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**COMMISSION STAFF WORKING PAPER**

**IMPACT ASSESSMENT**  
**integrating ex-ante evaluation requirements**

*Accompanying the document*

**Proposal for an amended Regulation of the European Parliament and of the Council on  
the European Institute of Innovation and Technology**

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## **1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES**

### **1.1. Organisation and timing**

The European Institute of Innovation and Technology's (EIT) is an independent and decentralised EU body with full legal personality. Its mission is to reinforce the innovation capacity of the Member States and the EU, by promoting the integration of higher education, research and innovation of the highest standards. The EIT Regulation<sup>1</sup> is a framework regulation, setting out the principles for the EIT functioning on a long term perspective. Following the EIT Regulation, the EIT has submitted its Strategic Innovation Agenda (SIA) proposal – a policy document outlining the future priority fields of the EIT and an indicative financial plan covering the period of the next financial framework – to the Commission in June 2011 (for more detail check 2.2).

Following the provisions laid down in the EIT Regulation on the SIA, discussions within the Commission in the second part of 2010 confirmed the necessity for a dedicated impact assessment on the EIT. In November 2010 DG EAC took the decision to establish an Impact Assessment Steering Group (IASG). The IASG has been convened for the first time in January 2011 and consists of representatives from DG ENER, DG ENTR, DG ENV, DG INFSO, DG REGIO, DG RTD, JRC, SG and SJ. The IASG has been actively involved in the work and contributed substantially on aspects such as the options identification, the framework for priority fields, the problem definition and the objectives. The IASG was consulted on the external study supporting the impact assessment. Overall, the IASG met four times (January 2011, May 2011, July 2011 and August 2011). DG EAC's reflections on the impact assessment were informed early on by a preliminary assessment of possible future options for the EIT, which DG EAC contracted to the external evaluator of the EIT and which was prepared by January 2011.

The impact assessment was submitted to the Impact Assessment Board on 7 September 2011, the IAB Opinion was issued on 7 October 2011. The recommendations of the IAB expressed in the IAB Opinion have been incorporated into this IA:

The revised impact assessment expands the information on the the EIT , its activities (current and planned) and the KICs, by including fiches on each KIC. It has clarified the context of complementarity by concrete examples and a separate detailed Annex. Critical mass and problem definition have been clarified and reflected in the revised operational objectives of the EIT. The findings of the evaluation have been further emphasised. Budget breakdowns of the policy options have been included and the funding model of the KIC explained. A KIC budget illustration for 2011 was added. An Annex assessing the economic impacts (supply and demand side) of the options has been included in order to better analyse cost and effectiveness. The monitoring and evaluation provisions have been clarified and spelled out, also by describing current instruments. A Glossary was added.

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<sup>1</sup> Regulation (EC) No 294/2008

## 1.2. Consultation and expertise

### 1.2.1. Public consultation on the future of the EIT

In respect of the Commission's standards on consultations, DG EAC has launched an open public consultation (OPC) on the EIT in April 2011. The OPC has been published online<sup>2</sup> and announced through different channels (DG EAC website, EIT website, collective and personalised mailings, related conferences and meetings). It ran until 30 June 2011 and has generated 134 responses through the online questionnaire and 46 position papers.<sup>3</sup> Contributions were received from a wide range of stakeholders from different countries, the highest numbers coming from the higher education and research sectors, followed by the business sector and public administration. The majority of respondents were from the EU-15 countries.

According to the results of the consultation, there is a very strong level of support for the EIT's mission and its underlying concept of a balanced and integrated approach to the knowledge triangle. The EIT should preserve its distinctive role within the forthcoming Common Strategic Framework for Research and Innovation (Horizon 2020) and maintain strong links to the European Higher Education Area. It should also seek to generate and demonstrate complementarities with other European and national policies. Future KIC priority fields should contribute to addressing the societal challenges identified under Horizon 2020. Business participation is highly relevant for the success of EIT's KICs. In order to attract private sector participation, flexibility and clarity on the applicable rules are necessary. The consolidation of the three existing KICs by providing tangible results and concrete benefits to society is considered as important as the designation of new ones. Through dissemination and outreach EIT should promote new models of knowledge sharing and open innovation. The impact assessment reflects the results of the consultations most closely in the development of Options, Objectives and the Monitoring and Evaluation provisions where the need for a sound monitoring system for the EIT is reflected.

The results of the public consultation on the Common Strategic Framework for EU Research and Innovation<sup>4</sup> (CSFRI) on what regards the EIT were also taken into consideration. The consultation revealed there is strong support for placing EU funding for research and innovation close to societal challenges. Excellence should continue to be the key criterion for distributing EU research and innovation funding. There is strong support for the EIT concept and its inclusion in "Horizon 2020", combined with the request for demonstrating that KICs can deliver tangible results and benefits to the business sector. EIT should maintain a strong link to the European Higher Education Area (EHEA). There is a need to embrace a broad concept of innovation including non-technological and non research based innovation.

The results of both consultations have thus confirmed EIT's mission and concept as laid down in the EIT Regulation.

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<sup>2</sup> [http://ec.europa.eu/education/eit/eit-consultation\\_en.htm](http://ec.europa.eu/education/eit/eit-consultation_en.htm)

<sup>3</sup> Papers from contributors who have agreed to be published and the report on the public consultation can be accessed at the following URL: [http://ec.europa.eu/education/eit/eit-consultation\\_en.htm](http://ec.europa.eu/education/eit/eit-consultation_en.htm)

<sup>4</sup> The consultation ran from 09.02.2011 to 20.05.2011. The summary of the report is published at [http://ec.europa.eu/research/horizon2020/pdf/consultation-conference/summary\\_analysis.pdf#view=fit&pagemode=none](http://ec.europa.eu/research/horizon2020/pdf/consultation-conference/summary_analysis.pdf#view=fit&pagemode=none)

### 1.2.2. EIT evaluation

The first external evaluation of the EIT was completed on May 31<sup>st</sup> 2011 by ECORYS.<sup>5</sup> The evaluation found that the EIT has succeeded in achieving its milestones, notably by establishing three KICs, which successfully integrate the three dimensions of the knowledge triangle: business, education and research. The concept of integrating the knowledge triangle is regarded as highly relevant and the priority fields around which the EIT is structured are well-received. Results are not yet available for the activities undertaken by the KICs owing to the fact that KIC started their operations in the course of 2010. To date, the development of the EIT has, broadly, been effective, efficient, and relevant and demonstrates EU added value. The broad model and structures remain appropriate and gradual expansion of the EIT is supported. There are particular challenges emerging in terms of governance and the role of the EIT Headquarters. A stronger emphasis on monitoring is also recommended. In going forward the evaluation highlights the need for the EIT to be more open and the need to consider ways in which the benefits of its experience can promote the development of innovation capacity across the EU as a whole. The results of the evaluation have provided an important impetus in the description of the baseline, the identification of the objectives, the design of the Options, the challenges identified with the implementation of the EIT as an agency and the monitoring architecture.

### 1.2.3. External study

The work on the impact assessment has been supported by a study prepared by an external contractor, carried out between March 2011 and July 2011. The same contractor has completed the first external evaluation of the EIT in May 2011. Results of the study are reflected mainly in the following sections: Problem definition, Objectives, Analysis of Impacts and Comparison of Options.

## 2. CONTEXT AND PROBLEM DEFINITION

### 2.1. Political context

The EU2020 strategy for smart, sustainable and inclusive growth puts innovation at the heart of the EU policies. The EIT is fully anchored in the context of the EU innovation policy agenda, and in particular, addressing smart growth via knowledge and innovation, and strengthening of knowledge triangle policies, notably education, skills and entrepreneurship.

In its Common Strategic Framework for Research and Innovation (Horizon 2020), the Commission identified three complementary and interlinked pillars: *Excellence in the science; Tackling societal challenges; Creating industrial leadership and Competitive frameworks*. The promotion of innovative education and entrepreneurial mindsets is a particularly unique dimension and the main contribution of the EIT across the three pillars of Horizon 2020. As part of Horizon 2020, the EIT has been framed within the pillar *Tackling societal challenges*, through its innovation activities and knowledge triangle integration. However, given its integrated, cross-cutting nature, synergies should also be sought with other pillars, in particular the "competitiveness" pillar.

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<sup>5</sup>

The full report can be found on: [http://ec.europa.eu/dgs/education\\_culture/evalreports/education/2011/eitreport\\_en.pdf](http://ec.europa.eu/dgs/education_culture/evalreports/education/2011/eitreport_en.pdf)

The impact assessment of Horizon 2020 confirmed the considerable synergies potential of the EIT within the EU research and innovation landscape. The Horizon 2020 impact assessment identified the preferred option of full integration of FP7, CIP and EIT into a single strategic framework to enhance synergies and the impact of EU action. This option would achieve critical mass, foster excellence and allow for more flexibility. The conclusions of the Horizon 2020 impact assessment, notably on synergies, policy alignment and monitoring and evaluation arrangements are taken into account in this document.

Apart from its prospective alignment within Horizon 2020, the EIT is reflected in the EU2020 and in key flagships and initiatives such as the Innovation Union Communication<sup>6</sup>, the Youth on the Move Communication<sup>7</sup>, the Modernisation of the Higher Education Agenda<sup>8</sup> and the Commission's Regional Policy communication on smart growth<sup>9</sup>

## 2.2. Background

The EIT was set up to fill a gap in the European landscape and with a clear objective: promote innovation via the full integration of the knowledge triangle (research, education and business). The EIT is a novel initiative at EU level that explicitly links the full innovation cycle from education and knowledge creation to new market opportunities and business creation. The EIT is characterized by two main principles: **a highly independent EIT organisation**, (neither the Commission nor representatives from the Member States are members of the EIT Governing Board) which organizes the selection process of KICs, coordinates them with a flexible framework and disseminates best governance and funding models from the KICs; **and autonomous KICs**, which define their internal organisation, composition, agendas and working methods. The value of this bottom-up model was subject to an impact assessment in 2006 and has been confirmed by the outcome of the open consultation and the experience gained in the first two years of the EIT's activities.

As an EU body, and in contrast to programs, the EIT implements its activities notably via the KICs, which are integrated, long-term partnerships, set for a period between 7-15 years, spanning over various financial frameworks. KIC have legal status. The first three KICs have been selected in the fields of climate change adaptation and mitigation (ClimateKIC), future information and communication society (ICT Labs) and sustainable energy (InnoEnergy). The KICs are presented in more detail in the Annexes.

The EIT regulation was adopted in March 2008, the EIT Governing Board was established in September 2008, the first KICs were designated in December 2009, and the first seven year partnership agreements concluded a year later –December 2010. In this period of time in place, the EIT has completed its initial phase, which was dedicated to setting up the EIT decision making and executive functions – Governing Board and Headquarters – as well as the operational arm, the KICs. It has also set up the **EIT Foundation**, a philanthropic organisation dedicated to supporting the work and activities of the EIT. The EIT is now consolidating itself.

The EIT has a EU budgetary contribution of €309m for the period 2008-13. The EIT has fully absorbed the amounts allocated in 2009 and 2010 (5,6 million and 26 million respectively)

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6 [http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication\\_en.pdf#view=fit&pagemode=none](http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf#view=fit&pagemode=none)

7 [http://ec.europa.eu/education/yom/com\\_en.pdf](http://ec.europa.eu/education/yom/com_en.pdf)

8 [http://ec.europa.eu/dgs/education\\_culture/evalreports/education/2011/eitreport\\_en.pdf](http://ec.europa.eu/dgs/education_culture/evalreports/education/2011/eitreport_en.pdf)

9 European Commission (2010), [http://ec.europa.eu/regional\\_policy/sources/docoffic/official/communic/smart\\_growth/comm2010\\_553\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/official/communic/smart_growth/comm2010_553_en.pdf)

and is expected to fully commit the 55 millions allocated in 2011. This is an important milestone, considering the large volume of carry-overs and cancellations of operational appropriations of EU agencies especially in during their first years of existence. Legal basis

The third paragraph of Article 173 of the Treaty of the Functioning of the European Union provides the legal basis for the EIT Regulation. Article 173 (3) allows the Council, acting in accordance with the procedure referred to in Article 294 and after consulting the Economic and Social Committee, to decide on specific measures in support of action taken in the Member States aimed at fostering a better exploitation of the industrial potential of policies of innovation, research and technological development.

### **2.3. Synergies and complementarities**

Synergies are defined here as the alignment of and cooperation between policy frameworks, programmes and actions allowing more and better attainment of their objectives. The inter-relationships between research, innovation and education are increasingly being recognised within EU initiatives and programmes. While many programmes address the research and innovation facets of the knowledge triangle, the EIT is so far the only initiative that has the explicit mission of addressing all of the three. In practise, while there is limited overlap with other EU programmes, there are many areas where actions could be mutually reinforcing.

Examples of the synergies between KIC and other instruments have been recently praised in DG RTDI *Synergies* report. The report<sup>10</sup> illustrated this on the example of EIT ICT Labs which liaises and works closely with the Future Internet PPP, the Artemis JTI and EUREKA initiatives such as ITEA (Information Technology for European Advancement). By applying KIC "catalysts" such as the Innovation Radar to existing research projects, ICT Labs boosts the market impact of EU funded research projects. In a similar vein, KIC InnoEnergy contributes to the delivery of the EU's Strategic Energy Technology Plan (SET Plan), through inter alia, its participation in the SETIS platform on technology watch and mapping. It also currently interacts with the Commission's Joint Research Centre (JRC) for the simulation capabilities in building scenarios. Climate KIC has the potential to provide overarching synergies between the upcoming Joint Programming Initiatives on "Connecting Climate Knowledge for Europe" "Urban Europe" and "Water" as well as with upcoming European Innovation Partnerships (EIPs) in these areas. Climate KIC Regional Innovation and Implementation Communities (RICs) provide an original pan-European regional innovation model, which uses regions as test beds, linking up the development of managerial capability and regional strengths to global challenges.

The upcoming European Innovation Partnerships (EIPs) will promote an overarching framework to promote the alignment and synergies among existing supply and demand-driven research and innovation instruments and policies. KICs have a strong potential to identify policy, regulatory or standardisation issues having an impact in the market, making them key players in the EIPs. Moreover, the EIT will complement ERC investment on frontier research by addressing the whole innovation chain from ideas to application and exploitation and provide additional opportunities in innovation and exposure to entrepreneurship to Marie Curie and Erasmus Mundus students

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10 Final Report of the Synergies Working Group, June 2011, [ftp://ftp.cordis.europa.eu/pub/fp7/docs/seg-final\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/fp7/docs/seg-final_en.pdf)



The EIT will contribute to achieving the objectives of Horizon 2020. It will primarily "respond to key societal challenges", by promoting innovation via the seamless integration of the knowledge triangle. It will also "boost competitiveness through technological leadership and innovation", by stimulating results-driven research and fostering the creation of high growth innovative SMEs. Finally, it will contribute "to strengthen the scientific foundation for innovation", by fostering mobility across boundaries –discipline, sector and country- and by embedding entrepreneurship and a risk-taking culture in innovative post-graduates degrees. The EIT has a particular contribution to make to the objectives of Horizon 2020 via innovative, entrepreneurial education, playing an important bridging role between the research and innovation framework and education policies and programmes. In this context, the EIT will contribute to achievements of the European Higher Education Area. In particular, through new, trans/interdisciplinary EIT-labelled degrees, the EIT is leading a collaborative effort towards education for innovation with clear spill over effects on the broader European agenda for the modernisation of higher education institutions.

Last but not least, the EIT can contribute to the Cohesion Framework by addressing the linkages between the local and global aspects of innovation. Co-location centres provide for cross-border collaboration within and outside of the KIC networks and are well positioned to capitalise and benefit from various funding schemes from their respective regions. Via the co-location centres, the EIT and KICs have a strong territorial impact and offer an important element of European added value next to the development of smart specialisation and clusters.

*EIT added value:* The EIT evaluation suggested that the integration of the knowledge triangle is beginning to demonstrate a number of potential efficiency gains. The European nature of the EIT offers a strong element of EU added value. Although this can be replicated by other groupings of organisations, they do not have the same institutional dimension. Existing interventions at EU level seeking to promote stronger collaborative activity tend to focus on bilateral arrangements rather than the tripartite collaboration required for integrating the knowledge triangle. Many of these arrangements also tend to be project specific. There is some evidence of individual MS undertaking actions promoting stronger collaboration within their own borders, but these remain isolated examples which are poorly integrated at a European level.

- Overcoming fragmentation via long-term integrated partnerships. Building on existing cooperation initiatives, the EIT brings the selected partnerships in the KICs to a more permanent level.
- Towards critical mass through its European dimension. The KICs' co-location centres offer strong local actors the opportunity to closely connect to other excellent partners
- Fostering entrepreneurship through knowledge triangle integration: Entrepreneurship is fostered through a new generation of students and education course
- Nurturing talent across borders: The EIT provides new career paths between academia and the private sector and innovative schemes for professional development.
- Experimental character The EIT has been equipped with a substantial degree of flexibility to test out new innovation models;

- Funding through leverage The EIT provides 25% of the KICs budget and catalyzes 75% of financial resources from a wide range of public and private partners;

*Box: Elements for creating European added value from the EIT*

## 2.4. Problem definition

A number of challenges and barriers continue to inhibit the innovation capacity in Europe and its ability to tackle complex societal challenges in a sustainable way. The EU's innovation system underperforms some of EU's major competitors and this has implications for the continued competitiveness across the EU. This underperformance is also contributing to an under-investment in those services, products and processes which are required to meet societal challenges. The relatively poor innovation performance of the EU economy on aggregate is well known and was clearly set out in the first EIT Impact Assessment<sup>11</sup>. This analysis remains valid. The EU continues to experience a relatively weak level and concentration of investment in higher education and R&D and the exploitation of knowledge and R&D results into economic growth and employment remains comparatively low. Where relative performance is strong, these places form 'islands' of activity within a wider 'sea' of underperformance. The fragmentation of research and innovation capacity is a key weakness in securing a more globally competitive offering for the EU economy. There is also a strong risk that emergent economies will begin to challenge the EU as a location of research, innovation activity and investment. This has social and environmental implications and will ultimately impact on the well-being of citizens across the EU and may also have economic implications in so far as EU firms and institutions fail to invest in future market opportunities.

EU policymakers have recognised the importance of societal challenges (as reflected in EU 2020 and associated flagship initiatives). Ensuring that research being undertaken is translated into products and services which serve to address the societal challenges is an identified challenge which remains to be addressed. An increasing number of countries, including many in the EU and the US, now arrange their research programmes around the broad construct of 'societal challenges'<sup>12</sup> However, fewer focus their innovation programmes in the same manner. Finally, enterprises increasingly recognise collaboration and innovation across sectors as the pivotal way to address the grand challenges of the day. As the INSEAD Global innovation Index report 2011 stated: "These challenges require new thinking, new technology, and new ways of collaborating — an open innovation approach to solving problems that is based on partnerships among industries, companies, national and regional governments, and research organizations and academia."<sup>13</sup>

## 2.5. Underlying drivers of the problem

As regards the **global problem definition** this impact assessment builds on the priorities set in the Horizon 2020 with which the EIT is aligned.<sup>14</sup> Moreover, some of the problems are

11 [http://ec.europa.eu/governance/impact/ia\\_carried\\_out/docs/ia\\_2006/sec\\_2006\\_1313\\_en.pdf](http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2006/sec_2006_1313_en.pdf)

12 Pro Inno (2010) Innovation and societal challenges Thematic Report No 1 (2010) Ibid. Cf INnges Thematic Report No 1 (2010)

13 Cf INSEAD, The Global Innovation Index 2011, Accelerating Growth and Development, p. V, [http://www.globalinnovationindex.org/gii/GII%20COMPLETE\\_PRINTWEB.pdf](http://www.globalinnovationindex.org/gii/GII%20COMPLETE_PRINTWEB.pdf)

14 The H2020 IA lists "innovation gap" as overriding problem and "Insufficient contribution of research and innovation to tackling societal challenges", "Insufficient technological leadership and innovation capability of firms", "The need to strengthen the science base" and "Insufficient cross-border coordination" as drivers.

similar to the ones identified in the first Impact Assessment of the EIT as relevance of those issues has not changed.

| <b>Drivers in H2020 impact assessment</b>   | <b>Drivers in EIT impact assessment</b>   |
|---|---|
| <ul style="list-style-type: none"> <li>• Insufficient contribution of research and innovation to tackling societal challenges;</li> <li>• Insufficient technological leadership and innovation capability of firms;</li> <li>• The need to strengthen the science base;</li> <li>• Insufficient cross-border coordination;</li> </ul> | <ul style="list-style-type: none"> <li>• Poor record of developing, attracting and retaining talented individuals;</li> <li>• Fragmented innovation system;</li> <li>• Underutilisation of existing research strengths in terms of realising economic or social value;</li> <li>• Low levels of entrepreneurial activity</li> </ul> |

*Box: Complementarity between underlying drivers of Horizon 2020 and EIT SIA*

The 4 underlying drivers which are particularly relevant for the EIT are:

### ***The talent challenge***

The EU faces interrelated talent attraction, retention and development challenges as well as an increasing global competition for talent. In 2008 around 4% of European scientists worked in the US<sup>15</sup>, whilst almost three quarters of European-born 'researchers with a PhD from an US University decided to stay, while only three per cent of US born scientists intended to work outside their home country.'<sup>16</sup> This loss of talent is made even more acute when the calibre of worker choosing to leave the EU is made clear - it has been suggested that 'Europeans living in the US are exceptional – they are more educated, earn higher wages, are more likely to be employed, and more entrepreneurial than their American or European counterparts. Europe's growth prospects may be dramatically reduced by its best and brightest living in the US.'<sup>17</sup> Internationally, there is a high level of competition for postgraduate students and researchers that EU institutions must navigate. This has emerged as higher education is 'now situated in an open information environment in which national borders are routinely crossed and identities are continually made and self-made'<sup>18</sup>. Data show high levels of student mobility, with a significant dominance of English-speaking destinations for high level students<sup>19</sup>.

### ***Fragmented innovation system***

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15 Bosch, X. (2008). Brain drain robbing Europe of its brightest young scientists. Money and independence lure young researchers to the USA, scientists say. *The Lancet*, 361, pp. 2210–11. p2210

16 Hartmann, S. (2009). The Race for the Best: A European Perspective on the Brain Drain. In *European Social Watch Report 2009, Migrants in Europe as Development Actors – Between Hope and Vulnerability*. [http://www.cimade.org/uploads/File/solidarites-internationales/Documents/english%20documents/Book\\_ESW\\_2009.pdf#page=22](http://www.cimade.org/uploads/File/solidarites-internationales/Documents/english%20documents/Book_ESW_2009.pdf#page=22); Dente, K.M. (2007). Scientists on the move. *Cell*, 129 (1), pp. 15–7.

17 Saint-Paul, G. The European brain drain: European workers living in the US. <http://www.voxeu.org/index.php?q=node/2739>

18 Marginson, S. (2006). Dynamics of national and global competition in higher education. *Higher Education* (2006) 52: 1–39. P1

19 CHEPS, INCHER-KASSEL, and ECOTEC, (2008). The Bologna Process Independent Assessment – The First Decade of Working on the European Higher Education Area, Volume 1 Detailed Assessment Report

The Innovation Union highlights the need to 'get more value for money and tackle fragmentation. EU and national research & innovation systems need to be better linked up with each other and their performance improved.'<sup>20</sup> It is argued that creating better linkages between centres will help improve productivity, on the one hand through greater economies of scale that avoids duplication, and on the other hand through a better exploitation of the diversity of research being undertaken in the EU<sup>21</sup>. For example, it has been argued that 'industry has not developed sufficient absorption capacity to harness the potential of university-based research. Consequently, the cross-fertilisation with the business community and with wider society remains difficult.'<sup>22</sup> Competition *and* collaboration are indicative of a new globalised geography of innovation. Whereas at one time clusters were seen as geographically dependent<sup>23</sup>, new technologies present opportunities for knowledge sharing and wider collaboration that extends beyond boundaries. The challenge for EU policy makers, companies and other stakeholders is to balance participation in global flows and networks with an understanding that proximity and location still matter<sup>24</sup>.

### *Underutilised excellence*

There is excellent potential within the European research and innovation structure, provided by a series of centres of excellence that have emerged. Indeed, in 'practically all areas and disciplines, Europe has public or private centres where research and technological development (RTD) is performed at a very high, often world-class level.'<sup>25</sup> However, whilst these provide an excellent foundation that underpins the EU's research and innovation activity, there is scope for improvement. A key aspect of this is the need to take advantage of network effects more effectively, for example, using linkages 'as a way of tapping into an information channel to obtain risk-reducing signals about a venture opportunity.'<sup>26</sup> Importantly, 'internal R&D intensity and technological sophistication are positively correlated with both the number and intensity of strategic alliances'<sup>27</sup>. As a consequence, improving linkages and networks may heighten the probability of high quality work that 'cite[s] materials more frequently in patents, and cite referenced prior knowledge more quickly'<sup>28</sup>.

### *Low levels of entrepreneurship*

Europe and indeed Japan trail the US in enterprise activity, and have done for some time. Europe lacks the generally entrepreneurial culture of the US that sees larger numbers of start ups there, and far greater figures for company growth by market capitalisation share<sup>29</sup>. One underpinning factor is different attitudes to risk, seen as a defining factor of entrepreneurship. One major study that sought to understand entrepreneurship in the US and 15 EU Member

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20 European Commission, (2010), Innovation Union. P3

21 European Commission, (N.D.). Actions for "centres of excellence" with a European dimension. <http://ec.europa.eu/research/era/pdf/centres.pdf> p1

22 European Commission, (2006). Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation. Comm(2006) 2008 Final p5

23 Porter, M. E. (1998). Clusters and the New Economics of Competition in Harvard Business Review. Nov-Dec 1998

24 Srholec, M. (2007) A multilevel approach to geography of innovation. TIK Working Papers on Innovation Studies October 2007. [http://www.sv.uio.no/tik/InnoWP/0710\\_MultilevelInnovation\\_Srholec.pdf](http://www.sv.uio.no/tik/InnoWP/0710_MultilevelInnovation_Srholec.pdf)

25 European Commission, (N.D.). Actions for "centres of excellence" with a European dimension. <http://ec.europa.eu/research/era/pdf/centres.pdf> p1

26 Fiet, J. O. (1996). The information basis of entrepreneurial discovery. Small Business Economics, 8: pp419-430

27 Powell, W. W. and Grodal, S. (2004) Networks of innovators in Faberberg, J. Mowery, D. C. and Nelson, R. R. eds. (2004) The Oxford Handbook of Innovation. Oxford: Oxford Uni Press. P59

28 Fabrizio, K. (2006). Absorptive Capacity and Innovation: Evidence from Pharmaceutical and Biotechnology Firms. Goizueta Department: Organization and Management. Paper number GBS-OM-2006-002. <http://gsbpapers.library.emory.edu/archive/00000253/01/GBS-OM-2006-002.pdf>

29 The Economist, (2009). A special report on entrepreneurs. <http://www.economist.com/node/13216037>

States found that 'the US population reveals a more positive attitude than in the EU'<sup>30</sup>. An additional argument is that in the US, entrepreneurs are seen as important growth-oriented commodities that should be supported and enabled, whereas in the EU entrepreneurs place too much emphasis on returns and profits at early stages reflecting a predominantly finance-focused venture capital system<sup>31</sup>. Other barriers include cultural differences and the fact that the concept of entrepreneurial thinking is largely confined to business schools and economics courses.<sup>32</sup>

## 2.6. Implementation issues

The EIT's independent evaluation confirmed the EIT concept but referred to some issues related to the implementation of the EIT following its launch. In assessing how far the EIT achieved its overall objective of increasing the innovation capacity of Member States, the evaluation found that the impact of EIT in structuring innovation across Europe is limited due to factors such as lack of critical mass, administrative inefficiencies and limited economies of scale related to a limited scope of activities. It is important to underline that all of these issues are related to the implementation of the EIT.

The concept of critical mass is important in explaining progress with the EIT. While the concept of critical mass in the Horizon 2020 impact assessment looks at critical mass from a *project* and a *program* point of view respectively, this impact assessment approaches critical mass from an EIT-institute perspective and a KIC perspective respectively.

### Critical mass

**KIC perspective:** Critical mass is a term used in the EIT regulation in relation to the KIC (Art 6) and is closely related to fragmentation of Europe's innovation systems. It refers to the number and relevance of excellent partners from education, research and innovation needed in a KIC to achieve a substantial economic and societal impact. The EIT evaluation indicated that the number of KIC partners from excellent universities, research centres and global players from the private sector, as well as the weight they represent in their respective fields is quite substantial, showing that the objective of achieving a critical mass has been achieved within each KIC. Moreover, the balance between the different components of the triangle in the partnership is balanced. Collectively, they have the potential to be world-class.

**EIT perspective:** Achieving critical mass at the EIT level relates to realising the value of the EIT as an institution. With only 3 KICs there are limited opportunities for the KICs to realise cross-KIC benefits of related and adjacent innovation opportunities as well as reap economies of scale in core functions such as administration and dissemination. It also means that the EIT is not of a sufficient scale to truly act as a European institution in its own right. In this respect additional KICs are required in order that the EIT can gain the critical mass to be more than simply the 'sum of its parts'.

30 Grilo, I. and Thurik, R. (2005). Latent and actual entrepreneurship in Europe and the US: Some recent developments. <http://www.indiana.edu/~idsspea/papers/ISSN%2005-6.pdf> P13

31 The Telegraph. (15/2/2011). What's wrong with European venture capital? <http://www.telegraph.co.uk/technology/technology-startup100/8325627/Start-Up-100-Whats-wrong-with-European-venture-capital.html>

32 Hege, U. and Palomino, F. (2008) Venture Capital Performance: The Disparity Between Europe and the United States. [https://www.ecb.de/events/pdf/conferences/ecbcfs\\_cmfi2/Frederic\\_Palomino\\_paper.pdf](https://www.ecb.de/events/pdf/conferences/ecbcfs_cmfi2/Frederic_Palomino_paper.pdf) p28

**Administrative inefficiency:** The EIT evaluation suggested that a small number of KICs means that part of the organisation the EIT is unable to reap economies of scale in terms of its administration and monitoring functions. Additional KIC would enable the EIT to operate at a more efficient scale. As to the efficiency of the EIT headquarters, this appears to be an issue for all small EU agencies, especially in their starting phase. In its annual specific reports for 2007, the Court of auditors reports an average of 30% of EU Agencies' staff assigned to administrative tasks, with a proportion exceeding 50% for the smaller ones, suggesting a high administrative burden that the current regulatory framework and implementing procedures represent for small-scale agencies, such as the EIT. Moreover, the compliance burden diminishes with agency's age: newer agencies find it more difficult to cope with the financial regulations and the implementing rules. Thus, there seems to be a learning curve for new agencies – and their new administrative staff. Having these considerations in mind, the current size and organisation of the EIT's HG function is partly driven by the EU's rules on financial procedures.

**Limited scope of activities:** Overall, the budget available to the EIT has been sufficient to finance its early years of operation. It has not been sufficient however, for the EIT to reach a critical mass of KICs. Moreover, with only three KICs, the current EIT structure has been a valuable experimental scale. KICs. However, this might render EIT resources disproportionate in the long run in terms of cost/benefit analysis as its activities remain confined to cross-KIC workshops and entrepreneurship promotion but without reaching a wide range of activities related to dissemination, outreach, internationalisation and learning.

## 2.7. Baseline

EIT activities are assumed to continue next to other existing EU sources of funding for research and innovation such as FP7 and CIP. The EIT continues to support the KICs, promote entrepreneurship and foster excellence-driven higher education. The EIT is not explicitly focused on the resolution of societal challenges. The EIT acts on a standalone basis without full synergies and complementarities with other instruments.

More specifically, the EIT operates primarily through the three Knowledge and Innovation Communities in the areas of climate change adaptation (ClimateKIC) and mitigation, sustainable energy (InnoEnergy) and the future information and communication society (ICTLabs). The KIC include up to 195 partners consisting of 73 Businesses, 61 Higher Education Institutions, 51 Research Institutes, and 10 Public authorities. There are 16 centres of co-location and expertise in 12 Member States. Based on the information provided by one KIC, taken here as a proxy, its results until 2013 will include around 4000 students, PhD and mid-career professionals trained in the KIC-own programmes; 55 new products or services; 37 patents registered (of which ten transferred to SMEs), and 20 spin-offs/ start-ups. The EIT's and KICs' economic impacts in the baseline are presented in the table below which provides a summary of supply and demand effects of the EIT and KIC activities until 2013. The total numbers have been projected on the basis of the existing plans of KICs. Supply and demand side impacts of the baseline scenario are presented in details in Annex on the assessment of EIT options. Table 5.4. presents the budget breakdown for the baseline.

In the baseline scenario, selected partners from research, business and education have pooled resources into integrated partnerships with the aim at solving societal challenges via innovation. An initial momentum has been achieved through the EIT, spill over effects into the education sector are visible through entrepreneurial education and access to markets is enhanced on the basis of excellence and demand. The EIT has become a platform for the

coordination of three Knowledge and Innovation Communities and for sharing know-how. There is some level of alignment of the European efforts in few selected fields.

Under the current scenario, the EIT is less likely to evolve into a reference model for the EU as a whole. At present, the focus of the EIT has been almost exclusively on the role of KICs, with a secondary emphasis on stimulating entrepreneurship. Whilst this approach strengthens those parties who are involved within the KICs, the implications of this for areas which may not be part of a KIC should not be overlooked. Moreover, an identifiable EIT brand has not yet emerged although there is consensus on the values which feature the brand: reputation for excellence and integration of business, research and education. The limited development of the EIT brand and EIT's communication strategy hinders the EIT's ability to achieve its own stated objective of providing inspiration and good practice across the EU.

The tackling of societal challenges via innovation would continue to be done primarily at national level with some coordination and limited pooling of resources on EU level. Member States where innovation is part of national strategy are unlikely to regard this development as sufficient. Member States which are outside the KIC will see no potential for becoming part of these innovation networks. The alignment of the EIT with Horizon 2020 will therefore lead to limited synergies in the priority fields which the EIT already addresses with the KICs.

It is unlikely that many of the current activities of the EIT would continue if the EU support was withdrawn or substantially decreased. The KIC remain at a very stage of development and are yet to deliver significant results. They are not yet sufficiently established to continue without external support. With only 3 KICs there are limited opportunities for the KICs to realise cross-KIC benefits of related and adjacent innovation opportunities. The EIT is not of a sufficient scale to truly act as a European institution in its own right.

### **3. OBJECTIVES**

#### **3.1. Review of EIT's objectives**

The external evaluation of the EIT validated the concept of the EIT and its goals of contributing to improving the innovation capacity of the EU by involving partner organisations in integrated innovation, research and education activities at the highest standards. EIT's ambition of becoming a model for the integrated European Innovation Research and Education area by generating innovations in areas of key economic or societal interest remains appropriate. However, the evaluation pointed also to some implementation challenges associated with the start of a new agency.

Since the introduction of the EIT, the importance of EU support for tackling societal challenges has increased in significance. The rationale for public intervention is strong given the levels of market failure present and the missing incentives for firms to engage in innovation addressing societal challenges.

#### **3.2. General objectives**

In full alignment with Horizon 2020 and in particular its societal challenges pillar, the EIT is well placed to play a key role in the EU level innovation policies. The general objectives of the EIT are to:

- (1) Contribute to reinforcing the innovation capacity of Member States and the EU by promoting the formation of integrated and co-located partnerships which combine innovation, research and education activities and act as globally recognized flagships for new models of innovation;
- (2) Deliver actions which tackle key societal challenges through developing new products, processes and services of the highest international standards.

### **3.3. Specific objectives**

The following specific objectives support the delivery of the general objectives:

- (1) To integrate the knowledge triangle (of research, innovation and education) to create economic and social value and to enhance the returns from greater levels of collaboration and co-operation.
- (2) To enhance the attractiveness and commercial relevance of post-graduate education opportunities to attract, develop and retain appropriate skills across the EU.
- (3) To exploit the underutilised potential of the EU's research strengths to deliver greater returns in the product and labour markets.
- (4) To develop effective collaborative linkages between centres of excellence to create a critical mass for advanced innovation and education.
- (5) To promote the development of innovative products and processes where market failures lead to a sub-optimal provision.
- (6) 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.
- (7) 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.
- (8) 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.

### **3.4. Operational objectives**

In support of the objectives above, the operational objectives of the EIT are to:

- (1) Achieve critical mass of KICs through consolidation and expansion;
- (2) Enhance administrative efficiency and capacity through providing support functions for the KIC, and simplification measures
- (3) Improve and extend the EIT activities including dissemination and outreach activities, including internationalisation, with view of achieving economies of scale.



#### 4. POLICY OPTIONS

A number of options for the development of the EIT were considered prior to its launch in 2009 and were subject to an impact assessment.<sup>33</sup> There has been no significant change in the context to warrant the reinstatement of those options which were rejected and so the current IA does not consider those rejected options further.<sup>34</sup> Instead the Options presented build upon the experience gained in the first two years of the EIT's activities. The Options are guided by the objectives.

The EIT evaluation has provided an important insight into the EIT-supported geography of innovation. According to it, "The structure of the KICs reflects the traditional research and innovation landscape of the EU, both in terms of geographical location and the institutions involved. The costs of KIC formation are high... This can act as a barrier to new entrants." The studies supporting this impact assessment also identified a clear risk "that EU support for KICs will lead to disparities in economic growth". Therefore some mitigations measures are required which allow the EIT to address possible risks.

An Option "Additional KICs" which suggest only the increase of the number of KIC without additional EIT activities has been discarded as it would have increased the risk identified above. Also, as the Option "Extended Activities for EIT" which includes activities such as knowledge sharing and dissemination and knowledge sharing cannot be a stand alone option, it has been discarded in this analysis. A further Option combining the "Baseline" with "Extended Activities for EIT" has been discarded due to the fact that with the current 3 KIC extended activities of EIT such as dissemination, outreach, internationalisation, and cross-KIC services support are likely to be costly and ineffective due to suboptimal economies of scale and scope to be expected from an EIT with 3 KICs.

Since the EIT's objective is to tackle societal challenges through innovation, it is important to define societal challenges in such a way that complementarities and synergies on the EU level are possible from the integration of education, research and enterprise. The EIT must have the degree of flexibility that is necessary for adjustments and refinements as some societal challenges may not, in a couple of years, be considered as the most important ones. An analysis of impacts related to the chosen priority fields should be carried out prior to establishment of potential future KIC(s). In the identification of the options one should keep in mind that the EIT is neither a policy nor a legislative initiative but is, rather, an institute independent from the EC. For this reason the EIT will only be able to reinforce the innovation capacity of Member States and the EU in so far as its activities directly support such actions. Similarly, it can only tackle those societal challenges which its actions are targeted towards.

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<sup>33</sup> [http://eit.europa.eu/fileadmin/Content/Downloads/PDF/Official\\_documents/impact\\_en.pdf](http://eit.europa.eu/fileadmin/Content/Downloads/PDF/Official_documents/impact_en.pdf)

<sup>34</sup> Five options were debated: 1) the Centralized EIT being a centrally governed institution performing directly research, education and innovation activities and directly responsible for the KIC management ; 2) the Distributed EIT where the EIT is a funding body but KIC are autonomous and perform directly education, research and innovation activities; 3) the Integrated EIT which is a combination of Options 1) and 2) and where the EIT Governing Board sets the overall strategy, selects, evaluates and monitors the KIC but KIC are autonomous to organise their activities; 4) the Funding-Labeling EIT where the EIT acts as a funding body and awards the EIT label based on excellence; 5) the Status-quo (a 'no EIT' option). Two options were also excluded during this first assessment process, namely; a) The single green field institution and b) The network of organizations. Policy option 3 emerged as the preferred option. The Impact Assessment exercise states that "This option aims at finding a balance between option 1 and 2 keeping the benefits of both while avoiding their drawbacks" (p.32).

Three Options are analysed:

- Option 1: Closure: The winding up of the EIT
- Option 2: Status Quo: To continue with the existing 3 KICs
- Option 3: Progressive growth: To launch a number of new KICs and extend the role of the EIT

### ***Option 1. Closure***

One Option for the EIT would be to wind up its activities. This forms the ‘stop option’ and all activities of the EIT are assumed to cease. Any prolongation of the activities of the KICs would be dependent upon their ability to secure funds to replace those lost from the winding-up of the EIT. It is considered unlikely that the three KICs would be able to continue activities as the evaluation of the EIT found that they were not yet financially self-sufficient. Some residual activity might be maintained and assumptions to this effect are built into the assessment exercise. No other existing initiative at EU level can support the long-term integration of excellent research, education and innovation to address specific societal challenges. Moreover, the role to be played by the EIT in dissemination of good practices of innovation would remain unfulfilled.

### ***Option 2. Baseline***

Continuing with the existing 3 KICs would enable the EIT to consolidate its activities and focus upon a limited number of priority fields. Under this baseline scenario, the existing pattern of activity of EIT and the KICs is assumed to continue on a similar pattern and scale. The Option would not involve any expansion of funds to the EIT but would continue its existing budget. Any expansion of activity by the KICs would be as a result of their ability to secure additional funding.

Activities of the EIT would continue at the present (planned) level. This includes activities related to entrepreneurship and workshops bringing together KIC participants. Under this Option new KICs could only be established once an existing KIC had ceased to receive funding from the EIT. This would maintain a constant budget and retain the operation of three EU-supported KICs. The EIT's and KICs blueprint on European innovation will be limited due to lack of critical mass to make a noticeable impact (cf. although there is no consensus as to what constitutes critical mass, most respondents believed that somewhere between 6 and 10 KICs would be an appropriate scale for the future)<sup>35</sup>. Table 5.4. provides the budgetary projection of the EIT for 2014-2020.

### ***Option 3. Progressive Growth and extended activities***

Under this Option a number of new KICs would be launched by the EIT, and thus a greater number of priority fields would be covered. The budget for each newly-launched KIC would be the approximately same as that currently applied to existing KICs. Based upon the analysis of the supporting study to this impact assessment regarding economies of scale and the EIT proposals for the future it is considered that the total number of KICs could eventually rise up to 9 by 2020 with 3 KICs to be launched in 2015 and 3 more KICs to be launched in 2018

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<sup>35</sup> EIT External expert evaluation of the EIT, May 2011

(allowing for a consolidation phase after each launch as after the launch of KIC in 2010 and also for a second independent evaluation due in 2016). This estimation is based on the judgement of the management and absorption capacity of the EIT as evaluated by the external evaluation of the EIT and is reflected in the results of the studies supporting this impact assessment and also reflect the societal challenges identified in Horizon 2020. The budget breakdown projection for this option 2014-2020 is presented in Table 5.4.

Although there is no consensus on what constitutes a critical mass of KICs, the Commission has considered that 9 KICs will enable the EIT to achieve its expected impact on innovation, research and education. This is based on the assumption that each KIC is composed between 5 to 6 centres of excellence (co-location centres), and that the very same centres may participate in more than one KIC, hence leading up to approximately a critical mass of 50 centres of excellence across the EU. A further expansion beyond the 9 KICs may compromise the principle of world-class excellence, which is a cornerstone of the EIT model.

Current and planned activities of the EIT would continue and expand in order to consolidate the EIT as a learning organisation in its own right. This would include developing dissemination and outreach strategies as well as the ‘internationalisation’ agenda of the EIT regarding its relationships with 3rd countries. Furthermore, this option implies that the EIT starts additional activities in order to extend the benefits gained through the KICs to audiences beyond those directly involved in the KICs. The EIT would operate additional activities which would serve to link firms, research institutes, Higher Education Institutions and public authorities located in areas where innovation capacity is weaker. The EIT would seek to promote the development of innovation capacity in these areas. This would not involve a dilution of the ‘excellence’ criteria applied to the selection of KICs but would constitute a deepening of the role of the EIT. Some of the measures will also serve to mitigate the risks identified for the case of a simple increase of the number of supported KICs while the aim in all activities would be to boost the outreach and profile of the EIT in terms of furthering the integration of the knowledge triangle.

- Cross-KIC collaboration
- Structured co-operation with actors from outside of the EIT;
- Activities promoting new models of innovation to a wider EU innovation community;
- Fellowships for talented people from across the EU and beyond;
- Competitions, fairs and events in the field of entrepreneurship;
- Creation of an EIT Alumni Network;
- Web based tools for knowledge sharing and networking around the EIT;
- Developing an international communication and engagement strategy.

*Box: Examples for extended KIC activities*

## 5. ANALYSIS OF IMPACTS

The analysis of the impacts of the various options identified contains six sections. Firstly, some basic constraints of the assessment are identified upfront. Second, general assumptions for the analysis and the investment principles of the EIT are outlined. This is followed by the preliminary priority fields of future KIC and their likely effect. Fourthly, the budgetary assumptions of options are presented. Fifthly, the most relevant economic, social and environmental impacts are briefly outlined and a particular emphasis is put on the economic impacts which are identified as being strongest. Finally, the analysis contains a section with a qualitative assessment of the more significant impacts identified in the areas in which the proposed actions are likely to have effects.

### 5.1. Assessment challenges

There are certain challenges to the assessment and they relate primarily to the evidential base of the priority fields. These are listed below in table 5.1 which outlines a range of challenges to the impact assessment arising from a potential lack of evidence to support the analysis, together with an assessment of the risk of occurrence and potential mitigation measures.

| Challenge   | Risk   | Mitigation measure  |
|---|--|---|
| Difficulties in defining the specificities of potential future priority fields    | <b>High:</b> Supporting activities in fields which are not sufficiently assessed upfront and can lead to deadweight effects or suboptimal investment decisions.      | Targeted assessment of the economic, social and environmental impact per priority field before launching any new call for new KICs. Involve relevant policies systematically in the KICs in order to foster necessary changes related to KIC-specific framework conditions (changes needed in legislation, need for public-private partnerships, etc.). |
| Limited evidence on differential impacts of innovation activity throughout the EU | <b>High:</b> The ability of different areas to benefit from technological innovation developed through KICs may substantially influence the overall impacts of EIT.  | Differential impacts across the EU will be explored on a qualitative basis, considering Member States' ability to benefit from technological innovations developed through EIT.   |
| Lack of evidence to support assumptions around the scale of future KICs           | <b>Medium:</b> The impact of KICs will largely be driven by levels of innovation activity support, which will largely be driven by levels of associated expenditure. | An assumption will be made that future KICs will mirror current KICs in terms of scale, with scenarios developed to explore the implications of KICs or larger and smaller scales.  |

|   |   |  |
|---|---|--|
| Lack of EU specific evidence on the rate of return to innovation  | <b>Medium:</b> There may be EU specific factors that influence the rates of return to innovation activity, which will influence the potential productivity effects. | US based results will be retained, and additional qualitative analysis will be provided on transferability of US based results in an EU context.             |
| Lack of evidence to support analysis around the impacts of KICs on student retention  | <b>Low:</b> The impacts associated with retention of skills in the EU are likely to be small in magnitude relative to other impacts associated with KICs.           | A qualitative assessment of the potential for KICs to help retain skills acquired in the EU  |
| Difficulties in establishing the likely economies of scale associated with EIT infrastructure and an increase in the number of KICs | <b>Low:</b> The direct impacts of EIT are likely to be subject to substantial crowding out effects and are unlikely to be a significant factor in the assessment.   | Alternative staffing scenarios will be provided to explore possible economies of scale, supported by a qualitative assessment of the uncertainties involved. |

Table 5.1 Assessment challenges

## 5.2. Selection of future priority fields

The effects from interventions in potential priority fields for new KICs cannot be assessed a priori as they do not correspond to a well-defined industrial or technological sector but combine a wide variety of economic activities and technological capabilities including converging technologies. However, their impacts and economic effects are likely to be similar to the ones analysed in this impact assessment based on the example of the first three KICs. This means that on an aggregated level the effects and impacts of the future KICs are likely to closely resemble those from the three which started activities in 2010. A further analysis of the impacts of potential priority fields for future KICs is not possible for this impact analysis since these themes have not yet been decided.

Initial input on potential themes has been received from the EIT Governing Board and from the Open Public Consultation. On this basis, and taking also into account current discussion on Horizon 2020, Commission services are currently identifying a limited number of themes for future KICs, on the basis of their expected economic and societal impact, education potential and innovation added-value. More specifically, the priority fields for future KICs which will have to meet the following criteria:

- Address major economic and societal challenges Europe faces, and contribute to the delivery of the EU 2020 Agenda;
- Align and co-ordinate with priorities defined in Horizon 2020 and other EU policies, in particular of education;
- Be able to mobilise investment and long-term commitment from the business sector; have an existing market for its products or be able to create new ones;

- Create sustainable and systemic impact, measured in terms of new educated entrepreneurial people, new technologies and new business ;
- Blend a critical mass of excellent research, education and innovation stakeholders, which would otherwise not unite;
- Require trans-disciplinary approaches and the development of new types of education across the boundaries of disciplines;
- Address major innovation gaps such as the European paradox, i.e. themes where Europe has a strong research base but a weak innovation performance.

### **5.3. Budgetary and funding assumptions**

The EIT funds on average up to 25% of the global KIC budget. The Annex "KIC budget 2011" provides an illustration. The EIT funding is foreseen only for "KIC added value activities", namely those activities that allow the integration of knowledge triangle (education, research and innovation) policies and partners within and across the KIC, in accordance with the KIC objectives and priorities laid down in the business plans. It includes in particular education, entrepreneurship and business creation projects of the KICs, which top up investment in other well-established activities (eg. existing research projects). The administration, management and coordination activities of the KIC should also be covered by the EIT contribution. Due flexibility should be granted to the management of this contribution. The remaining 75% of the KIC budget is a pre-requisite, showing the financial commitment of KIC partners and its leverage effect (cf. not to be confused with co-financing at grant action level). This includes KIC partners own revenues and resources, but also public funding, including from EU initiatives, in particular Framework Programme and Structural Funds. In such case, the KIC (or part of their Partners) apply for funding in accordance with the respective rules of the programmes and on an equal footing with other applications, be bound by H2020 Rules for Participation.

In order to assess the impacts of the various options assumptions are made as to the possible income and expenditure of the EIT and the KICs. Overall levels of impacts will vary depending upon the budgets available and the type of expenditure. The budget estimates are based on the KIC lifecycle<sup>36</sup> and on the principle that a KIC will be financed on average for up to 25% of its global expenditure for the whole life-cycle (15 years). The EIT funding model builds on following aspects:

#### ***Option 1***

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<sup>36</sup> The KIC life cycle phases cover the following phases: a) a "setting-up" phase of 2 years: it is a time for a KIC to get organised, set up necessary financial and legal structures as well as recruit crucial staff. The implementation of the real KIC activities will start notably on the second year of implementation. b) "development" phase of 3 years: it is assumed that the KIC has been already established and begun implementing its core activities, however still dynamically expanding in terms of the scope of activities and the number of partners. This would lead to a substantial increase of the KIC budgets. c) "achieving sustainability" phase of 6 years: the KIC becomes a still growing but stable structure with clearly defined scope of activities. It becomes self sustainable in terms of budget value but changes are not radical and easily foreseeable. d) "sustainable" phase of 4 years: the KIC has already a stable structure with clearly defined scope of activities.

No EU expenditure on EIT HQ or KICs. The own income and expenditure of KICs from 2014-2020 is assumed to be around one third of total KIC activity in 2013. Expenditure is thus strongest in early years and trending to zero by 2020. No income or expenditure by EIT HQ.

### ***Option 2***

EU income and expenditure by 3 KICs 2014-2020 to total €1,800m. This figure is based on assumptions of the budget required to consolidate existing KICs and a budget for the EIT for outreach and dissemination, cross-cutting support to the KICs and EIT administrative expenditures. During the 2014-2020 period, the EIT contribution to the three KICs will cover the last years of their "development phase", and "achieving sustainability phase". KICs own resource expenditure to total some €4,000m. EIT HQ to have income and expenditure in same period of some €5m.

### ***Option 3***

EU income and expenditure by 9 KICs 2014-2020 to total €2,800m. This figure is based on assumptions of the budget required to consolidate existing KICs, a gradual development towards new KICs (three new KICs by 2015 and 2018 each) and a budget for the EIT for outreach and dissemination, cross-cutting support to the KICs and EIT administrative expenditures. The budget reflects the different stages of development of the 9 KICs. Expenditure will be strongest in later years as KICs profiled to come on stream in a staggered manner. KICs own resource expenditure to total some €6,100m. EIT HQ to have income and expenditure in same period of some €100m.

For the actual 3 KICs ONLY (=Option 2) - EIT financial contribution needed for MFF 2014/2020 (million €)

| Year                       | 2014  | 2015  | 2016  | 2017 | 2018   | 2019  | 2020  | TOTAL      |
|----------------------------|-------|-------|-------|------|--------|-------|-------|------------|
| Year of KIC Life           | 5     | 6     | 7     | 8    | 9      | 10    | 11    |            |
| EIT Fund needed by KIC     | 58,9  | 72,6  | 82,5  | 99   | 103,95 | 112,2 | 70,4  | 599,55 €   |
| EIT Fund needed for 3 KICs | 176,7 | 217,8 | 247,5 | 297  | 311,85 | 336,6 | 211,2 | 1.798,65 € |
| KIC stake                  | 393,3 | 442,2 | 502,5 | 603  | 633,15 | 683,4 | 748,8 | 4.006,35 € |

For 3 new KICs starting in 2015 - EIT financial contribution needed for MFF 2014/2020 (million €)

| Year                       | 2014 | 2015 | 2016  | 2017  | 2018  | 2019  | 2020  | TOTAL      |
|----------------------------|------|------|-------|-------|-------|-------|-------|------------|
| Year of KIC Life           |      | 1    | 2     | 3     | 4     | 5     | 6     |            |
| EIT Fund needed by KIC     |      | 8,00 | 20,00 | 34,50 | 45,90 | 58,90 | 72,60 | 239,90     |
| EIT Fund needed for 3 KICs |      | 24   | 60    | 103,5 | 137,7 | 176,7 | 217,8 | 719,70     |
| KIC stake                  |      | 24   | 240   | 346,5 | 372,3 | 393,3 | 442,2 | 1.818,30 € |

For 3 new KICs starting in 2018 - EIT financial contribution needed for MFF 2014/2020 (million €)

| Year                       | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020  | TOTAL    |
|----------------------------|------|------|------|------|------|------|-------|----------|
| Year of KIC Life           |      |      |      |      | 1    | 2    | 3     |          |
| EIT Fund needed by KIC     |      |      |      |      | 8    | 20   | 34,5  | 62,50    |
| EIT Fund needed for 3 KICs |      |      |      |      | 24   | 60   | 103,5 | 187,50   |
| KIC stake                  |      |      |      |      | 0    | 24   | 246   | 270,00 € |

EIT financial contribution needed for the MFF 2014/2020 (million €) (=Option 3)

| Year                | 2014     | 2015     | 2016     | 2017     | 2018     | 2019     | 2020     | TOTAL      |
|---------------------|----------|----------|----------|----------|----------|----------|----------|------------|
| Actual KICs         | 176,70 € | 217,80 € | 247,50 € | 297,00 € | 311,85 € | 336,60 € | 211,20 € | 1.798,65 € |
| 3 new KICs on 2015  | 0,00 €   | 24,00 €  | 60,00 €  | 103,50 € | 137,70 € | 176,70 € | 217,80 € | 719,70 €   |
| 3 new KICs on 2018  | 0,00 €   | 0,00 €   | 0,00 €   | 0,00 €   | 24,00 €  | 60,00 €  | 103,50 € | 187,50 €   |
| EIT other than KICs | 4,00 €   | 5,00 €   | 5,00 €   | 5,00 €   | 6,00 €   | 6,00 €   | 6,00 €   | 37,00 €    |
| EIT Adm. Budget     | 7,00 €   | 7,50 €   | 9,00 €   | 9,00 €   | 9,50 €   | 9,50 €   | 9,50 €   | 61,00 €    |
| TOTAL EIT BUDGET    | 187,70 € | 254,30 € | 321,50 € | 414,50 € | 489,05 € | 588,80 € | 548,00 € | 2.803,85 € |

Table 5.4: Budget breakdown projection for the KICs

#### 5.4. Most relevant economic, social and environmental impacts

- **Economic effects:** the strongest effects are found around research and innovation activity and the influence on investment flows. The long run effects on GVA occur through a combination of: (a) an enhanced productivity effect and (b) a terms of



trade effect – via the impact on competitiveness. The distributed model adopted for the EIT encourages cross-border flows and contributes to the development of a single European area for education, research and innovation. The benefits of this may be territorially imbalanced.

- **Social effects:** welfare benefits accrue owing to the development of innovations addressing societal challenges. Labour market effects will depend upon the nature of the labour market in which they accrue, but are generally positive. The Options may also support the modernisation of Higher Education stimulating additional social benefits.
- **Environmental effects:** they are - at worst - neutral, at best, particular fields of activity may promote the development of innovations which provide positive environmental benefits. All of the three existing KICs will provide results which can be turned into innovation for environmental improvements. While this is obvious for Climate KIC and InnoEnergy, it is also true for EIT ICTLabs which addresses, inter alia, the subject of smart environmentally friendly cities.

### *Quantifying the economic impacts*

The likely economic impacts of the EIT and the associated KICs will be influenced by the following factors:

- Short term 'demand side' effects associated with the activities being undertaken and the expenditure of additional students. They will clearly represent real potential effects on the economies of the knowledge centres involved. How far they represent additional impacts at EU level is more problematic once account is taken of the likely 'crowding out' of other economic activity as a result of the additional taxation or reduced spend in other areas required to finance the initiatives.
- Much more significant in the longer term will be 'supply side' effects from the enhancements to the EU's skill and knowledge base and its stocks of innovation-driven businesses – and the results of this in terms of improved competitiveness and impacts on productivity, international trade performance, GVA and employment. Developing realistic quantitative estimates of these impacts represents a major challenge given the weaknesses and in the evidence identified in the external evaluation.
- The 'priority fields' addressed by the EIT through the KICs are likely to have an effect on the magnitude of the impacts. However, the priority fields have not yet been decided and have therefore not been subject to a detailed quantitative economic analysis within this impact assessment.

### **5.5. Analysis of the more significant impacts by option**

The following section contains a qualitative assessment of the more significant impacts identified in the areas where proposed options are likely to have effects.

#### *Innovation and research*

The proposals are conducive to increasing levels of research and innovation across all three Options. Each Option will promote stronger levels of research and innovation, and improve the efficiency of the innovation effort. All options will do so directly through providing investment in innovation activity to generate value from associated research and providing supply-side improvements to the innovation process. Option 3 will provide positive benefits also indirectly through supporting the generation and dissemination of better practices in innovation promotion and innovation governance.

### ***Education systems***

A strong element of the activity of the EIT is to encourage changes to Higher Education provision in the EU, in particular through an 'EIT quality label' for post-graduate courses. In the absence of the EIT this quality label would not be available and so there will be no benefits under Option 1. Options 2 and 3 will both improve the quality of education provision, particularly with regards to business involvement, and the provision of entrepreneurial education. This will serve to positively affect cross-border educational provision and improve access to relevant courses. Option 3 will also provide some positive impacts through raising awareness of good practice in those parts of the EU which are not directly participating in the EIT and so encouraging the modernisation of higher education provision more widely.

### ***Internal market and competition***

There is a potential positive impact for the EIT, through the KICs, on the movement of workers, the flow of capital and on better consumer choice through the introduction of new and improved goods and services. The impacts will be stronger under Option 3 than under Option 2 owing to the greater scale of activity under this Option and Option 1 will have some positive residual impact but this is unlikely to significantly affect market conditions.

### ***Competitiveness, trade and investment***

The effect of the EIT, through the KICs, on productivity is likely to be positive under all Options. The scale of the impact will be greatest under Option 3 and least significant under Option 1 where it is considered that the positive effects will have no significance at the European scale. Options 2 and 3 are also likely to deliver gains in the global competitiveness of those firms and institutions involved, providing positive spill overs throughout the economy. The activity of the EIT will also provoke cross-border investment flows through the relocation of economic activity. It is considered that this will have a positive impact on overall levels of competitiveness which will be greater under Option 3 than under Option 2 due to the scale of the former.

### ***Consumers and households***

Options 2 and 3 are likely to have positive, albeit modest, impact on consumers and households through improving the availability of goods and services, and so improving consumer choices in areas of societal challenges. It is considered unlikely that Option 1 will generate sufficient innovations to have a noticeable effect in this area. Furthermore, options 2 and 3 can foster behavioural changes in society. One can distinguish between non-KIC related behavioural changes (such as changes in attitudes towards entrepreneurship, risk-taking

attitudes and improved systemic thinking) and KIC-specific behavioural changes (eg. attitudes towards climate change, energy consumption)<sup>37</sup>.

### ***Specific sectors and regions***

Owing to the multi- and cross-disciplinary approach adopted in the KICs many sectors will potentially engage with the EIT. Some sectors may gain more positive benefits than others, such as the ICT and energy sectors in the current structure. The territorial impacts of the EIT will be more likely to be more significant. Regions and Member States which are the site for co-location centres will have opportunities to gain positive benefits through economies of agglomeration and the reaping of positive externalities. These opportunities will be fostered if a close cooperation is established between the KIC partners in the regions and the authorities and organisations involved in designing and delivering the Regional Innovation Strategies. Such cooperation can be facilitated by the setting-up of Regional Innovation and Implementation Communities (RICs), as it is the case for the Climate KIC. In contrast, regions which are excluded from these activities may experience risks of cumulative negative effects. This could reinforce existing inequalities in the cases of Options 2 and 3 – bringing positive benefits to regions which exhibit existing strengths in innovation capacity but adversely affecting those with existing weaknesses. These risks could be avoided if the regions which are not site for co-location centres adopt Smart Specialisation (RIS3) including partnership with regions hosting co-location centres. Moreover, Option 3, in seeking to extend the coverage of the EIT to generate new models of innovation governance across the EU has the potential to generate positive benefits in all EU regions and to work to mitigate existing and potential inequalities in innovation performance.

### ***Third countries/international relations***

Options 2 and 3 are considered to have the potential to affect investment flows between the EU and third countries through creating a more conducive environment for that investment. Both Options may also act to attract flows of students and researchers from 3rd countries. It is not considered that this will negatively impact on the development of developing countries. It is considered that Option 3 offers the potential to generate positive impacts in this area. This will be particularly so if the EIT develops a positive strategy for internationalisation.

### ***Macro-economic environment***

All options demonstrate that they will have a positive impact on economic growth. This will occur both through demand-side effects and positive improvements to the supply-side. The scale of the impact will be greatest under Option 3 and least significant under Option 1. Option 3 has some potential for positive effects to occur should new more efficient models of innovation governance and knowledge triangle integration be disseminated and then adopted by actors elsewhere in the EU.

### **Employment and labour markets**

All options facilitate new job creation and support entrepreneurship. There will be particular benefits to new entrants to the labour force through improvements made in educational provision at a post-graduate level, leading to a more skilled workforce. There will be no

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<sup>37</sup> Haegeman K. and Cagnin C., Priority areas for the next waves of knowledge and innovation communities, JRC Technical Note (JRC65426), 2011, p.4 and pp. 12-19. Weblink: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=4479>.

significant net job losses as a consequence of these Options and none will have significant negative consequences for particular professions or groups of workers. The labour force groups most likely to benefit are those engaged in research-related occupations and those engaged in managerial and skilled occupations. The scale of the impact will be greatest under Option 3 and least significant under Option 1.

Options 2 and 3 will also support the functioning of labour markets in the EU through encouraging the temporary mobility of labour to engage in knowledge exchange activities. This will serve to overcome some of the identified labour market barriers to knowledge exchange.

**Environmental impacts**

It is judged that Options 2 and 3 will have positive impacts on climate; transport and energy use; air quality; renewable and non-renewable resources, and environmental consequences of firms and consumers. This will be achieved through innovations developed and produced by the KICs operating in fields which are related to these topics. Option 3 could also stimulate additional benefits in this area through cross-KIC and extra-KIC activities, but the potential scale of these is difficult to assess and so no significant impact is accorded to this. Although Options 2 and 3 will involve mobility of personnel, which will have negative environmental effects, these journeys are considered to be offset by journeys which would have been undertaken anyway resulting in no net negative impact. In this regard KIC activity involves a refocusing of activities rather than new activities per se.

**6. COMPARING THE OPTIONS**

Based on the impacts analysed above, interim conclusions can be drawn on the strengths and weaknesses of the individual options and their ability to achieve the objectives properly. This forms up the first step of the comparison of options. In a next analytical step, the options are compared on the basis of their effectiveness, efficiency and coherence. Finally, some possible risks associated with the options are highlighted.

**6.1. Effectiveness of options - Strengths and weaknesses by Option**

Table 6.1 considers the relative strengths and weaknesses of the three options against each of the objectives established for the EIT. In a separate Annex there is a assessment of the likely economic impacts of the different Options.

| Objectives  | Option 1   | Option 2  | Option 3   |
|---|--|---|--|
| To promote the development of innovative products and processes where market failures lead to a sub-optimal provision | <p><i>Strength:</i> Does not run risk of government failure</p> <p><i>Weakness:</i> Does not overturn existing market failures</p> | <p><i>Strength:</i> Supports the development of innovative products and processes, particularly related to societal challenges</p> <p><i>Weakness:</i> Limits benefits to priority fields already active. Runs risk of government failure</p> | <p><i>Strength:</i> Supports the development of innovative products and processes - across a variety of fields providing critical mass and opportunities for adjacent innovation - particularly those related to societal challenges. Opportunity to promote cross-KIC and extra-KIC engagement</p> <p><i>Weakness:</i> Runs risk of</p> |

|  |  |   |  |
|--|--|---|--|
|  |  |   | government failure   |
| To exploit the underutilised potential of the EU's research strengths to deliver greater returns in the product and labour markets   | <p><i>Strength:</i> No risk of rent seeking behaviour</p> <p><i>Weakness:</i> Fails to address existing underutilised potential</p>                                      | <p><i>Strength:</i> Promotes the more effective utilisation of research undertaken in the EU, particularly through cross-border activities</p> <p><i>Weakness:</i> Risk of rent seeking behaviour and of deadweight and displacement/substitution of private sector investment</p>  | <p><i>Strength:</i> Promotes the more effective utilisation of research undertaken in the EU, particularly through cross-border activities. Opportunity to promote cross-KIC and extra-KIC engagement</p> <p><i>Weakness:</i> Risk of rent seeking behaviour and of deadweight and displacement/substitution of private sector investment</p>                          |
| 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 | <p><i>Strength:</i> Does not strengthen some centres at expense of others</p> <p><i>Weakness:</i> Current structures continue to underperform at a global scale</p>      | <p><i>Strength:</i> Strengthens existing centres of excellence through promoting investment and network linkages. Targeted investments enable the emergence of globally competitive centres</p> <p><i>Weakness:</i> May privilege existing centres of expertise with resources and capacity to successfully bid for funds over those with potential but lacking resources or reputation</p> | <p><i>Strength:</i> Strengthens existing centres of excellence through promoting investment and network linkages. Targeted investments enable the emergence of globally competitive centres. Knowledge and know-how from existing centres of excellence will be valorised across the EU</p> <p><i>Weakness:</i> May strengthen some existing centres of expertise.</p> |
| To develop effective collaborative linkages between centres of excellence to create a critical mass for advanced innovation and education  | <p><i>Strength:</i> Does not privilege some collaborative linkages over others</p> <p><i>Weakness:</i> Fails to provide incentives to develop collaborative linkages</p> | <p><i>Strength:</i> Promotes collaborative cross-border linkages</p> <p><i>Weakness:</i> May privilege existing networks and serve to exclude new participants</p>  | <p><i>Strength:</i> Promotes collaborative cross-border linkages. Able to engage with actors both within and outside of the KIC networks.</p> <p><i>Weakness:</i> May privilege existing networks and serve to exclude new participants</p>  |

|   |  |   |  |
|---|--|---|--|
| <p>To enhance the attractiveness and commercial relevance of post-graduate education opportunities to attract, develop and retain appropriate skills across the EU.</p>                   | <p><i>Strength:</i> No risk of distorting market provision through introduction of EIT quality label</p> <p><i>Weakness:</i> EU education system continues to underperform at global scale</p> | <p><i>Strength:</i> Integrates business, research and education actors in a bottom-up development, with an assured quality label</p> <p><i>Weakness:</i> External factors may limit the attractiveness of the EU as a place of study. No mechanism to extend benefits beyond participating institutions</p> | <p><i>Strength:</i> Integrates business, research and education actors in a bottom-up development, with an assured quality label. Able to promote and develop EU good practice and attract talent to EU.</p> <p><i>Weakness:</i> External factors may limit the attractiveness of the EU as a place of study.</p>  |
| <p>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</p> | <p><i>Strength:</i> Does not run risk of government failure</p> <p><i>Weakness:</i> Fails to address entrepreneurial challenges facing EU</p>  | <p><i>Strength:</i> Builds the capacity for entrepreneurship through courses, conferences and practical actions</p> <p><i>Weakness:</i> Small scale of investments limits returns to EU economy.</p>  | <p><i>Strength:</i> Builds the capacity for entrepreneurship through courses, conferences and practical actions. Scale of actions provides a ‘visibility’ return. Reputation of EIT attracts private sector venture capital. Able to engage with actors both within and outside of the KIC networks. Scale and profile of EIT activity enhanced</p> <p><i>Weakness:</i> Principal impacts concentrated in those territories which have a strong link to the EIT. Risk of crowding venture capital out from other investments</p> |
| <p>To integrate the knowledge triangle (of research, innovation and education) to create economic and social value and to enhance the returns from greater levels</p>                     | <p><i>Strength:</i> No risk of rent seeking behaviour</p> <p><i>Weakness:</i> Fails to provide incentives to draw the</p>  | <p><i>Strength:</i> Provides incentives to develop integrated networks of research, innovation and education actors</p> <p><i>Weakness:</i> Risk of rent seeking behaviour and of creating exclusive</p>  | <p><i>Strength:</i> Provides incentives to develop integrated networks of research, innovation and education actors. Development and sharing of effective means of integrating the knowledge triangle.</p>   |

|  |   |  |  |
|--|---|--|--|
| of collaboration and co-operation.   | knowledge triangle together   | networks   | <p>Opportunity to build evidence of returns realised from greater levels of collaboration and co-operation</p> <p><i>Weakness:</i> Risk of rent seeking behaviour and of creating exclusive networks</p>                                       |
| To address disparities in innovation capacity across the EU by developing and sharing the knowledge of the returns to new models of innovation practices and governance. | <p><i>Strength:</i> Does not provide additional public support to places which already have strong innovation capacity</p> <p><i>Weakness:</i> Fails to address the challenges of those areas with weak innovation capacity</p> | <p><i>Strength:</i> Opportunities to develop novel and effective practices for innovation and innovation governance</p> <p><i>Weakness:</i> No mechanism to share the practices developed with actors outside of the EIT</p> | <p><i>Strength:</i> Opportunities to develop novel and effective practices for innovation and innovation governance.</p> <p><i>Weakness:</i> Requires to set-up mechanisms to share the practices developed with actors outside of the EIT</p> |

Table 6.1 Strengths and weaknesses by option against the set objectives

## 6.2. Effectiveness, efficiency and coherence

In Table 6.2 the impact of the different options on effectiveness, efficiency and coherence is presented. For efficiency two criteria are taken into account: the cost to different parties of implementing the EIT and KICs (implementation costs) and the funds provided for the EIT by the EU (EU Budget). In addition, the Administrative Costs of implementing the EIT under different options is considered which can be viewed as contributing to the efficiency of each Option. Under coherence, both internal and external coherence are assessed. Internal coherence is the coherence between the option and the objectives to be reached, while under external coherence the contribution to the relevant overall EC policy and strategies are assessed. It should be noted that the impacts cover the period 2014-20. The timescale of effects noted previously suggests that Option 3 and Option 2 will both deliver significant additional impacts post 2020. This will improve the overall cost-effectiveness of these Options as the benefits will increase whilst the costs are unchanged. A scorecard methodology is used and, based on the intensity of impacts, Options have been assessed relative to the baseline using a scale ranging from (+) to (++) for positive impacts and from (-) to (--) for negative ones. The table below summarises.

|  | Option 1 | Option 2 | Option 3 |
|--|----------|----------|----------|
| <b>Effectiveness</b>   |          |          |          |
| To promote the development of innovative products and processes where market failures lead to a sub-optimal  | -        | 0        | ++       |
| To exploit the underutilised potential of the EU's research strengths to deliver greater returns in the product and labour   | -        | 0        | ++       |
| To strengthen existing and potential centres of research, innovation and educational excellence in the EU to produce   | --       | 0        | +        |
| To develop effective collaborative linkages between centres of excellence to create a critical mass for advanced innovation  | -        | 0        | +        |
| To enhance the attractiveness and commercial relevance of post-graduate education opportunities to attract, develop and retain appropriate skills across the EU                    | --       | 0        | ++       |
| 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 | --       | 0        | +        |
| To integrate the knowledge triangle to create economic and social value and to enhance the returns from greater levels of  | -        | 0        | +        |
| To address disparities in innovation capacity across the EU by developing and sharing the knowledge of the returns to new models of innovation practices and governance            | 0        | 0        | +        |
| <b>Efficiency</b>  |          |          |          |
| Implementation costs   | ++       | 0        | +        |
| EU budget  | ++       | 0        | --       |
| <b>Administrative costs</b>  | ++       | 0        | 0        |
| <b>Coherence</b> (with strategic objectives, etc.):  | -        | 0        | +        |

Table 6.2: Comparison of options

Legend: (+) to (++) for positive impacts and from (-) to (--) for negative

### Option 1

In this option, where EU funding to the EIT ceases from 2014, the impacts are reduced in comparison to the baseline reflected by Option 2. There will be some positive benefits emerging from the actions begun prior to 2014 and through the continuation of some activities by the one or more of the KICs post 2014 using alternative resources. This makes the impacts achieved under this Option very cost-effective. Internal and external coherence is likely to be low as there are no co-ordination mechanisms available. However, a positive dimension here could be the reduced risks of induced government failures and market distorting behaviours.



The administrative costs of the option will be decrease significantly as the activities of the EIT are assumed to cease. The costs of administrative expenditure, covering necessary staff, administrative, infrastructure and operational expenses until the wind up of the EIT activities will not exceed 1 % of the EIT Budget. The ongoing staff contracts should be finished and indemnities should be paid to the actual EIT employees. Only some employees for some residual activity might be maintained.

### *Option 2*

The impacts of this option are taken as the baseline. The impacts of this Option are those which the current KICs are projected to achieve. The positive and negative effects of this Option are relatively well-known and are supported by the external evaluation. In terms of cost-effectiveness the greatest weakness of this Option is its relatively small scale as it fails to achieve a critical mass. The internal and external coherence of this Option is positive but the value is reduced owing to the limited scope of the Option in that only three priority fields are developed. One area where coherence is weaker is in terms of EU objectives promoting economic convergence. This is not the primary objective of the EIT. The distribution of benefits is principally to organisations that are part of the KICs, and to the territories in which they are located.

The cost-effectiveness of the Option is stronger than Option 1 because the EIT will maintain the scale of operation. Implementation costs will also be proportionately reduced as they will be spread across the actual number of KICs. The administrative costs of the option will not increase significantly. The costs of administrative expenditure, covering necessary staff, administrative, infrastructure and operational expenses, will not exceed 2 % of the EIT Budget. According to the Host Agreement signed with the Hungarian Authorities, the Hungarian Government will contribute to the general budget of the EIT with an annual financial contribution of 1,560 million for the period 2011-2015 to cover staff costs for this period. The office space made available for free to the EIT by Hungary, as a host country, for a period of 20 years will notably reduce the EIT administrative expenditure.

### *Option 3*

In comparison to the baseline Option, the returns of Option 3 are increased according to the number of additional KICs supported. The returns from these actions are assumed to be constant. This is a conservative assumption for the number of KICs being proposed as it assumes that there are no gains to be made through cross-KIC collaborations. In practice such gains are likely to increase as the number of KICs increase. There will come a point where efficiencies of scale become negative, but it is not believed that the number of KICs proposed under this Option will reach this point.

The cost-effectiveness of the Option is stronger than the baseline Option because the EIT has reached a more efficient scale of operation. Implementation costs will also be proportionately reduced as they will be spread across a greater number of KICs. The administrative costs of the option will not increase significantly and governance arrangements will not need to be amended from those of the reference case Option. The internal and external coherence of this Option is positive. The level of coherence will depend upon the mix of additional priority fields selected for new KICs. The one area where coherence is weaker is in terms of EU objectives promoting economic convergence. This is not the primary objective of the EIT.

The distribution of benefits is principally to organisations that are part of the KICs, and to the territories in which they are located.

The cost-effectiveness of the Option is stronger than Option 2 because the EIT has reached a more efficient scale of operation. Implementation costs will also be proportionately reduced as they will be spread across a greater number of KICs. The costs of administrative expenditure, covering necessary staff, administrative, infrastructure and operational expenses, will not exceed 2.16% of the EIT Budget. According to the Host Agreement signed with the Hungarian Authorities, the Hungarian Government will contribute to the general budget of the EIT with an annual financial contribution of 1,560 million for the period 2011-2015 to cover staff costs for this period. The office space made available for free to the EIT by Hungary, as a host country, for a period of 20 years will notably reduce the EIT administrative expenditure.

Option 3 provides also positive benefits in terms of extending the reach of the EIT to individuals, actors and territories which would not otherwise be able to engage with the EIT. It promotes greater policy coherence in areas of economic convergence, modernisation of higher education and international relations.

### **6.3. Risks associated with policy options**

There are some economic risks associated with Options 2 and 3 which are worth highlighting. These are set out in Table 6.3 below. The analysis is conceptual and based upon qualitative assessment. The risks assessed are economic, consumer welfare, environmental quality and health. Owing to the nature of the policy it is not considered that there is a significant risk pertaining to health or environmental quality. Risks to consumer welfare are also considered to be low as it is deemed unlikely that the options will reduce the availability of goods or services, or make those available significantly more expensive.

There are two principal economic risks. The first is the risk of distorting market conditions and creating closed ecosystems. This may occur if the establishment of KICs as integrated legal entities leads to collusive behaviour between partners involved in the KIC. The possibility of this occurring is regarded as moderate with a potential moderate impact on economic welfare. If the KIC develops a significant market share, by dint of bringing together, all or the majority of the key players within a particular market then there is the potential for anti-competitive behaviour to result. The probability of this occurring is low with the risk of a slight impact on overall economic welfare. Related to this is the risk that EU actions in this area actually reduce the level of innovation by limiting the number of competing products/ideas through promoting a single provider of ideas in a particular market (the KIC). The risk of this occurring is judged to be low but will have a moderate impact on economic well-being if it does occur. Markets may also be distorted if EU funds simply subsidise activities which would have occurred anyway and thus 'crowd out' private sector investment. The risk of this occurring is regarded as high with a moderate impact on net economic welfare. Due to these deadweight risks the overall risk of market distortion is regarded as moderate with a potential moderate impact on economic welfare.

The second risk is that EU support for KICs will lead to disparities in economic growth. Supporting the development of a limited number of centres of expertise will establish agglomeration economies and positive externalities which will reinforce the growth of these

centres compared to other parts of the EU. The probability of this occurring is high whilst the magnitude of the effect on disparities in economic growth is likely to be moderate, all other things being equal. The establishment of integrated entities of firms and institutions of higher education and research may also create barriers to new market entrants in locations outside of the centres where these operate. This would be due to the greater difficulties that institutions outside of the entities have to access knowledge, finance and talent. The probability of this occurring is, however, low with the magnitude of the effect moderate if realized.

| <b>Risk</b>                            | <b>Probability</b> | <b>Magnitude</b> |
|--|--------------------|------------------|
| Consumer welfare                       | Low                | Slight           |
| Negative health impacts                | Low                | Slight           |
| Environmental degradation              | Low                | Slight           |
| Economic well-being                    | Moderate           | Moderate         |
| <i>Reduction in competing products</i> | <i>Low</i>         | <i>Moderate</i>  |
| <i>Collusive behaviour</i>             | <i>Moderate</i>    | <i>Moderate</i>  |
| <i>Anti-competitive behaviour</i>      | <i>Low</i>         | <i>Slight</i>    |
| <i>Deadweight</i>                      | <i>High</i>        | <i>Moderate</i>  |
| Disparities in economic growth         | High               | Moderate         |
| <i>Agglomeration economies</i>         | <i>High</i>        | <i>Moderate</i>  |
| <i>Barriers to market entry</i>        | <i>Low</i>         | <i>Moderate</i>  |

Table 6.3 Summary of potential risks

A potential risk is one of incomplete, or no, policy implementation. It is possible that calls for proposals for future KICs would not attract interest. Given current levels of interest in the topic, voiced by stakeholders and potential partners, this is believed to be unlikely – although as the number of KICs increases the potential correspondingly increases. Currently there seems to be sufficient demand for at least 6 further KICs. The risk of incomplete policy implementation – particularly where partners in KICs adopt a delayed activity profile as they seek to assess actual benefits to their involvement – is more probable, and is supported by evaluative evidence. Here benefits might be delayed by up to two years per KIC where such behaviour occurs. Where firms and institutions find it difficult to appropriate the benefits of their innovations (owing to reasons such as a failure to protect intellectual property) then the economic impact of the EU investment may be reduced if the knowledge gains are developed outside of the EU, but this may not adversely affect the impact of the EIT on addressing societal challenges.

**Potential mitigation measures**

Potential mitigation measures for the more serious risks described above are, briefly, set out below:

- **Risk of deadweight effects** – mitigation through strong monitoring by the EIT and the agreement of ‘stretch’ activity profiles.
- **Risk of reinforcing economies of agglomeration** – some mitigation measures available through extension of the EIT activities as already reflected in Option 3.
- **Risk of incomplete policy implementation** – mitigation through strong monitoring by the EIT.

#### 6.4. Identification of the preferred option

Options 2 and 3 meet the Objectives of the EIT most strongly. The impact of Option 3 is greater than that of Option 2 owing to its greater scale. Its greater scale also gives Option 3 a greater cost-effectiveness than Option 2. The scale of Option 3 provides a further benefit in that it is less affected by the potential weakness of privileging existing networks. This weakness is relatively greater for Option 2.

Option 3 scores positively in terms of raising the international profile of the EIT, and, most significantly, in sharing the knowledge generated within the EIT with external actors and agents.

Option 3 has two potential weaknesses. Firstly, its very scale may begin to introduce market distortions. This will not be the case in Option 1 and is less likely under Option 2. Secondly, it strengthens existing centres of excellence and risks reinforcing prevailing disparities in relative innovation performance between regions of the EU. Option 2 may also do so but to a lesser extent. However, Option 3 offers a means to mitigate some of these territorial imbalances.

Option 1 does not deliver against the objectives of the EIT in comparison to the baseline. Its main beneficial feature is that it involves no EU expenditure, whilst still reaping the benefits of past investments in the KICs. These benefits will decay over the period of the coming Multiannual Financial Framework. Were there evidence of significant government failure with respect to the EIT, such as deadweight, crowding-out of investment or misdirected investments then Option 1 would offer additional benefits. However, the external evaluation of the EIT did not find any evidence of such failures.

On the basis of the evidence available, Option 3 is the preferred Option.

## 7. MONITORING AND EVALUATION

A sound monitoring and evaluation system is required for the EIT in order to record and report progress towards the achievement of its objectives. This is also one of the major recommendations of the EIT evaluation.

The evaluation<sup>38</sup> made a number of strong recommendations regarding the monitoring and evaluation of the EIT. It stressed the importance of establishing robust monitoring procedures in association with the KICs, that the EIT should act as

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<sup>38</sup> [http://ec.europa.eu/dgs/education\\_culture/evalreports/index\\_en.htm#educationHeader](http://ec.europa.eu/dgs/education_culture/evalreports/index_en.htm#educationHeader)

a challenging partner to the KICs, and that the EIT should adopt a culture of ‘openness’. The EIT should seek to develop a culture of continuous evaluation across the EIT. This should seek to evaluate the innovative practices being implemented within and across the KICs and to identify the returns being achieved from investments made. The EIT should seek to work with the KICs to continuously improve performance and should seek to make available the lessons it has learnt to help improve performance elsewhere in the EU.

### 7.1. The EIT monitoring and evaluation system

The EIT evaluation addressed the EIT monitoring with two recommendations:

**Recommendation 4:** The EIT must establish robust monitoring procedures in association with the KICs. This should include the measurement of the performance of the EIT against its own objectives. The focus should be on establishing a results-based approach. An immediate priority is to use the results of such a monitoring procedure to assess the performance of the individual KICs and of the EIT overall. The challenges of developing an appropriate procedure is recognised by this evaluation, but the risks of adopting an inappropriate approach must also be acknowledged. We propose that the EIT consider inviting the Court of Auditors to contribute to their thinking on appropriate monitoring procedures. The Court has previously reported that it would welcome early involvement in the development of similar monitoring frameworks. The procedures adopted will also need to satisfy the requirements of any audits undertaken by the Court of Auditors in the future.

**Recommendation 5:** In its approach to monitoring the EIT should be a critical, challenging and constructive partner for the KICs. It should ensure the integration of the knowledge triangle in practice and use the opportunity of the divergent approaches being taken by the KICs to test the effectiveness of different approaches and to learn lessons for future applications. The monitoring process must also be sufficiently robust to guard against the known risks to the approach being taken with the KICs. It should ensure that the potential for deadweight is minimised, that added value is realised and that anti-competitive practices and market distortions are avoided. The EIT may wish to consider engaging an external partner in this process in order to emphasise the objective learning-based approach being facilitated.

*Box: EIT evaluation recommendations 4 and 5, EIT External expert evaluation of the EIT*

The Commission is fully committed to support the EIT in establishing a sound and solid results-oriented monitoring system while fully respecting the contractual relations between the EIT and the KICs. In doing so, it is important to design and implement the monitoring system around with EIT with view of at least four key determining factors:

- The European policy level: The need for an interface between the EIT and the overarching Horizon 2020 monitoring system and the Innovation Union monitoring.
- The EIT-Institute level: A set of indicators measuring the progress of the EIT own processes and activities such as dissemination, outreach, human resources development. The indicators should correspond to the objectives of an efficient and effective institution.
- The cross-KIC-level: A common set of SMART indicators applicable across all KICs, for example via a further development of the EIT Scoreboard (see Box below),

to be managed and applied by the EIT. The SMART indicators should correspond to the objectives of the EIT.

- The individual KIC level: KIC have different business models and markets and thus different industrial KPIs. The KIC own KPIs shall be taken into account by the EIT in measuring the progress achieved against the objectives set in the annual Business Plans. The KIC own KPI should correspond to the objectives of the KIC.

The EIT Scoreboard incorporates 9 measures and related indicators.

**1. Develop EIT brand and label:** This is the measure of the EIT brand perception by the stakeholders, the “customers” and the public. In the short term, more pragmatic measures can be used, such as “KICs organized conferences”, “other activities with high visibility”, “google search results”... but also “brand surveys” on specific criteria like entrepreneurship, contribution to societal challenge. The data should be collected yearly, or better, quarterly to create a dynamic of growth in the brand building. One indicator of immediate importance to the EIT brand is the set up of EIT labelled degrees and diplomas. Further examples include: independent assessment of brand influence/co-branded value of the EIT, KICs, Universities, enterprises; number of mentions of EIT in media; number of EIT/KIC website visits.

**2. Create new business:** This indicator is focused on new spin-off and start-up companies created by the KICs, and KICs employees. The data to be collected yearly is the number of spin-offs, start-ups, their market value, as well as growth of turnover and employment. The data is collected over the time. The KICs with their co-location centres are main sources of the data. Further possible measures include: societal impact including number of not-for-profits and social enterprises; number of new ventures created within partner SMEs and start-ups; the amount of investment attracted into new businesses.

**3. Provide growth to existing businesses:** The main stream of the contributions of the KICs to business development goes through existing service companies in the form of licensed tangible and intangible results, as well as major or minor improvements in products, processes and services of the companies. Apart from licensed results a big challenge with this indicator is identification of other contributions of the KICs and calculation of their value to the companies. For practical reasons it might be reasonable to concentrate on licenses and other major results with their economic implications.

**4. Attract, keep and work with top-class talents:** This indicator aims at evaluating the attractiveness of EIT and of the KICs. It can be easily measured in the short term by counting the “number of top-class faculty, post-docs, PhD students and entrepreneurs in KICs” against specific criteria to be defined with each specific KIC. A further possible measure could be the ratio of applications to offers for education programmes.

**5. Develop educational ecosystem for entrepreneurship:** Developing an educational ecosystem for entrepreneurship can be approached by measuring the number of Entrepreneurship training courses developed and/or taught and also by the number of those actually taught/led by entrepreneurs. Further possible indicators include: breadth of educational activities (masters, PhD, Executive); number of students that have completed entrepreneurship education programmes.

**6. Produce research and innovation breakthroughs:** One possible indicator measures both the quantity and the quality of published outputs. Bibliometrics provides a means for

measuring collaboration within the KICs as well as partners outside the KICs (co-authorship of papers). A second indicator measures patents as intermediate output from research, development and innovation processes. The total number of patents filed to the KICs would provide an indication of the success of the KICs in generating knowledge. The propensity to use patents as a means of protecting IP varies by industry and sectors and must be taken into consideration.

**7: Organize people mobility across co-location centres:** The content of this indicator is the level of mobility across co-location centres and domains (education, research and academia). This would indicate the mobility of people moving between co-location centres or/and domains (education, research and academia). Further examples include for example the number of secondments between academic and business partners.

**8. Bring together partners and people:** The content of this indicator is the global/international collaboration of the KICs by indicating the level of inward and outward KIC mobility. Examples includes long term (for example longer than 4 months) visitors, KIC staff outside, international collaborative ventures. The degree of cross-functional interactions within KICs could be measured by a Social Network Analysis tool. Further examples include for example Innovation events (e.g. number of open events, number of (closed) workshops, number of venture capitalists etc. attending).

**9. Attract Contribution from third parties:** Maximization of the share of financial contribution from the private sector is one the aims of the KICs. In addition to the private sector, this indicator includes financing from all third parties, or financing other than that provided by the EIT. This is financing from companies, funding from public national sources in EU and other countries, EU programmes, and funding from international organizations. An important part is also VC financing and financing coming from business angels. This indicator with its sub-categories measures attractiveness of the KICs among third parties, and commitment of key financiers to the KICs.

*Box: Strategic objectives of EIT Scoreboard and related indicators*

## Glossary

**EIT** –European Institute of Innovation and Technology

**KIC** –Knowledge and Innovation Community

**KIC InnoEnergy** - this KIC addresses sustainable energy.

**Climate-KIC** - this KIC addresses climate change mitigation and adaptation.

**ICT Labs KIC** – this KIC addresses future information and communication society.

**RIC** – Regional Innovation and Implementation Communities

**Knowledge triangle** - Research, Education and Innovation - three central and strongly interdependent drivers of the knowledge-based society.

**Co-location** - an essential notion in the establishment of the KICs of co-locating team members from diverse backgrounds.

**Co-location centre** - a lead node in the network of participating nodes making up the KIC, bringing together people from different organizations, sectors, disciplines and countries, united by common strategic objectives.

**ERC** - the European Research Council

**MFF** – Multi-annual Financial Framework

**SIA** – Strategic Innovation Agenda

**IASG** – Impact Assessment Steering Group

**IAB** – Impact Assessment Board

**OPC** – Open Public Consultations

**CSFRI** - Common Strategic Framework for EU Research and Innovation

**EHEA** – European Higher Education Area

**EU2020** - Europe 2020 - the EU's growth strategy for the coming decade aiming at the EU to become a smart, sustainable and inclusive economy.

**H2020** - Horizon 2020 Initiative - the European Commission initiative that aims to tackle the top sources of Mediterranean pollution by the year 2020.

**FP7** – 7<sup>th</sup> Framework Programme

**CIP** - Competitiveness and Innovation Framework Programme

**IPR** – Intellectual Property Rights

**JTI** – Joint Technology Initiative

**EUREKA** - a Europe-wide network for industrial research and development, designed to strengthen EU competitiveness by promoting market-driven collaborative projects.

**ITEA** – Information Technology for European Advancement

**SETIS** – Strategic Energy Technologies Information System

**SET-Plan** – Strategic Energy Technology Plan

**JRC** – Joint Research Centre



**PPPs** – Public-Private Partnerships

**EIP** – European Innovation Partnerships

**SMEs** – Small and Medium Enterprises

**RTD** – Research and Technological Development

**GVA** – Gross Value Added

**Educational spill over effect:** Knowledge spill over is enhanced through the educational dimension of the KICs. This combines leading industry and research knowledge which can spin-out to a wider economic base through post-graduate employment routes. KIC activities also act to retain talent which, in turn, serves to promote additional levels of innovation.

**Cross-industry knowledge spill over effects:** Innovations do not frequently ‘crossover’ into other industries. The KIC approach emphasises the adjacent-industry and related-variety dimension of knowledge pullovers and promotes cross-industry innovation.

**Complementary innovation effect:** The KIC provides an enhanced potential for complementary innovation, whereby one innovation encourages complementary advances elsewhere which further raise productivity. The structure of the KIC enhances this opportunity.

**Appropriation of benefits:** The risk of non-appropriation of benefits is a critical factor in the underinvestment in innovation. The nature of the KIC increases the potential for research and innovation advances to be appropriated by members of the KIC and reduces the likelihood that research/innovation will be lost to the market. The enhanced rate of return applying to the KIC compared to an individual partner also increases the likelihood of investment occurring.

**Technological substitution:** Traditionally, the value of innovation investment defrays over time owing to the increasing substitution of technologically superior products. As the KICs will be producing a flow of innovations, the technological substitution effect is assumed to have a limited effect on levels of productivity over time.

**Collaboration between academic research and business:** The EIT could generate feedback from business into research, both in terms of research needs and in terms of doing research differently in order to make it more useful for business.

**Annex: Assessment of EIT Options**

**Annex: Complementarity**

**Annex: ClimateKIC-fiche**

**Annex: KICInnoEnergy-fiche**

**Annex: ICTLabs-fiche** (*DISCLAIMER: This fiche is not public information and cannot be published.*)

**Annex: KICBudget 2011**