

ANALYSIS OF SYNERGIES FOSTERED BY THE EIT IN THE EU INNOVATION LANDSCAPE



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This publication has been prepared by the Technopolis **|group|**

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FOREWORD BY THE EIT DIRECTOR



This is the second in a series of publications by the European Institute of Innovation and Technology (EIT) which aims to create an 'inventory' of innovation practices that are emerging from our Knowledge and Innovation Communities (KICs) and to make these available to interested audiences across the European Union's innovation landscape. In line with our role as an Institute, codification and dissemination of good practices and lessons learnt across Europe and beyond is a very important role for the EIT, notably based on evidence and experience of the existing three KICs.

Whilst the first publication looked at the dynamics of the KICs themselves, this second one looks at their promising prospects and positioning to energise the EU innovation landscape. The very concept of the EIT and its KICs has been designed in a way that facilitates and actively encourages synergies and complementarities in the multilevel innovation governance of Europe. The EIT acts as a unique and vibrant catalyst by building upon existing strengths and capabilities of organisations and regions participating in KICs, which are recognised for their excellence.

Being an integral part of Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020), the EIT brings added value to the existing research and innovation base, notably by accelerating the take-up and exploitation of technologies and research outcomes and by adding an educational dimension to the EU's research and innovation policy. I would like to express my sincere gratitude to Commissioner Androulla Vassiliou and Director General Jan Trzuszczński (DG EAC) and his services, Xavier Prats-Monné, Jordi Currell and Lucia Recalde in particular, for their continuous and active support.

There is significant potential for a mutual reinforcement of the actions at inter-governmental, national and regional/local level as illustrated by KIC-driven experiences so far. For the EIT, bottom-up policy alignment and cooperation between higher education, research and innovation, is key. I am pleased that the publication illustrates the emerging synergies, between the EIT community and other EU, national, regional and local initiatives, and in so doing, contributes to novel innovation approaches in Europe.

The EIT will continue to actively support the exchange with other initiatives in order to foster synergies and complementarities within the Innovation Union and fellow Horizon 2020 initiatives bottom-up from the EIT and its unique partnerships with current and future KICs.

José Manuel Leceta

EIT Director

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Introduction

This is the second in a series of European Institute of Innovation and Technology (EIT)¹ publications that aims to create an inventory of practices emerging from the Knowledge and Innovation Communities (KICs) and make them available to audiences beyond the KICs.

The first publication in 2012, 'Catalysing Innovation in the Knowledge Triangle – Practices from the EIT Knowledge and Innovation Communities', noted the European Council's conclusions on developing the role of education in a fully functioning knowledge triangle. These conclusions highlighted the need to improve the effect of investment in education, research and innovation through systemic and continuous interaction. For the EIT, closer policy alignment and cooperation between education, research and innovation at EU and Member State levels, is central to its role and this second publication explores the emerging synergies, cooperation and collaboration between the EIT and other EU, national and regional policies and initiatives. The publication showcases examples from the three existing KICs², all of which evidence different types of synergies with EU, national and regional innovation policies and programmes. The publication also explores other potential synergies for these KICs and the future KICs³, with a particular emphasis on Horizon 2020, the new EU Framework Programme for Research and Innovation (2014-2020)⁴ and the EU regional policy. Finally, the publication suggests points for consideration in furthering the EIT's emerging role in the EU innovation landscape.



The EIT brings together stakeholders form across the European Union and the Knowledge Triangle

The European Institute of Innovation and Technology was set up to enhance Europe's ability to innovate. To achieve this, the EIT brings together and integrates all three sides of the knowledge

triangle, namely research, higher education and business. The EIT does this through Knowledge and Innovation Communities (KICs), which are highly integrated, legally and financially structured entities involving thematically driven partners from the research, higher education and business communities across Europe. The KICs operate through co-location centres which are geographical locations where all or a large part of the innovation web exists in close proximity.

Figure 1 The objectives of the European Institute for Innovation and Technology⁵

The European Institute of Innovation and Technology (EIT) was set up by EC Regulation 294/2008 with the objective of contributing to sustainable economic growth and competitiveness by reinforcing the innovation capacity of the EU and its Member States. During the period 2014-2020 the EIT will contribute to the general objective of 'Horizon 2020 - the Framework Programme for Research and Innovation', by integrating the knowledge triangle of research, higher education and business. This integration takes place primarily via the Knowledge and Innovation Communities (KICs), which bring together organisations on a long-term basis around societal challenges.

The specific objective of the EIT is to overcome fragmentation in the European innovation landscape and to enhance Europe's attractiveness as a location of choice for top level talent and entrepreneurs.

The EIT has the following operational objectives:

...To integrate the knowledge triangle of research, higher education and business to create economic and social value and to enhance the returns from greater levels of collaboration and cooperation;

...To enhance the attractiveness and commercial relevance of post-graduate education opportunities to attract, develop and retain appropriate skills across the EU;

...To exploit the under-utilised potential of the EU's research strengths to deliver greater returns in the product and labour markets;

...To develop effective collaborative links between centres of excellence to create a critical mass for advanced innovation and education;

...To promote the development of innovative products and processes where market failures lead to sub-optimal provision;

...To strengthen the capacity for entrepreneurship across the EU to create new business activity and increased realisation of the potential value of research and educational outputs;

...To strengthen existing and potential centres of research, innovation and educational excellence in the EU to produce globally competitive centres of activity with global reputations for excellence;

...To address disparities in innovation capacity across the EU by developing and sharing the knowledge of the returns to the new models of innovation practices and governance.

1 The European Institute of Innovation and Technology is an independent body established by EC Regulation No 294/2008 of the European Parliament and the Council of 11 March 2008 (OJ 97/1 of 9.4.2008)

2 Climate-KIC (climate change), EIT ICT Labs (information and communication technologies) and KIC InnoEnergy (sustainable energy)

3 Future KICs will focus on societal challenges such as innovation for healthy living and active ageing, raw materials, added value manufacturing, Food4Future and urban mobility)

4 <http://ec.europa.eu/research/horizon2020/>

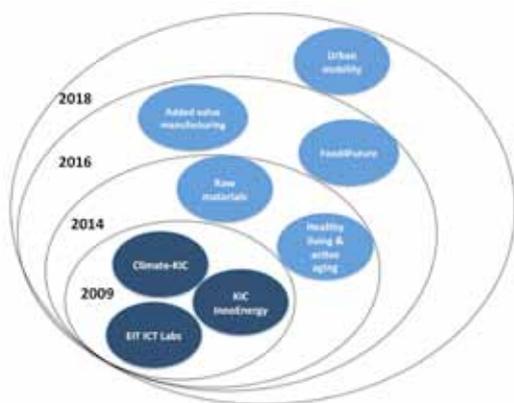
5 COM(2011) 817 final

The EIT operates through challenge-led themes to boost innovation in Europe

Each of the first KICs, Climate-KIC, EIT ICT Labs and KIC InnoEnergy, reflects a challenge-led theme in which Europe is boosting innovation. These KICs were designated in December 2009 and are all now fully operational, delivering programmes of education, creating entrepreneurs, incubating start-ups and launching products and services on the market.

Further KICs will follow from 2014 onwards. The themes of the future KICs will focus on societal challenges such as innovation for healthy living and active ageing, raw materials, Food4Future, added value manufacturing, and urban mobility⁶.

Figure 2: Existing and proposed future KICs



The EIT is committed to supporting and stimulating synergies within the European Innovation Landscape

There is a strong interest at EU level to ensure the EIT capitalises on synergies and complementarities between policies and initiatives at all levels. In its Triennial Work Programme 2013-2015, the EIT states, "During the period 2013-2015 the EIT will put emphasis on monitoring its progress through a holistic Performance Measurement System designed to showcase the EIT's impact and its KICs results and the way the EIT-KICs unique associations will progressively build synergies **upstream** with the Horizon 2020 and **downstream** with the KICs partners".

The Commission's proposal (2011) on the 'Strategic Innovation Agenda of the European Institute of Innovation and Technology (EIT): the contribution of the EIT to a more innovative Europe'⁷ highlights the **organisational flexibility** of the EIT, which supports synergy and cross-fertilisation between Horizon 2020, the Structural Funds and the Cohesion Funds. In addition, further flexibilities are being introduced in the new funding period (2014-2020) across a number of programmes. These

are presented in this publication and highlight the European Union's commitment to maximising impact in innovation. Key questions, not only for the existing KICs and the EIT, but also for the future KICs and the wide range of European innovation stakeholders, include:

- What is the current level of engagement with other policies and programmes?
- How are synergies created and explored?
- Are there patterns emerging in which coordination and cooperation are more likely to occur?
- What challenges are there to introducing coordination and cooperation between policies and initiatives?
- What is the added value?
- What are the impacts of joined-up policy-making and initiatives?
- What benefits do synergies, coordination and cooperation offer to the KICs?
- What benefits do synergies, coordination and cooperation offer to other international, EU, national and regional initiatives and programmes?
- What future conditions or measures are needed to further support synergies, coordination and cooperation?

Through the examples highlighted and the structuring of the innovation landscape, this publication explores these questions and provides a set of points for future consideration.

What do we mean by synergies and complementarities?

There are various types of synergies, planned or fortuitous, at the levels of policy, organisation and activity. Wherever synergy takes place, there will be a stronger effect, or outcome, as a consequence of the interaction between the different entities than would have been achieved by their individual efforts. Complementarity is a relationship or situation in which two or more different policies, organisations or activities improve or emphasise each other's qualities, perhaps by building on each other's strengths, or by balancing their respective limitations.

For the purposes of this publication, synergies and complementarities are defined as instances where two or more **policies** or **programmes** are working together and benefit from this approach. We differentiate between policy synergy and programme complementarity, as follows:

- **Policy synergy** means achieving greater than expected impact by combining policy positions and influencing strategies in an interactive way.

6 Disclaimer: Negotiations are still ongoing
7 COM(2011) 822 final

- **Programme complementarity**, at the organisation and action levels, is where two or more initiatives⁸ are pooling resources and using them to create something which is of more value than if the two initiatives worked separately and independently.

Why promote synergies and complementarities?

Encouraging synergies and complementarities between policies and programmes from design through to implementation is a focus in improving public policy-making. In innovation policy, the focus on synergies and complementarities is seen as a way of creating faster routes from research to innovation through the optimal use of available programmes and instruments.

The report on Synergies between FP7, the Competitiveness and Innovation Framework Programme and the Cohesion Policy funds (2011)⁹ identified the following types of failures in the EU innovation landscape which could be addressed through better joined-up policy-making:

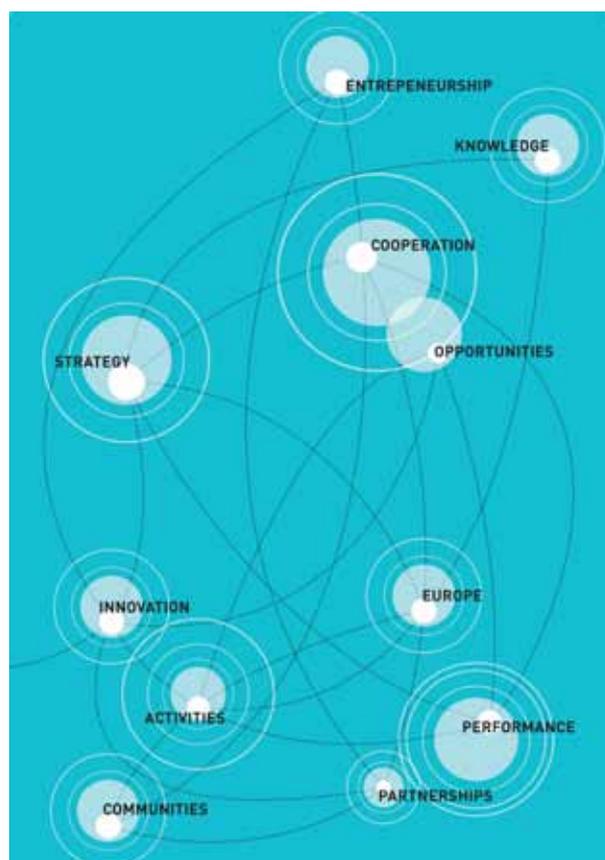
- The fragmentation of innovation policies across EU, national and regional levels;
- The sub-optimal coordination between research and innovation policies and the Cohesion Policy at EU, national and regional levels, both within and between these policies;
- A lack of common strategies in accordance with the orientation of Europe 2020;
- A lack of coherent and interacting governance structures;
- Weak complementarities and compatibilities, both regarding the regional dimension in research and innovation policy and the research and innovation dimension in regional policy;
- A lack of instruments aimed at supporting the pooling between EU and national funds;
- Poor communication, coordination and cooperation between stakeholders at all levels.

Previous reports on synergies and complementarities in policies and programmes have already highlighted the marginal links between education and training policies and programmes and the research and innovation policy landscape. Therefore, the above failures can be extended to include:

- The fragmentation of innovation, research, entrepreneurship and education policies;
- The sub-optimal coordination between innovation, research, entrepreneurship and education policies at all levels, and also with the Cohesion Policy;

- Weak complementarities and compatibilities in the regional dimension of innovation, research, entrepreneurship and education policies on the one hand, and the innovation, research, entrepreneurship and education dimensions of regional policies on the other.

However, the EIT not only involves the research and innovation mix but also introduces education and a strong focus on entrepreneurship. Thus, it offers an important opportunity to link the local, regional, national and international environments across a much broader policy context.



Is creating synergy and complementarity always the right option?

It is not proposed that all policies and initiatives should be coordinated at all levels. The choice of joint policy-making or programming should be based on added value with a consideration of the benefits outweighing the monetary and non-monetary costs. Efficiency is a particular consideration as cooperation and coordination can be costly. The cases presented in this publication give an insight into why decisions are made to coordinate policies and initiatives. In making these decisions, there should be clarity about the potential outcome and impact of synergy and complementarity that, in turn, should drive the process of coordination.

Creating the **conditions** for synergy and

⁸ The word programme and initiative can be used interchangeably in this sense. Policy is defined as the priorities adopted by policy-making bodies, these are often without budget. Programmes are the actions of policies which have specified goals/impacts.

⁹ European Commission (2011) Synergies between FP7, the CIP and the Cohesion Policy Funds. Final report of the expert group to DG Research and Innovation. The Synergies Expert Group started work in October 2010 to produce recommendations for the development of synergies in practices between FP7, CIP and Cohesion Policy, enhanced synergies for the next programming periods and in particular for the Regions and Knowledge (RoK) and Research Potential (REGPOT) under FP7. As such, this work provides a sound basis for the definitions of synergies and complementarities used in this report and also for defining the framework to analyse practical examples of synergies and complementarities in evidence in the KICs.

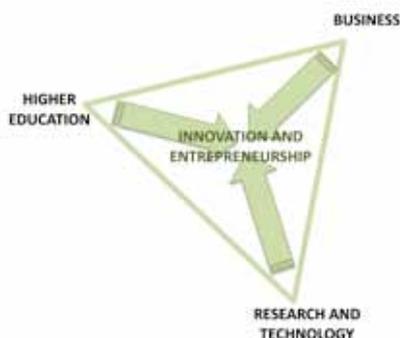
complementarity is however the right option to pursue. Synergies often occur from the bottom-up and therefore, while creating the right conditions may not immediately produce synergies, they need to be in place for synergies to occur. The following section gives an overview of how the EIT and the KICs use their structures and working practices to create these favourable conditions.

Encouraging synergy and complementarity between policies and programmes is embedded in the EIT and the current KIC delivery models

The EIT and the KICs have been specifically designed to facilitate and encourage synergies and complementarities within Europe's complex innovation landscape. This guiding principle of the EIT focuses on the bottom-up approach.

The **knowledge triangle** is of primary importance, as the EIT and the KICs have been set up to build on the strengths and capabilities of existing organisations that are active in the knowledge triangle, by bringing them together to accelerate market uptake of innovations. Business, higher education and research are creators of knowledge and also producers of human capital¹⁰. Multiple input and feedback loops exist between the stakeholders in the knowledge triangle. The stakeholders are present in the KICs and outside of the KICs. By bringing the research infrastructure, education, businesses and people together, through cooperation and collaboration, Europe can unlock its innovation potential and help address the fragmentation of approaches across the public and the private sector.

Figure 3: Generic scheme of the knowledge triangle



The KIC co-location centres are physical locations which promote synergy and complementarity, especially at national and regional levels. Each KIC works through co-location centres (CLCs) and these are the operational units which bring together people, regional and local clusters and nodes of excellence. Each KIC has five or six co-location centres offering a venue where interested individuals can meet with

entrepreneurs, students and businesses. The co-location centres are sited in universities, institutes, science parks and clusters, and have close links with the surrounding regional environment. The CLCs interact with each other across regional and national borders, and this inherent feature points at the complementary nature of KIC networks vis-à-vis other European level initiatives.

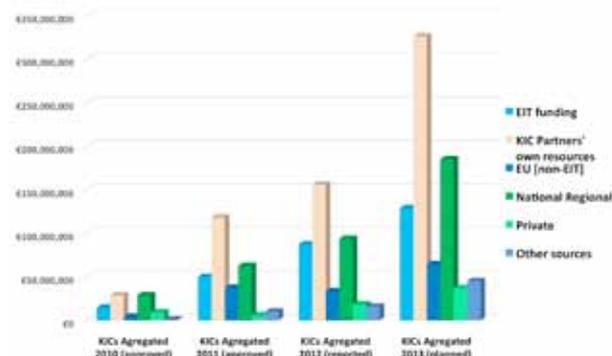
Figure 4: KIC co-location centres across Europe



The EIT smart funding model is a natural driver of synergies. The EIT funds provide, on average, up to 25 per cent of the overall KIC budget. The remaining 75 per cent comes mainly from KIC partners but also from other resources including EU, national and regional funding sources. This funding framework encourages synergies and complementarities.

As can be seen from Figure 5 the greatest share of KIC budgets came from partner organisation contributions. Since the establishment of KICs the funding from national and regional authorities has exceeded the total amount of annual EIT grants. It is planned that national and regional funds will constitute an even greater share of the total funding of KICs in 2013. This forecast indicates that KICs have reached their maturity stage and are gradually becoming embedded in the surrounding innovation landscape.

Figure 5: The leverage effect of the EIT funding

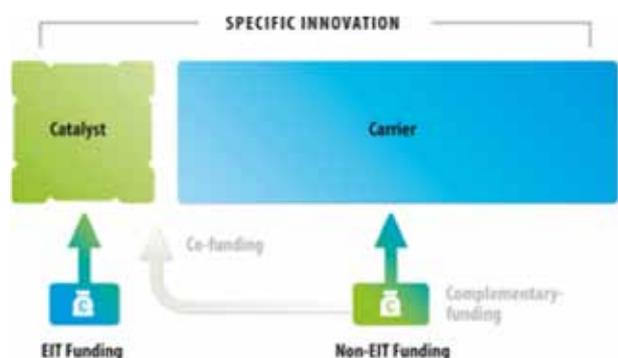


Source: The EIT

10 Edquist, C. (1997) *Systems of Innovation: Technologies, Institutions, and Organizations*, Pinter: London and Nelson, R. (ed.) (1993) *National Innovation Systems: A Comparative Analysis*, Oxford University Press: Oxford

The KIC business models facilitate cooperation and collaboration. Each KIC decides on how to implement the EIT funding model to suit its own business needs. The EIT ICT Labs model is one which is most noticeably facilitating synergies and complementarities through its 'Catalyst-Carrier' model. EIT ICT Labs develops a set of value added activities using the 25 per cent funding. These are called 'catalyst activities' and are applied to the existing complementary activities, which are 'the carriers'

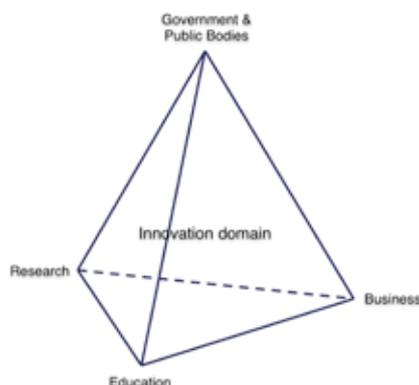
Figure 6: The EIT ICT Labs Catalyst Carrier Model



Source: EIT ICT Labs

Climate-KIC recognises that the public sector is an indispensable driver of climate innovation as municipal authorities hold a central role in developing key systems such as buildings, energy, transport and the waste management infrastructure. Therefore, the KIC has integrated an extended network of six Regional Innovation and Implementation Communities (RICs) into its model. RICs comprise regional businesses, universities, research agencies and public sector authorities that are central to the implementation of low-carbon innovations. Climate-KIC has conceptualised this model as the innovation pyramid. The inclusion, by design, of the public sector in Climate-KIC business model brings closer coordination with related initiatives at regional, national and EU levels and encourages synergies and complementarities.

Figure 7: Climate-KIC innovation pyramid

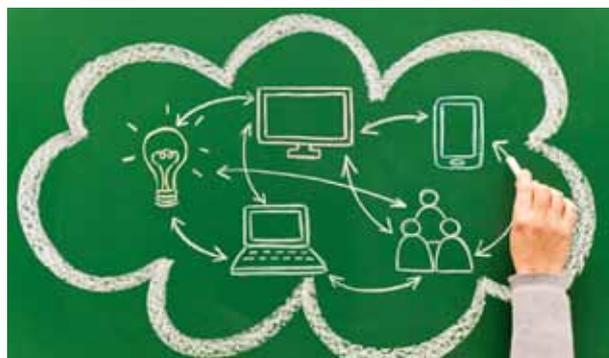


Source: Climate-KIC

KIC InnoEnergy undertook a comprehensive mapping of potential synergies and complementarities before launching its current activities and systematically seeks strategic partnerships that can further its position in the field of energy. Its approach to synergy building is goal-oriented as is its whole organisational model. It starts by defining the objective and then the partners who can help it to attain that objective in a more effective and efficient manner. Its operational structure also reflects this approach, as there is a dedicated staff member dealing with all questions related to synergy building.

The bottom-up alignment of topics and funding sources for the existing and future KICs, and other programmes and funding initiatives, also facilitates synergy. This is borne out in many of the examples highlighted in this publication such as the region of Trentino that concentrates on investing in ICT and Climate-KIC Pioneer Cities and the potential of regional funding for low carbon economies. This alignment will be even stronger in Horizon 2020 with its focus on societal challenges, and also in the emerging smart specialisation strategies of the European regions. At the strategic level, the EIT organises the selection process for all KICs taking into consideration the opportunities for synergies with other initiatives. The potential for synergies will be a selection criterion applied to the new KICs.

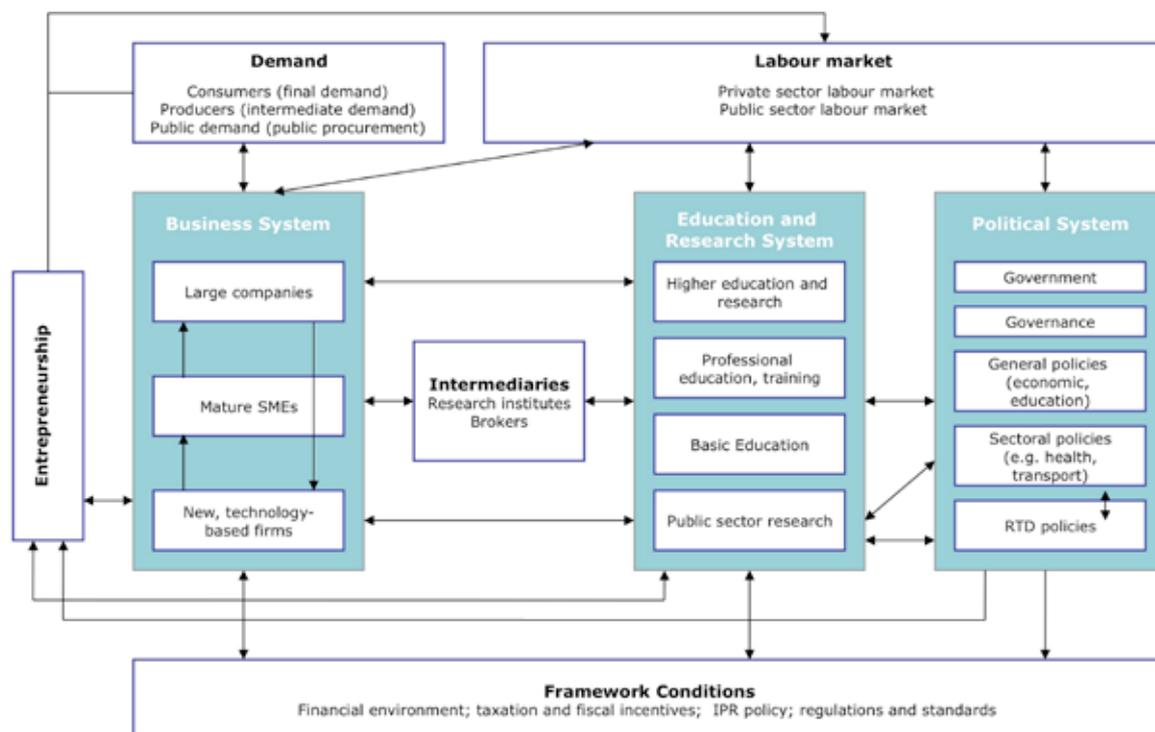
Commitment to dissemination and outreach beyond the KICs is a key priority which supports future synergy. The EIT's work programme encourages the active promotion of the dissemination of good practices in order to develop a common innovation and knowledge-sharing culture. The EIT is committed, in particular, to disseminating knowledge and practices to those people and institutions that do not directly participate in the KICs and to facilitating their adoption of experiences gained by the EIT and its KICs. The future planning also includes the development of such good practices as alumni communities, stakeholder platforms and the EIT fellowship scheme. The EIT is more than just the sum of its KICs. As an EU body it is dedicated to share the lessons learned from putting in practise a new approach to innovation policy to address societal challenges for the benefit of all European citizens.



A Conceptual Framework for Developing Synergies and Complimentarities

The 2011 report on Synergies between FP7, the CIP and the Cohesion Funds¹¹ has been referred to as the basis for the conceptual development of this publication. The wider concept of innovation and innovation systems has been taken as a source for the analysis of **where** synergies between policies and programmes may occur, **who** is involved and **what** type of coordination takes place.

Figure 8: Scheme of a national innovation system in the knowledge triangle



Source: Technopolis Group, adapted from Kuhlmann, S. and Arnold, E. (2001) RCN in the Norwegian Research and Innovation System. Background Report No 12 in the Evaluation of the Research Council of Norway, Oslo: Royal Norwegian Ministry for Education, Research and Church Affairs

Figure 8 shows a typical national innovation system and depicts the wide of range of its components. Even though businesses, as the key economic generators, are a central part of the system, many actors and institutions are also intrinsically involved. In addition, there are many inter-linkages and flows of knowledge in the system. The model highlights the importance of the education and research system, as well as the political and business systems.

The recent literature on innovation systems emphasises the importance of a coherent policy mix, which does not only centre on science, technology and innovation policies and actors, but also focuses on their interaction with the framework

conditions for innovation and other functions of the system. Core elements in these framework conditions are a favourable business climate that is conducive to entrepreneurship, an efficient and effective regulatory framework and a high quality education system.

Entrepreneurship is a more general framework condition that is connected to all other parts of the system as it triggers new company start-ups and the growth of SMEs, it is highly influenced by the education system and, in turn, it can stimulate start-ups emerging from the results of the public research system. The economic, financial, fiscal and innovation policies of governments can both stimulate and hamper entrepreneurship. The skills

11 DG Research and Innovation (2011) Synergies between FP7, the CIP and the Cohesion Policy Funds. Final report of the expert group.

created in the education and research systems are transferred to the industrial system via the labour market. In various EIT-KIC initiatives, cross-system mobility through joint education and training and eventually through the labour market, stimulates the flows of knowledge in the system. Entrepreneurship can even create a more sophisticated demand when leading-edge, start-up companies trigger new demands in their supply chains or tap into new consumer demands.

As societal challenges are key drivers for innovation and for innovation policy, the 'horizontalisation' of innovation and research policy becomes an additional decisive element in well-functioning innovation systems. For instance, the need to address environmental sustainability requires domains such as transport and environmental policies to promote research and innovation. The challenge of healthy ageing calls for health policies to trigger innovations in health treatment and care. Thus today, innovation systems have become much broader and now directly involve a multiplicity of stakeholders. Creating better alignments and synergies between different policy domains is an important area in which the EIT KICs initiatives have a potential contribution to make.

The EU innovation system is supported through European policies such as Europe 2020, Innovation Union, the European Research Area (ERA) and the European Higher Education Area (EHEA) and through programmes including the Framework Programmes and the Common Strategic Framework. In the future, it will be addressed even more coherently through Horizon 2020 with the inclusion of the EIT, as the only scheme which includes higher education. The focus on the grand societal challenges also stimulates more interdisciplinary, cross-border and cross-institutional teams and encourages Member States to better coordinate national and regional policy instruments, including procurement, regulation and innovation and direct R&D funding. In addition, this focus on societal challenges improves the links that the research and innovation policy environment has with other policy domains such as environment and health and this, in turn, encourages more cross-policy coordination.

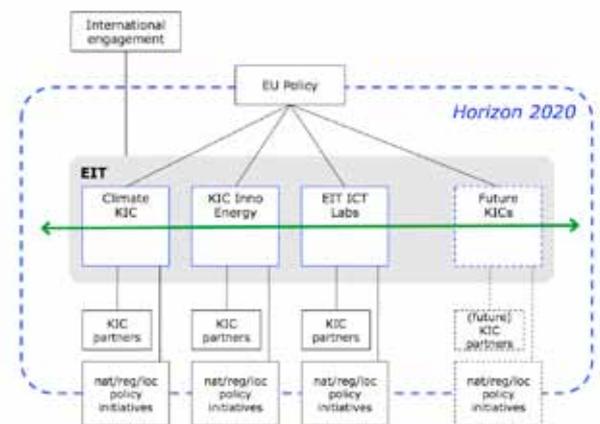
The report on the State of the Innovation Union 2012¹² indicates that many Member States have launched policy reforms in order to make their innovation systems more efficient and better aligned with the objectives of the European Research Area. At national level, there is also evidence of deeper integration of research and innovation into other policy areas, as a consequence of the financial crises. This signals a greater commitment to making optimal use of public, and also private, funding to create the largest impact or the most significant innovation. Where there is policy alignment, it can reduce the duplication of effort

through synergies and it can also join together initiatives which mutually support each other, such as providing talent for start-up programmes or linking entrepreneurship education to ideas generation.

The EIT, in particular, addresses the challenges relating to the fragmentation of the innovation system and also to an increased emphasis on talent development. The European Union funds - Horizon 2020, which will include the EIT in the future, and the European Regional Development Fund (ERDF) - are addressing the diversity and disparity of innovation landscapes across the national and regional environments. This EU funding is intended to increase the coordination between, and the efficiency of, national and regional innovation systems. The EIT KICs strengthen these efforts, as they put important innovation actors in the driving seat for innovation agenda. KICs have the capacity to link policy initiatives upstream, through the international and EU innovation agenda, and policy initiatives downstream, through national and regional innovation environments.

Upstream links are those between the KICs and other EU level and international policies and programmes. Related activities may include agenda setting, joint programming opportunities, the alignment of priorities or the alignment of funding opportunities. Downstream links are those with national and regional stakeholders, policies and programmes. There can be self-alignment by the national and regional stakeholders to the KICs priorities or examples, where the KIC activities work as part of a national or regional initiative.

Figure 9: Upstream and downstream European synergies and complementarities of the KICs



The international, EU, national and regional environments provide the basis for analysing synergies and complementarities between programmes and policies. The EIT and the KICs work across the knowledge triangle with a range of stakeholders. The points at which synergy and complementarity can occur, what is involved, who is involved

and what roles are played out are all issues to be explored. For the purposes of this publication, a taxonomy for documenting synergies and complementarities between the activities of the KICs and other programmes and policies is presented below¹³. This taxonomy covers five different dimensions of potential synergies and complementarities, including different stages in policy and programme cycles, and provides the possibility of analysing relationships from a number of different perspectives¹⁴. This is a descriptive framework, which does not explain how or why things happen but where they happen.

- Dimension 1 – **What** types of policies and programmes are working together?
- Dimension 2 – **Who** is collaborating and co-operating in the synergy?
- Dimension 3 – At what **stage** in the policy cycle is the synergy occurring?
- Dimension 4 – What are the **assets** involved in the synergy?
- Dimension 5 – What is the **role** of the KIC in the synergy?

Dimension 1 - What types of policies and programmes are working together?

The types of policies and programmes have been categorised by the aspects of the knowledge triangle - business, higher education and research. Research is not highlighted in this framework, as research is not the focus of a KIC. A KIC may cooperate with a research programme but the purpose would be, for example, to enhance its educational, entrepreneurial or innovative potential.

	What
Target area of the synergy	Education
	Entrepreneurship
	Innovation

Dimension 2 - Who is collaborating and cooperating in the synergy?

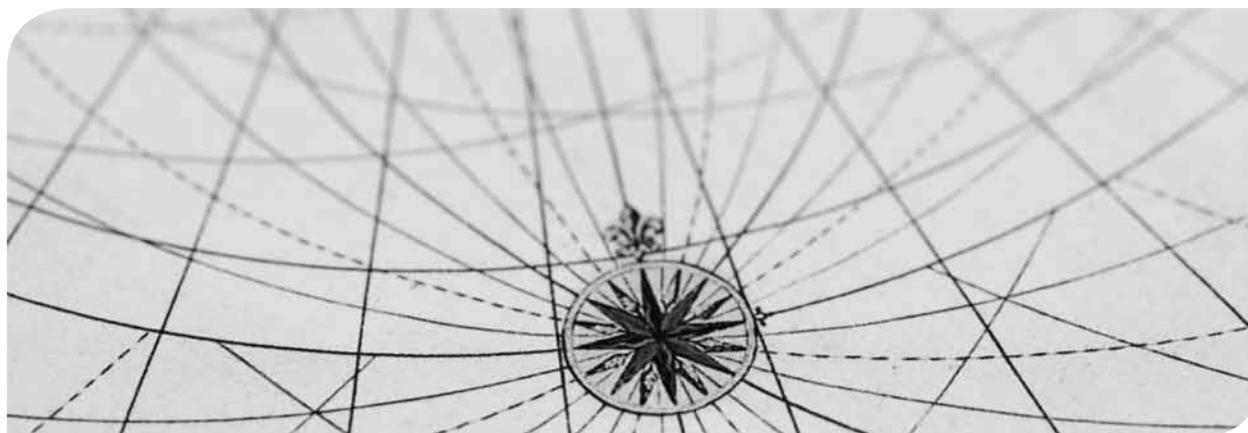
There are many stakeholder types working in innovation systems who may be directly involved in the synergy. Identifying who is collaborating and cooperating gives an insight into the person-driven mechanism of the synergy.

	Who
Stakeholder group(s) engaged in the synergy	Policy-makers
	Companies
	Educational institutions
	Research institutions
	Public sector
	Individual researchers
	Individual students
	Society at large

Dimension 3 - At what stage in the policy cycle is the synergy occurring?

There are a number of stages in the innovation policy cycle where synergy can happen. The first is at the pre-policy design stage, where policy-makers make use of strategic intelligence to understand a system's characteristics, and hence to assess the needs of, for example, a region. At the design phase, KICs and policy-makers can work together to define the focus of the policy and/or programme. The policy design phase is particularly important for the development of coordinated approaches. In the implementation phase, the programme can be implemented with rules that facilitate and encourage cooperation with the KIC or, at least, do not inhibit any synergy.

	Stage
Stages in the policy cycle at which the synergy is occurring	Pre-policy design, strategic intelligence
	Policy design
	Policy implementation



13 As part of the production of this publication, a group of innovation policy experts worked with the EIT and Technopolis to define a framework of analysis (March 2013)

14 Although not explicitly included as a dimension, this framework of analysis can be used to identify synergies at the international, European, national and regional levels

Dimension 4 - What are the assets involved in the synergy?

For synergy to occur there will be a transaction between the initiatives involving an asset, if the synergy is to achieve the intended added value. This could be, for example, new knowledge, access to networks, access to additional infrastructures, funding or increasing the profile of a given policy or programme through the EIT brand.

	Asset
Assets involved in the synergy	Knowledge
	Networks
	Infrastructure
	Fund
	Profile

Dimension 5 - What is the role of the KIC in the synergy?

There are a number of different roles that a KIC can play in any synergy with another initiative. This section is not exhaustive but provides an indication of what a KIC can provide in terms of activities rather than assets.

	Role
KIC role in synergy	Decision-maker
	Secretariat function
	Training provider
	Stakeholder consultation
	Exchange of experience/mutual learning
	Brokerage
	Placements
	New learning opportunities
	Quality assurance
	Use of research facilities
	Business support activities

The above dimensions are brought together in the case studies to illustrate where the synergies are taking place and also as a means of determining the drivers, enablers and barriers which the examples have experienced.

The EIT and the KICS in the Current EU Innovation Policy Environment

The European innovation policy and programme environment is not static. Policies also have different time frames. Europe 2020, the overarching growth strategy for Europe, runs from 2010 to 2020, as does the European Higher Education Area (EHEA). The Seventh Framework Programme for Research and the Competitiveness and Innovation Programme are in the last year of the current programming period of 2007-2013 but the projects funded will continue for some more years. This chapter looks at the current state of play and both the alignment of, and the key differentiating factors between, the main supporting environments for education, research, innovation and entrepreneurship and also the KICs.

The European Higher Education Area

The European Higher Education Area was launched in 2010 to ensure more comparable, compatible and coherent systems of higher education in Europe. During the period 2010-2020, the European Higher Education Area is focusing on a number of priorities, of which the following are strongly linked to the EIT and its objectives:

- Employability;
- Student-centred learning;
- Education, research and innovation;
- Mobility.

Employability is a priority of the European Higher Education Area. Labour markets increasingly rely on higher-level skills and transversal competences. During April 2012, in Bucharest, the Education Ministers committed the EU "to enhance the employability and personal and professional development of graduates throughout their careers". The Education Ministers also stressed the role of cooperation between employers, students and higher education institutions in achieving this goal. The European Commission is supporting this commitment in a number of ways through, for example, the University-Business Forum that promotes and facilitates interaction between academia, business and the Knowledge Alliances¹⁵. Knowledge Alliances are structured partnerships bringing together businesses, higher education institutions and students to stimulate innovation in, and through, higher education. With the support

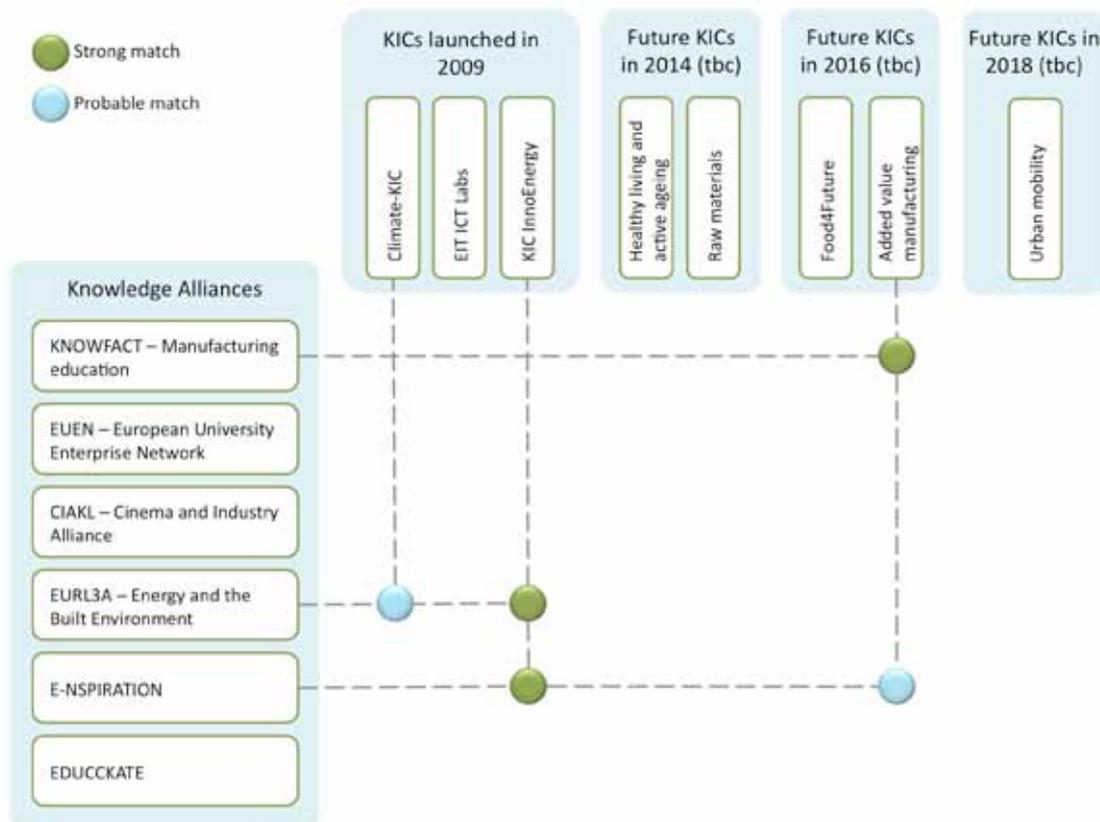
of the European Parliament, two pilot calls were launched in 2011 and 2012, leading to the implementation of six pilot projects.

Knowledge Alliances are transnational, structured and sustainable partnerships between higher education and business. They are open to any theme unlike the KICs and to cross-sectoral cooperation. Knowledge Alliances focus on multidisciplinary curricula, the entrepreneurial mind-set and the co-creation of knowledge. Other key features of Knowledge Alliances are an impact going far beyond the partner organisations themselves and continuing university-business cooperation. Knowledge Alliances will become part of Erasmus+ with plans to scale up their number to around 200.

Student-centred learning and the teaching mission of higher education attempt to overcome some of the problems inherent in more traditional forms of education by focusing on learners and their needs, rather than on the teachers' input. This approach has implications for the design and flexibility of the curriculum, course content and interactivity of the learning process. It is being increasingly used in universities across Europe. In addition, the model chosen for the EIT labelled degree is based on the learning outcome paradigm highlighted by the Bologna process and the EHEA, of moving to student-centred teaching and learning and changing higher education to add a competence base to the knowledge base¹⁶. The EIT Quality Assurance and Learning Enhancement Model consists of a set of quality indicators divided into individual assessment fields¹⁷. All of the EIT labelled degrees are based on a learning outcome-oriented approach.

Education, research and innovation underpin the 'raison d'être' of the EIT and the operations of the KICs. The integration of these three elements, no matter what starting point, is the key to delivering the added value of the EIT. According to the EHEA, higher education at all levels should be based on state-of-the-art research and development, thus fostering innovation and creativity in society. In the KICs, all education courses are fully integrated and benefit from the innovation, research and entrepreneurship elements of partnership. For example, students on the Journey of the Climate-KIC network¹⁸ with peers and entrepreneurs, explore climate change at first hand,

Figure 10: The Knowledge Alliances and alignment with the themes of the EIT



Source: Technopolis

access state-of-the-art resources, work in multidisciplinary teams and have a chance to pitch their ideas as potential business ventures. As the education programmes mature, the lessons learnt can be disseminated.

The EHEA calls for joint programmes as well as **mobility** windows to be introduced as common practice. The EIT labelled Master and PhD programmes include international and cross-organisational mobility windows in each study programme based on the European Credit Transfer and Accumulation System (ECTS) or its equivalents to facilitate recognition. The KICs also provide mobility for teaching staff and professionals from the world of business. The Master's Schools under Climate-KIC, EIT ICT Labs and KIC InnoEnergy all provide a transnational experience.

Another policy area which spans education and entrepreneurship is the European Entrepreneurship 2020 Action Plan that focuses on making education more entrepreneurial. KICs are oriented around entrepreneurship, which they stimulate not only through education actions but also through business development and innovation initiatives. Their objectives are fully in line with the endeavours of the European Entrepreneurship 2020 Action Plan. This Action Plan envisages a number

of actions being taken at both EU and Member State levels to support entrepreneurship in Europe such as developing entrepreneurial education and training, stimulating the business environment and strengthening the culture of entrepreneurship¹⁹. A specific area in which KICs can be instrumental is fostering entrepreneurship in the green economy given their foci on climate challenges and sustainable energy.

The Seventh Framework Programme for Research and Technological Development and Research Instruments

The EIT KICs became operational when the current Seventh Framework Programme (FP7) was already well underway and have complemented this existing Framework Programme by focusing not on research, but on innovation, education and entrepreneurship. The research activities supported under FP7 might not have direct linkages with the EIT activities but, nevertheless, the European research networks that have been built with the support of consecutive Framework Programmes form the backbone of the EIT-KICs' networks and nodes. Many of the partners of the EIT-KICs are also active participants in various FP7 programmes and initiatives.

16 EnQa (2009) Standards and guidelines for Quality assurance in the European Higher Education Area 3rd (Esg) Report for European Commission, DG Education and Culture
 17 Adamson, L. (2011) Handbook for Planning, Labelling and Follow Up Reviewing of EIT Master and Doctoral Programmes. Report for the European Institute of Innovation and Technology
 18 <http://www.climate-kic.org/for-students/professional-education/#.UcsOn-vrjmE>
 19 COM(2012) 795 final

Alongside FP7 instruments, in the Cooperation and Ideas programmes that are solely for research, and the People programme for the mobility of researchers, there are a number of activities connected with coordination of research activities and the European Research Area instruments that offer potential synergies with the EIT KICs.

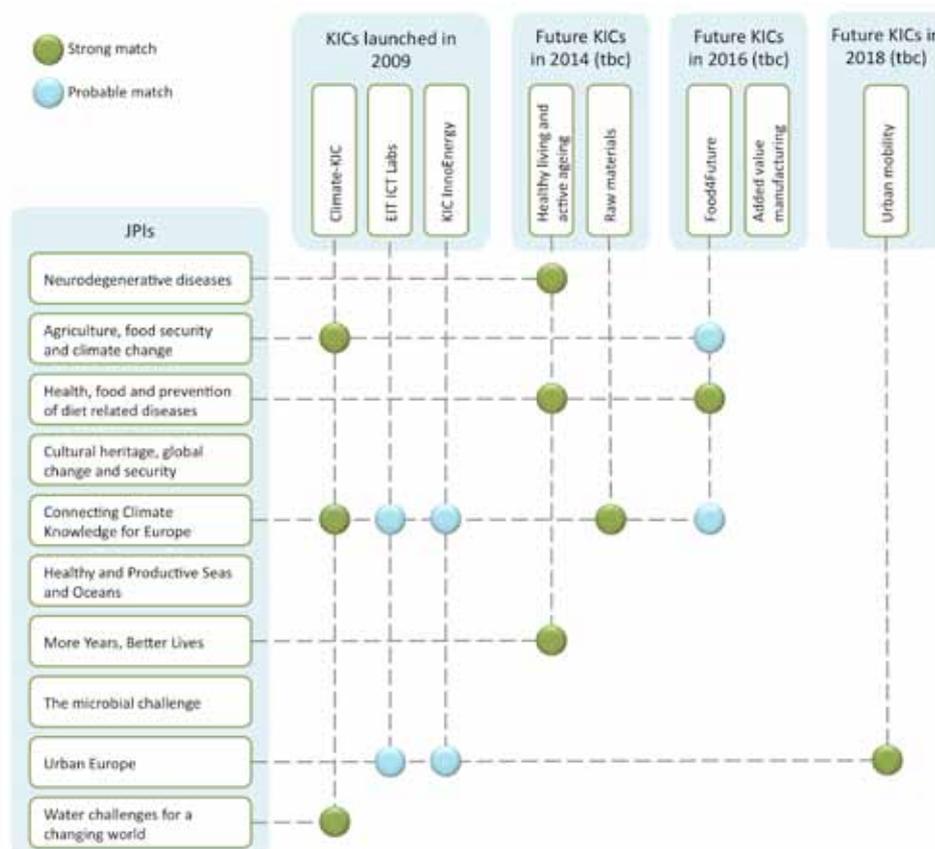
Amongst the ERA instruments, the Joint Programming Initiatives (JPIs) provide a way of coordinating national research efforts to tackle common European challenges and of using public R&D resources in a more efficient way.

JPIs' main structure comprises common visions and strategic research agendas that have been agreed jointly by the Member States to address a major societal challenge. Based on the initiative of the European Council of March 2008, the Commission proposed the launch of Joint Programming during 2010²⁰. The High Level Group on Joint Programming (GPC), a dedicated group of the European Research Area Committee, which was previously known as CREST, identifies the areas suitable for Joint Programming²¹. There is a number of JPIs that are closely aligned with the thematic areas of the existing and future KICs, as indicated in Figure 11 below. The focus of the JPIs is on research and

agenda-setting for research policy and funding across European countries. The mostly upstream research activities funded by the Member States, through joint calls, do not really offer suitable support for EIT activities. The research agenda setting that happens across Member States could, however, provide guidance to EIT actors on future needs for talent and potential opportunities and demand for innovation.

The European Innovation Partnerships²² (EIPs) represent a new approach that aims to coordinate and streamline existing instruments and initiatives in a number of challenge-driven domains. EIPs act across the whole research and innovation chain so, in that sense, they match the EIT mission quite well. The current topics of the EIPs are Active and Healthy Ageing; Agricultural Sustainability and Productivity; Smart Cities and Communities; and Water and Raw Materials. The synergy with KICs occurs firstly in the early agenda setting stages and in the mission to coordinate existing initiatives. The EIPs develop Strategic Implementation Plans to align and create synergies between existing EU, national, regional and local activities. The Smart Cities and Communities EIP has the most obvious synergies with the current KICs, particularly Climate-KIC and KIC InnoEnergy. However, solutions to the challenges

Figure 11: JPIs and alignment with the themes of the EIT



Source: Technopolis

20 COM(2008) 468 final

21 For more details see: http://ec.europa.eu/research/era/joint-programming_en.html

22 The European Innovation Partnerships is an overarching framework for Article 185 initiatives to ERA-NETs or JPIs

will also be relevant for EIT ICT Labs. The 2011 Smart Cities and Communities initiative has already demonstrated the relevance of synergies with the KICs (see Chapter 4). From 2014, this initiative will become fully operational under Horizon 2020, and for this purpose a technological transformation agenda will be established. This provides opportunities for leveraging KIC initiatives with the future programmes of this particular EIP.

The proposal for the Decision on the Strategic Innovation Agenda²³ states that the upcoming European Innovation Partnerships will provide overarching frameworks to facilitate alignment and synergies among supply and demand-driven research and innovation instruments and policies. The KICs can contribute to these objectives as they are distributed across the EU, have on the ground experience and skilled and knowledgeable human capital represented by their staff and partners.

The six Joint Technology Initiatives also offer potential synergies with the EIT KICs²⁴. These are public-private partnerships that define and implement a joint Strategic Research Agenda in predefined domains of major interest to industrial competitiveness and of considerable societal relevance. The thematic domains in which the current JTIs operate are only partially in line with the existing KICs. In particular, Artemis, the JTI for Embedded Computing Systems presents potential links with EIT ICT Labs and to a lesser extent Fuel Cells and Hydrogen (FHC) may have a relevance to KIC InnoEnergy. As the JTIs have strong industry participation, the links could be formed through the private sector partners in both initiatives.

EUREKA Clusters are also aligned with EIT domains and activities. The case studies in Chapter 4 have identified, for instance, a structural link between EIT ICT Labs and ITEA 2. The Eureka Cluster Eurogia+ that supports innovative projects in low-carbon energy technologies would also be a likely match for KIC InnoEnergy.

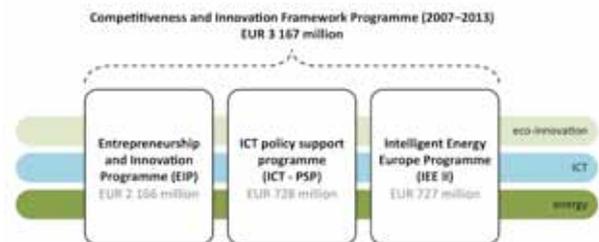


Competitiveness and Innovation Framework Programme and Entrepreneurship

Nurturing the next generation of young entrepreneurs and bringing innovative ideas onto the market are at the very heart of the EIT and its KICs. KICs are oriented around entrepreneurship, which they stimulate by creating new innovation models in the knowledge triangle that combine education actions with business development and innovation activities. In this respect, the Competitiveness and Innovation Framework Programme (CIP) is one aspect where the EIT and KICs can help to improve the links to the other two important elements of research and education.

The Competitiveness and Innovation Framework Programme was launched for the period 2007-2013 with the objective of supporting the innovation activities of SMEs and providing better access to finance and business advisory services. The Entrepreneurship and Innovation Programme, which is one of its three operational programmes, has financed successful pan-European initiatives such as the Enterprise Europe Network. Other actions include the Erasmus for Young Entrepreneurs initiative that is a cross-border exchange programme providing entrepreneurs with a chance to learn from other experienced entrepreneurs. A specific area where KICs are instrumental in this regard is fostering entrepreneurship in the green economy given their foci on climate challenges and sustainable energy.

Figure 12: CIP programme architecture



The Enterprise Europe Network has been assisting SMEs to access market information, overcome legal obstacles and identify potential business partners across Europe and in these ways it support innovation and transnational technology transfer. KIC business support activities such as the EIT ICT Labs technology transfer services or KIC InnoEnergy Highway™ complement these activities by offering a specialised and targeted service on a specific theme. KIC InnoEnergy Highway™, for instance, is a specialised business creation process in the field of sustainable energy that takes a business idea or concept through different evaluation stages with the aim of creating a new start-up or spin-off.

23 COM(2011) 822 final

24 For more info on JTIs see: http://ec.europa.eu/research/jti/index_en.cfm?pg=about

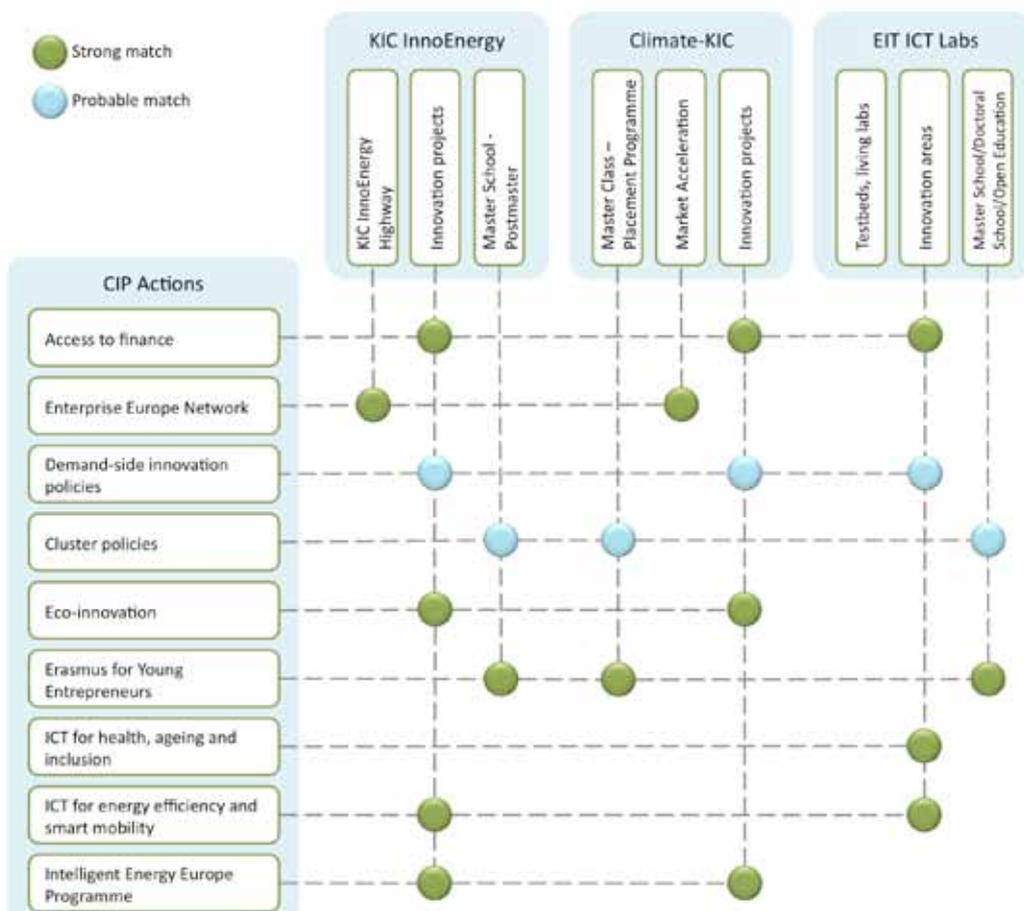
Two of the operational programmes of the CIP are complementary to all three of the KICs, notably the ICT Policy Support Programme (ICT-PSP), which is related to EIT ICT Labs, and the Intelligent Energy Europe programme, which is relevant to KIC InnoEnergy and Climate-KIC. The ICT Policy Support Programme has been stimulating the wider uptake of innovative ICT-based services and the exploitation of digital content by European citizens, governments and businesses, in particular SMEs. The pilot areas of this programme are also in line with the EIT ICT Labs focus areas such as ICT for health, smart mobility or smart energy systems. The Intelligent Energy Europe Programme targets ambitious climate change and energy challenges and supports specific projects, for instance, helping Europe's cities to develop more energy-efficient and cleaner transport.

These programmes and the KIC activities strengthen each other's impact by addressing the same challenges from different angles in critical areas such as ICT or smart energy development. The KICs add further dimensions to innovation projects

such as education or business support and provide an established community that can better exploit the opportunities identified as a result of these projects.

The potential synergies are less tangible but still important in the areas of cluster policies or demand-side innovation policies. As KICs are embedded in regional environments and regional clusters of businesses, universities and other innovation stakeholders through their co-location centres, cluster policies can use the new innovation model of the KICs to strengthen clusters. Demand-side innovation policy aims to create a link between research, development and innovation measures and the diffusion of innovation onto the market, thus the journey time of research results coming onto the market can be shortened by enhancing the market uptake of innovations. KICs play a complementary role in fulfilling this objective, as they foster the commercialisation of research ideas and through their focus on entrepreneurship, contribute to increasing the uptake of innovations.

Figure 13: Complementarities between the Competitiveness and Innovation Framework Programme and the EIT KIC actions



Source: Technopolis

Showcasing Synergies and Complementarities of the Knowledge and Innovation Communities

A key aspect of this study is to identify and explore existing synergies and complementarities between the Knowledge and Innovation Communities and other relevant initiatives. This chapter highlights some of the major examples that have been collected at European, national and regional levels, together with related cross-KIC activities. The cases are presented in a way which highlights what, where and how the synergy works according to the conceptual framework. For each case, the key facilitating factors or potential obstacles to coordination and complementarity are also highlighted. There are examples of coordination-related synergies as well as implementation-related synergies, with the framework giving a detailed picture of the nature of the cooperation and coordination.

Each case is different and it is not yet possible to identify trends in what, where and how these synergies have developed. However, as more KICs will be formed under Horizon 2020, this framework can be used to analyse synergies in more detail and give guidance on how synergies and complementarities can be formulated. Such an analysis can also be helpful in scoping the added value of the KIC structures vis-à-vis other EU, national and regional initiatives.

Upstream EU and international synergies and complementarities

This section describes cases which link the KICs with pan-European policies and initiatives, through networks, collaboration with other EU bodies, policy dialogue and learning and input for policy-making at EU level. There are other upstream cooperative initiatives currently under discussion or being scoped. The cases presented here are only those that have already shown some level of real collaboration and where the synergy can be documented using the overall synergy analysis framework. The cases are:

- Joint Research Centre (JRC) collaboration with the EIT KICs;
- ITEA 2 – a Eureka Cluster and EIT ICT Labs;
- Future Internet Public Private Partnership (PPP) and EIT ICT Labs;
- Trust in Digital Life and EIT ICT Labs;
- SET-Plan and KIC InnoEnergy.

The collaboration of the KICs with the Joint Research Centre

The Joint Research Centre (JRC) is an in-house European Commission service that provides scientific and technical support for the development, implementation and monitoring of EU policies. The JRC has a wide range of laboratories and unique research facilities at its disposal. While the core expertise of JRC remains scientific and technological, in recent years an increasing emphasis has been placed on the issue of innovation promoting jobs, growth, environmental sustainability and security.

"The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national."

There are seven Institutes of the JRC across five Member States:

- **IPSC – Ispra, Italy** - Institute for the Protection and Security of the Citizen;
- **IES – Ispra, Italy** - Institute for Environment & Sustainability;
- **IHCP – Ispra, Italy** - Institute for Health and Consumer Protection;
- **IRMM – Geel, Belgium** - Institute for Reference Materials and Measurements;
- **ITU – Karlsruhe, Germany** - Institute for Transuranium Elements;
- **IE – Petten, The Netherlands** - Institute for Energy;
- **IPTS – Seville, Spain** - Institute for Prospective Technological Studies.

The JRC has been observing the development of the EIT since its foundation in order to fully understand the potential of KICs as mature innovation policy instruments. In 2012, an EIT annual meeting, which is organised by DG Education and Culture, proposed a more formal exploration of where JRC and the EIT KICs may have synergies. Further bilateral meetings with the KIC CEOs were set up to discuss more technical and detailed issues.

The outcome of these discussions led to the conclusion that JRC and KIC structures had many complementarities. The KICs may be more innovation and business-oriented but the JRC can offer its scientific and technical expertise, as well as its facilities. The parties also set out a number of generic and specific areas in which JRC could collaborate with each of the KICs.

Generic complementarities concern KIC educational programmes. KICs are keen to place their students in the European research laboratories managed by the JRC to enhance their study experience. Also JRC input was sought for the dedicated workshops that are part of KIC Master and PhD programmes.

Specific JRC cooperation areas with each of the KIC includes issues of competence mapping in specific areas, analysis of techno-economic data such as for energy technologies and modelling approaches for the impact assessment of specific initiatives. KICs, in return, bring new dynamics and business and innovation capacity that the JRC does not possess.

The JRC has signed a formal cooperation agreement with KIC InnoEnergy. Agreements with the other KICs are also in preparation. The opportunities for Climate-KIC include hosting students involved in Climate-KIC educational programmes, addressing issues on open data products and services, joint working on insurance applications such as those for fire and flood, developing new businesses in climate services, especially related to the CLIMATE-ADAPT portal²⁵, and developing links to the carbon markets. EIT ICT Labs have been identified as a partner to participate in the large-scale trial of the ENVIROFI FP7²⁶ project of the Future Internet – Public Private Partnership. The JRC also participates in the ENVIROFI project.

The main bottleneck to synergy and complementarity is administrative. As a service of the European Commission, the JRC needs detailed documentation on the legal and administrative basis of the KICs, their partners and students in order to enter into actual cooperation agreements. For example, such details might include the basis on which students are paid, and their tax and social security situations. As each KIC is structured differently and

holds different information, this can be a complex process. The EIT is currently working with the KICs on aligning documentation requirements.

Facilitating factors for synergy and complementarity

Active brokerage by the European Commission

The annual meetings between the EIT, the KICs and the European Commission relevant service have provided the initial platform for dialogue, as well as the exploration of opportunities for joint working, where the potential aspects of cooperation between the JRC and the KICs have been identified. As the work of the KICs has matured, the dialogue with the JRC has pointed to a number of useful areas of collaboration that have subsequently led to further bilateral meetings.

Having available mechanisms for collaboration

The JRC can network with partners that contribute to its work programme. It can also participate in the Framework Programmes under the same conditions as organisations from Member States. In addition, the JRC can enter into agreements, which concern joint research, information sharing, and sometimes the exchange of personnel. An important part of JRC's activities is the opening up of its wide range of dedicated research facilities for greater external use. Besides all this, the JRC possesses excellent modelling capabilities over a wide range of themes.

Figure 14: Synergy framework – collaboration between the JRC and the EIT KICs

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Policy-makers	Policy implementation	Knowledge	Exchange of experience/mutual learning
Innovation	Research institutions		Networks	Place-ments
	Individual researchers		Infrastructure	New learning opportunities
	Individual students			Use of research facilities

25 <http://climate-adapt.eea.europa.eu/>
 26 <http://www.envirofi.eu/>

Eureka Cluster ITEA 2 and EIT ICT Labs

In 2011, at a co-summit in Helsinki, an ICT related Eureka Cluster ITEA 2 and EIT ICT Labs established a structural link.

What is Eureka?

- Eureka is a pan-European intergovernmental network which was set up in 1985 to support market-oriented R&D and innovation projects by industry, research centres and universities across all technological sectors.

What are Eureka Clusters?

- Eureka Clusters are long-term, strategically significant industrial initiatives. They have a large number of participants and aim to develop generic technologies of key importance for European competitiveness, primarily in ICT and, more recently, in energy and biotechnology.

What is ITEA 2?

- ITEA 2 is an ICT related Eureka Cluster. Its objective is to stimulate and support innovative and pre-competitive R&D projects that contribute research excellence in Software-intensive Systems and Services (SiSS). It has an eight-year programming period with its own technological roadmap that is continuously adapted in response to changing technological environments and market demands. There are calls once a year for research projects.

How is it funded?

- An ITEA 2 project partner can apply for national funding in its own country, and this enables a project consortium to attract funding from all participating countries. The ITEA 2 label is endorsed by all EUREKA Member Countries and financial support can be provided according to national funding procedures.

The catalyst carrier model of EIT ICT Labs means that the KIC catalyst funding can be used to supplement the ITEA 2 projects' carrier funding to facilitate particular impacts. The ITEA 2 projects are effective carrier projects as the EIT ICT Labs catalyst project can focus on those emerging results which are near commercialisation. The ITEA 2 project is only chosen to be linked to an EIT ICT Labs catalyst project if there is a strong expectation of exploitation of results which the catalyst activities can explicitly address and, in addition, provide the necessary training resources.

There are many examples of EIT ICT Labs' catalyst funding being applied to ITEA projects. ITEA Guarantee, for example, is a project developing safety systems that react automatically to risk events in a domestic environment, providing sensors to analyse, predict and react in the case of any danger. Under the EIT ICT Labs Action Line on Health and Well-being a test bed for the protection of elderly people was created with the involvement of Philips and VTT through the Eindhoven and Helsinki co-location centres. The EIT ICT Labs test bed could focus on those technologies which had the greatest appeal for consumer-driven

innovations in homecare. ITEA My-Sleep is a project which monitors the positive effect on sleeping of an optimal, stable temperature in bed. EIT ICT Labs was able to provide a simulator based on the feedback system of My-Sleep. ITEA Easi-Clouds is developing an infrastructure that will feature the classical categories of cloud computing offerings like IaaS, PaaS and SaaS with better reliability, elasticity, security and ease-of-use. EIT ICT Labs created software demonstrators that enable the effective, efficient, and elastic use of cloud, based on the research performed by the partners in the ITEA 2 project.

In the case of ITEA Guarantee, very clear tangible results were obtained from joining forces. The health and well-being test bed taught the partners to focus on human-scale issues and also revealed the modest, more practical robotic enhancement of everyday devices that will help care for the elderly and add clear value to the family. Jean Gelissen of Philips firmly believes that *"The EIT ICT Labs catalysts help transform ITEA 2 project results into meaningful validated business propositions"*²⁷.

A future possible extension to these joint activities concerns education and standardisation and there are now discussions on how to use the education catalysts. For example, in ITEA 2 there are new methodologies being developed for which training might well be appropriate and EIT ICT Labs is well placed to provide such training. Joint working at the project level is relatively straightforward between these two initiatives as the funding process is aligned throughout the year. Making decisions at a strategic level and coming to agreements, for example, on education and training programmes, is more complex.





Facilitating factors for synergy and complementarity

Building trust based relationships

Many of the partners of EIT ICT Labs are already ITEA 2 partners and this means that relationships are already in place. This enhances the ability of the two initiatives to work together and also access funding from EIT ICT Labs and national funding agencies.

Timing of funding cycles

Both EIT ICT Labs and the ITEA 2 fast track application process are aligned in terms of timing and this enables EIT ICT Labs catalyst and the ITEA project to start at the same time.

EIT ICT Labs annual process	ITEA
May – call	May – inform national funding agencies about the intention to apply for ITEA fast track
June – selection	June – national funding agencies express their support for fast track
July – September full proposal	July – September: FPP development
December – EIT GB decision	December - ITEA labelling and national Funding decisions
January – start of catalyst project	January - start of ITEA project

Source: Presentation Prof. W. Jonker, CEO of EIT ICT Labs, 2011

Figure 15: Synergy framework – ITEA 2 and EIT ICT Labs

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Companies	Policy implementation	Knowledge	Training provider
Innovation	Research institutions		Infrastructure	Use of research facilities

The Future Internet PPP and EIT ICT Labs

The Future Internet PPP (FI-PPP) was launched in 2011 to bring together projects dealing with specific technologies, which are used to develop future Internet applications. An agreement bringing together EIT ICT Labs and the Future Internet Public-Private Partnership (FI-PPP) was signed in June 2012. EIT ICT Labs has worked closely with FI-PPP and the CEO of EIT ICT Labs is the member of the board of this public-private partnership.

What is the Future Internet Public Private Partnership?

The main goal of the Future Internet Public Private Partnership²⁸ – an initiative of the European Commission - is to advance a shared vision for harmonised European-scale technology platforms and their implementation, as well as for the integration and harmonisation of the relevant policy, legal, political and regulatory frameworks. As set out in the Digital Agenda for Europe, these are considered to be pre-requisites for realising a European online Digital Single Market (DSM) and, more broadly, an inclusive knowledge society.

The programme aims to:

- Increase the effectiveness of business processes and infrastructures supporting applications in areas such as transport, health, and energy;
- Derive innovative business models that strengthen the competitive position of European industry in sectors such as telecommunication, mobile devices, software and services and content provision and media.

The FI-PPP follows an industry-driven, holistic approach encompassing R&D on network and communication infrastructures, devices, software and service and media technologies. In parallel, it promotes their experimentation and validation in real application contexts, bringing together demand and supply and involving users early in the research lifecycle. The new platform will be used by a range of stakeholders, in particular SMEs and public administrations, to validate the technologies in the context of smart applications and their ability to support user driven innovation schemes. There are currently 154 participants in FI-PPP.

The FI-PPP looks at different sectors, for example, transport, health and energy, and defines possible innovative business models for these sectors that address issues such as security, service market place and interfaces with networks. These are areas of application where it is beneficial to share data and where there are significant requirements for networking and computing capabilities. The FI-PPP is organised into several areas with specific projects. For example, FI-WARE is a technology foundation project responsible for putting together an innovative infrastructure for the cost-effective creation and delivery of services. There are several projects, which are responding to the needs of the user in specific domains, such as energy, logistics and agrifood.

The role of EIT ICT Labs in relation to the FI-PPP is extremely important. As a consequence of continued dialogue, more structured cooperation potential was identified, which culminated in the signing of a formal cooperation agreement. The FI-PPP is implementing technologies as well as developing an understanding of the users of technologies from different domains. EIT ICT Labs can take the technologies to market and provide the training necessary to do so in a coherent and complementary relationship. A specific activity was launched in 2013 that concerned the facilitation of technology transfer from the FI-PPP to SMEs. Currently EIT ICT Labs and the FI-PPP continue experimenting with the practical forms of cooperation and acknowledge that more learning is needed to realise the full synergy potential. As a distinguishing feature of the KIC is the inclusion of education, further work will explore how this KIC element can complement the activities of FI-PPP.

Facilitating factors for synergy and complementarity

Involvement of EIT ICT Labs in the governance of the FI-PPP

EIT ICT Labs has worked closely with this public-private partnership on the Future Internet, as some KIC partners are also members of the FI-PPP and EIT ICT Labs CEO is the member of the board of this public-private partnership. The ability to maintain a continued dialogue between both initiatives has led to the identification of specific cooperation potential.

Common drivers for coherence and cooperation

The mission of EIT ICT Labs is extremely important in relation to the FI-PPP. The FI-PPP is implementing technologies as well as developing an understanding of the users of technologies from different domains. EIT ICT Labs can take the technologies to market and provide the necessary training to realise that. Overall, it is a coherent and complementary relationship.

Figure 16: Synergy framework - Future Internet PPP and EIT ICT Labs

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Companies	Policy implementation	Knowledge	Training provider
Innovation	Individual students		Networks	Business support activities
Entrepreneurship				

Trust in Digital Life and EIT ICT Labs

Trust in Digital Life (TDL) is a research community that is working together with EIT ICT Labs. Both EIT ICT Labs and TDL share a strong interest in trustworthiness of ICT solutions.

Trust in Digital Life (TDL)²⁹ is a research community for the R&D of trustworthy ICT solutions which aims to:

- Set out a vision for trustworthy ICT-related products;
- Translate this vision into an agenda for research and innovation;
- Develop scenarios, or use cases, illustrating how combinations of trustworthy ICT-related products can put into effect specific public policy goals;
- Coordinate with other initiatives as an inventory of emergent technologies is made that can be combined to implement this vision of trustworthy ICT-related products, and to engage in a broad dialogue.

The TDL community is composed of 28 members from industry, academia and government, and supports industry and government in achieving a higher take-up rate of trustworthy ICT by:

- Raising awareness through monitoring the impact of incidents;
- Raising awareness through the definition and testing of interoperable frameworks for e-authentication services in public and private domains;
- Defining end-to-end technology platforms for user controlled data life cycle management;
- Defining end-to-end technology platforms for mobile service integrity.

The founding partners of Trust in Digital Life are Gemalto, Microsoft, Nokia and Philips. The initiative started in 2009 with the signing of a partnership agreement.

After investigating the possibilities for collaboration, TDL and EIT ICT Labs worked together during 2011, towards joint programming and the submission of a joint coordination and support action proposal, which culminated in the project 'Achieving the Trust Paradigm Shift (ATTPS)'.

The support action of ATTPS addresses four pillars, which include business, legal, social and technical challenges. The objectives of ATTPS are:

- Enforcement of the trust paradigm shift;
- Awareness-raising in industry, institutes and governments across Member States;
- Contributing to interoperability and standardisation at European level of trustworthy ICT.

The policy alignment between Trust in Digital Life and EIT ICT Labs is not formal but there are clear links. EIT ICT Labs has an Action Line called Privacy, Security and Trust, which is the link between the two communities. In the Netherlands, in particular, there is a common focus on the Cyber

Security Agenda. Both Trust in Digital Life and EIT ICT Labs are active in nine countries and there are people who are common to both bodies that help to link the European policy to national policy. EIT ICT Labs brings relevant experts, professionals and specialists together to facilitate these links through a bottom-up approach, which appears to work much more efficiently than any top-down mechanism.

There is a significant core of partners that are common to TDL and EIT ICT Labs such as TNO, NXP, Thales and the University of Twente, but there are differences between the projects and their approaches. The KIC has a clear education component, which is not present in TDL. In terms of innovation, the TDL projects deliver certain specific outcomes and EIT ICT Labs is more market-oriented, using available business development tools like living labs and technology transfer support, to bring research results to market. One area that has provoked a strong debate relates to intellectual property rights, which play such an important role in the ICT sector standards. Thus, the standards body ETSI collaborates with Trust in Digital Life to reduce the existing barriers.

Facilitating factors for synergy and complementarity

Personal links

A strong driver of the cooperation is personal links that exist. There are people who are directly involved in both initiatives – Trust in Digital Life and EIT ICT Labs.

A common mission to coordinate activities with other policies and initiatives

Both EIT ICT Labs and TDL have a mission to coordinate their activities with those of other initiatives. In the case of TDL, this is with the specific

purpose of improving trustworthy ICT-related products. *"The Trust in Digital Life community seeks to prevent fragmentation of industrial efforts toward trustworthy ICT-related products, it should coordinate with various industry initiatives in the field, and it should work to promote coherence with research and policy efforts already underway in the area of trust and security. It should also aim to complement work in 'Trustworthy ICT' (a prominent research objective in the FP7 ICT Theme that receives strong attention in the Strategic Research Agendas of several European Technology Platforms, or ETPs) and in forthcoming initiatives related to the Future Internet."*³⁰

Common organisations

TDL has formed many links, or is in the process of cooperating with other communities, extending its own reach but also making positive impacts on the networks of other initiatives and, in particular, on EIT ICT Labs. The list below is not exhaustive³¹ but even mapping the first order links between TDL and these other networks, programmes and organisations, highlights how the community is organising itself around key areas of policy:

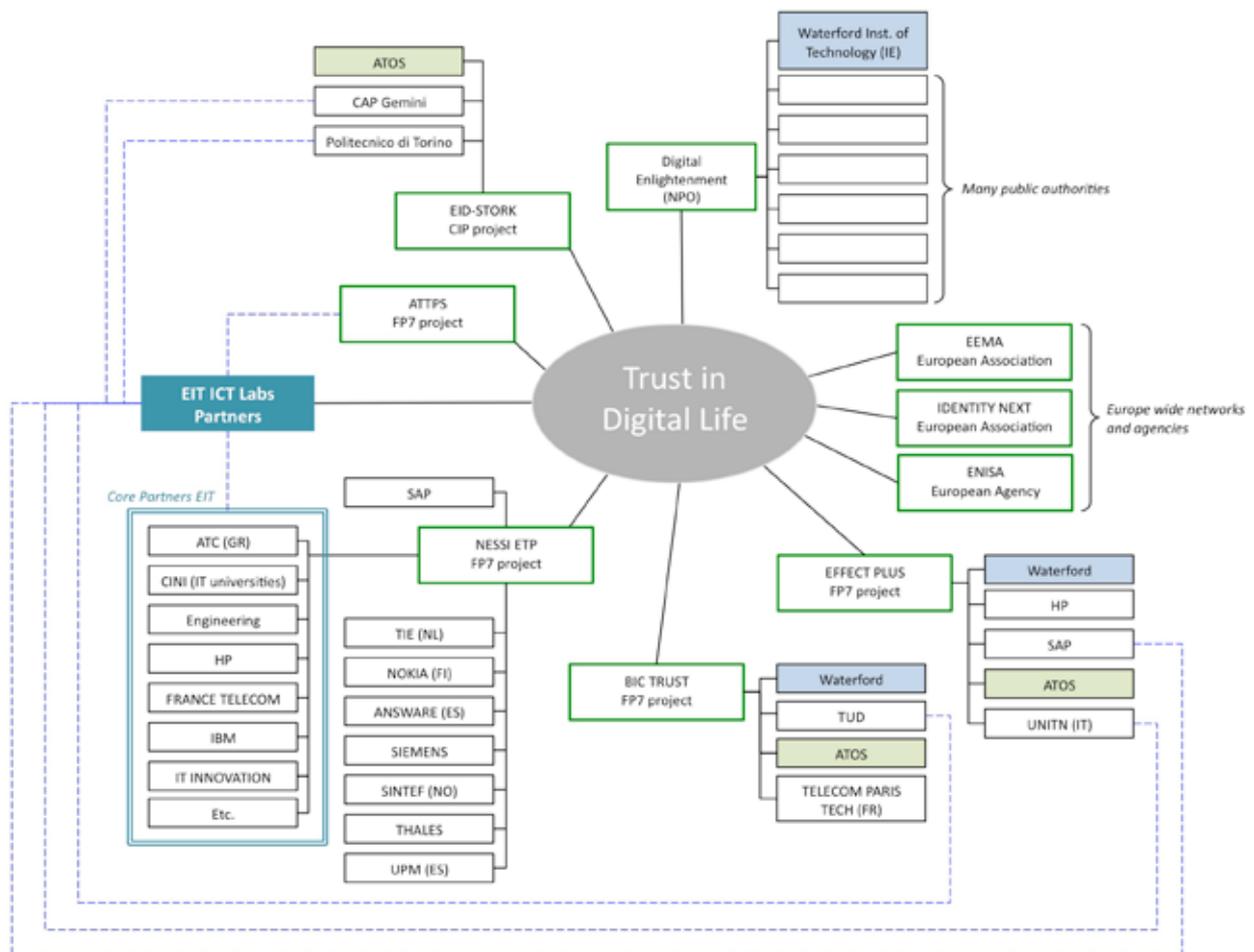
- EEMA: www.eema.org;
- IDENTITY.NEXT: www.identitynext.eu;
- ENISA: www.enisa.europa.eu;
- EIT-ICT: Labs www.eit.ictlabs.eu;
- Effects Plus: www.effectsplus.eu;
- BiC: www.bic-trust.eu;
- STORK: www.eid-stork.eu;
- DEF: www.digitalenlightenment.org;
- Inteco: www.inteco.es;
- Nessi: www.nessi-europe.com;
- ETSI: www.etsi.org.



30 Part of the Mission of TDL: <http://www.trustingdigitalife.eu/about-tdl/missions-of-tdl.html>

31 Source: Project deliverable D2.5 Summary of Dissemination Activities

Figure 17: Mapping of a selection of key project and organisational links of Trust in Digital Life



Source: Derived from www.trustindigitallife.eu (This is only an illustration and is incomplete)

Strong branding, vision and visibility

One way to facilitate coordination is through strong branding. TDL has ambassadors who work on behalf of the initiative. In addition, the logo and link is visible on many web platforms inviting potential members to discover more about TDL. EIT ICT Labs also has strong branding and visibility. In addition, the TDL community is also investing in the creation of an inventory of emergent digital technologies that can be used to implement the vision, and therefore engage and influence broad dialogue, in particular, in relation to public policy goals.

The spill over effects of TDL are facilitated by the community being open to all parties willing to exchange knowledge and experience, share insights and commit to joint research and cross-sector development. In addition, there are the links to other projects and initiatives on the TDL website. Next to the logos and links to the websites of the cooperating initiatives, TDL shares the mailing lists and dissemination activities that can inform a wider public, mainly with the aims of inviting larger

audiences to events and working group meetings and of distributing the TDL newsletter.

Investment in the longer term

EIT ICT Labs and TDL are longer-term partnerships, which can join forces and bid for funding, for example, through European projects but, at the same time, each has its own stability and roadmap for the future.

Focus on societal challenges

The future emphasis of Horizon 2020 on societal challenges is already embedded in TDL and EIT ICT Labs. The Trust in Digital Life research community is addressing the fundamental societal issues raised by the introduction of digital technologies, through bringing together European public and private stakeholders to promote trust in digital life. This is another reason why coordination is central to TDL as it needs to be present at Member State level, as well as sectorally, and also in terms of its stakeholders from academia and public authorities.

Figure 18: Synergy framework – EIT ICT Labs and Trust in Digital Life

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Innovation	Policy makers	Strategic intelligence	Knowledge	Decision making
	Companies	Policy design	Networks	Stakeholder consultation
	Research institutions	Policy implementation	Profile/image	Exchange of experience/mutual learning



The SET Plan and KIC InnoEnergy

The European Strategic Energy Technology Plan (SET-Plan) addresses the challenge of the transformation of the entire energy systems in Europe and this has a direct bearing on how energy is sourced, produced, transported, traded and used. KIC InnoEnergy strategy is fully aligned with the objectives of the SET-Plan with respect to ambitions as well as design.

The SET-Plan outlines the EU’s aims, activities and investment in the following strategic areas:

- The European Industrial Bio-energy Initiative;
- The European CO2 Capture, Transport and Storage Initiative;
- The European Electricity Grid Initiative;
- The Fuel Cells and Hydrogen (FCH) Joint Technology Initiative;
- The Sustainable Nuclear Initiative;
- Energy Efficiency – The Smart Cities Initiative;
- The Solar Europe Initiative;
- The European Wind Initiative.

The implementation of the SET-Plan is coordinated by the SET-Plan Steering Group. This group provides a high-level discussion platform and a flexible framework for strategic planning. The SET-Plan steers the implementation of the European Energy Technology Policy, fosters European joint actions and measures and identifies the resources available to contribute to the financing of joint actions.

KIC InnoEnergy contributes to the delivery of the European Strategic Energy Technology Plan. The six thematic emphases of KIC InnoEnergy co-location centres echo the SET-Plan objectives. These are:

1. Clean Coal Technologies;
2. Energy from Chemical Fuels;
3. Intelligent Energy-efficient Residential Buildings and Cities;
4. Renewables: Wind, Photovoltaic, Solar, Thermal, Wave and Tidal Energy;
5. Smart Electric Grid and Electric Storage;
6. Sustainable Nuclear and Renewable Energy Convergence.

Representatives from KIC InnoEnergy chair three of the SET-Plan Steering Group’s working committees, namely, Energy Storage, Nuclear Energy and Coordination of Education and Training Systems. Currently, KIC InnoEnergy participates in 12 of the 17 SET-Plan education initiatives and leads two of them. The working group on education and training aims to define key education and training activities in the field of low carbon technologies for the next five to ten years. Given the strategic position of the KIC, the initial experience shows that there is further room for strengthening KIC InnoEnergy participation in the SET-Plan delivery.

Facilitating factors for synergy and complementarity

Focus on societal challenges and thematic alignment between the initiatives

The strategy of KIC InnoEnergy has been designed with the thematic SET-Plan objectives in mind. Each co-location centre concentrates on its specific field of expertise, enhancing KIC InnoEnergy competences across all main energy technology fields.

KIC consolidates important cross-cutting stakeholder groups

The SET-Plan concentrates on industry-led initiatives aiming to strengthen industrial participation in energy research and demonstration, to boost innovation and to accelerate the deployment of low-carbon energy technologies. KIC InnoEnergy takes the role of a leading hub for innovation and the promotion of entrepreneurial skills for sustainable energy. The joining together of major energy innovation stakeholders across the knowledge triangle enables KIC InnoEnergy to provide leadership, on a European scale, in thinking especially about aspects of innovation promotion and skills development for the implementation of future energy technologies.

Figure 19: Synergy framework - SET-Plan and KIC InnoEnergy

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Policy-makers	Pre-policy design - strategic alliance	Knowledge	Decision-maker
Innovation		Policy implementation	Networks	Stakeholder consultation

Downstream national and regional synergies and complementarities

This section outlines the examples of the links between KIC initiatives and national and regional programmes and networks. The cases exemplify the diversity of interactions from synergies involving the whole regional ecosystem in the case of Trentino, cluster cooperation on specific technologies such as FITTING and the joint use of KIC and European regional funds. They are:

- The region of Trentino and EIT ICT Labs;
- Equipex/FITTING and EIT ICT Labs;
- Software Campus and EIT ICT Labs;
- Smart specialisation agenda setting in Valencia and Climate-KIC;
- ERDF funded activities and Climate-KIC Pioneers into Practice;
- ERDF, national and regional funds and Climate-KIC Pioneer Cities;
- KIC InnoEnergy Cluster cooperation with Capenergies and Tenerrdis.

The region of Trentino and EIT ICT Labs

The Trentino region in Italy has been actively investing in innovation over the last 30 years. It has a policy of inviting companies to locate themselves in the region and it offers the incentive of matched investment. This has attracted many companies and created new innovative companies across a broad spectrum of activities. Helping to facilitate this investment is the region's approach to budget administration. It should also be noted that the region has a high degree of autonomy over its spending, giving it the flexibility to invest in innovation. Its Autonomy Statute allocates 90 per cent of the tax revenue to the region to manage all its responsibilities and services³².

The region uses regional, national and European funds in an optimal way to support its vision and

strategy. This has also driven its involvement in EIT ICT Labs and its inauguration as an EIT ICT Labs Node or co-location centre, in 2011. The ICT Labs Node in the Trentino region focuses on leveraging ICT for Quality of Life. Its Core Partners are Trento RISE, an organisation which connects several of the major players in ICT research, education and business in the Trentino region, Telecom Italia, a prominent industrial partner, and Engineering, a large Italian systems integration company. The other affiliated partners of the ICT Labs Node operate all over Italy ensuring the dissemination of the co-location centre's activities throughout the country. All partners have an active policy to attract European funding from sources such as FP7, Marie Curie, ERC, ETPs, JTIs and Future Internet PPP. The focus of the Trento Node is on taking research results and bringing them to market.

The region has a significant stake in the success of EIT ICT Labs. It has allocated €84m of its investment funds to co-funding EIT ICT Labs. The Director of Trento Node also sits on the industry advisory board of Trento RISE and helps to steer and shape investment decisions. There are several national programmes flanking EIT ICT Labs. Several hundred million Euros have been allocated to research activities in the area of EIT ICT Labs. These funds form part of the 'carrier' funding in EIT ICT Labs' 'catalyst-carrier model'. Trento RISE has also received funding from the European Framework Programmes - €23m from FP6 and €36m from FP7. Significant funding is also received by most other partners in the Italian Node of EIT ICT Labs. The leverage of the other funding is providing a significant ICT focus on leading the creation of applications for handling personalised services in smart environments including user testing.

The EIT ICT Labs' approach is well-aligned with the national and regional policy priorities and therefore combining the sources of funding makes perfect sense in the region of Trentino, and in Italy, for achieving their vision. The projects have also increased the international profile of the region's networks. One of the Smart Cities projects involves collaboration between Telecom Italia's SKIL laboratory, the Human Dynamics Lab at the Massachusetts Institute of Technology (MIT), the Institute for Data Driven Design (ID3), the Fondazione Bruno Kessler (FBK) and the Telecom Italia Future Centre. Telefónica is contributing to this project by sharing competences developed through similar initiatives in Spain.

Facilitating factors for synergy and complementarity

Regional policy drive and focus

The region already invests in ICT and innovation

32 Other territories in Italy are managed by the state

and therefore the strategic fit with EIT ICT Labs is high. EIT ICT Labs catalyst projects can use the international, national and regional funded projects as carrier projects.

Embedding EIT ICT Labs in the regional governance

The Director of the Trento Node sits on the industry advisory board of Trento RISE helping to steer and shape investment decisions.

Capitalising on existing capacity and relationships

As a consequence of the Trentino model, many companies have moved into the region and the networks and links internally and externally are both numerous and multifaceted. The inclusion of EIT ICT Labs and its access to the other co-location centres/nodes across Europe further extends the reach at the same time as concentrating the action.

Figure 20: Synergy framework – the region of Trentino and EIT ICT Labs

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Policy-makers	Pre-policy design, strategic intelligence	Knowledge	Decision-maker
Entrepreneurship	Companies	Policy design	Networks	Training providers
Innovation	Education institutions	Policy implementation	Infrastructure	Stakeholder consultation
	Research institutions		Funds	Exchange of experience/mutual learning
	Public sector		Profile	New learning opportunities
	Individual researchers			Use of research facilities
	Individual students			Business support activities
	Society are large			

Equipex/FITTING and EIT ICT Labs

The French Node of EIT ICT Labs has aligned its use of European and national funding sources to reinforce the benefits by giving access to the pan-European networks of test beds and leveraging funding for the further networking of test beds in France. Two major projects in this alignment are FITTING (EIT ICT Labs) and Future Internet of Things (Equipex).

What is Equipex?

- Equipex, or the 'Equipements d'Excellence' research grant programme, is an initiative of the French Ministry of Higher Education and Research.

What is the Equipex project?

- The Equipex project is called FIT (Future Internet of Things), one of 52 winning projects from the first wave of programme funding. It is coordinated through UPMC Sorbonne Universités and will run over a nine-year period.

How much funding?

- The project has a €5.8m grant from the French government.

FITTING is an EIT ICT Labs research project coordinated through the French Node of EIT ICT Labs³³. The idea behind FITTING is to create a pan-European network of test beds to enable network researchers to develop and experiment with next generation services and applications.

What are test beds?

- A test bed is a platform for experimenting with and for large development projects. In this case, the test beds are all related to ICT. Test beds can be used as a proof of concept or when something is tested in isolation from the programme/system to which it will later be added. However, a skeleton framework is constructed around the module so that the module behaves as if it was already part of the larger programme.
- A typical test bed could include software, hardware and networking components. In software development, the specified hardware and software environment can be set up as a test bed for the application, which is being tested. FITTING, in particular, offers a large open, shared facility for testing new protocols, applications and services. Test beds are expensive and providing better access to test beds for researchers reduces the duplication of effort and offers real life experiences.

FITTING builds on three other projects supporting the idea of federating test beds. These are two FP7 programme projects, One Lab³⁴ and PII³⁵, and a French national project, Senslab³⁶ that is funded by INRIA. The European funding offered to the original FP7 projects played an important role in stimulating this community to come together across Europe.

The EIT ICT Labs project FITTING overcomes the time limited nature of traditional national and European Framework programme projects for

33 Although coordinated through the French Node, it brings together partners from several of EIT ICT Labs co-location centres

34 <http://www.onelab.eu/>

35 <http://www.panlab.net/>

36 <http://www.senslab.info/>

which funding is usually provided for a maximum of four years. The KICs have a much longer-term strategic vision that stretches over 7-15 years and this gives them the opportunity to establish a more stable infrastructure. Test beds are expensive facilities that need associated longer-term plans for their maintenance, access and upgrading. Individual higher education and research institutions tend not to invest in long-term upkeep and therefore it is important for this open shared infrastructure to either have some continuity of public funding or continuity of a strategy for their funding. However the actual funding from EIT ICT Labs was not the main driver, as it the level of this funding is marginal. More crucial factors were the long-term vision, the alignment of national and European policies and the access to wider networks and stakeholders that EIT ICT Labs provided. Another important aspect was the fact that the facility could be distributed across every node of the KIC and that the KIC partners could also eventually become service providers.

With this structure and vision in place, there was the leverage to apply for funding under Equipex's 'Appel à projets Equipements d'Excellence' and to convince the French authorities to invest in the partners that would maintain the French part of the network. A project Future Internet of Things (FIT) was developed with the aim of giving French Internet stakeholders a means of experimenting with mobile wireless communications and of accelerating the design of advanced networking technologies for the Future Internet of Things. It was selected in this call and awarded a €5.8m grant by the French government.

Another benefit of being part of the KIC is related to the education catalyst activities. EIT ICT Labs have recently launched doctoral and masters schools. In these programmes, there are practical classes where students need access to good facilities. In the past, the testing was mainly done through simulations but now with the test beds it is possible for the students to use the best kinds of facilities available.

Many of the partners of the KIC are also partners in the other projects that have been described. This strengthens EIT ICT Labs French Node, in particular, in relation to its ability to reach out to international markets and clients. One of the obstacles to overcome in aligning programme activities to produce added value was the positioning of global, European and national partnership structures.

Facilitating factors for synergy and complementarity

Using European funding to lever the further activity of French innovation actors in exchange for wider access to European networks

FITTING introduced European partners such as Alcatel Lucent Bell Labs, Fraunhofer Fokus, TU Berlin, BME, ELTE and the University of Trento into the network. These partners brought additional technical components, usages and measurement and monitoring tools.

Capitalising on past projects and relationships

Building partnerships and trust is a long-term process, but capitalising on existing relationships to build and extend projects shortens this process and helps alleviate any potential differences or conflicts.

Figure 21: Synergy framework – EIT ICT Labs FIT/ Equipex

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Companies	Policy implementation	Networks	Training providers
Innovation	Education institutions		Infrastructure	Exchange of experience/ mutual learning
	Research institutions		Funds	Place-ments
	Individual researchers		Profile	New learning opportunities
	Individual students			Use of research facilities

German Software Campus and EIT ICT Labs Berlin Node

The Software Campus initiative was launched in 2011 with a budget of €50m over a five-year period. Half of this funding is provided by the German Federal Ministry of Education and Research. Industry partners provide the other half, either in cash or in kind. The German authorities entrusted the management of the Software Campus³⁷ education initiative to EIT ICT Labs.

Software Campus is a German Federal Government initiative for excellent young computer science researchers who have been proven to have outstanding talents in both research and leadership. The aim of the programme is to increase the number of highly skilled IT specialists who will eventually become entrepreneurs or executive board members. Software Campus stands on three pillars:

- Key players from the German IT industry provide individually tailored training programmes in management and entrepreneurship skills;
- The Ministry of Education and Research funds individual projects, to be applied for and conducted by the candidates on their own authority;
- Thesis supervision is assured by one of the five German partner universities of the ICT branch of the EIT - Darmstadt with its CASED institute for IT security research being one of them.

The goal of Software Campus is to train future technical leaders in the IT industry through a top-ranked qualification programme in which industry and academia work together to create first-class curricula. This goal is achieved by implementing publicly funded small research projects of up to €100,000 over two years, which are proposed by the students themselves. Each year up to 100 selected Master's or PhD students will be trained through intensive project work and mentoring by executives from the IT industry.

As a national co-location centre of the EIT, Berlin Node organises the training network of the participating companies, computer science departments at universities and research institutes in Germany. This work includes the selection of seminars and the ongoing quality assurance of all education and training activities³⁸.

The relationship between EIT ICT Labs and Software Campus co-evolved, as both initiatives began almost simultaneously and more or less the same people were involved in setting up both initiatives. EIT ICT Labs participated in the conceptualisation of Software Campus and now plays a central role in strategy as well as in management. Software Campus had eight industry and eight academic partners at the time of its establishment. In the meantime, a ninth industry partner has been added to the list. The campus kick-off was very a high-level event, as the Chancellor Angela Merkel, five federal ministers and the CEOs of the major ICT companies in Germany were present.

In order to run Software Campus, Berlin Node needed to become a legal entity. This is different from the set up of the other EIT ICT Lab Nodes, and as a consequence, the Berlin Node has a more mature set up in terms of its staff and payroll. This would not have happened without the early link to Software Campus. There is no clear link between the Software Campus and EIT ICT Labs' educational activities for various reasons. Firstly, a number

of the Campus partners are not part of the KIC, since Software Campus is a purely German initiative. Secondly, the Campus' educational activities come from industry rather than from academia. Finally, the work is carried out in German, and participants have to be enrolled in a German university to participate.

The EIT ICT Labs' activities are not formally aligned with German ICT educational policy agendas, which are the responsibility of the Bundesländer. However, people responsible for the various agendas know of each other and there is informal interaction but no formal mutual agenda-shaping.

The added value of the joint working between EIT ICT Labs and Software Campus includes:

- Reinforcing both sides, as EIT ICT Labs helped to conceptualise Software Campus and managing Software Campus gave stability to EIT ICT Labs in the beginning;
- Helping to position the EIT ICT Labs brand in Germany, many people regard the KIC as a lead initiative and it has a strong presence and pull for high-level stakeholders in Germany.

In terms of sustainability, expectations are that Software Campus will continue its activities. Even if the German Federal Ministry of Education and Research (BMBF) funding is not renewed, the commitment of industry and the universities will remain. A spill-over effect of the cooperation has been the creation of a significant synergy in marketing strategies and therefore in branding and visibility. There is a high level commitment from Germany to Software Campus and the role of EIT ICT Labs within it.

Facilitating factors for synergy and complementarity

Formal structure and governance of EIT ICT Labs

To take on a formal role in the national initiative, EIT ICT Labs Berlin Node became a legal entity. This facilitated the interaction between the two initiatives.

Market orientation and reputation

Berlin Node of EIT ICT Labs differentiates itself from other initiatives through its formal structure, its branding and its commitment to excellence in close to market activities. The Node's obvious market orientation, single vision and branding inspires commitment from other initiatives such as Software Campus that recognises the value of being associated with what is seen as a world class institution.

The location of EIT ICT Labs Node in Berlin

Berlin Node is located in the heart of Germany and is close to its partners and the partners involved in Software Campus, both those from industry and from the public sector.

Figure 22: Synergy framework - German Software Campus and EIT ICT Labs Berlin Node

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Companies	Policy implementation	Knowledge	Secretariat function
	Education institutions		Networks	Training provider
	Public sector		Profile/image	Quality assurance
	Individual students			

Smart specialisation agenda setting in Valencia and Climate-KIC Valencia RIC

The establishment of the Climate-KIC Regional Innovation and Implementation Community (RIC) in the Spanish region of Valencia has shown a clear complementarity with the development process of the regional innovation strategy for smart specialisation (RIS3). Regional smart specialisation is essential to attract truly effective research and innovation investments. For this reason the European Commission has set the development of a RIS3 as a pre-condition for using the European Regional Development Fund (ERDF) in 2014-2020 to provide such investments.

National/Regional Research and Innovation Strategies for Smart Specialisation (RIS3) are integrated, place-based economic transformation agendas that:

- Focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development;
- Build on each country's/region's strengths, competitive advantages and potential for excellence;
- Support technological, as well as practice-based innovation, and aim to stimulate private sector investment;
- Get stakeholders fully involved and encourage innovation and experimentation; and
- Are evidence-based and include sound monitoring and evaluation systems.

The development of a regional innovation strategy implies that all relevant regional innovation stakeholders should participate extensively in its design. According to the RIS3 Guide³⁹, the RIS3 process should promote collaborative leadership, with

flexible decision-making hierarchies, to ensure that the vision and action plan of the strategy is shared and 'owned' by all main actors within the regional innovation landscape. The RIS3 strategy development should link SMEs and large firms, research and education establishments and the public sector to capitalise on the creative and social capital within the regional community. The process must be interactive, regionally driven and consensus-based.

The current structure of Climate-KIC Regional Innovation and Implementation Communities is well-aligned with the RIS3 requirements. Whilst in their initial years the six Climate-KIC RICs displayed considerable divergence in terms of the number and configuration of partners, by the end of 2012 the RIC partnership model had become much more formalised and specific. The RIC model enables continuous communication between a wide variety of regional innovation stakeholders in order to build a shared understanding and vision for regional development. In addition, any RIC partnership establishes a common platform for joint activities that has the potential to speed up the implementation of the related RIS3.

In the case of Valencia, Climate-KIC RIC has been closely involved in the development of the RIS3 strategy as it embraces the key organisations and individuals that define the smart specialisation agenda. The Valencia RIC partnership has made a major contribution to the development of the RIS3 vision and the roll-out of stakeholder consultations, as result of its established decision-making framework and its experience of providing collaborative leadership for, and with, regional actors.

Facilitating factors for synergy and complementarity

Building trust based relationships and social capital amongst regional innovation actors

The RIC model provides a formalised platform for continuous communication and iterative collaboration between the regional innovation actors from various sectors. The experience of regional players in Valencia of organising themselves around a shared goal and driving activities leading to its attainment has significantly assisted the process of smart specialisation agenda setting.

A formal partnership agreement enables the launch of joint activities

The RIC partnership has provided a platform for discussion that can mediate the ideas and interests of regional actors and carry out wider stakeholder consultations. The formal partnership agreement has reduced the time needed to launch specific activities.

Figure 23: Synergy framework - RIS3 process and Climate-KIC Valencia RIC

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Innovation	Policy-makers	Pre-policy design – strategic intelligence	Knowledge	Secretariat function
	Companies		Networks	Stakeholder consultation

Climate-KIC Pioneers into Practice programme and ERDF funded activities

Climate-KIC has developed a new type of European professional learning programme, called 'Pioneers into Practice'. The aim of this programme is to develop high-level skills for the transition to a low-carbon economy by applying a cross-sector, multi-disciplinary approach that unites people from research, business and public agencies in a 'learning-by-doing' environment. The programme targets professionals with a wide range of backgrounds and offers them an opportunity to join real-life projects that are currently being implemented in the six regions where Climate-KIC Regional Innovation Communities are established.

The focus is placed on the three thematic areas on the built environment, mobility/transport and energy networks, which have been identified as being the keys to systemic change in the regions. The participants spend two one-month periods in two of the six RICs that are located in Central Hungary (Hungary), Emilia Romagna (Italy), Hessen (Germany), Lower Silesia (Poland), Valencia (Spain) and the West Midlands (UK). Additionally, the participants benefit from structured mentoring and organised workshops that develop and enhance their experience, knowledge and professional networks.

Climate-KIC acts as a broker by managing the applicant profiles and arranging suitable placements for the participants in this professional mobility scheme. This programme is based on synergies with the existing instruments and regional activities, without which such complementarities could not be realised. As the programme grows in its scope and the number of applicants, Climate-KIC is actively fostering complementarities with the Cohesion Policy by using ERDF-funded projects to provide placement opportunities for its pioneers. For example, one placement for a pioneer from the West Midlands took place in the Technical Department of Arpa, which is Environmental

Protection Agency based in the centre of Bologna. The purpose of the placement was to support Arpa with an evaluation of the carbon accounting tools they are developing which will be used to assess the carbon impact of the ERDF Operational Programmes for the Italian regions.

The flexibility in the design of this Climate-KIC programme enables additional and unexpected benefits to be harvested from the ERDF funding that fosters knowledge exchange and skills development in relation to climate change mitigation and adaptation.

Facilitating factors for synergy and complementarity

Flexibility in the design of the Climate-KIC programme

The Climate-KIC Pioneers into Practice programme is based on exploiting the synergies and complementarities of existing initiatives. This requires a significant level of flexibility in the programme design and also a regular review of the lessons learned if the programme is to be shaped to the evolving conditions.

Figure 24: Synergy framework - ERDF funded projects and Climate-KIC 'Pioneers into Practice'

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	The individual professional	Policy implementation	Networks	Secretariat function
			Funds	Training provider
				Placements

Climate-KIC Pioneer Cities and ERDF funded projects

Pioneer Cities⁴⁰ is a network of six cities from Climate-KIC regions, which are Birmingham (UK), Frankfurt (DE), Bologna (IT), Budapest (HU), Wroclaw (PL) and Castellon (ES). This Climate-KIC initiative aims to develop an overarching approach that will join up the various low-carbon investments that cities are making in order to reach real policy targets.

The work is divided into three phases and the activities are carried out entirely by the various city authorities. In the first phase, cities examined their investments in buildings, mobility and energy networks. This is a common approach across the

40 <http://www.climate-kic.org/for-students/professional-education/#.UcsOn-vrjmE>

regions to understanding how, for example, ERDF money is spent on low-carbon investments. City authorities exchanged their observations and it became clear that, when it comes to sustainability, investments tend to focus on individual projects and programmes. The second phase is focusing on how to cluster a range of activities to reach the low-carbon targets that each city has set. Through the Pioneer Cities initiative, cities learn from each other about how existing initiatives and projects can best be grouped if the understanding of the intervention logic at systems level is to be improved. In turn, this improved understanding can lead to enhanced decision-making on the necessary targets and the related financing model.

The third phase focuses on the approach to steering systemic transition in cities. Using their experience of exchange placements, city authorities learn from each other about who takes decisions on a specific technology, how such decisions are taken and which parts of the system are involved. The idea is that, for example, the West Midlands should not simply copy Frankfurt's approach to energy networks, but that it understands the socio-technical system that supports the development of Frankfurt's energy network and uses that knowledge to inform its own decision-making processes.

In the ERDF's next programming period of 2014-2020, all regions will have to allocate a significant share of funding to innovation and the low-carbon economy. Thus, this type of experience could prove especially valuable in avoiding the risk of funding separate projects and programmes that do not have a sufficiently large overall impact to achieve the desired policy goals.

Facilitating factors for synergy and complementarity

Flexibility on the design of the Climate-KIC programme

The Climate-KIC Pioneer Cities initiative is a response to the problems identified in the overall policy framework for cities' approaches to low-carbon investments. The Climate-KIC structure enables the KIC to launch a policy learning initiative that is tailored to the promotion of systemic innovation in a municipal environment. Whilst it is still in the early stage of development, the outcome of this exchange of experience and the new learning opportunities it offers has the potential to foster the emergence of a funding framework that supports a systemic transition towards a low-carbon economy in which regional, national and European level programmes can all play an integral part.

Figure 25: Synergy framework - Climate-KIC Pioneer Cities and ERDF funded projects

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Entrepreneurship	Policy-makers	Pre-policy design – strategic intelligence	Knowledge	Exchange of experience/mutual learning
Innovation	Public sector		Networks	New learning opportunities

The French competitiveness clusters of Capenergies and Tenerrdis and their links with KIC InnoEnergy

The French Competitiveness Clusters programme (Les Pôles de Compétitivité) was launched in 2004 to foster cooperation between industry, research laboratories and universities. Capenergies is one of the 71 clusters that were approved in 2005 and is situated in the South of France, which, in this instance, also includes Corsica. This area also has considerable natural resources and is home to many companies and laboratories and also the International Thermonuclear Experimental Reactor (ITER). Tenerrdis is another cluster that supports new energy technology companies and operates across France's Rhône-Alpes region.

The main characteristics of the competitiveness clusters set up in France are also mirrored in the KICs, through the inclusion of all actors in the knowledge triangle. KIC InnoEnergy has a co-location centre situated in Grenoble, in France. As well as managing operational activities, the French co-location centre is in charge of the scientific co-ordination in the field of sustainable nuclear and renewables and also leads the thematic field of energy efficiency. At its premises in Grenoble, the co-location centre hosts an incubator for start-ups and provides meeting and networking facilities for the use of all partners involved in the KIC activities. The subject of nuclear and renewables is well established in this region and some of the partners involved in the KIC are already involved in this area and its clusters. These include INP Grenoble, INSA Lyon, Grenoble Management School, CEA, CNRS, Areva, Schneider Electric, EDF and Total. As for the training aspects, the Grenoble Management School is hosting a PhD Summer School, as well as running a Master's programme.

Overall, the model of delivery is open and collaborative and supports the forging of strong relationships between the partners. Similarly to the case of the competitiveness clusters, there is a common vision of bringing innovation to the market and this involves all three sides of the knowledge triangle.

The co-location centre is leveraging resources in an environment oriented to regional innovation, where the existing industrial clusters are dedicated to energy technological innovation. Part of the mission of co-location centres is to build on regional clusters and to raise them to international levels of competitiveness. In the case of KIC InnoEnergy, the co-location centre is networking with the clusters in a formal way by including them in the partnership. Both of the clusters are associated partners of KIC InnoEnergy. The longer-term structures of KIC InnoEnergy increase the reach and scope of the French clusters, whilst the clusters help KIC InnoEnergy to become embedded in the regional environment giving it access to more resources, facilities and talent.

There are other mutually beneficial relationships in the regions. For example, KIC InnoEnergy is funding a project of Areva, a leading energy company specialised in nuclear energy. This project is developing a concept for modular and compact power plants that can exploit the small-scale biomass resources in Latin America, south Asia and Europe. A number of partners have already signed up for the project including SITA, an industrial operator specialising in waste treatment, recovery and R&D centres, the French CEA and the German Karlsruhe Institute of Technology. Areva is part of the Capenergie cluster along with the CEA, while the Karlsruhe Institute of Technology connects the project with the German co-location centre.

Facilitating factors for synergy and complementarity

Cluster partners are also KIC partners

Co-location centres have a specific remit to build on regional clusters and, in the case of KIC InnoEnergy, the co-location centre is networking with the clusters in a formal way by including them in the partnership.

Regional policy drive and focus

The region is already one which actively invests in renewables and therefore there is a very good strategic fit with KIC InnoEnergy.

The knowledge triangle approach

Both the clusters and the KICs work with the same kind of partnership models that involve research, business and educational institutions.

Longer-term structures

The French Competitiveness Clusters programme is a longer-term strategic investment and for the KICs, this enables a more stable and longer-term partnership to be sustained.

Figure 26: Synergy framework - French competitiveness poles and KIC InnoEnergy

Target area of the synergy	Stakeholder group(s) engaged in the synergy	Stage in the policy cycle at which the synergy is occurring	Assets involved in the synergy	KIC role in synergy
Education	Education institutions	Policy implementation	Networks	Training provider
Entrepreneurship	Companies		Infrastructure	Exchange of experience/mutual learning
Innovation	Research institutions		Funds	Business support activities

Drivers and enablers in the creation of policy and programme synergies and complementarity

The current innovation policy environment is relatively favourable to facilitating synergies and complementarities. Synergies and complementarities are called for in the European innovation policy agendas and they can also provide solutions for national and regional innovation policy-makers who are increasingly required to provide evidence of the impact and effectiveness of their programmes. The Innovation Union 2012 report 'Accelerating Change'⁴¹ notes large differences in industrial sectors in, and between, countries, together with an underlying lack of business confidence. It notes that R&D results are uneven, and budgets are under pressure. The report also highlights imbalances in supply push and demand pull, together with a fundamental need for a change in the composition of the European economic fabric towards one that contains more high-growth innovative firms. This change is happening, but not yet at the required pace, and the report calls for 'smart consolidation' and a unification of the value creation chain. Other studies also emphasise the need to create more synergies. The Synergies Expert Group noted that even if progress has been made in the establishing of '**synergies of policies**' there is still a need for '**synergies in practice**'.

The case studies that have been featured in this chapter outline the mechanisms of KIC synergies in practice that have evolved bottom-up. An overarching conclusion that emerges from these

examples is that the conditions for synergies and complementarities to emerge have to be **planned right from the start** of the launching of any new KIC-related activity or project. The wider innovation landscape should be mapped and the important linkages have to be identified. There must also be a **plan for identifying further opportunities for synergies that might occur** in the changing policy context. Some synergies will function for discrete periods of time in a policy or programme, but other opportunities may materialise and should be 'institutionalised' by establishing appropriate frameworks and mechanisms to ensure the most effective form of policy synergies and complementarities.

The case studies have shown there are many benefits that can be achieved by synergies between programmes, initiatives and projects. These include more efficient use of research facilities, innovation labs and test beds, leveraging local initiatives to a global level and complementing programmes with a further step in the innovation chain, such as adding commercialisation or a market dimension to research projects. The examples prove that there is an important rationale behind fostering greater complementarities between policy measures. Several common factors have been identified as drivers and enablers for synergies and complementarities between the KICs and other policy measures, which are indicated in the figure below.

Figure 27: Drivers, enablers and barriers related to creating synergies and complementarities between the KICs and other policy measures

Enabling factors	Driving forces	Barriers
Policy environment	Common vision, e.g. a focus on societal challenges	Lack of compatibility in funding cycles
Strong social capital, e.g. personal links between members of, or having members that are common to, steering or management boards	Achieving better results by joining up initiatives	Lack of compatibility in levels of autonomy
Capitalising on past projects and relationships	Leveraging local initiatives to a global, international level through improved visibility and branding	Lack of long-term vision
Skills in coordination and communication		Failure to maintain momentum
Flexibility in administrative and financial rules		

Social capital has been indicated as being one of the important aspects that facilitates coordination and cooperation between policy initiatives and programmes. Building trust-based relationships and personal ties or, even better, having the same directors and executives on several steering and management boards at the same time can be the key that will open up many beneficial and productive links. Another factor that enables the development of complementarities is experience of previous programmes and a history of past relationships upon which the KICs and other policy initiatives can capitalise.

Skills, awareness and mechanisms for coordination and communication are necessary pre-requisites for synergies and complementarities. In many situations, it is the interpersonal skills of policy coordinators and programme managers that create or drive the synergies. These skills are often learnt through experience but they can also be strengthened through mutual learning. An open mind-set and a view of the wider picture always assist the development of cooperative working relationships. However, without the presence of mechanisms that support coordination and communication, it is difficult to formulate common objectives and ensure that activities to meet these objectives are implemented effectively. Mechanisms such as joint platforms, communication channels and governance models are always needed.

An important enabling factor for complementarity is the tailored KIC structure and its funding model. The flexibility of the KIC programme design has been mentioned several times as a positive way of supporting the emergence of synergies and complementarities. The long-term KIC funding model ensures that investments and engagements can be made with a great degree of certainty about the future. However, it was also noted that the KICs might not always fit with smaller regional or local initiatives because of the differences in scale and types of partnership.

Case studies reinforce that synergies are facilitated by a common vision. A common mission and a common vision are amongst the key drivers that can stimulate and maintain cooperative arrangements or synergies with other policies and initiatives. Most of the examples in this chapter illustrate how the KICs and other policy measures can complement and strengthen each other in a joint effort to address particular societal challenges. As the commercialisation of research results and the faster uptake of innovation have become even more pertinent issues, many research initiatives and research and innovation platforms are interested in the KICs because they can add that missing 'near to market' element. The same

applies to education where the KICs and other research and innovation policy measures complement each other in their attempts to unlock the entrepreneurial potential in Europe.

The cases also highlight instances in which the non-material assets of KICs, such as their visibility, are identified as facilitating factors for synergies. The EIT and KICs are creating a strong brand and so the motivation to create links is often the visibility and strong European dimension that the EIT and the KICs can offer. The market orientation and reputation of the KICs that have major players in their partnerships are other factors that can encourage policy-makers to engage in cooperation projects. The leveraging potential that the KICs can offer to upscale regional initiatives to an international level was another important factor that was highlighted in the case studies.

Administrative aspects can be either enable or hinder cooperation. There is a need for greater coherence and compatibility in the timing of application and selection procedures and in the documentation on funding and partnership structure that is required. As the SEG highlighted with respect to the next programming period, there is a need for the Research and Innovation Framework and the Cohesion Framework to follow rules and procedures that ensure interoperability as well as synchronised road mapping and common evaluation and administrative cycles. Implementation improvements have already been made and include the removal of the rule that indicated that Structural Funds' programmes or projects could not be co-funded by another EU source of funding. This removal is an adaptation which should promote more joined up approaches to research and innovation and regional development. The SEG has also proposed "efforts towards the greatest possible simplification in the implementation of the instruments."

Barriers to policy cooperation can emerge from a lack of compatibility in the levels of autonomy or a failure to maintain momentum. The level of autonomy might be substantially different across the policy measures and regional partners involved. The KIC steering board is relatively free in making its decisions on the selection of projects and activities but other research projects or regional partners might be more dependent on regulations or guidance that is issued at EU or national level. This might present a potential barrier that should be borne in mind. At the start of most new initiatives for policy cooperation, there is a momentum that is generated but if this begins to fade during the implementation phase, it will be difficult to achieve the targets that were set and expectations that were raised at the beginning.

Cross-KIC synergies are not yet a strong feature of the EU innovation landscape. In the proposed Strategic Innovation Agenda⁴², the EIT recognises that with only three existing KICs there are limited opportunities for cross-KIC activities. In addition, given the fact that the KICs have only been in operation since 2010, their initial focus has been on establishing networks within their own domains. The existing KICs work closely together at a strategic level and, in some cases, KICs themselves are co-located or have common partners or affiliated partners. For example, KTH in Sweden is part of the KIC InnoEnergy and EIT ICT Labs and the Technical University of Munich is involved in Climate-KIC and EIT ICT Labs, as an affiliated partner. This report does not highlight any mature cross-KIC collaboration but it is likely that as the number of KICs increase, there will be more bottom-up, cross-KIC collaboration. The EIT already plans to incentivise KICs to engage in cross-KIC work in areas, which offer strong potentials for synergies, such as via professional development courses, joint research activities, Master's or PhD degrees or cross-KIC mobility between academia and business.

Conclusions from the survey of the views of national and regional policy-makers/programme managers

The survey on the EIT and the Knowledge and Innovation Communities⁴³ among national and regional policy-makers has provided further insights into potential for synergies and complementarities. Although the sample of survey respondents is not statistically representative, it reveals further aspects that could motivate or stimulate the establishing of connections across various policy domains.

The survey has pointed to the difference between synergies established between KICs and institutions/organisations located in the region/country in which the KIC is active and those established between KICs and institutions/organisation outside the so-called 'KIC areas'. Overall, the results suggest that KICs' outreach activities are perceived as being important and potentially beneficial for existing national and regional innovation support measures but their potential for synergies has not yet been fully realised.

Some 90% of the respondents had heard of the EIT and around 60% had heard of the specific KICs. Of those who had heard of the KICs, the majority has interacted with them to some extent and/or is located in a KIC country or region. The responses show that most of the interaction with the KICs is informal and indirect, mainly through networks of partners. EIT ICT Labs was mentioned more often than the other two KICs, which is not

42 COM(2011) 822 final

43 In the framework of this study an online survey was conducted among policy-makers and programme/policy measure managers who have been registered in the database of the ERAWATCH-INNO Policy TrendChart and in the Regional Innovation Monitor. An additional tailored survey was also conducted among cluster organisations in Europe. There have been 51 responses to the survey.

surprising given its catalyst carrier model.

The majority of the respondents see further opportunities, and no particular barriers, to establishing policy cooperation and coordination between the KICs and national or regional initiatives. It seems that all the three KIC themes are priority areas at national and regional level of innovation policies. Respondents regarded KICs as instrumental in building bridges between national excellence poles in the EU. KICs were also seen as being valuable partners in shaping strategic innovation agendas in Europe.

The survey highlighted that although KICs address many of the same topics as the EU Member States and regions, these challenges are not necessarily approached in the same way. In the cases that have been presented in this chapter, the methods of coordination are largely formalised but there is also scope for more informal cooperation to occur and for different approaches to the development of synergies between policy initiatives. More informal synergies can still involve careful design, such as the inclusion of certain bodies or agencies in governance structures or a decision on the site of the co-location centre, and can be established without formal, written or legal procedures. These types of issues are best explored during the planning phases of policies.

The role of the KICs in developing synergies between interests at regional, national and European levels was stressed. KIC co-location centres were seen as potential nodes for focusing dispersed regional development funding and aligning objectives across all three levels above.

The Future Horizon – facilitating further Synergies and Complementarities

The notion that innovation stems only from research and focuses solely on specific disciplines or sectors has long been discarded. Innovation is happening in new ways throughout the world, through the co-creation of knowledge, the development of businesses, user-led ideas and, more recently, societal challenge-led approaches. This results in new ways of working, networking, collaboration and funding and new configurations of the public and the private sectors to tackle the innovation challenges.

Europe has many of the elements that are necessary to be a world leader in enterprise, entrepreneurship, education and innovation including world class universities, excellent research infrastructures, leading centres of excellence, multinational corporations and innovative SMEs. The focus on the knowledge triangle and the conditions set out in the research, education, innovation, enterprise and regional funding programmes support synergies and complementarities in many ways. Most notably it happens through:

- Transnational partnership building;
- Multi-stakeholder, multidisciplinary, multinational teams;
- Support for the freedom of circulation of people and knowledge;
- The alignment of societal challenges and the funding rules for Horizon 2020;
- The new generation of Structural Funds and smart specialisation;
- The national policy environment.

This chapter gives an insight into how the next round of major European policies and programmes are being set up to support synergies and complementarities in the areas in which the KICs will operate. In addition, examples are provided of how Member States are aligning their policies and programmes, at national and regional levels, to prepare for the next funding rounds. This includes making the best use of all available resources through reducing barriers to synergies and complementarities. The chapter also provides recommendations for the existing KICs, future KICs, the EIT and the European Commission.

Horizon 2020 – supporting synergies and complementarities

Overview of Horizon 2020 and its structure: a short description

The forthcoming Horizon 2020 (H2020) builds upon the successes of previous Framework Programmes. Its main aims are to boost the global competitiveness of Europe, to help to create new jobs and to generate the knowledge of the future. Horizon 2020 is a core part of Europe 2020, the Innovation Union and the European Research Area strategies. It deals with high-level strategic objectives for Europe such as the need to respond to the economic crises by investing in future jobs and growth, to address people's concerns about their livelihoods, safety and environment and to strengthen the EU's global position in research, innovation and technology.

The European Research Area Committee discussed the relationship between the European Research Area and Horizon 2020, in February 2012. After a follow-up discussion on how the Commission and Member States could best work in partnership, in relation to both the governance proposed for Horizon 2020, as well as the wider ERA, the Commission concluded:

"Horizon 2020 can best support the continued development of the European Research Area post-2013 and thereby the implementation of the Innovation Union. The ERA can grow to become the best environment for European research and innovation, including most specifically the main EU-level funding action in 2014-2020, Horizon 2020."

The strategy to achieve the general objectives of Horizon 2020 is structured around the three main pillars of Societal Challenges, Industrial Leadership and Excellent Science.

The 'Societal Challenges' programme makes special mention of the enhancement of well-being and quality of life, the efficient use of scarce resources, energy efficiency and innovation aimed at making societies more secure. Its aim is to increase the effectiveness of research and innovation in responding to key societal challenges by supporting excellent research and innovation activities.

The 'Industrial Leadership' programme has the objective of making Europe a more attractive location in which to invest in research and innovation by supporting major investments in Key Enabling Technologies (KETs). Under the Industrial Leadership programme, there are activities designed to stimulate the creation of new jobs by giving support to innovation activities, encouraging private investment in R&D, increasing the market uptake of innovations and strengthening the participation of innovative SMEs in the programme.

Finally, the 'Excellent Science' programme promotes basic research through activities to support world leading scientists in frontier research, providing training and career development opportunities and developing emerging new technologies and research infrastructures.

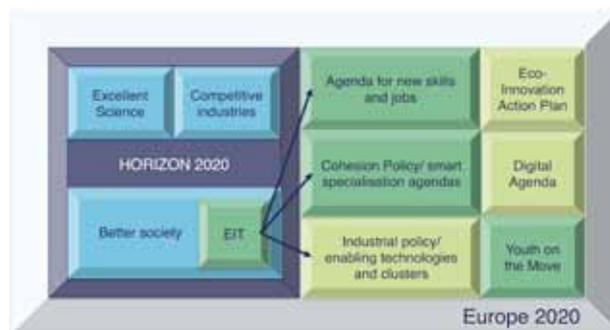
EIT as an integral part of Horizon 2020

Within Horizon 2020, the EIT will contribute to the priorities of Excellent Science, Industrial Leadership and Societal Challenges. It will stimulate results-driven innovation, provide tools that incentivise the creation of high growth innovative SMEs, and foster mobility across boundaries of disciplines, sectors and countries. The aim is to significantly enhance the impact of the EIT across Europe through the integration of the knowledge triangle, with entrepreneurship as the driver. As a result, it will act in a complementary way to other H2020 initiatives in these areas. The fit of the EIT in helping to achieve the objectives in H2020 is stated in its Strategic Innovation Agenda⁴⁴ proposed by the Commission in November 2011:

"Through the KICs, the EIT helps to create environments where innovation is more likely to thrive and to generate breakthroughs in the way higher education, research and business collaborate. This approach helps addressing the increasingly complex societal challenges set out in Horizon 2020 in a holistic way, bringing together excellent people from different sectors, backgrounds and disciplines – who otherwise would not necessarily meet – to jointly find solutions to the challenge."

The distinctive aspect of the EIT is that it will bring an education dimension to the EU's research and innovation policy. The main tools are new, transdisciplinary and interdisciplinary EIT labelled degrees led by the different KICs. In this respect, the EIT is leading a collaborative effort towards education for innovation and entrepreneurship with clear spill-over effects on the broader European agenda for the modernisation of higher education institutions, thereby promoting the European Higher Education Area. In addition to Horizon 2020, the EIT operates in a broader context, contributing to other flagship initiatives of the Europe 2020 strategy such as the Agenda for New Skills and Jobs, Youth on the Move and the Digital Agenda.

Figure 28 The EIT in the EU innovation landscape



Alignment of the KICs with societal challenges

The Horizon 2020 programme will provide the EIT with a significant increase in its budget. Funding for the EIT is currently expected to increase to €2.7bn for the period of 2014 to 2020. This is a rise from the initial €308.7m that helped establish the EIT and launch the initial round of KICs during the period 2008-2013.

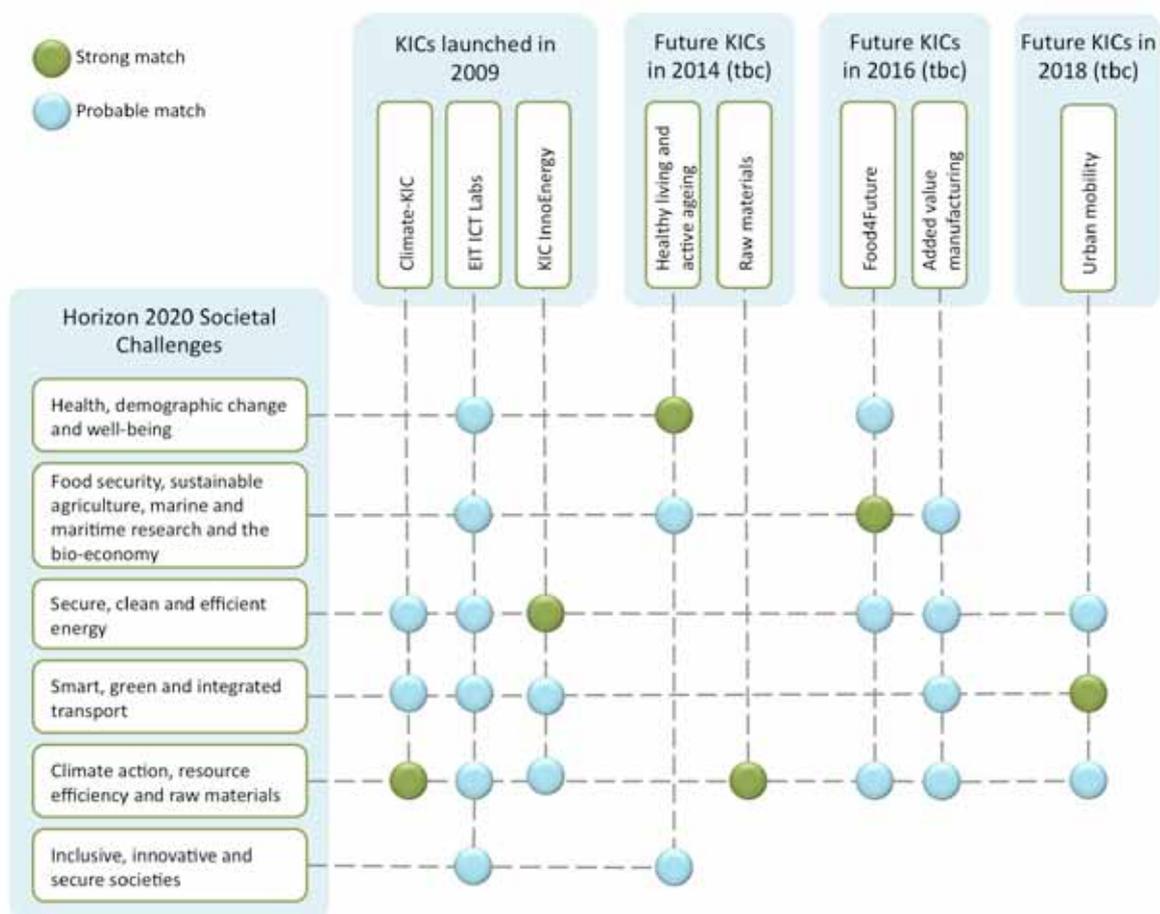
The EIT will be part of the rules of participation of Horizon 2020. The EIT funding to the KICs will only cover "KIC added value activities", making the 25 per cent/75 per cent funding model of the KICs an important part of the strategic conditions to produce synergies.

The European Commission is doing its part by aligning themes, but with regard to the EIT synergies there is no top-down approach. The EIT KICs are autonomous but their topics are strategically aligned with the proposed societal challenges. If there is some thematic field that is not aligned with the agenda, it will not be possible to fund it.

The role of the EIT in its synergy with Horizon 2020 is to contribute significantly to promoting the framework conditions that are needed to realise the innovative potential of EU research. In addition, the KICs or their partner organisations may apply to other parts of Horizon 2020 or European Union programmes, in accordance with their respective rules and on an equal footing with other applications⁴⁵. Figure 29 shows the alignment between the different KICs and the topics proposed under Horizon 2020. This does not imply, however, that new multidisciplinary innovations cannot fall into other activities between those of the KICs and the societal challenges of Horizon 2020.

44 COM(2011) 822 final
45 COM(2011) 817 final

Figure 29: Mapping of current and expected KIC initiatives and Horizon 2020 Societal Challenges



Source: Technopolis

Recommendation: The European Commission should consider stimulating and supporting joint events of European Innovation Partnerships, Joint Technology Initiatives, Joint Programming Initiatives and other thematic and policy programming networks together with the EIT KICs in order to increase the visibility of the KICs, their thematic foci and complementary competences.

Alignment with the Entrepreneurship 2020 Action Plan

The Entrepreneurship 2020 Action Plan is an initiative to unleash Europe’s entrepreneurial potential, to remove existing obstacles and to revolutionise the culture of entrepreneurship in Europe⁴⁶. It is built on three main pillars:

- Entrepreneurial education and training;
- Creation of an environment where entrepreneurs can flourish and grow; and
- Developing role models and reaching out to specific groups whose entrepreneurial potential is not being tapped to its fullest extent or who are not reached by traditional outreach for business support.

There is a clear role for the EIT KICs in assisting the implementation of the Entrepreneurship Action Plan. The Commission Communication on the Action Plan⁴⁷ highlights that “the European Institute of Technology (EIT) has pioneered the role of entrepreneurship as a key enabler of innovation on EU level and is helping to bridge the gap between education and innovation for industry.” However, it does not suggest further specific actions to better capitalise on the practices and experiences of the first KICs.

Recommendation: the European Commission should seek to build upon the accumulated experience of the EIT KICs with regards to good practices on stimulating the entrepreneurial potential of diverse target groups and fostering supporting environments for business growth.

46 http://ec.europa.eu/enterprise/policies/sme/entrepreneurship-2020/index_en.htm
 47 COM(2012) 795 final

Alignment with national policy environments – encouraging synergies with the EIT

National policy coordination is more likely to emerge when policies are characterised by some form of strategy or thematic complementarity. In some cases, these complementarities already exist and in others, national policy formulation becomes aligned to international policy, or vice versa, as a way of strategically encouraging or exploiting opportunities of mutual benefit.

Many EU Member States have one or more programmes and initiatives in which public-private-partnerships are supported through a structured and medium to long-term mechanism. The most widespread type is national variations of programmes to support 'competence centres' or 'networks of excellence'. These virtual and physical structures aim to implement joint strategic research agendas based on inputs from both public research institutions and private sector actors. Examples are, for instance, the Swedish Competence Centre Programme, the Austrian KPlus programme, the Finnish SHOKs, the Dutch Leading Technology Institutes, the Flemish Competence Poles and the Estonian Competence Centres⁴⁸. The early programmes were inspired by the National Science Foundation's Engineering Research Centre programmes, established in the 1980s. The objective of all these programmes is to bring public research and the private sector closer to each other in order to narrow the innovation gap. Evaluations of the programmes point out that both sides namely, public sector research often involving universities and private sector actors in companies, have had to learn to cooperate with each other and to build up trust through networking.

The networked competence centres are very much modelled in a similar way to the EIT KICs, with some programmes supporting physical centres, whilst others are networked and more virtual co-location centres in a specific technological domain or market. The fact that these public-private-partnerships exist in many European countries enhances the EIT KICs, as the latter can build on existing networks at national level to extend their reach.

A 2010 study commissioned by COMPERA, a network of national agencies responsible for these programmes, showed that the internationalisation of national competence centres is high on these centres' agendas, but also faces a number of barriers⁴⁹. One of those barriers was, for instance, identifying appropriate partners in other countries. Thus, the national competence centres can also build on the EIT KICs to help them to make contact with partners in other EU countries. The recent evaluation of the six Finnish SHOKs, for instance, came to the view that the internationalisation of

these national centres had not yet progressed as expected⁵⁰. The only SHOK reported to have links with EIT KICs was the ICT focused centre. However, given the themes of these centres, the potential for links certainly exists in other domains such as energy and the environment.

The potential synergies between the many national public-private-partnership initiatives and the EIT KICs are clearly present. While the KICs can use the national contacts to broaden their own networks and identify potential partners, the national initiatives can use their relationships with the KICs as a stepping stone towards internationalisation.

Recommendation: A European-wide mapping of existing public-private-partnerships for research and innovation in the thematic domains of the KICs should be supported and stimulated. This would create a better awareness of the many initiatives and partners involved to leverage and coordinate ongoing activities. New KICs should undertake these mapping exercises in their start-up phases.

The European Commission and the Member States should consider working towards the alignment of funding cycles of similar programme activities and the mitigation of procedural differences for acquiring funding with the European Research Area.

Alignment with regional policy environments – KICs and the Cohesion Policy

Around 21 per cent of the current EIT KICs funding comes from regional and national resources. As shown in the previous chapters and case studies, building upon and complementing existing regional policy initiatives is an inherent feature of the KIC model in which the KICs are embedded in regional environments through their co-location centres. Chapter 2 shows that there are 19 regions involved in the current KICs, of which the regional authorities in nine regions are also participants in actions launched by the KICs: Hessen; Valencia; Emilia Romagna; Lower Silesia; Silesia; Central Hungary; the West Midlands; Trentino; and Eindhoven.

The forthcoming funding period 2014-2020 of the Cohesion Policy offers further scope to create complementarities between the KICs and regional development. It is expected that there will be five additional KICs in operation by 2020, potentially involving 20-30 further regions connected to the EIT. This will increase the KICs' importance in fostering regional development and innovation.

The regional dimension will become more significant for the KICs and conversely innovation will become a more prominent target for regional

48 See for a recent historical description of these programmes Stern, P. et.al. (2013) Long Term Industrial Impacts of Swedish Competence Centres, Technopolis, Stockholm

49 Boekholt P. et.al. (2010) International Cooperation of Competence Research Centres, Final Report of the COMPERA Joint Study, IWT Agency for Innovation by Science and Technology, IWT Report 66, Brussels

50 Lähteenmuaki-Smith, K. et.al (2013) License to SHOK? Publications of the Ministry of Employment and the Economy no. 1/2013, Helsinki

policy. A considerable share of the total Cohesion Policy budget will be allocated to research and innovation. For example, in more developed and transition regions, at least 80 per cent of ERDF resources at national level are expected to be allocated to energy efficiency and renewables, innovation and SME support. This share will be reduced to 50 per cent in less developed regions.

Synergies are encouraged on both sides. In future, the Structural Funds are expected to be used more efficiently so that synergies between different EU, national and regional policies, as well as public and private investments, can be increased⁵¹. Given the common objectives and focus areas, such as societal challenges, there is a strong rationale for creating clear complementarities between regional innovation policies and actions launched through the EIT and the KICs. In addition, the policies and practices of regional authorities will need to be more proactive in applying the KIC model and in joining up their activities.

While the ERDF is perhaps the most obvious source of support for the type of actions, which can build complementarities between the KICs and regions, there is also considerable potential for cooperation via projects financed by the European Social Fund (ESF). One of the roles of the European Social Fund is to promote education and lifelong learning, and to contribute to strengthening research, technological development and innovation. This is to be achieved through the development of post-graduate studies, the training of researchers, networking activities and partnerships between higher education institutions, research and technological centres and enterprises.

These types of synergies are not only important for regions participating in a KIC, as the concept and practices of the KICs are relevant for any region looking for inspiration. Nevertheless, there is a need to provide further guidance to future KICs on strengthening outreach activities and on embedding their activities more deeply in existing and successful regional innovation partnerships or clusters.

The following sections describe several specific areas for joint action.

Firstly, national and regional authorities are currently drawing up research and innovation **smart specialisation strategies**, which are an 'ex-ante conditionality' for supporting investments in the two key policy objectives of:

- Strengthening research, technological development and innovation (the R&I target); and
- Enhancing access to, and use of, quality ICT (the ICT target).

Clusters constitute an important basis for both regional development and the internationalisation of firms. The implementation of smart specialisation strategies will most probably be connected with cluster policies and cluster initiatives in several cases. KIC co-location centres are rooted in cluster environments and, in a number of cases, involve cluster organisations in their partnerships and such involvement should be further encouraged.

Another area of untapped potential for synergies involving the KICs lies in the **European territorial cooperation** objective of the cohesion policy.

Smart specialisation agendas and their implementation

KICs are embedded in regional innovation systems through their co-location centres (CLC) that are geographical locations, which bring together groups of people, regional and local clusters and/or nodes of excellence. A particular task for each CLC is to organise and structure its own national and regional innovation context to include partners from research, education, business and local authorities. KICs are networking and reconfiguring existing networks at EU, national and regional levels by setting a common holistic goal and providing a specific structure for joint action.

As indicated in the European Commission's 'Guide to Research and Innovation Strategies for Smart Specialisation (RIS3)', smart specialisation involves identifying the unique characteristics and assets of each country and region and highlighting each region's competitive advantages. It encourages multi-level governance and helps to build creative and social capital. Smart specialisation strategies can be complemented by other sources of EU funding such as EIT and national public funding, and are also expected to mobilise private investment.

KICs can be instrumental in strengthening regional specialisation and the exploitation of existing regional strengths by adding an international dimension. They can be a mechanism to help regions and clusters stay connected to the stream of global innovation flows, which is also a requirement for smart specialisation strategies.

The smart specialisation strategies (RIS3) and the proposals for the Operational Programmes 2014-2020 are to be negotiated and completed in 2013. A review of the Regional Innovation Monitor regional reports⁵² on the status of the RIS3s suggests that the explicit inclusion of the current and potential future KICs' activities does not feature strongly as part of the regional portfolio of actions in these long-term plans. There is a risk that the synchronisation of the strategic

51 See information on the EC legislative proposal for cohesion policy 2014-2020 (October 2011) http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf

52 See Regional Innovation Monitor portal: <http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/>

agenda setting currently in process might lead to missed opportunities for synergy. The contribution of KICs to smart specialisation lies in seeking early alignment with national and regional innovation landscapes at the stage of strategy definition. For instance, Lapland in Finland included the KIC concept into its regional innovation strategy as a way of opening up the regional innovation system to more international collaboration.

Regions need to position themselves in European and global value chains, and to improve their connections and the internationalisation of their businesses. It is still a problem that too often national networks do not look sufficiently ambitiously beyond their country's borders⁵³. In this respect, the KIC concept can be useful in the ongoing process of smart specialisation strategy setting, and also later in its implementation.

Recommendation: The KICs should engage actively with the regional policy makers who are developing the smart specialisation strategies and the Operational Programmes for 2014-2020. As the objectives of the KICs are at the heart of the key actions in the ERDF an early stage alignment of goals, agendas and instruments would be beneficial for the remaining period in which the KICs and the OPs are in operation. The KIC concept should be part of the smart specialisation strategies of regions.

Cluster policy

Clusters are often seen as an organising concept for regional development policies, while cluster initiatives are an important policy instrument supported through regional Operational Programmes. In addition, the KICs' approach is strongly market-driven and has the potential to strengthen clusters so that they become world-class. The model of the co-location centres links regional clusters to a pan-European network and thus increases their critical mass through such European links so that they can step out jointly onto the global stage.

Within the EU, there are more than 500 cluster organisations with the role of providing customised support, networking and consultancy to their members. Many of them have established track-records and have developed trust amongst their cluster members, which provides an ideal context in which the cluster organisations and the KIC co-location centres can build upon each other's strengths. There are instances of CLCs becoming embedded in clusters and gathering key academic and business partners together with several cluster management organisations, including, for example, Tenerrdis, Capenergies, KISTA and Capdigital.

KIC InnoEnergy Alps Valley co-location centre, for example, builds upon the clusters in the field of energy in France. EIT ICT Labs Stockholm co-location centre is situated in the Kista Science City with access to over 1,100 ICT companies. EIT ICT Labs forge alliances with other organisations in the Kista environment, including Kista Science City AB, Stockholm Innovation and Growth, ACREO and Stockholm University.

In Paris, some EIT ICT Labs' activities are carried out in cooperation with two regional competitiveness clusters. This network of networks provides access to over 24,000 ICT companies in the region.

KICs can be a mechanism to help regional clusters to stay connected to the stream of global innovation flows, which is also a requirement for smart specialisation strategies. KICs can play an important specific role in improving framework conditions for clusters such as nurturing a 'game changer' attitude, strengthening the European dimension in business support activities as, for example, in the KIC InnoEnergy Highway⁵⁴ or by adding the educational dimension to industry-science cooperation.

An online survey⁵⁵ conducted amongst cluster organisations indicated that they view collaboration with the KICs as being important for the future. More cooperation between the KIC CLCs and cluster organisations could add value such as industry relevance, internationalisation of SMEs and better connections to academia. Cluster organisations often represent and gather local SMEs, hence cooperation between the KICs and cluster organisations could help to link SMEs to key innovation players in Europe and internationally.

Recommendation: Active dissemination work on the role of the EIT and its KICs, and their potential in nurturing vibrant and internationally connected regional innovation environments needs to be furthered.

European Territorial Co-operation

The new European Territorial Co-operation regulation proposes that the programme strands should concentrate funding on a smaller number of priorities that are better linked to the Europe 2020 Strategy.

The new INTERREG B and C strands focus on transnational and interregional cooperation and have objectives aligned with the KICs' goal and hence they offer scope for complementarities. Innovation policy-related actions within transnational cooperation programmes include technology transfer to improve access to scientific knowledge and the creation of joint financial engineering instruments to support research and development in SMEs.

53 The European Observation Network for Territorial Development and Cohesion, 2010: http://www.espon.eu/main/Menu_Programme/
54 <http://www.kic-innoenergy.com/businesscreationservices/business-creation-services-2/>

55 A survey tailored to cluster organisations was launched together with the survey of national and regional authorities and managers of national and regional innovation measures. Ten responses were received from cluster organisations. Results are not regarded as being representative, but are referred to for indicative purposes.

Transnational and macro-regional development strategies that bring together stakeholders from different countries and sectors are being used as a way forward in the Baltic Sea Region and the Danube Area. The development of smart and connected places contributes to regional growth and to the overall development and competitiveness of Europe in a globalised market. There are new initiatives under preparation, such as the Danube Research and Innovation Fund that will pool national and regional funds. The KIC co-location centres that are part of a macro-region or transnational programme area could be encouraged to develop actions financed under these programmes and complement their funding.

Recommendation: In order to provide transparency for the current and future KIC communities, the EIT and the European Commission should provide guidelines on how Horizon 2020 and the CSF funding mechanisms can be used and combined to incentivise synergies. The EIT should draw upon the identified good practices of synergies to foster awareness building and to undertake pro-active initiatives to link research, innovation, education and entrepreneurship. This would stimulate stakeholders at various levels to plan for joined up activities creating more coherent, targeted and efficient European innovation landscape.

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