



Border, Midland & Western
Regional Assembly
Investing in Your Future

**Briefing Paper for Meeting between
the BMW Regional Assembly
&
Dr. Jimmy Devins T.D.,
Minister for Science Technology and
Innovation**

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Key Issues for the BMW Region

1	Science, Technology & Innovation Policy is Reinforcing Regional Imbalances in Ireland
2	Consistent Under-Investment in R&D in the BMW Region Across All Research Programmes
3	Dedicated R&D Fund for the BMW Region is Required – Weak Institutions Require Focused Supports
4	The Economic Development Role of Third Level Institutions Remains Under-Developed
5	Level of Interaction between Research Institutions and Private Enterprises is Poor
6	Innovation Levels Remain Low
7	Regional Innovation Strategies for Each Sub-Region are Required

1. Introduction

The Border, Midland and Western (BMW) Regional Assembly welcomes this opportunity to meet the Minister for Science, Technology and Innovation to discuss the relationship between the Science, Technology and Innovation (STI) policy and balanced regional development in Ireland. This paper presents an overview of research and development (R&D) and innovation in the BMW Region and examines a number of key issues for the BMW Region.

2. Border, Midland and Western Region

The BMW Regional Assembly was established in 1999 in order to give effect to the designation of two regions in Ireland for structural funds purposes. The Regional Assembly acts as the Managing Authority for the BMW Regional Operational Programmes 2000-06 and 2007-13, monitors the expenditure and impact of NDP and EU funds in the Region while seeking to ensure that national programmes take regional issues into account.

The BMW Region is comprised of 13 counties representing 47% of the landmass of Ireland, 27% of the population and produces 19% of total GDP. The Region is predominately rural in nature and is characterised by higher levels of employment in primary and secondary sectors. This is illustrated by the fact that 36.9%¹ of men in the BMW Region are employed in either agriculture or construction. The continued over-reliance on these sectors has contributed to a lower economic output level, has restricted the Region's ability to develop a sustainable economic base during the 'Celtic Tiger' period and now places the Region in a vulnerable position as the economy begins to enter a recessionary period. The immediate impact of the negative economic climate can be illustrated by rising unemployment which has so far has reached 8% in 3rd quarter of 2008, which compares to 6.7% in the S&E Region. The principal regional socio-economic indicators are shown below in Table 1.



Low income per head, higher levels of unemployment and employment in low value-added sectors which characterise the BMW Region, are symptoms of the persistent regional economic disparities in Ireland and emerge as a result of a poor developmental capacity of weaker regions. Regions such as this tend to struggle due to a relative absence of physical infrastructures, highly qualified labour and research and technological development activity. Less favoured regions also tend to have little or no social capital from which they can draw. This ability to seek joint solutions to common problems otherwise known as 'invisible factors' in economic development, is just as important, as physical capital².

As this recessionary period takes hold of the Irish economy, disparities between regions will continue to widen unless the BMW Region can rapidly shift towards an economic base which creates more sustainable and diversified sectors of employment, is more innovative, more knowledge-based, and more internationally competitive.

¹ CSO. Quarterly National Household Survey (QNHS). 2008 Quarter 3.

² Doeringer, P. & Terkla, D. 1990. "How Intangible Factors Contribute to Economic Development: Lessons from a Mature Local Economy", World Development, Vol. 18, No.9, p.1295-1308.

One of the challenges of promoting national innovation policy is that absorption or adoption capacity is generally weakest in disadvantaged regions where the needs are greatest. Underperforming regions display lower rates of R&D investment and slower application of new technologies, than innovation leaders, usually based in large diversified cities or in spatially concentrated clusters. Such regions face formidable obstacles in creating the conditions for the establishment of internationally competitive and flexibly specialised industrial clusters. There are also contradictions inherent in public science policies that invest to concentrate research specialisations in a small number of locations and sectors, thus depriving disadvantaged regions of science investment.

In order for the BMW Region to succeed in its transition to a knowledge economy, a focused regionally-sensitive Science, Technology and Innovation policy is required to stimulate and facilitate economic development.

Table 1: Principle Regional Socio-Economic Indicators³

	Year	State	BMW	S&E
Population (000s)	2006	4,239.8	1,134.3	3,105.5
Labour Force (000s)	2008 Q3	2,281.4	589.2	1,692.2
Unemployment Rate (%)	2008 Q3	7.0	8.0	6.7
GVA per Person (state =100)	2005	100	70.3	110.8
Average Annual Disposable Income (€)	2007	23,610	18,950	25,336
% of Labour Force with a 3rd Level Qualification	2008 Q3	30.5	36.1	34.6
No. of Universities	2007	7	1	6
No. of Institutes of Technology	2007	14	5	9

3. The Strategy for Science, Technology and Innovation 2006 – 2013

While it is widely acknowledged that a country's investment in Science, Technology and Innovation (STI) will assist the transition to a knowledge driven economy, the economic impact, efficiency of implementation and delivery of key outputs are the crucial factors that will ultimately determines its success. Ireland's strategy for STI is articulated in the Strategy for Science, Technology and Innovation (SSTI) 2006-2013 sets out a vision for Ireland that by 2013 it will be *'internationally renowned for the excellence of its research, and will be at the forefront in generating and using new knowledge for economic and social progress, within an innovation driven culture'*. The strategy's key objective is the development of a strong knowledge intensive economy and to this end its budget is divided among 3 key areas; (i) Research Infrastructure; (ii) Enterprise Support; and (iii) Research and Commercialisation programmes. The SSTI has received considerable investment in the previous NDP 2000-2006 (€2.4bn) and has been allocated even greater resources in the latest NDP 2007-2013 (€8.2bn).

³ Data Sources:-CSO: Census (2006), QHNS (08Q3), Survey on Income & Living Conditions in Ireland (2007) and County Incomes and Regional GDP (2005)

The greatest impact of this new strategy has been that for the first time Ireland is now in a position to determine its own R&D investment priorities. Whereas up until the late nineties Irish research funding was dominated by the European Framework programmes and as a consequence national research priorities were largely determined by European priorities, which was ultimately fragmenting the national effort.

Key Point 1: STI Policy is Reinforcing Regional Imbalance in Ireland

The impact of innovation is contingent on the intensity of R&D activity in a region, the potential for technological exploitation from elsewhere (technological gap) and several complementary factors. These complementary factors may be either conducive to technology diffusion e.g., stock of physical infrastructure, critical mass and density of population, or may be detrimental e.g., dominance of traditional sectors, or, a high unemployment rate. The SSTI acknowledges that companies in regional locations are at a disadvantage when it comes to accessing support for innovation due to the large concentration of scientific and technological resources in the major cities. However current government R&D expenditure does not reflect the strategic aims of the National Spatial Strategy and is in fact reinforcing the imbalance between regions.

From a regional development perspective, the potential of the Institutes of Technology to develop into effective technology resources focused on collaboration with business, on the basis of applied research and technology development, is recognised in the strategy. The strategy proposes to build on the research strengths in the Institutes, support networking activities, address identified industry needs and the development of competence centres. However, the assertion in SSTI 2006-2013 that the concentration of research activity in a small number of national research centres is consistent with the National Spatial Strategy⁴, is open to serious questioning. The award of institutional research funding continues to be based on competitive excellence, with limited emphasis on building the capacity of weaker institutions. The SWOT analysis does not identify any spatial disparities in the level of research activity or innovation at present, such as those identified in the Audit of Innovation report for the BMW Regional Assembly (2004). The strategy does not propose to address any specific spatial disparities, nor does it have any region-level targets. Although the strategy provides one of the pillars of the NDP, it makes no reference to the National Spatial Strategy, and does not reflect or reinforce the goals of balanced regional development as set out in the NDP 2007-13.

R&D investment has been overwhelmingly directed towards existing centres of excellence which are invariably found in more prosperous regions and this reproduces the gap between underperforming and prosperous regions i.e., between the BMW Region and the S&E Region. This reflects the outcome of a study from the European Spatial Planning Observation Network (ESPON)⁵ which found that R&D policy in the European Union was adversely impacting on spatial balance by reinforcing existing concentrations of activity. While economic geography literature on spill-overs from university research suggests that spill-overs are quite limited in distance. In the Irish context, this implies that most of the benefits of the increased public investment in HERD (Higher Education Research and Development)

⁴ Department of Enterprise, Trade and Employment. 2006. Strategy for Science Technology and Innovation. Government Publications: Dublin. p. 86.

⁵ ESPON. The Territorial Impact of EU Research and Development Policies. December 2005.

will accrue to the university cities, and particularly Dublin with four universities in its vicinity. For this reason, **a territorial impact analysis of STI policy is merited.**

Key Point 2: Consistent Under-Investment in R&D in the BMW Region

The total expenditure in the BMW Region of just under €300m represents just 15% of RTDI expenditure nationally under the National Development Plan (NDP) 2000-2006⁶. Given the importance of RTDI as a driver of regional development, the low levels of expenditure that currently exist will have a significant negative impact on the competitiveness of the Region.

1. Since its inception Science Foundation Ireland (SFI) has allocated €1,150m⁷ in grants, only 9.4% of which went to researchers in the BMW Region. It should be noted that Letterkenny Institute of Technology along with Galway Mayo Institute of Technology have not received any SFI funding.
2. The Programme for Research in Third Level Institutions (PRTLII) which is operated by the Higher Education Authority (HEA) has at its core the development of research infrastructures and research programmes for third level institutions. The first three cycles of PRTLII represented a €605m investment in research in Ireland. However, just 12% of this fund was invested in third level institutions in the BMW Region. It is also notable that NUI Galway (NUIG) received 93% of the total investment for the Region. Of the BMW Region's five Institutes of Technology - Athlone Institute of Technology (AIT), Dundalk Institute of Technology (DKIT), Galway Mayo Institute of Technology (GMIT), Letterkenny Institute of Technology (LYIT) and the Institute of Technology Sligo (IT Sligo) - only AIT and IT Sligo benefited from direct funding under this programme. Funding awarded under the fourth cycle of PRTLII in 2007 has maintained this trend of under-investment in the BMW Region. NUIG represents the only third level institution in the Region to be awarded funding in the latest cycle of this programme which is valued at €260m. The forthcoming call for proposals under Cycle 5 of PRTLII provides an opportunity to consider these trends.
3. The Technological Sector Research Initiative (TSRI) is a research fund available on a competitive basis to the fourteen Institutes of Technology for the purpose of supporting and strengthening the research capacity of the sector by enabling research projects. The total funding awarded under the 2000-2006 NDP of €38.9m administered by the Council of Directors of Institutes of Technology. Due to the limited budget available the Institutes of Technology cannot significantly improve their research infrastructure. Given the crucial role of the five Institutes of Technology (IoTs) in the development of the BMW Region and the lack of funding awarded under PRTLII it is once again a disappointment to note that just 19.4% of the TSRI funding has been awarded to the IoTs in the Region.
4. The Irish Council for Science, Technology and Innovation (ICSTI)⁸ found that the gap in the availability of applied research capability that enterprises can readily access and the low absorptive capacity of enterprises for research were the two key constraints to

⁶ Department of Enterprise, Trade and Employment. Annual Implementation Report 2006 for the Productive Sector Operational Programme 2000-2006.

⁷ Figures supplied by SFI for Funding Commitments up to the end of September 2008.

⁸ ICSTI. Promoting Enterprise-Higher Education Relationships. Forfás. March 2007.

enterprise-higher education research collaborations. These are in part being addressed by Applied Research Enhancement (ARE) Programme targeted at the Institutes of Technology and administered by Enterprise Ireland. This programme has been introduced to develop research capacity in areas of strategic importance to the individual colleges and of relevance to industry both regionally and nationally. This programme aims to facilitate a maximum of three centres of excellence in each of the Institutes of Technology. The funding available for each project is €1.25m and so far four centres have benefited from this programme in the BMW Region. The scale of funding available under this programme which is potentially of great benefit to regional enterprises and development compares very unfavourably with the main programmes such as PRTL and SFI.

5. Latest figures published by Forfás show that the BMW Region is lagging significantly behind the S&E Region in terms of BERD and HERD. The regional distribution of R&D spending by businesses (BERD) in 2005⁹ showed that just 25.7% was occurring in the BMW Region. BERD figures also highlight the concentration of research activity in Dublin. These figures show that 41.2% of all business expenditure R&D occurring in Dublin, the remaining 33.1% of R&D investment occurred in the rest of S&E Region.
6. This is also reflected in the Higher Education R&D (HERD) figures for 2006¹⁰ which found that only one BMW institution (NUIG) featured in the top ten in terms of research expenditure and total HERD expenditure for the BMW Region was just 14.8% of the total figure of €600m in 2006.

Key Point 3:

A Dedicated R&D Fund for the BMW Region is Required

This fund should have two strategic aims:

- (i) To build the research capacity of the higher education institutes in the BMW Region and in particular the Region's Institutes of Technology
- (ii) To develop research linkages between industry and higher education which impact on the regional economy

The BMW Region must significantly raise its research and commercialisation capacity by investing in focused, market-led applied research infrastructure and facilities that address the specific needs of enterprise development in the Region. This can only be achieved through a substantial increase in the level of investment currently received in the BMW Region. Both targets have been partially addressed by the TSRI and the ARE programmes. However these initiatives will continue to have a limited impact as they both remain severely under-funded. Lónra, the BMW Regional Higher Education Network, is already in place in the Region and could act as a strategic partner to progress this initiative.

Lionra, with support from the BMW Regional Assembly is currently undertaking a feasibility study into the establishment of a Knowledge Transfer Network, focussed initially on the medical devices sector in the BMW Region. This initiative has enormous potential for collaboration between the Higher Education Institutes and Industry in the Region.

⁹ Forfás. 2007. Research & Development Performance in the Business Sector Ireland 2005/6. January 2007.

¹⁰ Forfás. 2007. The Higher Education R&D Survey 2006 (HERD): First Findings. August 2007.

In addition, the Convenor of Lionra, Professor Ciarán Ó Cathain (AIT) has proposed the establishment of a dedicated R&D seed fund in the region in order to build the collaborative capacity of the Institutes of Technology, in partnership with NUI Galway. Such an initiative needs positive endorsement by Government as the resources currently available to the Institutes is quite limited. Furthermore, 40% of the public investment in such a fund is recoupable from the EU under the Regional Operational Programme.

**Key Point 4:
3rd Economic Development Role of 3rd Level Institutions
Remains Under-Developed**

The Expert Group on Future Skills Needs has described Higher Education Institutions as “potentially a central element in the portfolio of assets that contribute to a region’s competitive advantage and enterprising capability.” There is a need for explicit policy in higher education in relation to the role of these key regional institutions as drivers of economic development and as loci for spatial clustering, consistent with the NSS. In an Irish context, it is noteworthy that four of the seven universities are located in the Greater Dublin Area, while the distribution of the Institutes of Technology is more spatially balanced, coinciding in particular with the designated gateway centres.

The impact of Government policy which aims to deliver a knowledge economy is that the old core remit of simply educating and researching is now evolving towards greater research activity and even stronger collaboration with industry. TLIs are also increasingly required to engage with others in their regions, provide opportunities for lifelong learning and contribute to the development of knowledge-intensive jobs which will enable graduates to find local employment and remain in their communities¹¹. This newly evolving ‘third role’ for TLIs requires greater consideration by government policy. The third-level sector cannot be expected to deliver seamlessly or painlessly on a broader mandate in a short timeframe as this involves a change in institutional culture, structure and orientation.

**Key Point 5:
Poor Levels of Interaction between Research Institutions & Private
Enterprise**

Serious deficiencies exist in the roll-out of Ireland’s STI Strategy and in particular research performance is not adequately paired with the economic utilisation of results. One of the core objectives of STI policy is to facilitate strong industry-academia collaboration in order to maximise the economic benefits of basic research. However, collaboration between third-level institutions (TLIs) and industry remains low as do levels of innovation within industry. Without real collaborative research tangible benefits for enterprise cannot be realised. The prospect of Ireland delivering as a ‘knowledge economy’ remains weak unless there is a significant increase in the number technology transfers and in the intensity of innovation, across all sectors and in all regions.

¹¹ OECD. 2007. Higher Education and Regions: Globally Competitive, Locally Engaged. OECE: Paris.

Evidence from research carried out by O’Leary and Jordan¹² (2007) on business innovation in the South-East and South-West of Ireland found that the majority of companies surveyed, rarely or never interact with the region-based education sector. Another key conclusion was the inefficiency of outcomes of industry-academia collaboration. They found in fact that the greater the frequency of direct interaction with TLIs the lower the probability of both process and product innovation occurring in these businesses.

A report from the Expert Group on Future Skills Needs¹³ on the skills and research needs of the international financial services sector also found there was very little evidence of the technology transfer from TLIs to industry. In addition it was also reported that there is a ‘general lack of interest from industry in research activity in Irish universities’¹⁴.

Further evidence from the CSO and Forfás¹⁵ showed that the levels of cooperation with TLIs was greatest with larger enterprises with more than 250 employees (26.7%) but cooperation with small (4.3%) and medium sized enterprises (9.7%) remained very low. Just 6.8% of all firms who responded to the survey had cooperated with a TLI.

A systematic mechanism is required by which TLIs are rewarded on a recurrent basis for collaborative engagement with industry in order to address the R&D and technological adaptation needs of enterprises. The BMW Regional Assembly has piloted several initiatives and will shortly provide a report to the Minister identifying a number of mechanisms by which this may be done in future.

Key Point 6: Low Levels of Innovation

The need to innovate is also acknowledged as critical in order to offset mounting international competition which brings with it an increasing pressure for improved levels of productivity, quality and efficiency. Empirical evidence shows that a strong link exists between investment in the research and innovation base of an economy and sustainable economic growth. It also demonstrates that the sustainability and therefore the longevity of enterprises are positively correlated to those enterprises that engage in R&D. These enterprises also provide higher quality and better paid employment¹⁶. Therefore a successful innovation and technology transfer culture is critical for the future growth and prosperity of the BMW Region and for the Irish economy.

Hewitt and Roper¹⁷ found that innovation by Irish manufacturing firms remained relatively static over a 15 year period to 2005, despite strong economic growth during the period. Between 1991 and 2005 the proportion of manufacturing plants in Ireland making changes to

¹² Jordan, D. & O’Leary E. 2007. “Is Irish Innovation Policy Working? Evidence from High-Technology Businesses”. Dublin: Statistical and Social Inquiry Society of Ireland, October 2007.

¹³ EGFSN. 2007. Future Skill and Research Needs of the International Financial Services Industry. December 2007.

¹⁴ Ibid p.138.

¹⁵ CSO & Forfás. 2008. Community Innovation 2004-2006 First Findings. June 2008.

¹⁶ Kearns, A. and & Ruane, F. (1999). ‘The Tangible Contribution of R&D Spending Foreign-Owned Plants to a Host Region: a Plant Level Study of the Irish Manufacturing Sector (1980-1996)’ Economic Papers 997. Trinity College Dublin, Department of Economics.

¹⁷ Hewitt-Dundas, N & Roper, S. 2008. Ireland’s Innovation Performance: 1991 to 2005. ESRI Quarterly Economic Commentary. Summer, p.46-68.

their existing products or introducing new products rose only marginally, from 63% to 68%. They also showed that the proportion of manufacturing plants in Ireland making changes to their existing processes or introducing new processes has declined from 58% in 1996 to 51% in 2005. In the early 1990s 46% of sales from manufacturing plants were coming from products that had been improved or newly introduced. By 2005 this proportion of sales had dropped to 34%. This means that plants in Ireland were becoming more dependent on established products for which the profit margins are typically lower.

This trend is further reinforced by the findings of The Audit of Innovation in the BMW Region¹⁸, which concluded that the Region had an innovation deficit and was also less entrepreneurial as evidenced by the fact that the volume of new start-up businesses in the BMW Region was only half that in the S&E Region on a pro-rata basis. It also illustrated that the link between industry and third level institutions in the BMW Region was very weak.

The deficit of innovation and lack of successful industry/academia interaction taking place in Ireland reinforces the need for SSTI to deliver as a driver of innovation. If Ireland is to build a strong knowledge-based economy, achieve projected levels of economic growth and remain competitive internationally, then regional innovation must rise to the top of the policy agenda.

Key Point 7: Regional Innovation Strategies for Each Sub-Region

The SSTI sets out a national Innovation System and implementation structures but does not propose the development of complementary regional innovation systems and structured regional implementation arrangements, at which level, the interactions with business will take place. It has been recognised that an effective regional innovation system can facilitate interaction between all relevant actors and unlock access to sources of knowledge.

The national agencies responsible for science and innovation policy, led by Forfás should collaborate with regional level bodies, third level institutions and private sector bodies to develop multi-annual comprehensive regional innovation strategies. These are the ‘missing link’ in the governance of national STI policy. These complementary strategies could be developed on a pilot basis initially, drawing on the extensive experience of regional development agencies in several EU countries¹⁹. The Regional Operational Programmes (OPs) 2007-2013 provides a mechanism through which 40% of the cost of developing such strategies in both NUTS II Regions may be recouped from the European Union through the experimental actions strands of the OP.

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¹⁸ BMW Regional Assembly. 2004. Audit of Innovation in the BMW Region. BMW Regional Assembly: Ballaghdereen.

¹⁹ The European Commission Regional Technology Plans, see Henderson, D. 2000. “EU Regional Innovation Strategies”, in European Urban and Regional Studies, Vol. 7, No. 4, p. 347-358.