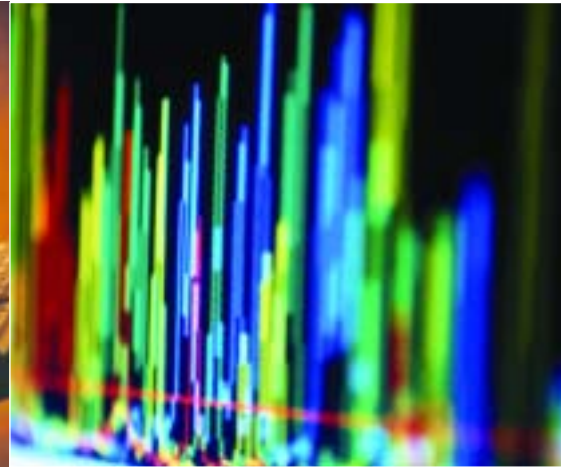


Final Report to the **BMW** Regional Assembly

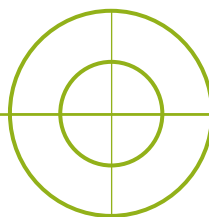


Audit of **INN****VATION** —
in the BMW Region



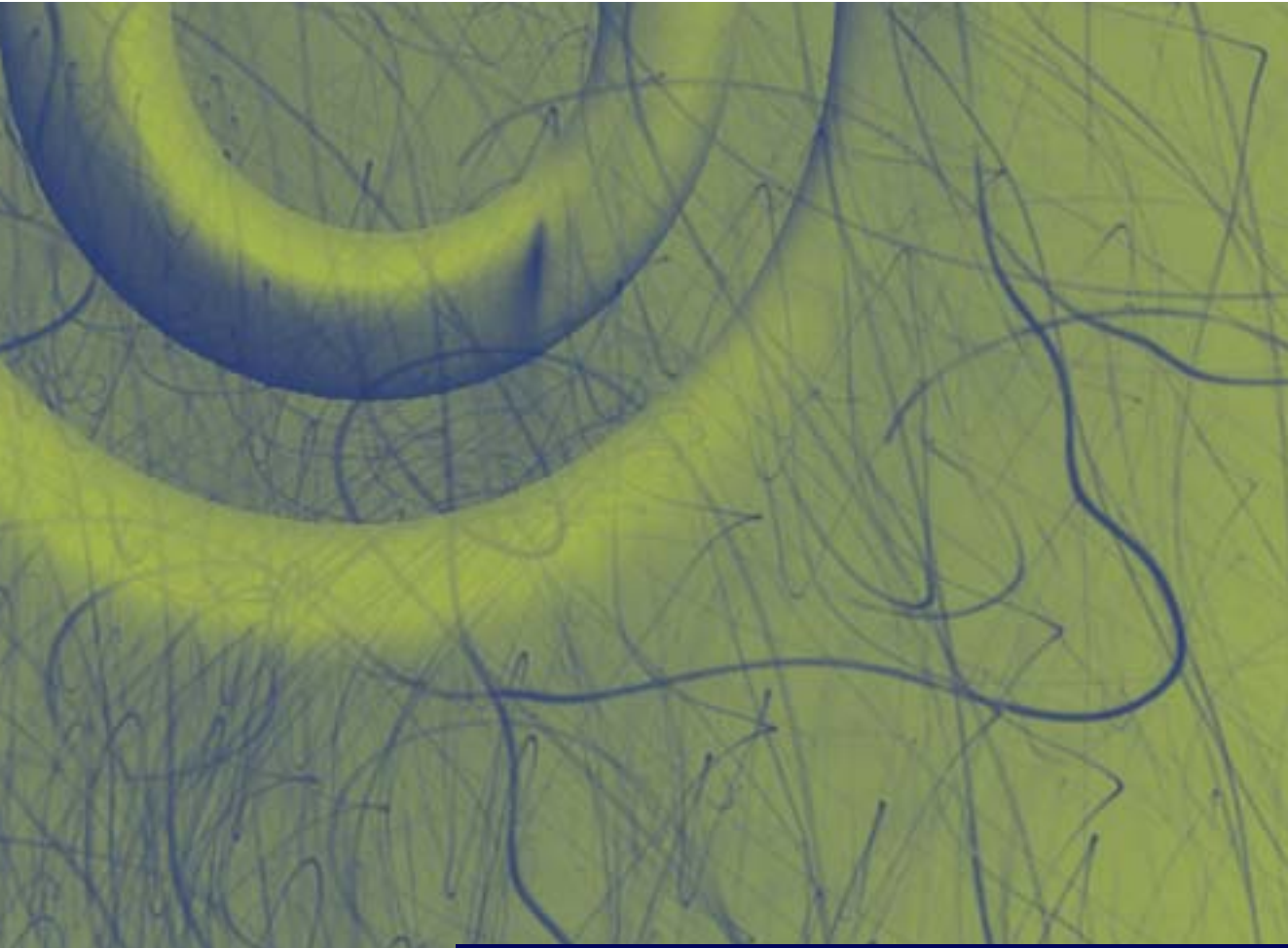
Border, Midland & Western
Regional Assembly
Shaping the Region

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Executive Summary

Executive Summary

This BMW Region Innovation Audit examined the following questions:

What is innovation in the context of the BMW Region and what was the methodology used in this audit?

Chapter One

How is the BMW Region developing?

Chapter Two

What is the level of entrepreneurship and company performance in the BMW Region?

Chapter Three

What innovation activities are BMW companies undertaking and how do they compare to S&E companies?

Chapter Four

Who are the relevant State Development Agencies and what contributions do they make?

Chapter Five

What impacts do the Third Level sector, the physical infrastructure and the regional entrepreneurial culture have on innovation in the BMW Region?

Chapter Six

What lessons can one learn from 'Best Practice' examples internationally?

Chapter Seven

What are the main opportunities and what can be done to improve the level of innovation in the BMW Region?

Chapter Eight

Chapter One

Chapter 1 outlines the Terms of Reference, shows a diagram of the audit of innovation methodology and defines innovation as:

- *The introduction of new or significantly modified products*
- *Process innovation new to the firm*
- *Opening of a new market or markets*
- *Significant change in business organization or structure*

In addition, the model of innovation used incorporates three other key factors:

A positive **Culture and Attitude** towards entrepreneurship and innovation is essential. The **Enabling** Conditions which must be present to allow innovation, such as Third Level institutions, essential infrastructure, broadband communications systems, adequate energy supply and the availability of venture and risk capital.

The **Innovation Stimulators** which are positive actions, such as the stimulation of new and growth-oriented enterprises; Third Level–industry linkages, R&D supports, relevant research centres and IPR supports.

Chapter Two

Chapter 2 assess the economic and demographic position of the BMW Region and concludes:

The BMW Region is facing new challenges and drivers of change, including the second half of the National Development Plan (2000-2006), the growth in population and the opening of foreign labour markets to Irish employers (foreign immigrants). New technology, the change to a knowledge-based economy and the National Spatial Strategy are also important. New approaches will be necessary to exploit these new drivers.

The structure of industry in the BMW is very traditional - it has a high proportion of primary production and traditional industry and a low proportion of service businesses. It also has a higher level of unemployment than the S&E Region. Consequently, many companies are at risk in the medium term. A long-term initiative is required to modernise the region's industrial structure - this should not be left to normal attrition and change processes.

The BMW Region is growing more slowly than the S&E Region and is likely to continue to do so unless some significant decisive action is undertaken.

In demographic terms, the BMW Region has a higher dependency rate, a more dispersed population, smaller urban centres and a greater percentage of its population still living in rural areas than the S&E Region. Many of these rural areas are poor and in long-term decline. Some urban areas, such as Galway and Louth are growing rapidly, as are the conurbation areas of Dublin, such as Portlaoise, Mullingar and smaller towns in-between. The implication is that some areas within the BMW Region are likely to grow at different rates and planning targets will also vary from area to area.

Significant investment will be required in the BMW Region's identified Gateways and Hubs under the NSS if they are to reach their critical mass by 2022.

Chapter Three

Chapter 3 assesses the level of entrepreneurship in the BMW Region and the performance of its companies, drawing comparisons with the S&E Region. It concludes by looking at some 'best practice' examples and explores some opportunities in the BMW Region.

The key conclusions in this chapter are:

The volume of new start-up businesses in the BMW Region is only half that in the S&E Region. Therefore the BMW Region, in general, is less entrepreneurial than the S&E Region. This situation needs to be addressed to ensure long-term development.

Across a range of indicators, companies in the BMW Region do not perform as well as

companies in the S&E Region. Part of the discrepancy in efficiency is due to differences in their industrial structure, as influenced by the following factors:

- *There are slightly more manufacturing companies in the BMW Region*
- *The BMW Region has more traditional and fewer high-tech firms than the S&E Region*
- *It has proportionally fewer MNEs*
- *It also has smaller companies generally*
- *Operational capability needs improvement to upgrade performance*

The BMW Region has few internationally traded service companies, and the majority of service companies are in the S&E Region, particularly in the Financial Services Centre (FSC). Companies in the FSC are more productive than other service companies and there is no equivalent to the FSC outside Dublin. Service companies are a critical part of future development and the BMW Regional Assembly must identify processes for stimulating more of them to establish in the region.

Despite the above conclusions there are many examples of high quality entrepreneurship and successful indigenous companies and MNEs in the BMW Region. There are also many opportunities for further development in the future including medical devices and biotechnology.

Chapter Four

Chapter 4 reports on the innovation survey of 215 companies in the BMW Region. The questions included type of innovation activities undertaken, drivers of innovation, supports and barriers, information sources, expenditure on innovation, impact of this expenditure on company performance, and the use of development agencies and the Third Level sector. In addition companies were asked to indicate their employment levels, sector, ownership and location (by county).

The main conclusions are:

The BMW Region is significantly less innovative than the S&E Region based on the number of innovative companies. Only 53% of companies undertook innovative activities. This is significantly lower than the 63% in the National Innovation Survey and an estimated 79% in the S&E Region.

R&D performance seems to be the key to innovation – 85% of innovative companies undertook R&D; the other 15% were innovative primarily in new product introduction, new design, purchase of machinery and new market entry.

The absorptive capacity of companies is dependent on the skills and knowledge of their people, usually assessed by the number of graduates and post-graduates involved in R&D. Too many companies in the BMW Region undertake no R&D or only as a part-time activity. Thus, few have the resources to absorb and exploit new developments.

State agencies play a limited role in increasing levels of innovation. However, the promotion and information the agencies provide are important contributors to developing a receptive

company (and reducing its potential risk), and also providing finance (grants, loans or equity) are their major stimulants to company innovation. However, grants will only be required when the company recognises the need for innovation.

Of those responding, over 32% of companies were involved in some form of partnership, joint venture or network - quite high by international standards. 33% used services provided by the Third Level sector. However membership of useful groups or associations seems limited to representative bodies, whereas companies in the UK would typically be members of their trade research association and have access to the latest technical information. The lack of such bodies in Ireland is an important constraint in the Irish situation.

The most important innovation result was new product development (62.1%) and patent applications (20%). The impacts reported were all positive and emphasise the importance of innovation:

- *Employment increase – 544 fulltime and 118 part-time jobs*
- *Turnover and profitability – average increase of 10%*
- *New markets – average increase of 10%*

State support for innovation is very important. Many companies received support from innovation programmes within the last three years, primarily from EI and the CEBs. IDA, Údarás, InterTradelreland and the Programme for Peace and Reconciliation also assisted the respondents.

Chapter 5

Chapter 5 describes the main State development agencies in the BMW Region. It examines the support they provide and how it is distributed between the BMW and S&E Regions.

The main conclusions are:

New ways need to be explored to generate additional start-up businesses, with a higher emphasis on high-tech start-ups, whether they are HPSUs or not. The role of WESTBIC could be invaluable in this effort.

The BMW Region draws down its share of EI support generally, but there is perception among companies that many programmes are available only to a limited selection of companies. EI's main R&D support scheme, RTI has too high a failure rate; its R&D capability scheme is not adequately used.

The Region fails to secure its share of venture capital. In fact, the availability of alternative capital sources within the BMW must be addressed, as lack of finance is the major obstacle to investment in innovation (see 7 below as well).

The Region received 14.6% of the IDA's funds to date. The IDA needs to identify and promote the positive features of specific locations in the BMW Region, preferably in partnership with local business organisations and communities.

Only 1.1% of the IDA expenditure, involving three companies was committed to innovation (R&D). This is far too low.

Other State Development Agencies

- *Údarás supported businesses accounted for 22 applications to RTI, which covered 57 projects*
- *The Western Development Commission manages an important investment fund, which provides both working capital and venture capital for a wider range of businesses than most venture capitalists fund*
- *BMW Regional companies have the capacity to get the FAS’“Excellence Through People” award demonstrating that others could follow suit*

There are opportunities to improve the State support system:

- *The individualized company based programmes are very effective. The challenge is how to ensure more BMW Regional companies meet the ‘support conditions’*
- *The traditional support for new entrepreneurs is much reduced from 20 years ago and new approaches are required to increase the number of new start-ups*
- *In relation to other supports, business development training and investment capital were two common company needs*
- *The level of participation in both RTI and the R&D Capability grants is too low to bring about radical change in the medium-term*
- *The delivery of supports is influenced by the interest and commitment of both parties, by the quality of the application and whether the applicant (company) falls into one of the gaps we identified*
- *The draw down of funds is influenced by the private sector’s understanding of the supports and their expectation of getting support. It is also influenced by whether they have already received the maximum amount of support they are entitled to.*

Chapter Six

Chapter 6 examines factors that are external to the company yet act as barriers or stimulators to innovation within the companies. It assesses the impact of the Third Level education system, the physical infrastructure and the regional entrepreneurial culture. The CIRCA innovation model indicates that if any of these factors are present at an inadequate level (e.g. no broadband) they are a barrier; but if present at an adequate level, they can then be used to stimulate development (e.g. availability of highly skilled personnel for the medical devices sector).

The main conclusions are:

Third Level Sector

The Third Level sector is facing a period of major change and is a key driver to support regional economic development and the development of a knowledge society. NUIG and the IoTs are beginning to plan for this more complex, multi-task future. This new direction requires new strategies and change programmes in Third Level institutions.

The available resources to support industrial R&D need to be increased. This will require changes in attitude, culture and the regulations governing staff in the IoTs. In essence, the numbers of researchers will have to be increased and most services and activities under teaching and training, research and industry and regional development will need strengthening.

The BMW Region is proportionately better supplied with IoTs than university places, as compared to the S&E Region. It needs more post-graduate places, otherwise the 'knowledge drain' of undergraduates and postgraduates to the Greater Dublin Area will continue.

Virtually all of the research funding is competitive, and the quality of proposals and the people are key elements in the assessment. The more applied expertise of the IoTs is not relevant in the assessments for the two major national funds, PRTL and SFI.

There is a reasonable spread of expertise in the Third Level sector in the BMW. But there are restrictions in the IoTs that limit the time available for research and other non-teaching tasks, such as working with industry. These restrictions should be reviewed.

The distribution of employment of primary and post graduate degree holders over recent years shows the lower ability of the Border and Midland Regions to absorb graduates, which is one measure of the level of innovation in a region. The Western Region fares relatively well in comparison with the Midland and Border Regions.

Infrastructure

The BMW Region is deficient in many aspects of infrastructural provision as compared to the S&E Region and the Greater Dublin Area. These add costs to doing business in the BMW Region and act as disincentives to new companies to locate there.

Given the importance of **roads** in the BMW Region in comparison to the rail system, increased investment is urgently required. Roads are not all required to be of motorway standard, but should have improved surface quality and have bottlenecks removed.

The lack of 'Dublin' cost **telecoms** is affecting the competitiveness of the Region and costing jobs and new business, but some developments are underway. The BMW Region will shortly be reasonably well served with broadband backbone systems and a number of local wireless pilots are being undertaken. However, the provision of "last mile" services is not guaranteed. Absence of "last mile" services will place local industry at a disadvantage.

Rail infrastructures and services in the BMW Region are inferior to those in the S&E Region. Rail services on existing lines need to be improved to give a better and more reliable service for passengers and freight.

Electricity supplies to the greater part of the BMW Region are inadequate, but improving. Opportunities will exist for small-scale local generation of electricity by local authorities, communities and PPPs. Future supplies of natural gas to the BMW Region are likely to be limited. This will not generally place consumers in the Region at a disadvantage unless Carbon taxes are introduced.

Culture

The culture of entrepreneurship and innovation in the BMW Region is neutral at best, and probably a little negative in many of the more rural areas. A more positive culture is desirable.

Although culture is slow to change, entrepreneurial activity may create its own feedback cycle, slowly moving society to a more entrepreneurial and innovative culture.

The government can exert influence on entrepreneurship and innovation in different ways: directly through specific measures (support for new start-ups, R&D etc.) and indirectly through generic measures (e.g. education, regulation to create more competition etc.).

Chapter Seven

Chapter 7 discusses what the BMW Regional stakeholders can learn from past experience and 'best practice' in regional development worldwide by assessing:

- *The impact of regional development in the EU under the three CSFs*
- *The lessons from three selected European regions*
- *Best Practice' in regional development worldwide*

The main conclusions from this chapter are:

The analysis of regional development indicates that

- *Convergence of the BMW Region to the S&E Region is possible, but not automatic*
- *Convergence will be slow (1-3% per annum), but some gap will probably remain between the two regions due to continuing structural differences*
- *Convergence will not begin unless the BMW Region undertakes its own actions*

The innovation scoreboard is a good system of comparison between regions, provided adequate data is available. The available Irish data indicates that the S&E Region is more innovatory than the BMW Region.

International comparisons also show that the BMW Regional Assembly and/or the private sector will have to convince other stakeholders to participate in implementing appropriate plans and actions.

The BMW Executive should monitor other regions to identify successful activities that are relevant and transferable to the BMW Region.

Regional policy makers can learn a lot from each other. There are a number of tools that are fashionable, analysed and quoted by international organizations, such as:

- *Clusters*
- *University-industry linkages*
- *Human capital development and mobility*
- *Technology transfer intermediaries*

'Best Practice' regional development requires an approach that includes a framework, specific recommended measures and some pilot actions.

Chapter Eight

Chapter 8 discusses the main trends affecting future development in Ireland and assesses the employment growth prospects to 2015. Then based on this information and on the conclusions in Chapters 2 to 7, a framework for improving innovation in the BMW Region is presented. This is followed by more detailed recommendations and four pilot actions.

The Proposed Framework for Improving Innovation in the BMW Region

Improving company innovation at the regional level is a complex task and any detailed recommendations should be set in the context of a more complete picture. Based on the earlier analysis and discussions, a model encompassing nine different building blocks is proposed. These factors are interrelated. Excelling in one at the expense of the others will not work. All need to be undertaken at the same time, although some may require more effort than others. The eight factors are:

- *Vision and Leadership*
- *Entrepreneurship and SME Support Systems*
- *Venture Capital*
- *Third Level commitment to Economic Development*
- *Human Resource Development*
- *Networking*
- *Cluster Development*
- *Creative Arts & Society*
- *Infrastructure Deficit*

The four pilot actions to implement the priority recommendations are:

- A1 - To undertake a Regional Technology Foresight
- A2 - To develop clusters and networks
- A3 - To improve SME innovative capacity and Third Level linkages
- A4 - To improve the level of appropriate research in the Institutes of Technology

Detailed Recommendations

The more detailed recommendations are made under the same headings as the building blocks. They are summarised in the following section.

Recommendations

(1) Vision and Leadership

1) All the Stakeholders should take local ownership and responsibility for increasing innovation by establishing Innovation Committees under the three NUIITS III Regional Authorities (Border, Midland and Western Regional Authorities) or alternatively by EI Region. The BMW Regional Assembly should facilitate this development. The stakeholders should represent all the public and private bodies and private industry, in particular, necessary to increase the level of company innovation within each region. These committees should be responsible for ensuring the implementation of the main recommendations in this report. They will need to influence government policy to regionalise R&D and innovation policy, where appropriate.

2) To undertake a regional foresight exercise to identify the main themes for regional development over the next 20 years in the BMW Region. This should be undertaken by the BMW Regional Assembly and should involve all the interested parties and relevant stakeholders in the BMW Region and nationally.

3) To build an image and brand for the BMW Region that emphasises its positive attributes for both individuals and companies – this should be undertaken by the BMW Regional Assembly and the three Regional Authorities.

(2) Entrepreneurship and SME Support Systems

1) Develop a comprehensive promotion and support programme to increase the number of new company start-ups. This would include joint promotions to maximise response, use existing programmes, more behavioural approaches to encourage new entrepreneurs, responsive at county level, bi-annual promotions.

2) Promote and support company expansion in the region with campaigns, new scheme to prepare companies to become EI clients, targeted training and development programmes and periodic review of all companies.

3) Increase the number of companies undertaking R&D by more awareness campaigns; introduce a new scheme (research vouchers); ensure more use of existing schemes; increase the approvals rate; increase the absorption rate of private companies with a placement scheme; develop a series of R&D workshops for specific manufacturing and service sectors; assist or sponsor research networks;

4) Attract more multinational enterprises: The IDA, local communities, IBEC and the Chambers of Commerce should work together to identify and develop reasons why MNEs would locate in a BMW Regional town. MNEs are typically attracted to locations that meet their people skills, services requirements, have international air access and high quality Third Level research.

5) The State Development agencies and Local Authorities should be more innovative in their approach to private enterprise and entrepreneurs.

6) Undertake a strategic study of service companies in the BMW Region, focusing in particular on software development, international business services and international financial services; and make recommendations on stimulating and supporting internationally traded service companies.

This recommendation would fall under the responsibilities of the three regional Innovation Committees.

(3) Venture Capital

Establish a Business Venture Capital Committee by bringing together relevant people in the BMW Region to stimulate and support the level of innovation. The BMW Regional Assembly should assist the initial meetings. All stakeholders should be represented, both public and private.

- 1) Improve the availability of working and investment capital in the region by developing a network of 'visible' business angels, local investors, State capital funds, the banks and local venture capitalists
- 2) Increase companies' awareness of venture capital, how to optimise one's use of it, and when and how best to access it.

(4) Third Level commitment to Economic Development

- 1) NUIG and the IoTs should raise the importance and profile of Lionra within their own institutions and use it more to develop more integration and broader provision of services within the BMW Region.
- 2) Lionra should undertake a key role in fostering innovation and creating the knowledge economy in the BMW Region; the individual Third Level colleges and institutions should then develop their own internal change programmes; the change process should be designed to encourage industrial linkages and the Third Level institutions should be more community based and user friendly.
- 3) Increase the Third Level – industry supports by setting up a teaching company scheme to assist companies with less than 100 employees and to better link the Third Level expertise with indigenous companies and increase the number of masters and PhDs trained in the BMW Region Third Level sector and encourage in-company PhDs
- 4) The State should play a role in assisting and underpinning this change, particularly EI which has many of the necessary support schemes already in place; NUIG should be targeted to be the equivalent of the University of Twente (NL); the Department of Education and Science should establish a programme to build more research facilities and capability in the Institutes of Technology; and promote it strongly in the BMW Region; and NUIG and the IoTs should recognise any achievements within their new objectives as equally important for purposes of individual recognition, promotion and support.
- 5) A review of the current internships operated by the Third Level sector should be undertaken to assess their impact on graduates, diploma and certificate holders staying in the BMW Region and their impact on company absorption capacity and innovation

(5) Human Resource Development

The establishment of one Committee on Human Resource Development to underpin and enhance the level of innovation in the BMW Region. All stakeholders should be represented on the committee. Companies should be encouraged to use existing systems, such as FAS, Skillnets, IDA and EI, for their human resource development.

- 1) Develop an appropriate framework for Human Resource Development relevant to Innovation in BMW Regional companies covering: upskilling programmes for current employees, particularly in the more traditional manufacturing sectors; specific learning programmes to increase the number and level of high technology new start-ups; specific practical programmes to assist owner managers to manage and expand their businesses; and programmes to meet the identified areas of weakness in the BMW companies including competitiveness (world class manufacturing, total quality management, just in time delivery etc.), SCM – supply chain management and technology management.
- 2) Increase availability of training services on a Just in Time rather than Just in Case basis. These services to be customised to specific industry/business needs and mainly delivered through outreach.
- 3) The establishment of PLATO groups in the BMW Region should be encouraged for the smaller ambitious companies. This approach would particularly suit the companies with 5 to 20 employees.
- 4) NUIG should implement its plans to establish a Business School as soon as possible and provide practical programmes for industry as well as learning for undergraduates and post-graduates.

(6) Networks Development

1) A special scheme to assist the initial development and operation of networks should be established. This should be part funded for a minimum of two years with a possible extension of one year where the network could be sustained. This could be a pilot action.

This recommendation should be monitored by the three regional Innovation Committees, be implemented by the State Development Agencies, primarily the CEBs, and WESTBI. .

(7) Clusters Development

1) Development of an international cluster is a major challenge for the BMW Region, indeed for Ireland. The best option is the medical devices in Galway-Mayo. The BMW should stimulate this initiative and EI and IDA should implement it.

2) A cluster approach should also be used to develop a regional strength in ICT, particularly in the Galway and Dundalk counties.

3) The strengthening of other more local clusters, such as organic food, eco-tourism, Irish culture, toolmaking, pharmaceuticals should also be explored.

These latter two recommendations would fall under the responsibilities of the three regional innovation committees.

(8) Creative Arts and Society

1) Encourage a range of creative businesses and leisure activities to Galway and other BMW 'gateways' aiming at the 25-40 age group. This would include design, advertising, multimedia, theatre, TV etc. These organisations would need to be very high quality and of international standing.

2) Establish the BMW Region (primarily Connemara and Donegal) as the centre of Irish culture, music, learning, drama and entertainment' using the latest technologies for delivery, such as, TV, video, DVD, multimedia, broadband etc. (this could be both an industry and a creative regional driver).

(9) Infrastructure Deficit

1) Given the importance of the roads in the BMW Region in comparison to the rail system, increased investment in roads is required particularly on the Sligo route (N4), Castlebar (N5), the Dublin-Galway route (N6) and the Galway-Limerick (N17).

2) Establish the planned telecoms system as quickly as possible, ensure the last mile is opened up, get costs down and services equivalent to Central Dublin. Then review progress.

3) Incrementally improve the rail services on existing lines giving a better and more reliable service for passengers and freight

4) Strengthen the public electricity transmission and distribution grids both to provide enhanced supplies in terms of capacity, quality and reliability to consumers and to enable local producers to export. Small-scale electricity generation initiatives should be fostered.

However, longer term decisions should also take into account the development of the gateways and hubs in the BMW Region (National Spatial Strategy).