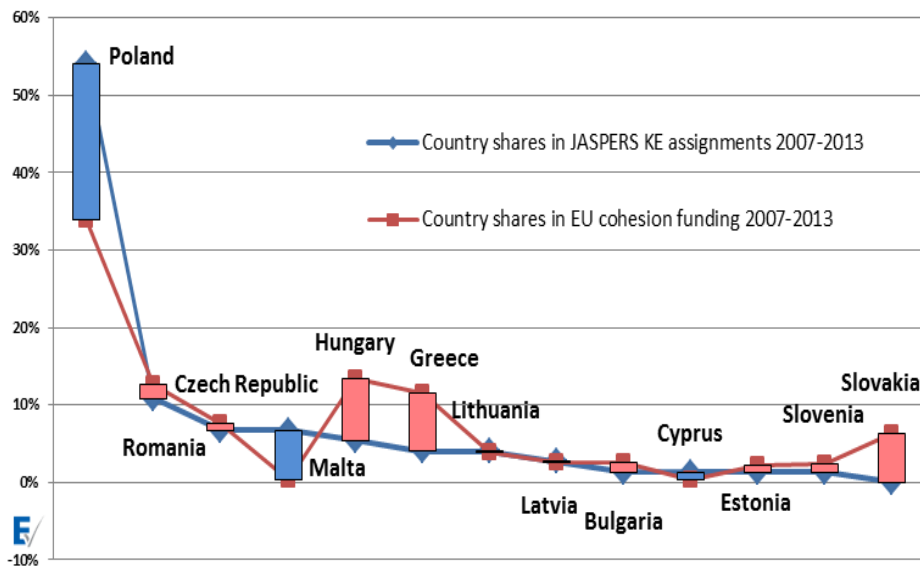
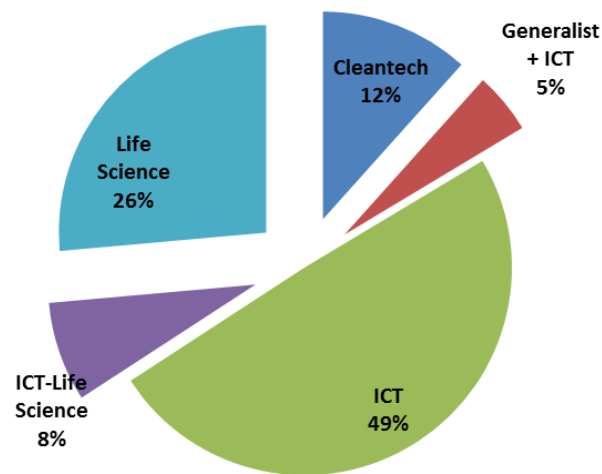


Figure A 3.8: Sector distribution of EIF KE-related products (amounts committed per sector 2007-2013)



⁷³ EU shares refer to the total of EU cohesion funding KE-related and for MS benefiting from JASPERS support.

Figure A 3.9: Achievements of KE-related COP targets

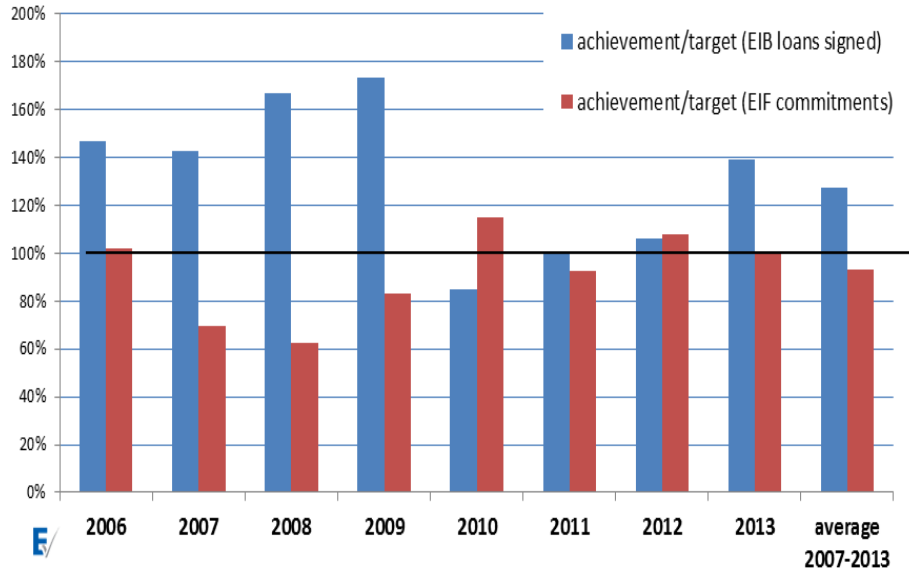


Figure A 3.10: Split public/private operations in the KE lending portfolio

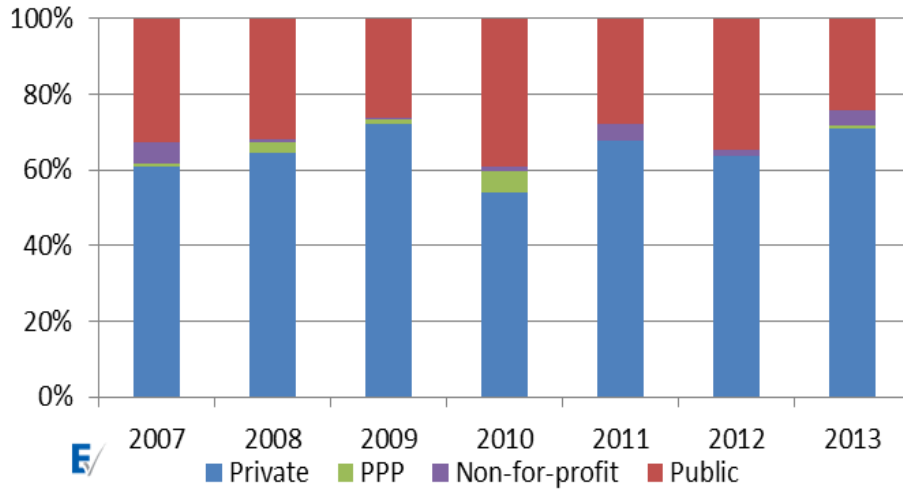


Figure A 3.11: Split public/private operations in the RDI portfolio

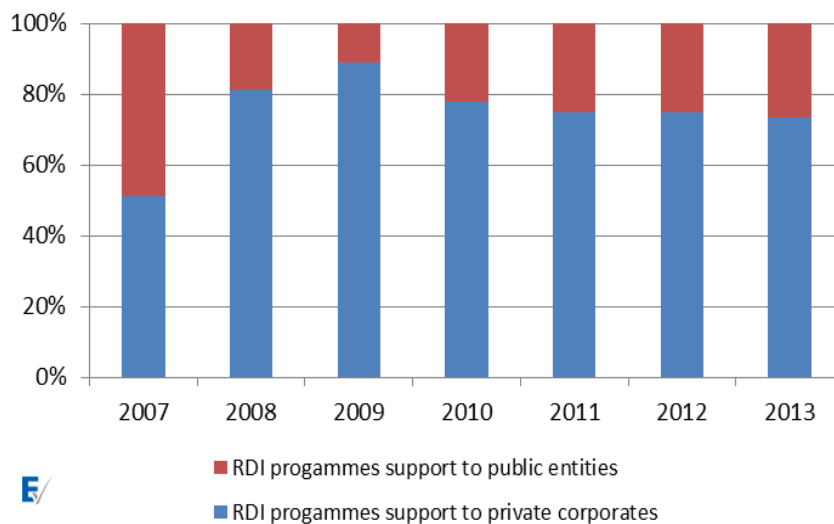


Figure A 3.12: Proportion of intermediated operations within the entire KE lending portfolio (%)

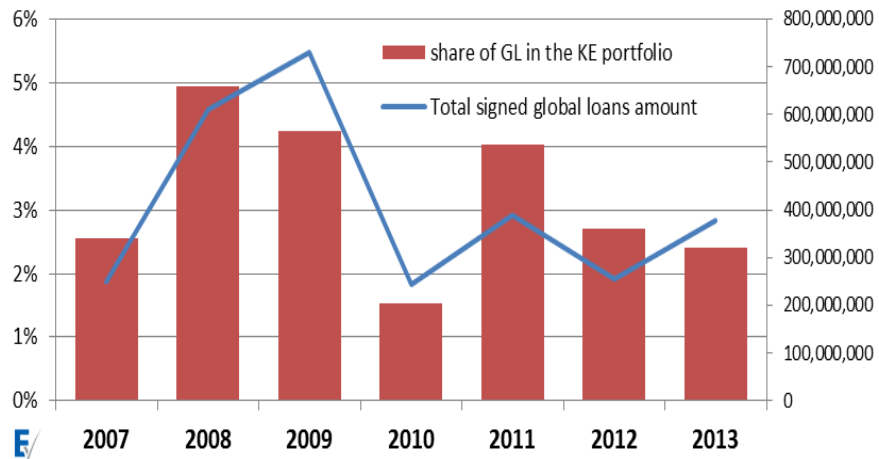


Figure A 3.13: Evolution of the share of KE within the EIB loans signed portfolio

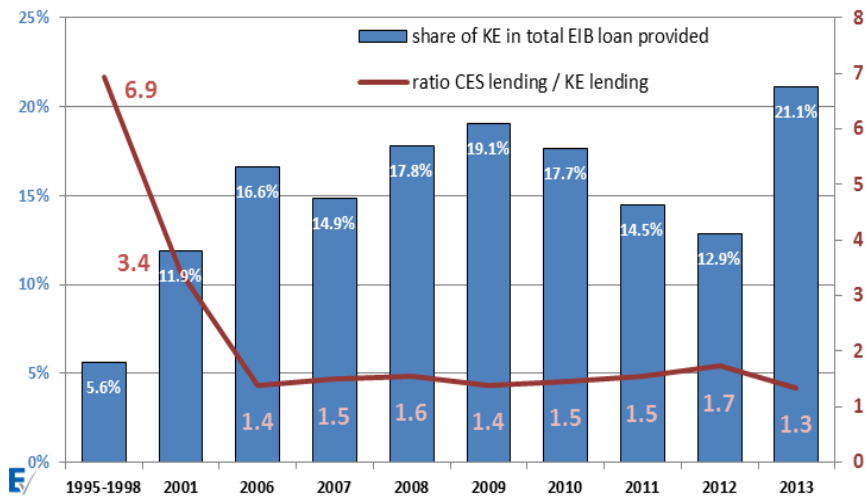


Figure A 3.14: Distribution of the KE portfolio by loan grading (from A+ to ETP)

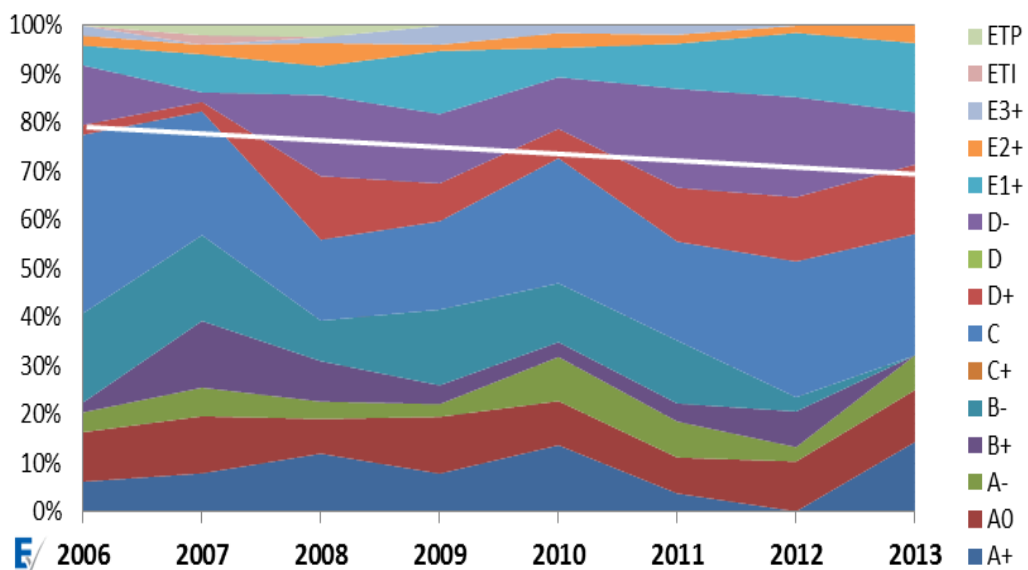


Figure A 3.15: Overall EU-macroeconomic contribution of the EIB KE lending portfolio to KE
(Total EIB signed KE-related loans/total EU+ KE-related expenditures)

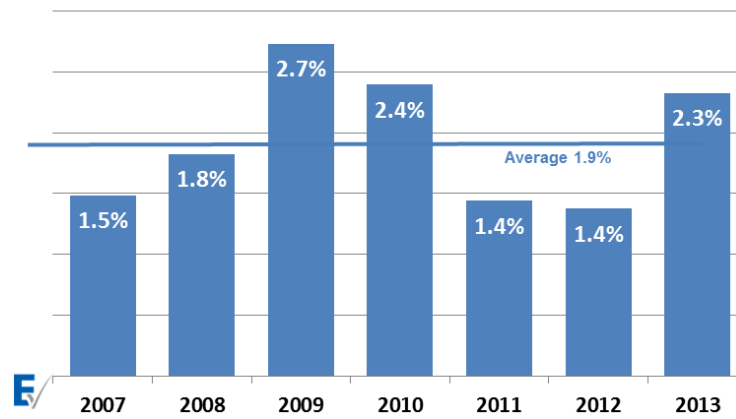
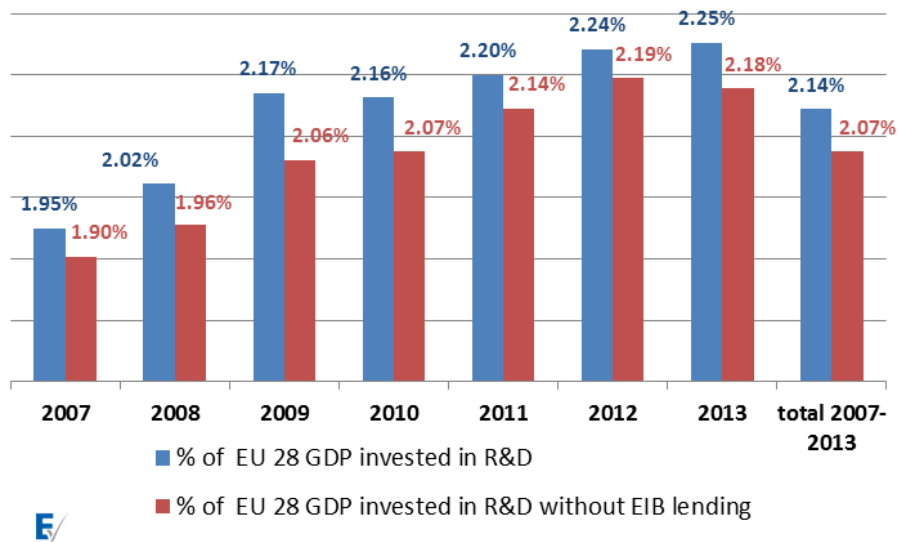


Figure A 3.16: Evolution of the share of R&D expenditures in the EU GDP with and without EIB lending



ANNEX 4: THE SAMPLE: LIST OF THE 58 INDIVIDUAL OPERATIONS EVALUATED

The following 58 operations have been included in the sample of this evaluation. In line with EV's Terms of Reference, promoter identities are not disclosed for confidentiality reasons.

The analysis of these operations resulted in the production of:

- Evaluation summary sheets for operations 1 to 46;
- In-depth reports for operations number 47-58.

#	Country	RDI	Education	ICT	Loan Amount, EUR millions (KE part only)	Signature year
1	Austria	X	X	X	50	2008
2	Bulgaria			X	75	2008
3	Denmark	X			59	2008
4	Denmark	X			59	2007
5	Finland	X			100	2008
6	Finland	X			100	2008
7	France	X			40	2009
8	Germany			X	500	2010
9	Italy		X		120	2010
10	Italy	X	X		150	2008
11	Multicountry	X			30	2008
12	Portugal		X		65	2009
13	Spain			X	500	2009
14	Spain		X		80	2007
15	Spain			X	450	2007
16	United Kingdom		X		79	2008
17	Italy	X	X		15	2009
18	Germany			X	100	2009
19	Austria			X	125	2008
20	Finland	X			150	2011
21	France	X			100	2011
22	France	X			400	2009
23	France	X			400	2009
24	Germany	X			300	2009
25	Germany	X	X		240	2007
26	Germany	X			200	2011
27	Italy			X	300	2011

#	Country	RDI	Education	ICT	Loan Amount, EUR millions (KE part only)	Signature year
28	Italy			X	400	2007
29	Sweden	X			212	2008
30	United Kingdom			X	445	2007
31	United Kingdom			X	35	2007
32	Austria	X	X		250	2010
33	Belgium			X	60	2007
34	Czech Republic			X	150	2010
35	Germany	X			500	2010
36	Germany	X			400	2009
37	Germany			X	410	2009
38	Germany	X	X		240	2007
39	Hungary	X			168	2010
40	Hungary	X			275	2008
41	Italy	X			50	2010
42	Multi-country	X			250	2010
43	Poland			X	400	2007
44	Spain		X	X	220	2007
45	United Kingdom		X		243	2009
46	United Kingdom	X			127	2008
47	Germany		X		350	2009
48	Spain	X			70	2008
49	Germany	X			400	2009
50	Turkey	X			400	2007
51	United Kingdom		X		53	2010
52	Hungary			X	200	2008
53	Multi-country	X			320	2009
54	Spain		X		100	2009
55	Luxembourg			X	200	2009
56	Sweden	X			320	2007
57	France	X			130	2011
58	Italy	X			50	2008

ANNEX 5: THE SAMPLE: FINDINGS AND EVIDENCE BY EVALUATION CRITERIA

This annex presents the detailed findings and conclusions extracted from the 58 reports written in the context of the KE evaluation.

1. Coverage of priorities

The sample of projects selected for this evaluation covered the three main areas of the Knowledge Economy: Education, RDI and ICT.

Although there were a few cases where the operations were identified in the EIB documents as supporting more than one of the three areas of the Knowledge Economy most of the operations had a clear focus on one of the three.

Operations with a focus on more than one area of the KE

Multi-beneficiary loans supporting SMEs with a focus on investments in all three areas of the Knowledge Economy (#1 and #10).

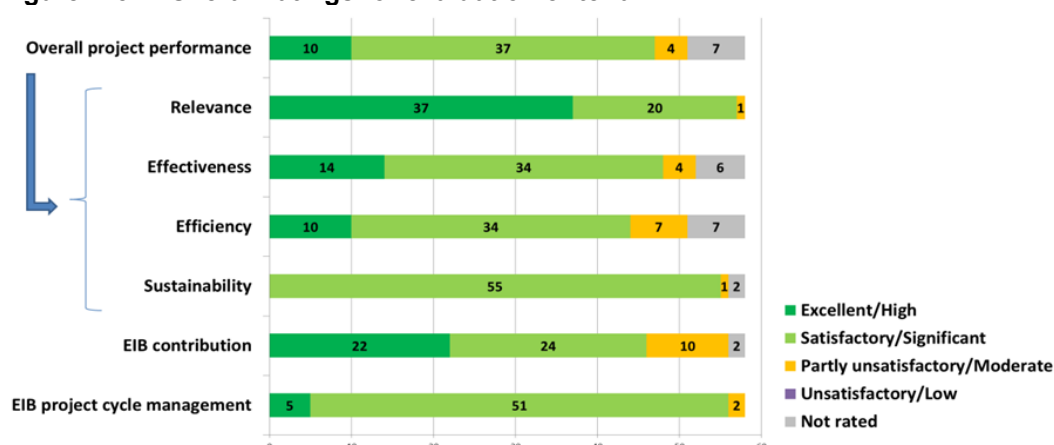
Loans supporting infrastructure investments in tertiary education and also their respective research programs (#25 and #38).

Nonetheless, it should be noted that even for operations with a specific focus on one of the three areas, when the underlying investments of the operations were analysed there was an implicit or explicit support of two or even all three aspects of the Knowledge Economy. This is to be expected as education reinforces the knowledge base, RDI helps to expand it and ICT acts as an enabler. This proved to be true at the level of the projects supported by the EIB and the knowledge triangle (i.e. links between education, RDI and ICT) was found in all the operations when reconstructing the intervention logic for the projects to link the expected operational outputs with the ultimate long term goals. This reinforces the rationale for grouping the investments as Knowledge economy rather than treating them as investments in the three separate areas.

2. Overall performance

Overall, the 58 projects that were examined as part of the evaluation sample performed well in terms of the evaluation criteria. The following chart provides an overall summary of the ratings given to the projects with regard to relevance, effectiveness, efficiency sustainability, EIB contribution and EIB project cycle management. Overall project performance considers in the calculation of its rating the criteria for relevance, effectiveness, efficiency and sustainability. EIB contribution and EIB project cycle management are only rated as separate criteria.

Figure A 5.1: Overall ratings for evaluation criteria



For more than half of the projects examined, **overall project performance** was rated as being either 'excellent' or 'satisfactory'. Issues linked to the effectiveness of four operations led to a partly unsatisfactory overall project performance rating and for two of these four the negative rating was further accentuated by issues identified under efficiency. The overall performance for a small number of projects (seven) could not be rated because the required information, mainly related to aspects of effectiveness or efficiency, was not available. Additionally, there were a number of difficulties concerning the evaluation process, which have also affected the capacity of IG/EV to rate the operations. These are summarized in the core report (section 1.4). In this evaluation, there were no unsatisfactory/low ratings given to any of the operations.

3. Detailed findings and conclusions relating to evaluation criteria

Although ratings are operation specific, there are some aspects which have positively or negatively influenced the rating for each of the criteria that were common across various operations of the sample. The key aspects influencing the ratings upwards or downwards are listed below for each of the IG/EV criterion in order to derive findings and conclusions which could be extrapolated to future operations.

Some of the more detailed issues affecting the evaluability and the measurability of the operations are also addressed in this Annex, with the main issues raised under each of the evaluation criteria.

Relevance

The projects scored particularly well in terms of their relevance to key stakeholder objectives (64% excellent, 34% satisfactory and only one operation rated partly unsatisfactory). Specific areas of the KE received higher ratings under relevance; there was a predominance of high ratings in the RDI and ICT areas. In the case of RDI projects, projects in the pharmaceutical sector as well as projects in the automotive or machinery sector were expected to generate benefits which went beyond the KE boundaries thus increasing their relevance. In the case of ICT there were a large number of projects with a strong focus on convergence, rural or less developed areas thus contributing to bridge the Digital Divide, a priority for both the EU and the EIB. Operations supporting hospitals demonstrated a higher relevance and potential contribution to the KE when the investments covered university hospitals (#14). Due to their nature, these specific types of hospitals were found to be strong at promoting collaboration between different key actors of the KE across the private and public spheres.

Including the abovementioned, there are some aspects to be highlighted which were considered positive by EV, leading to excellent ratings under relevance. The first aspect in the Table A 6.1 below refers to the degree to which the operations had been tagged upfront as contributing to the EIB priorities under each of the three KE areas.

Table A 5.1: Aspects driving the relevance rating upwards

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
Support of an EU or EIB priority through the operation more justified in the EIB documentation	Development of telecom networks (including an operation supporting the launch of a satellite) in convergence regions, rural or less densely populated areas to bridge the Digital Divide.	#2, #8, #13, #15, #19, #31, #34, #43, #52, #55
	Support for intangible investments (i.e. research) in tertiary education establishments.	#25, #38
	Support for KETs (i.e. nanotechnology) which would additionally have a positive impact on climate mitigation through emission reductions.	#46
Excellent degree of complementarity with other key stakeholders built into the operation design	Involvement of institutional partners in order to reinforce the success of the operation's objectives through agreements with industrial associations to facilitate the identification and disbursement of funds to eligible mid-caps.	#10
	Support for an operation with a key role in the reconfiguration strategy within a region of a Member State introducing a new philosophy supporting the integration of public, private and social actors and exploring PPPs in the health sector.	#12
	Design of project determined by the provisions of a facility agreed with the government of a Member State, highly consistent and complementary with the objectives of a national initiative. Overall, the project was designed to address both local and national needs through co-ordinated procedures bringing together local and national policy.	#45
	Support for a national R&D program providing additional blending of different sources of funds.	#50

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
	EIB support supplemented previously achieved funds from European Regional Development Fund, an independent organisation supporting innovation and own University's resources.	#51
Demonstration project -First operation in a sector/sub-sector with a high potential to allow future support through other EIB operations	First project supported by the EIB dealing with the digitalization of production, distribution and broadcasting of content.	#33
	First project supported by the EIB dealing with e-commerce and related logistics.	#18
Benefits of the operation which were expected to go beyond KE boundaries	Improvement of health through the development of new or improved medical compounds or treatments.	#3, #7, #21, #35, #48, #49, #58
	Climate mitigation through the development of new technological solutions expected to result in emission reductions.	#4, #20, #22, #23, #24, #26, #36, #53, #56, #57

There was also an issue with the relevance of design of one operation which resulted in a partly unsatisfactory rating for relevance in one of the operations in the sample (see Table A 6.2 below).

Table A 5.2: Aspects driving the relevance rating downwards

Aspects driving the rating downwards	Additional detail specific to operation(s)	Operations
Inadequate design of the operation	Intermediary selected without a full view of their pipeline potential when signing the contracts leading to a cancelation of almost half of the signed amounts.	#47

Other points for further reflection

Despite an overall very positive relevance of the operations as regards the different stakeholders (i.e. EU, national, promoter and beneficiaries) at the different levels, several additional areas which might require further reflection were noticed across all or a large part of the sample of operations assessed.

Internal coherence and relevance of design

In most of the operations from the sample, the operation objectives were easily derived from the EIB operation documentation and the intervention logic was in most cases easily reconstructed. The objectives were scattered in different sections of the appraisal report and other documents. In general terms they are not clearly stated or identified as project objectives. It had to be deduced since they are included within many descriptive aspects of the project.

The intervention logic was reconstructed and considered coherent by the promoter and the EIB services, which agreed with the logic behind this framework, in the discussions with EV. It should be noted that this was done ex-post for all project evaluations and that this clarity did not exist when the projects began. This complicated the assessment of the operations as described later in the effectiveness section.

Furthermore, there is a misalignment of expectations between the information presented in the appraisal and the Board Report versus the contract. The latter is usually more general and ambiguous in terms of what the operation is expected to achieve and how it is going to add value to society. Although this provides more flexibility during implementation, since the promoter is only currently aware of what is in the contract, there is a risk of deviating from the original expectations that were presented in the Board Report.

Relevance in relation to EU policies

In many of the operations from the sample, although the operations clearly supported EU policy, there was no explicit mention in the EIB documents of the specific objectives within EU policy that were supported and whether this was or was not an EU priority for the area. It is noted, though, that that EU priorities are taken into account when defining EIB priorities in the different sector strategy papers. However, the degree of alignment of a specific operation with an EU priority is difficult to infer without knowledge of a sector's strategy. This also makes it more difficult to categorize or highlight operations that have a stronger focus than others on EU priorities.

Relevance in relation to EIB policies, strategies and priorities

Although all operations can be linked to one or more priorities for the different areas of the KE, in most cases the EIB documentation did not explicitly mention which EIB priorities under the KE were being supported and how the operation was contributing to tackling these priorities. A link between the operations and the priorities they targeted has been reconstructed by IG/EV and can be found in Table A 4.13 of this Annex. Operations for which support to EIB priorities was more clearly justified in the documentation are mentioned in Table A 4.1 above (i.e. operations #2, #8, #13, #15, #19, #25, #31, #34, #38, #43, #46, #52 and #55).

Relevance in relation to national, regional and local needs

Although most if not all of the operations had clear relevance as regards the national, regional and local policies there were not many cases found in the sample of an explicit attempt to maximize the complementarity of EIB funds with funds coming from national or EU interventions, or to include other key stakeholders in the design or during the implementation of the operation. The exceptions where clear explicit attempts to maximize complementarity are mentioned in Table A 4.2 above (i.e. operations #10, #12, #45, #50 and #51). A better understanding or assessment of the role of the stakeholders was lacking in the EIB documentation, beyond those with which the EIB signed the loan and linked to the supported investments.

National, regional and local relevance was higher for the public sector operations across all three areas of the KE. This is explained by the inherently stronger alignment of the public actors with EU policy since public authorities are in charge of aligning EU objectives to the specific national context.

Relevance in relation to promoter needs

Since the intermediate objectives used to reconstruct the intervention logic referred to the objectives of the promoter for undertaking the investment, there was a positive bias created at this level.

Relevance in relation to promoter and final beneficiary needs

A discussion is recommended on what the EIB refers to when talking about final beneficiaries, which is usually referred to in the EIB documents as the intended recipients of the funds. This evaluation made the distinction between promoter needs and final beneficiary needs, the latter referring to the EU citizens benefitting from the outcomes of the operations. Most of the operations considered the promoter as the final beneficiaries. Since the intermediate objectives that were reconstructed from the EIB documents in most cases referred to the promoters, there was a positive bias created since it is intuitive to expect that the operations were highly relevant to the needs for which they sought EIB funds.

Final beneficiary needs covering the benefits to the final users/consumers, was not really the focus of the EIB documents. This aspect of relevance was not explicitly addressed in the documentation but in the majority of cases, it is considered as self-evident since both the public and private sector undertake their investments with these final users in mind, albeit from a different perspective. Private promoters tend to aim at optimizing market benefits whilst public promoters usually have a stronger focus on maximizing social benefits. A brief analysis of the key stakeholders can be found in the main report.

In any case, it could be useful to highlight the specific expected contribution to the final beneficiaries as this is the ultimate purpose for EIB support, as an EU institution. In several operations, the information to assess this section, came from the ERR assessment.

Effectiveness

Overall the projects scored well in terms of their effectiveness (24% excellent, 59% satisfactory and 7% partly unsatisfactory). The high number of operations in the sample supporting large corporates, leaders in their sectors of activity and, in many cases, with R&D intensity above the sector average⁷⁴ are also considered to have resulted in a positive bias for effectiveness.

The effectiveness of six operations (10% of the sample) could not be rated for several reasons:

- Not enough information available on the degree of achievement of the objectives to put forward a rating (i.e. #18, #42, #53). For #18 only limited written feedback was provided to EV. In the case of #42 and #53 it was not possible to arrange an interview with the promoter to obtain additional information.
- Change in the objectives during the life of the operation with not sufficient data available to assess the initial objectives (#30).
- Operations were at a too early stage of progress (#32 and #39). In the case of #32, the operation had been completed only a few months before the evaluation by IG/EV and it was still too early to assess the degree of achievement of the objectives since the outcomes had not yet materialized. In the case of #39, due to justified delays in the achievement of the objectives, the EIB Services provided an extension of the project deadline until the end of 2014. This is after the date the field work for the evaluations took place.

Compared with many other spheres where the EIB intervenes, the effectiveness of KE projects in the areas of education and RDI are particularly difficult to evaluate because the investments are often of an essentially intangible nature and the benefits only become apparent in the long-term.

IG/EV assesses effectiveness based on the extent to which the operational, intermediate and global objectives of the project have been achieved or are expected to be achieved. The nature of many of the objectives, especially for RDI and education, makes it more difficult to project the potential achievement of the objectives, requiring a much longer timeframe than for other EIB priorities, to properly assess.

Additionally, RDI projects are particularly difficult to evaluate as the “real” outcomes and impact are linked to the RDI product development cycle which is usually much longer than the start and end of works defined for this type of operations. Furthermore, the R&D activity is usually interlinked across different research objectives, with developments in one area benefiting or affecting other strands of research. This is well exemplified in the automotive sector where R&D investments to reduce particle emissions have implications on performance, safety, vehicle design and comfort, etc. In operation #56 it was difficult to isolate R&D activity focused only on emission reduction, the “documented” main objective of this operation, for this very reason. This makes it more complicated to evaluate progress unless specific milestones for the period in question are defined and agreed upfront between the EIB and the promoter. Discussions indicated that although these milestones cannot be contractually binding, they could still serve to justify the degree of contribution to the KE. These milestones and criteria should also be aligned with the promoter’s monitoring objectives which they use to assess the success of their R&D activity. For example in operations in the automotive sector where the objectives were linked to compliance with EU emission regulation, at least this objective was easier to assess as the conditions under which success would be judged were clearly defined upfront.

In the case of ICT projects supporting the telecom sector, there are usually more concrete intermediate and long term objectives and targets identified. Additionally in this sector the rapid pace of technological change creates an incentive for these types of projects to exceed their initially planned objectives in order to keep up with the latest technologies. Both these aspects created a certain positive bias in the effectiveness rating for these projects. The promoters operating in this sector demonstrated a high degree of flexibility in adapting their objectives during implementation to respond to the rapid pace of technological change.

Including all the elements already mentioned above, there are some aspects to be highlighted which were considered very positive by IG/EV and which led to excellent ratings under effectiveness.

⁷⁴ Especially for operations in the pharmaceutical sector

Table A 5.3: Aspects driving the effectiveness rating upwards

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
Expectations ex-ante clearly defined upfront and targets clearly exceeded	Operations supporting investments for the roll-out of communication network infrastructure in the telecom sector which had clear and measurable targets defined ex-ante which were exceeded at the end of the implementation of the investments.	#2, #8, #15, #34, #52
	Combination of a clearer definition in the appraisal report of the criteria that was to be used for prioritizing and selecting R&D projects and an indication that the initial expectations had been exceeded ex-post.	#4
	Support for R&D investments which met the original objectives and resulted in bringing to market technologies that improved the potential for the promoter to expand its activities into new sectors and new geographical areas	#41
	Expectations defined clearly upfront for the timeframe supported by the EIB with an industry benchmark provided on expected number of medical compounds to reach the market and much more detailed information on progress of different compounds through the R&D cycle. Evidence of clear benefits of new compounds to improvement of treatments for certain medical conditions was also available.	#49
	Significant improvements in the technology standards delivered through the operation, when compared to previous available technologies, allowing for an excellent achievement of the intermediate and global objectives.	#55
Technological breakthrough leading to clear improvement of objectives or benefits to sector/society	RDI support meeting objectives and with a technological breakthrough with important implications for the long-run competitiveness of diesel manufacturers and for the viability of hybrid technologies which rely on electric and diesel components.	#22
	Achievement of objectives complemented with a clear contribution of the project to the educational excellence of the region as well as to the tourist attractiveness. Most importantly, the project has led to the further development of the whole region, resulting in the construction and upgrading of infrastructure (e.g. transport facilities) in the city.	#51
	RDI support meeting objectives and bringing to market a technological solution with clear benefits to society (i.e. a technological solution which has already achieved significant reduction of particle emissions)	#57
Clear evidence of flexibility to successfully reprioritise R&D efforts to respond to crisis whilst maintaining market position as technology leader	Clear evidence of flexibility within the promoter was found to reprioritise R&D efforts to respond to crisis whilst maintaining market position as technology leader at the end of the timeframe supported through the EIB operation.	#29
Significant progress shown in the achievement of the objectives taking into account that ex-ante expectations were too ambitious	Significant progress was evidenced across the R&D programs of a country despite ex-ante expectations and targets having been defined at a too high level, probably because of political considerations. The R&D targets imposed on the country were not considered realistic by the evaluators and the achievements when compared to the base scenario were considered exceptional.	#50

There were also some aspects which resulted in a partly unsatisfactory rating for effectiveness for several of the operations in the sample (see Table A 4.4 below).

Table A 5.4: Aspects driving the effectiveness rating downwards

Aspects driving the rating downwards	Additional detail specific to operation(s)	Operations
Lack of progress on achievement of objectives	A large part of the funds signed have not yet been allocated with an extension of the allocation deadline and with uncertainty as to whether this will happen. The effectiveness of the operation could still improve depending on whether all funds are eventually allocated.	#1
	Operation was closed internally and a PCR was produced, rather than extending the end of works deadline, despite the fact that at the end of works date not all the planned investments had been completed. Thus, the achievement of objectives at the time of the IG/EV assessment remained only partially achieved. It was noted, that if this operation was evaluated again in the future and the objectives had advanced the rating under effectiveness would positively improve.	#14
	The project was only partially implemented with its scope reduced to only one out of the 5 main outputs initially planned. It should be noted that despite the reduction in scope some of the investments excluded from the EIB loan were undertaken using other sources of funds, with some indications that <u>some</u> of original objectives were covered by the promoter.	#17
	Underperformance in the achievement of the objectives and expectations defined ex-ante	#40
Deviation of the original objectives from the expected focus on KE investments	A large part of the investments to date do not appear to be in line with the Knowledge economy eligibility. The financial intermediary at the start of the operation had a line of business focused on education projects. However, this line of business which provided reassurance on the potential to identify investments in this area was closed. Despite this signature of an additional tranche was made without a reassessment of the potential of the pipeline to still comply with the Knowledge economy focus.	#1

Other points for further reflection

Defining better ways to monitor operations supporting R&D investments

There were certain projects supporting R&D programmes where the objectives and expectations of the activity supported were more clearly defined ex-ante allowing for a better assessment of success. This is true for operations #4, #41 and #49, both abovementioned. In the case of the latter (i.e. #49), an effort was also made to define for the timeframe supported by the EIB operation an industry benchmark to determine the average number of compounds expected to reach the market and detailed information on progress of different compounds through the R&D cycle. This additional information facilitated the assessment of the effectiveness of the R&D activity during the period supported. Overall, it was observed that when the EIB services had aligned the objectives of the operations with those of the promoters, it was easier to monitor and assess success. For example, in the case of operations where the objectives were very clearly linked to the legislative requirements, the assessment of a successful implementation was rather straightforward - for example EIB operations in the sample supporting the automotive sector in complying with EU emission regulations. Reliance on the success measures used internally by the promoters to determine the degree of achievement of the objectives helped IG/EV to better assess the objectives for these operations.

Changes to objectives of operations during implementation

The lack of visibility for the EIB on changes made to the objectives of the operation are considered to have created a reputational risk during implementation, as the Bank did not have real visibility as to what the money was being used for. Fortunately, this risk did not materialize. The Services highlighted that a mid-term review report was being asked from the promoters to have a better understanding of progress and direction for the operations. This being said, for the operations in the sample, this report was not found.

Efficiency

Overall the projects scored well in terms of their efficiency (17% excellent, 59% satisfactory and 12% partly unsatisfactory). Additionally, the efficiency of a number of operations could not be rated for several reasons, i.e. not enough information available on several aspects of efficiency to put forward a rating (i.e. #9, #18, #42).

Also, as a result of not being able to assess effectiveness for the reasons described in the previous section, efficiency could also not be rated (#30, #32, #39 and #53).

No specific positive or negative biases by KE area, sector or any other grouping were observed when rating efficiency. However, there were several aspects of efficiency for operations supporting intangible R&D investments which were difficult to assess, particularly, project cost and timeliness.

Project cost: When supporting intangible R&D investments or an overall R&D programme of a promoter, an increase in costs is not generally negative since it might be the result of an increase in R&D intensity. For these types of operations, there would normally be a need to assess the cost effectiveness of the investment. However, in order to assess this, there needs to be more information on the expected outcomes of the R&D. As this information was difficult to obtain, the evaluation mostly limited itself for this type of operations to large unjustified deviations in the expected R&D expenditure and whether these variations were justified.

Timeliness: Assessing the timeliness of intangible investments was difficult. This was the case particularly for operations supporting R&D programmes of the public/private sector, including those of educational or health establishments. An additional complication in assessing the efficiency of R&D programs is that they are made up of many activities which are constantly on-going and which are constantly being reprioritized to respond to the findings during the different phases of the RDI lifecycle. These changes are difficult to foresee and the capacity to be flexible and adapt the R&D activity is actually a positive aspect. The evaluation limited itself for most of this type of operations to trying to determine whether there were large unjustified delays or important advances to the timeline during the period supported through EIB investments.

Including the abovementioned, there are some aspects to be highlighted which were considered very positive by EV, leading to excellent ratings under efficiency.

Table A 5.5: Aspects driving the efficiency rating upwards

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
FIRR and/or ERR surpassing the original ex-ante expectations	FIRR and ERR with better results ex-post than originally expected as per EIB appraisal.	#2, #6, #26, #31, #34, #55
	Excellent project management led to actual investment expenditure being below projections for the same scope.	#54
	ERR higher than originally expected with clear indications of very positive economic social and economic externalities in the regional economy including some aspects such as economic spill-overs through technology transfer and clustering.	#38
	The promoter went beyond the national regulation as regards environmental related aspects of the design of the buildings. This led to a higher ERR as a result of additional benefits to final beneficiaries/society	#54
Achievement of R&D objectives significantly ahead of schedule and/or with lower expenditure than foreseen	R&D programme to develop engines compatible with Euro V, Euro VI, US07 and US10 standards was completed one year ahead of schedule.	#56
	Large and complex project where part of the objectives concerning the rollout of 4G services was done ahead of schedule	#8

There were also some issues which resulted in a partly unsatisfactory rating for efficiency in several of the operations in the sample (see Table A 4.6 below).

Table A 5.6: Aspects driving the efficiency rating downwards

Aspects driving the rating downwards	Additional detail specific to operation(s)	Operations
Significant delays and/or cost overruns in the achievement of the objectives	This is a multi-beneficiary dedicated loan to supporting the Knowledge economy. The second tranche has been signed and disbursed to the financial intermediary but after several extensions of the allocation period there were indications that it might not be fully allocated and even less that it will be allocated to Knowledge economy projects.	#1
	The project delivered the required technical solutions but there was a cost overrun of more than 40% and some delays for taking the product to market. Although the crisis required additional R&D investments to reduce the unit costs of the vehicles, this is already a normal concern within the sector and it does not justify such a large cost overrun.	#22
	There have been delays in the construction, as well as delays in the purchase of key medical equipment for one of the health establishments supported. One of the supported health establishments has also suffered an important reduction in scope. The delays have been linked to the financial and economic crisis and the resulting austerity program put in place by the regional government. However, these delays have generated a certain degree of deficiencies in health services performance during this period. It is noted though that without this project the situation would have probably been worse.	#14
Financial and or economic performance below expectations	Major revisions in the project design and changes in the management had a negative impact on the operation's financial and economic performance well below its expected potential.	#37
	Project cost overruns and longer than planned completion of the start of the activity of the promoter. Although this might seem justified for a prototype, as the one supported through this operation, this created a delay in the start of the remunerated activity having a negative impact on performance.	#58
	Financial performance was below expectations. The initial expected returns were based on a target production of electric vehicles that was probably too optimistic. EV's note that a slower uptake is to be expected when a new technology is being brought to market.	#23
	Changes in the government following elections led to a shift in the R&D priorities of the national programme supported through this operation. The changes introduced led to delays and, eventually, the discontinuation of parts of the project, affecting the economic performance and the potential externalities that could not reach the level initially envisaged.	#40

Other points for further reflection

Project cost for operations in sector with a fast technological innovation rate

Expenditures for most of the operations supporting the roll-out of communication networks turned out to be lower than foreseen and in the majority of cases with better technological solutions implemented at completion. Cost reduction should be also viewed in the context of a general trend in the industry of falling equipment prices. This was mainly due to the rapid pace of technological innovation in this area.

Project management

Project management was particularly strong across most of the operations. This is to be expected considering that the quality of the promoter is a criterion assessed at appraisal. Project management was also positively influenced by the fact that many of the private sector operations were made with large corporates or midcaps with a strong competitive position in their corresponding market. There were several operations also supporting companies which were part of a larger group and which therefore benefited from this knowledge and experience (i.e. for example #2 and #34 were loans with telecom operators in the new Member States but which belonged to two large European operators).

FIRR and ERR in operations supporting R&D programmes

Although qualitative assessments were found in most cases, it is not always possible to accurately calculate IRR and ERR ex-ante or ex-post as many R&D projects are still in a research phase, or part of an overall programme that is not possible to separate out into individual sub-projects. As a result, ex-post monitoring and comparisons to ex-ante conditions are not straightforward.

Sustainability

The sustainability of the operations was rated positively across almost all of the operations in the sample (94% satisfactory and only one operation rated as partly unsatisfactory). The sustainability of two operations could not be rated since they were at a too early stage of progress (#32 and #39).

In comparison to the ratings for the different criteria, there is clearly a greater share of 'satisfactory' ratings for this criterion.

Under this criterion there were different aspects of sustainability assessed. Although there were some sub-areas of sustainability which were deemed as excellent when combined with other sub-areas of sustainability, this led to an overall satisfactory rating for almost all of the operations in the sample. For instance many of the operations supporting R&D programs of large corporates in the pharmaceutical sector (e.g. #35 or #49), were considered to have an excellent level of physical and operational sustainability as regards the R&D activity supported. However, these companies operate in a sector which is subject to many risks that need to be constantly mitigated, thus reducing the rating assigned.

There are some aspects to be highlighted which were considered positive by IG/EV within the different aspects of sustainability which were assessed.

Table A 5.7: Aspects positively influencing sustainability

Aspects reducing sustainability risks	Additional detail specific to operation(s)	Operations
Limited physical or operational risks to the sustainability of the projects	Existence of satisfactory project implementation and appropriate mechanisms to ensure long-term viability.	Most operations in the sample.
Mechanisms to secure maintenance for constructed establishments during their life of operation in the health and education sector	In the case of education infrastructure projects (schools, universities) and hospitals the necessary maintenance activities were included either as part of the project itself or were part of the long-term commitment of the promoters.	#9, #12, #14, #16, #17, #25, #32, #38, #44, #45, #51, #54
Private promoters with global market presence	Private promoters with a global market presence allowing them to diversify their efforts across different markets thus helping them to mitigate the effect of the crisis.	Most of the private promoters across different sectors (i.e. automobile, pharmaceutical, machinery, global telecom players, etc.)
	R&D activity supported by the EIB loan helped the promoter to enter new markets.	#7
Flexibility to adapt strategy and direction in response to the crisis	The strategic direction of many of the promoters changed during the crisis in order to adapt to the changing landscape.	Operations for which investments were taking place during the crisis
EU regulation in place to reduce environmental sustainability risks	Sectors which have more potential for negative effects on the environment are heavily regulated and these regulations generate a need to heavily invest in R&D in order to comply with the upcoming standards of future regulations.	Mainly projects in automobile, machinery and chemical sectors

Aspects reducing sustainability risks	Additional detail specific to operation(s)	Operations
Strong private promoters	Private promoters which were supported through direct loans were strong corporates or large mid-caps with sound project and financial management experience and a consolidated position in their sectors of activity with good or at least stable financial and economic prospects. It should be noted that this evaluation excluded most of the RSFF operations as they had been evaluated recently. As a reminder, RSFF operations have a weak investment grade or are below investment grade, whilst the operations in this sample are above investment grade in line with standard EIB risk practice.	Operations supporting private promoters
R&D portfolios balancing fundamental research and innovation	The private promoters in the sample balanced their efforts between fundamental research and innovation, so that the benefits of innovations close to being brought to market would “cross subsidize” the riskier and more uncertain results of fundamental research.	All operations supporting R&D
Private and public sector collaboration on R&D initiatives	Evidence was found across most of the private promoters in the sample which relied on the public sector, mainly through partnerships with universities or on grant supported programs for part of their fundamental research.	Operations supporting private promoters

Aside from the absence of the positive elements mentioned in the table above, there were also some issues identified which increased sustainability risks in several of the operations in the sample (see Table A 4.8 below).

Table A 5.8: Aspects increasing sustainability risks

Aspects increasing sustainability risks	Additional detail specific to operation(s)	Operations
Inherent nature of R&D activity	R&D projects are risky by their very nature so there is no guarantee of a marketable product at the end. Long term sustainability of a specific EIB funded activity can be difficult to achieve.	All operations supporting R&D
Risk for R&D on new technologies for which demand is still uncertain	Tariffs were not agreed at a national level and a steady flow of revenues, sufficient to guarantee the sustainability of the centre, was not secured at the time of the evaluation of this operation. Additionally, the future availability of financial sources to cover research costs is uncertain and service agreements for clinical activities with the National Health System are still to be finalised.	#58
	There were several projects supporting R&D on new technologies for which demand is not clear, consolidated or dependent on additional investments to make them more viable. In the case of R&D to market electric vehicles, additional investments in infrastructure are still required to make this technology more attractive to potential users. However, the R&D activity of these promoters was diversified and included other developments with a known market use.	#23, #36, #57
Pressure on increasing innovation and in parallel reducing costs	As a result of more intense price competition as a result of the crisis, the promoter’s had to deliver increased innovation whilst reducing and streamlining their costs.	Observed mainly in operations supporting the automotive sector
	In the medium to long term, price pressures, expiry of patents and substitution through generics could mean	Operations supporting R&D in

Aspects increasing sustainability risks	Additional detail specific to operation(s)	Operations
	that the revenue streams from existing or even new products could decrease faster than initially expected.	the pharmaceutical sector
Changes in national priorities as a result of a change in government during life of the operation	There was one operation where there was an absence of any mechanisms to shield the project from the radical changes introduced by a new government and which led to significant underinvestment. One of the actions taken in order to mitigate this risk, includes discussions between the EIB services and the national authorities regarding the national strategy for the Member State's education and research sectors to be developed for the current EU programming period. This is expected to increase the complementarity of EIB's intervention during the EU programming period.	#39

Other points for further reflection

R&D viewed by promoters as a necessity to maintain competitiveness

The negative market trends due to the crisis are risks which affected all sectors assessed in this sample. Through the assessment of the operations during this period, it was confirmed that the promoters across all operations supporting R&D investments, saw this as a strategic expenditure, that would have happened even without EIB support since it was viewed as a necessity to safeguard the promoter's position in the market and, from that perspective, the project itself acted as a mitigating measure. Even though the R&D programs would have taken place regardless of EIB support, the evaluation found indications that EIB played a role in facilitating these investments as already mentioned in several instances in this annex.

Lack of feedback provided to the EIB on changes in priorities and strategic direction until completion

The lack of feedback to the EIB on changes of objectives by the promoter during the implementation of the operations reduced the potential for EIB to assess possible new risks and determine whether adequate mitigating measures in place (e.g. #30, #42). This limited the capacity for the EIB to decide whether the risks incurred are properly being mitigated with respect to its risk appetite.

EIB continued support to promoters

EIB support through several operations to the same promoters was also found to contribute to reducing sustainability risks for repeat operations⁷⁵.

EIB contribution

Overall this criterion is the one which had a larger variation in ratings across the sample (38% high, 41% significant and 17% moderate⁷⁶). No specific positive or negative biases by Knowledge economy area, sector or any other grouping were observed when rating the EIB contribution. However, the timing of the operations (i.e. pre-crisis, crisis or period following first signs of recovery) and the nature of the counterparts (i.e. public or private) resulted in some trends as regards the ratings.

The large number of operations in the sample having taken place during the crisis resulted in a positive bias for EIB contribution, since during this period the potential sources of funds for counterparts became much more limited or less favourable.

The EIB contribution of two operations in the sample could not be rated since there was not enough information available and also no possibility to interview the promoter to clarify aspects of EIB contribution (#18, #25).

EIB contribution was assessed as high when one or several positive aspects were found within the operation. In order to assess this criterion, operations were compared not only with what would be

⁷⁵ There were promoters which signed more than one operation with the EIB in over 50% of the overall Knowledge economy portfolio.

⁷⁶ The rating of this criterion follows a different naming convention for the rating scale i.e. high, significant, moderate and low. Nonetheless there is a direct equivalence to the rating scale used for the other criteria where High=Excellent, Significant=Satisfactory, Moderate=Partly unsatisfactory and Low=Unsatisfactory.

expected for the specific operation but also with what EIB contribution was given to other similar operations in the sample during the same time period.

It should be noted that some of the aspects improving the EIB contribution to the operation in some cases also had an impact on the criteria linked to the overall project performance i.e. relevance, effectiveness, efficiency and/or sustainability of the operation. For this reason, some of them overlap with points raised in the sections for the IG/EV criteria covered under the overall project performance sections. Some of the operations mentioned as examples below presented positive aspects but were not necessarily rated as high. The examples listed are not exhaustive since some of the positive aspects might have been present but less relevant to the promoter and therefore not highlighted in the documentation or in the interviews as a differentiating factor.

Table A 5.9: Aspects positively influencing EIB contribution

Aspects positively influencing EIB contribution	Additional detail specific to operation(s)	Operations
Clear additionality of EIB funds	EIB loan was the first medium/long term loan requested by the promoter. The EIB was the first provider of long term funds demonstrating clear additionality for this operation.	#7
	Aside from donations, the EIB loan was the only external source of funds available to the promoter, a non-profit entity.	#9
	The EIB provided a significant contribution through its participation in a fund to companies in a region of the EU, which relative to the rest of the EU, is underserved by equity investment funds.	#31
	There were indications that EIB's support to the national R&D program allowed for an increase in the R&D intensity.	#52
Financial advantage and other financial conditions offered significantly better when compared to alternative sources of funds	The crisis affected both the public and private sector and made EIB's contribution more relevant and valuable during this period. Funding was available from other sources but at worse conditions particularly as a result of the crisis context.	#1, #2, #3, #4, #5, #6, #9, #10, #11, #12, #13, #14, #15, #18, #19, #27, #28, #29, #32, #36, #39, #40, #41, #42, #45, #48, #50, #54, #55, #56
	The FVA and other financial conditions were assessed against a comparable alternative source of funding to the promoter at the time of appraisal. However FVA was not recalculated at other stages of the loan cycle (i.e. signature, disbursement) ⁷⁷ .	All operations in the sample.
	A very important aspect of the financial advantage was the large loan amount supporting large scale investments. This was particularly observed for operations supporting large network roll-outs in the telecom sector, including the innovation phase of RDI in this same sector.	#8, #13, #15, #19, #27, #28, #34, #43, #52, #55
Evidence of EIB flexibility in the design of the operation or in adapting to changes in the original contractual conditions	EIB showed flexibility in the design of the operation or in adapting to changes in the contract including in some cases in the priorities or timing of the investments supported through amendments to the contract thus contributing to ensuring a smooth implementation of the supported investments (e.g. disbursement extensions, end of works extension, allocation extension in the case of MBIL, accommodation of organizational and structural changes with the borrower, etc.).	#2, #10, #22, #24, #32, #37, #39, #40, #44, #47, #48, #52, #54, #56, #57, #58
	The EIB facilitated the change from a direct loan to an intermediated loan in order to accommodate to the restrictions of the promoter to accept EIB warranty	#9

⁷⁷ An estimated comparison was possible though for most operations for which there was an IG/EV site visit based on promoter information.

Aspects positively influencing contribution EIB	Additional detail specific to operation(s)	Operations
	conditions due to their legal status as non-profit foundation. The EIB also showed additional flexibility as regards other contractual issues thus contributing to ensuring a smooth implementation of the supported investments.	
	The EIB structured the loan through a financial intermediary as public educational establishments cannot borrow funds directly.	#25
	After the crisis some of the banks involved in the funding of the operation abandoned the project – and more in general many PPP operations. The new conditions of the market meant that maintaining the initial budget of the project was not possible under the initial funding structure. The EIB backing of the project was critical to convince the financial intermediary to accept implementing the project without an increase of the initial budget despite the higher financial costs due to the increase of the interest rates.	#12
EIB funds positively influenced the timing and/or scope of the operation	Although the supported investment would have still taken place there were indications that EIB funds prevented changes in the timing or the scope of the project.	#2, #6, #13, #14, #16, #32
	In the case of operations supporting R&D investments given their critical nature for the promoter they would have happened irrespectively of the EIB loan. However indications were found that the timing and/or scope of the R&D program would have been negatively affected without EIB support. Additionally there were some indications that the EIB loans facilitated making these critical investments minimizing or eliminating the need to make cuts in other areas to be able to undertake them. R&D investments are considered a necessary expenditure to maintain competitiveness.	#3, #4, #5, #7, #11, #21, #22, #23, #26, #27, #28, #29, #39, #40, #41, #46, #48, #56, #57
	In the case of operations supporting investments in education infrastructure for providing compulsory education, the need to be compliant with the respective national and regional regulations for the provision of education meant that the operation would have happened irrespectively of the EIB loan. However indications were found that the timing and/or scope of the R&D program would have been negatively affected without EIB support.	#45, #54
	The EIB loan made it possible to conduct the operation with the desired scope. The scope of the project required a large of amount of funding that the promoter could not obtain from their cash flow generation or other sources	#33, #50
Operation supported by the EIB was a flagship project	The operation supported by the EIB improved the credibility of the counterpart and/or led to other similar investments.	#9
	This was the first time that the EIB financed a project in e-commerce and related logistics	#18
	This was the first time that the EIB financed a project for the digitalization of content.	#33
	This operation is considered as an educational EIB flagship project for the UK. There were indications that the project had a strong signalling effect based on its positive outcomes. The project was successful and became a benchmark for other University projects.	#51

Aspects positively influencing EIB contribution	Additional detail specific to operation(s)	Operations
	This operation has led to promotion of similar comparable education projects with other universities across the UK and to additional signatures between the EIB and other universities for similar projects.	
EIB's loan was specifically designed to complement other sources of national/EU funds	The loan complemented a much larger (earlier) loan by the Member State. The two contributions together allowed the project to proceed. Nonetheless, there was no formal cooperation and coordination with the national government	#22
	The EIB loan was provided under the ECTF facility providing support to the automotive sector at a critical time for the sector during the crisis	#23, #53
	There were clear complementarities found between FP7 projects of the promoter and the evaluated operation.	#29
	The EIB operation supported a national investment program of a new Member State (education and R&D). Complementarity of EIB funds to EU and national sources of funds is implicit. Additionally the EIB is also in discussions with the Member State's authorities regarding the national strategy for the national education and research sectors (incl. tertiary education) to be developed for the current EU programming period.	#39, #40
	The EIB operation supported a national R&D programme for an FP7 associated country. EIB support has led to blending of EIB, EU and national funds for RDI development. This is expected to provide additional leverage in increasing the positive outcomes and impacts of the programme and supporting further collaboration between those actors.	#50
Diversification of funds mentioned as an advantage to the promoter	<p>Although not always explicitly mentioned, this is a clear advantage provided to any counterpart by allowing them to diversify their sources of funds.</p> <p>The value of this diversification is dependent on the potential sources of funds available to the counterparts and mainly linked to size/strength or legal status/restrictions.</p>	All operations in the sample to different degrees.
Support to more innovative areas that are perceived as riskier by other providers of funds	EIB understanding of the sector and its risks and constraints allowed for supporting the promoter with long term financing in more innovative areas where the risk is perceived as higher by other sources of funding. The EIB also has a stronger focus on ERR rather than purely on FIRR. This advantage is particularly applicable to R&D investments and to operations supporting network roll-outs in the telecom sector in rural or less developed areas/regions.	#3, #4, #5, #7, #8, #11, #13, #15, #19, #21, #48, #57, #58
Indications that EIB's intervention had a catalytic and/or signalling effect	There were some indications that the EIB loan incentivised other partner commercial banks of the promoter to provide them with bank guarantees.	#6
	According to internal documents, and confirmed by the promoter, without EIB long-term funding, no financial intermediaries would have been interested to finance the project on a long-term basis and at a pricing acceptable for the promoter and consistent with its debt service capacity.	#58
	The promoter recognized an indirect effect from the involvement of the EIB financing which encouraged other financiers to lend the regional authority.	#14

Aspects positively influencing contribution EIB	Additional detail specific to operation(s)	Operations
	The promoter received additional funding for complementary R&D activities from a Nordic bank and this was linked to EIB's involvement. According to the promoter the fact that the firm went through the EIB due diligence process had positive signalling effect for other lenders and helped during their negotiations.	#20
	The EIB's contribution was a significant component of the overall package arranged with the Member state in monetary terms, but also in the signals that it sent to the market at a very critical time.	#22
	Being the first loan under the ECTF facility focusing on electric vehicles, there were some indications that the specific operation promoted further investment in the development of electric vehicles by other car manufacturers. However, it is rather difficult to establish a linkage between the EIB loan and the subsequent operations from other manufacturers, particularly due to presence of the other important incentives, such as EU legislation and increasing market demand.	#23
	EIB funding had a catalytic effect, mainly through the positive signal sent to other financial entities encouraging them to lend money to the promoter. According to the feedback provided by the promoter, after the EIB loan, there was another loan with a commercial bank.	#33
	A catalytic effect of the EIB loan was observed in that the signature of the loan allowed the promoter to send a message to the market that it had secured a large amount of funds and this contributed to securing the funding and attracting other investors to this and other projects of the company.	#56
	The promoter stated that after the EIB loan several banks approached them to offer their services. Therefore they consider that the EIB's involvement gave them visibility and credibility in the market and made it easier for them to attract other sources if they had so wished	#57
	Institutional and/or technical contribution provided by the EIB	The institutional and technical contribution of the EIB is considered excellent as it helped the promoter to negotiate the bank guarantees. Additionally, since the project had to be presented to the EIB in a very structured way, these obligations helped the promoter to improve their governance on many relevant aspects, such as the procurement processes or project management, and to adopt good practices.
The EIB contributed in terms of structuring the transaction and choosing the product fitting best the needs of all parties (including bringing in the loan guarantors).		#41
The cooperation of the promoter with the EIB has been crucial for reconstructing the project design and objectives.		#52
There are indications that EIB's additional requests during appraisal encouraged the promoter to carry a more detailed planning and as a result provide more sound information to the EIB.		#52, #58

Aspects positively influencing EIB contribution	Additional detail specific to operation(s)	Operations
	The promoter considered that if they had wanted to raise funds of a similar magnitude it would have been more difficult for them as they had no clearly defined business plan for the RDI and they were not sure when the products would go to market. The advice from the EIB was considered significant and the promoter stated that it played a critical role in the overall success of the RDI as it helped them to formulate a proper business plan.	#57
EIB long term support through repeat operations	The promoters valued the long term commercial relationship with the EIB and viewed part of the EIB contribution as the cumulative EIB contribution through their history of operations with the EIB	Repeat borrowers

Aside from the absence of the positive elements mentioned in the table above, there are some aspects to be highlighted which negatively influenced EIB contribution. Some of the operations mentioned as examples in the table below presented some of these aspects but were not necessarily rated negatively if they also showed other positive elements. However, one aspect which strongly influenced the lower ratings was the possibility for borrowers at the time of the operation to easily access funds from many other sources to undertake the operation at similar conditions, even if these additional funds might have carried an additional cost.

Table A 5.10: Aspects driving the EIB contribution rating downwards

Aspects negatively influencing EIB contribution	Additional detail specific to operation(s)	Operations
Slow allocation of funds or cancellation of signed amounts in MBIL linked to a partly unsatisfactory effectiveness and reducing potential benefits to final beneficiaries	Slower than expected allocation of funds from the financial intermediary to the final beneficiaries decreasing the potential EIB contribution to the latter. However, it is noted that a slower allocation provides additional financial support to the financial intermediary by providing them with funds at attractive conditions which can be used for alternative purposes pending their allocation. This can be considered as a non-intentional form of institutional contribution especially during the period under review which mainly coincides with the crisis.	#1
	Cancelation of part of the signed loan amount after signature reduced the potential EIB contribution to the final beneficiaries	#47
Intermediated loan without an adequate transfer of benefits to the beneficiary	The loan was provided to the promoter through a financial intermediary. The FVA transferred from the financial intermediary was not perceived as particularly competitive and close to that available on the market. The project promoter stated that they would have favoured a direct credit from the EIB or at least to have known from the initiations of the discussions that the interest rate would reach such a level when compared to other alternatives available to them.	#17
Potential risk of perception by external parties that EIB supports financial intermediaries rather than final beneficiaries.	Slow allocation of funds to final beneficiaries carried a reputational risk for the EIB increasing the potential perception that the EIB supports banks in detriment of EU citizens or SMEs.	#1
Catalytic effect marked as a benefit but no evidence that it materialized	The appraisal indicated a catalytic (demonstration effect) and/or signalling effect but no evidence of this was found for the operation. This created expectations for the operations which eventually did not materialize.	#8, #11, #19, #24, #25, #30, #35

Aspects negatively influencing contribution to EIB	Additional detail specific to operation(s)	Operations
	Although the appraisal or the services indicated a catalytic and/or signalling effect, the promoters themselves did not recognize this effect coming from the EIB operation.	#27, #28
	This operation was supporting the Knowledge Economy investments through the financial participation of the EIB in a fund. There were some indications that taking a position in the Fund early on (i.e. during the first round) had a catalytic effect attracting further investors. This catalytic effect though could not be verified with the Fund manager. Although a catalytic effect can be expected, it would be stronger if this had been the first fund for the Fund manager. This was the third fund managed by this promoter. The publication of EIB involvement in the Fund on EIB's web site might have served as a promotion tool for attracting other investors but this could not be verified.	#31
Support to companies with easy access to funds from the market at similar conditions not explicitly justified in EIB documentation	The EIB supported large corporates which were leaders or with a very strong position in their sectors. Although the financial conditions were better than the alternatives, these promoters had easy access to alternative sources of funds (except during the financial crisis). Although there were advantages provided by the operation supported and justifications for EIB intervention the full rationale for this intervention to justify the EIB loan had to be reconstructed using information presented in different sections of different EIB documents.	Operations supporting large corporates
	Operation where lack of clear justification for EIB loan to a large strong private counterpart generated a public complaint which required some time to resolve. It is noted though that this was positively resolved.	#42
Indications of potential for complementarity with EU, national or regional funds not explicitly explored	There were some indications that the investments supported might have also been eligible for regional, national or EU grants. The project documentation did not present information on the extent to which the possibility of applying for available EU funds was investigated.	#17
	The EIB loan was complementary to other EU and national funding. However the project was not led or coordinated by EIB.	#51

Other points for further reflection

Assessment of contribution of the operation to its objectives with and without EIB support

The ex-ante assessment of the contribution of EIB funds to the operations did not follow a structured approach based on an ex-ante assessment of additionality in order to ascertain the degree of the EIB contribution for the operations supported or the capacity of the EIB loan to influence the scope and timing of the supported investments.

EIB financial conditions

As it would be expected from EIB's constant AAA rating, the financial conditions given by the Bank to support promoters improved as the crisis set in, when compared to their alternative sources of funds. The operations assessed corroborate that the EIB played a countercyclical role during the crisis. During this period the assumption that the EIB provided real additionality is defensible; not necessarily by generating an increase in the investments supporting a specific area of the Knowledge economy but in some cases by preventing or minimizing a decrease in the amounts spent in these areas or by allowing the investments to take place faster than it would have been the case without EIB support. This also explains the positive bias of operations as regards EIB contribution, especially those covering the period of the crisis.

The fact that operations are signed and disbursed is an indication that EIB loan conditions are better than alternative funding sources. As a result an EIB contribution, at least as regards the financial

conditions, is always to be expected, however the degree of this contribution can vary and it is for the EIB to decide when it should intervene. As enumerated in table x above, there are also other ways in which the EIB can contribute to supporting operations. The financial conditions for some of the operations in the sample, mainly those to large corporates were very positive during the crisis but became less advantageous as time evolved and the difficulties in tapping the bond market had been overcome (for example #23, #32, #36, #37, #49). There were even promoters that took an EIB loan during the crisis and then decided or considered to pay early once the constraints imposed by the crisis had dissipated (e.g. (#3, #30, #49).

Considering EIB's commitment to be financially self-sustainable and its desire to maintain its AAA rating, there are benefits to providing financing to some promoters even where the EIB financial value added is "Low", as long as the operations are aligned with EIB priorities, to maintain the overall risk diversification strategy for the Bank. It should be considered that having a significant share of "plain vanilla" projects also makes it easier for the EIB to be able to lend to riskier counterparts and/or projects and/or participate in more innovative instruments or initiatives, which also usually carry a higher risk.

Institutional and technical assistance

Some cases were found where the EIB provided an institutional and/or technical assistance. However, considering the strength of the promoters as regards project management and financial soundness, this type of support is normally not requested by the promoters from the EIB.

Support to R&D investments

Several promoters highlighted EIB's support to their overall R&D program as something valuable which provided them with considerable flexibility (e.g. #21, #26, #56). Despite forcing the promoters to identify and monitor eligible R&D investments in order to apply for the EIB loan, the EIB funds were considered as an injection of cash that helped the promoter's to undertake their R&D investments. These constraints and administrative preparation required to be eligible for an EIB loan were considered justified by the promoters, in particular with promoters expecting future potential operations with the EIB which considered that the administrative burden would decrease for subsequent operations.

EIB project cycle management (PCM)

EIB PCM was found satisfactory or better for all but two operations (9% excellent, 88% satisfactory and 3% partly unsatisfactory). This reflects that it was overall in line with the procedures and requirements valid and applied at the time. However, this rating does not provide an opinion on the intrinsic quality of these procedures and requirements. No specific positive or negative biases by KE area, sector or any other grouping were observed when rating this criterion.

There are some aspects to be highlighted which were considered very positive by IG/EV and which led to excellent ratings under EIB PCM.

Table A 5.11: Aspects driving the EIB PCM rating upwards

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
Complementarity of operations maximized through involvement of key stakeholder in all operations	A permanent and central point of contact with the regional government is maintained and meetings between Ops and this contact are held once or twice a year. This contact allows the EIB to seek potential funding opportunities within the region and also facilitates the monitoring of on-going operations. Additionally, to date, this approach has helped the EIB to ensure complementarity for the investments carried out in the region and has also facilitated the contacts with the public counterparts for the specific operations which are identified. In some cases they also accompany EIB services in the monitoring missions.	#54
Streamlined procedures and increased prioritization to minimise the period of negotiation for more urgent operations requiring EIB support during the crisis	In order to respond to more urgent funding needs during the peak of the crisis, the EIB applied streamlined procedures for a subset of operations which were identified as requiring EIB funding support more urgently.	#22, #23

Aspects driving the rating upwards	Additional detail specific to operation(s)	Operations
Improvement of synergies between operations with the same promoter	The appraisal mission was integrated with a project monitoring mission for the previous operation. Its similarity with the first operation meant that the appraisal would be more complete and smoother. PJ proposed and advanced the project monitoring mission of the previous operation in order to match it with the appraisal of the one assessed in the Knowledge economy sample.	#54
Reliance on external experts to complement the appraisal for specific areas	External specialised experts in the specific field covered by the operation were used to support the EIB officers to adequately appraise the project, including its risks and viability of the investment. As a result the quality of the appraisal was enhanced and the negotiation phase was concluded rapidly and without problems. The risk analysis was also very thorough and mitigating measures were well defined contributing the long term physical and operational sustainability of the investments supported.	#41, #58
	PJ commissioned the services of an architect which undertook an extensive visit of a sample of educational establishments covered by the previous operation to draw lessons which could be used in the appraisal of the operation assessed in the Knowledge economy sample.	#54
Early EIB involvement in the operation led to clear advantages for the promoter	Early EIB involvement in this operation reflected an advantage for the promoter. This took place prior to the appointment of a preferred bidder (and before final bid submissions including finalisation of CAPEX, OPEX, funding costs etc.). This resulted in the benefit of an EIB tranche being included in all bid submissions. Early engagement ensured an overall more efficient process (albeit resulting in the EIB being involved for a longer period of time).	#16
	Strong EIB involvement from the beginning contributed to the success of the operation. From the beginning of the relationship with the promoter there was a strong involvement from the EIB which built up trust between the parties and allowed the Bank to use its sector and project experience to assist them in developing a proper business plan.	#57

There were also some aspects which resulted in a partly unsatisfactory rating for EIB PCM for several of the operations in the sample (see Table A 6.13 below).

Table A 5.12: Aspects driving the EIB PCM rating downwards

Aspects driving the rating downwards	Additional detail specific to operation(s)	Operations
Insufficient project monitoring and reporting with significant delays	The main weakness appears to be the rather insufficient monitoring and reporting from the promoter with delays in submission of the relevant information and absence of project progress reports. There were also significant delays in the PCR.	#33, #42
	Especially considering that this operation was under close scrutiny as a result of the public complaint more attention could have been given to the monitoring of the project.	#42

Other points for further reflection

More clarity on EIB priorities and products

Some promoters highlighted that during first contacts they would have liked to have had a better understanding of EIB priorities and products, including more clarity on eligibilities. For them there was opacity as to what the EIB could finance (e.g. #11, #54).

Involvement of key stakeholders in the operations

It was noted in the assessment of the operations that the objectives, especially those in the medium and long term, as extracted from the appraisal documents and reconstructed in the intervention logic, were not always within the direct control of the promoter.

For both the private and public sector, the operational objectives were within the control of the promoter and these usually corresponded to the technical description annexed to the contract. However, the intermediate and global objectives, involved other stakeholders with whom the EIB did not necessarily maintain a dialogue in the context of the specific operations. There was no analysis of stakeholders found in the documentation or through the discussions with the services or the promoters. This analysis would have allowed for a better understanding of the different roles in order to maximize the complementarity of the EIB intervention. The operation where other key stakeholders were involved (#54) demonstrated a higher degree of complementarity of the EIB intervention.

Reinforcement of project monitoring requirements

There were several cases where the operations were set to Category A (light monitoring) despite the fact that the operations were with a new promoter to the EIB and also in new areas of activity (#33 was the first operation of the EIB for the digitalization of media content and #41 was an operation which relied on external experts for the appraisal). Although it is understood that the higher volumes of activity that the EIB has faced in the past years, for the period covered in the sample, requires strong efforts for the appraisal and negotiation of new operations, this should not be in detriment of a lower level of monitoring of the operations.

The end of works date should be extended when the project is not completed rather than closing it and writing a PCR. Although it is understood that this is normal practice, this early closing happened with an operation in the sample (#14). Doing a PCR before the end of the project has a reputational risk since the EIB funds in the public opinion are linked to a “complete project”.

As regards PPRs, there were many cases where the promoter did not comply with the requirements. In some operations this resulted in some issues with the operations being identified late in the implementation or even at completion.

The contractual project reporting requirements were for most operations very generic and the PPRs and PCRs only presented a more general assessment of project success. The PCRs focused mostly on objectives depicted in the annexes to the contracts. The EIB contracts also included the reporting requirements for the promoter. These objectives included in the contract usually focused on the immediate outputs (i.e. rather than on the expected outcomes and impact) of the operations and were generally vague. This is to be expected as the promoters would probably not commit to medium and long term goals which are sometimes outside of their control. However, during the evaluation interviews IG/EV found that the promoters had much of the information to be able to assess the medium and long term goals as defined in the reconstructed intervention logic. It was also noted that promoters were willing to undergo a heavier due diligence process and accept more reporting requirements when there was a possibility of a longer term commercial relationship with the EIB. This was observed with repeat promoters or those which anticipated additional loans to be signed in the near future with the EIB.

As already mentioned, the Board Report presented a more complete view of what was anticipated from each operation creating expectations from our “shareholders” as regards the short, medium and long term goals. As these objectives were not formally set or even agreed or communicated with the promoter at the onset, many of them were not covered in the promoter’s project reporting to the EIB nor were they assessed by the services in the PCR providing a more incomplete view of the contribution of the operations to the objectives defined in the Board Report.

Contact persons in the EIB services for the operations

IG/EV faced some difficulties when using SERAPIS as a contact database to determine the last contact persons in charge of an operation. The names of the persons did not always correspond to the persons responsible for the operation at the time of the evaluation and in many cases, where the names did correspond, the people contacted had only a brief overview and referred the evaluators to the people in charge of the operations earlier in the project cycle⁷⁸ (i.e. usually during appraisal or negotiations). IG/EV considers that the people assigned as contacts should have gathered the information or at least participated in the meetings to improve their knowledge of the operations for which they were flagged as responsible. In all fairness, in most cases the people in charge of the

⁷⁸ This was mostly observed for Ops counterparts.

operations did participate in the process to improve their understanding of the operations for which they were responsible.

Table A 5.13: Contribution of the sample operations to the EIB priorities

EIB priorities for the different knowledge economy areas	Related Sample Operations	Signed amount EUR m	Percentage signatures ⁷⁹	Contribution of the operations to the EIB priority
Research & Development – further scope and excellence of knowledge creation				
1. R&D in ICT as a crucial enabling technology for implementing the knowledge-based economy	27, 28	700	5.4%	The operations have supported the RDI investments on ICT technologies of a large telecom operator with a focus on fixed and mobile networks, broadband technologies and advanced network architectures, application platforms and IT innovation. These repeat operations to one promoter have supported the development of new innovative telecommunication technologies and improved Internet and multimedia services, thus contributing to strengthening the information society and promoting competitiveness in the telecom sector.
2. Emerging technologies expected to have a significant impact on the economy, such as life sciences (mainly biotechnology) and material sciences (notably nanotechnology);	7,46	167	1.3%	These operations had as a specific goal to develop and introduce to market new contrast agents for medical purposes in one of the operations and new catalysts, including investments in nanotechnologies in the second. Both of these technologies were expected to have a significant impact on the economy. Additionally, although not enumerated in column (b), through the support of other operations covered in the sample, the EIB also indirectly supported the developments of enabling technologies. However, these have not been considered as supporting this priority since it was not their direct objective.
3. Environmental technologies, reflecting the importance attached to energy efficiency and climate change in transport, manufacturing and process industries, power generation and renewables, such as hydrogen, solar, wind, 2nd generation biofuels	22, 23, 36, 46, 53, 56, 57	2,177	16.6%	The environmental technologies targeted, were mostly in the automotive sector operations, and focused on the development of a new platform for fully electrical and/or hybrid vehicles as well as development of improved diesel engines and alternative fuels. EIB support for these operations had a significant impact on the development of the technologies for electric vehicles, going from the improvement of the batteries to the commercialization of a prototype vehicle that was introduced in the market after the operation. The investments also covered the improvement of hybrid technologies and engines based on alternative fuels (e.g. biofuels). It is expected that these operations will have a positive impact on the development of the automotive industry, increasing its energy efficiency potential as well as contributing to reduce the negative effects on the environment in the form of a reduction of fuel consumption and greenhouse gas emissions.
4. New technologies in mature sectors, such as steel, chemicals, agro-food, etc benefiting from incremental innovation and productivity gains;	3, 4, 5, 20, 26, 29, 41,42, 49	1,480	11.3%	These operations covered several mature markets and included operations in the machinery, steel, cement, chemical and pharmaceutical sectors. The operations in the machinery sector were focused on the improvement of engines and other technologies for marine, rail, construction, mining and oil and gas industries. Other projects were focused on the chemical and cement industry and on the development of recycled materials for the steel industry. Part of the RDI also included projects in the medical and pharmaceutical industry aimed at

⁷⁹ The percentage refers to total in the evaluated sample

EIB priorities for the different knowledge economy areas	Related Sample Operations	Signed amount EUR m	Percentage signatures ⁷⁹	Contribution of the operations to the EIB priority
				improving medical technologies, medicines and treatments. EIB financing aimed to support incremental innovation within these mature markets, thus increasing their competitiveness on the European and international markets.
5. Joint research programmes at EU and national level, including projects associated with the ETPs, JTIs, EUREKA;	40, 50	675	5.2%	The operations addressing this priority were supporting specific RDI objectives within national RDI programmes. Those projects were crucial to fulfil national commitments and priorities regarding RDI developments that would support economic and social cohesion at EU level and to contribute to Lisbon Strategy targets on RDI spending. The operations were covering main areas of national RDI activities and are expected to increase the knowledge intensity and innovation capacity of the targeted public and private actors.
6. New generation research infrastructures, including those identified by, but not limited to the European Strategy Forum on Research Infrastructures (ESFRI);	-	0	0.0%	There were no operations in the sample identified with a specific focus on this priority.
7. Academic research in public and private universities;	25, 35, 38, 39, 49, 58	1,548	11.8%	The operations supporting this priority covered various RDI activities of universities and specific RDI activities within medical research centres. The universities were covering a large spectrum of activities to enhance the quality and outcomes of scientific work to increase their leading position in the region. The research institutions in the area of health focused their efforts on specific fields of healthcare in order to achieve significant scientific progress and leadership in that area. These operations are expected to support the creation of regional centres of expertise and excellence as well as to facilitate basic research in Europe.
8. Downstream actions and investment in support of incubators, science and technology parks and clusters etc to facilitate the transfer of knowledge and expertise between academia and the business sector;	6	100	0.8%	This operation supported this priority through the creation of a science park which had as its main goal to facilitate technology transfer and increase the innovation absorption capacity of regional companies and SMEs. However, through supporting knowledge transfer, the EIB loan is expected to contribute to promote cooperation and reinforce the utilisation of knowledge and innovation-based entrepreneurship.

EIB priorities for the different knowledge economy areas	Related Sample Operations	Signed amount EUR m	Percentage signatures ⁷⁹	Contribution of the operations to the EIB priority
9. SME and Mid-Cap company activities in leading-edge technology sectors, cross-fertilisation of knowledge, including patenting activities.	1, 7, 10, 11, 18, 21, 31, 41, 48	675	5.2%	These EIB operations were addressing this priority either through direct loans to midcaps in the machinery, telecoms and pharmaceutical sectors as well as through commercial bank's intermediated loans to knowledge intensive SMEs. As regards the investments supporting midcaps the priority for the EIB was for those more knowledge intensive midcaps in order to increase their market competitiveness. These operations covered a range of instruments which included direct investments or delegated the allocation of funds to intermediaries in the case of global loans and support to an investment fund, in order to allow the EIB to reach a wider range of beneficiaries of smaller size (i.e. midcaps and SMEs).
Innovation – applications, diffusion and enabling infrastructures				
10. Financing of innovative technologies, products and services, across all industries, until commercial market launch that lead to a significant productivity increase (including prototyping and demonstration plants up to first commercial application, but short of mere capacity increase);	35, 46, 49, 56, 57	1,477	11.3%	The operations targeting this priority included major research in the transport and pharmaceutical industry. The cross-cutting research of the companies supported focused on the product development cycle up to market launch. Some of these operations supported the development of prototypes.
11. Projects providing/incorporating innovative solutions in response to regulatory environment changes at EU and national level (e.g. CO2) should be targeted;	22, 23, 24, 26, 56	1,620	12.4%	The EIB support of this priority is represented in the sample mostly by operations with the main automotive manufacturers in Europe. These operations focused on RDI activities aiming to comply with current and future European and international particle emission regulation. The EIB support in this area has brought not only a significant reduction of transport emissions but also an extensive efficiency improvement and competitiveness gain for European automotive manufacturers.
12. Contribute to ICT infrastructure projects that further strengthen and accelerate the diffusion of information, knowledge and innovation (e.g. next generation access – fibre to the home, mobile broadband – 3G+, the efficient use of the radio spectrum – digital dividend) or promote technology competition;	2, 8, 13, 15, 19, 30, 34, 37, 43, 52	3,255	24.9%	The operations addressed by this priority represent large telecom companies, mostly implementing 3G, 4G and related infrastructure. The investment in those areas is expected to improve the quality and speed of broadband services as the basis for i) the development of the European IT industry, ii) the fostering of the Information Society and iii) the reduction of the Digital Divide and regional cohesion in convergence areas. Additionally supporting ICT infrastructure development should promote competition in the telecommunications sector in Europe.

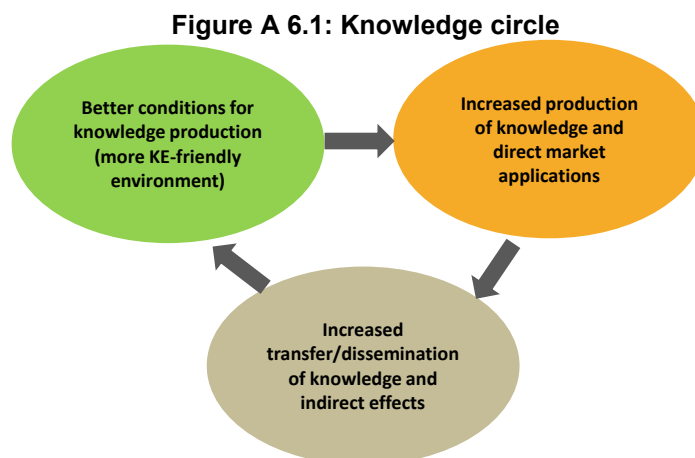
EIB priorities for the different knowledge economy areas	Related Sample Operations	Signed amount EUR m	Percentage signatures ⁷⁹	Contribution of the operations to the EIB priority
13. Financing of projects promoting the widespread adoption of ICT including innovative software, audio visual and multimedia content to provide e services (ICT content).	18, 33, 55	360	2.8%	This priority was addressed through the support of satellite, TV & radio, and online content providers. Through the different operations, EIB focus was meant to secure the capacities of analogue and digital High Definition TV services, as well as broadband applications, develop the content distribution technological convergence and increase the competition in the media and online industry. These operations are expected to contribute to the development of the Information Society and to social inclusion within the European market.
Education & training – Focus on improving skills and employability				
14. Improve the quality of education on offer, notably through the implementation of the lifelong learning concept: early childhood education – “learning how to learn”; all day schools – encouraging youngsters to learn more; quality enhancing investments in teacher training; vocational education and training (VET); corporate and on the job training; work-based adult learning – keeping pace with developing skill needs, as well as extending working life and participation;	1, 6, 16, 44,45, 47, 54	1,156	8.8%	The operations targeting this priority were represented by primary and secondary education infrastructure projects as well as a project targeting vocational and work-based adult learning. EIB support of school infrastructure aimed at improving the quality of the educational estate, increasing the supply of schools to meet population growth and contributing to the formation of human capital. The latter is an essential prerequisite for economic growth and employment. The operations supporting vocational and qualification training aimed to increase the knowledge potential and facilitate knowledge transfer between academia and industry.
15. Support the European Higher Education Area and the European Research Area, with tertiary education and academic research a priority to drive the knowledge frontier (leading edge universities in search of excellence; reforms targeting the quality and competitiveness of tertiary education);	9, 12, 14, 17, 25, 32, 38, 39, 47, 51	1,611	12.3%	The operations had goals which ranged from the development of physical infrastructure for European leading universities to the development of health research centres. The EIB support of these promoters is expected to improve the performance in higher education, ensure its RDI potential and strengthen its competitive position among other universities and also centres of excellence. Those activities should also help to promote economic development and the reduction of socio-economic disparities within different regions of Europe.
16. Encourage the mobility of students, researchers and academic staff by supporting relevant national programmes and demand side measures through tailored loan schemes; at the request of the Board special effort should be made to develop the financing of student loans at pan-European level	50	53	0.4%	Through the support of the national RDI programme, which also covered student grants, the EIB indirectly supported this priority. Nonetheless, this part of the RDI programme was not included in the eligible RDI activities supported by the Bank.

EIB priorities for the different knowledge economy areas	Related Sample Operations	Signed amount EUR m	Percentage signatures ⁷⁹	Contribution of the operations to the EIB priority
17. Bridge the gap between academia and business enterprises to promote innovation by lending to technology transfer initiatives and relevant national programmes;	6	100	0.8%	The project addressed the need to produce, exploit, transfer and apply knowledge for the development of the knowledge-based economy. It has directly supported the development and strengthening of networking activities between the public sector, the business community and the higher education institutions, thus boosting the technology and knowledge transfer.
18. Promote projects addressing social exclusion and demographic change, including supporting reforms induced by new technologies (ICT) and facilitating the educational integration of immigrants.	2, 8, 9, 13, 15, 19, 31, 34, 43, 52, 54, 55	2,900	22.2%	The projects addressing this priority include telecom, education and healthcare operations. For operations in the telecom sector, their focus on convergence, rural and less densely populated areas contributed to reducing the digital divide. For those operations in the healthcare area, EIB support focused on ensuring social care of disabled and elderly people. In the case of the operation in the education sector, there was a particular focus on the integration of immigrants, those with a low income and other segments of the population at a high risk of exclusion. All these actions from the various operations are expected to reduce social exclusion.

ANNEX 6: THE SAMPLE: OUTCOMES AND IMPACT OF INDIVIDUAL OPERATIONS ON THE KE

On the basis of the project sample, the effects of the KE operations co-financed by the EIB are measured at three different levels which correspond to the three phases of the knowledge circle (see Figure A 5.1):

- Upstream of knowledge production. Many operations have first contributed to the creation of a more favourable /KE-friendly environment;
- Knowledge production. Almost all operations produced additional knowledge, developed innovative products and services;
- Downstream of knowledge production. Many operations contributed to knowledge transfer and dissemination, which triggered several indirect effects. These effects reinforced in return the “initial” conditions for knowledge production.



1. Contribution to the creation of a more KE-friendly / enabling environment

Upstream of knowledge production, the operations co-financed by the EIB have first contributed to the creation of a more KE-friendly environment, which has in turn enhanced European knowledge and innovation capacity. As illustrated by the abundant materials drawn from the project sample, all dimensions of this surrounding environment have been impacted -whether at financial, technical, physical, social, or economic level. Several projects have also improved more directly the working environment in which promoters internally operate.

Limited effects of intermediated loans on SMEs and midcaps

Several operations offered an increased access to finance for RDI projects, including some multi-beneficiary intermediated loans to SMEs and midcaps (projects #1, 10, 31 and 37). The real impact of these operations is difficult to measure through the sample since project monitoring data is often missing. These effects are however likely to be limited, as illustrated by project #1 where only 14 SMEs were supported. In addition, a particular focus on *innovative* SMEs or midcaps is difficult to prove (in project #10, one third of the midcaps financed had no RDI character). The broad definition of eligibility rules appears to be the main cause of such uncertain outcomes. On the positive side, project #48 shows the possibility to address the midcap segment directly, especially when national or regional financing conditions (e.g. pricing) are less.

Reduction of the digital divide and enabling effects of ICT networks are evidenced

Several projects improved access to telecommunications networks and contributed to reduce the digital divide (projects #2, 8, 13, 14, 15, 19, 27, 30, 33, 34, 37, 43, 52 and 55). This has occurred in particular via the extension of GSM coverage (especially in rural areas), the reduction of white spots, or an increased high speed broadband penetration. To take but one example, the GSM roll-out in poorly served areas in one project (#15) allowed an additional coverage of 3,400 rural villages, around 250 sites in strategic areas and 400 sites located along high speed train lines or highways. In the case of project #34, the roll-out of a 3G/UMTS network provided for 48% of geographical coverage with 85% coverage of the population coverage, i.e. 15 points above the planned objective. The updated technology included in the network provided high speed data services with much higher rates than planned (42 instead of 21 Mbps) to 67% of the population. Additional benefits for the population included 2,479 cities and villages, with 1,880 villages having less than 2,000 inhabitants.

The enabling effects of such a modernisation of ICT networks are evidenced in terms of cost and time savings, increased productivity, and new business opportunities (as illustrated by projects #2, 13, 15, 28, 30, 33 and 52). In the case of project #52, ICT investments boost further the development of innovative IT infrastructures, hardware and software applications, as well as facilitating improved Internet, multimedia and telecom services.

Additional building and installation capacities

In physical terms, projects co-financed by the Bank created additional building or installation capacities, notably in the form of science/business parks. These new facilities have, in turn, attracted new start-ups (project #6) or led to brownfield rehabilitation (project #17). Environmental impacts were also positive in several cases (# 26, 36, 41, 42, 46, 52, 53 and 57). For project # 52, CO₂ emissions have dropped 11.8% in 2011 in comparison with 2008 and the replacement of old infrastructure led to a very significant increase of recycled waste (+130% in the period 2008-2011).

Better educational and research facilities

With respect to social aspects, many projects have offered better educational/teaching (project #12, 16, 17, 32, 44, 45, 47, 51, 54) or research (project #9, 17, 25, 38, 39, 40, 58) facilities. In the case of project #32, a total of 3,000 self-study places have been made available on campus (three times more than in the old buildings). Ninety auditoriums and seminar rooms, seating over 5,000 students have been created together with 1,500 student workstations in the central library. Unlike in the old location, all auditoriums and class rooms now have natural daylight and are equipped with state-of-the-art teaching technologies. However, in at least one case in the sample, facilities are under-used (utilisation rate for academic year 2013-2014 was at 81% for project #54).

Maintaining, securing and creating RDI jobs

Many projects have also played a major role in maintaining or securing RDI jobs (projects #7, 8, 21, 22, 26, 27, 28, 29, 34, 36, 37, 38, 41, 46, 49, 50, and 53). For project #50, the number of FTE (Full Time Equivalent) R&D personnel in 2008 increased by 131% as compared to 2002, and the number of researchers grew by 121%. Net creation of jobs has been identified for at least eight projects (#11, 13, 24, 26, 28, 34, 46, and 50) with a 41.4% increased between 2008 and 2011 in the case of project #24. In three cases, final outcomes at completion are better than expected at appraisal: 298 R&D staff instead of 100 for project #26, 806 instead of 670 for project #46. As recalled in project #50, this positive RDI job contribution may have limited brain drain outside the region or Europe more generally, which is confirmed by educational projects which have often attracted additional students (#25, 38, and 51). In the case #51, the newly installed facilities had an immediate impact on the number of students in the university, with the amount of students increasing by 26% for the period 2008-2011. The new campus allows the university to diversify its teaching and research activities, by strengthening the more vocational aspects of its educational offer and rebalancing the focus that was, until then, purely on academic subjects. As a result, this university was ranked 3rd for student satisfaction in the country in 2011 (whereas its overall national rank is only 14th)⁸⁰.

A significant support to regional and local clusters

On economic and spatial aspects, projects have often provided support to regional clusters, such as in the case #3 (life sciences), #4 (clean tech transfer), #5 (forestry), #7 (medicine), #11 (aviation), #21 (oncology), #23 (automotive), #25, 29, 26 and 49. In addition, several gave additional assistance to sectors where uncertainty is high and the development process of new products is long, such as in the pharmaceutical sector, project #49). For several projects, EIB support was crucial in time of crisis (#21 and #27), as in case #27 where the company was facing funding difficulties because of the dearth of liquidity in the capital markets. This confirms the countercyclical effects of EIB financing underlined in the second evaluation of the RSFF.

⁸⁰ Source: desk review + promoter.

An increased attractiveness for the city, the region or the country

In the same way, the impact of projects has been on the attractiveness of the city or region where they are located, as for projects #32, 35, 38 and 51. For project #32, the public areas of the campus have galvanised a part of the city centre. Similarly for project #38, the project strengthened the R&D capabilities of both the region and the country by attracting top-level researchers and carrying out state-of-the-art research. In the case #51, the new campus has increased the touristic attractiveness of the region, contributing to the 4.8% growth in tourism from 2008. However, in at least two cases (#39 and 40) a lack of attraction for private money to public universities has been noticed and for project #40, an external consulting report indicates that there has been no noticeable local improvement in terms of strengthening the innovation activities of businesses.

A more favourable working and cooperative environment within the entities supported

As regards the creation of a more favourable working environment within the structure or organisation of the promoters themselves, several projects have physically enlarged the premises, facilities or equipment dedicated to RDI activities (projects #6, 11, 18 and 58). As far as project #57 is concerned, throughout the implementation of the project, the co-operation between the different business units concerned was enhanced, creating new synergies in the Group. As a result, a new division was set up to bring all companies and subsidiaries under one single entity. Increased coordination around an RDI programme inside the company was also noticed for project #11. In other cases, the project has increased the promoter's operating flexibility (projects #3, 7 and 32). In case #32, the project has led to a more efficient building organisation and distribution. However, in at least one case (#38), not only RDI facilities have been financed since EIB funding was used to modernise an outdated infrastructure and bring it up to date in terms of security.

2. Outcomes and impacts linked to knowledge production and direct market applications

The additional production of knowledge and innovation generated by the projects co-financed by the EIB is at the heart of its contribution to the strengthening of the European knowledge economy. This additional production has in particular materialised in the development of new products, industrial processes or services and via an increasing number of patent applications. Direct effects of this additional knowledge production are the diversification of company portfolios, the penetration of new markets, and an overall increase of promoters' competitiveness. In return, these have impacted certain sectors of the economy, or even the entire European economy.

Reinforcement of promoters' RDI capacity

Additional production of knowledge and reinforcement of promoters' RDI capacity (or intensity) is directly mentioned in 23 projects of the sample (#3, 4, 5, 6, 11, 20, 21, 22, 23, 24, 25, 27, 29, 39, 40, 41, 42, 46, 48, 50, 53, 57 and 58). In case #20, the project has enhanced the promoter's knowledge and know-how in developing and producing engines and engine components for various marine and power plant applications. Promoter's knowledge and know-how in conventional and full electric powertrains has also been strengthened for project #3 as evidenced by the considerable progress made in reducing average CO₂ emissions to a level below European regulatory requirements. Another major achievement was the development of a platform dedicated to electric vehicles on which different models have been developed. For project #46, an increased understanding of nanotechnology science in the development of catalysts was noticed allowing the promoter to reduce the cost of catalysts and improve the efficiency of fuel cells. In the case of project #58, a new therapy has been developed to treat cancer and a wide range of publications on clinical applications have been produced (total number of publications is 54, of which 22 in international journals). Clinical experiences have also demonstrated the therapeutic advantage of the new therapy. However in two cases (#3, 7), the company has seen a slight decrease of its RDI intensity.

Increased number of patents

Additional knowledge acquired is notably illustrated by the increased number of patent applications (as for projects #3, 4, 5, 21, 22, 25, 27, 28 and 48). For project #25, the number of patent applications relating to the university's research activity increased from 81 in 2007 to 289 in 2013. In the case #48, the progress made in terms of generating new patents and families of patents with commercial viability

during the years of the operation (2008-2012) is particularly visible with 28 new patent families generated (+187%) and 226 new patents registered in different countries (+39%). For project #46, the promoter has developed its innovation capacity whilst putting in place strategies for the registration and maintenance of its registered intellectual property.

New industrial processes, innovative products and services

The first direct effect of the additional knowledge gained concerns the setting-up of new industrial processes and the development of innovative products and services. Several examples show that improved industrial processes have been implemented (projects #4, 5, 7, 23, 42, 46 and 53). For project #53, improvement in plant performance has been noted in parallel with an increased use of renewable energy sources. In the same way, the development of innovative and more knowledge intensive products is frequent (projects #7, 23, 29, 36, 42, 46, 55 and 57). For project #57, the enhanced knowledge allowed market applications of the new technology acquired in the transport sector, which led the company to be awarded several electric vehicle car-sharing projects in Europe. Similarly, the innovative automatic identification systems developed became an integral part of the electric vehicle sharing programmes and are now used to recharge the cars, register clients, monitor locations and control the payment systems.

Additional or more efficient services to the population have also been developed in the framework of many projects financed by the Bank (projects #13, 14, 27, 28, 30, 33, 34, 37, 43, 52, 55, 57). For project #33, the digitalisation of broadcasting will improve service to customers, in terms of better quality of image and sound and availability of new innovative communication channels (internet and mobile). In the case #55, the project resulted not only in an increased subscriber base but also in greater volumes of voice and data traffic.

A major contribution to the strengthening of promoters' competitive position

Beyond innovative products, processes and services put in place, most of the projects observed contributed to a large extent to the strengthening/safeguarding of the promoters' competitive position (#3, 4, 5, 7, 9, 11, 15, 17, 20, 21, 22, 23, 24, 26, 27, 29, 32, 33, 34, 35, 36, 37, 38, 42, 43, 46, 48, 49, 51, 53 and 57). For project #48, the company has, with the implementation of its RDI programme, gained four places (from 15 to 11) in the national sector ranking whilst its market share has increased by 65%. In case #49, the project's activities helped the company to sustain and strengthen its strategy based on attaining a high proportion of sales from internally discovered products. At the end of 2011, the firm had a much larger number of new products in the pipeline and in 2013 around 16% of sales came from these new products, which entered the market in the previous 5 years. Available data suggests that the company has maintained its global position (15th) on the basis of global sales during the last three years and the 7th position in relation to cardiovascular diseases. The benefit can also be unexpected, as for project #23 where, during the development process, a copper-based technology was developed to replace rare earth minerals used in engines as part of raw material substitution. At the time, China was severely restricting access to the export of rare earths, with the result that the price increased significantly. This has then helped to keep the cost of electric vehicle down and to make them more competitive than they would have otherwise been. This consolidation of market position has also occurred in the public or non-profit sector, as illustrated by the case of a university project (#38) where signs that its reputation as a leading research university has been strengthened since the project. However, increased RDI may not always be sufficient to maintain market position, as demonstrated by project #37 where the objective to improve the competitive position of the company was not achieved (market share declined from 13.5% to 11.3% between 2009 and 2012).

A significant contribution to the diversification of portfolios

Several projects have also contributed to diversify the portfolio of products or services offered by promoters (#3, 4, 5, 6, 21, 26, 33, 35, 41 and 42) or helped them to penetrate new markets or reinforce their presence in existing markets (#4, 5, 11, 18, 21, 26, 41, 43, 46 and 57). As regards project #57, an electric boat and tram pilot projects are currently being developed which use the new battery technology acquired. Plans also exist to develop the electric battery technology in growing Asian and African markets where the device could be developed for applications in water treatment as well as energy storage, in areas that are not connected to the main electricity grid.

Important possible effects on the structure and functioning of markets

At a wider level, the effects of these new products and services are also on the structure and functioning of markets, as illustrated by several examples where the innovation introduced by the project developed has fostered competition and a more efficient functioning of the market.

Innovation has indeed the capacity to allow challengers to catch up leaders of the same sectors, creating a strong incentive for second-tier companies to increase their RDI intensity, as demonstrated by twelve projects of the sample (#2, 13 -where the third operator become the second-, 23, 27, 30, 33, 34, 36, 37, 43, 52 and 55). Stimulating effects have been especially noticed in old industries/sectors (such as for projects #23 and 52 where the strong competition puts pressure on telecom companies to adopt the latest technologies to remain in the market).

Innovation also has the capacity to break technological walls and to create spin-offs on other sectors (as illustrated by projects #33 or 55 which triggered the convergence of previously separated markets such as internet, radio and TV). This important phenomenon is also exemplified by project #30 which fostered competition among carriers on an equal access basis, thereby fostering service-based and infrastructure-based competition, with lower prices and faster speeds for consumers⁸¹. With regard to project #55, digital broadcasting has freed up additional frequencies, making space available for new radio broadcasting services that incorporate the advantages of digital and convergent services combining features of mobile telephony and terrestrial broadcasting. This confirms the idea that even if technologies are usually developed to respond to specific needs, once created, they may have multiple uses.

At market and sub-markets levels, some effects on the structure or evolution of markets have been noticed, especially in terms of higher competition, signalling or stimulating effects triggering an increased RDI intensity. This is particularly illustrated by project #57, where EIB support to a new entrant in the market has clearly boosted both the research and the competition within an initially rather oligopolistic market dominated by a small number of major players. As stressed in the individual evaluation report, “the EIB’s involvement gave the company visibility and credibility in the market”. And the success story has continued, as a cooperation agreement was signed in September 2013 with the former dominant player. The two companies are now considering the possibility of creating a joint venture to win and implement new projects in order to meet growing demand on international markets.

Such potential market effects may also occur in relation to ASD/RDI activities, since the financial engineering support provided to initially non-bankable projects may lead to the creation of new market segments (as is the case of the tuberculosis vaccine).

The role of EU regulation and the impact of political and management changes

However, to nuance these positive effects, it should be underlined that several projects were also implemented mainly with a view to comply with a new European legislation (such as REACH in the chemical/pharmaceutical sector or EURO 6 in the automotive sector). This necessity to adapt to EU legislation was mentioned for projects #7, 20, 22, 23, 24, 26, 29, 33, 36, 41 and 53. In the same way, effects highlighted above may be hampered by important changes occurring in promoters’ management or policy background (such as for projects #7, 30, 39, 40 and 42). For projects #39 and #40, the change of government resulted in an important reduction of academic staff and entailed significant delays in terms of knowledge production and R&D investments. This illustrates a high sensitivity of RDI programmes to managerial or political changes.

3. Increased knowledge dissemination and global effects

Beyond the production of knowledge and its immediate consequences, the contribution of the projects co-financed by the EIB to the European KE also lies in the transfer and dissemination of the additional knowledge produced and in the global effects generated by this wider dissemination. With this section, the knowledge circle presented above has been closed, since such effects contribute in return to the creation of a friendlier KE-environment.

⁸¹ Since other telecommunications carriers and service providers of broadband, data and voice services are able to use the upgraded network on an equal access basis.

Diffusion of Best Available Technology

In some cases, knowledge dissemination is made via the diffusion of Best Available Technology (BAT), as for projects #2, 4, 33 (digital broadcasting) and 54. As illustrated by project #50, the importance of knowledge transfer can be estimated by the number of international publications issued in the framework of the project. With the implementation of this national research programme, the number of scientific publications grew by 33.8% in three years.

Increased cooperation and networking at sectoral, national and international level

Increased knowledge transfer and dissemination often takes the form of improved cooperation between different actors of the economy (whether or not they belong to the same sector, have the same public or private status or are operating on the same national or international markets).

Within the sample, the most common way to share knowledge is via partnerships between universities, public research centres and private companies (cases #4, 5, 7, 12, 23, 28, 29, 35, 39, 40, 41, 48, 49, 51, 55 and 58). In case #3, the partnership has gone up to the point where part of the patents used by the company is developed by partner universities. For project #12, an innovative partnership has been established between a university and a hospital to develop research activities in neuroscience, microbiology and surgical oncology. With regard to project #28, more than 50 active contracts with universities have been identified and the company participates in about 50 national or European research networks. The promoter of project #35 accessed to complementary technologies and external innovation potential through strategic cooperation with partners via a specific programme which offers financial support to successful applicants (universities and start-ups). Project #48 is a successful example of a public-private partnership with national authorities in the field of cardiovascular research. In case #49, the strong cooperation with academic centres and smaller companies was particularly relevant for the identification of new targets to drug profiling and development, as well as the early identification of relevant biomarkers. As regards project #51, the university offers incubator facilities for some 20 early stage spin-offs.

As for projects #1, 11, 14, 17, 25, 28, 53 and 58, this cooperation is also happening at EU or international level. The achievement of project #58 was based on a strong collaboration network that links the promoter with 19 other national and international institutions operating in its field. This network has guaranteed the collaboration of outstanding personalities and experts to the programmes of the promoter, allowing staff to acquire a unique expertise.

To a more limited extent, evidence has been found of improved cooperation with other firms and suppliers (#21, 25 and 36) such as in case of project #36, where this automotive company closely cooperates with producers of carbon fibres, manufacturers of batteries and battery cells, electric engines and their components, as well as with technical institutes and universities. In one case (project #44), the project has offered improved access to cultural facilities which also participate in knowledge dissemination process.

Impact on convergence and regional development

At global level, impact on convergence and regional development has been mentioned in 13 projects (#2, 6, 7, 11, 13, 15, 19, 31, 43, 44, 52, 53 and 54) as well as a direct contribution to R&D (#39, 40 and 50) or information society national targets (#15). In the case #15, the number of homes with broadband access has nationally evolved from 29.3% to 66.7% during the period 2006 to 2012 for instance. If not all this progress can be attributed to the project, the leading position of the promoter on the national market points to the conclusion that the project oriented towards broadband access has contributed significantly to those developments. Impacts are also on educational performance and attainments (as for projects #16, 45 and 47). For project #45, the idea was to address underperformance in education by delivering a positive shock to the local community through the demolition of previous school buildings and the provision of advanced new facilities, with a view to changing perceptions and expectations. In project #47, the new facilities allowed children to stay at school longer thanks to pre- and post- school care (part of the all day school programme) which, among others, provides greater opportunities for parents to stay at work, to increase job participation and potentially have positive impacts on productivity.

In conclusion, the outcomes and impacts observed for the 58 operations evaluated are substantial and the social value of these operations within the KE was high across the sample.

ANNEX 7: POSSIBLE IMPLEMENTATION MODALITIES FOR THE EV RECOMMENDATIONS

Based on the findings and conclusions derived from this evaluation, seven recommendations have been elaborated. These are presented at the beginning of this report, together with the management response.

If approved by the Board, the Bank will need to develop specific actions to implement those recommendations. EV will then monitor the progress in the implementation of these recommendations on a quarterly basis.

In order to support Services in operationalising the implementation of the recommendations, EV elaborated a number of implementation modalities. These should be read as suggestions of concrete actions, for the Services consideration.

R1. Make EIB KE strategy more robust

- Align definitions, scope, approaches and priorities between the different organisational structures of the EIB, EIF, and Advisory Services (e.g. JASPERS and InnovFin Advisory). The increasing role of NPST product development teams should also be taken into consideration.
- Update all priorities relating to the KE through a periodical review to ensure ongoing economic relevance and alignment with EU policies and priorities. Ensure that the updated priorities are kept in a document or other central point of reference.
- Check the consistency of any new strategic or sectoral document introduced with existing documents and providing additional guidance with regard to the practical implications of these new documents on existing ones.

R2. Continue monitoring and revising the hierarchy of priorities in order to promote those areas where the potential EIB contribution is higher

- Consider as “high priority operations” those identified in the framework of this evaluation as having a higher potential EIB contribution, namely those:
 - Simultaneously addressing several KE-related priorities;
 - Providing support to a new or minor player in an oligopolistic market (possible extension to all new clients);
 - Having a strong complementarity with EU as well as local/regional/national public policies and other stakeholders;
 - Having a large knowledge production and knowledge transfer potential (assessed in terms of minimum R&D intensity or intensity of cooperation/dissemination to be defined).
- Rely on a system which identifies market failures to detect higher level priorities.
- Adapt the scoring system (3PA methodology) with additional “bonuses” given to higher priority operations so that they score higher in the 3PA.
- Introduce revolving options for multiannual RDI programmes (which could avoid a full new appraisal process for repeat operations with well-known promoters but ensuring that key checks and controls currently applied by the EIB are maintained).

R3. Maximise and better demonstrate EIB additionality and more generally EIB’s contribution to the KE

- Testing the use of a more comprehensive stakeholder analysis at local/regional/national level to maximise the alignment and complementarity of EIB operations with stakeholders’ strategies, local environment and institutional context.

- Consider tapping additional budget from the EU in order to support specific market gaps which are identified (e.g. example of EIF tech transfer reinforcement request to EC with additional EU budget).
- Assess the possibility to allocate additional funds to support smaller and riskier projects with a higher potential KE impact. This would have to be preceded by an increase of the incentives provided to EIB Services for meeting the current special activities targets, as these types of activities usually cover smaller or riskier operations and as a result EIB's contribution is higher as it tends to address funding gaps.
- A wide dissemination of financial gap analyses is recommended. A possibility could be to start with surveys or financial gap analyses relating to currently under-represented countries, sectors (culture and media), or target groups (midcaps). Gap analyses should be prioritised in accordance with existing logistical, administrative or financial constraints to EIB lending in the given country / region i.e. where there is no lending potential, an analysis is superfluous. InnovFin Advisory and NPST may have an important role to play in the matter⁸².
- Rely on sectoral expertise and market knowledge shared in particular by EIB PJ, OPS, RM and TMR officers), in particular as regards knowledge sharing platforms. ASD/InnovFin Advisory may have an important role to play in this matter.
- Consider improving the EIB loan conditions offered to the promoter when they can commit to additional actions to increase the KE impact of the operation (e.g. creating additional high-skilled employment or increasing its R&D intensity).

R4. Align resources and incentives with KE goals and ambitions

- Aside from headcount, it is recommended to focus on finding the right profiles in terms of expertise required for specific needs arising within the KE.
- Beside loan volume targets, a second objective at the level of the individuals or the divisions may be introduced in terms of minimum number of special operations to be signed yearly. This would incentivise EIB officers to dedicate part of their time to these usually more labour-intensive special transactions which normally cover smaller and/or riskier operations and as a result EIB's contribution is higher as it tends to address funding gaps for these projects.
- For repeat transactions with a potential higher EIB contribution, consider introducing new features such as revolving loans as envisaged under R2.

R5. Reinforce the coordination within the EIB Group's organisation in the field of KE

- Adopting a clear coordination and leadership structure with an appropriate distribution of tasks between the CoE on KE and the Innovation Working Group.
- Reinforce the role of the CoE by fostering internal debate and interactivity with participants, enlarging its scope to Education, KETs, ICT, and systematising the presentation of new sectoral or strategic papers related to KE.
- Encourage exchanges of information between peers in the operational Directorates and consider the creation of inter-division/inter-directorate thematic working groups. This could also be done through the CoE.
- Improve knowledge sharing between the EIB and the EIF, for example through:
 - The creation of a knowledge sharing platform; or
 - The set-up in the medium term of an EIB Group shared database or common information system.
- Increase the number of EIB/EIF joint missions to ensure that clients and financial intermediaries receive a common EIB Group offer.
- Increase the exchange of information relating to clients of both the EIB and the EIF.
- Better coordination between EIB and EIF Global Relationship Managers, GRM.

⁸² Provided it fits with their mandate with the EC (e.g. does not currently cover Education)

R6. Continue to actively prospect for new clients and new types of transactions to maximise EIB's contribution and to better address market needs

- In identifying ways of increasing the share of new clients and types of transactions, seek inspiration from the new types of instruments and transactions designed and initiated in the framework of InnovFin (and InnovFin Advisory in particular) which have shown a way forward.
- A more active prospection could be made for example via an increasing coordination between PJ and OPS for setting-up of a pipeline of projects or via a more intensive usage of specific databases (e.g. Amadeus which is currently used by Ops/PJ to screen the market for new potential EIB clients or others not currently exploited relating to patent applications).
- In order to promote an increase in the share of new clients, indicative targets could be fixed in terms of share of new clients to be reached annually either at the level of the individuals or the divisions (e.g. 10% new clients).
- Consider additional implications on EIB's business model mainly in terms of proximity to the market, potential competition with commercial banks, risk/volume logic and internal resources.

R7. Start working earlier with promoters on the ex-ante definition of higher-level objectives and ex-post reporting modalities for the operations

- To better account for the longer time it takes for outcomes to materialize, in complement to the current PCR, IG/EV encourages the use of PCR+3 (a second PCR carried out three years after the first).
- Put in place at appraisal a timely cooperation process with promoters to determine:
 - The joint definition of expected outcomes (in addition to the list of expected outputs and as a complement of the current list of PJ indicators). These should be aligned with the objectives of the promoters rather than artificially created for the operation;
 - The joint definition of reporting modalities to assess the degree of achievement of these objectives (with agreed milestones that would serve to benchmark success).
- Intermediate objectives could be added for information as a side letter to the contract or simply discussed upfront with the borrowers in order to clarify EIB's expectations and provide a wider view of the operation that could facilitate project monitoring and reporting. A better understanding by the promoters of EIB's information needs might lead to an easier identification of synergies in terms of information already produced by the promoters in the course of their activity which could be of value for monitoring the operations;
- Clarifying how to handle possible changes during implementation would be particularly relevant in the case of public programmes. In some cases, the EIB could put greater emphasis on identifying additional mitigating measures (e.g. for those projects with a higher risk of political changes leading to variations in strategic direction). Such measures could include reinforcing the dialogue between the EIB and the public authority to find ways to reduce these risks, or setting out specific conditions within the financial contract linking disbursements with project implementation. As regards large corporates in the private sector, where the EIB has less leverage, this might be limited to improving the informal communication channels during the implementation of the project in order to assess whether any significant changes have taken place.

ANNEX 8: THE EVALUATION PROCESS

The evaluation process has been divided in four phases:

Phase 1: Scoping and structuring (October 2013 – February 2014)

An extended scoping phase was needed to identify all possible EIB Group activities related to KE and to define the most appropriate evaluation methodology for such a wide field of activities.

During this phase, preliminary interviews with internal counterparts (EIB and EIF) were held to ensure a good understanding of KE-related activities and to collect a first set of data and documentation. A preliminary portfolio review of the KE-related lending activities provided an overview of the main characteristics and trends of the Bank's activities in this field.

The main outputs of this phase were: an "Issue Paper" consulted with services; a first portfolio review (for lending activities); the terms of reference to launch the external consultants' selection process; and the evaluation framework (detailed list of key evaluative questions to be addressed).

Phase 2: Desk research, field work, and interviews (March 2014 - November 2014)

This phase involved the completion of extensive desk research, field work, interviews and in-depth analysis pertaining to the operational aspects of the evaluation. Tested first for two pilot cases, the methodology was then applied for each of the other 56 projects of the sample.

Further horizontal tasks were also performed at that stage: update of the portfolio review, analysis of non-lending and EIF activities (via 2 additional portfolio reviews), evaluation of policy, strategic and organisational aspects related to KE (via desk review, bilateral and focus groups meetings).

The main outputs of this phase were 12 in-depth evaluation reports plus 46 Evaluation Summary Sheets. All these deliverables have been submitted for review and comments to appraisal and monitoring teams. A one-page summary sheet has been made for each of the 58 operations and is provided in Annex 8 of this report.

Phase 3: Analysis and Synthesis Report (September 2014 – February 2015)

In parallel to the finalisation of work related to the 58 individual operations evaluated, the synthesis work started in September 2014 with preliminary identification of emerging findings and conclusions combined with a first assessment of the EIB Group's overall contribution to KE. Preliminary findings and conclusions were presented to services during an interactive workshop session.

On that basis and after having finalised an appropriate outline, a first version of the synthesis report has been drafted and peer reviewed.

Phase 4: Consultation and distribution to MC and the Board (February 2015 –October 2015)

The draft report went through two rounds of consultation – first at Services level and then at DG level. In addition, two meetings were organised with internal counterparts to discuss the report's recommendations. Following adjustments based on the comments and additional evidence provided by DGs and Services, a final version of the synthesis report was produced and discussed by the EIB Management Committee in June 2015. Following the drafting of the management response and the its approval by the MC in September, the final evaluation report was submitted to the EIB's Board of Directors. Once approved by the BoD, the report will be published on the EIB website.

Table A 8.1: Sources of information, data gathering methods, evaluation criteria, mode of evaluation and products

	Sources of information	Data gathering methods	Evaluation criteria	Intermediary IG/EV products
Strategic activities	<ul style="list-style-type: none"> • Past IG/EV evaluation reports • Internal EIB and EU documents (strategic & sectoral papers, minutes) • Comments and opinions formulated by EIB officers during the meetings of the Centre of Expertise on KE and Innovation Working Group 	<ul style="list-style-type: none"> • Web search via Intranet & Internet • Face to face interviews (10) 	<ul style="list-style-type: none"> • Relevance to EU KE goals and wider EIB strategy • Internal coherence • Effectiveness • Sustainability 	<ul style="list-style-type: none"> • Issue Paper (02/2014) • Methodological note on strategic and organisational aspects (05/2014) • Sections of synthesis report (01/2015)
Organisational activities	<ul style="list-style-type: none"> • Feedback obtained during EV-organised focus group and bilateral meetings, the emerging findings workshop of this evaluation and meetings to discuss recommendations • Findings and conclusions from analysis of 58 sample operations 	<ul style="list-style-type: none"> • Collection of minutes and shared documents • Focus groups 	<ul style="list-style-type: none"> • Internal coherence • Efficiency • Sustainability 	
Operational activities	<ul style="list-style-type: none"> • EIB data bases (Serapis, BO, GED) • Internal EIB documents • Comments, feedback and opinions formulated by EIB officers and promoters • Data from websites and external sources 	<ul style="list-style-type: none"> • Web search via Intranet & Internet (for all 58 projects) • Phone and direct interviews (171) • Site visits (9) 	<ul style="list-style-type: none"> • Relevance (incl. relevance of design) • Effectiveness • Efficiency • Sustainability • EIB contribution • EIB management 	<ul style="list-style-type: none"> • 3 Portfolio Reviews (10-11/2014) • 12 In-Depth Reports (03-12/2014-) • 46 Evaluation Summary Sheets (03-11/2015) • Sections of synthesis report (01/2015)

ANNEX 9: METHODOLOGICAL NOTE ON CALCULATIONS RELATING TO EIB MARKET SHARES IN KE

The contribution of the EIB portfolio to the European KE can be estimated by calculating its relative weight as compared to the total European KE expenditure. The methodology for these calculations is presented below.

Goal pursued

Calculate the share of EIB portfolio as compared to the total KE-related expenditure in Europe at the aggregate level of the entire set of countries under observation (EU 35), for each of the three sectors (Education, RDI and ICT), and for each of the 35 countries, so as to obtain an estimated measurement of the contribution of the EIB lending activities to the European knowledge-based economy.

Scope

Calculations are made for lending activities of the EIB during the period 2007-2013 and for all KE-related operations, i.e. Education, RDI and ICT activities.

Sources

OECD and Eurostat databases.

Calculations

The total EIB share in KE-related expenditures is estimated by the ratio (1):

$$\frac{\text{Total KE – related loans signed by the EIB}}{\text{Total KE – related capital expenditures for EU 35}}$$

For each area, the specific EIB share in KE-related expenditures has been calculated as follows:

For Education (2):

$$\frac{\text{Total EIB loans signed in the field of education}}{\text{Total capital expenditures in education for EU 35}}$$

For RDI (3):

$$\frac{\text{Total EIB loans signed in the field of RDI}}{\text{Total R\&D expenditures for EU 35}}$$

For ICT (4):

$$\frac{\text{Total EIB loans signed in the field of ICT}}{\text{Total capital expenditures in the ICT sector for EU 35}}$$

Capital expenditures in the ICT sector have been estimated by adding the following elements: (i) office machinery; (ii) radio, TV and communication equipment; (iii) software equipment.

As a first step, these ratios have been calculated at the level of each of the 35 countries and for each year between 2007 and 2013. As a second step, national and annual data have been aggregated at EU 35 level and for the entire period 2007-2013.

Outcomes of these calculations are provided in the following table (remarkable figures are highlighted).

Table A 9.1: EIB's weight in KE expenditure (overall and by KE area)

Country	Overall weight	Weight in Education	Weight in RDI	Weight in ICT
Austria	1.5%	9.0%	2.3%	0.3%
Belgium	1.1%	4.4%	2.2%	0.1%
Bulgaria	2.1%	0.0%	0.3%	3.5%
Croatia	0.1%	0.0%	0.4%	0.0%
Cyprus	5.4%	11.4%	2.9%	0.1%
Czech Republic	0.4%	0.0%	2.1%	1.1%
Denmark	0.9%	0.0%	2.8%	0.0%
Estonia	4.4%	1.5%	6.9%	2.6%
Finland	3.4%	7.1%	4.6%	0.7%
France	1.1%	2.9%	1.7%	0.2%
Germany	2.4%	1.6%	3.3%	1.0%
Greece	1.6%	2.7%	3.6%	0.2%
Hungary	12.8%	22.6%	23.5%	3.7%
Ireland	1.5%	10.3%	0.1%	0.5%
Italy	3.0%	0.6%	4.8%	1.9%
Latvia	7.6%	1.9%	26.7%	0.0%
Lithuania	2.7%	3.1%	11.0%	0.0%
Luxembourg	2.7%	0.0%	1.4%	5.2%
Netherlands	0.4%	0.8%	0.3%	0.4%
Poland	5.1%	2.9%	18.5%	1.8%
Portugal	5.1%	44.0%	5.0%	2.0%
Romania	0.6%	0.0%	0.9%	0.6%
Slovakia	1.7%	0.3%	8.5%	1.0%
Slovenia	4.7%	2.2%	8.5%	1.8%
Spain	3.4%	6.4%	6.3%	0.9%
Sweden	3.0%	0.0%	7.1%	0.0%
Switzerland	0.1%	0.0%	0.1%	0.0%
Turkey	2.1%	0.0%	7.0%	0.9%
United Kingdom	1.1%	3.8%	1.3%	0.5%
EU 35 average	1.9%	1.9%	3.2%	0.7%



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