Department of
Agriculture,
Fisheries and Food

An Roinn
Talmhaíochta,
Iascaigh agus Bia

Committee on the Uptake of Information Technology in Agriculture and in Rural Communities

Interim Report

December 2008

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Executive Summary

The ongoing advances being made in Information and Communications Technology (ICT) mean that these technologies are being utilised more and more in improving communication and providing access to information. Increasingly, people who use these technologies can participate more fully in society. Rural dwellers and in particular farmers are known to be a group of people who are late adopters of these types of technologies. With this in mind, the Minister for Agriculture, Fisheries and Food has, in May 2007, formed a Committee to examine ways for Increasing the Uptake of Knowledge Society Technologies in Agriculture, with a view to getting guidance and advice on the relevant areas related to ICT usage in farming and rural families in Ireland.

The overall objective of the committee is to accelerate the adoption of ICT by the farming sector and rural families. The terms of reference, which can be found in section 1.2, asked the committee to identify the obstacles to uptake of ICT and also to identify opportunities to promote awareness of the opportunities for technology use. The committee is comprised of representatives of organisations with a farming and rural interest and its members are listed in Appendix 1.

It is recognised that this Committee cannot achieve all the objectives of the terms of reference in a short period of time so therefore this is an interim report on the work of the Committee to date.

The committee has examined the environment in general and looked at the various sectors where ICT is being used and also under utilised. A significant block of work of the committee involved determining and examining the barriers currently in place that prevent the uptake of ICT. It appears a major barrier, for many, is the ready availability of inexpensive broadband capability in rural Ireland.

The report, in Section 5, lists a number of recommendations and opportunities for action and these are summarised as follows:

- Department to provide focused promotion of benefits of using ICT
- Other organisations should also promote the use of ICT at every opportunity
- Video and presentation material on the benefits and range of facilities that can be accessed using ICT should be produced as a resource for all those promoting rural uptake of ICT
- Research in the areas of fear of technology and other barriers is advised

- The Department should consider use of its new electronic communication channels as a substitute for paper communications where possible
- It is recommended that the Department explore the feasibility of providing Message box facilities to its customers
- The Nitrates information held by the Department should be made readily accessible to farmers
- Agri Industry may also be able to improve its communications with farmers and this is encouraged
- The LEADER programme provides an opportunity, for local initiatives, to access funding for projects which might assist in increasing rural ICT uptake
- Part of the fear of using a PC may be alleviated if a scheme providing an e-Tutor scheme to farmers or rural dwellers to assist them in their first time usage of ICT was implemented
- As broadband availability and cost is a particular issue for rural dwellers, and most likely the greatest barrier to ICT uptake, it is recommended that this issue be pursued at the highest level

There may be other factors that are preventing the uptake of ICT among farming and rural families and the final section of the report makes some observations and recommendations in relation to research that may assist in the development of any future strategy in this regard.

While the Committee conducts further investigation and research the recommendations above will provide an opportunity for progress to be made.

Section 1: Introduction

1.1 Catalyst

Knowledge Society technologies are those technologies that allow people to fully participate in society in this, the digital age, where creation and distribution of information is a key economic and social activity. These technologies include computer and communications technologies, such as Internet access, short message service (SMS) and wireless application protocol (WAP).

Internationally, rural dwellers and in particular farmers are known to be among the 'late adopters' of information society technologies and the adoption of these technologies among Irish farmers and farm families is lower than it should be. Farmers and rural dwellers require particular encouragement if they are not to fall behind the rest of society. In this regard there is a risk of an occurrence of a rural / urban digital divide.

There is a reasonable possibility that the rural population in general will suffer from the digital divide in Ireland, given the limited availability of broadband access in rural areas. Broadband is a significant catalyst in the increased usage of newer information and communications technologies (ICT's) in general.

Currently about 5% of Irish farmers use farm management software to assist in the management of their farms. This is below the level of many other EU countries, and the use of such software has reached a plateau. Access to and use of the Internet by Irish farmers is also understood to be lower than in many countries. The low uptake in Ireland may be linked to the number of small-scale farms but this factor would need further research.

Since Common Agricultural Policy (CAP) reform and the decoupling of CAP payments, farming is now driven by market forces and must be competitive to survive and prosper. A key objective identified in Agri-Vision 2015 is the development of a more competitive sector. To achieve the efficiencies necessary, it is now more important than ever that farmers use all available tools and technologies at their disposal. ICT is an important tool in the efficient management of modern farming and it is also important to ensure that farming families participate fully in the knowledge society.

While the Department continues to add to the significant electronic services that it provides, such services alone will not generate the necessary increase in uptake that is desired.

The Minister has therefore convened a committee to develop a national strategy for increasing the uptake of knowledge society technologies in Agriculture. The committee consists of stakeholder representatives from the agricultural and rural bodies. These include the Department of Agriculture, Fisheries and Food (D/AFF), Department of Community, Rural and Gaeltacht Affairs (D/CRAGA), Teagasc, farm software companies, Irish Society for IT in Agriculture (ISITA), University College Dublin and the farm representative bodies.

1.2 Terms of Reference

The overall objective of the committee is to accelerate the adoption of ICT by the farming sector so as to ensure that it reaps all of the efficiency gains available from such technologies and has access to all of the available information sources to make the best decisions for their business, and to promote the participation of Irish farm families and rural families in the knowledge society so as to maximise their well-being.

The committee has been charged to:

- Identify the obstacles to uptake of knowledge society technologies, by farmers and farm families.
- Propose initiatives to accelerate the adoption and usage of ICT to world-class standards in the Irish farming sector.
- Identify opportunities to promote awareness of the opportunities for technology use, and skills acquisition by the farmers and farm families.
- Identify synergies among all of the parties in the sector, and promote their exploitation
- Drive knowledge, scholarship and research activity within ICT for the agricultural industry.
- Provide guidance and advice to the Minister on the relevant areas related to ICT in farming.

The committee will report to the Minister.

1.3 Objectives

There are a significant number of issues to be examined with regard to addressing the terms of reference of the committee. In particular it is recognised that a block of work will involve some further research in specific areas such as identifying definitive barriers to uptake of ICT. Therefore some interim goals and objectives have been set.

1.3.1 Interim Objectives

While there is no particular timeframe imposed on the work of the committee, the committee itself has imposed some deadlines and interim objectives to provide a focus to the work concerned. The following are the list of initial objectives:

1. Carry out an initial identification of obstacles that prevent the use and/or uptake of knowledge society technologies based on the knowledge and experience of the committee members.
2. Identify some opportunities to promote awareness of the opportunities for technology use, and skills acquisition by the farmers and farm families.
3. Identify areas that require further research.
4. Produce an interim report by February 2008.

The first deadline surrounds the creation of this interim report. The group will set further deadlines as the work of the committee progresses.

1.3.2 Long Term Objectives

The long term objectives of the group will be to make recommendations to the Minister in relation to formulating a national strategy as outlined in the Terms of Reference.
The committee will produce a final report setting out these recommendations and will include the results of any research conducted in the areas of concern.

Section 2: Environment

There have been significant changes to the pattern of rural life over the last 30-40 years. The rural population can now be considered to be predominantly non-farming. This change in pattern brings certain lifestyle expectations in the areas of leisure time, travel, sports, health and fitness, education and information. These cannot be realised without access to new technologies and information sources such as the Internet. Many rural dwellers are significantly hindered by the poor availability of broadband connections outside urban areas.

As a subgroup of rural dwellers, farmers are not yet using information technology (IT) in a significant manner on the farm. The numbers using IT are quite low but they are using other technologies such as the mobile phone. The farmers who are using IT are either using their own personal computer with farm management software and / or the Departments online services provided via www.AgFood.ie. There are also a number of online services provided by the farming representative bodies and Teagasc who provide valuable assistance and calculators for farm specific tasks. Farmers may also use services of IFAC accountants to assist with the running of their businesses, which may also bring them into contact with IT.

2.1 General

Many technical advances have been made in recent years in relation to the types of computer devices and systems available to the average user. Advances in technologies and convergence of communications and computing have moved the use of personal computers on from simply storing documents to be capable of much more. The use of technology has permeated broader aspects of lifestyle and is no longer used solely as a business tool but as a lifestyle tool also.

Technologies in current use

The use of mobile phone technologies (e.g. SMS) is most significant in Ireland and the European Union (EU). The pervasiveness of mobile technology in the rural context presents particular opportunities due to the take up of these devices and their ability to operate in the more remote areas. While the use of SMS has initially been considered to be a ‘youth thing’, the large usage of this technology across all of our population has in it’s own way been responsible for unwittingly dragging people into the use of IT.

Informed users are now expecting to be able to access the Internet at all times whether it be in the home or on the road. To date, farmers who are using the Internet are in the main using it to search for information. They are not necessarily using it to conduct their business but are in a way using it as an informal decision support system in that they are gathering facts about prices, trends, weather etc. This type of information helps farmers significantly in allowing them to make decisions on tasks and issues presenting themselves on the farm front.

According to a CSO survey[1], the ten most popular activities that the general population used the Internet for were:

1. Sending & receiving emails.
2. Finding information about goods & services.
3. Travel & accommodation services.
4. Obtaining information from public authorities.
5. Internet banking.
6. Downloading public authority forms.
7. Buying goods/services online.
8. Education activities.
9. Submitting completed forms to public authorities.
10. Seeking health information.

This is consistent with research by ComReg[2] where it was noted that people were using the Internet principally for emailing, finding information, and simple transactions/exchanges with banks and public bodies.

With the introduction of personal computers (PC's) into schools in the late 1980's a significant number of people who have attended school in that time have had exposure to PC's and their use. A good proportion of almost 85% of the Departments customers, who do not fall into the 20 - 40 age range (i.e. left school in last 20 years), may have had no exposure to PC use at all.

Looking at the subset of all customers registered to use the Department's AgFood services (see Table 2.1 below), approximately 25% of those registered are in this age range (20-40). This demonstrates that while only 16% of all the Departments customers fall into this age range a higher proportion of this age group has registered for AgFood services. Education in the use of personal computers would appear to be a factor that needs addressing.

[1] *Source: Information Society Statistics – Ireland 2004, CSO, 2004*
[2] *Source: Trend Survey Series – Wave3, 2005, ComReg 05/86b, 2005*

Table 2.1 – Age comparison D/AFF customers against AgFood online users[3]

Age group	All D/AFF customers		Customers registered to use AgFood Services		As proportion of all D/AFF customers	Customers registered with Agents for online services	As proportion of all D/AFF customers
	No.	**%** [4]	**No.**	**%** [5]	**%**	**No.**	**%**
Over 60	58,923	**36**	4,112	**20.5**	**2.5**	5,217	**3.2**
50-60	40,024	**25**	5,133	**25.5**	**3.1**	3,430	**2.1**
40-50	36,882	**23**	5,958	**30**	**3.7**	3,115	**1.9**
30-40	21,409	**13**	4,053	**20**	**2.5**	1,758	**1**
20-30	4,694	**3**	793	**4**	**0.5**	346	**0.2**
20 and younger	105	**0**	6	**0**	**0**	2	**0**
No DOB available (companies etc. not included in % calculation)	44,069		52				
Totals	**206,106**		**20,107**		**12.3%**	**13,868**	**8.4%**

Technologies on the way

It is not easy to predict what technologies will be coming on stream in the near future. In 1947 for example, experts predicted helicopter / gyro copter in every garage, men on mars, a permanent moon base and nuclear powered aircraft and trains. Since 1947 we have had men on the moon, a true worldwide economy and robots replacing people.

In 2005, future trends were predicting increased use of Radio Frequency Identification Chips (RFID), expanding use of robotics, everything to everything wireless connectivity, remote imagery available to all. These technologies are becoming more pervasive in our society and we encounter these on a day-to-day basis, RFID's are used in packaging, farm tractors can operate in a hands free mode and we can see our properties via satellite imagery using products like 'Goggle Earth' etc. There is no doubt that these and now unknown new technologies will be at the forefront of business and home life in the future. In order to be able to embrace these new technologies rural dwellers and farmers must become familiar with what is currently 'on offer'.

2.2 Sectoral

The availability of off-farm employment opportunities together with changes in agricultural practices has led to a rise in the number of farmers combining their farming activities with outside employment. This means that there is now a pattern developing whereby the majority of intensive farming production is now being carried out by a smaller number of full time farmers.

[3] *Figures at Mid February 2008 (D/AFF)*
[4] *% of all D/AFF customers*
[5] *% of all customers registered for AgFood services*

Approximately 67% [6] of all farms were part-time in 2006. In approximately 38% of all farms, either the farmer and/or spouse were also working in off farm employment. It is probably safe to say that for these farmers there is a scarcity of time available to work on their farms. The use of ICT in these cases could significantly improve their ability to be better informed for making decisions and being better able to manage their farms. Part-time farmers are more likely to own a PC than their full time colleagues[7]. It is also possible that part-time farmers may have access to a PC and Internet in their off-farm jobs.

As per National Census 2006 figures (see Appendix 2) about 45% of all Irish farmers owned a personal computer of which, according to Teagasc[5], 15% of these used it for farming purposes. The Irish agricultural sector lags behind the USA, UK and France. In Ireland, the use of farm management software is not confined to those farmers with large farms. One might have expected that the larger farming operations would have a greater uptake of IT use but in fact the usage of products is spread across farms of all sizes. This would seem to suggest that some large farms might be 'too busy' or not see the benefit of using IT while farmers, even with small farms, will use technologies where they find a benefit.

Irelands farmers have a relatively small uptake in the use of the Department of Agriculture, Fisheries and Food's electronic services. Within the EU, using Single Payment Scheme (SPS) as a reference, Ireland, Scotland, Netherlands and Sweden have contrasting uptake in receipt of SPS claims by electronic means. Figures for 2006 are shown in Table 2.2 below. While Ireland had 5.6% of it's claims registered by on-line means, this was a lot less that the almost 24% of farmers who had signed up for electronic services and were capable of making these claims electronically.

Netherlands provided a briefing at the 32nd Panta Rhei conference in which they outlined their approach to increasing the utilisation of their electronic services. The Dutch had initially provided services, assuming that once services were available their customers would use them. This however, was not their experience, and D/AFF in Ireland have had the same experience. The Dutch took a different tack and an 'Outside In' (getting feedback from customers) approach rather than an 'Inside Out' (pushing out services without reference to customers) approach was adopted. Farmers were convened into customer panels and asked about their experiences and what services they would wish for to make their work easier. This approach resulted in a greater uptake of services and the services were tailored to the farmers needs rather than what was the perceived need.

[6] *From National Farm Survey 2005, Teagasc 2006*

[7] *Development of Information and Communication Technologies: The Impact at Farmer Level, T.G. Kelly (Teagasc Program Manager) et. al. www.EFITA.net - efita_article_20070331125915*

Table 2.2 – contrast of Single payment Scheme on-line claims across EU[8]

Country	Number of SPS Claims	% Claims Received Online	Of which x% were submitted by		Note
			Agents	Farmers	
Ireland [1,2]	133,000	5.6%	57%	43%	
Scotland	22,000	7.6%	25%	75%	Budget 1999-05 4m
Netherlands	85,000	24%			Target 70% by 2011 About 90% of farmers have Internet access
Sweden	83,000	55%	49%	51%	Development costs 4m

1. 24% of Irish customers had ability to submit online via agent or self
2. 45% of Irish customers have access to Internet

There appears to be a digital divide occurring across sectors of Agriculture with regard to their access and use of information and also even in productivity and management of enterprises. Table 2.3, below, shows the adoption of PC use and uptake in business use for the farm. It is clear that Dairy farmers as compared to Cattle Farmers tended to be involved in ICT and are more likely to use their PC as a communication tool.

Table 2.3 – PC ownership and use[9]

Farming Category	Own a PC	Used for farming purposes
Dairy Farmers	54%	26%
Tillage Farmers	55%	23%
Cattle Farmers	33%	9%

While the Dairy sector may be more intensive and have larger enterprises these figures still demonstrate that there is still a lot that can be done to close the divide.

As mentioned earlier there is a growing population who are now leaving school who will have good exposure to new technologies and ICT in general. These people will / should be able to realise the benefits available from ICT and be in a better position to utilise the technologies. At the same time there is a growing population of older farmers and these will not adopt ICT unless the benefits can be demonstrated.

[8] *Source: XXXII nd Panta Rhei Conference*
[9] *Source: Teagasc – National Farm Survey 2004*

At this point in time the agricultural sector doesn't have a large number of service offerings with just three main Irish players providing farm management software to the farming community. In addition, the Irish Cattle Breeders Federation (ICBF) and Teagasc also provide Services to farmers who can use technology to assist them in their business. The Department has it's own on-line services, www.AgFood.ie, which a farmer may use to view and record their own information. As far as the committee is aware there are no major developments ongoing which could create a significant shift for the farmer towards using ICT.

The committee felt that where there was a reasonable critical mass of users then a service would be provided, however, the reality is that users want the service to be in place first. The next two to three years should see 'rural broadband' widely available and this would help to alleviate some of the 'Act of Faith' involved in new ventures.

'Ryanair' is often cited as an example where on-line facilities were provided and taken up by large numbers of users. The initiative by Ryanair to streamline their ticket sales operations resulted in all ticket sales being moved to on-line purchase only. While this may have meant an initial loss of custom, once patrons realised that using the Internet was the only way to reserve a ticket, all passengers have found a way to use technology to book a ticket, whether it was by buying a PC, learning how to use the Internet or getting assistance from an experienced user. People didn't ask for this change, however in practice, when it became the only method to reserve flights it was quickly adopted. This type of initiative provided a catalyst to other airlines and now practically all airlines offer online ticketing. A similar type of catalyst may need to be looked at if an increase of the use ICT on farms is to be realised.

2.3 Security

The committee believes that **data security** is a particularly important issue and is probably one of the factors discouraging the uptake of knowledge society technologies.

Data security is the means of ensuring that data is kept safe from **corruption** and that access to it is suitably controlled. While data security helps to ensure **privacy**, it also helps in protecting personal data. In Ireland the Data Protection Acts 1988 and 2003 are used to ensure that personal data and information is kept accurate, is only made available to those that should have it and is only used for specified purposes. This is particularly important to ensure individuals are treated fairly, for example for credit checking purposes. The Data Protection Act states that only individuals and companies with legitimate and lawful reasons can process personal information and this information cannot be shared. It is possible that people may not realise they are served very well by this legislation.

Data corruption refers to errors in computer data that occur either during transmission or retrieval, which result in unintended changes being introduced into the original data. Computer storage and transmission systems use a number of measures to provide data integrity and lack of errors.

Data loss during storage has two broad causes: hardware or software failure. Problems such as computer component failure and general wear and tear of media (such as hard drives) fall into the former category, while software failure typically occurs due to 'bugs' in code. There is also the threat of malicious software being inadvertently introduced onto ones computer and the dangers that may impose. Keeping ones anti-virus software up to date can help prevent this type of loss of data. A further cause of concern, which has been highlighted on a number of high profile cases in recent months, is the loss of data stored on laptop computers and in transferring data between organisations.

Data privacy refers to the evolving relationship between technology and the legal right to, or public expectation of privacy in the collection and sharing of data. Privacy concerns exist wherever uniquely identifiable data relating to a person or persons are collected and stored, in digital form or otherwise. Improper or non-existent disclosure control can be the root cause for privacy issues. The most common sources of data privacy issues are:

- Health information
- Criminal justice
- Financial information
- Location information
- In some cases even ethnic or gender information

The committee feels that there are people who are less technically comfortable with the maintenance of their computer and are either not aware of the dangers and/or not capable of protecting their computer adequately. Many users also have real fears in relation to loss of service, loss of data and access to information. As outlined in Section 3 of this report, education and training will be very important to address this.

Section 3: Barriers

This list of barriers cannot at this stage be considered to be comprehensive or indeed complete. The following items are the consensus of the committee in relation to the main obstacles in preventing the uptake of ICT. The committees view is that this whole area needs further investigation to allow further definitive opportunities to promote awareness of the advantages for technology use to be identified.

The main barriers that were examined are detailed in the following sections, but overall, it was felt that "time" and "interest" are the two issues that will always need to be considered and addressed. "Lack of interest" is ever present. If you have someone that hates or is deficient in their paperwork, how do you convince them about ICT? "Lack of Time" is an often-quoted reason why people fail to use ICT, even after attempting to do so. They fail to get over the learning curve and give up on it before they start realising the benefits. The benefits of use of ICT must be promoted across the board.

3.1 Age

The question of age profile of Irish farmers was considered and would appear not to be a significant barrier to the uptake of technologies.

Table 2.1, above, gave a breakdown of the age profiles of all the agricultural customers of the Department of Agriculture, Fisheries and Food and compared them against those customers who have registered to use the Departments AgFood on-line services. A further breakdown of the over-60's age group is supplied in Table 3.1 below.

Table 3.1 – breakdown of customers over 60 years of age[10]

Years of age	All D/AFF customers		Customers who can avail of online services either themselves or via agents		As proportion of all D/AFF customers
	No.	**%[11]**	**No.**	**%[12]**	**%**
Over 90	910	**0.6**	82	**0.9**	**0.05**
80-90	7,737	**4.8**	857	**9.2**	**0.5**
70-80	19,430	**12.0**	2,635	**28.2**	**1.6**
60-70	30,846	**19.0**	5,755	**61.7**	**3.6**
	58,923	**36.4**	9,329		**5.75**

[10] *Figures at Mid February 2007 (D/AFF)*
[11] *% of All D/AFF customers (162,037) in this age group*
[12] *% in this age group - of all over 60 registered for online services*

A significant number of the customers registered for AgFood services are in the over-60 age group (36%). This figure would seem to offer some encouragement that the older population is using ICT. However this figure cannot be entirely relied upon. The experience of some of the committee members is that for many of these farmers, who are greater than 60 years of age, it was mostly their son / daughter who used the computer for them.

The committee believes there is an opportunity to entice older age groups to support their farms and leverage their experience.

3.2 Broadband

Many services are available on the Internet that would be of interest to farmers and rural dwellers. In order to best use these services and fully avail of the features of the service the users must have a broadband connection to the Internet.

The committee discussed the following issues and formed the opinion that these were significant factors having a bearing on the uptake of ICT:

a) Broadband availability.
b) Cost.

A recent (unpublished) study carried out by IFA has shown that 68% of their respondents couldn't get connected to broadband in their area. Of the people who did have broadband available in their location, 75% of these have subscribed to broadband and 20% of those that had broadband said it was family use that was driving PC use. Interestingly 25% of respondents felt that broadband was not relevant to them.

Factors determining take up of broadband

The Department of Communications, Marine and Natural Resources (D/CMNR) in January 2006[13] identified the main factors that determine the take-up of broadband services in any market. These are:

- The price of the service.
- The quality of the service from the customers' perspective.
- The potential size of the market.
- The stage of the development of the market.

[13] *Source: Broadband Demand: A Review of Demand in the Irish Broadband Market. D/CMNR January 2006*

Why people haven't connected to Broadband

A survey of businesses using either ISDN (Integrated Services Digital network) or Dial-up Internet connection, carried out by the Commission for Communications Regulation (ComReg)[14] between November 2006 and January 2007 gives reasons as to why the businesses have not switched to broadband (see Table 3.2 below).

Table 3.2 Main Reasons for Businesses using an ISDN or Dial-up Internet Connection[15]

	H2'05	H2'06
Broadband is currently not available to our business	47%	47%
It is the most suitable package for my needs	10%	21%
The Internet is not an important tool for our business	16%	14%
It is the most cost effective way of accessing the Internet	8%	10%
I have not considered moving to a broadband service	7%	3%
I am not sure about the options for a broadband service	5%	5%
These services are compatible with technology used for our business	1%	5%
Other	5%	6%
Don't Know	8%	3%

Among business users connected to the Internet, but not using broadband, their primary reason for not doing so was **lack of availability.** This figure (47%) remained unchanged between the second half of 2005 (H2'05) and H2'06[16]. On the other hand one in five (21%) businesses in the survey claimed that they still used a narrowband (e.g. dial up) connection, as they believed this to be the most suitable package for their needs. This suggests that there were a certain proportion of companies who genuinely felt that they did not need a broadband connection, or else were **unaware of the benefits of broadband**. This perception is reiterated by one in seven (14%) businesses that claimed that they used narrowband rather than broadband, as the Internet was "not an important tool for their business".

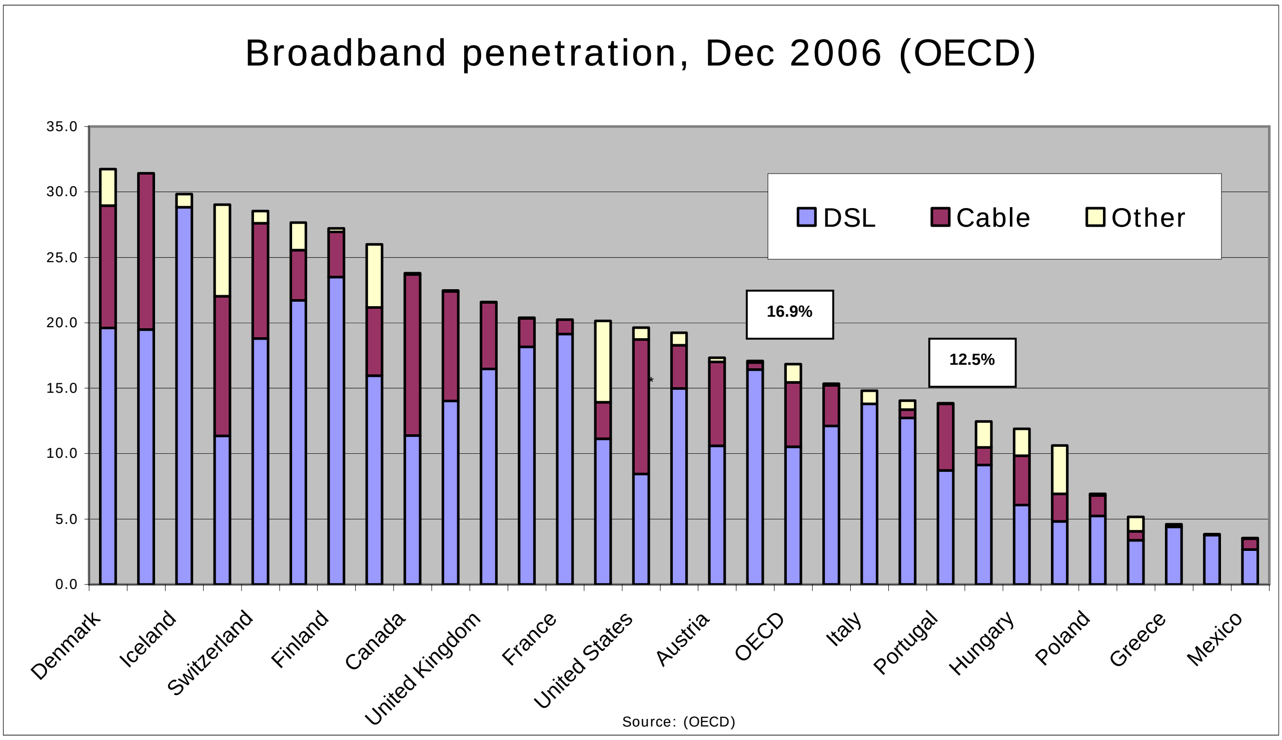
Availability of broadband

Figure 3.3 (below) represents broadband penetration rates calculated by OECD on a per capita basis at the end of December 2006. Irelands penetration rate is calculated at 12.5% compared to and OECD average of 16.9%. Ireland falls well below other close countries like the United

[14] *Source: ComReg document no 07/23 May 2007*
[15] *Figures may add up to over 100% as multiple responses were allowed.*
[16] *This was from a smaller base in 2006, as fewer SME's connected via a narrowband connection compared to 2005.*

Kingdom (UK) with 21.6% and France with 20.3%. The highest in the EU at that time was Denmark with 31.7% penetration.

Figure 3.3 Broadband Penetration Dec 2006[17]



Other - Broadband includes Satellite and Optical Fibre broadband subscription

Price of broadband

It has been suggested that the price of broadband is a significant factor determining the level of take-up of broadband. Tests on the correlation between broadband penetration and prices confirm that prices are significant determinants of broadband take-up in the 0.5 – 2 Mbps (megabit per second) range of services[18]. As referred previously, a ComReg survey indicated that 15% of respondents who would not get broadband access at home do so because it is too expensive[19]. The same sample indicated that 32% 'would not use the internet enough' and 21% have sufficient Internet access, as reasons for not getting broadband at home. This would suggest that a significant proportion of respondents had no need for broadband access and were unlikely even to have considered the price of broadband access.

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[17] *Source: http://www.oecd.org/dataoecd/37/39/38449070.xls*

[18] *Connecting Europe at High Speed: National Broadband Strategies, European Commission, 2004*

[19] *Trend Survey Series – Wave3, 2005, ComReg 05/86b, 2005*

The same ComReg survey identified the three top reasons for subscribing to broadband (as distinct from narrowband access) as:

(i) High download speeds.

(ii) Always-on access.

(iii) The flat fee.

Price / Usefulness remains a particularly important factor for residential and Small and Medium Enterprise (SME) consumers who do not have substantial exposure to broadband, and thus cannot see 'what all the fuss is about'.

Implications of not availing of broadband

The committee discussed the impact on farmers and rural dwellers of the availability of broadband and issues relating to this topic.

The most significant risk was that a digital divide would occur. The term digital divide[20] refers to the gap between those people with effective access to digital and information technology, and those without access to it. It includes the imbalances in physical access to technology, as well as the imbalances in resources and skills needed to effectively participate as a digital citizen. In others words, it's the unequal access by some members of the society to information and communications technology, and the unequal acquisition of related skills. Groups often discussed in the context of a digital divide include socioeconomic (rich / poor), racial (white / minority), or geographical (urban / rural).

Other areas discussed were those around making broadband available in areas that are remote, do not currently have any broadband service and the need for public funding to accomplish this. The committee strongly felt that there is a need to ensure that when these more remote areas are provided with broadband services that they were affordable and that no descrimination, in effect, was made because of location. The committee acknowledges that there is a National Broadband Scheme project being undertaken by the Department of Communications, Energy and Natural Resources which plans to address this gap in services. This scheme is summarised in Appendix 5.

[20] http://en.wikipedia.org/w/index.php?title=Digital_divide&oldid=175496344

3.3 Education and knowledge

As outlined earlier there are a significant number of the farmers who would not have had exposure to PC use either at school or in their normal working lives. Whether a PC is available or not, many people may not be aware of the utilities, benefits and specific applications that they could use to assist them in their home and business lives.

Education in the use of PC would appear to be a factor that needs addressing. It is reasonable to assume that once a farmer or rural dweller takes that initial step towards learning how to use available technology that they will go on to use it for accessing information to their benefit.

3.4 Fear of technology

The committee felt that there is certainly, for some people, a fear of taking up new technologies. These fears can be summarised in the following list:

- Fear of loss of information.
- Lack of confidence in themselves and belief in their own abilities.
- Fear of the complexity of tools.
- Fear of looking foolish in front of their peers.
- Fear of the learning curve.
- Fear that it will consume time, not save time.

These fears may prevent farmers and rural dwellers from getting involved in training initiatives from the outset and they may contribute to the slow uptake of knowledge society technologies. It is imperative that a 'safe' training environment be provided for people new to computer and technology usage, particularly if they are in the older age groups.

There is much public discussion and at times 'hype' in relation to keeping information safe and secure. The advent of computer viruses, worms and Trojan horses and the surrounding publication of potential dangers of attack by these means help to further the fear of technology in the uninformed user. It is important that wherever training in PC use is being conducted that good practices with regard to securing the PC and protecting and backing up of it's data should be included.

Any training conducted, even if with small numbers of farmers or rural dwellers, could result in an increase in uptake as more and more people learn that there is nothing to be feared. An essential element of training should be that it is context specific and cover topics that are of topical use for rural dwellers and farmers.

The experience of one farm management software provider was that there are three types of computer user availing of these types of services:

- The 'enthusiastic' users, who catch on quickly to the use of technology and the advantages that this type of software presents to themselves.
- The 'flyer', or type of person who will be good at using the package straight away.
- The 'challenging case' users who have to deal with a steep learning curve and require a lot of help and support from the company with the initial use of the software and after.

Section 4: Sectoral Opportunities

The committee have identified a number of opportunities that it considers will help increase the uptake of ICT. The opportunities can be broadly categorised under the following headings:

1. Increased relevant services.
2. Synergies.
3. Education and information.
4. Cost of hardware.
5. Broadband.
6. Incentives.

4.1 Increased relevant services

With an increase in the number of services provided on the Internet there is an opportunity for people to use ICT, not just for their farming business, but also for all manner of other services. In future, it is expected that broadband will become more relevant and convenient, and will be used in users everyday lives, in the same way that TV's, DVD players and mobile phones are used nowadays. Broadband applications, such as the following, are now emerging that will take advantage of this:

- Voice & video telephony at greatly reduced costs.
- Expanded range of online entertainment offerings.
- Convenient, tailored education and training.
- Telemedicine, such as remote monitoring and check-ups from home.
- Remote home security monitoring while people are at work or away.
- Enhanced communications for people with disabilities (e.g. impaired hearing).

The committee feels that the farming community is quick to adopt technologies where they know they would be beneficial. The relevance of anything being introduced is a major factor in whether it will be adopted or not. An opportunity may be presented therefore in 'selling' the benefits of ICT wherever possible.

With the abundance of information available on 'the web' farmers often experience information overload, which can prevent them from focusing on what, is relevant and useful. The ideas of having a "one-stop shop" portal or service where all relevant information could be accessed were discussed.

A “one-stop portal” service may provide opportunities to encourage the use of IT. A portal could provide access to information on:

- Education – use of IT, farm tips, local information on Internet etc.
- Information like news updates, provided by D/AFF and other organisations.
- Access to vendors to facilitate farm inputs trading B2F.
- Farm-to-farm sales / trading i.e. allowing the placement of products for sale along lines of eBay have emerged as sites where products can be placed for sale but nothing similar specifically for agricultural sector.

A venture such as this would need further research on it’s potential use and efficacy as similar powerful search engines available on the Internet can allow access to similar information but not all in the one place.

In order to get people using the Internet and ICT the committee felt that the provision of community portals or websites could provide useful information on local events which community members may have an interest in e.g. local GAA club news, local lotto results etc. This forum could serve as an easy introduction to websites and use of a personal computer to the committees target population. This could help to de-mystify ICT and provide a stimulus to use other applications and on-line services. The **ClanEire** Connected Communities project being led by the Irish Farmers Association**,** FBD Insurance plc and CP. Community Publishing Ltd. is one such project providing a means to allow local communities create and maintain their own local information websites.

However there is a necessity for someone in the community to be a ‘local champion’ of any such venture. This champion must fulfil several roles and get involved in the promotion of the website / portal and encourage users to keep information up to date etc. Infrastructure for this type of initiative could also be an issue and some form of technologist is probably required initially for set up and possibly for editorial maintenance of any site. The single most important factor would be to obtain and keep up to date relevant information for these sites.

The committee also discussed the use of the Internet for trading hubs and using these hubs to facilitate trade between:

B2F – Business-to-Farmer,
V2F – Vendor-to-Farmer and
F2F – Farmer-to-Farmer services.

Discussion on merits of having a pilot county in which a focus would be made to provide training and publicity ("Do you want to save 2 hours a week?") and push to see impact in comparison to a neighbouring county. The message needs to be "If you are not using IT, you are not at the races".

There are also opportunities to have a travelling road show at local marts whereby services not just the D/AFF services could be demonstrated

There is a need to provide encouragement on the merits of keeping on top of paperwork be it farm management, small business or home management. However, it should be noted that if this is not currently being done in a paper-based system, an ICT system will not create any benefit to the user. The Department's customers frequently do paperwork at the end of a 12-hour working day, which is not ideal. If administration work is always last thing to do, it is likely to be first to be dropped off the list of jobs to do. There is a need to encourage office work to be part of the daily workload.

Mobile computing can present an opportunity to farmers who may be able to record information while on the go and then download or use this data later.

4.2 Synergies between all actors

Both Government and Non-government agencies are now providing access to their data to customers outside their organisations. This makes it easier for people to find information relating to their claims, tax relief, planning applications etc. There is an abundance of facts and figures waiting to be accessed.

There may be opportunities in the area of sharing data within the private sector e.g. between the Agri-industry and their own customers. Trading online and interactions between farmers and marts / factories / suppliers etc. are all areas where an examination of the potential benefits of sharing data should be made. Once benefits are identified, the potential could be realised to increase the number of relevant services available to farmers and rural dwellers. This increase of services would have the effect of making ICT use more relevant and increase the uptake as a result.

4.3 Education and information

There is an opportunity for localised and focused, training and education schemes that can empower people with the knowledge to be able to use a personal computer to access their information.

Teagasc under the LEADER programme in South Kerry provided Agri IT training and achieved modest success. A safe training environment for learning was provided and served to de-mystify the technology and provided training at a relevant pace.

A recent (unpublished) study carried out by the IFA showed that most respondents felt they would benefit for training in the use of the Internet and how to use email.

Teagasc, in partnership with local Vocational Educational Committees (VEC), launched a new "Internet training for farmers" initiative in Autumn 2007. Trainers from Teagasc use their own and VEC computer labs in each of their regions to conduct training in specific computer applications like the Internet, email, and schemes and services. A syllabus is available that can be used by trainers and is used as a template for standardised training around the country. D/AFF has provided access to Teagasc to a User Training version of the Animal Identification and Movement (AIM) system, thus allowing Teagasc advisors to demonstrate to their farming clients how to access on-line information held by the Department.
Figures for Teagasc courses are shown in Appendix 4.

Reports of some community based training initiatives in the UK for the sometimes-named "silver surfers" (internet users over 60 years of age) proved that there needed to be a local champion / driver if these initiatives were to succeed. This champion was less of a requirement where a formal programme of training was in place. The UK has also been cognisant for some time of the occurrence of a growing urban-rural digital divide and a number of initiatives have been undertaken on a wider basis to address this. One such initiative is the provision of shared, or communal Internet facilities within public places – such as village halls, pubs, Internet cafés or other community resource centres (for example, associated with healthcare provision, job search, training etc.).

A further example, closer to home is the Virginia Active Retirement group. Where PCs in Virginia Agricultural Show offices were open to the public. Some of the group received training by way of night classes and then helped to instruct their fellow members in the use of email and the Internet. The scheme went very well and older people came in, received training, and used broadband, email, etc. The limiting factor as far the group were concerned was the availability of broadband once you went a few miles out of town, but all the same a good example of a community project that introduced ICT to a large number of people in a local area.

It is important to remember that the farming community is just part of a wider community as a whole and that services provided for a wider community could be an incentive to draw in the farming community.

It was felt that the Ploughing Championship provided a unique opportunity to advertise what's available.

A further opportunity may be utilised in the Departments DVO's with the implementation of an "Ask and Assist" programme, whereby farmers and rural dwellers could use a computer in a DVO to carry out their business with the assistance of a Department official.

There is also a need to have training materials created and focused on the farm / agricultural perspective and the relevance of the material is also important. Teagasc, for example, have produced a series of workbooks with funding assistance from the National Development Plan, 2007-13. In particular, an "Internet Training for Farmers" manual has been developed to accompany a course of the same name.

4.4 Cost of hardware

The committee feels that there is no significant barrier surrounding the cost of hardware. There may be an opportunity to educate farmers and rural dwellers on the best type of specification of a computer for use in their business or home and a suggested price point.

4.5 Broadband

The availability and uptake of broadband is now increasing around the country. This in conjunction with the National Broadband Scheme (see Appendix 5) presents a significant opportunity. The numbers of households / businesses now using broadband has increased in 2007. Almost 84,000 new broadband subscribers were added between January and March 2007, the highest number of quarterly net additions since the launch of broadband in 2002[21]. At the end of September 2007, there were 793,600 broadband subscribers in Ireland, a penetration

[21] *Source: ComReg PR210607*

rate of 18.4%. Irelands growth rate for broadband between June 2006 and June 2007 was the highest in the OECD[22].

More significantly the number of broadband subscriptions exceeded narrowband subscriptions for the first time in Q1 2007, with broadband representing 58% of all Internet subscriptions.

As the overall broadband customer base increases it appears likely that users of broadband will be less focused on the aspects of 'high speed' and more on the usefulness of the Internet or it's applications. In drawing an analogy between broadband and mobile phone uptake, there is no single 'killer application' of broadband whereas mobile phone penetration provided 'mobile contactability' when mobiles were launched. This lack of a killer application will not hinder the usefulness of the Internet as the large list of up and coming services as outlined in 4.1 shows.

In the mind of the consumer, **price** and **usefulness** are inextricably linked as perceived value for money. The Irish consumer will pay for something if they believe it's worth it. Currently, it would appear that broadband services do not represent enough value for money. In other words, broadband is too expensive for what a consumer perceives can be done with it. This is in spite of the potential savings that can be made in terms of telecoms costs and subsequent savings on on-line transactions (e.g. airline tickets).

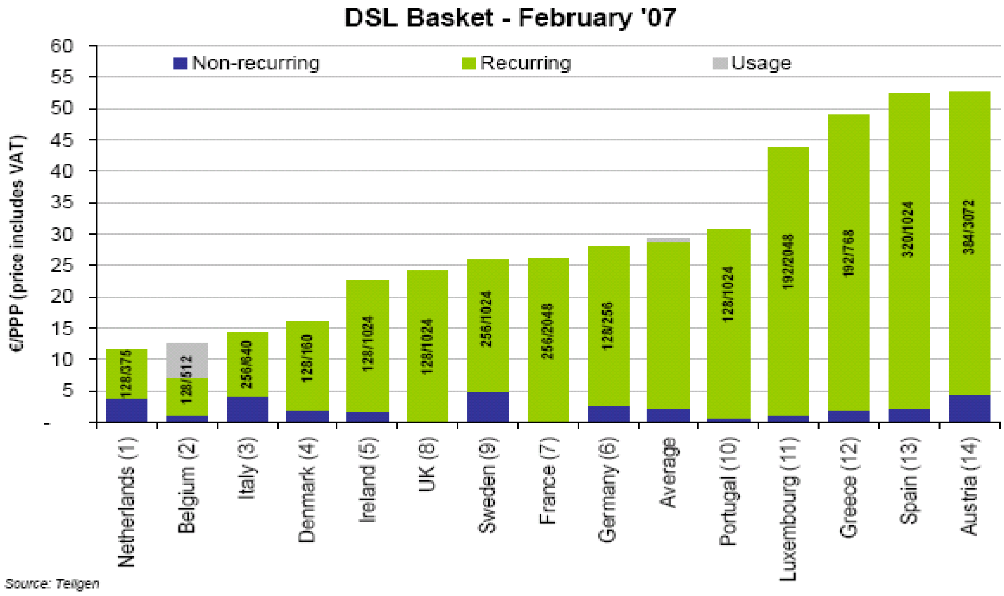
Market research carried out for ComReg in 2002, showed that more people are likely to subscribe to broadband at lower price levels. In this respect, it should be recognised that the headline price of broadband has improved dramatically over the past years – it is now possible to pay a monthly broadband subscription charge of less than €16.

Another perception, that can be countered, is that the cost of broadband is very expensive in Ireland compared to other countries. The reality is that the cost of DSL (digital subscriber line) in Ireland is very favourable in comparison with other countries around Europe.

As can be seen in Figure 4.1, Ireland was ranked in 5th place in the DSL basket in February 2007, which is also five places less expensive than the EU average. The Irish package used was *eircom's* Broadband Home Starter package.

[22] *Source ComReg PR181207a*

Figure 4.1 – Lowest Monthly Rental ADSL Basket- February 2007[23]



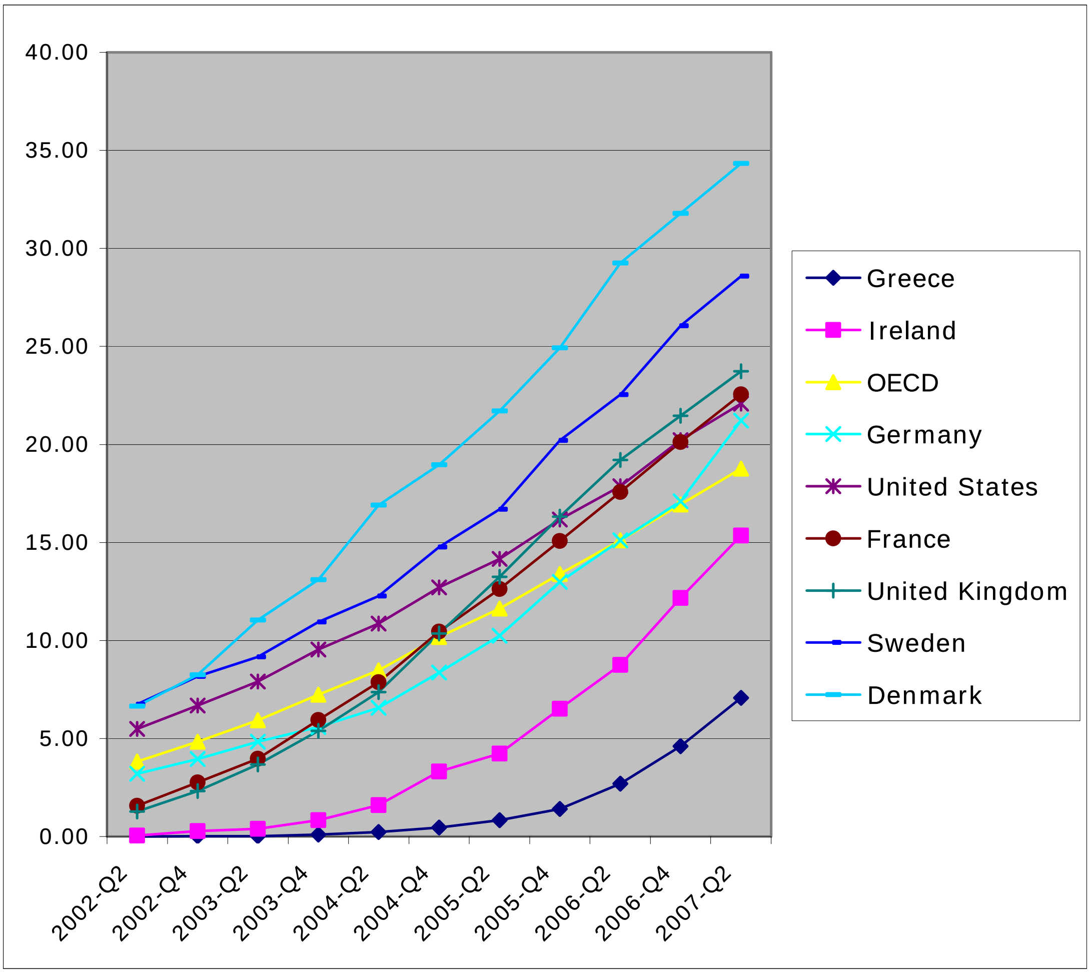
Note: The numbers in brackets represent each Member State's respective rankings as at November 2006

(Figures in Fig. 4.1 are based on usage of 25 hours per month, with each session assumed to last for 1 hour and assumes download usage of 10 Gigabytes every month for each service. The data presented illustrates the cheapest product available in each country under these usage assumptions for residential DSL products. Details on the upload and download speeds for each of the analysed products are included in the figures.)

Figure 4.2 illustrates that the penetration of broadband in Ireland has also increased over the last five years and shows a significant rise in the early part of 2007. This increase coupled with the promises of the National Broadband Scheme signals that there should be some optimism in relation to broadband availability / usage and that this could be a start to building a foundation to start the work of increasing the uptake of ICT, particularly in rural areas.

[23] *Irish Communications Market: Key Data Report – June 2007, ComReg Document 07/34*

Figure 4.2 OECD historical broadband penetration rates[24]



4.6 Incentives

It was felt that uptake of IT was generally good in the dairy sector (see Table 2.3 above) as, at the more commercial end of farming, computers greatly assisted in reducing paperwork. The benefits in this type of business were more apparent and useful to the daily running of the business. There is an opportunity for agricultural business to interact more closely with its customers. Reducing paperwork is a good example of an incentive to use IT.

The committee considered the merits of grants-in-aid scheme for assistance in purchase of computers / hardware under the Farm Improvement Scheme, for example. The group felt that any such grant would require a demonstrable Return on Investment (ROI). The only realistic ROI for the Department would be that recipients would undertake to submit claims on-line e.g.

24 http://www.oecd.org/dataoecd/22/12/39574779.xls

register calf births on-line etc. This too would require further research and is obviously constrained by ever tightening budgets.

The committee have identified a potential in the provision of new services in the area of farm-to-farm trade and that these could provide benefit to farmers. Merchants have a lot of costs to bear in running a business not least cost of salesmen and bad debt. Provision of on-line trading would help to reduce costs for merchants and farmers and increase use of technologies by farmers.

A scheme along the lines of Tidy Towns competition for local Community Websites was discussed. This could provide an incentive to stimulate communities to create and maintain websites. This would have the added benefit of creating a reason for current non-users of ICT to think about getting on-line.

A further suggestion discussed was the creation of an annual award to be made to a farmer who has availed of the best / new / innovative use of ICT on their farm.

There was some strong feeling from the representative bodies that electronic records should count for something. Could incentives be offered by D/AFF for completing forms on-line (e.g. Department could make a priority payment or else allow for later date of submission of claims) similar to those offered by Revenue On-line Service (ROS) who allow an extended deadline for their on-line users. In the UK registrations on-line for pedigree Holsteins get 50p rebate/discount. This whole idea would need further examination and would need to be cognisant of possible legislation changes while at the same time ensuring that no discrimination is introduced into any business process.

The committee welcomed the initiative which was included as part of the recent Animal Welfare Registration and Breeding Scheme for Suckler Herds (AWRBS) where €2.00 extra incentive is to be paid for animals that qualify or the scheme and are registered online. At the end of February 2008 there had been 41,904 herds that had registered for the scheme and 3,015 had signed up to register animals online. With the expectation of about 14% of 734, 000 animals qualifying for the incentive this means that over €200,000 of the expected €53m expenditure (based on applications to date) will be for incentives alone.

Section 5: Immediate actions and recommendations

With a view to testing some of the proposals listed in this report, the committee recommends that the following interim actions that may cause an increase in the uptake of ICT, take place.

5.1 Focused Promotion

The Committee believe there is value in the Department running a focused promotion campaign in a chosen area, both from the perspective of uptake of ICT and also as a valuable measure of the effectiveness of such promotional activities. A campaign involving promotions and demonstrations would outline the benefits of ICT use in general and of services available to farmers and rural dwellers. Points of concentration of users such as marts, schools, community centres etc. should be targeted with promotional or demonstration activities.

This promotion should target one or two counties initially and assess the response is in relation to take up of ICT. A positive, consistent, branded message should be used in all such promotions.

Any such promotion would benefit from the support of local media such as local radio and newspapers to generate a sufficient number of users to attend any planned events. The campaign would benefit from liaison between all of the local organisations involved such as Teagasc, local classes etc. This would ensure that new users could avail of training in PC and Internet use following attendance at a promotional event.

5.2 Promoting use of ICT

Many of the organisations represented on the committee are well placed to provide a channel to the target groups of potential adopters of ICT. The Minister should urge these organisations to avail of opportunities to promote the uptake of ICT in Rural Areas through their various fora. Opportunities for promotion through joint programmes of these organisations should be exploited.

5.3 Presentation and Video

In support of 5.1 & 5.2, the Committee recommends the creation of a video and presentation material that can be distributed to users on DVD. This DVD should outline the advantages of using ICT and demonstrate some practical uses of computers, technology and the Internet, that would be advantageous to the rural dweller.

5.4 Research

The Committee recommends that a research resource be recruited or assigned from existing resources, to assist in the work of the Committee. The research topics to be undertaken are outlined in Section 6.

5.5 Communication channels

The Committee believes it timely for the Department to exploit the technical abilities that it has developed in recent years to communicate using alternative channels. In particular, consideration should be given to the use of emails and text messaging as an acceptable alternative to written communication, where the customer chooses this as an option. Such emails should have a well-defined Subject Line description to avoid confusion between this correspondence and 'junk mail'.

5.6 Message Box

In conjunction with 5.4 above, it is recommended that the Department, in consultation with other Departments, explore the feasibility of providing a Department hosted 'message box' for each customer. This message box would retain a copy of correspondence, issued by the relevant Department, to the customer. There would be significant advantages for the Departments customers in the use of such a facility as it would be possible for a subscriber to avoid 'Spam' and 'junk mail'. The Revenue Online Service (ROS) currently uses such a facility.

5.7 Nitrates information

Given the importance of Nitrates information, the committee recommends that the Department explore the possibility of providing view access to farmers to see their Nitrates calculations online.

5.8 Agri Industry

The Committee feels that Agri Industry could improve mechanisms for engaging with their customers by provision of online services. These could be used for conducting transactions and accepting feedback from customers e.g. grading information, kill out weights etc. The Committee recommends the Department urge the industry where possible to adopt electronic communication channels for interacting with their customers.

5.9 LEADER programme

The Committee recommends that the attention of the Local Action Groups involved in the delivery of LEADER-type actions be drawn to the opportunities for funding under the new Rural Development Programme. Under Axes 3 and 4 of the Rural Development Programme for Ireland 2007-13 there is scope for the provision of training related to support for increasing the uptake of knowledge society technologies in agriculture. There are opportunities in the Training and Information measure for Economic Actors operating in the Fields covered by Axis 3 and also there are possibilities for co-operation projects between different Local Action Groups, which have potential on a county or regional basis.

5.10 e-Tutor scheme

The Committee recommends that the Department in conjunction with other agencies explore the possibility and economic feasibility of implementing an e-Tutor mentoring scheme. Such a scheme would see e-tutors engaged to encourage and support customers in the use of Internet, email, maintaining anti-virus software etc. in their early days of ICT usage. This may be a candidate for funding under Axes 3 and 4 of the Rural Development Programme.

5.11 Broadband

Since lack of affordable broadband has been identified as a major obstacle, the committee recommends that the Minister urge the Minister for Communications, Energy and Natural Resources to accelerate the rollout of affordable broadband to rural areas.

Section 6: Research required

The impact of ICT uptake on farms and rural dwellers goes beyond the operation of the farm and effects the economic and social life of rural dwellers and families. ICT also impacts on the employment patterns in rural areas and also on the health of the rural economy. Research in this area goes well beyond the scope of this committee.

Operational level research could be carried out on all known operators in the field. D/AFF and Agri-traders (i.e. marts, factories, co-ops etc.) and others (e.g. farm management software providers) who are all providing services to rural families. Research with the cooperation of these parties could provide a list of all such services and the level of usage.

The committee recommends that D/AFF and other Departments explore the opportunities for collaboration with academia. Research in general should be encouraged and the education sector should receive support of all parties. There has been some research in farm IT carried in some of the universities and Teagasc but this has been fragmented and lacking in cohesion. No major projects have taken place in this area. The committee is aware of at least one current doctoral research project in this area, but these types of projects tend to have a long duration. It is anticipated that this doctoral research will not produce results in the lifetime of the committee

In the short term, the members of the committee and the groups they represent have variously planned and carried out modest size surveys of their own clients. There is a willingness of all the bodies to cooperate to obtain a baseline of views and an indication of some factors under operations including the potential for tactical action to increase the uptake of ICT.

An amount / quantity of research could be carried out on the underlying causes and perceived barriers that are currently influencing the level of uptake. There is limited research available on this and focusing to identify the obstacles / barriers and disincentives to uptake and factors most likely to underpin upsurge would provide the most valuable information to help the work of the committee.

The Committee recommends that research in the area of fear of technology and barriers to the use of ICT in a changing technological environment would be of most benefit for the Final Report. It is felt that research in these areas will provide initial trends that can be examined but probably represents only part of the research required.

Discussions around the type of research that should be carried out resulted in the opinion that any research that was available whether it be a piece of primary research, questionnaires or surveys would all serve a purpose and be of benefit to the Final Report.

Section 7: Glossary

Glossary of terminology and acronyms used in the report

ADSL	Asymmetric Digital Subscriber Line, is a form of DSL, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide
AgFood.ie	Department of Agriculture, Fisheries and Food on-line services website
Agri-Vision 2015	Action Plan setting out details of specific actions to be taken by the agriculture and food industries to achieve a vibrant future for the industry
AIM	Animal Identification and Movement system
AWRBS	Animal Welfare Registration and Breeding Scheme for Suckler Herds
B2F	Business-to-farmer
Broadband	Broadband, in telecommunications is a term that refers to a signaling method that includes or handles a relatively wide range of frequencies, and especially pertains to an internet connection with a much larger capacity than dial-up or ISDN.
CAP	Common Agricultural Policy
ComReg	Commission for Communications Regulation
CSO	Central Statistics Office
D/AFF	Department of Agriculture, Fisheries and Food
D/CENR	Department of Communications Energy and Natural Resources, formerly D/CMNR
D/CMNR	Department of Communications, Marine and Natural Resources, now called D/CENR
D/CRAGA	Department of Community, Rural and Gaeltacht Affairs
Dependency culture	A type of society which relies upon, and often expects, state benefits and other support to maintain it
DSL	Digital Subscriber Line
DSL	Digital Subscribe Loop or Line, is a family of technologies that provide data transmission over the wires of a local telephone network.
DVD	Digital Versatile Disc
DVO	District Veterinary Office
EFITA	European Federation for Information Technology in Agriculture
EU	European Union
F2F	Farmer-to-farmer
FDII	Food and Drink Industry Ireland
GAA	Gaelic Athletic Association
Google™ Earth	Google™ Earth is computer software that combines the power of Google™ Search with satellite imagery, maps and terrain to allow viewing of the world's geographic information
IBEC	Irish Business and Employers Confederation
ICBF	Irish Cattle Breeders Federation
ICMSA	Irish Creamery Milk Suppliers Association
ICOS	Irish Co-operative Organisation Society
ICSA	Irish Cattle and Sheep farmers Association
ICT	Information and Communications Technologies
IFA	Irish Farmers Association
Internet	Worldwide, publicly accessible series of interconnected computer networks

ISDN	Integrated Services Digital Network is a telephone network system, designed to allow transmission of voice and data over ordinary telephone copper wires.
ISITA	Irish Society for Information technology in Agriculture
IT	Information Technology
Knowledge Society	Is a society where human activities become dependent on a huge volume of knowledge and information
LEADER	Is the EU Community Initiative for Rural Development that provides approved Local Action Groups with public funding (EU and National) to implement multi-sectoral business plans for the development of their own areas.
MACRA	Macra na Feirme – voluntary organisation for young people
Mbps	Megabit per second or 1,000,000 bits per second
OECD	Organisation for Economic Co-operation and Development
PC	Personal computer
RFID	Radio Frequency Identification chips
ROS	Revenue Online Service
SME	Small and Medium Enterprise (SME)
SMS	Short Message Service
SPS	Single Payment Scheme
Teagasc	Irish Agriculture and Food Development Authority
Trojan Horse	Is a piece of software which appears to perform a certain action but in fact performs another. This action may or may not be actually malicious, but Trojan horses are notorious today for their use in the installation of programs providing access to your PC without your knowledge.
UCD	University College Dublin
UK	United Kingdom
V2F	Vendor-to-farmer
VEC	Vocational Educational Committee
Virus	A computer virus is a computer program that can copy itself and infect a computer without permission or knowledge of the user.
WAP	Wireless Application Protocol
Worm	A computer worm is a self-replicating computer program that uses a network to send copies of itself to other computers, often without any user intervention. Unlike a virus, it does not need to attach itself to an existing program.

Appendix 1 – Committee members

Organisation	Nominee
D/AFF	Mr. Philip O'Reilly (Chair)
D/AFF	Mr. Aidan O'Brien (Secretary)
D/CRAGA	Mr. Pat Moynan
FDII IBEC	Ms. Karina Cassidy
ICMSA	Mr. James O'Mahony
ICOS	Mr. Ray Doyle
ICSA	Mr. Edmond Phelan
IFA	Mr. Pat Smith
Irish Farm Computers	Mr. Barry Lynch
ISITA	Mr. Mick Harkin
MACRA	Mr. John Graham
Teagasc	Mr. Mark Gibson
UCD	Dr. Dermot Ruane

Appendix 2 – National Census Figures 2006 PC & Internet availability in Agricultural sectors

Households with at least one member working in the Agriculture sector classified by Internet Access

Census 2006 Returns	Total Households	Access to internet – broadband connection	Access to internet – other connection	No access to internet	Not stated
01 Agriculture, Hunting And Related Service Activities	**75353**	6440	28191	37259	3463
		8.55%	**37.41%**	**49.45%**	**4.60%**
02 Forestry, Logging And Related Service Activities	**2137**	313	827	918	79
		14.65%	**38.70%**	**42.96%**	**3.70%**
05 Fishing, Operation of Fish Hatcheries And Fish Farms	**1834**	216	785	762	71
		11.78%	**42.80%**	**41.55%**	**3.87%**
State – Overall All Sectors (01+02+05)	**79324**	**6969**	**29803**	**38939**	**3613**
		8.79%	**37.57%**	**49.09%**	**4.55%**

Households with at least one member working in the Agriculture sector classified by PC availability

PC Availability			Households with a PC		
Internet Access	Total Households	Access to internet – broadband connection	Access to internet – other connection	No access to internet	Not stated
01 Agriculture, Hunting And Related Service Activities	34641	6316	27709	250	366
02 Forestry, Logging And Related Service Activities	1130	307	809	7	7
05 Fishing, Operation of Fish Hatcheries And Fish Farms	996	214	771	7	4
	36767	**6837**	**29289**	**264**	**377**

PC Availability			Households without PC		
Internet Access	Total Households	Access to internet – broadband connection	Access to internet – other connection	No access to internet	Not stated
01 Agriculture, Hunting And Related Service Activities	10926	85	391	8190	2260
02 Forestry, Logging And Related Service Activities	339	3	15	275	46
05 Fishing, Operation of Fish Hatcheries And Fish Farms	248	2	13	189	44
	11513	**90**	**419**	**8654**	**2350**

PC Availability			Availability not stated		
Internet Access	Total Households	Access to internet – broadband connection	Access to internet – other connection	No access to internet	Not stated
01 Agriculture, Hunting And Related Service Activities	29786	39	91	28819	837
02 Forestry, Logging And Related Service Activities	668	3	3	636	26
05 Fishing, Operation of Fish Hatcheries And Fish Farms	590	0	1	566	23
	31044	**42**	**95**	**30021**	**886**

Appendix 3 – National Census Figures 2006 PC & Internet availability

30. Private households in permanent housing units in each Province, County and City, classified by personal computer ownership and access to the Internet, 2006

	Total households	PC ownership	No PC ownership	Not stated	Broadband Internet Access	Other Internet Access	No Internet Access	Not stated
Carlow	17,074	9,248	7,424	402	2,213	4,916	8,802	1,143
Dublin	419,529	254,506	152,235	12,788	134,923	81,709	178,946	23,951
Dublin City	190,711	98,878	84,522	7,311	51,172	29,223	95,393	14,923
Dún Laoghaire-Rathdown	68,375	48,357	18,651	1,367	27,284	16,077	23,288	1,726
Fingal	80,085	55,103	22,809	2,173	27,712	20,290	29,208	2,875
South Dublin	80,358	52,168	26,253	1,937	28,755	16,119	31,057	4,427
Kildare	60,578	39,134	20,167	1,277	14,385	18,265	24,871	3,057
Kilkenny	29,478	16,601	12,273	604	3,919	9,545	14,283	1,731
Laoighis	22,421	12,008	9,937	476	2,671	6,575	11,798	1,377
Longford	12,042	5,778	5,923	341	1,189	3,326	6,610	917
Louth	38,598	21,801	15,917	880	6,821	10,594	18,749	2,434
Meath	53,575	33,801	18,766	1,008	9,889	18,298	22,665	2,723
Offaly	23,533	12,143	10,839	551	2,483	6,680	12,723	1,647
Westmeath	26,881	14,578	11,652	651	3,678	7,733	13,802	1,668
Wexford	45,096	24,203	20,183	710	4,510	14,396	23,446	2,744
Wicklow	42,472	26,974	14,583	915	9,424	13,219	17,569	2,260
Clare	38,026	21,700	15,556	770	5,309	12,435	18,023	2,259
Cork	166,542	92,841	69,868	3,833	29,671	47,765	79,015	10,091
Cork City	43,871	21,108	21,232	1,531	9,703	7,014	23,751	3,403
Cork County	122,671	71,733	48,636	2,302	19,968	40,751	55,264	6,688
Kerry	47,743	24,049	22,688	1,006	5,368	14,389	25,020	2,966
Limerick	63,956	33,748	28,929	1,279	10,227	16,783	35,097	1,849
Limerick City	19,513	8,812	10,251	450	3,768	3,002	12,073	670
Limerick County	44,443	24,936	18,678	829	6,459	13,781	23,024	1,179
North Tipperary	22,866	11,844	10,574	448	2,522	6,787	12,954	603
South Tipperary	29,221	14,474	14,227	520	3,557	8,136	16,756	772
Waterford	38,444	20,955	16,580	909	7,615	9,761	19,776	1,292
Waterford City	17,049	8,716	7,696	637	4,655	2,674	8,917	803
Waterford County	21,395	12,239	8,884	272	2,960	7,087	10,859	489
Galway	78,206	43,474	32,842	1,890	13,364	22,426	38,952	3,464
Galway City	25,324	14,477	10,068	779	7,990	4,234	12,164	936
Galway County	52,882	28,997	22,774	1,111	5,374	18,192	26,788	2,528
Leitrim	10,541	5,167	5,170	204	817	3,252	6,190	282
Mayo	43,218	21,563	20,840	815	4,371	13,169	24,113	1,565
Roscommon	20,624	10,522	9,762	340	1,926	6,339	11,838	521
Sligo	21,352	11,494	9,505	353	2,510	6,879	11,429	534
Cavan	21,781	10,796	10,531	454	1,980	6,526	11,708	1,567
Donegal	49,993	25,518	23,721	754	4,878	15,153	28,859	1,103
Monaghan	18,506	9,436	8,725	345	1,890	5,479	9,913	1,224
State	**1,462,296**	**828,356**	**599,417**	**34,523**	**292,110**	**390,535**	**703,907**	**75,744**
		56.65%	**40.99%**	**2.36%**	**19.97%**	**26.71%**	**48.14%**	**5.18%**

Appendix 4 – Teagasc training figures

Adults	
Year	Numbers
1998	300
1999	1,000
2000	2,500

New Entrants
700 - 1,000 per year trained

Courses	
Year	Numbers
2001	50 courses
2002	112 courses 1202 people
2003	53 courses 513 participating

Appendix 5 – National Broadband Scheme

Summary of National Broadband Scheme[25]

1. Introduction

In 2 May 2007 the Department of Communications Energy and Natural Resources (D/CENR) announced the commencement of the procurement process for the National Broadband Scheme (NBS).

The objective of the NBS is to encourage and secure the provision of broadband services to certain target areas in Ireland in which broadband services are not currently available and are unlikely to be available in the near future. It is envisaged that the NBS will lead to a broadband product being available to fixed locations in these areas, which is affordable, sustainable and scaleable. It is intended that the broadband service delivered under the NBS will be broadly comparable to the products enjoyed in the majority of currently served areas, now and in the future.

2. Broadband Coverage

In order to assess the extent of broadband coverage, the D/CENR contacted known service providers and sought details as to their current and future purported broadband coverage. Based on information provided by such providers an indicative broadband coverage map was published on the D/CENR's website in early May.

An updated indicative coverage map has been published on the D/CENR's website at: www.dcmnr.ie/communications (and is included in this Appendix for reference only). The map denotes the following defined coverage areas:

> "**Red areas**" are currently served by broadband service providers.
>
> "**Blue areas**" are currently without broadband coverage, but service providers have indicated that they plan to provide broadband services in these regions in the future.
>
> "**Green areas**" identify remaining areas where no service is currently provided and is unlikely to be provided in the future.

3. National Broadband Scheme Coverage

In ensuring the provision of broadband services for consumers and businesses through the NBS, the D/CENR wishes, insofar as is possible, to minimise potential distortions in competition. The focus of the NBS is, therefore, on areas that are unlikely to have broadband services available within a reasonable timeframe.

The D/CENR intends that 'green areas' will fall within the scope of the NBS.

Consumers/businesses in the blue (and green) areas have, to date, been denied access to broadband services since they first became generally available approximately 5 years ago. The D/CENR considers that it is no longer justifiable for this broadband deficit to continue, particularly from social inclusion and economic competitiveness perspectives. The D/CENR considers that it should exclude blue areas from the scheme at this point in time. It intends that services providers will be given a reasonable timeframe to roll out broadband services to these blue areas, after which any unserved areas at that time will be facilitated by the NBS.

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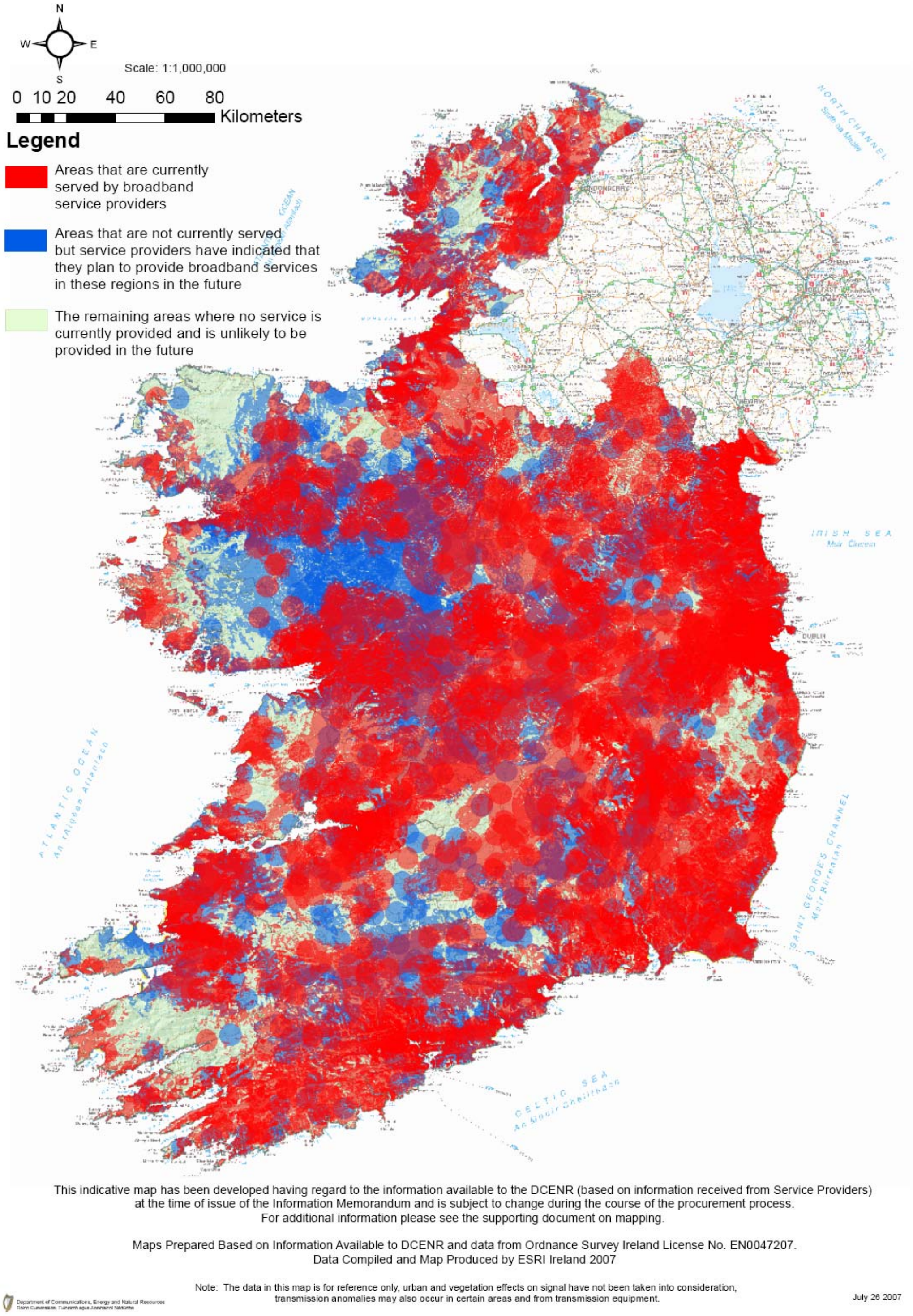
[25] *National Broadband Scheme: Approach to NBS broadband mapping and coverage August 2007, D/CENR*

The blue areas will, therefore, be included in the scope of the NBS from the outset and the NBS procurement process will seek to address these areas. However, the provision of broadband to the blue areas via the NBS contract will not take place until the beginning of Q3 2008. Up to the end of Q2 2008, where the D/CENR is presented with clear evidence that a ‘live service’ is being provided to users in blue areas, the service provider’s particular service footprint will be removed from the NBS coverage requirements.

Wireless and DSL Broadband Coverage



Source D/CENR July 2007