

# Ireland's Broadband Performance and Policy Requirements

December 2007

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## Executive Summary

Broadband is important to improving productivity growth, facilitating innovation and enhancing social and cultural development. Widespread and affordable broadband access can contribute to productivity growth through applications that promote efficiency, with benefits for business, the public sector, and consumers. This report focuses on the key indicators of Ireland's broadband performance and the policy issues that need to be addressed to enable Ireland to meet the broadband needs of the enterprise sector.

### Key Findings

- Broadband take-up continues to grow strongly in Ireland. At the end of June 2007, there were 698,000 broadband subscribers, including 45,000 mobile broadband subscribers<sup>1</sup>.
- Ireland added 6.6 new broadband connections per 100 inhabitants in the year to June 2007, the highest growth of all OECD countries. As a result, Ireland's ranking improved to 21<sup>st</sup> out of the 32 benchmarked countries in June 2007, compared to ranking 24<sup>th</sup> in June 2006. However, the broadband penetration rate in Ireland at 15.4 % still lags the OECD average of 18.8 %.
- With regard to broadband services for business, Ireland compares well on prices for 34 Mbit/s leased lines but is more expensive for other broadband speeds, such as 6 Mbit/s ADSL and 2 Mbit/s SDSL.
- The key issue from an enterprise development perspective is the limited range and speed of broadband services available and their comparatively higher cost. The fastest speed that is widely available in Ireland (6 Mbit/s), costs four to five times more than considerably higher-speed (ADSL) services in countries such as France, Germany and Hungary. An Irish business would pay over €2,000 per annum for a 6 Mbit/s ADSL service, while its counterpart in Germany would pay up to €534 for 16 Mbit/s (depending on usage). In France, the annual cost is €530 for 18 Mbit/s, and in Sweden, 24 Mbit/s costs just under €1,200 per annum.

### Key Conclusions and Recommendations

Although broadband take-up continues to grow strongly, a number of issues need to be addressed to ensure that Ireland is meeting the broadband needs of enterprise. These include:

#### Improving competition and the availability of advanced service offerings

Competition between and within platforms has been a key driver of product and price innovation internationally. The availability of a fit-for-purpose Local Loop Unbundling (LLU) product since September is a positive development as is the increasing take-up of other broadband platforms, such as cable, fixed wireless and mobile. The take-up of LLU needs to continue to be monitored by ComReg and a periodic review of progress should be undertaken to ensure that any issues impeding

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<sup>1</sup> Since Q2 2007, ComReg includes mobile broadband subscribers in the total broadband figure.

LLU take-up are dealt with promptly. In particular, compliance with the enhanced SLA commitments for business customers needs be monitored and reviewed on at least a six monthly basis.

### **Addressing the regional differences in broadband performance**

Advanced and competitive telecommunications infrastructure is critical to support regional development and to enhance the attractiveness of the gateways and their regions to enterprise development and investment<sup>2</sup>. Critical to the success of the Metropolitan Area Networks (MANs) and their role in supporting regional development is the availability and pricing of backhaul. One possible option to extend Ireland's backhaul network is to make mandatory the installation of telecommunications ducting on an open access basis on all national road upgrades. Ducting could also be mandated in all new residential, commercial and public building developments. Accelerating the rollout of the National Broadband Scheme is also important.

### **Future-proofing Ireland's telecommunications infrastructure**

Trends in broadband technology, regulation, market dynamics and applications all point to the importance of next generation networks (NGN) in terms of ensuring Ireland's future economic growth. A number of other countries have recognised this trend and investment is underway in NGNs that can cater for the services and industries of the future. Further action is required in Ireland if it is to be in a position to take advantage of future global broadband trends and the opportunities associated with those trends. The challenge will be to encourage high levels of investment in the next generation of broadband infrastructures and services in Ireland, which will require a partnership approach between the public and private sector.

### **Enhancing demand side initiatives for business, e-Government and education.**

As well as addressing the aforementioned supply side issues, further actions are also needed to stimulate demand for broadband take-up, in particular, initiatives to promote more sophisticated use of ICT by SMEs, enhanced e-Government services and a more integrated approach to ICT education. Take-up of the Department of Enterprise Trade and Employment's Tech Check programme aimed at SMEs has been strong and potential exists to expand the scheme. The review of Ireland's knowledge society strategy provides an opportunity to reinvigorate the implementation of key e-Government projects. Although it is essential that the ICT Strategy for schools is driven by pedagogical considerations, the levels of ICT equipment and broadband access made available to schools must keep pace with technological advances.

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<sup>2</sup> The gateways identified in the National Spatial Strategy are: Athlone/Mullingar/Tullamore, Cork, Dublin, Dundalk, Galway, Letterkenny, Limerick, Sligo and Waterford.

# 1. Introduction

Broadband is of strategic importance in improving productivity growth, facilitating innovation and enhancing social and cultural development. Since 2002, Forfás has produced a series of reports that benchmark Ireland's comparative performance in meeting the broadband needs of the enterprise base. The most recent report, published in November 2006, found that although there had been a number of significant developments in the Irish broadband market in recent years, Ireland's relative performance continued to lag that of its competitors. This report focuses on the key indicators of Ireland's broadband performance and the policy issues that need to be addressed to enable Ireland to meet the broadband needs of the enterprise sector.

## 2. Broadband and Competitiveness

Advanced telecommunications services are critical for the attraction of foreign direct investment, for the development of indigenous industry and the promotion of the knowledge economy. The increasing importance of services to the economy, in particular those that are structured around electronic transactions and information flows, makes it essential that Ireland has access to an advanced and cost competitive communications services. For SMEs, effective use of ICT allows them to compete more effectively with their counterparts in other markets, for example by reducing costs and improving the quality of services to their customer base.

Better use of ICT has been identified as one of the key factors required to improve Ireland's productivity performance. Broadband can enable higher productivity growth by allowing firms to cast their net wider when looking for suppliers or seeking new market opportunities to increase their customer-base or to more effectively link business functions e.g. sales, design, manufacturing, supply chain, stock control and accounts.

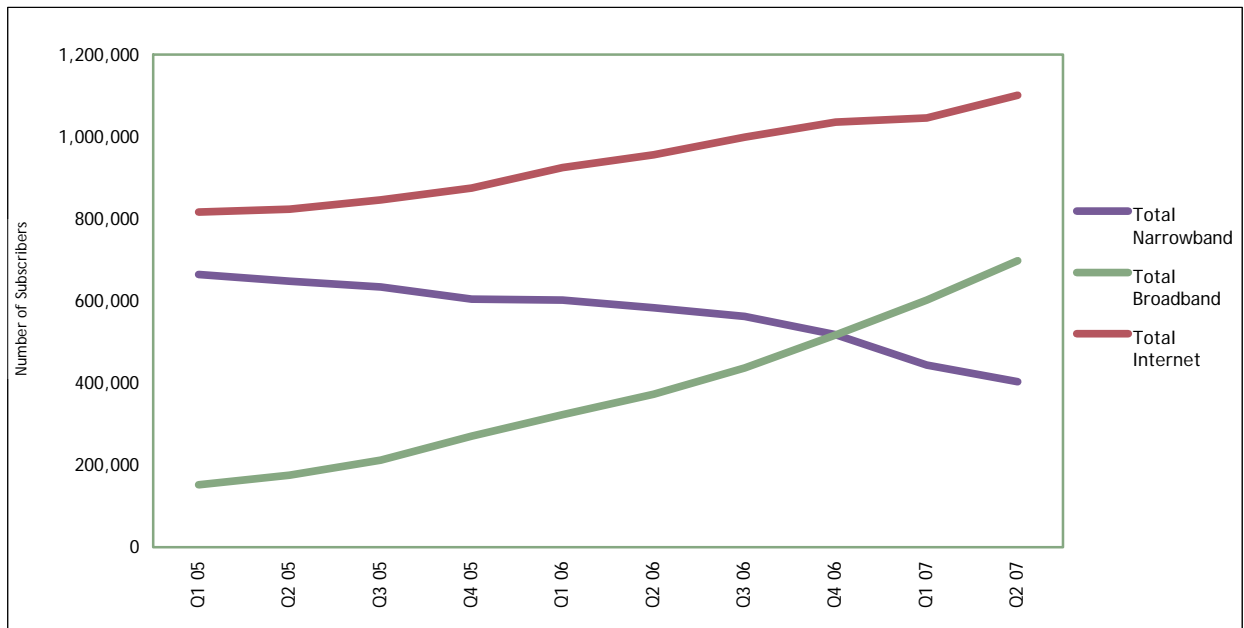
## 3. Overview of the Broadband Market in Ireland

Broadband take-up continues to grow strongly in Ireland and at the end of June 2007, there were 698,000 broadband subscribers in Ireland, including 45,000 mobile broadband subscribers. This represents an 87 % increase on the June 2006 figure of 372,600 broadband subscribers<sup>3</sup>.

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<sup>3</sup> Since Q2 2007, ComReg includes mobile broadband subscribers in the total broadband figure. The growth in total broadband subscriptions year on year is 57 % when mobile is excluded.

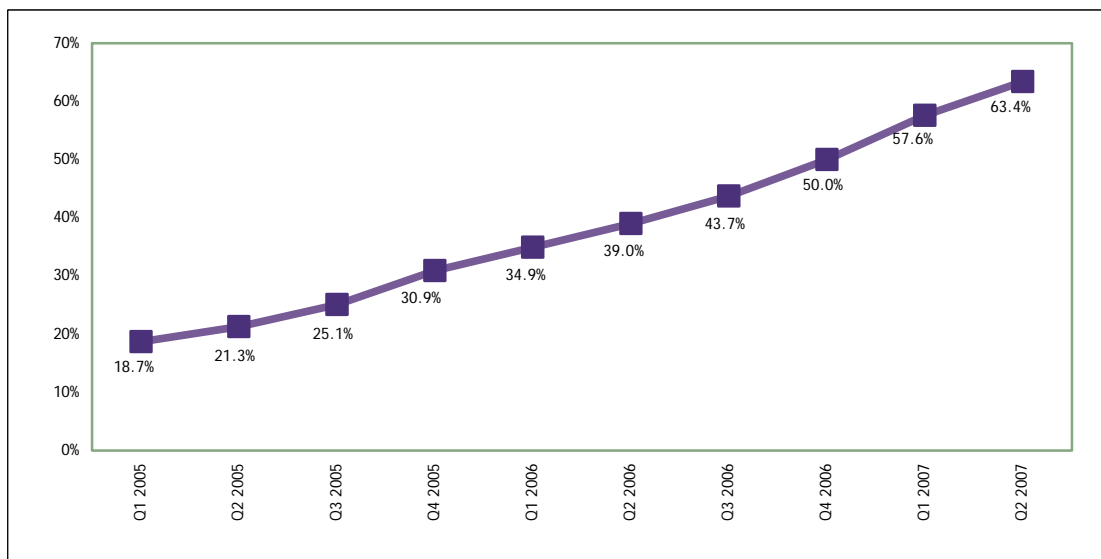
Figure 1: Trends in Internet, Narrowband and Broadband Take-up in Ireland



Source: ComReg

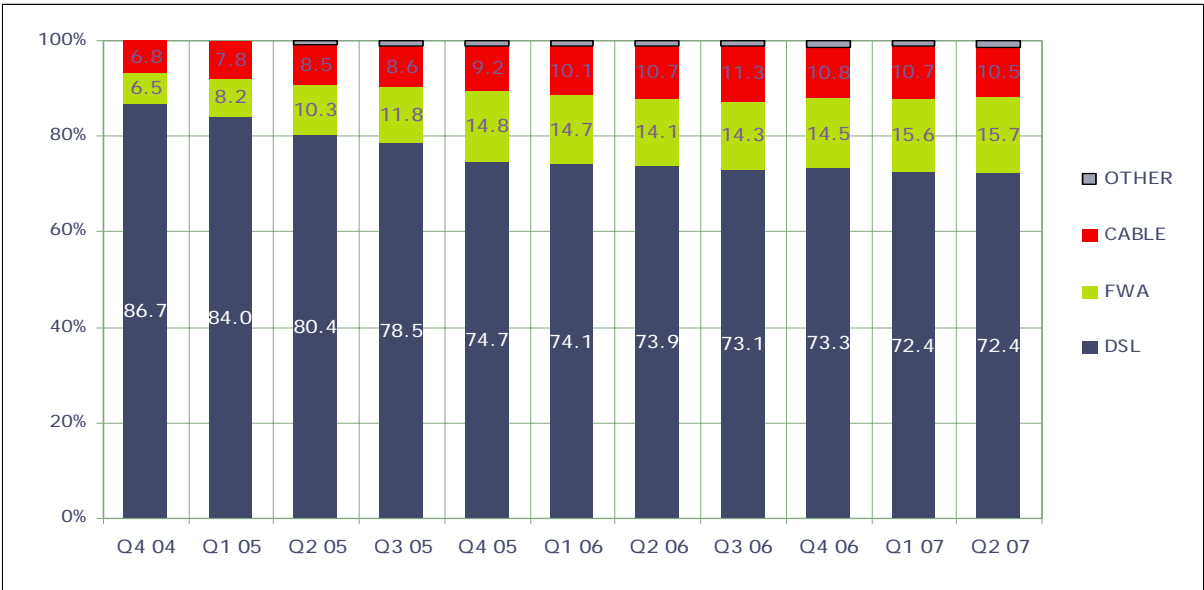
In Q1 2007, the number of broadband subscribers exceeded that of narrowband (metered plus flat rate) for the first time. Internet penetration also continues to increase but at a more modest rate. In June 2007, the number of Internet subscribers stood at over 1.1 million, with broadband subscribers making up almost two thirds of this (Figure 1). Broadband’s share of the total Internet base has seen strong growth in the last year (Figure 2).

Figure 2: Broadband Subscribers as a %age of Total Internet Subscribers, Q1 2005-Q2 2007



Source: ComReg

Figure 3: Trends in Broadband Take-up by Platform in Ireland<sup>4</sup>



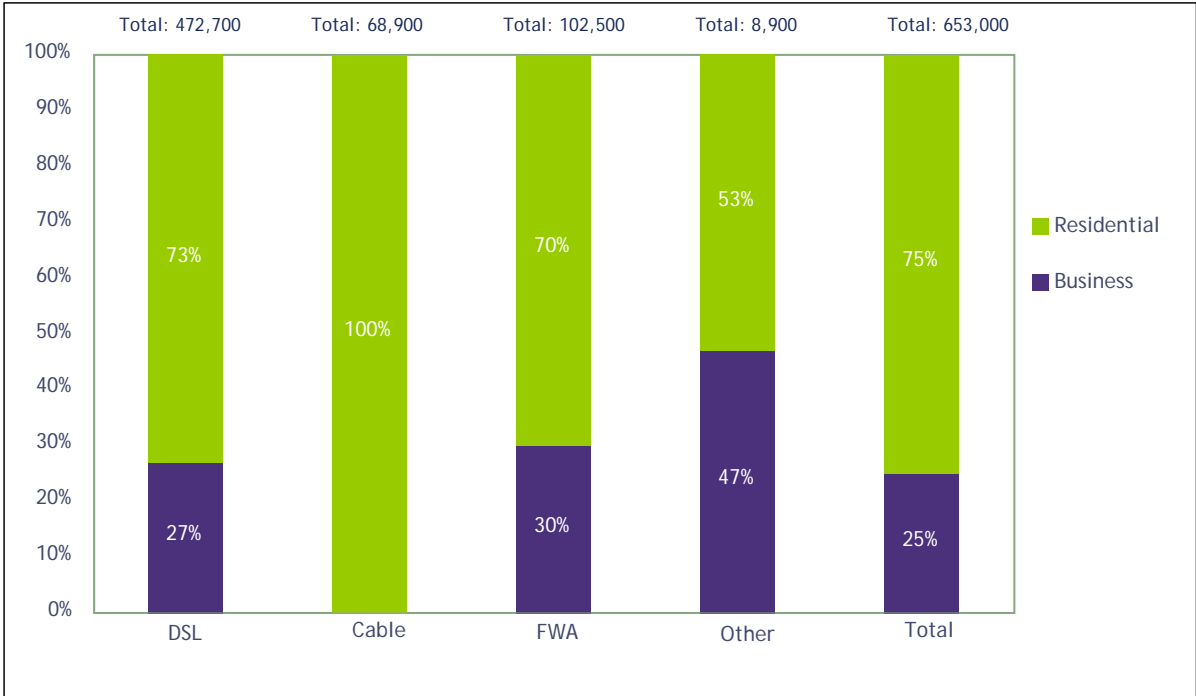
Source: ComReg

There has been little change in broadband take-up by platform in the past year. DSL (broadband over telephone lines) continues to be the main means of access<sup>5</sup>. Excluding mobile broadband subscribers, approximately one in four broadband connections is via a broadband platform other than DSL (Figure 3). When mobile broadband subscribers are included, DSL’s share of broadband take-up in June 2007 was 67.7 %. This means that one third of Ireland’s 698,000 broadband subscribers are accessing broadband services via cable, FWA, mobile or satellite.

<sup>4</sup> Data for Q2 2007 excludes mobile subscribers to ensure comparability of data between quarters.

<sup>5</sup> DSL = Digital Subscriber Line. DSL is a family of similar technologies which allow ordinary telephone lines to be used for high speed broadband communications. The family includes ADSL, SDSL and VDSL

Figure 4: Residential vs. Business Subscribers across Broadband Platforms, June 2007



Source: ComReg

ComReg’s latest quarterly Key Data report provides a breakdown of subscribers between residential and business users across the various broadband platforms (Figure 4). In June 2007, businesses accounted for a quarter of total broadband subscribers (excluding mobile broadband) in Ireland and are more likely to use DSL and FWA technologies to access broadband services<sup>6</sup>.

<sup>6</sup> FWA = Fixed Wireless Access. It is the use of a wireless communications link as the "last mile" connection for delivering telephony services to telecommunications customers.



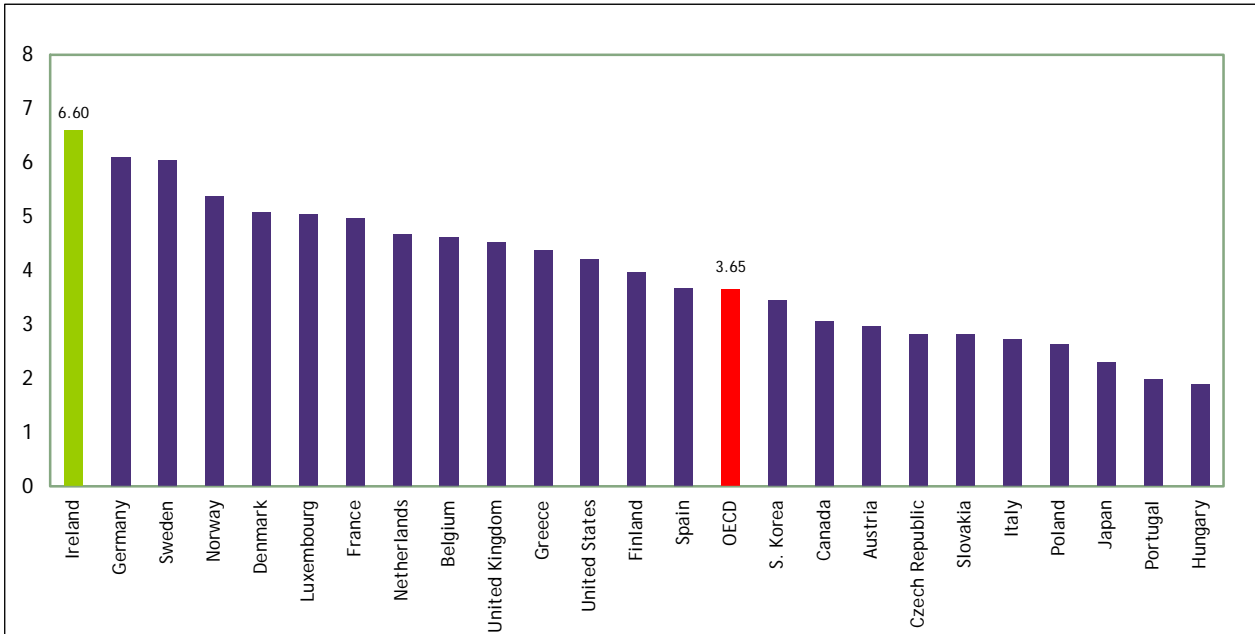
# 4. Main Findings of the Benchmarking Analysis

This section provides an update of Ireland’s comparative performance across a range of indicators, including take-up, costs, quality and choice of broadband services.

## 4.1. Broadband Take-up

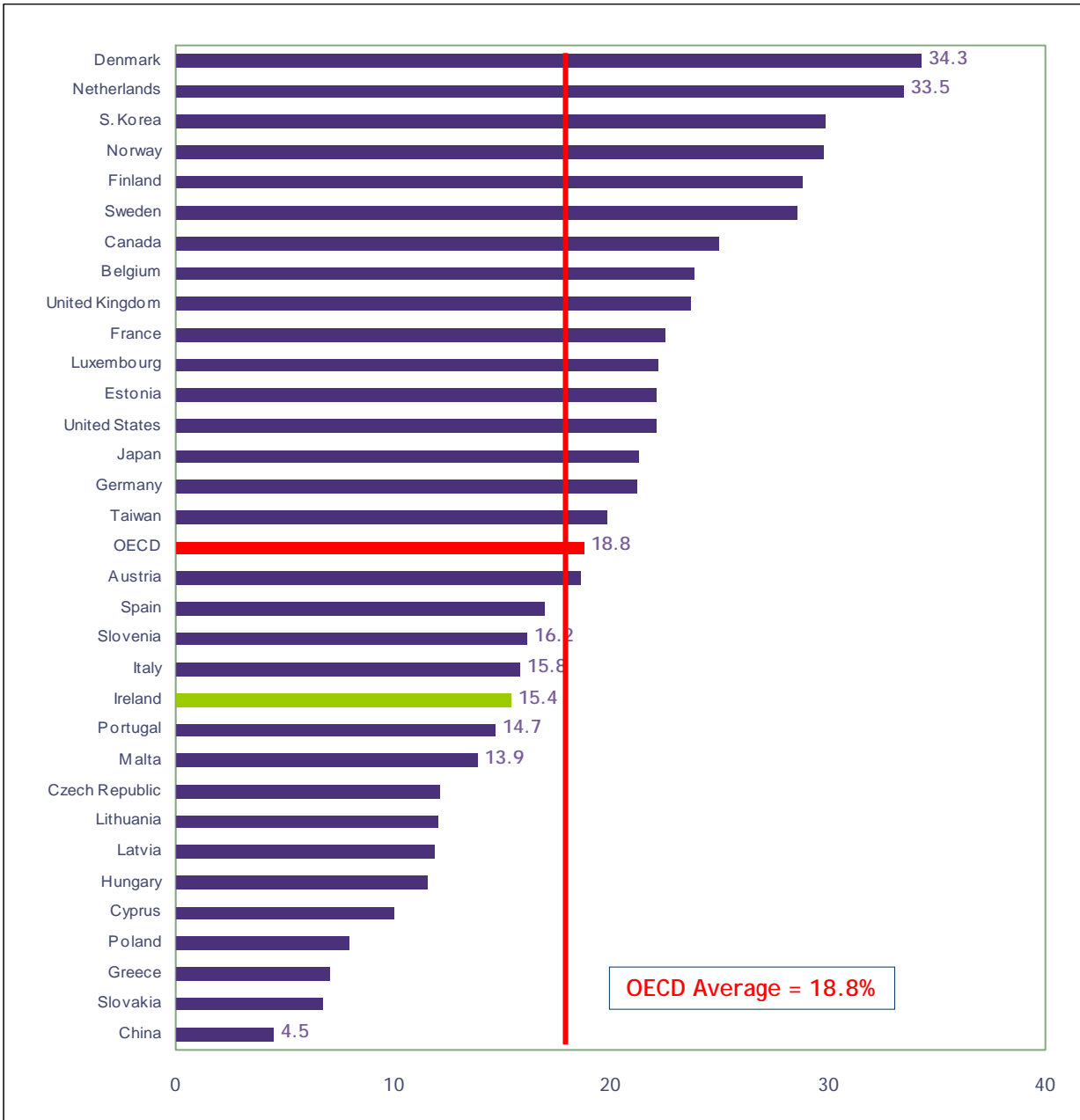
Ireland recorded the highest number of new broadband connections per 100 inhabitants of the OECD countries in the 12 months to June 2007. The rate of increase in Ireland was 6.6 new connections per 100 inhabitants compared to the OECD average of 3.65 new connections (Figure 5).

Figure 5: Number of New Broadband Connections per 100 Inhabitants from June 2006 to June 2007



Source: OECD

Figure 6: Broadband Take-up per 100 of Population, June 2007<sup>7</sup>

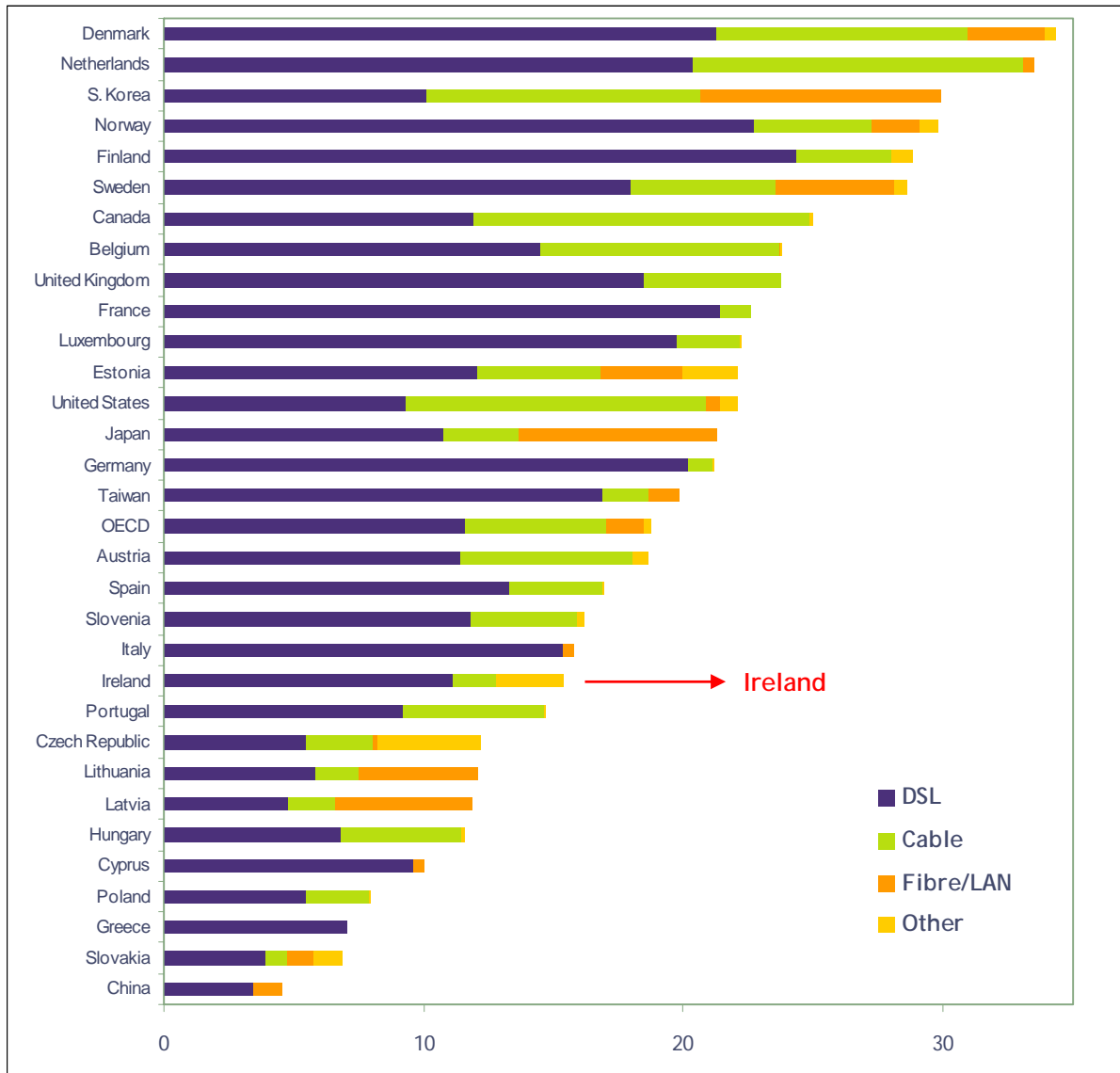


Source: OECD, Point Topic, European Commission

As a result of that very strong growth in new broadband connections during the past year, Ireland’s ranking has improved to 21<sup>st</sup> of the 32 benchmark countries in June 2007 from 24<sup>th</sup> position in June 2006 (Figure 6). Broadband penetration in Ireland increased from 9.2 % in June 2006 to 15.4 % in June 2007. The OECD average was 18.8 %, up from 15.5 % in June 2006.

<sup>7</sup> Note: OECD statistics do not include mobile broadband subscribers. If Ireland’s 45,000 broadband subscribers were included, broadband take-up in Ireland would be 16.5 %.

Figure 7: Broadband Take-up by Platform (as %age of population), June 2007<sup>8</sup>



Source: OECD, Point Topic

DSL continues to be the leading platform across most of the benchmark countries, with the exception of Canada and the US, where cable modem subscribers outnumber DSL ones (Figure 7). The total number of ADSL subscriptions continues to fall in South Korea and Japan, as more users upgrade to fibre-based connections<sup>9</sup>. In June 2007, fibre connections accounted for 36 % of all Japanese broadband subscriptions and 31 % of Korean broadband connections.

<sup>8</sup> Data for Malta was unavailable.

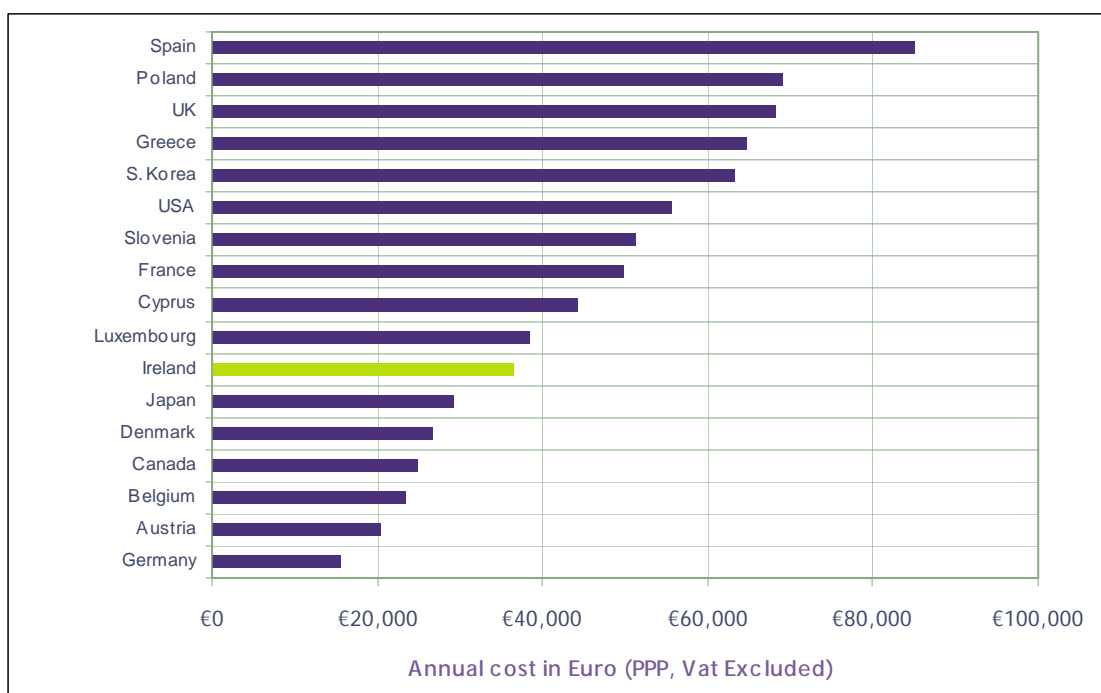
<sup>9</sup> ADSL refers to Asymmetric Digital Subscriber Line. With ADSL, download speeds are faster than upload speeds.

## 4.2. Broadband Costs

This section focuses primarily on the comparative costs of broadband services for businesses in Ireland, including 34 Mbit/s leased lines, 2 Mbit/s symmetric services (SDSL) and a range of ADSL speeds<sup>10</sup>. Large corporates are the main users of the leased line services while SMEs tend to use ADSL and SDSL services. However, there will be exceptions to this depending on how data intensive particular companies are.

With respect to 34 Mbit/s leased lines costs, Ireland performs relatively well. Ireland is the 11<sup>th</sup> most expensive of the 17 benchmark countries for which data is available (Figure 8)<sup>11</sup>.

Figure 8: Annual Cost of 34 Mbit/s Leased Lines (PPP; VAT excluded), October 2007<sup>12</sup>



Source: Teligen

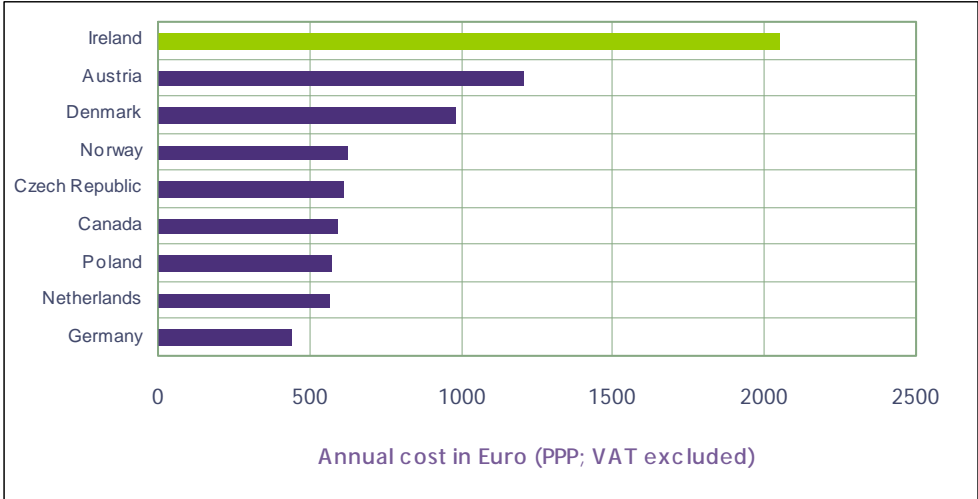
<sup>10</sup> The number of countries benchmarked for each broadband service will vary depending on whether the service is offered by the incumbent.

<sup>11</sup> A leased line is a telephone line that has been leased for private use. Typically, large companies rent leased lines from the telephone message carriers (such as AT&T) to interconnect different geographic locations in their company.

<sup>12</sup> Leased line price indicated for Ireland is as of 1 September 2007, as pricing information is now only available on request.

For 6 Mbit/s business ADSL services, the fastest ADSL business service offered by eircom, Ireland is the most expensive of the nine benchmark countries for which data is available. The annual cost in Ireland is nearly double that of the next most expensive country, Austria (Figure 9).

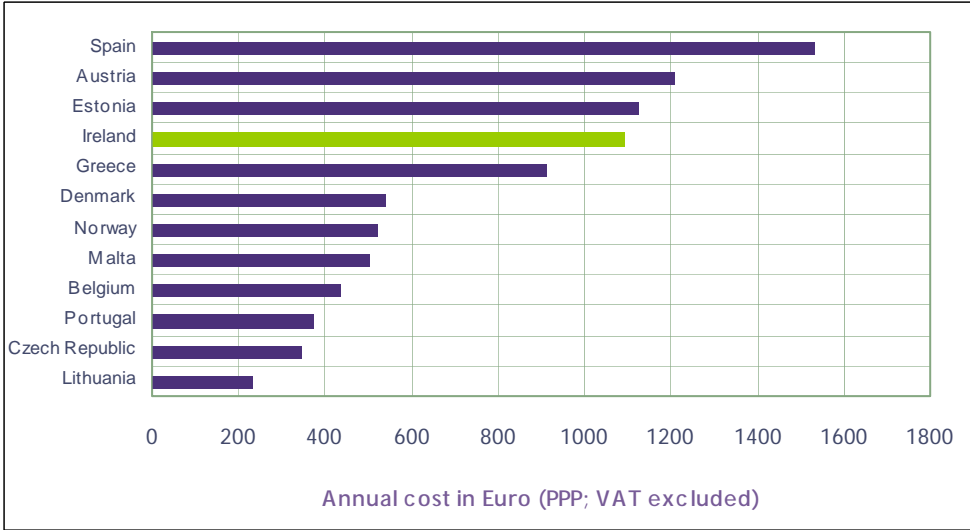
Figure 9: Cost of 6 Mbit/s Business ADSL Broadband Services Offered by the Incumbent, October 2007



Source: Teligen

Ireland is the 4<sup>th</sup> most expensive of 12 countries benchmarked for 4 Mbit/s business ADSL services (Figure 10).

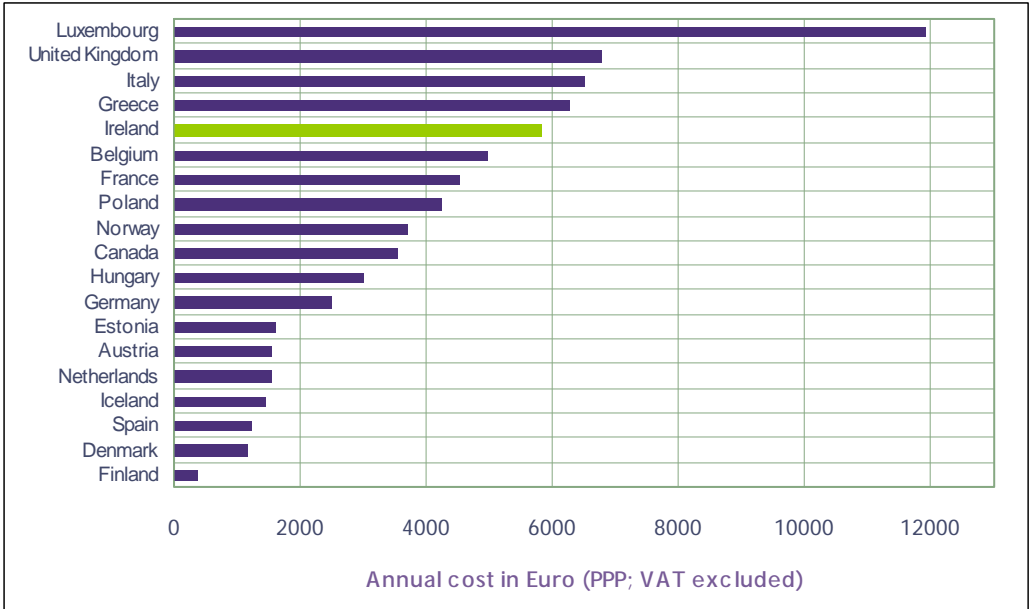
Figure 10: Cost of 4 Mbit/s Business ADSL Broadband Services Offered by the Incumbent, October 2007



Source: Teligen

Ireland is also less competitive with respect to 2 Mbit/s business symmetrical DSL services where Ireland ranks as the 5<sup>th</sup> most expensive of the 19 countries benchmarked (Figure 11)<sup>13</sup>.

Figure 11: Cost of 2 Mbit/s Business SDSL Broadband Services Offered by the Incumbent, October 2007<sup>14</sup>



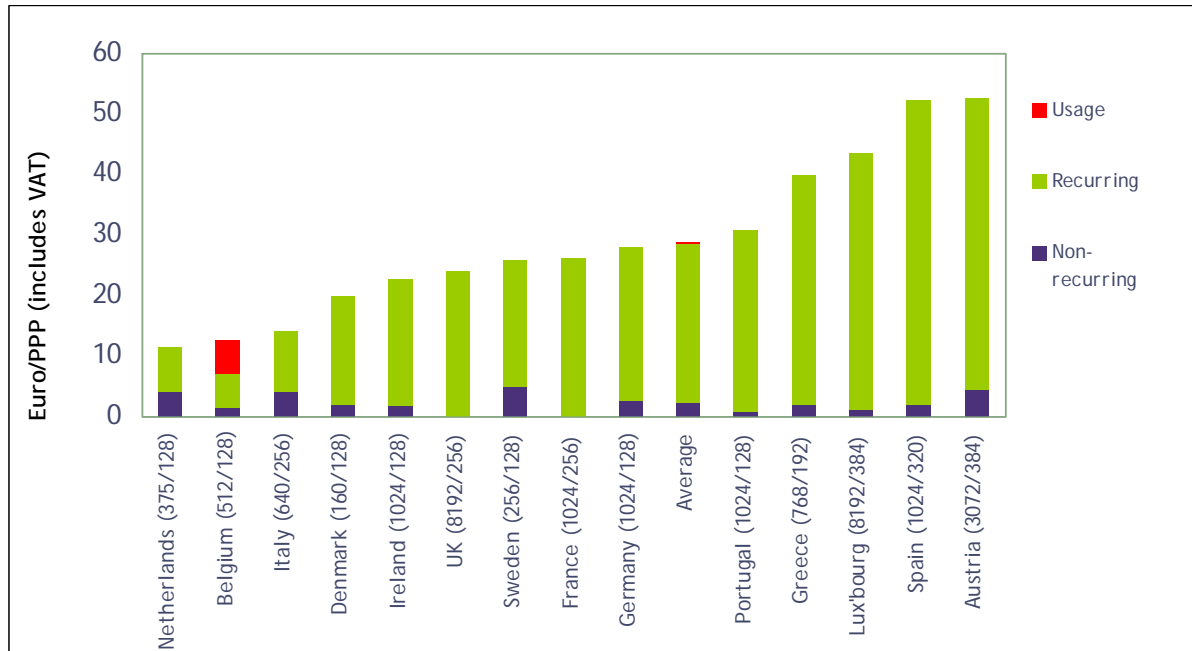
Source: Teligen, Forfás research

Finally, comparing the cost of the lowest monthly residential ADSL offering across the EU-15, Ireland was the 10<sup>th</sup> most expensive (Figure 12). The Irish package used is eircom’s Broadband Home Starter package.

<sup>13</sup> Symmetrical DSL services have the same upload speed as download speed. In Ireland, the incumbent operator, eircom, does not offer SDSL services. Pricing data is for Magnet. Other operators also offer SDSL services, for example, Irish Broadband offers 3Mbit/s and 4Mbit/s Business SDSL services.

<sup>14</sup> In Ireland, the incumbent does not offer any SDSL services. The data included is for Magnet, which offers SDSL services in a small number of locations.

Figure 12: Lowest Monthly Residential ADSL Offering, May 2007<sup>15</sup>



Source: ComReg

### 4.3 Broadband Quality/ Choice of Service

The quality of services offered (measured in terms of the range and speed of broadband products available) to businesses in Ireland remains behind those of other benchmarked countries, where speeds of at least 8 Mbit/s are commonly available from the incumbent operator<sup>16</sup>. The fastest business ADSL product currently offered by eircom is 6Mbit/s. This is an improvement on 2006 when the fastest business ADSL offering available from the incumbent was 4 Mbit/s<sup>17</sup>.

Other operators offer faster speeds in certain locations, for example, Digiweb offers business broadband services of up to 10 Mbit/s over wireless in a number of regional centres while BT recently launched an 8 Mbit/s ADSL service in the Dublin area and in Dooradoyle in Limerick.

<sup>15</sup> Notes: The figures in brackets next to each country on the axis are the details of the download and upload speeds for the analysed product. The product used is based on the cheapest residential product available in each country, assuming defined usage of 25 hours per month, with each session assumed to last for one hour. It further assumes a download usage of 10 Gigabytes every month for each service.

<sup>16</sup> The incumbent offering is used to benchmark quality of service on the basis that it is the most widely available service in each benchmark country.

<sup>17</sup> eircom is currently piloting a 12 Mbit/s ADSL service.

Table 1: Range of Speeds and Costs of 4-10 Mbit/s Business ADSL Services by the Incumbent, October 2007<sup>18</sup>

Country	ADSL Speeds Available				Costs (PPP, VAT Excluded)	
	4 Mbit/s	6 Mbit/s	8 Mbit/s	10 Mbit/s	Minimum	Maximum
Austria	x	x	x		€898	€2,598
Belgium	x				€435	€586
Canada		x	x		€594	€1,010
Czech Republic	x	x	x		€261	€785
Denmark	x	x	x	x	€542	€1,039
Estonia	x		x		€1,123	€3,468
Finland			x		€476	€476
France			x		€330	€480
Germany		x			€438	€468
Greece	x		x		€561	€1,411
Hungary			x		€338	€338
Iceland			x		€680	€680
Ireland	x	x			€1,093	€2,053
Japan			x		€357	€357
Latvia	x	x			€542	€2,572
Lithuania	x				€233	€233
Luxembourg			x		€533	€533
Malta	x				€505	€744
Netherlands		x	x		€567	€915
Norway	x	x	x		€525	€1,407
Poland		x			€572	€798
Portugal	x		x		€374	€667
Spain	x		x		€1,531	€2,047
Sweden			x		€522	€1,026
United Kingdom			x		€237	€775
USA			x		€1,537	€1,537

Source: Teligen

In terms of the range of business ADSL services offered by incumbent operators in the 25 benchmark countries for which data is available, Ireland was one of only six countries where an 8 Mbit/s service was not offered by the incumbent operator. Furthermore, the 6 Mbit/s service in Ireland was more expensive than the 8 Mbit/s service offered in all but two countries, Austria and Estonia.

<sup>18</sup> In the US, 7 Mbit/s services are available.



Business ADSL services of speeds faster than 10 Mbit/s are available in a number of Ireland's main competitor countries. The fastest ADSL speeds available to businesses range from 12 Mbit/s in Austria to 20 Mbit/s in Denmark and the Netherlands and 24 Mbit/s in Portugal and Sweden. Speeds of up to 47 Mbit/s are available in Japan.

Table 2: Range of Speeds and Costs of 10+ Mbit/s Business ADSL Services by the Incumbent, October 2007

	Offerings	Price Range (PPP, VAT Excluded)	
		Low	High
Austria	12Mbit	€2,558	€3,038
Denmark	15Mbit; 20Mbit	€1,039	€1,039
France	18Mbit	€530	€530
Germany	16Mbit	€475	€533
Hungary	16Mbit	€419	€418
Japan	12Mbit; 40Mbit; 47Mbit	€365	€379
Luxembourg	15Mbit	€867	€867
Netherlands	12Mbit; 20Mbit	€915	€1,117
Portugal	24Mbit	€609	€666
Sweden	24Mbit	€1,158	€1,158

Source: Teligen

It is also notable that the fastest speed offered to business by the incumbent in Ireland, ( 6 Mbit/s), costs four to five times more than considerably higher-speed ADSL services in countries such as France, Germany and Hungary. An Irish business will pay over €2,000 per annum for a 6 Mbit/s ADSL service, while its counterpart in Germany pays up to €534 for 16 Mbit/s (depending on usage). In France, the annual cost is €530 for 18 Mbit/s, and in Sweden, 24 Mbit/s will cost just under €1600 per annum. Meanwhile a business in Japan can get a 47 Mbit/s ADSL service for a fifth of the annual cost of 6 Mbit/s in Ireland.

## 5. Findings and Conclusions

Broadband take-up continues to grow strongly and Ireland is making progress in terms of catching up with the penetration rates of other OECD countries. This has been supported by competitive entry level broadband prices and greater competition between DSL and cable in the main urban centres. However, for business users that demand higher speeds, prices are significantly less competitive when compared to the services available in other countries. Furthermore, the range of services available in Ireland in terms of speed is considerably less than those offered in other countries. This section of the report sets out a number of recommendations focused on enhancing competition and encouraging the rollout of advanced competitively priced services.

### 5.1. Improving Competition and Availability of Innovative Products

The regulatory environment plays a key role in the efficient functioning of the telecommunications market. There is broad consensus internationally that inter-platform competition (i.e. between DSL, cable, fibre, wireless) has been one of the primary drivers of broadband take-up in many markets (e.g. the Netherlands and the US). In other markets, competition within the DSL platform has allowed operators to innovate in terms of both product and pricing (e.g., France and Norway).

Competition between and within platforms in the Irish broadband market has been slow to develop, resulting in a limited range of advanced services being offered to businesses. The recent launch of broadband services by the mobile operators is a positive development in increasing competition in the Irish broadband market<sup>19</sup>. Data for Q2 2007 shows that almost one in three broadband connections (including mobile broadband) in Ireland is via a platform other than DSL. The major investment plan underway by UPC Ireland to make cable broadband services available in the main urban centres (Dublin, Cork, Galway, Limerick and Waterford) is due to be completed in 2008. Fixed Wireless Access (FWA) has provided competition in certain regions in recent years. To enhance FWA's potential role, and that of mobile broadband, Ireland's spectrum management policy needs to continue to facilitate future growth and expansion.

In Ireland, one of the key regulatory challenges of recent years has been the lack of effective implementation and poor take-up of Local Loop Unbundling (LLU)<sup>20</sup>. Recent European data shows a decline in the share of DSL lines unbundled in Ireland in the six months to Q1 2007 (Figure 13)<sup>21</sup>.

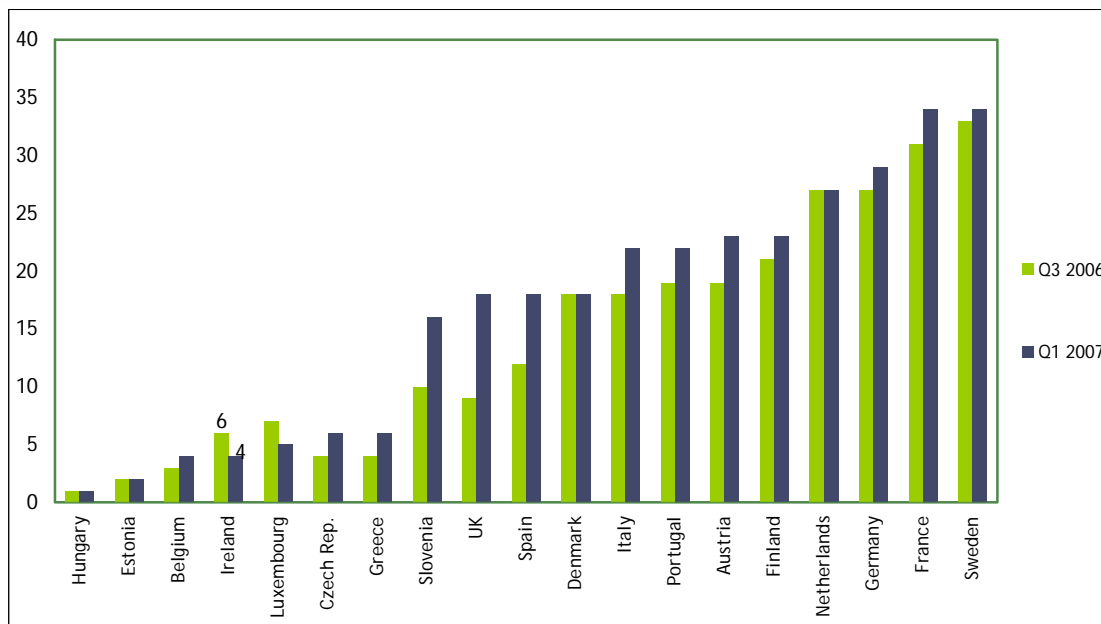
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<sup>19</sup> Vodafone, O2 and 3 recently launched HSDPA (High Speed Downlink Packet Access) products. Commonly referred to as 3.5G technology, HSDPA is a new protocol for mobile data transmission which will provide download speeds equivalent to those from ADSL.

<sup>20</sup> Local Loop Unbundling (LLU) is the process by which other telecommunications operators gain access to the existing telephone exchange in order to provide a connection to the end user.

<sup>21</sup> This is mainly due to the decline in the number of DSL lines used by Smart Telecom, following the difficulties faced by the company in late 2006.

Figure 13: LLU Lines as a %age of Total DSL Lines, Q3 2006-Q1 2007



Source: ECTA

The European Commission’s 12th report on the implementation of the Telecommunications Regulatory Package published in 2006 was critical of Ireland’s regulatory performance, particularly ComReg’s limited enforcement powers and the delays in reaching decisions as a result of the appeals mechanism. In the interim, there have been a number of important developments, notably the enactment of the Communications Regulation (Amendment) Act 2007, which strengthens ComReg’s enforcement powers<sup>22</sup>. The Electronic Communications Appeals Panel was also abolished.

Earlier this year, ComReg reached agreement with eircom on a number of issues (such as seamless migration, number portability, service level agreements and backhaul) that were impeding the development of LLU. A fit-for-purpose LLU product has been available to alternative service providers since the 24<sup>th</sup> September 2007. An enhanced Service Level Agreement (SLA) for business customers, which commits eircom to repairing 85 % of faults within eight hours and 99.6 % of faults within 24 hours, has also been introduced. The take-up of the LLU offering needs to continue to be monitored by ComReg and a periodic review of progress should be undertaken to ensure that any issues impeding LLU take-up are dealt with promptly. In particular, compliance with the enhanced SLA commitments for business customers needs to be monitored and reviewed on at least a six monthly basis.

<sup>22</sup> In particular, the new legislation provides for the creation of indictable offences, with extensive fines for serious infringements of the regulatory framework. Fines of up to 10 % of turnover or €5 million will now apply for non-compliance with decisions by ComReg. The act also gives ComReg competition powers concurrent with the Competition Authority.

Enhancing competition in the broadband access market is one of the main areas addressed in the recent telecommunications reform package by the European Commission<sup>23</sup>. One of the main measures proposed to enhance competition across Member States is functional separation<sup>24</sup>. The European Commission highlights that this remedy can enhance overall investment in services and in network infrastructure. For example, in the UK, functional separation has spurred a new wave of investment and infrastructure-based market entry. The number of local loop unbundled lines has jumped from less than 100,000 in June 2005 to 3.3 million by the end of October 2007. Introducing functional separation will be at the discretion of Member States. Careful consideration would need to be given to the implications of functional separation for the Irish telecommunications market.

## 5.2. Improving Regional Broadband Performance

Advanced and competitive telecommunications infrastructure is critical to support regional development and to enhance the attractiveness of the gateways and their regions to enterprise development and investment. The availability of adequate broadband services is an important factor in the location choice of foreign direct investment and for existing and start-up Irish companies. In an increasingly knowledge intensive economy, companies are harnessing technology to drive productivity improvements and add value, and are increasingly dependent on digital data content. This is particularly important for balanced regional development.

### MANs Programme

In the NDP (2007-2013), €435 million is allocated for investment in communications. This is primarily to be used to complete the second phase (approximately 90 towns) of the Metropolitan Area Networks (MANs) during 2007/2008 and the rollout of broadband services to those areas where it is not commercially viable to do so under the National Broadband Scheme. Construction of phase two of the MANs is well advanced and about two thirds will be constructed by the end of 2007.

The development of the MANs is an important step in ensuring that regional locations can support the broadband needs of enterprise. In terms of prioritising towns for development, it is important that a range of outstanding NSS centres are considered. These include Castlebar, Ennis, Mallow, and Tuam. Shannon, which is part of a joint gateway with Limerick, may also need additional infrastructure.

Critical to the success of the MANs and their role in supporting regional development is the availability and pricing of backhaul. Without competitive backhaul capacity to connect the MANs to main national and international nodes and to each other, the local access networks are isolated and have limited appeal to potential service providers<sup>25</sup>. A number of potential options are available to

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<sup>23</sup> On 13<sup>th</sup> November 2007, the European Commission published proposals to reform existing EU telecoms rules. Details are available at: [http://ec.europa.eu/information\\_society/policy/ecomm/tomorrow/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomm/tomorrow/index_en.htm).

<sup>24</sup> Functional separation is an instrument to ensure fair competition leading to freedom of choice for consumers in a telecoms market dominated by one operator. It requires an incumbent operator to separate its network infrastructure from the units offering services using this infrastructure. Although operationally separate business entities are created, overall ownership remains unchanged.

<sup>25</sup> Two of the Phase one MANs (Kiltimagh and Gweedore) do not have open access backhaul available to them and as Phase two is rolled out, this will become more of an issue.

extend Ireland's backhaul network. One possible option is to make mandatory the installation of telecommunications ducting on an open access basis on all national roads upgrades. A more integrated approach to infrastructure provision would facilitate cost savings in the form of lower overall land requirement and potential construction savings, particularly where projects are undertaken simultaneously. Ducting could also be mandated in all new residential, commercial and public building developments. Potential also exists to work with key state owned firms including ESB, Bord Gáis Eireann and CIE to extend their existing telecommunications networks and in some cases make these available to telecommunications operators to provide services.

### National Broadband Scheme

The National Broadband Scheme (NBS), which aims to provide broadband services to areas where the private sector is unable to justify the commercial provision of broadband connectivity, was announced in May 2007. It replaces the Group Broadband Scheme<sup>26</sup>. According to the Department of Communications, Energy and Natural Resources, approximately 10 % of the population is currently without any broadband access<sup>27</sup>.

In September 2007, the Department of Communications, Energy and Natural Resources selected four candidates, namely BT; eircom; Hutchinson 3G, and an IFA/Motorola consortium, to enter the next phase of the procurement process for the NBS. The Department expects to conclude the process in the second quarter of 2008. In addition to advancing these proposals quickly, it will be important that the solution agreed advances the development of infrastructure to meet the long terms needs of poorly served areas.

### 5.3. Future-Proofing Ireland's Telecommunications Infrastructure

A number of countries are currently in the process of upgrading their telecommunications infrastructure to next generation network (NGN) standard. The construction of NGNs involves the replacement of existing copper-based legacy telecom networks with fibre and old telecommunications exchanges with digital IP-based switches. It is envisaged that this will transform the communications industry by facilitating the delivery of multiple services (e.g., voice, data, TV) over a single packet-based infrastructure.

Trends in broadband technology, regulation, market dynamics and applications all point to the importance of NGNs in terms of ensuring Ireland's future economic growth. A number of other countries have recognised this trend and investment is underway in NGNs that will underpin the services and industries of the future. NGNs ultimately mean far greater bandwidth capacity, more efficient networks, lower costs for operators and a wider range of advanced services.

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<sup>26</sup> See the Appendix for the coverage map prepared by the Department of Communications, Energy and Natural Resources outlining where broadband services are currently available.

<sup>27</sup> This is widely regarded as a conservative estimate of the %age of the population currently without access to broadband services because it does not take account of line failures, distance from the exchange and line of sight issues.

Further action is required in Ireland if it is to be in a position to take advantage of future global broadband trends and the opportunities associated with those trends. Despite significant recent growth in the take-up of broadband services, the accepted standard of broadband in other countries is significantly ahead of that available in Ireland. Countries that already have advanced networks such as Korea, Japan, the Netherlands and Singapore are seeking to build even faster networks which will offer up to 100Mbit/s capacity. If Ireland does not act quickly to ensure that a world class communications network is in place, the consequences for Ireland's future growth and development will be substantial, including the loss of our international credibility as a knowledge economy and missed opportunities in the huge growth areas of entertainment/media, health and education services.

The Department of Communications, Energy and Natural Resources is currently preparing a draft policy paper that will review Ireland's communications infrastructure policy and analyse policy options in relation to the optimum role for the Government in the planning and rollout of next generation infrastructure. A National Advisory Forum of telecommunications experts will be established towards the end of the year to critically evaluate the policy options contained in the draft paper and to provide a blueprint for the development of NGNs in Ireland. The challenge will be to encourage high levels of investment in the next generation of broadband infrastructures and services in Ireland, which will require a partnership approach between the public and private sector.

#### **5.4. Enhanced Demand Side Initiatives**

Further actions are also needed to stimulate demand for broadband take-up. Initiatives to promote more sophisticated use of ICT by SMEs, enhanced e-Government services and a more integrated approach to ICT education could spur broadband demand and investment.

##### **Increasing ICT use by SMEs**

The sophisticated use of e-Business remains relatively low in Ireland. In response to the Small Business Forum's recommendation to introduce an ICT audit programme to promote awareness of the productivity benefits of greater strategic use of ICT by small businesses, the Tech-Check Programme was launched by the Department of Enterprise, Trade and Employment earlier this year<sup>28</sup>. It is currently being rolled out across the country by the County and City Enterprise Boards. Business interest in the scheme is strong and at the end of October 2007, nearly 400 Tech-Checks had been approved, with almost a quarter of those completed. While the initiative is at an early stage of implementation and needs time before its effectiveness can be evaluated, potential may exist to expand and develop the scheme further.

##### **Role of Government in Exploiting ICT Benefits**

Government can promote the take-up and development of best practice in ICT by further developing the quality and availability of e-Government services. This would help improve public

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<sup>28</sup> Under the Tech-Check Programme small businesses can apply to their local County and City Enterprise Board (CEB), who will appoint an independent expert to carry out an ICT analysis of the business. The 2007 funding provided will enable the CEBs to provide access to the programme for up to 1,000 individual businesses. A modest end-user fee of €150 has been set for access to the programme.

sector productivity and the performance of private enterprises that use these services. It can also create opportunities for Irish enterprises to develop innovative ICT products and services that can compete in international markets, and can facilitate the wider public uptake and exploitation of ICT.

The development of e-Government acts as a driver of innovative solutions and as a rationale for businesses to upgrade their e-Business capabilities. At government level, the proportion of public services available online in Ireland (50 %) in 2007 is below that of the EU-27 average (59 %) <sup>29</sup>. In relation to technological readiness, international surveys undertaken in 2006 highlight that there has been a notable deterioration in indicators that assess the perceived prioritisation of ICT by Government (36<sup>th</sup>, down 28 places since 2001) and Government's success in promoting ICT (43<sup>rd</sup>, down 36 places since 2001) <sup>30</sup>. The review of Ireland's knowledge society strategy by the Department of the Taoiseach provides an opportunity to reinvigorate the implementation of key e-Government projects, such as e-payments and e-procurement.

There is therefore a need to prioritise and advance the implementation of key e-Government projects in Ireland to facilitate the wider uptake and exploitation of ICT in public services, not alone to improve the productivity of the public sector but also to create opportunities for Irish enterprise to develop innovative ICT products and services that can compete in international markets. The main e-Government projects that need to be progressed are e-payments and e-procurement.

### **Integrating Technology into Education**


Education is regarded as a key driver of broadband take-up internationally. South Korea has been pursuing policies to integrate the use of ICT into its education systems since 1997. The success of South Korea's integrated education and technology strategy is seen as one of the primary contributory factors to Korea's position in the top decile of the OECD league table for broadband take-up. Other countries, such as the US and the UK have also been looking at how emerging technologies can contribute to the quality of education and training and the move to a knowledge-based society.

The Broadband for Schools programme, which was launched in 2004 to provide broadband connectivity to all of the 4,100 primary and secondary schools in Ireland, was an important development. However, providing the broadband access is only a first step. The integration of ICT in learning and teaching must facilitate both personalised and collaborative learning. Key to achieving this learning and teaching dynamic is the provision of appropriate ICT-related professional development of teachers to facilitate the integration of ICT into the curriculum and teaching practices.

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<sup>29</sup> Eurostat, e-Government availability (supply side), 2007.

<sup>30</sup> World Economic Forum, Global Competitiveness Report, 2006-2007.



The commitment in the NDP to develop an ICT Strategy for schools during 2007 is therefore to be welcomed. It is essential that this strategy is driven by pedagogical considerations and that this is reflected in how the €252 million investment in the NDP for ICT development in schools is allocated. However, in a fast changing environment like ICT, it is essential that the levels of both ICT equipment and broadband access made available to schools keep pace with technological advances to ensure that Ireland can realise the opportunities presented by greater integration of ICT and education.

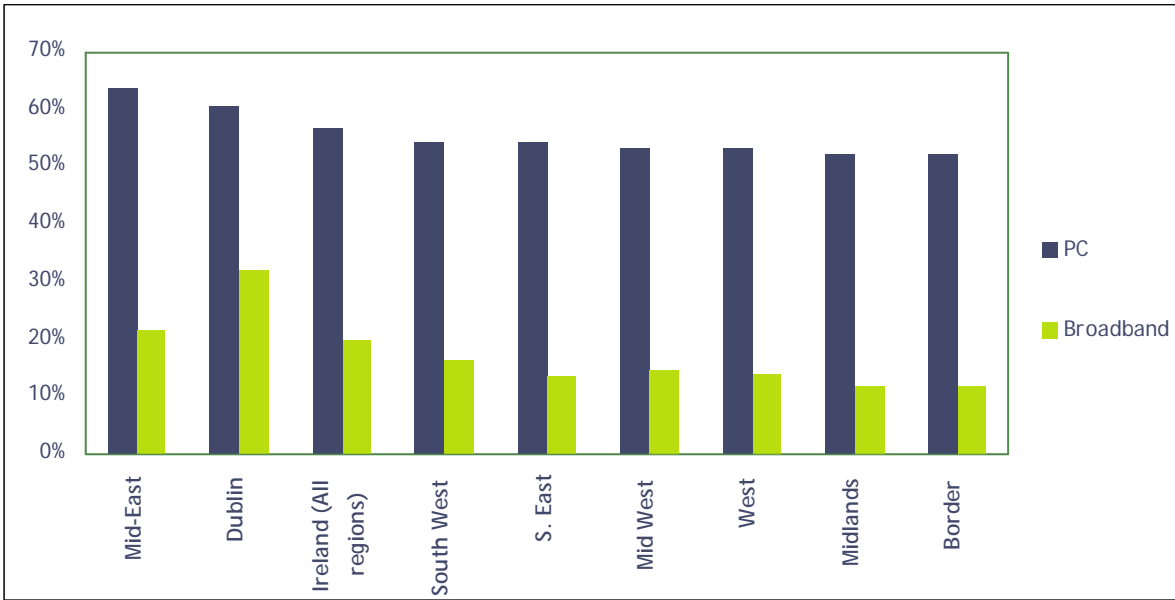


# Appendix: Regional Broadband Performance

The 2006 Census provided information on PC and broadband take-up by region. It should be noted that since that data was collected in April 2006, broadband take-up has more than doubled.

However, the 2006 Census data provides a good indication of regional differences in PC and broadband take-up (Figure A.1). In April 2006, one in five households in Ireland had a broadband connection. Of the eight regions, Dublin and the Mid-East had broadband penetration levels above the national average. Take-up in Dublin is significantly higher (32.2 %) than the national average. Broadband take-up in the Midlands and Border regions is almost half the national average at 11.8 %.

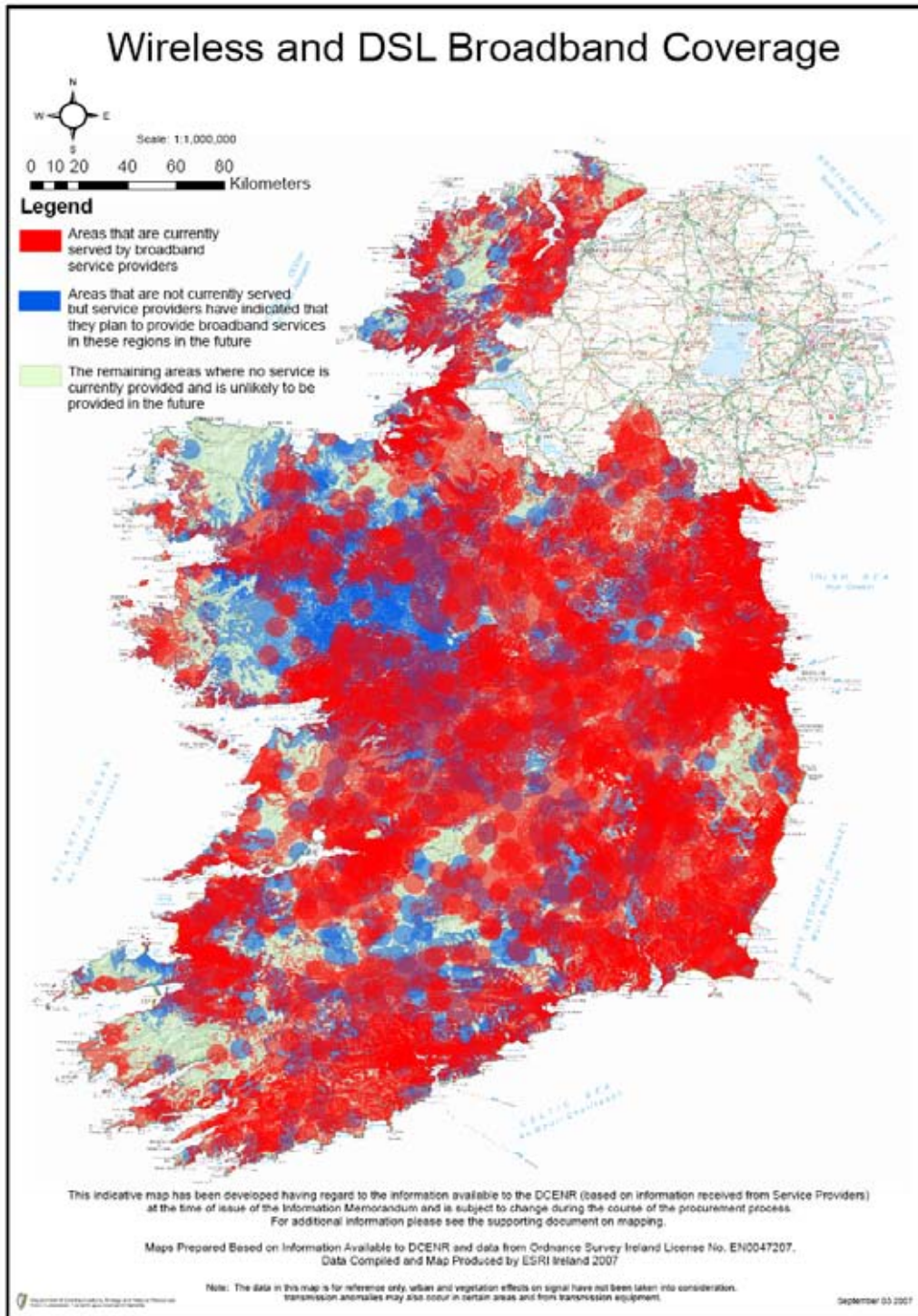
Figure A.1: PC and Broadband Penetration by Region, April 2006



Source: Central Statistics Office, Census 2006

The Border and Midlands regions have the lowest rates of PC ownership and broadband penetration (52.4 % for PCs and 11.8 % for broadband). The variation in PC penetration across regions was not as pronounced as that of broadband. PC penetration ranged from 52.4 % in the Border and Midlands regions to 63.8 % in the Mid-East, while broadband take-up ranged from 11.8 % in the Border and Midlands regions to 32.2 % in Dublin.

Figure A.2: Broadband Coverage Map of Ireland



Source: Department of Communications, Energy and Natural Resources (2007)

Note: *This map is indicative of broadband coverage in Ireland as service may not be available in all of the red areas because of line failure, distance from the exchange, line of sight issues etc.*

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