

**KT
FORCE**
knowledge as a value

REGIONAL

IMPLEMENTATION

PLANS

PARTNERS



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KT Force Knowledge as Value

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EXECUTIVE SUMMARY

The KTForce INTERREG IVC project involves, at its core, the benchmarking and investigation of best practices in knowledge transfer policies and practices at regional level. Its ultimate goal is to improve Europe's innovation environment. The project focuses on three components within Knowledge Transfer (KT) and seeks to assess and benchmark these within an innovation and regional development context. KTForce looks at how university-industry relations can be enhanced, how technology licensing can be improved and the identification of the optimum conditions for creating spin-outs and increasing entrepreneurial activity.

Along with a brief contextualisation of the South East Region of Ireland this booklet gives a concise overview of the overall methodology set up and applied over the course of the KT project. Specifically, this booklet provides a characterisation of the South East Region, the focus (however, most data available is only for the Southern and Eastern region), through a regional SWOT analysis supported by detailed illustration of both scenario 0 and future scenarios, based on the analysis of key innovation performance indicators.

In considering both practices and policies relevant to knowledge transfer, at national and regional levels, the process for practice selection and implementation and the analysis used for policy benchmarking are also illustrated. This booklet ends with the main conclusions and some policy recommendations resulting from the analysis and work performed over the course of the KT Force project.

1. KTFORCE PROJECT OVERVIEW

KTForce is a project supported by the INTERREG IVC Capitalisation Programme, under the 4th call for proposals, and co-financed by the ERDF (European Regional Development Fund). The aim of the INTERREG IVC programme is to improve the effectiveness of regional development policies in the area of innovation and the knowledge economy. This is achieved through exchange, sharing and transfer of policy experience, knowledge and good practices between European regional and local authorities.

The idea to submit a project to INTERREG IVC programme emerged in 2008 when several European partners decided to make a joint effort to contribute to a more collaborative and aligned environment, capable of harmonising knowledge transfer mechanisms and boosting innovation at a European level. In fact, the European Union (EU) recognises Knowledge Transfer as a key tool for fostering innovation and competitiveness in Europe.

In line with the EU strategy, KTForce aimed to benchmark both innovation policies and knowledge transfer practices in the partner regions, putting forward a set of strategic recommendations for the future design of innovation policies and the implementation of knowledge transfer practices capable of making European regions more dynamic and competitive.

The EU Innovation Scoreboard (2013) allocates each EU country into four different categories of innovation performance. All levels of innovation performance were represented within the KT Force project as partners were selected from countries that are “modest and moderate innovator” (Lithuania, Portugal and Romania) which display performance levels below and well below that of the EU average and “innovation follower and leader” countries (France, Germany and Ireland) which display innovation performance levels close to and above the EU average.

The rationale behind the partnership is that less advanced regions are able to benefit from the experience and learn from more advanced ones, and in turn improve the overall policy context in knowledge transfer and innovation. Moreover, political entities and operational partners (Knowledge Transfer Offices) from across all partner regions work together discussing top-down and bottom-up approaches on how to increase the efficiency of knowledge transfer policies and practices and how this could benefit future policy design.

2. OVERVIEW OF THE METHODOLOGY APPLIED

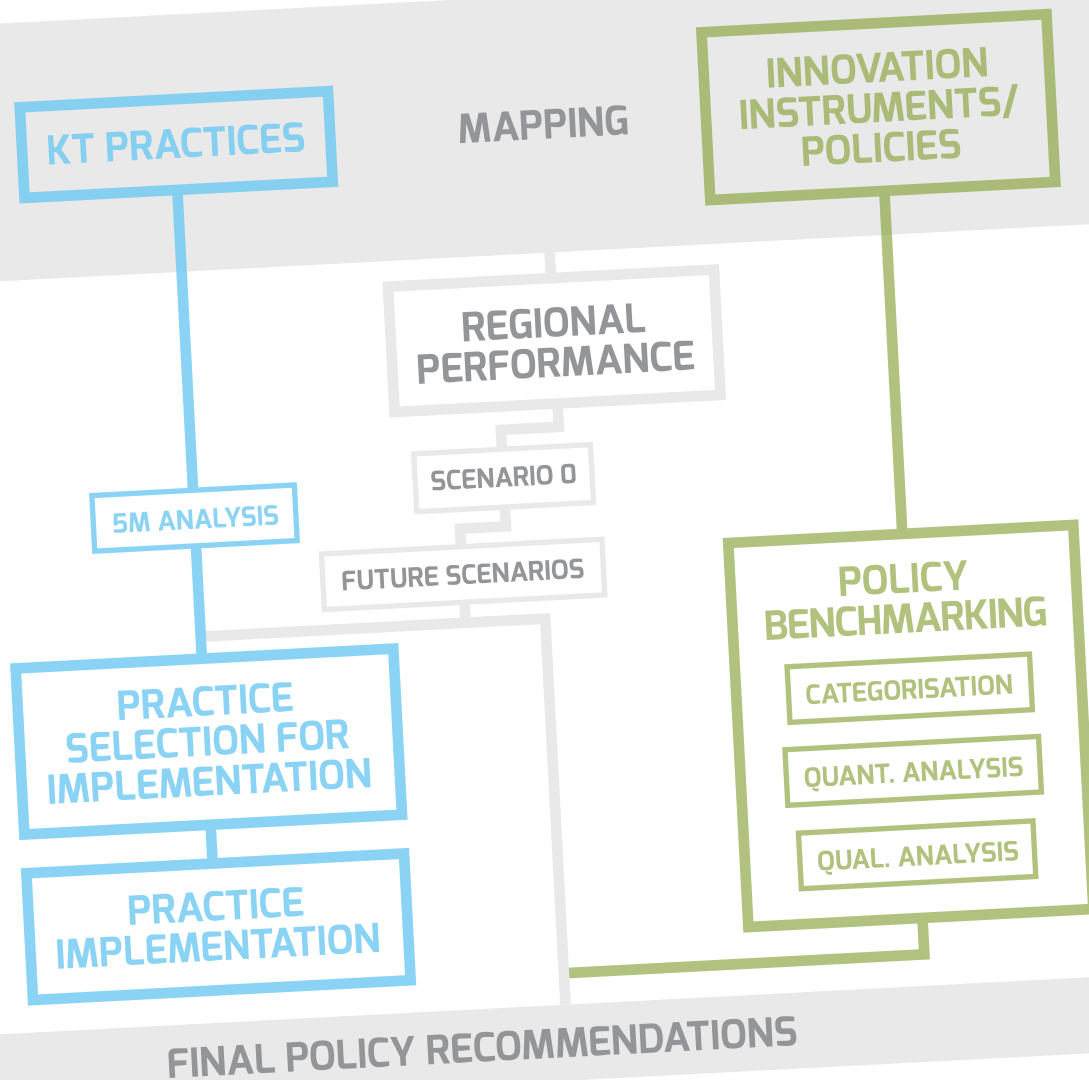
The KTFforce methodology was built around the analysis of the performance of each region involved in the project (see Fig 1 KTFforce Project Methodology). Initially, knowledge transfer good practices and innovation policies or instruments were collected and mapped. Based on a SWOT (Strength, Weakness, Opportunities and Threats) analysis and the use of official innovation scoreboard indicators, a “scenario 0” (current state of the region’s performance in terms of knowledge transfer related indicators) was defined for each region.

Based on the scenario 0, “future scenarios” were established for each region in order to understand a point where each region would like to progress to. Then, the selected good practices identified initially were assessed by the 5M analysis which investigates Money, Management, Manpower, Methods and Material (see Methodology booklet for more information), selected, transferred and adopted by partners according to their ‘future scenarios’.

Concurrently, innovation policies were categorised (technology licensing, spin-off creation and entrepreneurship, and university-industry relations) and quantitative and qualitative analyses were performed. The result is a set of policy recommendations aimed at improving regional innovation performance, taking into account the policies undertaken on the ground by the partner regions.

¹ University of Porto, Portugal, Innovation Agency (ADI), Portugal, Waterford Institute of Technology, Ireland, south East Regional Authority (SERA), Ireland, National Institute of Research and Development for Mechatronics and Measurement Technique (INCDMTM), Romania, Executive Agency for Higher Education, Research, Development and funding (UEFISCDI), Romania, University Joseph Fournier, Grenoble, France, Ville de Grenoble, France, Aufbauwerk Region Leipzig (GMBH), Germany, Technical University Dresden, Germany and Sunrise Valley, Lithuania.

FIG 1: KT FORCE PROJECT METHODOLOGY



3. SOUTH EAST IRELAND CONTEXTUALISATION

SWOT ANALYSIS AND REGIONAL CHARACTERISATION²

The South-East Region is a homogenous and compact geographic entity, comprising the five counties of Carlow, Kilkenny, South Tipperary, Waterford and Wexford. The region has an area of 9,406 sq. kms, equating to approximately 13.5% of the area of the state. The South-East is predominantly rural in character with the main urban centres being Waterford City, Kilkenny City and the towns of Carlow, Clonmel and Wexford.

The region has a fairly balanced urban structure with the main urban centre in each county having a population exceeding 17,000. The main city in the region – Waterford, has a population of some 52,000, a micro-city by European standards. The rural nature of the region is characterised by 5 major rivers, 4 mountain ranges, 2 coastal counties and fertile arable land. Population projections for the South-East region predict growth in the region of 30,000 by 2016 to 540,000.

STRENGTHS

WEAKNESSES

TECHNOLOGY LICENSING

Presence of a dedicated Technology Transfer Office (TTO) Infancy Technology Transfer Office

SPIN-OFF CREATION & ENTREPRENEURSHIP

Presence of a dedicated Technology Transfer Office (TTO) at WIT gives a single point of contact for Regional TT TTO do not exist in every HEI, only 1 in South-East region although there is commercialisation support in other HEIs

Availability of TT metrics, nationally, regionally and internationally No university in the region

World-class incubation facilities – ArcLabs based at WIT facilitating commercialisation, spin off, HPSU, and entrepreneurial culture Difficulty in getting up-to-date accurate figures on spin outs – 2010 most recent available

Strong HEI led Entrepreneurship programmes in the region (New Frontiers at WIT and IT Carlow) Many spin outs are not evolved and are really only at early stage development category

University/HEI TT is based around a single centralised system Only 50% of spin outs are HPSUs

Strong TT network with growing expertise and knowledge including commercialisation specialists Uncertainty over research mission of Institutes of Technology and role of IoTs

Clear and demonstrable growth in national and regional spin offs since establishment of TT initiatives Strong reliance on public exchequer funding

Growing relationship between Enterprise Ireland and HEIs Reduced private investment

New Government led National IP protocol in place gives certainty and basis for commercialisation There are multiple stakeholders and players in the entrepreneurial eco-system resulting in confusion and lack of integration

Strong entrepreneur public sector support pipeline from Local Enterprise Offices, South-East BIC, Enterprise Ireland

Entrepreneurship and commercialisation of publicly funded research are national government policy goals and also major pillars in the South-East regional competitiveness agenda

For the first time, Ireland has a dedicated Minister for Research & Innovation

UNIVERSITY-INDUSTRY RELATIONS

Research Groups

Staff Industry Placement

EI Funded Programmes

IP Protection

TTO

ArcLabs

² For the purpose of this review the analysis was based on WIT within the South East region as they were the active partner on the KT Force Project.

OPPORTUNITIES

THREATS

TECHNOLOGY LICENSING

Volume of Research Conducted at WIT

Funding for the TTO

SPIN-OFF CREATION & ENTREPRENEURSHIP

Entrepreneurial education opportunities such as New Frontiers programme, including mentoring and supports

Funding for the TTO problematic as current phase only last until 2016

Re-configuration of Irish Higher Education (HE) sector may result in a strengthening and more competitive HE in South-East region

Recession and austerity measures

Potential re-configuration of HEI network

Strong relationship between Enterprise Ireland and HEI (such as Technovation, Business Partners Programme, and dedicated HPSU unit)

Local and Regional government re-configuration

Brain-drain of postgraduates and researchers

International collaboration – Cross-border (North/South) TT opportunities and commercialisation via dedicated InterTrade fund – FUSION

No National Entrepreneurial Education policy despite individual initiatives, tendency towards localisation

Access to funding and resources limited

Growing postgraduate and post doctorate numbers – growing awareness of commercialisation potential and culture

Shortages in labour market and insufficient numbers of math's, science and language graduates

Strong advocacy around spin outs from EI – 'Big Ideas Showcase', and 'Applied Research Forum'

Telecommunications cluster at TSSG – world class level research group, positive association

Wide range of regional entrepreneurial projects (although not necessarily integrated) including IdeaGen, Spirit of Enterprise, FUUSE, CIME, Youth Entrepreneurship Strategies Project (YES) as well as numerous primary and secondary school initiatives

UNIVERSITY-INDUSTRY RELATIONS

Entrepreneurial Education

Financial Crises

Building Capacity through Clustering & Collaboration

Expected funding cuts for TTO

There are "islands", but not integrated, of university-industry relations

Lack of sufficient funding for university-industry initiatives

Lack of cohesive integrated university-industry plan within the IOT sector.

STRENGTHS

Waterford Institute of Technology (WIT) is one of the leaders in research in the IoT sector in Ireland, securing over €107 million in external research funding since 2001. At the core of the Institute's research ethos is its commitment to engagement and knowledge exchange with regional, national and international industry. A culture of entrepreneurship and innovation is fostered at all levels in the organisation, primarily through WIT's main research groups such as the Centre for Enterprise Development & Regional Economy (CEDRE) which focuses on entrepreneurship research and the institutes technology gateways which are (1) TSSG (Telecommunication Software Systems Group), (2) Optics Research Group, (3) Pharmaceutical & Molecular Biotechnology Research Centre and (4) South East Applied Material Research Group (SEAM).

As the institutes key technology gateways they are a major driving force of WIT's commercial relationships with industry. For example, TSSG is a leading ICT research group in Europe and is Ireland's leading software ICT research centre as it has secured more than €57 million in research funding since 1996. Each of the groups has established extensive relationships with a wide range of industries engaging in research, contract research, and problem solving and university-industry collaboration. Industry partners include but are not limited to IBM, Ericsson, Cisco, Alcatel-Lucent, O2, Telefonica, Vodaphone, BT, Eircom, Oracle/BEA, Genyme, and Eirgen. As part of the Institute's Research & Knowledge Strategy, the Technology Transfer Office (TTO) was formed to advance one of the Institute's key strategic goals - to enhance and deepening WIT relationships with industry. The TTO helps to evaluate the commercial potential of intellectual property created within WIT and the appropriate forms of IP protection that should be pursued. The TTO can act as mediator between WITs research group and industry, also the TTO is a key player in the promotion and development of university-industry relationships within WIT.

The goal of the ArcLabs Research & Innovation Centre based in WIT is to provide entrepreneurs (with high growth potential) and early-stage ventures with the support needed to achieve success in national and international markets. ArcLabs aims to accelerate business growth by providing business advisory services, mentoring and access to the R&D resources of Waterford Institute of Technology. WIT has developed a successful model for co-locating research, business incubation and entrepreneurship training through the ArcLabs model.

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The key to this applied approach is enabling the movement of human capital between the three elements as research generates know-how and intellectual property, and helps early-stage companies to develop technologies. Business incubation provides the physical infrastructure and advisory services for spin-outs, spin-ins and entrepreneurs. Specific entrepreneur development programmes provided in Arclabs are a pipeline of companies that are interested in accessing research and utilising business incubation services.

On a national level Enterprise Ireland (EI) is the state agency responsible for supporting the development of manufacturing and internationally traded services companies in Ireland. EI provides an extensive range of funding and support for companies, from entrepreneurs with high potential start-ups through to large companies expanding their activities, improving efficiency and growing export sales. EI provides funding and support for many programmes including but not limited to Innovation Vouchers, Innovation Partnerships, Technovation (see page 9) Commercialisation Fund and Feasibility Commercialisation Fund. The funded programmes outlined above allow WIT to assist industry and develop effective working relationships that enhance WIT industry relationships.

WEAKNESSES

Although there has been an increase in spin outs since a Technology Transfer Office (TTO) was established in WIT, however the perception remains that without a Higher Education Institution (HEI) with University status in the region Technology Transfer (TT) and associated activities may be problematic with commercialisation support weaker in comparison to other regions. There is also ambiguity around the mission of Institutes of Technology, a situation not helped by the lack of progress on the Hunt Report (2011) on the future of higher education in Ireland. There is also the issue of sustained exchequer funding for TT activities beyond 2016 which remains as of yet, unresolved.

There is also some uncertainty around the availability of accurate up to date figures on TT outputs – the latest available being 2010. We do know though that there were no spin outs from the South-East in 2011 and it would appear that the national trend is one of relative decline. High Potential Start Ups (HPSU) are prioritised however it is estimated that only 50% of spin-outs are fully evolved high potential start-ups. Many spins-outs are in reality early stage development start-ups. As previously referred to there are many entrepreneurs and spin-out supports as well as a move towards a pipeline approach to commercialisation, start-ups and entrepreneurial activity. However it is a crowded space which results in confusion, overlaps and multi-agency engagement which can lead to confusion and a lack of strategic focus in entrepreneurial activity and commercialisation for the region.

OPPORTUNITIES

A key opportunity for technology licensing is the volume of research that is being conducted at WIT. The more research and knowledge that is created the greater the probability of that knowledge being suitable and transferable for industry and commercialisation. Highlighted in the WIT Research Snapshot of 2010-2011, WIT researchers were successful in securing funding for 155 new research projects resulting in research income in excess of €8.4 million. The total value of the projects in which WIT will participate exceeds €26 million.

WIT is quite progressive in the area of entrepreneurial education for both students and early stage entrepreneurs. Technovation is a pilot Enterprise Ireland programme that is delivered in conjunction with WIT. As part of the programme, Enterprise Ireland supports clients to employ a graduate for 18 months to undertake an innovation project. These projects could entail development of a new product or service offering, or the improvement of manufacturing or business process competitiveness. They address a clear business need and have the potential to deliver a positive business impact. The programme assists up to 15 companies (per cohort) in the South-East region to develop new or improved products or services and/or to improve business processes, by employing a graduate to implement an innovation project. The innovation project that is implemented by the student forms the central element of the accredited Postgraduate Diploma in Business in Innovation Practice.

There is a wide range of regional entrepreneurial projects, programmes, networks and supports (although not necessarily integrated) including IdeaGen, Spirit of Enterprise, FUSE, CIME, Youth Entrepreneurship Strategies Project (YES) as well as numerous primary and secondary school initiatives. New Frontiers is Ireland's national entrepreneur development programme delivered at a local level by WIT and IT Carlow. The programme is aimed at individuals who may have an innovative business idea or someone who is planning to establish and run their own company. The New Frontiers Entrepreneur Development Programme provides supports to help the acceleration of business development and to equip the applicant with the skills and contacts required to start and grow a business. Businesses supported in recent years through the programme have created a combined turnover of €29 million, with €8.5 million in export sales, and have secured investment of €8.8 million.

Networks and clusters development initiatives are concentrated on encouraging and supporting inter-firm collaboration, institutional development and support in targeted industrial sectors.

The sectors are usually targeted at those that offer the most local economic development potential. Where the local economy has existing clusters this may provide a more targeted approach to improving economic development activity by leveraging resources in the direction of greatest potential return. The capacity building can take on many forms. Examples of locally-based initiatives that have resulted in programme development include linkages with;

SunLife Financial (for whom a version of the Higher Diploma in Business was developed, BAM Contractors (for whom a version of a bespoke version of the MSc in Construction Project Management was created). The Institute is actively engaged since 2009 with local trade unions, in collaboration with SOLAS (Ireland's further Education and Training Authority, formerly named FÁS), on initiatives to support newly unemployed people, to provide access routes into third-level education, and to contribute to economic development and renewal within the region.

THREATS

Within Ireland there is a considerable threat to all TTO offices as they are currently funded through Enterprise Ireland under Technology Transfer Strengthen Initiative 1 (TTS1). TTS1 came to an end in December 2012 and now the TTO offices are being funded under the Technology Transfer Strengthen Initiative 2 (TTS2). TTS2 will operate for four years however the source of funding to operate WIT's TTO past this point is unclear. If a subsequent funding source is not found either from the Irish government or within the institute itself then the TTO office may cease to be.

There remain substantial uncertainties around the development of TT and KT in the South-East region. Despite national policy initiatives and resourcing in this space, the funding and resource future of TT and spin-offs from publicly funded research is unclear beyond the current funding phase to 2016. A sustainable model for TT resourcing has not yet emerged. Perceptions around the cost of publicly funded research and the outputs that result remain politically sensitive. The ongoing period of fiscal rectitude and cuts across the public purse make real long term planning difficult. Other uncertainties also exist at political, policy and infrastructural levels, for example the re-configuration or consolidation of local and regional government will have wide ranging implications; the proposals to amalgamate and merge many HEIs may or may not benefit the South-East Region.

Lack of resources, poor funding opportunities and job market uncertainty could potentially result in brain-drain of innovative postgraduates and researchers. Similarly, shortages in certain labour markets such as software engineering and insufficient proactive labour market activation schemes (and inadequate numbers of math, science and language graduates) present a future risk. The required, but as yet not delivered, strategic National Entrepreneurial Education Policy (despite individual initiatives, tendency towards localisation) also needs to be addressed.

KEY INDICATORS AND SCENARIO 0

In line with the project methodology, a Scenario 0 was defined based on the analysis of the Southern and Eastern Region, in comparison to other partner regions, using a pool of 18 innovation indicators (from the EU Innovation Scoreboard and Eurostat) likely to be influenced by technology licensing, spin-off creation and entrepreneurship, and university-industry related practices.

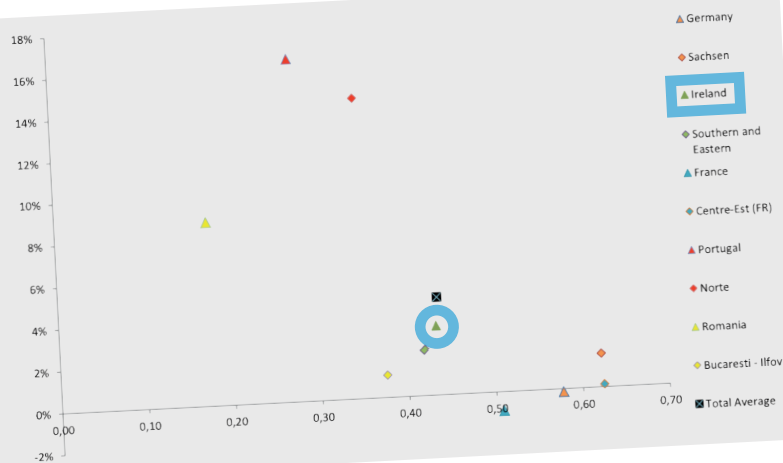
TECHNOLOGY LICENSING	SPIN-OFFS CREATION AND ENTREPRENEURSHIP	UNIVERSITY-INDUSTRY RELATIONS
1. Number of patents applied for at EPO, by year, into the Regional GDP in Purchasing Power Parity Euros;	1. Number of employed persons in the knowledge-intensive services sectors and Number of employed persons in the medium-high and high-tech manufacturing sectors into total workforce;	1. Population with tertiary education per 100 population aged 25-64;
2. Number of patents applied for at EPO, by year, per million of inhabitants;	2. High and medium high-technology manufacturing – Percentage of total employment;	2. Total SMEs innovation expenditure, excluding intramural and extramural R&D expenditures, into the total turnover for SMEs;
3. R&D expenditures in the business sector (BERD), by year, into Regional GDP, in national currency and current prices;	3. Knowledge-intensive services – Percentage of total employment;	3. SMEs introducing any new or significantly improved products or production processes (in-house innovations);
4. Business enterprise R&D expenditure (BERD) by economic activity – Percentage of GDP;	4. Sum of total turnover of new or significantly improved products either new to the market or new to the firm for Small Manufacturing Enterprises (SMEs) by total turnover for SMEs;	4. SMEs with innovation co-operation activities in total number of SMEs);
5. R&D expenditures in the government sector and the higher education sector in Regional GDP;	5. Total high-tech trade in million euro – Percentage of total exports.	5. Number of public-private co-authored research publications by total population;
6. R&D expenditures in the government sector and the higher education sector in GDP – Percentage of GDP.		6. Number of SMEs introducing new products or processes to market by total number of SMEs;
		7. Number of SMEs introducing new marketing and/or organisational innovations to market by total number of SMEs.

Full information about the indicators selected can be found in the KTFforce website under “documents” (www.ktforce.eu/documents-view)

The data, collected mainly for 2007-2009 and 2009-2011, were considered for each region or country. Composite indicators for each of the knowledge transfer related areas as well as a global composite indicator were defined in order to assess and compare the state of the countries/regions in terms of growth rate and level (see Graphs 1, 2, 3, and 4).

⁴ Data from Innovation Scoreboard represents Southern and Eastern Region of Ireland which includes the South-East of Ireland

Graph 1 Scenario 0: Indicators Influenced by Technology Licensing – Composite Indicator



For **Technology Licensing**, the analysis for the Southern and Eastern region of Ireland (see Graph 1) reveals:

A good growth rate on new product innovation, with firms with good capacity to develop new products;

An average position on the number of patents applied for at the European Patent Office;

A good growth rate on R&D expenditures in the business sector, i.e. on the formal creation of new knowledge within firms;

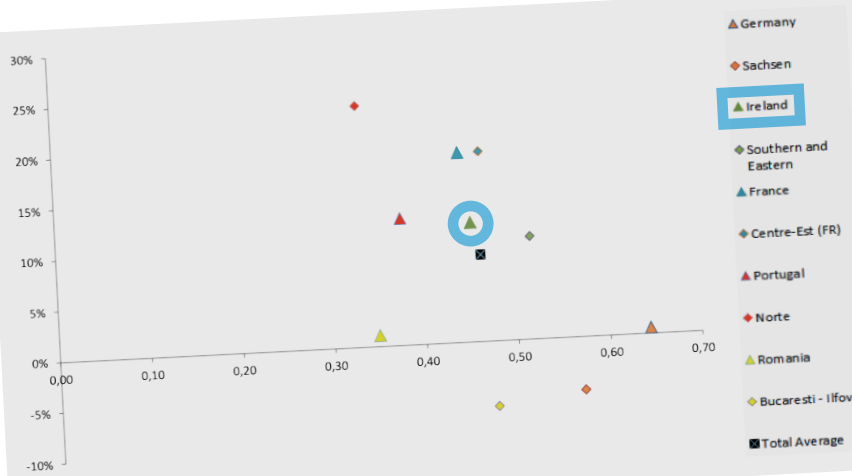
An average position on business enterprise R&D expenditure (BERD);

A good growth rate on R&D expenditures in the government and higher education sectors;

An average position on R&D expenditures in the government sector and the higher education sector in GDP.

By paying particular attention to the performance of the technology licensing indicators, the Southern and Eastern region of Ireland is in an average position in comparison to the other partner regions.

Graph 2 Scenario 0: Indicators Influenced by Spin Off Creation and Entrepreneurship – Composite Indicator



For **Spin-off creation and Entrepreneurship**, the analysis for the Southern and Eastern region Ireland (see Graph 2) reveals:

A high growth rate on employment in knowledge-intensive service sectors and in the medium-high and high-tech manufacturing sectors;

A position above the (negative) average on employment in high and medium high-technology manufacturing;

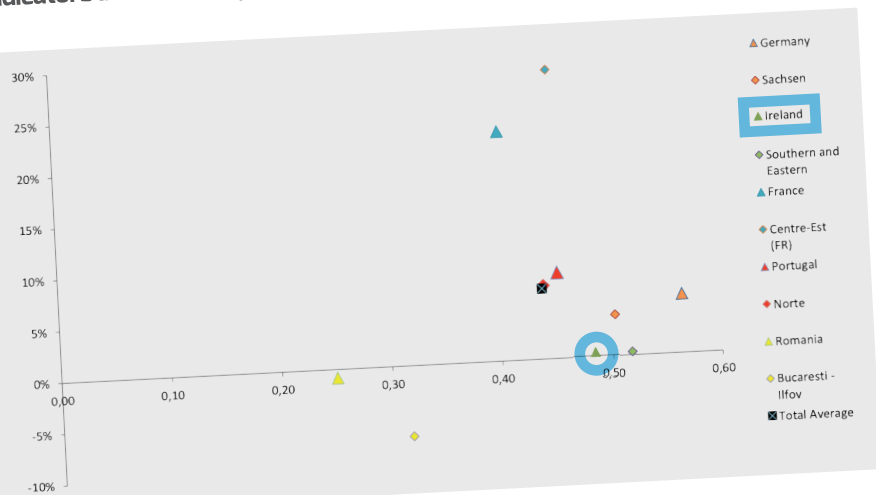
A position slightly above the average on employment in knowledge-intensive services;

An average position on the sum of total turnover of new or significantly improved products either new to the market or new to the firm for small manufacturing enterprises;

A position below the EU average on the high-tech products trade;

The observed growth rates of the spin-off creation entrepreneurship indicators reveals that the Southern and Eastern region of Ireland is in a process of convergence to the levels observed by the other partner regions.

Graph 3 Scenarios 0: Indicators Influenced by University- Industry Relations – Composite Indicator



For **University-Industry Relations** the analysis for the Southern and Eastern region of Ireland (see Graph 3) reveals:

A position above the average on population with tertiary education per 100 population aged 25-64;

A poor growth rate on non-R&D innovation expenditures (just for SMEs, excluding intramural and extramural R&D expenditures) in % of total turnover;

A good position in level on SMEs innovating in-house, introducing any new or significantly improved products or production processes;

A high growth rate on SMEs with innovation co-operation activities, establishing any co-operation agreements on innovation activities with other enterprises or institutions;

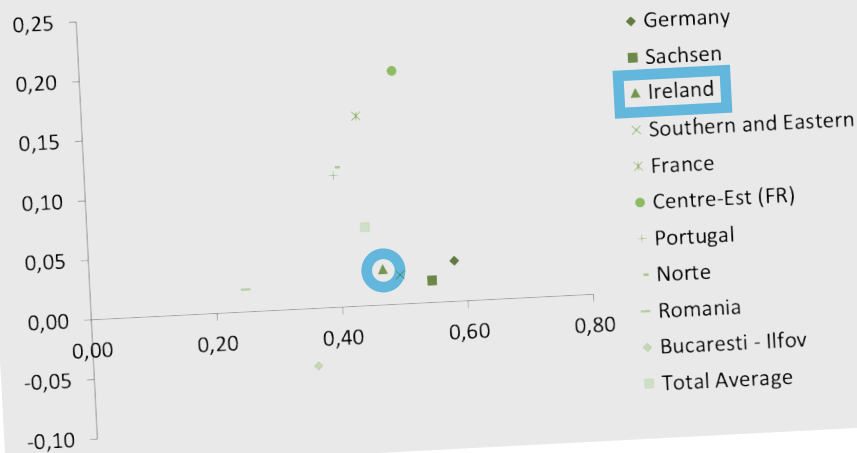
A position on the average public-private co-authored research publications;

A position above the average on technological innovators (SMEs) introducing new products or processes;

A position below the average on SMEs non-technological innovation (marketing and/or organizational innovation).

In the area of University-Industry relations, the performance of the Southern and Eastern region of Ireland reveals a higher level than the average of the KT Force partners and a lower growth rate than the average.

Graph 4 Global Composite Indicator for all the Partner Regions/Countries



Considering the global composite indicator, the Southern and Eastern Ireland presents a good performance in the global composite indicator.

The current scenario and the insights deriving from the indicators analysis were taken into account in the design of the countries' future scenarios, presented in the following section.

FUTURE SCENARIOS AND TFP CORRELATION

Each of the KTFforce partners Scenario 0 was based on the level and growth rate of a set of innovation indicators that are likely to be influenced by Technology Licensing, Spin-Off Creation and Entrepreneurship and University-Industry Relations. The future scenario was defined by bearing in mind the effect of the innovation indicators on the Total Factor Productivity (TFP). The source for the innovation indicators, associated with the areas of focus of the KT Force project was drawn from the EU Innovation Scoreboard and Euro Stat.

The TFP was regressed using econometric techniques on each of the chosen indicators, enabling the analysis of the relation between the indicator and the TFP. The TFP evolution according to each indicator was translated into a chart, in order to visually understand the positive or negative influence of each indicator on the TFP. Only the indicators that showed to have a positive influence on the TFP were retained. Again, by using econometric techniques, a ranking of the indicators that most influenced TFP was established, thereby highlighting which knowledge transfer activity each region should invest in more.

Therefore, in general, practices and policies that affect positively the EU Innovation indicators, which, in turn, are more connected with TFP, are what should be implemented within a region to improve its economic performance. A detailed explanation of the methodology applied for the definition of the future scenario is described in "The KTFforce Methodology Booklet" (see www.ktforce.eu)

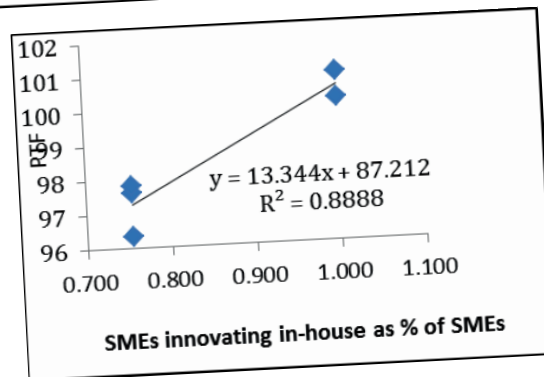
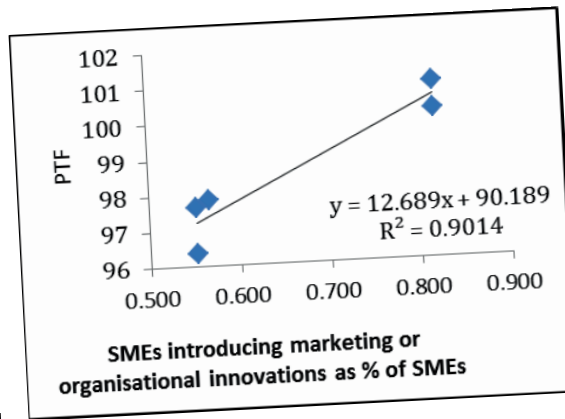
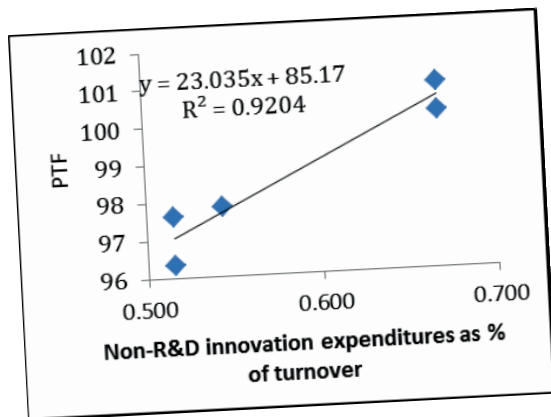
In the case of South East Ireland, the indicators that most influence the evolution of the TFP are:

Non R&D innovation expenditure as a % of turnover

SMEs introducing marketing or organisation innovation as % of SMEs

SMEs innovating in-house as a % of SMEs

The graphs of the 3 indicators that positively influence TFP for Southern and Eastern region of Ireland are as follows:



Source: AMECO: http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm

The ranking and rate of influence (see Table 1) of the most relevant indicators associated with the evolution of the TFP and Knowledge Transfer activity in the Southern and Eastern region of Ireland are as follows:

KNOWLEDGE TRANSFER AREA	INDICATOR	R ² *	RATE OF INFLUENCE CONSIDERING THE OTHER INDICATORS
Entrepreneurship & Spin-off	Non R&D Innovation Expenditure as a % of Turnover	0,36	55%
University-Industry Relations	SMEs Introducing Marketing or Organisation Innovation as % of SMEs	0,17	26%
University-Industry Relations	SMEs Innovating In-House as a % of SME's	0,12	18%

* R2 is the coefficient of determination, which ranges from 0 to 1, and obtained through econometric techniques. It indicates how well data points fit a statistical model, and thus, how much TFP is related to the indicator. The higher the R2 is, the higher the influence of the indicator on TFP is.

In conclusion, in the case of the Southern and Eastern Region of Ireland, the three indicators that are related to the University-Industry Relations knowledge transfer area and have a relative importance of 34%, 33% and 32% regarding the evolution of TFP. The South-East as part of the Southern and Eastern region therefore should concentrate on developing practices and policies that influence indicators associated with University-Industry Relations.

4. POLICY BENCHMARKING AND PRACTICE SELECTION

POLICY BENCHMARKING METHODOLOGY

The benchmarking of the innovation policies of the 6 partner regions was organised in 4 steps:

1. MAPPING OF THE POLICIES

Together with the mapping of the practices, the KTFforce partners performed a mapping of the ongoing or finished innovation policies implemented within their regions or countries.

The mapping of the innovation policies in each country was done via an online questionnaire specifically created for this task. According to a set of criteria and keywords linked to the 3 specific Knowledge Transfer areas, the partners selected a set of relevant policies available in the ERAWATCH database - Platform on Research and Innovation policies and systems.

(http://erawatch.jrc.ec.europa.eu/erawatch/opencms/research_and_innovation)

2. CATEGORISATION OF THE POLICIES

The categorisation of the policies aims at including each collected policy within the three knowledge transfer areas (Technology Licensing, Spin-Off Creation and Entrepreneurship and University-industry Relations) that the project focuses on. If some policies cover two or three areas, the policy is included in both areas.

3. QUANTITATIVE ANALYSIS

The quantitative analysis of the policies has used a statistical method for creating a ranking of the policies. This ranking lists the “best” policies collected by the partners, using, in the calculation method, some key criteria that the partners estimate to have influence on the efficiency of a policy.

THE CRITERIA SELECTED AND ASSOCIATED WEIGHT WERE:

- A. (Bearing in mind) the Total Factor Productivity - 45%
- B. The policy connection to a specific practice mapped by the partners (yes/no) - 10%
- C. The focus of the policy (transversal to 1, 2 or 3 KT areas) - 10%
- D. The stability of the policy (long term or discontinued after first attempt) - 10%
- E. The results/outputs are available (yes/no) - 10%
- F. The focus on target groups (collaborative initiatives/individual initiatives) - 5%
- G. The evaluation of the policy (evaluation ex-post or ex-ante) - 10%

Resulting from the quantitative analysis, the top-ranked policies mapped by the KTForce partners are the following (see Table 2):

Table 2 Top Ranked Policies Supplied by KT Partner

COUNTRY	RANKING	POLICIES	KT AREA	A - TFP	B - CONNECTION	C - FOCUS	D - STABILITY	E - OUTPUTS	F - TARGET GROUPS	G - EVALUATION	VALUE
IRELAND	1	POLICY 25: PRTL - Programme for Research Programme for Research in Third Level Institutions	University-Industry relations	1	1	1	1	1	1	1	10
FRANCE	2	POLICY 3: R&D tax credit for companies	Technology licensing + University-Industry relations	1	1	0,66	1	1	1	1	9,66
FRANCE	3	POLICY 4: The Regional Development and Innovation Agency (ARDI)	Technology licensing + University-Industry relations	1	1	0,66	1	1	1	1	9,66
FRANCE	4	POLICY 5: Technological platforms	Technology licensing + University-Industry relations	1	1	0,66	1	1	1	1	9,66
IRELAND	5	POLICY 18: Enterprise Ireland 'Innovation Partnership Programme'	Spin-off creation and Entrepreneurship + University-Industry relations	1	1	0,66	1	1	1	1	9,66
FRANCE	6	POLICY 2: Cluster policy of the Rhone-Alps regional authority	Technology licensing + Spin-off creation and Entrepreneurship + University-Industry relations	1	1	0,33	1	1	1	1	9,33
FRANCE	7	POLICY 1: Support to the competitiveness clusters (pôles de compétitivité)	Technology licensing + Spin-off creation and Entrepreneurship + University-Industry relations	1	1	0,33	1	1	1	0,5	8,83

COUNTRY	RANKING	POLICIES	KT AREA	A - TFP	B - CONNECTION	C - FOCUS	D - STABILITY	E - OUTPUTS	F - TARGET GROUPS	G - EVALUATION	VALUE
IRELAND	8	POLICY 17: Entrepreneur Business Development Programme (SEEP)	Spin-off creation and Entrepreneurship + University-Industry relations	1	1	0,66	1	1	1	0	8,66
LITHUANIA	9	POLICY 11: The Development of High Level Research Centers and Competence Centers	University-Industry relations	1	0	1	1	1	1	0,5	8,5
LITHUANIA	10	POLICY 13: Strengthening of the General Science and Studies Infrastructure	University-Industry relations	1	0	1	1	1	1	0,5	8,5
LITHUANIA	11	POLICY 16: The Preparation of R&D Infrastructure Development Projects	University-Industry relations	1	0	1	1	1	1	0,5	8,5
PORTUGAL	12	POLICY 8: NITEC - Incentive System for creating R&D nuclei in the company sector	University-Industry relations	0,66	1	1	1	1	1	1	8,47
PORTUGAL	13	POLICY 10: SIFIDE - Tax incentives for Company Investments in R&D	University-Industry relations	0,66	1	1	1	1	1	1	8,47
GERMANY	14	POLICY 14: Research for the market "ForMat", BMBF (German Ministry of Education and Research)	University-Industry relations	0,66	1	1	1	1	1	1	8,47

4. QUALITATIVE ANALYSIS

The qualitative analysis of the policies aims at analysing the highest ranked policies resulting from the quantitative analysis in order to discuss the main aspects that make these policies so efficient, and understand how these good examples could potentially be transferred or improve similar policies already existing in each partner region.

PRACTICE SELECTION & IMPLEMENTATION

In line with the project's objective, the 11 KTFforce partners performed a mapping of the Knowledge Transfer practices implemented, ongoing or over, within their organisations.

The partners selected a set of relevant practices that had been implemented within their organisations in the 3 Knowledge Transfer areas: Technology Licensing, Spin-off creation & Entrepreneurship and University-Industry relations. An online questionnaire was specifically created for this task, gathering a set of key questions that would be relevant for the partners to select the practices that they would like to implement within their organisations.

Country

Portugal

Do you want to share an instrument/policy or a knowledge Transfer practice? *

Knowledge Transfer Practice

Identify the Knowledge Transfer area to which the practice belong *

Technology licensing
Spin-off creation & Entrepreneurship
University-Industry relations

Press ctrl + click for multiple choice

Indicate the country from which the practice is

Country

Portugal

KTForce project partners Waterford Insititue of Technology (WIT) and South East Regional Authority (SERA) representing the South East Region of Ireland identified 13 knowledge transfer practices in South East Ireland relevant to the three dimensions of the project. Detailed information on each of these 13 practices (and the practices of the other regions taking part in the KTForce project) is available on the interactive webtool on the KT Force project website (<http://www.ktforce.eu/mapa>).

The next step for all project partners was to conduct a 5M analysis on each practice which helped to provide understanding on the level of difficulty of practice implementation based on the following considerations, **M**oney, **M**anpower, **M**anagement, **M**ethod and **M**aterial (i.e. 5M).

The 5M methodology sets on rates of the practices between 1 and 5 according to 5 dimensions. This assessment methodology is based on the 6M methodology created by Ishikawa. For the purpose of KTForce, the 5M methodology is aimed at easing the evaluation of each practice.

THE 5M ASSESSMENT OF EACH PRACTICE CONSIDERED THE FOLLOWING FEATURES:

1. MONEY NEEDED TO IMPLEMENT THE PRACTICE	2. MAN OR HUMAN RESOURCES NEEDED TO IMPLEMENT THE PRACTICE	3. MANAGEMENT STRUCTURE REQUIRED TO IMPLEMENT THE PRACTICE
1: 0 k€ (no cash, only efforts)	1: 1 part time person	1: no consensus needed, can be done alone
3: 50 k€	3: 1 full time person	3: consensus to be built inside a small community
5: >= 100 k€	5: >= 3 full time persons or external HR	5: consensus to be built with a large community including external stakeholders
4. METHODS NEEDED TO IMPLEMENT THE PRACTICE (COMPLEXITY & TIME)	5. MATERIAL NEEDED TO IMPLEMENT THE PRACTICE (INFRASTRUCTURE & LOGISTICS)	
1: easy, < 1 month	1: no need	
3: average difficult, 6 months	3: average infrastructure or means.	
5: need experts, > 1 year	5: large infrastructure or means.	

Implementation of practice

Each partner region has been provided with a structured and rigorous approach to practice selection via the development of the Scenario 0 and Future scenario for their respective regions. In the case of the Southern and Eastern region of Ireland the TFP analysis clearly indicated that regional stakeholders should focus on practices that would impact university-industry relationships.

The practice selected for implementation in South East Ireland is the A2B sessions which originated from the University of Porto in Portugal. The objective of A2B (which means Academia to Business) is to strengthen the relations between university and industry. This practice was selected for the South East Region for a number of key reasons;

- (i) The practice falls within the recommend area guidelines from the TFP analysis.
- (ii) The practice would not be expensive to implement.
- (iii) The practice allowed for the alteration of the approach to suit the needs of the South East region.

The vast majority of, if not all, HEIs in Ireland engage in some level of interaction with industry. When such initiatives already exist and are successful there can be the perception that good and effective university-industry relations have been achieved. The selection of this initiative allows stakeholders in the region to re-evaluate how they engage with industry and to try to understand on a deeper level the regional industry needs and more specifically their longer term needs. In order to proceed with the implementation of the A2B Sessions practice, a transfer guide was developed (full in depth details of this is available on the KTForce website (www.ktforce.eu), supporting the implementation process in 5 steps:

Phase 1 – Planning

This section comprises general information about the region, the lead stakeholders and supporting stakeholders. It also contains the policy scenario to be pursued and detailed information on the planning of the implementation, including the reasons why such a practice was chosen for implementation.

Phase 2 - Transfer Methodology

The information required relates to the objectives, methodology and steps needed for the implementation (including workflow and Gantt chart) of the practice, hints on what to do and not to do, and possibly performance indicators used by the Practice Owner (i.e. the University of Porto who currently run this initiative) for reference.

Phase 3 – Implementation

This section provides information on the expected outcomes for each of the practices chosen to be implemented, including the name of the Supporting Stakeholders for each of the practices and information on their involvement (role, tasks). The start date and expected completion date of the implementation is also reported in this section.

Phase 4 – Measurement

The most critical aspect of the Implementation phase is the monitoring of actual outcomes of the implementation and the effectiveness of the practice, and the comparison of these with previously defined expected outcomes. This allows for the positive and negative differences between both sets of outcomes to be established. It is advised that such measurements should take place at least 12 months (but not exceeding 18 months) after implementation.

Phase 5 – Updating the Plan

According to the differences in outcomes (actual vs expected) identified in Phase 4, the stakeholder lists the actions to be taken to address and/or expand on the differences in outcomes. Completing this phase of the process may mean restarting the process all over again.

Implementation Example

The A2B session practice is the adoption of an iterative process of continuous evaluation of HEI relationships with industries within their regions. Rather than adopting the Portuguese version of A2B in its entirety without question, the KTFORCE Irish partners explored and analysed the A2B process in detail. Based on the analysis the process was adapted to suit the dynamic of HEIs and industry in the South East. The first task in the process was to explore the current HEI-industry relationships in the South East, and to assess, reflect and understand to what extent current practices are effective. The next step was to select key aspects of the A2B process that we felt would enhance the effectiveness of these relationships.

Workshop 1: The implementation plan development workshop was held on 25th of Feb 2014 in ArcLabs Research and Innovation Centre, in WIT. It was a facilitated workshop that was attended by over 30 people, representing businesses in the South East region along with relevant regional stakeholders such as representatives from Enterprise Ireland, Local Enterprise Offices, and HEIs. The objective of the workshop was to discuss the regional industry needs and relationships with HEIs - how industry currently or has engaged with HEIs, and how could the process be made more meaningful and effective for industry.

Outcomes: The objective was to debate the level of collaboration with industry and to identify needs and barriers to university-industry collaboration. Key points drawn from that debate were that programmes such as Technovation (operated by WIT) is a good example of university-industry interaction that is very “company friendly”. The interaction works for industry as it gives not only the student but also the business a real benefit. It was clearly stressed during the workshop that any university-industry practice must be beneficial for all parties in order to be effective and useful.

The attendees expressed their lack of knowledge about the research activities and skills sets available within the HEIs in the region. Therefore, as a result of this lack of knowledge, the industry attendees were unsure as to how they could tap into the research or expertise in the HEIs to meet their specific businesses needs. They also expressed the lack of a defined, easy-to-use, process of engagement with the HEIs in the region as being a hindrance to their engagement with HEIs.

A regional workshop representing specific HEI research groups was identified as a potentially effective way to communicate the research focus and capability to industry in the region. However, it was also agreed that engagement at such events can be difficult as business owners generally focus on their day-to-day, immediate business issues and taking time out to attend such events is taking time away from their business. Therefore a more “user friendly” process of engagement needs to be identified, tested and implemented in the region.

HEIs in the South East are part of a wider research community and therefore should act as a conduit for industry and business in the region as a whole. For example, if South East based HEIs do not perform a particular research or possess a particular expertise that is required by industry/business in the region they should be able to connect up South East businesses with people/ researchers/ knowledge/ and technology in other HEIs and Research Centres across the island of Ireland. Enhancing the connections between students and companies in the region was also discussed as a potentially way of building effective university-industry relations in the region.

The workshop was successful in that it did open a dialogue with owner/managers in the region which set the foundation for further more effective and more inclusive university-industry engagement in the region.

Next Engagement: a workshop with a small number of relevant regional stakeholders. The aim of this activity is to discuss further the long term needs of industry/business in the region and to determine how regional institutions can support and meet those needs. Furthermore the workshop will explore how those long term needs can be supported through collaborative university-industry-government-support agency projects within the Horizon 2020 domain.

5. POLICY RECOMMENDATIONS

By using the qualitative analysis of the policy benchmarking, a set of recommendations for the design or optimisation of the implementation of innovation policies within each partner region was established.

The South East NUTS III region of Ireland, represented in the project by the South East Regional Authority (SERA), a statutory public body established in 1994, compiled an extensive selection of policies and related policies which was shared with and submitted for analysis by the KTForce project partners. An equally extensive list of policies was submitted by all project partners, 14 of all submitted policies were selected as the highest performing. Of the top 14 selected three were Irish based policies.

These results would seem to indicate that the region is broadly moving towards appropriate levels of support in innovation and technology transfer, notwithstanding particular deficiencies or limitations in the areas of technology licensing, spin-offs and entrepreneurial activity. Those Irish policies that ranked in the final 14 selected policies scored particularly highly and relate to strong supports in the third level education area. This document serves as a tool and an aid to assist stakeholders, interested parties and specifically policy makers in local authorities, regional authorities and in national government to inform, initiate and create more effective policies that can boost innovation and increase regional competitiveness.

As elaborated in detail earlier in this document, the indicators that were shown to have the greatest influence on Total Factor Productivity (TFP) in the Southern and Eastern region are linked to entrepreneurial activity and in particular university-industry relations. These results show that in order to boost innovation and thereby productivity and related outputs, policymakers should concentrate their efforts in the following areas:

TECHNOLOGY LICENSING

The high levels of patents granted in the partner region of Grenoble and the overall patent intensity serves as a highly developed model that regions and the South East in particular should strive for. High level and more frequent collaboration with higher education institutes in the region can only improve this. Analysis carried out during the KTForce project showed that technology licensing levels for the South East region were relatively low and required strong policy initiatives and interventions to improve this situation. Additionally, and in order improve on TFP, policymakers could look towards bridging the gap between citizens and everyday societal challenges and innovation, for example, through a policy similar to the German Policy 14 'ForMat' (see Table 2) which aims to bring research closer to industry, or through launching calls for projects for public procurement with a view to adopting innovations for use in the public sector.

SUPPORTING INNOVATIVE SMES

Support for pro-SME policies generally across EU governments and the recognition of the centrality of SMEs to the European economy is clearly evidenced by Eurostat and manifested in numerous policy documents and initiatives. There was a high propensity of high-ranking policies aimed at supporting SMEs across the project partners with policies from France, Germany and Ireland attaining particular recognition.

The quantitative analysis illustrated that support for innovative SMEs is already a political priority in the regions such as Rhone Alpes and South East Ireland. Whether this prioritisation has resulted in concrete results is a matter of some debate but from a policy perspective, SMEs support and public sector assistance are in evidence.

The sharing and analysis of policies between members of the KTFORCE project has identified a specific Irish policy which could potentially be adopted in other regions to support innovative SMEs, particularly start-ups: the Irish Policy – on the Entrepreneurship Business Development Programme funded by Enterprise Ireland and delivered regionally by the Institutes of Technology – New Frontiers (formerly SEEP) was highlighted as a best practice and top ranking public policy to support innovation, innovative SMEs and to increase and sustain entrepreneurial activity. This programme allows for the development of innovative start-ups and accompanies them in becoming viable businesses through the provision of technical and financial support during the most precarious period of development. Furthermore, the integrated nature of ‘New Frontiers’ facilitates companies to access the support they need.

Grenoble is currently in the process of setting up the SATT, which is an opportunity identified in the SWOT analysis to support SMEs. The SATT is designed to be an incubator to accompany innovative start-ups through their development and could use the Irish model of New Frontiers as inspiration.

UNIVERSITY-INDUSTRY RELATIONS

A further role which local authorities should carry out or support in order to assist in the development of innovative SMEs is the animation of the ecosystem. The SWOT analysis identified several threats and weaknesses linked to a lack of awareness of other actors operating within the ecosystem which often leads to competition instead of collaboration. Through support of the local competitiveness clusters and cooperation with key actors, such as local authorities, enterprise offices, HEIs, and Chamber of Commerce, this could facilitate future beneficial collaborations and development for innovative SMEs.

Although the South East region performs moderately well and has developed some tools and initiatives to support innovation and technology transfer across the three (3) key KTFORCE project areas, much remains to be done to inform better sustainable policies that directly impact on innovation and regional competitiveness and growth. The analyses carried out over the course of the KTFORCE project have revealed several weaknesses and threats to be improved upon as well as obvious opportunities for further action.

SOUTH EAST IRELAND

It is clear from the KTFforce project analysis and results that regional stakeholders should focus on strengthening linkages and relationships between university/higher education and industry (including SMEs). This may require a change in cultural mindset but can also be achieved through practical steps and initiatives and forward looking sustainable policy planning. The TFP analysis revealed that the South East region should concentrate efforts on developing practices and policies that could influence indicators associated with University – Industry relations. Delivering this at a regional level is a challenge.

Recent changes to public sector structures have resulted in uncertainty in the already under-developed regional tiers in Ireland. This approach has been heightened in recent economic times with central government being the pre-eminent form of governance and power. Regional imbalances and disparities remain and this is clearly identifiable in the socio-economic indicators for the South East region. The lack of nationally co-ordinated fully developed spatial or strategic planning for the regions adds to the challenge.

Other challenges that give context to the South East region and the potential delivery of effective innovation and technology transfer are the status of the Institutes of Technology. Currently there is in effect a two-tier higher education system, with mission uncertainty around the futures of the Institutes. This may take a number of years to be resolved. As has also been stressed a number of times during the KTFforce project and in the documentary outputs, detailed data in the areas of knowledge transfer for the NUTS III region is at best mixed. Over reliance on national figures and NUTS II Southern & Eastern data can skew the actual analysis of the specificity and uniqueness of the South-East regional area.

In terms of KT policy areas, we know that in the area of spin-off and entrepreneurship, we are performing at average levels and are in the process of convergence. Real levels of entrepreneurship (as defined by GEM) are difficult to ascertain at regional levels. What is clear is that labour force and unemployment levels for this region continue to significantly exceed the national figures and have done so for some time now. Technology licensing also performs at average – moderate levels, but that policy initiatives around TTOs has improved the situation. The % of SMEs innovating in-house as an overall % of SMEs is also improving, although both HERD and BERD especially need to be increased.

Growth rates on R&D expenditures are mixed across sectors. A more sustainable and self-financing model for the current TTO infrastructure (and more awareness of their roles) will also need addressing as the current round of support lasts only until 2016. From a policy perspective, the project has highlighted a number of policies from other regions and partners that could have a positive impact on the South East region. Tax credit systems work well in France and Portugal, a dedicated region specific development agency, clustering and smart specialisation as well as a strengthening of the STEM studies infrastructure were areas identified that merited exchange of experience and further exploration. The key area of knowledge transfer that needs to address is in University-Industry relations.

There are high levels of HE attainment per 100 but poor rates on non-R&D innovation expenditures. KTFforce showed our University-Industry stream to be performing above the average of the project partners but with a lower growth rate. This is the area for the South East region that has shown much potential and should be specifically addressed by policy makers.

CONCLUSION

The KTFforce project brought together 11 partners from all over Europe with the ambitious objective of benchmarking good practices and policies in knowledge transfer in the areas of technology licensing, university-industry relations and spin-off creation and entrepreneurship. This booklet has been designed to provide an overview of the regional situation, the methodology applied in the project and the outcomes and conclusions resulting from it.

It is overwhelmingly apparent that the project did indeed achieve its original objectives in terms of analysing practices and policies facilitating knowledge transfer. The 11 partners have not only been able to assess their own activities in the area but to gain a better understanding of how knowledge transfer is carried out and supported in other, very different European regions, ranging from regions recognised as “innovation leaders” to regions recognised as “modest innovators”. Each partner was able to use the experience of others in order to better identify their own strengths, weaknesses and opportunities.

Furthermore, the KTFforce project has had some important long-term consequences which were not planned for at the outset of the project. First and foremost, the project has been able to put in place the beginnings of a Europe-wide network for knowledge transfer which can undoubtedly be built upon in the future. Finally, the partners of the KTFforce project have all been able to learn from other regions but also from individual partner members which has paved the way for future collaborations in the same subject area.



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