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**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE
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COMMITTEE AND THE COMMITTEE OF THE REGIONS**

Bridging the Broadband Gap

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1. INTRODUCTION

The dynamism of the European economy crucially depends on the development and adoption of new technologies. Enhancing supply and demand of Information and Communication Technologies (ICTs) is important to realise the growth and jobs objectives of the renewed Lisbon strategy¹.

The access to high speed internet through "broadband" connections is opening up huge possibilities and constitutes concrete evidence of the promises of the "information society". The benefits of broadband are such that the inability to have access to it is an issue which should be addressed urgently. The lack of access to broadband connections constitutes an aspect of the more general problem usually referred to as the "digital divide", which describes the gap between individuals, businesses and territories in terms of opportunities to access and use ICTs.

This Communication focuses on the *territorial* divide regarding broadband access. It aims to make governments and institutions at all levels aware of the importance of this divide and of the concerns about the lack of adequate broadband services in the less developed areas of the Union. The Communication implements one of the priorities of the i2010 initiative – a European Initiative for growth and employment².

The analysis is based on the findings of the Digital Divide Forum Report³, which was made available for public consultation until 16.09.2005. The Communication reviews progress on the availability of broadband access in the EU15 plus Norway and Iceland in 2003-2004. Data for the new Member States are not yet available.

On the basis of the comments received during the public consultation, the present Communication identifies a number of instruments that could be deployed at the local level to improve the availability of broadband. It calls on all the public and private stakeholders to attach the highest priority to the development of this important communication infrastructure and suggests that the Member States continue to apply and, where appropriate, strengthen their National Broadband Strategies. The Commission, for its part, will take a number of measures aimed at making relevant information more easily available and at increasing the exchange of best practices.

The geographical broadband digital divide is only one aspect of a wider social and economic development issue. It requires demand-side actions that support skills, accessibility, use of online services, etc. The Commission is working on these issues in the context of the i2010 initiative as well as through the support of structural and rural development funds.

¹ "Time to Move Up A Gear" The European Commission's 2006 Annual Progress Report on Growth and Jobs: http://europa.eu.int/growthandjobs/annual-report_en.htm

² COM(2005) 229

³ Available at http://europa.eu.int/information_society/europe/i2010/digital_divide/index_en.htm

2. WHY BROADBAND MATTERS

The internet is one of the most important innovations of our time. It brings substantial benefits to economies and societies⁴. The impact of broadband is just beginning to be felt. The precise impact has been difficult to measure. It is, however, clear that the ability to communicate information at high speeds and through various platforms is key to the development of new goods and services.

Broadband enables new applications and enhances the capacity of existing ones. It stimulates economic growth through the creation of new services and the opening up of new investment and jobs opportunities. But broadband also enhances the productivity of many existing processes, leading to better wages and better returns on investment. Governments at all levels have recognised the impact that broadband may have on everyday lives and are committed to ensuring that its benefits are made available to all⁵.

Securing long term sustainability of remote and rural areas requires a strategic approach to the development of the information society. The availability of broadband services is one critical element in assisting local communities in attracting businesses, in enabling tele-work, providing healthcare, improving education and government services. It provides a critical link to information. Examples are:

Telemedicine and eHealth: The delivery of telemedicine and eHealth applications bridges time and distance and allows services to reach individuals in their own communities. Rural hospitals may exploit broadband to enjoy the same medical expertise available in urban centres. Purchase of medical supplies, prescriptions and electronic record keeping are enabled online. Electronic monitoring is made possible, with important benefits for assisted living.

eGovernment: Broadband improves the capability of eGovernment services and allows a better interaction between governments, easing access to government for citizens and businesses. It facilitates the development of high-quality services and may increase organisational performance resulting in efficiency gains for the public administrations.

Education: Broadband strengthens the life-long learning process and enables students to obtain real-time education from qualified teachers in areas where that instruction may not be available. Students can access alternative educational resources and be exposed to new forms of educational content. It enables video-conferencing and facilitates inter-institutional collaboration.

Rural Development: In rural areas, broadband plays an important role in connecting farms and businesses to national and international markets. It helps the development of the rural economy by facilitating e-business, particularly in the farm and food sectors. It can encourage diversification by making rural areas more attractive and improving marketing opportunities for products and services such as tourism and rural amenities. Village ICT initiatives built around broadband hubs can provide a cost-effective approach to provision of services to businesses and local communities.

⁴ M. O'Mahony and B. Van Ark, "EU productivity and competitiveness: An industry perspective", http://www.ggdc.net/pub/EU_productivity_and_competitiveness.pdf.

⁵ "Connecting Europe at High Speed: National Broadband Strategies", COM(2004) 369.

3. THE BROADBAND GAP: THE GEOGRAPHICAL DIVIDE

3.1. The size of the gap

Demand for residential broadband services in the EU has been growing fast. The number of broadband access lines has almost doubled in the past two years. In October 2005 there were about 53 million connections in the EU25, corresponding to a penetration rate of 11.5% in terms of population and to roughly 20% of households. These developments have been mainly market driven and enhanced by increases in competition.

Broadband access can be delivered by a variety of platforms: telephone and cable wires, wireless connections, fibre, satellite and electrical powers. Digital Subscriber Line (DSL) is the predominant access technology in the EU. It accounts for an increasing share of the overall broadband market, standing at 80% of total broadband lines. Cable modem is the second most important technology in terms of penetration, with a share of 18%. Other technologies account for the balance of about 2%.

Despite the general increase in broadband connectivity, access in more remote and rural regions is limited because of high costs due to low density of population and remoteness. Population scarcity limits the exploitation of economies of scale, entails lower rates of demand and reduced expected returns from investment. Remoteness often implies the need of bridging longer distances from the local exchanges to the premises and to the backbone. Commercial incentives to invest in broadband deployment in these areas often turn out to be insufficient. On the positive side, technological innovation is reducing deployment costs.

As a result, there was a significant increase in broadband coverage in 2004, but in January 2005 an important gap remained between the urban and the rural areas of the EU15 Member States (plus Norway and Iceland)⁶. At the beginning of the year, DSL reached approximately 85% of households, up from 80% one year earlier⁷. Given the predominance of this delivery technique, the figure for the availability of DSL can be taken as a good proxy for the general availability of broadband.⁸

Households with access to broadband are concentrated in urban and suburban areas. In January 2005, DSL reached only about 62% of households in the rural areas. Furthermore, in these areas, only about 8% of households subscribe to broadband, compared to an average rate of 18% in urban areas.

Rural areas also lag behind urban area in terms of connection speeds. Download speeds between 144 kbps and 512 kbps have been the most common in rural areas in the past two years. In more urban areas, average speeds are in the range of 512 and 1,000 kbps. While in urban areas there is a clear trend towards higher bandwidth, in rural areas speeds tend to remain constant. This divergence follows from lower technological performance resulting both from distance and from lack of competition. Lower speeds may constrain take-up by

⁶ Comparable data on coverage in the new Member States are not yet available.

⁷ DSL coverage denotes the percentage of population depending on switches equipped for DSL. The definition of DSL coverage includes individuals and businesses located too far away from the switches to be reached, overestimating effective coverage.

⁸ In more general terms, at least 4.7 million would-be users are expected to be excluded by commercial broadband rollout in 2013. Cfr Annex 1, footnote 17.

businesses in rural areas as well as take-up by households that are unable to undergo a true multimedia experience.

Although connectivity is progressing fast, there is a large gap between coverage and take-up of broadband in all areas. In less developed areas, structural characteristics such as lower income and education may inhibit demand even when access is available. The Commission will examine this issue in the annual progress reports of the i2010 initiative.

3.2. New Member States

Comparable data on broadband coverage in the new Member States are not yet available. The broadband market is just starting to develop but is restricted by lower levels of PC and telephone line penetration. In some countries, however, TV cable networks are significantly deployed and represent an important alternative to the upgrades of telephone exchanges.

While broadband rollout in the EU15 is mostly based on the upgrading of existing networks, it is reasonable to expect a different pattern of development in the new Member States. In these countries there is often a situation of slow adaptation of the market rather than a market failure. Furthermore, there is a clear trend towards take-up of mobile instead of fixed telephones. When available, people are likely to retain a fixed line for internet access, but wireless developments will probably play a more important role in the provision of broadband services.

3.3. The technological solutions

Broadband services can be delivered using various combinations of communications network technologies (“platforms”). Technologies can feature either fixed or radio based transmission infrastructure, and they can substitute or complement each other according to the individual situation. Each technology has particular features and a different impact on the overall network capacity and capability⁹.

Technological innovation is succeeding in increasing the reach and the performance of existing technologies, bringing new platforms to the market, and reducing their minimum operational size, facilitating the exploitation of economies of scale.

Savings in civil engineering costs for passive infrastructure can be further realised by exploiting the synergies between the constructions of ICT, energy, water or transport infrastructures.

The emergence of new wireless platforms particularly suited for rural areas is an interesting development. However, it requires that sufficient spectrum is made available, which in turn reinforces the importance of moving to more efficient and flexible forms of management of this scarce resource.¹⁰

The optimal mix of technologies depends on the characteristics of each particular location. The cost of technologies varies according to the number of potential users, the distance of the

⁹ A detailed description of their characteristics can be found in Chapter 2 of the Digital Divide Forum Report.

¹⁰ The Commission presented a new strategy for an optimal use of radio spectrum in Europe on 29.09.2005. See COM(2005) 400, COM(2005)411 and COM(2005) 461.

dwellings from the point of presence, and the presence of the backhaul. A scarcely-populated isolated area may be better off with a wireless solution and a small town with a wireline solution. Some radio solutions require a line-of-sight path which may not always be available in hilly regions.

No specific technology option will offer the best connectivity in all situations. The optimum is often achieved by a combination of technologies and solutions. In conclusion, best solutions can only be identified at the local level. Investment and choice should be made on the basis of current availability and effective demand.

4. THE CURRENT RESPONSE

4.1. The political process

The Commission has highlighted the issue of the geographical digital divide on a number of occasions¹¹. The scope for public intervention in under-served areas was emphasised in *eEurope 2005*¹², which highlighted the role that Structural Funds can play in bringing broadband to disadvantaged regions. Clarifications on the availability and on the compatibility of public funding with the state-aid rules were given in the “Guidelines on criteria and modalities of use of Structural Funds for electronic communications”, published by the Commission in July 2003¹³.

In the context of *eEurope 2005*, and on the basis of discussions at Telecom Councils, 15 Member States put in place National Broadband Strategies in 2003. Five new Member States have since decided to adopt similar documents. All strategies recognise the role of competition in driving private investment. However, in the presence of market failure, national strategies acknowledge the role of governments in ensuring coverage and announced supporting programmes. Current initiatives address both the supply and the demand side of the market to stimulate a virtuous circle, whereby development of better content and services depends on infrastructure deployment and vice-versa. Some of these strategies have been recently revised to introduce more refined targets.

Initiatives are generally coordinated at the national level, although their implementation is carried out at the regional and local levels. The Digital Divide Forum report, announced by the White Paper on Space¹⁴, opened a public discussion on the desirability of public intervention. It detailed the costs and performances of alternative technologies and provided examples of current initiatives. The public consultation confirms the importance attributed to this issue by local/regional and national authorities as well as by the industry and various associations. A comprehensive summary of the results of the public consultation is annexed to this Communication.

4.2. Rationale of public intervention

Action at all government levels can help to increase coverage in under-served areas. Nevertheless, the assessment of market failures is a difficult task, particularly when there is

¹¹ COM(2003) 65, COM(2003) 673, COM(2004) 61, COM(2004) 369, COM(2004) 380.

¹² COM(2002) 263

¹³ Available at http://europa.eu.int/comm/regional_policy/sources/docoffic/working/sf2000_en.htm.

¹⁴ COM(2003) 673.

uncertainty over the pace of broadband deployment. The benefits from government intervention must therefore be clear and substantial, compensating for the risks of undesirable consequences. One risk is that, by picking particular technologies or defining particular services, some government programmes may inhibit technological development. Another risk is that government intervention may distort competition and affect commercial incentives to invest. Finally, given the current gap between coverage and take-up, people may simply not be willing to use the technology.

All these risks should be assessed when designing broadband initiatives involving demand stimulation and aggregation, grant and loan programmes, municipal initiatives and competition, etc. The analysis requires policy makers to review reliable broadband data on an ongoing and timely basis. Availability of mapping of infrastructure is particularly relevant.

Local governments are well placed to collect local information and aggregate local demand for broadband services. They know the local topography and may determine the optimal technology mix. They may facilitate the development of local services or launch pilot projects to explore new technologies. They may support the rollout of future-proof high-capacity infrastructure that is open to competitive service providers on non-discriminatory basis.

In conclusion, local/regional authorities are best placed to plan a broadband project that takes into account local needs and technological requirements. National broadband strategies need to be strengthened to involve and reflect local needs. As projects are scattered, local and regional authorities will also largely benefit from an increased exchange of best practices.

4.3. Available Instruments

Devising and implementing effective policy instruments to correct market failures or complement the action of market forces is a complex task. However, various instruments are already available at the EU level:

(i) Implementation of the regulatory framework for electronic communications: Broadband is developing most rapidly in liberalised markets. Enhancing competition is therefore the best way to stimulate the market to develop. In addition, given the importance of wireless solutions for rural areas, a more coordinated EU Radio Spectrum Policy could result in increased harmonisation and stimulate broadband developments.

Action 1: Member States shall fully implement the regulatory framework for electronic communications, to enhance open access and facilitate competitive entry in rural areas. In the area of spectrum, the Commission is working with Member States to harmonise the technical conditions of use in the EU for broadband wireless access applications, with the aim to consolidate the single market and stimulate entry of innovative technologies.

(ii) Public funding: With the increasing level of public support for broadband initiatives, there is growing evidence that public intervention may accelerate broadband deployment in the less profitable areas, while ensuring, by means of open access requirements, that competition is preserved in the future.

Action 2: Public intervention in the forms of loans and grants, often as public-private partnerships, should be further developed in under-served areas. Fiscal incentives for subscribers should be explored by Member States, in compliance with competition rules and technological neutrality.

(iii) *State aids and competition policy:* public intervention may distort competition, and state-aid law provides an important set of rules to safeguard it. When the granting of state aid is envisaged, the project must be notified to the European Commission. The Commission will then assess its compatibility with the Treaty rules. There have already been a number of decisions regarding publicly funded broadband projects in rural and remote areas in which the Commission did not raise objections. A summary of those decisions can be found in Chapter 3 and Annex 3 of the Digital Divide Forum report. Deployment of open access infrastructure, defined according to technological neutrality and managed by an independent entity, appears to be the solution most conducive to effective competition.

Action 3: The Commission will further explain and disseminate its practice in order to provide guidance on state-aid rules applicable to broadband projects..

(iv) *EU funding: Structural Funds and Rural Development Fund:* At the EU level, Structural Funds and the Rural Development Fund contribute to the development of regional and rural areas that are lagging behind. Within the renewed Lisbon process, the Commission has proposed that the programmes supported by Structural Funds target investment in knowledge. Especially in remote and rural areas and in new Member States, Structural Funds aim at ensuring availability of ICT infrastructure where the market fails to provide it at an affordable cost and to an adequate level to support the required services. Above all, Structural Funds should aim at the spread of the Information Society through the balanced support of demand and supply of ICT products and services as well as through improved human capital. The balance of investment should reflect the existing gap between broadband penetration and coverage in the area.

Guidelines on the use of Structural Funds for electronic communications were published in 2003¹⁵. The new Rural Development Fund will also focus on forward-looking investment in human capital and innovation, including the take-up of ICTs in rural areas¹⁶. Rural development programmes can play an important role in ensuring that appropriate small-scale local infrastructure is put in place to connect major investments to local strategies for diversification and development of agricultural and food-sector potential. Only then will the intended multiplier effects be fully realised in terms of jobs and growth.

Action 4: The Commission will organise a conference in the first half of 2007 to bring together the ICT and rural constituencies. The aim will be to better understand rural users' requirements and create awareness of the potential of ICTs for rural development. In particular, it will focus on how rural communities and businesses can build on the opportunities created by improved ICT infrastructure and broadband access, and on the synergies between the Structural Funds and the Rural Development Fund.

(v) *Demand aggregation and procurement:* Uncertainty of demand affects expected returns on investment and inhibits commercial investment. Local authorities are well placed to organise a registration system and assess the local demand which can eventually be brought to the market. When collective demand within a community is not sufficient, municipalities may consolidate aggregation across several communities.

¹⁵ Cfr footnote 13.

¹⁶ The Commission presented a set of Community Strategic Guidelines for 2007-2013 (COM(2005) 299 and COM(2005) 304) targeting the next generation of cohesion policy and rural development programmes more on growth and jobs.

Action 5: The Commission will launch a web site that will stimulate the exchange of best practices and facilitate demand aggregation. It will act as a central information platform, publishing calls for tender and providing a one-stop shop for best practice exchanges. The web site may become this way a virtual meeting point between suppliers and local governments. In particular, the web site could permit very sparsely-populated areas to coordinate demands for broadband, establishing a critical mass for technological solutions, such as satellite, that provide large coverage.

(vi) *Fostering the creation of modern public services:* All Member States support the development of on-line public services. In turn, development of innovative services stimulates user demand which facilitates infrastructure deployment. Development of modern online public services is a powerful instrument to drive broadband demand.

Action 6: Active policies at Member State and regional level to provide connectivity for public administrations, schools and health centres will create a critical mass of users, whilst stimulating demand by demonstrating benefits of broadband-enabled services. The Commission will take into account of the stimulation effect of e-government services in disadvantaged regions in preparing its Action Plan for e-government in 2006.

5. CONCLUSIONS

Widespread broadband access is a key condition for the development of modern economies and is an important aspect of the Lisbon agenda. The European Union must step up its efforts to encourage take-up of broadband services and stimulate further deployment, in particular in the less developed areas of the Union.

This Communication invites all levels of government in the European Union to be more active in using the available instruments and technologies.

Member States are invited to update their existing National Broadband Strategies to provide additional guidance to all stakeholders. Their documents may well define targets in terms of coverage as well as take-up, on the basis of an active partnership with regional authorities, and exploiting synergies between alternative sources of funding (national, Structural Funds, Rural Development Fund). National broadband strategies should also set clear targets for the connectivity of schools, public administrations and health centres.

The Commission will monitor and organise discussions around these strategies within the i2010 High Level Group.

The Commission will continue monitoring the broadband digital divide by:

- a) Analysing all the aspects of the "broadband divide" in the i2010 annual progress reports and in the context of the e-Inclusion initiative planned for 2008;
- b) Monitoring broadband developments in the new Member States and reporting on them in 2006.