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**Better access for rural areas to modern ICT**

**{COM(2009)103}**

## 1. INTRODUCTION

Information and Communication Technology (ICT) has transformed the socio-economic environment of the EU over the last decade. The internet has become an integral part of people's lives, and a tool without which many enterprises could not exist and do business.

The impact that ICT has on the socio-economic environment, businesses and individuals has made it an important policy area for Community, national and regional measures in pursuit of Lisbon objectives. The adoption and use of ICT are among the most significant factors determining productivity growth, accounting of 40% of Europe's productivity growth and 25% of EU GDP growth<sup>1</sup>.

In recent years, the EU has become the largest market in the world with about half of its population, estimated at some 250 million people, regularly using the internet. Internet use has accelerated particularly over the last two years. At the same time, the public sector has been rolling out online public services and advancing in the use of ICT to deliver such services efficiently in education, health and public administration<sup>2</sup>.

ICT in general is highly relevant to improving the competitiveness of agriculture and forestry and improving quality of life and diversification of the rural economy. High-quality internet access is one of the tools which can unlock more of the potential of rural areas and make them more viable places for people to live. ICT helps existing rural businesses to perform tasks more effectively and efficiently and responds to their demand for rapid access to diverse kinds of information. It creates greater scope for new businesses to start up, and it makes it easier to deliver vital resources. Entrepreneurship and economic progress in rural areas could be strong if the economic environment is favourable<sup>3</sup>.

Despite the progress made in recent years, significant differences still exist between Member States (MSs) in terms of broadband coverage and take-up. Gaps in coverage and take-up between their rural areas, and between rural and urban areas, are widespread and the pace of development differs. It has been estimated that by 2007 only 70% of the EU27 rural population was able to subscribe to a broadband connection as opposed to 98% of the population in urban areas. The bulk of the rural population receives poorer services at higher costs.

The Commission has assigned a central role to the development of on-line services in the eEurope 2005 and i2010 initiatives. The characteristics of rural areas and the fact that almost half of the EU population resides there make them one of the best environments for taking full advantage of the benefits of such on-line services. Clearly rural broadband connectivity will have a bearing on the uptake of on-line services (for example, webcasting Council meetings). The delivery of these services will require further planning, provision and support for training, connectivity and equipment<sup>4</sup>.

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<sup>1</sup> COM(2005) 229, 1.6.2005.

<sup>2</sup> The i2010 Agenda — a European Success Story in the Making, Speech by Commissioner Mrs Viviane Reding at the i2010 Conference — Information Society at a Crossroads, Brdo, 13 May 2008.

<sup>3</sup> Tools in the toolbox: ICT and broadband in rural areas, speech by Commissioner Mrs Mariann Fischer Boel at the Conference on Bridging the Broadband Gap: Benefits of broadband for rural areas and less developed regions, Brussels, 15 May 2007, SPEECH/07/311.

<sup>4</sup> Study on availability of access to computer networks in rural areas (SAACNRA), page 61.

This Annex supplements the joint Communication between DG Agriculture and Rural Development and DG Information Society and Media to the Council and the European Parliament on 'Better access for rural areas to modern ICT' by presenting in detail the current state of ICT development in rural areas, the situation as described by Member States and regions in their rural development programmes (RDPs) 2007–2013, the way in which rural development approaches the problem and the actions planned on ICT for rural areas, and last but not least the benefits that can be achieved.

## **2. THE RURAL-URBAN ICT GAP**

The rural-urban gap in broadband coverage, internet take-up and growth in use of technologies is still huge. The availability of applications and quality of service in rural areas are also lower.

This section describes the existing urban-rural gap using the only two data sources available at EU level, namely the Idate data on broadband coverage and the Eurostat Community Survey on ICT usage in households and by individuals. Both data sources use methodologies that define “rural” areas in a different way from the one used by Member States and regions in their rural development programmes, and also differ from the statistical approach used by DG AGRI, which is based on the OECD methodology<sup>5</sup>. Eurostat also defines three types of areas, namely thinly populated, intermediate populated and densely populated areas<sup>6</sup>. However, for the purpose of consistency with the data, we will use the same terminology as that used by both sources.

Although data is limited, from what is available at EU level it can be seen that there are gaps between urban and rural areas, thinly and densely populated areas, and that these gaps cannot be ignored and need to be analysed.

### **Broadband coverage and take-up<sup>7</sup>**

The broadband gap can be clearly seen from the data presented in Tables 1 and 2 and Figures 1 and 2, showing obvious disadvantages for rural areas and the slow development of broadband coverage taking place there<sup>8</sup>.

In Europe, Digital Subscriber Line (DSL) is the dominant platform providing about 80% of total broadband lines. At the end of 2007 DSL reached 98% of EU urban areas, but rural coverage lagged behind at 70% (Table 1 and Figure 2).

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<sup>5</sup> The data provided by DG INFSO is derived from a study carried out by Idate, which uses its own definition of rurality. Rural areas are defined as those having less than 100 inhabitants per square km, sub-urban areas have a population density between 100 and 500 inhabitants per square km, and the rest are urban areas. This definition is a restricted version of the OECD definition used by DG AGRI and is a different from the one adopted by MSs and regions in their RDPs 2007 – 2013. Coverage is measured as the share of total population that can subscribe to a DSL connection. Data for Bulgaria and Romania is not available. The purpose of this working document is to present statistical evidence on the situation in the EU as regards broadband coverage and take-up and not to compare different methodologies used for defining rural areas.

<sup>6</sup> The Eurostat methodology is based on the degree of urbanisation.

<sup>7</sup> The analysis in this sub-section is based on Idate data.

<sup>8</sup> For the purpose of consistency with previous policy documents, we will call the “sub-urban” areas – intermediate areas, although the Idate’s methodology defines them more widely than the OECD.

In about one third of the EU27 MSs, rural broadband coverage is below 80%. These are mostly new Member States such as Slovakia (38.5%), Poland (42.5%), Latvia (65.0%), Lithuania (67.5%), Estonia (73.0%), the Czech Republic (75.0%) and Hungary (80.0%), with only two old MSs belonging to this group, namely Greece (50.0%) and Ireland (73.3%). In Bulgaria and Romania the situation is even worse, as indicated in Bulgaria's rural development programme and in Romania's structural operational programme "Increasing economic competitiveness".

Not only coverage, but also rural take-up is low in the aforementioned countries. Data for 2007 show that take-up barely reached 3.0% (see Table 2 and Figure 1), except in the Czech Republic where it was 4.8%, still quite a low level.

Low take-up levels were registered on average in 2007 in the rural areas of the new Member States, where the indicator for EU12 was just 2.7% versus 12.8% for the EU15 and 10.1% for the EU27. Most importantly, these three indicators for rural areas remain significantly below the urban levels, which was 8.6% for the EU12, 20.7% for the EU15 and about 19.1% for the EU27. Intermediate areas (called "sub-urban" by Idate) were close to the urban levels.

In contrast, six countries have approximately 100% or full DSL coverage in their rural areas (Belgium, Denmark, France, Luxembourg, the Netherlands and the United Kingdom; Table 1 and Figures 1 and 2). These are also the countries where rural take-up is the highest, reaching the maximum registered 21.1% in France and 20.9% in the Netherlands.

As regards the growth in coverage and take-up over the last few years, two opposite trends can be observed.

DSL coverage in rural areas has been developing faster in recent years, but mostly because the gap with urban areas has been substantial and also because urban coverage has in several countries reached, or is approaching, the level of 100%. The absolute change in rural coverage over the period 2005–2007 is particularly high in the cases of Slovenia (58.5%), Greece (50.0%), Italy (37.1%) and Germany (32.5%) as depicted in Figure 3. Slovenia has the highest growth in coverage of rural areas over the last three years (216.7%), followed by Italy (83.2%), Slovakia (54.2%), Sweden (36.4%) and Ireland (29.7%). Lithuania and Austria have also recorded a growth in coverage of about 20% if 2007 is compared to 2005.

As regards take-up, the position of rural areas is not that strong. Urban take-up and take-up in intermediate areas grew more strongly in 2005–2007 (Table 2 and Figure 4). Except in France, Sweden, Italy and the Netherlands, rural take-up is developing sluggishly. Particularly marked are the differences in Ireland (4.3% for rural areas versus 12.3% for urban territories), Germany (4.9% versus 11.4%) and Slovenia (4.5% versus 9.9%). Overall, rural take-up is two to four times lower than urban take-up.

It is interesting to note that in the EU27 there were in both rural and intermediate areas about 19.2 million DSL subscribers in 2005, while in 2007 this number grew by 70.8% to reach 32.8 million subscribers.

However, due to the different rate of development, the gap between best and worst performing regions and countries is widening<sup>9</sup>. As regards quality of the service, rural areas

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<sup>9</sup> COM(2007) 803 final.

suffer from low connection speeds<sup>10</sup>, lower download rates, fewer internet operators and lack of choice of competitive platforms (apart from DSL)<sup>11</sup>.

### **Eurostat household ICT survey data**

The Eurostat household survey data confirms the situation outlined before, although there are differences in the methodologies and terminology used between both sources.

Eurostat data shows that despite the increase in EU25 internet take-up by households over the period 2004–2007, the gap between thinly and densely populated areas remains the same (12-13 points; from 6 and 18% in 2004 respectively for thinly populated and densely populated areas to 35 and 48% in 2007, Figure 5). The take-up in thinly populated areas in new Member States compared to densely populated areas remains much lower than in the old MSs, with Italy, Greece, Portugal and Spain also having difficulties in ensuring high levels of internet usage in thinly populated areas (Figure 6). Importantly, for 11 of the new Member States (except Malta) levels are below the EU average and Bulgaria and Romania are ranked last on this criterion.

### **3. OBJECTIVE-LED APPROACH IN RURAL ICT DEVELOPMENT: CHALLENGES AND DIFFICULTIES<sup>12</sup>**

Overall, Member States and regions have recognised the importance of ICT for business and area development in the new programming period. In 65 RDPs (out of 94 in total)<sup>13</sup> the baseline analysis makes a reference to broadband and in 37 RDPs there is a specific reference in the ex-ante evaluations. Analyses and information confirm the significant differences between MSs and regions, and between urban and rural areas. Significant disparities exist even between regions within a given Member State.

As regards the ICT situation in rural areas, about half of the MSs have recognised the ICT situation in rural areas as poor (13 MSs and 16 RDPs), and one quarter of them, accounting for half of the programme areas (7 MSs and 44 RDPs), rate it as average.

Member States and regions that have developed sufficient broadband coverage (at least in DSL) are now strongly focusing on the development of services for the rural population and businesses. At the same time, those that are still behind in their infrastructural development are targeting both the demand and the supply side.

#### **ICT development in rural areas: development of services**

Despite reaching full rural coverage of DSL connections, several Member States continue to invest in ICT mostly for the development of services for the population and businesses.

Denmark, for example, is focusing on food-chain development including the use of ICT; Finland places future emphasis on developing the supply of services and the availability of

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<sup>10</sup> COM(2006) 129, 20.3.2006.

<sup>11</sup> SEC(2007) 395 annexed to COM(2007) 146, 30.3.2007.

<sup>12</sup> This section is based on information derived from the rural development programmes of Member States and regions for the new programming period 2007–2013.

<sup>13</sup> Six rural development programmes are framework and network programmes. They are not counted here.

connections, while France is targeting the improvement of services quality (e-government, home e-service, etc.) with additional stress on the benefits of networking.

More efficient and equitable access for the rural population to local services (such as through e-commerce) is one of Luxembourg's objectives, with promotion of village networking and on-the-spot training of internet users. In Galicia (Spain), ICT for rural areas has become one of the major objectives and the provision of quality services is recognised as a challenge. Increasing access to the internet and broadband has improved connectivity of rural areas and access to services more generally (e.g. in Scotland).

Sweden is aiming to strengthen the diffusion of knowledge from universities, colleges and the research community. Development and competitiveness is to be supported through the development of skills, know-how and learning, new technology and resource-efficient methods, ICT and new product development. Collaborative models for management and administration will also receive attention.

### **ICT development in rural areas: infrastructural challenges**

Progress in developing broadband in rural areas is noticeable: from the French overseas departments through Spain to Poland, coverage is increasing annually and prerequisites for growth and e-inclusion are being laid down. However, efforts are still needed to create equal conditions in rural areas compared to urban areas, with a number of factors determining the low levels of ICT indicators in Europe's rural areas.

Broadband coverage in rural areas is particularly low because of local geographical specificities and the related high costs for maintaining the network infrastructure as recognised, for example, by Lithuania, Poland, Romania and Slovakia. In specific cases, there are no technical facilities in the rural areas for using broadband and having internet connection (Lithuania).

In Finland, the construction of broadband connections to villages is still under way (80%) and the importance for the Finnish rural areas of introducing wireless broadband connections remains. In France, remote rural areas cannot gain sufficiently from the benefits of the new technologies as the concentration of internet providers focuses on and develops in the most profitable zones, these mainly being the big cities. However, having access to the internet became a major priority in 2004.

In Sweden, where ICT is a horizontal strategic priority in rural development, internet and computer networks are already widely used tools, given the country's sparsely populated areas with long distances. However, internet connections in rural areas are too slow for all services to be able to be implemented functionally. Additionally, there are still extensive parts of the rural areas that lack coverage for mobile communication.

In Slovakia, the availability of broadband remains low, particularly in the rugged parts of the country that mainly comprise rural settlements with low population density, while in Romania, high costs in rural areas are determined by the lack of fixed telephony infrastructure. In addition, wireless broadband is concentrated in urban areas. In Poland, however, an opposite trend could be observed — many telephone owners have terminated their landline subscriptions. This has been induced by the competitive offers of mobile service providers, apart from the higher costs of having a landline.

In Italy, regions often underline that the supply of broadband connection in mountainous, hilly, coastal and inner rural areas is either missing or problematic and more costly. Difficulties in the broadband development of the hilly and mountainous areas can be seen, for example, in Abruzzo, Marche, Campania and Molise. Lower development of inner rural areas is a feature of Abruzzo, Marche and Liguria, while coastal or peripheral problems are discussed, for example, in Marche, Emilia-Romagna, Veneto and Valle d'Aosta. A rural-urban digital divide also exists in other regions such as Piemonte, Basilicata and Sardegna.

Like in other MSs, broadband development and use of the internet in the Italian rural areas is hindered by long distances, low population densities, sparsely distributed services, fragile business infrastructure, quality of the service, nature of the territory, etc. However, in several Italian regions solutions to problems faced by hilly and mountainous areas have been found, such as the provision of satellite and/or wireless connections (e.g. Trento, Friuli-Venezia Giulia).

Demand for better infrastructure exists also in the big islands, especially in the areas that are far from the residential centres and where urbanisation is limited (e.g. Malta).

### **ICT development in rural areas: rural uptake**

In most Member States rural take-up is low and far behind urban areas and even in cases where coverage is progressing, take-up is not yet sufficient. This remains one of the challenges for the future.

Often, the ambition to extend broadband in general is hindered in some rural areas by insufficient capacity (e.g. Sweden, Schleswig-Holstein). In these cases, the costs of providing and maintaining the connection are higher than the lower user potential. Low incomes continue to be one of the most important factors holding down internet take-up, especially in countries which have to catch up economically (e.g. Bulgaria, Slovakia).

In Romania broadband penetration is about 6 times higher in urban than in rural areas, like in Bulgaria, where internet uptake in the villages (outside the rural municipal centres) is also extremely low. Comparable to Bulgaria is the situation in the Baltic countries (Latvia and Lithuania), with rural households in Latvia having only half as many computers as urban households.

Like in other parts of the EU, the high degree of dispersal of the population complicates and increases the price of the provision of infrastructures and basic services, constituting a significant deficiency (e.g. Galicia, Spain). This is confirmed also by the sparsely populated rural areas in Slovenia, where internet take-up is behind that of densely populated areas. Nonetheless, in certain rural areas demand over the last years has steadily grown, such as in the case of Northern Ireland.

### **ICT development in rural areas: agriculture**

All RDPs confirm the importance of the internet and ICT for business development and social integration. Its importance for the agricultural sector, however, is clearly noted by several countries such as Greece, Poland, Cyprus and Hungary. Raising the e-skills of farmers is a horizontal objective in all programme areas.

Specific problems for agriculture are raised in Toscana (Italy), where 7 out of 10 agricultural enterprises do not have a computer and just one quarter of them use the internet.

In Hungary, only 32% of all Hungarian farmers had computers and just 28% used the internet in 2004. In addition, only 58.7% of agricultural entrepreneurs have access to the internet, far below the country's average of 76.2%. In Cyprus, in specific sectors such as organised livestock-farming units and modern food industries ICT is well placed, but there are considerable setbacks in agricultural holdings, which fall far short in this area.

Based on similar reasoning, Portugal sets objectives for raising the use of modern technologies in the farm sector, while Finland is targeting about 85% of farms having a computer by the end of the programming period.

One good example of how ICT plays an important role for agriculture is given by the Swedish RDP, according to which about 80% of agricultural holdings have access to the internet. Of these, one third use the internet daily and another third use it a few times per week. Interestingly, almost a third of Swedish agricultural holdings submit their applications for EU support online.

### **ICT development in rural areas: non-farm businesses and SMEs**

Poor access to the internet in rural areas is a factor discouraging businesses from entering markets and developing activities. Larger enterprises continue to dominate the use of modern technologies, with micro-enterprises and SMEs in rural areas in need of better attention. One reason for this is that existing entrepreneurs have insufficient skills to use modern technologies (Latvia).

In Bulgaria, just a quarter of all rural enterprises have access to a DSL connection, while figures for large companies reach almost 100%. The lag in take-up in rural businesses is also evident in the UK, where only one third of rural businesses (38%) had for instance, a website compared to half of urban businesses (51%), and only 41% of rural businesses used broadband in 2005. Small enterprises also experience difficulties in using modern technologies as described by Friuli-Venezia Giulia (IT).

In the UK, rural businesses adopt ICT significantly more slowly than urban ones and this holds for all enterprises, no matter their size. The lower adoption is primarily attributed to the more limited range and intensity of “influences” promoting the use of ICT such as advertising. Micro-businesses are particularly disadvantaged. In addition, smaller rural businesses are more likely to use low-speed internet access, unless assistance is offered.

Careful selection of ICT activities can ensure that they do add value to existing activities and that rural development funds are used effectively. The UK has identified sustainable rural tourism business development as a priority area for actions, like in Austria where development of SMEs which rely on supra-regional trade relationships and those involved in rural tourism with the aid of the internet is a priority. Enabling the smallest businesses to market globally is another priority for the UK, leading also to potential environmental benefits by reducing travel needs.

### **ICT development in rural areas: state support**

Some Member States have developed measures, outside the options provided by the Community policies and instruments, to address existing problems. For example, state support in Estonia has been launched to provide the population of low density areas with internet access under conditions equal to those in high density area (“Village Road 3” state programme).

Federal support also plays a significant role in certain German regions. For example in Saarland, in 2005–2008 a federal programme under the leadership of a state media institute launched a campaign aimed at improving IT skills and promoting the internet among several specific groups, such as elderly people (above 50 years old) and people with low job qualifications. Women and the rural population were also targeted.

Apart from this, in 2008 the Commission approved an amendment to the German national framework programme to allow support for improving access to the internet and ICT in rural areas. For the period 2008–2010 a total amount of €141 million is planned to be spent.<sup>14</sup> This is now followed by number of modifications submitted by German regions for developing broadband infrastructure in their rural areas.

### **ICT development in rural areas: state aid rules**

In line with Article 87 of the EC Treaty, the grant of state aid needs to comply with the state aid rules. The Commission has noted in several cases that measures aimed at promoting widespread availability and use of broadband services do not fall under any of the existing frameworks and guidelines. Therefore, if a public initiative is to be considered as state aid its compatibility is in most cases assessed under Article 87(3)(c).

More information on the issue was provided in the Commission Staff Working Paper on the “Guidelines on criteria and modalities of use of Structural Funds for electronic communications”, published by the Commission in July 2003. Since then, after having assessed more than 40 cases, the Commission now has a well-established approach and a clear and coherent policy concerning state aid to broadband.<sup>15</sup>

State aid rules encourage well-designed public measures that are best placed to address the lack of or limited affordable availability of broadband in these regions. They increase the effectiveness of public funding by ensuring the use of the minimum amount of aid required in a necessary and proportionate way. Full compliance with the state aid rules will ensure that public involvement focuses on genuine and well-proven market failure, and where there is no alternative to granting public funding to overcome the lack of broadband connectivity, the public support is proportional so as to avoid crowding out or discouraging private investments or unduly restricting competition. Certain types of state aid may also be considered compatible under the general block exemption regulations<sup>16</sup> or under the *de minimis* regulation<sup>17</sup> and do not need to be notified separately to the Commission if they are fully compliant with the underlying regulations.

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<sup>14</sup> See Commission Decision C(2008) 3157 of 02 July 2008 approving the related state aid scheme.

<sup>15</sup> Further explanations concerning application of the state aid rules are available on DG Competition's webpage, including the list of broadband decisions available at [http://ec.europa.eu/comm/competition/sectors/telecommunications/overview\\_en.html](http://ec.europa.eu/comm/competition/sectors/telecommunications/overview_en.html)

<sup>16</sup> Commission Regulation (EC) No 800/2008 of 6 August 2008 declaring certain categories of aid compatible with the common market in application of Articles 87 and 88 of the Treaty (General block exemption Regulation). OJ L 214, 9.8.2008.

<sup>17</sup> Commission Regulation (EC) No 1998/2006 of 15 December 2006 on the application of Articles 87 and 88 of the Treaty to *de minimis* aid OJ L 379, 28.12.2006.

#### 4. ICT ACTIONS IN RURAL DEVELOPMENT PROGRAMMES 2007 – 2013

The EAFRD is supporting the development of ICT businesses, services and broadband in rural areas. The opportunity to invest in these areas and in the skills upgrading of the rural population, including farmers, has been strongly taken on board by Member States.

This section draws on specific actions planned by MSs and regions in their RDPs (Table 3)<sup>18</sup>. To preserve the identity of the actions, they have been introduced separately, without being merged into a few general headings.

Investments in hardware and software are eligible in all programmes and in all measures, where their use is relevant. Because of this, such investments are excluded from the analysis.

Investments in broadband infrastructure are concentrated in the measure for developing basic services for the rural population and economy under Axis 3 of rural development. Products and services, on the contrary, are covered by more than 10 measures from all axes, including that on basic services, and the most important of these will be presented here.

There are no specific funding commitments attached to the ICT actions in rural development. The latter fall within the scope of measures where non-ICT related investments will also take place. This is why budget figures displayed here represent a general total amount available for a measure, and covers all kind of actions.

##### 4.1. Development of basic services (infrastructure and services)

**Broadband infrastructure and access to internet** are considered as basic services in rural development.<sup>19</sup> In the current period 2007–2013 in almost a third of the RDPs EAFRD support for infrastructural broadband projects in rural areas will be provided<sup>20</sup>.

In more than half of the RDPs (47 RDPs of 16 MSs) direct actions on ICT (including broadband) targeting the creation of basic ICT infrastructure and services were planned. In total, investments in broadband infrastructure are planned in 31 RDPs of 12 MSs (such as Austria; Sweden; Finland; the Italian regions Toscana, Trento, Piemonte, Veneto, Umbria; the German regions Niedersachsen and Bremen, Sachsen, Rheinland-Pfalz; the Spanish regions Asturias, Andalucia, Canarias, Baleares, Extremadura and Murcia; Vlaanderen in Belgium, etc.; Table 4). In addition, Bulgaria intends to invest in mobile ICT centres, and Latvia, Lombardia (IT) and Thüringen (DE) in public internet/communication points.

Centres for ICT-based services will be developed by 7 MSs or some of their regions (Bulgaria, France, Hungary, Latvia, five Italian regions, Wallonie (BE), Niedersachsen and Bremen (DE) and Rheinland-Pfalz (DE)), with Rheinland-Pfalz (DE) and Cyprus planning the establishment of youth centres with free access to the internet and free IT lessons. Seven Italian regions (Abruzzo, Umbria, Marche, Toscana, Veneto, Liguria, Sardegna) have

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<sup>18</sup> Owing to the specificity of the legislation, several MSs opted to leave the content of certain measures under Axis 3 of rural development open, without specifying any priority commitments. These are not included in the numbers mentioned in this section, which does not mean that ICT investments will not take place in these MSs. Only RDPs where commitments have been specified are counted.

<sup>19</sup> This area for investments is part of Axis 3 of the rural development policy, measure “Basic services for the economy and rural population” (code 321).

<sup>20</sup> In a number of RDPs, Axis 3 is partially or fully implemented via the Leader axis. Because of this, actions on ICT investments could not be (fully) listed given the operational specificity of the Leader's bottom-up approach.

specifically targeted the development of e-government services as has Wallonie (BE). Improved use of telematic solutions and development of ICT tools (in general) are specifically on the agenda of 6 RDPs.

Specific actions reflecting local broadband and internet conditions and situations have also been committed. For example, France and Corse (FR) will support investments in IT equipment for health care professionals and in ICT networks, the latter being programmed also in Canarias (ES) and Molise (IT).

The German region Sachsen-Anhalt, on the other hand, has scheduled rural development support for the purchase and setting-up of IT equipment in small schools. In France and Hessen (DE) money will be made available for the development of internet portals. In other areas, such as Åland Islands (FI), where coverage is equal to 100%, efforts will be targeted at promoting cooperation between enterprises and other actors in rural areas through the utilisation of telematic connections.

Within the basic service domain actions are also foreseen on the setting-up of tele-services and electronic consultation systems (ES Canarias) transport services operated by telephone as well as tele-assistance (IT Piemonte), tele-working (ES Baleares, ES Castilla-La Mancha, UK Wales and Finland Continental) or village ICT initiatives covering provision of word processing facilities, publishing software, etc. (UK Wales). Next to this is the development of multimedia and information laboratories and centres, or multifunctional centres in villages where access to the internet for the population will be provided.

Investments in broadband infrastructure and services under the EAFRD are a part of the whole range of options for investments in basic services, for which a total of €2.7 billion will be spent. It is impossible to identify the spending on ICT at this stage, but actions planned hint that it could take a relatively good share.

#### **4.2. Farmers delivering ICT services**

**Income diversification** has become a crucial factor in the multifunctional development of EU farms over the last decade. By creating additional income opportunities, farmers not only support themselves and their families, but also become less dependent on changes in climate conditions and market fluctuations, attract more people into rural areas, create a basis for preventing the process of depopulation and enrich the socio-economic development of rural areas by providing the local population with services.

In total 21 RDPs (15 MSs) have explicitly committed to offer financial resources for **farmers who want to be involved in ICT services** (Table 5). Of these, the creation of web-sites and e-booking for tourism purposes are the most widespread actions leading to the development of agri-tourism. IT services for the rural population are envisaged, for example, by Finland, Poland and Galicia (ES). Brandenburg and Berlin (DE) plan investments for assistance provided by farmers in ICT initiatives, Sweden focuses on networking, while Scotland (UK), Slovakia, Slovenia, Saarland (DE), Piemonte (IT) and Pais Vasco (ES) will increase access to the internet for diversifying farms and will support the increased use of ICT in non-farming businesses.

Total investments for farm diversification, which also include actions linked to development of ICT products and services, will amount to €1.4 billion under the EAFRD.

### 4.3. Modernisation of agricultural holdings and adding value to products

Substantial support for **modernising agricultural holdings**, forestry managers and food industry enterprises, including equipping them with computers, modern technologies and machinery, will be provided under two measures of Axis 1 of rural development — “Modernisation of agricultural holdings” (code 121) and “Adding value to agricultural and forestry products” (code 123).

Although it is difficult to list specific investments given the variety of agricultural sub-sectors and the many types of investments that can take place, it is worth mentioning that the stated objectives of many MSs for equipping farmers with computers and modern technologies, and as a result their networking, will be supported in the current programming period.

Over the period 2007–2013, in total about €9.6 billion will be provided from the EAFRD (10.5% of the overall EAFRD budget) for modernising agricultural holdings, and actions related to ICT will receive part of this support. Another €5.5 billion in total, including also ICT-related actions, will be invested for adding value to products.

### 4.4. Vocational training and upgrading of human capital in agriculture, forestry and the food industry

The modernisation of EU agriculture goes hand-in-hand with **upgrading of the knowledge of farmers** and their abilities to cope with the changing market and policy environment, ongoing reforms of the CAP and economic market challenges.

Commitments on vocational training are made by all MSs and all RDPs, with about 20 MSs (in 56 RDPs) specifically mentioning various types of ICT training among their priority fields for support.

Among all initiatives, professional training in ICT and computer skills is explicitly envisaged by 15 MSs in 40 RDPs (Table 6). Among these are Austria, Bulgaria, the Czech Republic, Finland, Germany, Italy, Portugal, Spain, Malta and the UK. Thirteen RDPs (by 7 MSs) specify that vocational training of farmers through e-learning will be provided, with web portals and web tools to be developed, for instance, in Austria, Malta and several Italian regions (Abruzzo, Toscana, Puglia, Umbria).

Apart from the standard actions on training and upgrading of e-skills, specific training and information actions are planned in a number of rural development programmes. For example, developing ICT use in farms will be supported by Martinique (FR) and Guadeloupe (FR). Farmers will be trained in data processing in Schleswig-Holstein (DE), while life-long learning for groups of rural population involved in the primary sector will be encouraged in Greece. Sweden, Northern Ireland (UK) and Emilia Romagna (IT) will develop farmers’ skills in setting up and managing ICT resources in farming enterprises. Sweden will take actions also in the field of greater use of ICT by agricultural enterprises’ administration and for marketing purposes.

Distance learning will be supported in France, Valencia (ES) and Cataluña (ES), while Northern Ireland (UK) will invest in sophisticated knowledge transfer systems.

As regards information actions, several examples could be given. Permanent information systems favouring agricultural and rural development will be further developed in Calabria (IT) as well as the creation of a network through the interactive use of new ICT. Information activities using ICT will be carried out by Wallonie (BE), Malta, Madrid (ES) and several

Italian regions such as Abruzzo, Marche, Sardegna, Toscana, Puglia and Umbria. In addition to these, the Netherlands will develop demonstration projects on the improvement of logistic systems and information technology.

Overall, for training and information actions, including those on ICT, about €1 billion from the EAFRD will be spent in the current programming period.

#### **4.5. Creation of micro-enterprises and business development**

**Micro-enterprises and rural off-farm businesses** will also benefit substantially when it comes to the development of IT. Specific actions are listed under 28 RDPs (by 17 MSs), where the creation of ICT-based services, cooperation networking, e-commerce and e-marketing, cluster formation and bookkeeping, will be the main targets (Table 7).

Of the whole variety of actions specified in the RDPs, the introduction of new technologies for bringing consumers and producers closer seem to be the most essential (Austria, Estonia, Açores (PT), Valencia (ES), Wales(UK) and some Italian regions). This is followed by the creation of micro-enterprises providing ICT-based services (Bulgaria, Sardegna and Puglia (IT), Poland, Finland) and investments in structural improvements, including the establishment of communication points (Lombardia (IT) and Liguria (IT), Brandenburg-Berlin (DE)). Romania will support services for connecting and providing internet.

Overall, under the EAFRD about €2.2 billion will be spent in the current programming period for the creation and development of all types of micro-enterprises, including those providing ICT services.

#### **4.6. Rural tourism and ICT**

**Rural tourism** has become one of the major economic pillars for business development in rural areas. In the new programming period ICT will contribute to rural tourism mainly through the creation of websites for marketing and e-booking, tourist web portals, information centres equipped with ICT, etc. as specifically envisaged in 34 RDPs (by 13 MSs, Table 8).

Apart from the creation of web portals and e-booking, which in the globalised world seems to be the most efficient way of providing potential tourists with information and access to book a holiday, networking of tourism actors deserves to be pointed out, as planned for example by France, Sardegna (IT) and Sachsen-Anhalt (DE). Such networking could allow the easy transfer of innovation, information and communication between the parties.

For the overall objective of developing rural tourism, including its support via ICT, MSs have committed investments to the tune of €1.3 billion in total.

#### **4.7. Environmental use of ICT**

**Rural development provides for wider environmental use of current technologies**, and ICT is no longer used separately and only for economic purposes. This is evident from the planned investments in forest fire tele-detection systems, forest fire monitoring systems, communication equipment (for prevention of forest fires) and networking (14 RDPs).

Such investments will be made in the current programming period under the measure for “Restoring forestry potential and introducing prevention actions”, where a total of €1.6 billion will be spent (this funding covers also a wide range of other activities, apart from those linked to ICT).

However, it could be noted that there is scope for further development of existing potential and much stronger use of ICT for environmental purposes.

#### **4.8. Training in ICT and information actions for rural population**

The study on availability of access to computer networks in rural areas commissioned by DG Agriculture and Rural Development has confirmed that rural areas have been skills and knowledge out-drained mostly by the out-migration of young people to cities and urban areas. This holds especially for the new MSs. As a result of this negative process, e-learning and the development of infrastructure for its diffusion such as training centres become important priorities for rural areas. Upgrading of e-skills through local educational courses and training on PC use as well as training on broadband network development becomes a necessity for local communities.

Skills development and upgrading of farmers, foresters and food processors receives special attention in the current programming period. However, the **rural population** that is not involved in farming, forestry or food processing can also benefit from rural development **to gain IT knowledge and to upgrade its e-skills** (Table 9). For example, in Ireland, a set of actions are due to be implemented: from training in ICT and computer skills, through distance learning, on-line training and e-learning, to the establishment of mobile training solutions.

Training in ICT for rural inhabitants is also explicitly envisaged, for example, in the Czech Republic, France, Finland, Luxembourg, Slovakia and some Spanish regions (Castilla-La Mancha and Canarias). On-line training will also be provided in several Italian regions (Marche, Veneto, Liguria and Campania).

Overall, approximately €136 million will be spent under the EAFRD for training of the rural population and information actions. ICT actions are part of this funding.

#### **4.9. Other ICT actions in rural development**

Other aspect of the planned EAFRD support for developing and promoting ICT, as well as its better use in the daily life of farmers and rural inhabitants, are the investments in networks in public buildings, training and information on environmental issues in Natura 2000 combined with internet forums for the exchange of ideas and views. IT will be used also for setting up databases and e-catalogues for the conservation of biodiversity resources, e-commerce for improving the economic value of forests, for provision of advisory services, e-information and promotion of producer groups, support for meeting standards on electronic identification of livestock (for example, purchase of electronic devices for sheep and goats), etc. National and regional web portals for the rural development networks will also be financed.

#### **4.10. Leader**

**Leader** actions will also cover a wide range of ICT investments in rural areas. Although it is difficult to envisage at this stage what Local Action Groups (LAGs) can create and develop for the benefit of their area and its well-being, some elements have already been determined. For example, several German RDPs explicitly mention the setting-up and maintenance of internet provision as tasks for LAGs. Innovative communication technologies in addressing tourism, productive sectors, the environment and cultural assets will be implemented, and innovative actions (e.g. e-governance, communication) in transnational and inter-territorial cooperation, training, access to the internet, etc. are other aspects to be developed.

## 5. COHESION POLICY INVESTMENTS FOR BROADBAND COVERAGE, E-PRODUCTS AND E-SERVICES

### *Cohesion policy finds*

The Cohesion policy funds will continue to develop broadband infrastructure in rural areas and to support products and services in general. In the new programming period 2007–2013, about €15.3 billion from the Cohesion budget will be invested in priorities directly linked to the information society in the EU.

In the Communication “Regions for economic change” it was stressed that both access to broadband infrastructure and services and the strategic use of ICT constitute one of the main drivers for economic growth, social development and inclusion. They are a key force for improving quality of life and redressing the balance between urban and rural areas. This message is reflected in the Community strategic guidelines for cohesion 2007–2013, which highlight the importance of a balanced approach to the development of the information society including the provision of an affordable broadband infrastructure.

Although it is difficult to say how much of the invested €15.3 billion will be spent in rural areas, it is obvious that impacts will be significant. Many MSs and/or regions have opted, for example, to develop their broadband infrastructure entirely through the Structural Funds, while keeping EAFRD support vital for investments in products and services (Lithuania, Belgium, Finland, many German regions, Greece, Portugal, several Italian, Spanish and UK regions, etc.).

Overall, of the total €344.4 billion Community funding under the three Objectives (namely Convergence, Regional competitiveness and employment, and European territorial cooperation), some 4.4% (€15.3 billion) will be used in the current programming period 2007–2013 for investments in the information society, of which about three quarters for products and service development, and the rest for infrastructure. Within the product and services domain, support for investments will target information and communication technologies, services and applications for SMEs and citizens as well as other measures leading to improved access and efficient use of ICT by SMEs.

In about one third of the MSs (Austria, Bulgaria, Finland, Germany, Greece, Spain, Italy, Latvia, and Portugal) investments in infrastructure will represent up to 15% of the total commitments under the Information Society heading. But in others, such as Belgium, Ireland and Slovenia, it will account for more than 44% of the total spending for ICT development. In addition to this, two ICT-related "fast-track" INTERREG IV C thematic regional networks have been launched in 2008.

Proposals under the theme “Better ICT connections between regions” are meant to reinforce the capacity of regional authorities to plan, manage and implement ICT strategies and projects that support EU policy objectives in the context of the digital divide, in particular in rural and remote areas and less developed regions.

Proposals under the theme “e-government” are meant to reinforce the capacity of regional authorities to make public services more efficient, transparent and accessible to all citizens and businesses.

The role that support from the Structural Funds (SFs) plays in rural areas can be seen also from the set of good practices collected by the Study on “Availability of access to computer

networks in rural areas”. For example, the Wireless Connections in the Archipelago, the Limousin Regional Network, the Rural Area Interconnection to the Educational Broadband IT Network (RAIN), the Nuenen, the Broadband Communication Network of the Kuyavia and Pomerania Region (K-PSI), KZ@BZ and the Sámi Network Connectivity Project are typical examples of projects that have used sound SF financial support. All these projects share a common factor, namely the deployment of ICT infrastructure, mainly broadband communications, to bridge the broadband gap.

### *European Social Fund*

Investments under the ESF will also target the creation, development and upgrading of e-skills among the rural population and workers in certain MSs. Member States and regions must ensure that there is no overlapping between the various funds, and as a general principle those that have opted to use EAFRD funding for training in rural areas will not use ESF funding for the same activities.

In the new programming period, four of the five priorities as set in Regulation (EC) No 1081/2006 on the European Social Fund could be classed as having an impact on, or including activities related to, the development of e-skills in rural areas. This includes increasing adaptability of the workforce, enhancing access to employment, reinforcing social inclusion and enhancing human capital. However, in most cases ICT training is supported horizontally across the country, and often references to rural areas do not appear in the operational programmes. Nevertheless, some concrete examples could be given.

As discussed earlier, several Member States have chosen to use only the ESF to provide opportunities for vocational training for all rural non-agricultural and non-forestry businesses (e.g. Bulgaria). In the Czech Republic, support is provided generally for e-learning and e-skills development across the country. In Lithuania, the general computer literacy programme 2004–2012 aims to create the conditions for all people to acquire the necessary computer literacy in line with their education and professional activities irrespective of their place of residence, age, gender, etc. In this context, the ESF will contribute to the implementation of the programme by helping people to acquire the skills they need to use public electronic services. Priority will be given to people over 45 years of age and people living in rural areas.

In Germany, some nine regions will promote vocational training, which in principle includes support for raising e-skills in rural areas. In Slovakia efforts will be focused on improving educational levels of disadvantaged groups. In Aragon (ES), the need to step up actions related to new ICT, particularly in rural areas, is specifically addressed. In England (UK) activities to tackle specific barriers to work faced by unemployed or inactive people in rural areas have been planned, while in Wales, acquiring ICT skills is clearly among the ESF investments priorities.

## 6. IMPACTS OF THE INTRODUCTION OF ICT IN RURAL AREAS<sup>21</sup>

The SAANCRA study commissioned by DG Agriculture and Rural Development in 2007 has put together a set of 67 good practice case studies, of which 59 relate to EU projects and 8 to non-EU projects. We focus our attention here on the EU case studies, which are analysed further.

The set of good practices shows the variety of effects that the introduction of ICT can have on farms, food industries, non-agricultural businesses, the rural population, and socio-economic life and communication in general.

This section draws on the information collected in the process of compiling the set of good practices as regards the projects developed in the EU<sup>22</sup>. Projects cover the three major areas of rural development intervention (farm, forestry and food industry competitiveness; land management and the environment; quality of life and development of the rural economy). Often funding for ICT projects is obtained through Leader, which shows the inter-linkage between the bottom-up approach and the three major priorities of rural development. However, the SFs, rural development funding and funding under the research agenda of the Community represented by the 6th and 7th Framework Programmes have also been used as sources for financing some of the projects. Many of the applications, after their initial stage and testing, have been turned into commercial activities.

It is worth mentioning that examples of transnational projects (i.e. projects developed in more than one country) or projects whose product has been tested in all the project's partner countries could also be displayed. These have significant positive transnational spill-over effects and show how a large area can benefit from a single initiative developed through ICT.

The ensuing analysis looks in turn at each of the areas that have gained from ICT. It should be mentioned that often ICT projects appear to be a successful response to issues of rural poverty, isolation, technological and infrastructural deficiencies as well as reduced market power and falling sales volumes.

### 6.1. Benefits for the farming sector – examples of good ICT practices

ICT projects can impact on farm businesses in various ways. In particular, the creation of conditions for generating growth and reducing costs can be essential. In certain cases, the number of users can become an important proxy for the success or usefulness of certain ICT products. This is typified not only by the introduction of new technologies, practices and production methods, but also by expansion or maintenance of the markets for the production and improvements in the relationships of all types within certain agri-food chains. Experience shows that even the most traditional activities can, or have the potential to, generate economic opportunities.

#### *Organic farming*

How ICT can be used to boost the competitiveness of organic farms is demonstrated, for example, by the S'Atra project (Sardegna, Italy). There, sufficient ICT and related training

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<sup>21</sup> This section draws on the information collected by the external consultant in the framework of the Study on Availability of Access to Computer Networks in Rural Areas (SAACNRA). The European Commission can not be held responsible if this information is incomplete or inaccurate.

<sup>22</sup> In some of these projects, one or more of the partners are from a non-EU country (e.g. Norway).

was provided to about 100 small farmers and producers in remote rural areas to sustain a thriving international business with an extensive product range. ICT and access to the internet were used as tools supporting, on the one hand, communication and relationships between the cooperative farm members and, on the other hand, the establishment of a platform for direct sales to international clients. This, combined with active participation at international events and fairs, has substantially increased the volumes of products sold and the net gains of the cooperative and its members.

The importance of web portals for promoting organic production is demonstrated also in the case of the Organic-Denmark project (Denmark), where about 3 000 farmers producing organic food gained the opportunity to establish direct contacts with buyers.

#### *Trade with agricultural and food industry products*

Globalisation and new technologies, together with the huge variety of products have led to new developments in the trade relationships between farmers, food processors, intermediates and retailers, and final clients.

Several good practice examples depict the impact that e-commerce can have on farm businesses. Internet trading platforms are created as a response mostly to growing market pressure (S'Astra, Italy; Impecta, Sweden; NetBrokers, Poland) or as a result of consumers switching to online services (Rotalde, Spain) instead of traditional methods of maintaining relationships and performing transactions with their suppliers.

Such trading platforms also represent a dynamic means of exchanging of information and meeting trade offers. They can further develop in online financial transactions.

Farmers and food processors who need to trade on internet platforms may become a driving force behind the infrastructural broadband developments in rural areas, as shown by Impecta (Sweden), where local authorities and telecommunication companies invested in broadband after being approached by a local company that needed an internet connection. A similar situation has been experienced by an Oxford farm shop (UK), where integrated services offering networking between the various buildings of the enterprise, phones and broadband has reduced costs has increased efficiency and have enabled the business to open up to more channels through which to communicate with its customers.

Beneficiaries of such projects could be farming enterprises or farmers (such as in the case of Impecta, Sweden), farmers located in a community (Rotalde, Spain), and even large numbers of agricultural enterprises such as the approximately 3 000 companies present on the NetBrokers' trading platform. The impact of e-commerce on farming can therefore be substantial.

In the "Food and Drink" project (Greece) trade opportunities for final customers are combined with free access for them to daily news, interviews, articles, job vacancies, etc., all related to the food industry. The online presentation of the major Greek food and drink industry companies as well as their major products further enriches the range of choice for the final client and brings producers and consumers closer together.

### *Farm and rural tourism*

The Commission's rural development statistical report 2008 clearly identifies rural tourism as one of the major off-farm activities conducted by EU farmers and six good practices clearly relate to farm and rural tourism.

Tackling rural tourism with ICT can lead to positive effects everywhere, but especially in areas with poor or missing telephone infrastructure where access to the internet is hugely disadvantaged or absent. The project Dolina Czarnej (Poland), conducted by the agri-tourism association having the same name, has managed to promote the Rakow region and to create a much higher inflow of tourists in a situation where access to the internet was lacking in the region. The created electronic platform and the established mobile communication network have resulted in easier exchange of information between the farms providing agro-tourism services, a cheap, fast and easy-to-access advertising channel and greater interest in the region leading to higher numbers of bookings and visits.

The Ammarnäs project (Sweden) further shows how village (community) web portals where natural and cultural heritage is collectively marketed, and local socio-economic agents are promoted, can generate economic effects. It has attracted more tourists, it has reduced transaction costs for reservations and bookings (done previously via telephone or post) and shifted them almost 100% online, all this leading to the maintenance of nearly all the jobs available in the village, which have been largely dependent on tourism activities. The involvement of the local players, with several SMEs having an important role, gives a good example of how rural SMEs can work in clusters. The presence of good broadband infrastructure has substantially eased the work on the project.

These two contrasting examples of good practice show that ICT can act as a mechanism for fostering the development of areas that experience difficulties in obtaining sufficient numbers of tourists and face high transaction costs, and that impacts cannot be expected only in disadvantaged areas.

This is confirmed in the “Fjälhästen” project (Sweden), where the sustainability of the eco-tourism has been guaranteed through online marketing, despite the rather small scale of the company.

The example of the mountainous hotel “Martinske Hole” (Slovakia) gives further evidence of the potential of the internet as demonstrated by the 30% higher bookings experienced by the hotel compared to the situation without internet marketing and online availability of their services. Similar benefits were enjoyed by a mountainous farmhouse providing tourist accommodation in Slovenia (“Turisticna kmetja Metul”) after launching its online booking system, as well as by the Cumberland Hotel (Alston, UK).

### *Training and information for farmers*

One important aspect contributing to better performance of farmers as producers and managers is their ability to take fast and correct decisions as well as to implement production practices and technological processes in a way that ensures their sustainable development. Skills upgrading is a major factor in achieving these objectives.

Developing IT competence among the farm community is an essential part of rural development policy and its outcomes can make a vital contribution, for example, to the adjustment of farmers to market situations and the use of new technologies. The positive

benefits of the knowledge upgrade can be seen in the Ballyhoura Country (South West, Ireland) where pilot implementation of a multi-targeted project on developing IT competences has resulted initially in the training of 367 adults (of whom 73% were women), and another 1 512 by the end of the three-year period, and delivered “summer school” ICT training for about 1 000 children. In addition, about 70 farmers have benefited from this training initiative, being equipped with, and accredited for, the ICT skills necessary to improve and diversify farm activities.

The three strands of the project (ICT for farmers, ICT for women and mobile ICT) are interlinked, mutually reinforcing and impact on different layers of rural society. Such multi-layer approach can have positive impacts in communities where farm management and farm efficiency need to be improved, where skills and competences for farm diversification and farm activities are still desired, where women’s access to labour as well as their ability to start a business needs to be promoted, and where children should be provided with the same knowledge as that acquired by children in urban areas.

Special IT training for farmers has also been provided under the Sarekide project (Spain), in which agricultural producers received courses on desktop applications and themes of interest for the agricultural sector, web systems and systems specialising in farm management.

However, many rural inhabitants and farmers do not have complete information on how to gain access to Community funding for their projects as well as on procedures, how to fill in application forms, etc. Such gaps have been filled successfully by the “eFarmer” project (Slovakia), for example, where farming communities in four MSs (Slovakia, the Czech Republic, Hungary and Poland) are provided with up-to-date content linked to the support they can, or have the right to, receive. This is followed by a package of web services to support farmers in their electronic submissions of claims to their Paying Agency such as for SAPS, LFA, national top-up payments etc., with options to check for and remove errors in the draft application. The project estimates that a total net gain for farmers amounting to €275 million could be achieved, if farmers’ awareness in these four countries is raised by 10% through the project. The existence of such platforms may also provide incentives to farmers to start using computers and the internet.

Other projects, such as Rural Living Lab (Hungary), have developed wireless solutions for rural farmers and producers in Hungary, and their family or micro-enterprises, involved in agricultural production, affording them direct access to useful and up-to-date databases of information related to daily operations and production, forecasts, market prices, etc.

On the other hand, Crepac (Corsica, France), a marketing network driven by Corsica’s agriculture and, to some extent, tourism industries, has targeted the promotion of the area and local (agricultural and food-processing) businesses around certain seasonal events and industries.

#### *Farm innovation*

Many ICT projects in agriculture are innovative. One example is the project that has introduced ICT in the sheep-milk sector in the Basque region (Spain). There, 22 shepherds and cheese makers were provided with laptops and web applications developed to manage their business. Additionally, technical support was provided together with basic training in computer skills and specific training on the use of the applications. As a result, a reduction in the time spent for management and administration has been observed.

### *Precision farming*

ICT can play a crucial role in precision farming, as proven by the Prefarm project (the Czech Republic). This concept in agriculture relies on the existence of in-field variability, and for its development the existence of new technologies such as GPS, sensors, satellites, etc. is a major prerequisite.

Farmers often need advice on farm management, systems and practices. Some farmers are interested in knowing how to combine the various qualities of their main production factors, for example, soil variation and fertility, as well as territorial factors such as elevation (altitude at which farming is conducted) and what impact these aspects might have on their farm business. The effects achieved can vary and depend on the scale of use of the practice, but references to better time management and planning, optimal use of fertilizers and other inputs as well as reduced negative environmental effects could easily be listed.

The Prefarm project system now covers about 300 000 ha of agricultural land and about 500 users have been identified. Coming as a solution to the need for advice on farming, it has easily obtained recognition among farmers in the Czech Republic, Slovakia, Germany and Italy, displaying also how ICT use can be easily transferred across borders, if applications are correctly developed, targeted and used.

### *Spatial data management*

The WirelessInfo project (Czech Republic) has been chosen as an example of spatial data management. This project aims to bring together SMEs, research and industry with a focus on new development, testing and exploitation of services and technologies for spatial data management in rural areas, covering agriculture, forestry, emergency systems, logistics and public administration.

## **6.2. Benefits for the rural economy, environment and population – examples of good ICT practices**

### *Broadband infrastructure*

Broadband needs in the rural areas described below have been driven by different factors, projects had different objectives and aims, but overall their implementation has led to a revival of social and economic life. Public-private partnerships have proven successful.

The development of broadband infrastructure in rural areas close to major cities has been combined with the provision of bundles compound set of applications (e.g. Rural Living Lab, Hungary), while in remote and isolated areas, significantly fewer (if any) applications are provided to (potential) beneficiaries and the infrastructure is less developed. There is still more to be done in these areas, which leaves a lot of economic opportunities open to IT businesses. In addition, in several cases packages combining internet access, TV and telephony have been offered to the public, and they have been well accepted by the rural population (Nuenen, the Netherlands).

Some of the projects that have been developed were initiated because of previous market failures in delivering broadband to rural areas, which at that time were underserved. Such examples are Watzelsdorf (Austria), the Baltic rural broadband project (Finland), and Cahersiveen Satellite Broadband (Ireland). Broadband projects have also been implemented in isolated, remote or mountainous rural areas, where providers were not interested in investing

owing to high costs and low numbers of potential users (broadband technology to bridge the digital divide, Brescia, Italy; Cybermoor, UK; Limousin, France).

Networking and the creation of public access points are other approaches used in rural areas for reducing the digital divide. An example of the networking of towns, attracting businesses to rural areas, is eTowns (Ireland). Broadband has been delivered also in cases where national and/or local authorities have focused on networking of public administrations (RAIN, Lithuania) or when a good quality communication system has been provided via Public Internet Access Points (Zielonka, Poland; Rude, Portugal; Ikonk@, Poland; I-Centre, Bulgaria; Corsica hotspot, France; Look@World, Estonia), mostly accommodated in public libraries, but also in museums, local administrative buildings, etc. The total number of public internet access points created under the aforementioned projects amount to some 3 961 and the RAIN project has spread broadband to about 33% of the rural territory in Lithuania<sup>23</sup>. Easy access to most of the public access points has also been provided made available for people with disabilities. It is important to note that the success of any similar initiative depends on choosing the correct technology for broadband delivery.

Several projects were preceded by studies or the development of sub-regional, local broadband strategies (eTowns, Ireland; Rural information system for the LAG Platani Quisquina, Italy; Baltic rural broadband project, Finland; Turku Archipelago Living Lab, Finland; KZ@BZ, Spain; etc.). This helped project managers to discover the actual needs of the local socio-economic environment, to determine the possibilities for using one or other technology and the potential impacts and benefits from the introduction of the new connection. In Cyprus, the Diadigite project conducted research on personal and domestic use of the internet with the aim of developing a strategy for internet expansion. This included not only identifying the rural areas where labs could be established, but also setting them up and equipping them, conducting training and analysing results. In certain cases (KZ@BZ, Spain), the initial research showed that some population centres that were supposed to be within the reach of existing private operators were in fact excluded. Such results inevitably improve the impacts of the projects and focus their targeting and implementation better.

The Rural information system for the LAG Platani Quisquina project (Italy), for example, was initiated as a response to the reduced competitiveness of local businesses following globalisation, the lack of broadband coverage in some of the rural areas and low government investments in ICT in this region. In searching for solutions, the project managed to build on the national government broadband strategy to make it a regional shared-service strategy, followed by a strategic value-case analysis quantifying the future impact of the technology, and finally to introduce a wireless mesh network brought to rural areas with fibre optics to connect long-distance backbones. As a result, the digital divide is expected to be reduced in 79 of the province's most underserved communities, shared services will bring government closer to people and businesses, and a positive impact of about €139 million over the following six years is expected, coming from a variety of sources such as saved unemployment benefits, tax revenue from those who manage to keep their jobs thanks to the broadband development, productivity benefits generated by more efficient businesses having access to broadband-based internet business solutions, public administration benefits displayed in increased productivity and transaction cost savings from fully scaled regional shared public services including intranet, e-procurement, intranet connectivity to schools, and e-health.

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<sup>23</sup> Data for the number of internet access points created by Rude (Portugal) has not been provided by the consultants.

Social benefits can be achieved when investments in broadband are simultaneously accompanied by investments in applications such as home-care and monitoring systems for example. The broadband development in Zielonka (Poland) has gone hand-in-hand with the creation of a security monitoring system with cameras, which has increased security in the town. In Nuenen (the Netherlands) the network supports home care technologies and video links which allow doctors to communicate with patients at home. E-health and e-government services are to be started in the broadband network of the Kuyavia and Pomerania Region (Poland).

The relocation of knowledge-based SMEs from urban to rural areas can also lead to benefits for rural areas in terms of creation of broadband infrastructure. The example of DBTG (North West, UK) demonstrates that a rural area can attract businesses by offering less expensive conditions for them to operate, invest and grow.

Whether for existing or relocating businesses, the development of local business portals and applications for SMEs is an important factor creating opportunities that should not be missed. Benefits have been secured for SMEs in this way in the case of RLL (Hungary), the Sámi Network Connectivity Project (Sweden) etc.

There are many rural areas where broadband connections exist, but quality of service remains low. In such areas, what is made available for the local economy needs to be improved. Several case studies demonstrate the impacts that such investment might have in rural areas (e.g. Katrineholm, Sweden). For example, Project Access (UK) has lifted take-up rates in Cumbria from the lowest registered broadband take-up in the region to the highest. Internet usage in homes has quintupled (from 7% to 36%) and by businesses more than doubled (from 20% to 49%), while at the same time economic decline has been halted. A few years later, a growth rate higher than the UK average (0.6% above) has been registered.

#### *Training, promotion and information*

Developing broadband without potential beneficiaries who have the skills to use it will not result in positive outcomes. Training can serve not only as a skills upgrading measure, but also as an instrument reducing unemployment, developing entrepreneurship and promoting knowledge.

The eLearning-Livani project (Latvia) created an e-learning centre in Livani and has focused on developing training courses for beginners and advanced users with consecutive training in business planning. Its success has been proven by the increasing number of participants and their willingness to continue upgrading their education by attending the more advanced courses. Targeting low-paid workers has been the main objective of the Workplace Guidance 2 project (Finland) where participants are given the opportunity to take up learning options and improve their employability.

A similar distinction between the different types of trainees to that in the Livani project (Latvia) has been made also in the framework of the CRISP project (Ireland) where courses additionally targeted digital photography, computerised accounting and website design. The underlying idea behind this multi-targeting of subjects and participants was the uneven take-up of ICT in rural areas which the project aimed to turn into a coherent network giving expression also to the local voice of the people. The latter has been achieved by creating a local website, that is kept updated, and by requesting local people to contribute with articles or any other information to its content.

Higher take-up has been also the purpose of I-Centre (Bulgaria) and Look@World (Estonia), the latter of which, for example, aimed to create a training network, with special emphasis on rural areas given the better IT competences observed among the urban population. As a result, about 73% of the participants in the training courses have subsequently become regular internet users and about 15% of adults in the Estonian rural areas have received training.

Introducing modern technologies to the rural population is often a good way of starting IT initiatives in rural areas. Such an approach has been applied by Sarekide (Spain) in the Basque Region where an exhibition on the latest technologies and how they can be used to improve the quality of life has been organised. Part of the exhibition has been a training area for farmers (already discussed), another section has focused on the latest mobile and digital technologies, and there have been cyber games and digital video area for young people and children. In total some 3 000 people have visited the exhibition.

A considerable boost in the information flows to rural citizens could be seen in the case of the “Information Office for citizens” (Insuratei, Romania), where the IT project has set up a new and modern system allowing the easy circulation of documents between the local municipality and the county council. In addition, information on EU policies and institutions, access to decisions and official documents, guidance concerning Romanian laws, land renting and cultural activities are other streams that have been developed under the project.

Finally, the Media event project (Latvia) has implemented new methods for low-cost interactive learning, thereby improving the process of information processing and its delivery to the local population.

### *Renewable energy*

The internet can be a useful tool for promoting renewable energy. For example, Pro-Bio-Energy (Germany) has developed a virtual marketplace for bio-energy and has promoted the replacement of fossil fuels with local and regional biomass production, in all the project's partner countries (Sweden, Denmark, the UK, Germany and Norway).

### *E-commerce*

Like farmers and food processors, non-agricultural businesses in rural areas benefit from e-commerce actions and the case studies in the set of good practices show how initially fairly small businesses can grow with little investments, but good innovative ideas.

For example, Martinus (Slovakia) has become the biggest internet bookshop in Slovakia with about 140 000 visitors a month, and this following an investment of some €2 000. It is a good example of how certain businesses in rural areas, when fulfilling their local potential, can expand and grow, and add to the economic performance of their area. In addition, thanks to this IT initiative, the number of jobs in the company has more than tripled.

Similar benefits, though not on the same scale, have been achieved by the Zamas massage school in Slovakia, which after being held back by lack of competitiveness and a dwindling client base, promoted its services on the web. The resulting approximately 50% increase in the final number of clients speaks for itself. The school furthermore stopped using other media for promoting its activities, once a smoothly running website had been launched.

### *Jobs and growth*

The cases discussed in this section present sufficient evidence that growth in rural areas can be achieved if ICT is used correctly for addressing current market and socio-economic deficiencies. Although direct job creation is seldom the major idea behind an ICT project, and benefits cannot always be quantified given the overall impact on whole areas and their economy, a few more examples can be provided.

The “Team International” project (Ireland) is a particular case of innovative entrepreneurship leading to job creation through the discovery of a tiny market niche with great economic potential. The project was initiated in a predominantly rural area as a small rural enterprise, but its services (translation, localisation, interpreting, proof-reading and abstracting in a large number of languages) are now provided by more than 750 freelance e-workers, working at home but operating in a culture of effective project management. The project has overcome distances and geographical disadvantages, and has minimised as much as possible the impact of personal circumstances as contacts take place via the internet. However, customers are provided with complete services from project management to processing procedures, through quality assurance, confidentiality/non-disclosure agreements and copyright.

### *Environmental awareness raising*

Direct and indirect environmental effects have been achieved through many projects, and several of those presented in the previous section are examples of this. Two other projects, however, with different methodologies and target groups have exploited the internet as a tool for distributing knowledge and education on environmental problems and issues and promoting sustainability.

The project to establishment of a system for training on sustainability aspects in Vysočina (the Czech Republic), for example, is using an innovative web-based infrastructure that allows local environmental data to be shared across Europe using methods based on virtual reality, multimedia and GIS services.

The Passerelle ECO project (France) tackles environmental issues from a different perspective by promoting eco-villages and distributing information newsletters on current developments. Although a very specific case, it shows how ICT can be used as a tool for promoting ideas and lessons learned.

### *Local heritage*

ICT can also be a useful tool for promoting local cultural and natural heritage, as demonstrated by the “Les Plus Beaux Villages de Wallonie” project (Belgium). It has grouped 23 villages and gathered their efforts in promoting their rural areas. It is interesting to note that conditions for villages to be admitted to become part of this group include having a distinct rural character, one or more monuments or buildings that are listed or likely to be listed in the future, an architectural and urban heritage of value which is assessed against a number of criteria, and finally the sharing of common objectives between the local inhabitants and the municipality.

### *Basic services*

An example of social development using ICT could be given with the project developed in the Czech Republic to create a system for managing emergency vehicles in Vysočina, a typical

rural region in the country. This project has not only has improved the management of the emergency cars, but has also increased their efficiency, especially in winter.

## **7. CONCLUSIONS**

Developing and improving existing broadband infrastructure has been the central objective of ICT investments over the last few years in rural areas, with attention being currently shifted to e-products and e-services. Various processes such as depopulation and out-migration, declining economic activities, low commercial attractiveness, market pressure leading to closure of businesses and withdrawal of public services (financial, administrative, social, etc.), inadequate communication systems and infrastructure, etc. have attracted the attention of local and national policy-makers to rural areas and have brought back innovation in rural areas for people and businesses in their attempts to resist market pressure and ensure decent incomes and quality of life.

Experience shows that ICT enhances business efficiency and competitiveness and creates advantages for all sectors, including farming and the food industry. It does not matter what technology is used for breaking down the rural-urban digital divide as long as objectives are achieved and the environment is protected.

The EU should take full advantage of existing technologies, products and processes and successfully match them with existing funding (Community, national and private), thereby creating favourable conditions for development and growth of rural areas. All this should contribute to the Lisbon objectives and lead to strong territorial cohesion and greater socio-economic well-being in rural areas.

Rural development policy 2007–2013 shows many options for investing in ICT in agriculture, agri-food and forestry, and in the rural economy in general. MSs and regions need to efficiently target funding and capital in order to achieve the best outcomes. In order to meet the needs of the rural population in a comprehensive manner and to ensure that EU funding can have a significant impact, managing authorities of different EU programs will need to co-operate closely and complement each other activities applying a strategic approach for rural areas' development.

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## 9. TABLES AND FIGURES

**Table 1. DSL coverage in the EU27 as of December 2007 and its evolution (2007 to 2005), % coverage of total area**

Country	DSL coverage				Change in DSL coverage (in %)*			
	Rural	Sub-urban	Urban	National	Rural	Sub-urban	Urban	National
Belgium	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0
Bulgaria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Czech Republic	75.0	85.0	98.0	85.0	n.a.	n.a.	n.a.	10.0
Denmark	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0
Germany	87.5	94.6	99.2	95.7	32.5	-3.4	0.2	3.7
Estonia	73.0	0.0	90.0	85.0	n.a.	n.a.	n.a.	n.a.
Ireland	73.3	99.3	99.8	89.2	16.8	0.8	0.3	6.9
Greece	50.0	85.0	100.0	86.3	50.0	85.0	83.0	74.3
Spain	88.0	90.0	93.0	91.0	6.0	0.0	2.0	2.0
France	96.7	98.7	99.2	98.5	8.8	0.7	-0.1	2.1
Italy	81.7	90.8	99.8	94.0	37.1	3.7	1.0	7.0
Cyprus	0.0	40.0	100.0	79.6	0.0	40.0	0.0	9.9
Latvia	65.0	80.0	98.0	87.0	n.a.	n.a.	n.a.	n.a.
Lithuania	67.5	96.5	99.0	87.9	12.9	2.4	0.0	5.7
Luxembourg	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0
Hungary	80.0	94.0	98.0	91.0	4.0	7.0	6.0	6.0
Malta			99.0	99.0			0.0	0.0
Netherlands	99.0	99.0	99.0	99.0	0.0	0.0	0.0	0.0
Austria	80.6	99.0	100.0	92.0	13.6	1.0	2.0	6.0
Poland**	42.5	45.0	85.5	64.0	u	u	u	1.7
Portugal	86.0	96.0	99.0	95.0	7.0	0.0	0.0	2.4
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Slovenia	85.5	95.3	98.5	92.2	58.5	51.3	4.5	37.2
Slovakia	38.5	83.6	94.3	73.9	13.5	17.0	9.0	13.1
Finland	91.0	98.0	99.0	96.0	13.0	2.0	1.0	5.6
Sweden	90.0	99.0	99.0	97.8	24.0	3.0	0.0	4.3
United Kingdom	96.1	100.0	100.0	99.6	1.3	0.0	0.0	0.1
EU27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
EU15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
EU12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: DG AGRI Rural development statistical report 2008, European Commission

Notes:

- The delimitation of areas is different from the OECD definition:
  - rural: < 100 hab./km<sup>2</sup>
  - suburban: 100 to 500 hab./km<sup>2</sup>
  - urban: > 500 hab./km<sup>2</sup>

\* The change is measured in absolute terms, i.e. the difference between the % DSL coverage in 2007 and the % DSL coverage in 2005.

— Some small negative changes may be due to sampling problems

\*\* Changes in Poland concerning infrastructure not displayed as considered not reliable.

**Table 2. Share of population having a DSL internet subscription as of December 2007 and change in the share of population having a DSL internet subscriptions in 2007 versus 2005, % of total population**

Country	DSL take-up				Change in DSL take-up (in %)*			
	Rural	Suburban	Urban	National	Rural	Suburban	Urban	National
Belgium	16.7	15.6	15.0	15.3	1.4	2.2	3.4	2.8
Bulgaria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Czech Republic	4.8	4.6	10.5	5.9	2.6	2.6	5.6	3.2
Denmark	10.9	25.7	28.4	22.0	3.2	7.6	8.4	6.5
Germany	9.2	22.6	26.5	22.5	4.9	9.9	11.4	9.9
Estonia	n.a.	n.a.	n.a.	10.1	n.a.	n.a.	n.a.	1.9
Ireland	6.4	15.4	19.0	13.4	4.3	8.4	12.3	8.4
Greece	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	8.5	12.8	16.7	14.1	3.1	2.8	5.9	4.7
France	21.1	22.3	25.0	23.5	9.3	8.4	8.9	8.9
Italy	10.3	14.5	19.2	16.3	5.5	4.3	4.2	4.5
Cyprus	0.0	2.6	16.8	12.3	0.0	2.6	8.7	6.6
Latvia	3.0	7.3	9.0	7.0	n.a.	n.a.	n.a.	4.0
Lithuania	3.0	7.7	9.1	6.9	1.7	4.3	4.9	3.8
Luxembourg	20.0	22.7	23.6	22.6	7.7	8.6	8.5	8.4
Hungary	2.8	7.3	11.7	7.3	1.7	4.1	5.0	3.6
Malta	n.a.	n.a.	9.4	9.4	n.a.	n.a.	1.9	1.9
Netherlands	20.9	20.9	20.9	20.9	5.3	5.3	5.3	5.3
Austria	7.2	15.8	17.5	12.9	2.7	5.7	5.5	4.4
Poland	1.9	10.0	7.6	6.2	0.8	4.3	3.8	2.9
Portugal	6.2	8.4	13.5	10.2	3.0	4.2	-0.2	3.4
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Slovenia	9.0	9.2	23.1	12.2	4.5	4.7	9.9	5.7
Slovakia	2.3	5.5	7.2	5.1	1.5	3.4	4.4	3.2
Finland	18.9	26.7	30.6	25.4	5.0	5.3	7.3	6.0
Sweden	15.3	20.2	19.4	19.2	7.2	6.1	4.1	5.6
United Kingdom	19.8	20.9	19.9	20.1	9.3	11.3	6.2	8.0
EU27	10.1	17.2	19.1	17.0	4.7	6.7	6.5	6.4
EU15	12.8	18.8	20.7	18.8	5.9	7.2	6.7	6.8
EU12	2.7	7.4	8.6	6.6	1.4	3.7	4.5	3.2

Source: DG AGRI Rural development statistical report 2008, European Commission

Notes:

- The delimitation of areas is different from the OECD definition:
  - rural: < 100 hab./km<sup>2</sup>
  - suburban: 100 to 500 hab./km<sup>2</sup>
  - urban: > 500 hab./km<sup>2</sup>

\* The change is measured in absolute terms, i.e. the difference between the % DSL take-up in 2006 and the % DSL take-up in 2005.

**Table 3. Appearance of specific commitments to make investments in ICT with a direct impact on businesses and population in rural development programmes 2007–2013, selected measures**

Member States	Programme(s)	m 321	m 111	m 311	m 312	m 313
<b>Austria</b>	National	X	X		X	X
<b>Belgium</b>	Vlaanderen	X				
	Wallonie	X	X	X		
<b>Bulgaria</b>	National	X	X		X	X
<b>Cyprus</b>	National	X				
<b>Czech Republic</b>	National		X			
<b>Denmark</b>	National	X				
<b>Estonia</b>	National			X	X	
<b>Finland</b>	Continental	X	X	X	X	
	Åland Islands	X	X			
<b>France</b>	Hexagone	X	X	X		X
	Île de la Réunion					
	Martinique		X		X	
	Guadeloupe		X			
	Guyane					
	Corse	X				
<b>Germany</b>	Bayern					
	Rheinland-Pfalz	X				
	Baden-Württemberg					
	Hessen	X				
	Nordrhein-Westfalen	X				
	Niedersachsen + Bremen	X				
	Saarland			X		
	Hamburg				X	
	Schleswig-Holstein		X			
	Sachsen-Anhalt	X			X	X
	Sachsen	X				
	Thüringen	X				
	Mecklenburg-Vorp.					
	Brandenburg + Berlin		X	X	X	X
	National framework	X				
	Network					
<b>Greece</b>	National		X			
<b>Hungary</b>	National	X	X		X	
<b>Italy</b>	Piemonte	X	X	X	X	X
	Abruzzo	X	X			X
	Umbria	X	X			X
	Marche	X	X	X		X
	Emilia-Romagna		X			
	Toscana	X	X			X
	Friuli-Venezia Giulia					
	Veneto	X				X
	Trento	X		X		
	Liguria	X	X		X	X
	Lombardia	X	X		X	X
	Valle d'Aosta	X				X
	Bolzano					
	Campania		X		X	X
Puglia		X		X	X	
Basilicata	X	X			X	

	Calabria	X	X			
	Sicilia	X	X		X	X
	Sardegna	X	X		X	X
	Molise	X	X			
	Lazio	X	X			X
	Network					
<b>Ireland</b>	National				X	X
<b>Latvia</b>	National	X	X	X	X	
<b>Lithuania</b>	National					
<b>Luxembourg</b>	National					
<b>Malta</b>	National		X			X
<b>Netherlands</b>	National		X	X	X	
<b>Poland</b>	National		X	X	X	
	Continental		X			
	Madeira		X			
<b>Portugal</b>	Açores	X	X	X	X	X
	Network					
<b>Romania</b>	National		X		X	X
<b>Slovakia</b>	National	X	X	X		X
<b>Slovenia</b>	National			X	X	
	Aragón		X			
	Baleares	X	X			
	Cataluña	X	X			
	La Rioja		X			X
	Madrid		X			
	Navarra					
	Pais Vasco		X	X		X
	Cantabria		X			
	Andalucia	X	X			X
<b>Spain</b>	Asturias	X				
	Canarias	X	X	X	X	
	Castilla-La Mancha	X	X		X	X
	Castilla y León					
	Valencia		X		X	X
	Extremadura	X	X			
	Galicia		X	X		X
	Murcia	X		X		X
	National framework					
	Network					
<b>Sweden</b>	National	X	X	X	X	X
	England		X			X
<b>United Kingdom</b>	Northern Ireland		X			
	Scotland		X	X		
	Wales	X	X		X	
# of RDPs		47	56	21	28	34
# of MSs		16	20	15	17	13

Note: "X" = yes

Note: The rural development framework and network programmes are not taken into account. Integrated measures are covered. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

**Table 4. Specific commitments to make ICT investments under measure 321 “Basic services for the economy and rural population” in Rural Development Programmes 2007–2013**

Type of action	Rural Development Programme		
<b>Broadband infrastructure</b> (mostly small-scale; e.g. creation of access to internet, wireless, etc.)	Austria DE Rheinland-Pfalz DE Sachsen IT Toscana IT Sicilia IT Umbria ES Asturias ES Murcia ES Cataluña UK Wales	Sweden DE Niedersachsen & Bremen Denmark IT Trento IT Piemonte IT Veneto ES Canarias ES Baleares ES Andalucia FI Continental	BE Vlaanderen DE Nordrhein-Westfalen IT Basilicata IT Valle d’Aosta IT Abruzzo ES Extremadura ES Castilla-La Mancha PT Açores Hungary
<b>Technical infrastructure</b> (broadband maybe possible)	Slovakia	*	
<b>Centres for ICT based services</b> (health advice and medical care, business support, municipal services, other social services)	Bulgaria FR Corse IT Piemonte IT Lombardia DE Rheinland-Pfalz	BE Wallonie IT Calabria IT Abruzzo Latvia DE Niedersachsen & Bremen	FR Hexagone IT Sardegna IT Umbria Hungary
<b>Mobile ICT centres</b>	Bulgaria		
<b>Youth centres</b> (incl. for free access to internet and free IT lessons)	Cyprus		
<b>Public internet/communication points</b>	DE Thüringen	IT Lombardia	Latvia
<b>e-Services</b> for rural population and enterprises (e-commerce, e-government, etc.)	IT Abruzzo IT Toscana IT Sardegna FI Continental	IT Umbria IT Veneto BE Wallonie ES Andalucia	IT Marche IT Liguria FR Hexagone
<b>Improved use of telematic solutions</b>	FI Continental	IT Calabria	IT Lazio
<b>Development of ICT tools</b>	IT Sardegna	ES Baleares	ES Canarias
<i>Specific actions</i>			
<b>Promoting cooperation between enterprises and other actors</b> , utilising telematic connections in rural areas	FI Åland islands		
<b>IT equipment for health care professionals</b>	FR Hexagone	FR Corse	
<b>ICT networks</b>	FR Hexagone ES Canarias	FR Corse	IT Molise
<b>Internet portals</b>	DE Hessen	FR Hexagone	
<b>IT equipment in small schools</b>	DE Sachsen-Anhalt		

**Table 4. (continued)**

<b>Information and multimedia laboratories/centres</b>	IT Piemonte IT Abruzzo IT Sardegna BE Wallonie	IT Veneto IT Sicilia IT Lazio	IT Umbria IT Calabria PT Açores
<b>Transport service by telephone calls</b>	IT Piemonte		
<b>Security of people (reservations, tele-assistance)</b>	IT Piemonte		
<b>Teleworking</b>	ES Baleares FI Continental	ES CLM	UK Wales
<b>Setting up of tele-services and electronic consultation systems</b>	ES Canarias		
<b>On-line training and e-skills</b>	ES Castilla-La Mancha	UK Wales	
<b>Village ICT initiatives</b> (i.e. provision of word processing facilities, publishing software, etc.)	UK Wales		

Note: Some of the actions or the measure itself will be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

\* The RDP for Slovakia does not mention explicitly broadband investments.

Source: DG Agriculture and Rural Development, European Commission

**Table 5. Specific commitments for ICT investments under measure 311 “Income diversification” in Rural Development Programmes 2007–2013**

Type of action	Rural Development Programme		
<b>Development of agri-tourism by using ICT</b>	BE Wallonie	IT Trento	
<b>IT services</b>	FI Continental	Poland	ES Galicia
<b>Implementation of new technologies for bringing the producer and consumer closer, web-sites, e-booking, etc.</b>	Estonia Netherlands FR Hexagone	IT Marche ES Canarias	IT Trento ES Murcia
<b>Assistance in ICT initiatives</b>	DE Brandenburg & Berlin		
<b>Access and increased use of ICT</b>	DE Saarland UK Scotland	Slovakia IT Piemonte	ES Pais Vasco Slovenia
<b>Dissemination and communication tools</b>	PT Açores		
<b>Computer and related activities</b> (except databases)	Latvia		
<b>Network</b>	Sweden		

Note: Some of the actions or the measure itself will be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

**Table 6. Specific commitments for ICT investments under measure 111 “Vocational training and information actions for farmers, food industry and forestry” in Rural Development Programmes 2007–2013**

Type of action	Rural Development Programme		
<b>Professional training in ICT and computer skills</b>	Austria	BE Wallonie	Czech Republic
	Bulgaria	FI Continental	FI Åland islands
	IT Piemonte	IT Marche	DE Schleswig-Holstein
	IT Toscana	IT Lombardia	DE Brandenburg & Berlin
	IT Campania	IT Puglia	IT Basilicata
	IT Sicilia	IT Molise	IT Lazio
	Latvia	Malta	Poland
	PT Continental	PT Madeira	PT Açores
	Romania	Slovakia	ES Aragón
	ES Baleares	ES La Rioja	ES Pais Vasco
	ES Cantabria	ES Canarias	ES Castilla-La Mancha
	ES Extremadura	ES Galicia	ES Cataluña
	Hungary	UK England	UK Scotland
	UK Wales		
<b>E-learning</b>	Austria	FI Continental	DE Brandenburg & Berlin
	ES Cataluña	Greece	IT Liguria
	IT Lombardia	IT Puglia	IT Calabria
	IT Sicilia	IT Sardegna	Malta
	UK Northern Ireland		
<b>Web portals and web tools</b>	Austria	IT Abruzzo	IT Umbria
	IT Toscana	IT Puglia	Malta
	Slovakia		
<b>Information activities using ICT</b>	BE Wallonie	IT Abruzzo	IT Umbria
	IT Marche	IT Toscana	IT Puglia
	IT Sardegna	Malta	ES Madrid
	ES Andalucia	ES Cataluña	
<i>Specific actions</i>			
<b>Developing ICT use in farms</b>	FR Martinique	FR Guadeloupe	
<b>Data processing</b>	DE Schleswig-Holstein		
<b>Life-long learning</b> for groups of rural population dealing with the primary sector	Greece		
<b>Establishment and management of ICT</b> resources in farming enterprises	Sweden	UK Northern Ireland	IT Emilia-Romagna
<b>Increased use of ICT</b> within enterprise administration and for marketing purposes	Sweden		
<b>Permanent information system</b> in favour of agricultural and rural development	IT Calabria		
<b>Creation of a network</b> through the interactive use of new ICT	IT Calabria		
<b>Demonstration projects</b> on the improvement of logistic systems and information technology	Netherlands		

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**Table 6. (continued)**

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<b>Distance learning</b>	ES Valencia	ES Cataluña	FR Hexagone
<b>Sophisticated knowledge transfer systems</b>	UK Northern Ireland		

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Note: Some of the actions or the measure itself could be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

**Table 7. Specific commitments for ICT investments under measure 312 “Creation of micro-enterprises and business development” in Rural Development Programmes 2007–2013**

Type of action	Rural Development Programme		
<b>ICT based services</b>	Bulgaria Poland	IT Sardegna FI Continental	IT Puglia
<b>Web portals or implementation of new technologies for bringing the producer and the consumer closer (e.g. e-commerce, e-marketing)</b>	Austria IT Liguria IT Puglia UK Wales	Estonia IT Lombardia PT Açores	IT Piemonte IT Campania ES Valencia
<b>Development of mobile solutions</b>	Estonia		
<b>Investments in structural improvements, incl. communication points</b>	FR Martinique DE Brandenburg & Berlin	IT Liguria	IT Lombardia
<b>Services for connecting and providing internet</b>	Romania		
<b>Cooperation networking</b>	DE Hamburg	DE Sachsen -Anhalt	Sweden
<b>Computer and related activities (except database)</b>	Latvia		
<b>Application of new IT</b>	IT Piemonte ES Canarias ES Castilla -La Mancha	Hungary Estonia	Ireland Sweden
<b>Utilisation of local ICT capacity (e.g. online processing of micro-enterprise administrative activities)</b>	Ireland		
<b>New (or improved) access to ICT (facilities)</b>	Netherlands	IT Sicilia	Slovenia
<b>Micro-businesses in ICT training</b>	ES Canarias		

Note: Some of the actions or the measure itself will be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

**Table 8. Specific commitments for ICT investments under measure 313 “Rural tourism” in Rural Development Programmes 2007–2013\***

Type of action	Rural Development Programme		
<b>Web portals, electronic booking systems, marketing, tourism services, etc.</b>	Austria	Bulgaria	IT Piemonte
	IT Abruzzo	IT Umbria	IT Marche
	IT Toscana	IT Veneto	IT Liguria
	IT Lombardia	IT Campania	IT Puglia
	IT Sicilia	IT Sardegna	Ireland
	Malta	Romania	ES La Rioja
	ES Pais Vasco	ES Castilla -La Mancha	ES Valencia
	ES Galicia	ES Murcia	ES Andalucia
	Sweden	UK England	Slovakia
	FR Hexagone		
<b>Development of ICT services for tourism</b>	IT Marche	IT Piemonte	IT Basilicata
	IT Liguria	IT Lombardia	IT Toscana
	IT Lazio	Ireland	
<b>Networking of tourism actors via ICT</b>	FR Hexagone	DE Sachsen -Anhalt	IT Sardegna
<b>Tourist information centres *</b>	IT Sardegna	IT Valle d’Aosta	
<b>Common structures for tourism purposes</b>	DE Brandenburg & Berlin		
<b>Multimedia and IT services for promotion of rural tourism *</b>	IT Toscana	PT Açores	ES Galicia

\* Please note that in all RDPs where this measure is open, actions involving investments in information centres and promotion of tourism including purchase of hardware and software are considered eligible. They are not presented here.

Note: Some of the actions or the measure itself will be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

**Table 9. Specific commitments for ICT investments under measure 331 “Training and information for the rural population” in Rural Development Programmes 2007–2013\***

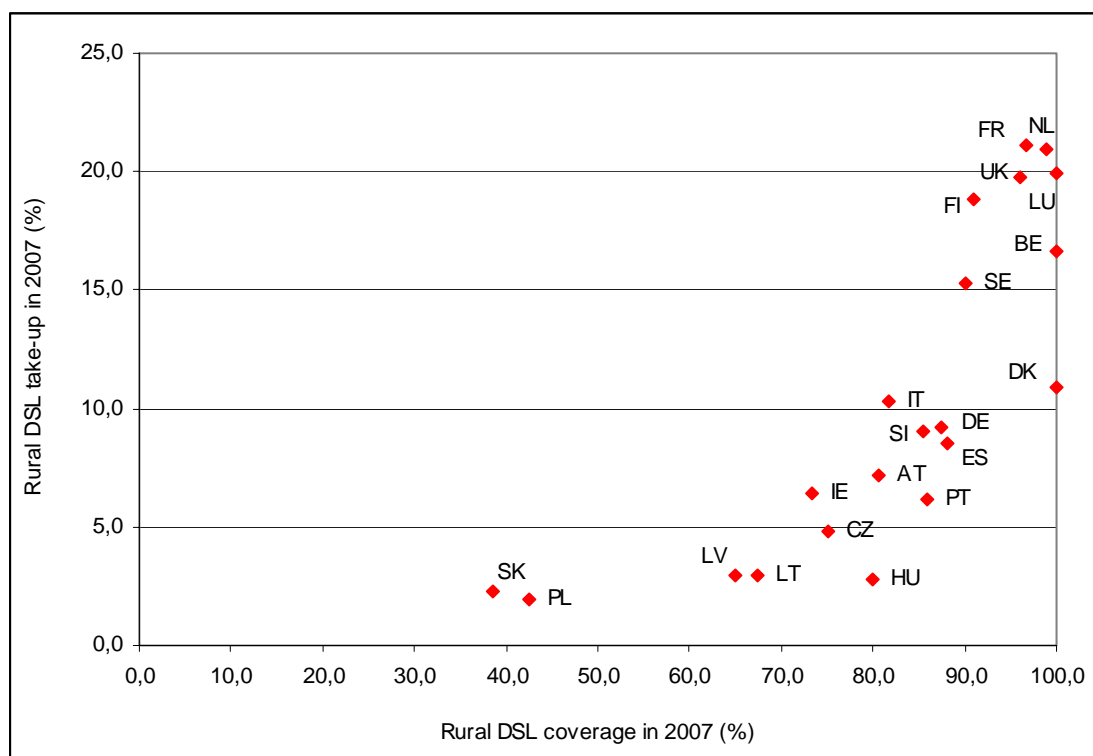
Type of action	Rural Development Programme		
<b>Training in ICT and computer skills</b>	Czech Republic FR Guadeloupe Ireland ES Castilla -La Mancha	FI Continental FR Corse Luxembourg ES Canarias	FR Hexagone IT Piemonte Slovakia
<b>On-line training and e-learning</b>	FI Continental ES CLM Ireland	IT Marche IT Liguria	IT Veneto IT Campania
<b>Dissemination of information by using in particular ICT</b>	FI Continental	FR Corse	Luxembourg
<b>Distance learning</b>	Ireland	ES Castilla-La Mancha	
<b>Mobile training solutions</b>	Ireland		

\* Please note that certain RDPs which have programmed this measure have not opted for a detailed description of the training to be provided under it.

Note: Some of the actions or the measure itself will be implemented through Leader. Integrated measures are taken into account. Only RDPs that have specified ICT-related actions are listed.

Source: DG Agriculture and Rural Development, European Commission

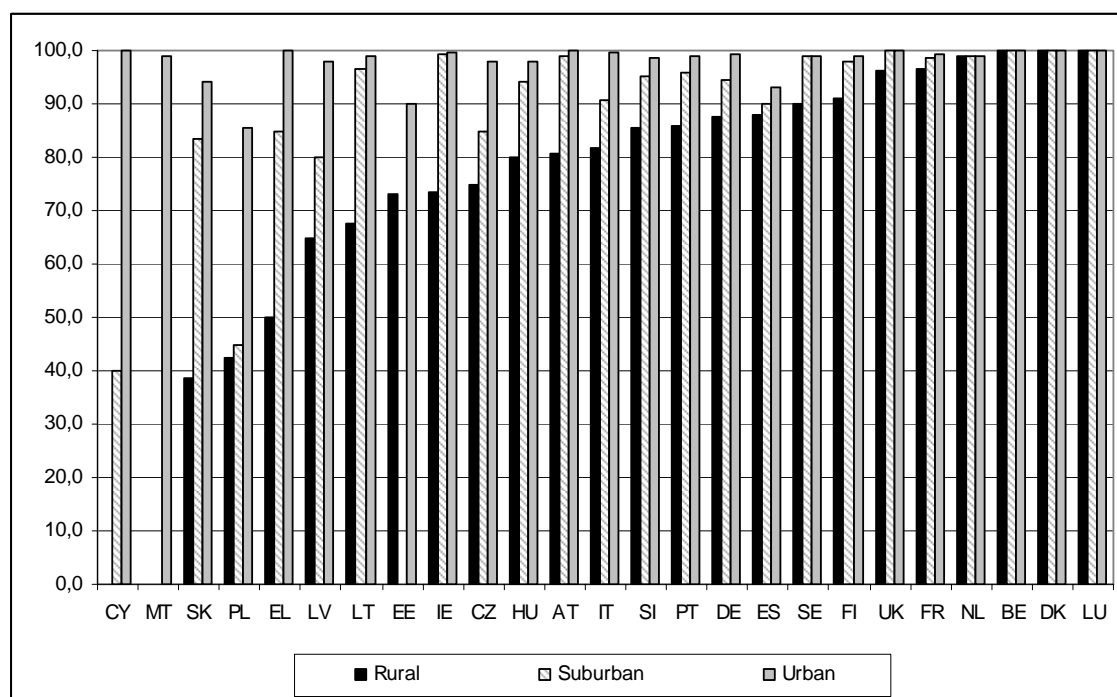
**Figure 1. DSL coverage in rural areas and share of population having a DSL internet subscription in rural areas, as of December 2007, %**



Note: Complete data for Bulgaria, Cyprus, Estonia, Greece, Malta and Romania is not available.

Source: Rural development statistical report 2008, European Commission

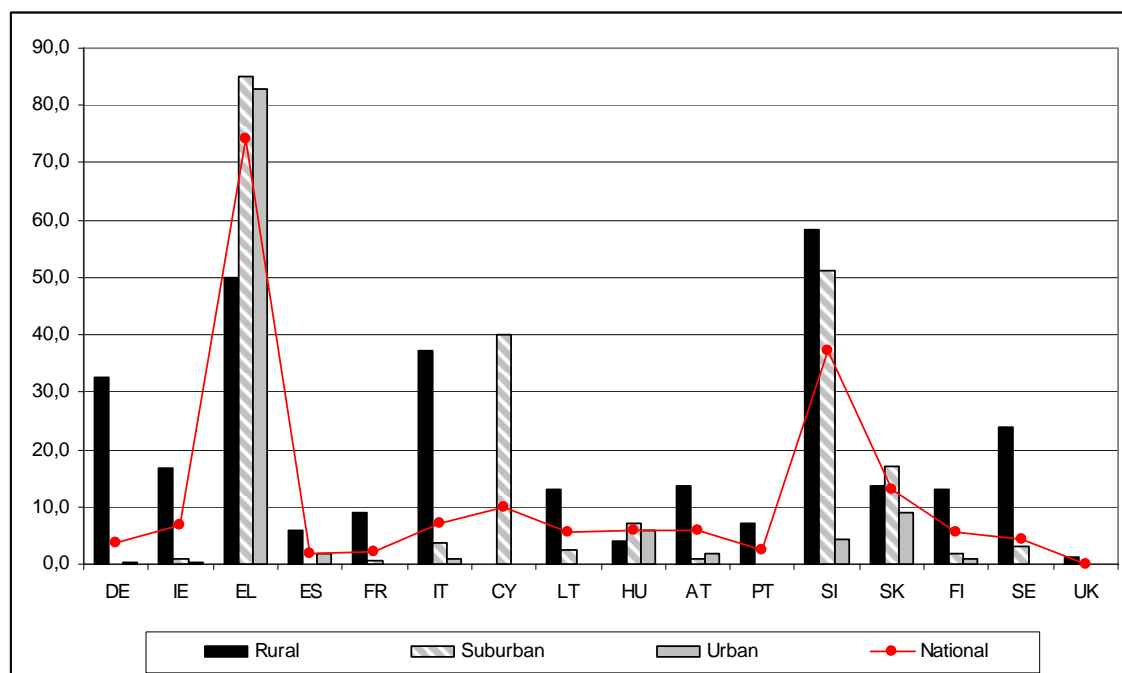
Figure 2. DSL coverage in different areas in the EU27, Dec 2007, % of total territory with DSL coverage



Note: No data for rural areas in Malta and Cyprus

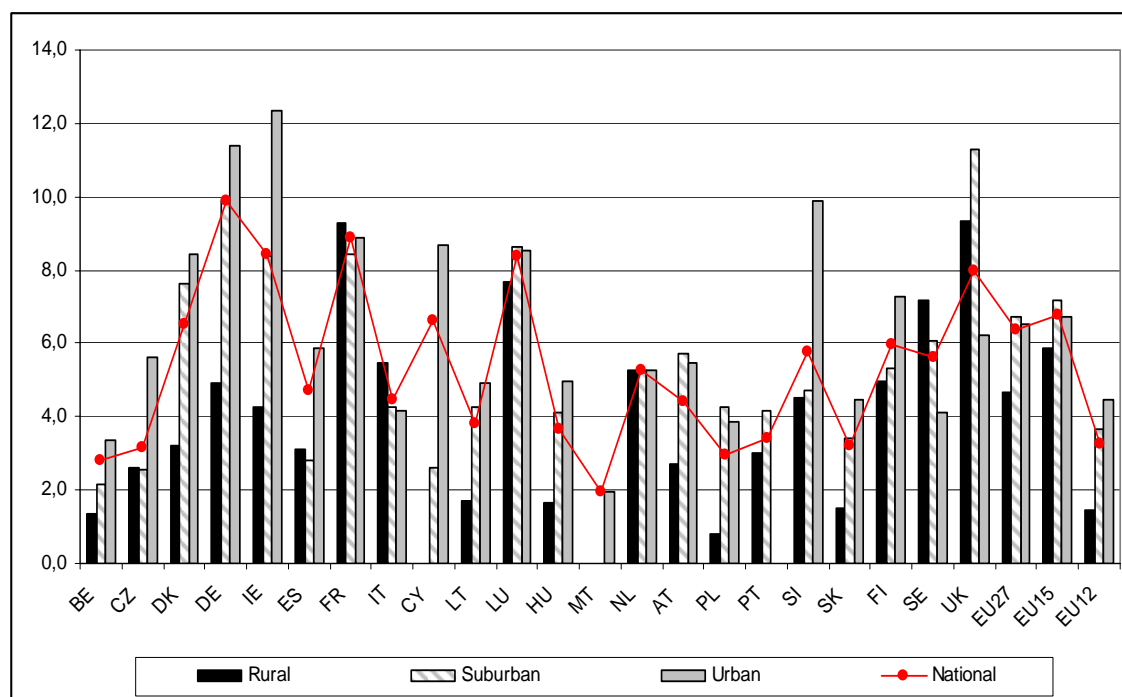
Source: Rural development statistical report 2008, European Commission

**Figure 3. Change in the DSL coverage in the various areas in selected MS, 2007 to 2005, difference between both years, %**



Note: Countries with 100% coverage and countries for which data was not available are not displayed  
 Source: Based on data from the Rural development statistical report 2008, European Commission

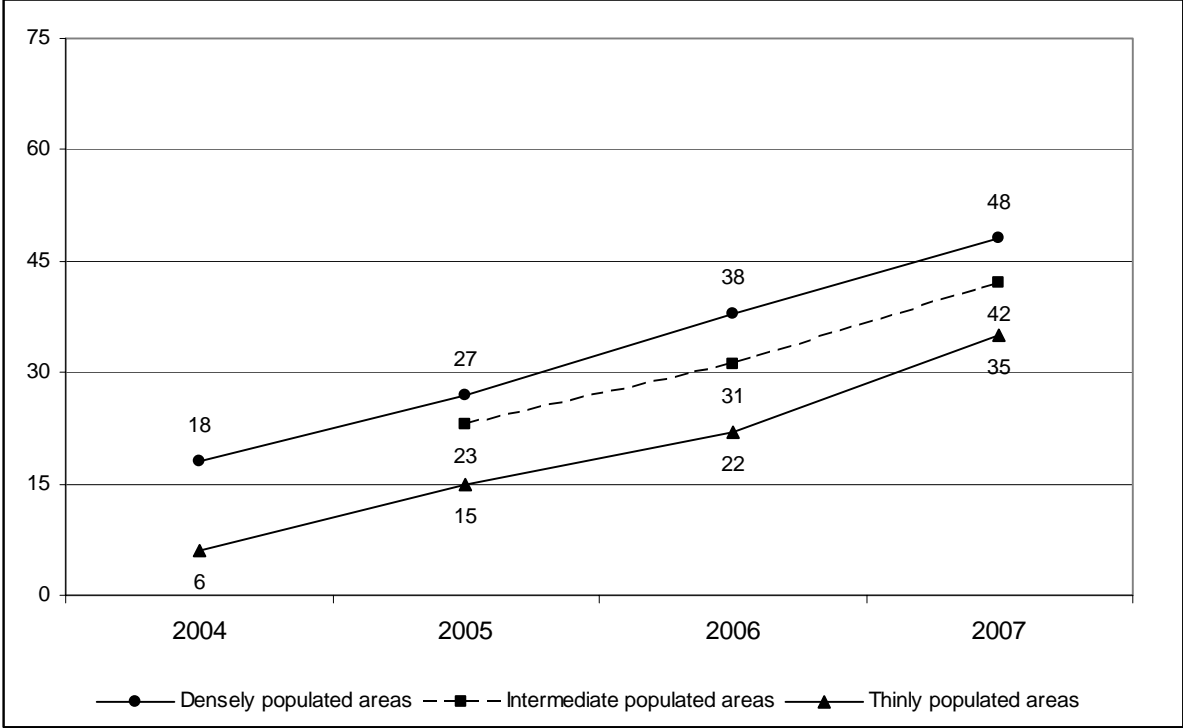
**Figure 4. Change in the share of population having a DSL internet subscription in the EU27 MSs, 2007 to 2005, difference between both years, %**



Note: Countries for which data was not available are not displayed.

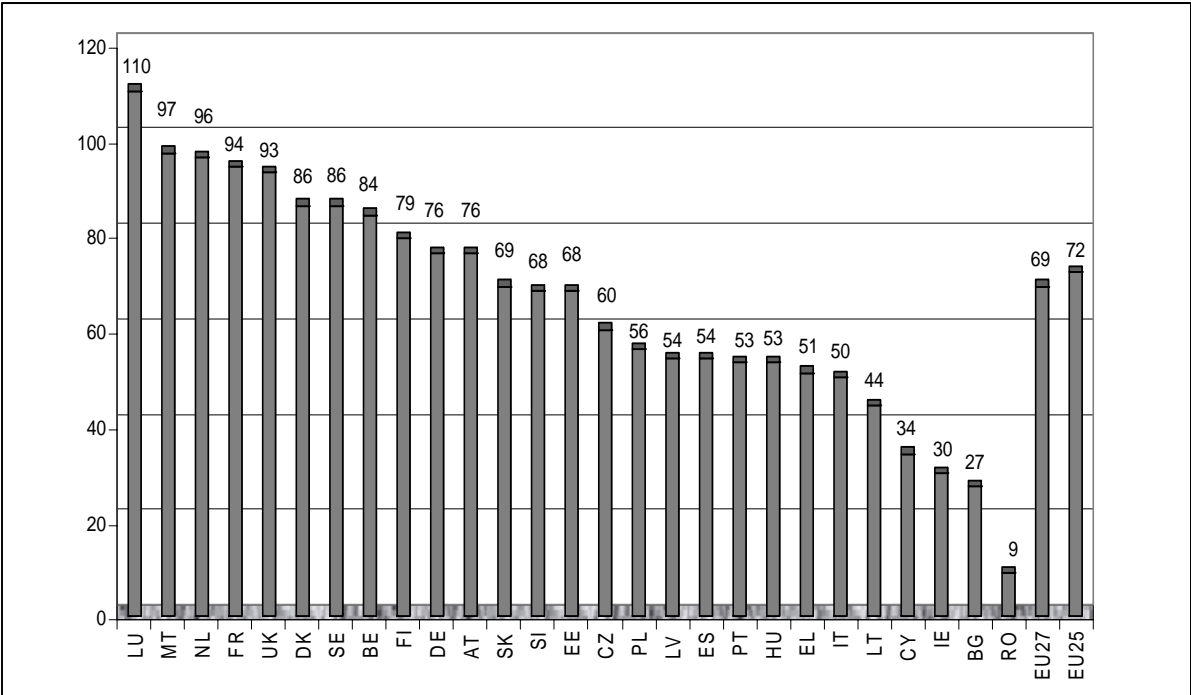
Source: Based on data from the Rural development statistical report 2008, European Commission

Figure 5. Households in EU25 using broadband by population density, %, 2004–2007



Source: 2007 Eurostat ICT household survey (extraction on 20 October 2008), Eurostat, European Commission

**Figure 6. Relative broadband gap in 2007, thinly populated areas as % of urban areas**



Source: 2007 Eurostat ICT household survey (extraction on 20 October 2008), Eurostat, European Commission