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TO THE COUNCIL, THE EUROPEAN PARLIAMENT,
THE ECONOMIC AND SOCIAL COMMITTEE
AND THE COMMITTEE OF THE REGIONS

COHESION AND THE INFORMATION SOCIETY

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FOREWORD

The Commission has recently adopted its first Report on economic and social cohesion, under Art. 130b of the Treaty. This Communication forms part of the follow-up to the recommendations and analysis of the Report in the area of the information society. It complements the Green Paper "Living and Working in the information society - People first", (which undertook an analysis of the issues related to social cohesion), notably by highlighting the regional aspects of the problem.

In the context of the globalisation process and of the need to become more competitive at the world level, the opportunities offered by the emerging information society are huge: in terms of competitive gains to be grasped by firms and territories; more efficient organisational forms; new trading opportunities; new educational and new employment possibilities. Making these opportunities available throughout Europe is one of the central objectives of the gradual liberalisation of telecommunication markets. However, not all European regions, citizens or firms are equally well equipped to enjoy these benefits because of geographical, social and economic reasons, yet in a globalising environment, it is clear that they have to compete not just at EU level, but at a global level as well.

Though the opening of telecommunications market and the harmonisation measures should in principle reach out to the whole territory of the Union, the principal risk is that investments in some regions will be delayed.

Thus, the development of the information society needs to be complemented, where necessary, by policy action in order to close the existing gaps and ensure that the information society develops at the desired rate throughout the Union. This calls for the participation and co-ordination of regions, national governments and the European Institutions so as to avert a polarisation between "information haves" and "information have-nots" as the new technologies spread.

This document, having identified the need for action, indicates the issues, the context and the way forward in the areas of regulatory, investment and demand support policies. Coherent progress in these three areas will be important for harmonious regional development.

THE ISSUE

1) The information society is making possible profound economic, social and institutional transformation across all realms of human activity[1]. As such, it also has considerable potential for strengthening economic and social cohesion within the meaning of Art. 130a by reinforcing regions' competitiveness. The latter is increasingly determined by the ability of regions to integrate the new technologies made available by the information society.

Information and communication technologies (ICTs) can widen the efficient locational choices for firms so that they can take advantage of differential costs of operations and/or market opportunities. They can help regions, both, retain a larger share of total value added and attract and develop new activities with high value added. The information society could also help breakdown the barriers to location of business outside urban centres, attracting increased investment to rural areas where relative business-location costs are typically lower and which can offer a high quality of life.

2) The information society also offers a great potential for the development of new forms of employment and high skilled jobs, especially by providing SMEs, as the main dynamic source of employment creation, growth and competitiveness, with the instruments to innovate and adapt to a rapidly changing economic environment.

Research undertaken by the Commission[2] suggests that liberalisation of telecommunication markets combined with a rapid adoption for ICTs will yield positive effects in terms of employment, largely compensating for any job losses that could take place in the telecommunication sector. The problem, however, is in managing the time lag between these processes: those who adapt first and manage to anticipate the emerging products and services are likely to gain dynamic "first mover" competitive advantages, while the inability to rapidly adopt these technologies will certainly have a negative effect on employment[3].

From a socio-economic perspective, the information society opens up opportunities for new working schemes such as teleworking, potentially providing wider access to jobs and more flexible timing of work; it provides a basis for overcoming mobility and access problems arising, for example, from remoteness and/or poor transport infrastructure, especially in rural areas; it opens up new opportunities in the areas of education, health and caring activities; and provides for increased transparency in the public administration - to mention but a few examples[4].

3) All these processes also have profound spatial and social implications. Though ICTs are not, by themselves, bringing about or determining any particular spatial outcome, their up-take affects regions' ability to exploit and develop their human resources, infrastructures and the like, thus determining a region's development potential. This is important, in particular, for SMEs which represent the backbone of regional economic structures, especially in LFRs. At the same time if all citizens are not offered equal opportunities of access to the information society, we risk the creation of new forms of social exclusion.

The quality of information and telecommunication infrastructure is a key determinant of the effective capacity to participate in the information society. Other factors include: the level of qualification and the educational level so as to support the widespread use of information society services; a pro-active role played by the private and public sectors in promoting the information society; organisational and investment capacities for pursuing an effective information society strategy; availability of the technical support for facilitating the diffusion of information society activities; and the creation of public awareness for the information society.

4) For the opportunities of the information society to be grasped by individuals, institutions and firms independent of their location, these enabling factors need to be put in place throughout the EU. A review of the available data as taken up in the Statistical Annex to this document suggests that an important gap still exists between the richest and the less favoured regions (LFRs) of the Union at the level of basic infrastructure provision, the cost and reliability of services, and the availability of advanced services.

For example, looking at the proportion of all households passed by cable network (which indicates the future potential for rapid deployment of local loop competition and broad band services), about 97% of the Belgian population and 84% of the Dutch population had access in 1993 to cable TV networks compared to 0% in Italy and Greece, 2% in Portugal and 8% in Spain. Another example concerns the cost of using information society services: at the beginning of 1996, the residential installation of a telephone line costs respectively on average 32.5% more in cohesion regions than in the European core; 65.0% more in Ireland and 76.0% more in Greece.

Often, averages hide the existence of major differences within countries. In Portugal, for example, 62 main telephone lines per hundred inhabitants were available in Lisbon against 29 in the rest of the country and 18 in the Açores; in Spain, Madrid had 45.2 lines against 36 in the rest of the country and 22 in Estremadura; and in Greece, 52 lines were available in the Athens region against only 27 in Anatoliki Makedonia.

Evidence also suggests that some particular groups or individuals may face problems of adaptation to the information society and that their needs should be addressed.

The central issue is, therefore, how to combine developments in information society and telecommunication policies with the role to be played by structural interventions in order to rapidly reduce these disparities and promote a cohesive information society.

THE CONTEXT

The regulatory framework

5) Recognising the need to accelerate the diffusion of telecommunication networks, to facilitate service and network innovation, and to bring down the costs of usage, leading to further innovation and the development of new applications, the European Commission has promoted and supported the liberalisation of telecommunication

markets. At the same time, Commission policy is based on the recognition that also in the emerging pro-competitive environment in the field of telecommunications, it is essential to ensure the provision of universal service and, where necessary, the financing through the creation of specific mechanisms funded by market players. This regulatory approach has been chosen partly to avoid "cherry picking" by new entrants who are not themselves required to deliver universal service and who are likely to focus their activities on both business and residential customers in and around major cities[5], but also to ensure that all citizens of the Union have access to certain services of high quality at prices they can afford. As such, the concept of universal service is a central part of the European model of society contributing to solidarity and equal treatment, and an essential element of economic and social cohesion. The importance of universal service for cohesion has also been stressed in the First Report on Economic and Social Cohesion.

6) It is often said that the forces of liberalisation and competition will reach out to the whole territory of the Union[6]. Yet, given the rapid pace of technological change, frequently, there will be fresh rounds of investment, service innovation and competitive entry in the core regions which, if not reciprocated, will affect development and employment opportunities and sustain the relative gap between different types of areas. Therefore, from a cohesion perspective, there is a need to keep the regulatory framework and, more particularly, the scope of universal service, under review so as to ensure that all territories participate in the full range of benefits of liberalisation in terms of affordable price, level of service and innovation. Targeted support, where necessary, for investment expenditures to spread the beneficial effects to the less developed, peripheral and/or rural areas of the Union, in line with the competition rules, should complement the regulatory framework.

The role of the Structural Funds

7) A recent analysis[7] of European Regional Development Fund (ERDF) and European Social Fund (ESF) interventions suggests that, overall, only a surprisingly small part (about 2.0%) of expenditure goes to investment in the telecommunication sector. Furthermore, the most significant part of these investments (about 1.5%) is used for upgrading and completing the information and communication infrastructure, especially the basic telephony network. A tiny portion (approximately 0.3% of total expenditure) of the Community Support Frameworks (CSFs) is then dedicated to demand-side measures. An analysis Objective by Objective does not reveal substantial differences. Hence, it is fair to say that, with few exceptions[8] and despite having received increased attention under the current programming period, efforts for supporting the emergence of the information society and preparing regions to grasp the related benefits remain modest and insufficient.

TABLE 1 - TOTAL EXPENDITURE OF CSFs FOR OBJECTIVES 1, 2, 3, 4 AND 5B IN THE TELECOMMUNICATION SECTOR (1994-99)

MECU	MEMBER STATES		EUROPEAN UNION		TOTAL	
	Private	Public	SFs	% (i)	Value	%(ii)
Telecom (iii)	33	2.005	1.332	39,5	3.370	1,2
- Basic	*0*	*1.417*	*877*	*38,2*	*2.295*	*0,8*
- Advanced	*27*	*524*	*369*	*40,1*	*920*	*0,3*
Telematics (iv)	46	382	437	50,5	865	0,3
TOTAL(v)	81.504	85.087	117.280	100.0	283.871	100,0

(i) Percentage of the total Community Support Frameworks (CSFs) on the Total Value of the line.

(ii) Percentage of the total budget for the item on the total budget allocated for the CSFs (i.e. ECU 283.871 million).

(iii) Total funds allocated to axes, measures or simple actions covering telecommunications (infrastructures and service) mentioned in the Community Support Frameworks. A further distinction is made between Basic (provision and modernisation of basic telephony, including digitalisation and optical fibre in national or regional networks) and Advanced (implementation of advanced infrastructures and services such as optical fibre in local access, satellite links, ISDN and broadband network)

(iv) Budget allocated to telematic applications in several fields like health, education, transport. This line include actions like teleworking schemes, teleleaming and multimedia applications

(v) This is the total of CSFs and not the sum of the items above.

8) The nature of the Commission's initiatives to support and stimulate a wider diffusion of information infrastructures and applications in LFRs has evolved over time from the STAR programme[9] with a strong infrastructural focus, to the TELEMATIQUE programme[10] which stressed the stimulation of demand for telecommunication services and the efficient use of telecommunication infrastructures among the public and the private sectors.

TABLE 2 - TOTAL EXPENDITURE OF COMMUNITY INITIATIVES IN THE TELECOMMUNICATION SECTOR (i)

MECU	MEMBER STATES		EUROPEAN UNION		TOTAL	
	Private	Public	SFs	%	Value	%
Telecom	6	41	41	46,6	87	0,7
- Basic	*0*	*0,7*	*0,7*	*50,0*	*1,4*	*0,8*
- Advanced	*4*	*24*	*24*	*46,0*	*52*	*0,4*
Telematics	66	112	166	48,3	344	2,7
TOTAL	3.337	3.280	5.910	100.0	12.527	100,0

(i) The same footnotes of Table 1 apply to Table 2.

The European Social Fund (ESF)[11], through its interventions under the different objectives and the Community Initiatives EMPLOYMENT and ADAPT, has been particularly attentive in promoting training and supporting structures for jobs and skills related to the information society. In 1996 the ADAPT Initiative was reinforced with a new set of actions, ADAPT-BIS (Building the Information Society), aimed at promoting pro-active social policies facilitating the transition to the information society.

The Structural Funds are also an important tool in seeking to address the risk that rural areas be left behind by both financing provisions of ICT infrastructure to remote rural areas (particularly in Objective 1 regions) and by offering help to rural areas to exploit new employment opportunities[12].

In 1994, the Commission launched the Interregional Information Society Initiative (IRISI), which aims to demonstrate a methodology based on subsidiarity and a bottom-up approach for creating awareness among the general public and decision makers, including the private sector. The objective here is to define information society actions which are relevant to the economic fabric of the region and to develop synergies between regional resources, private capital and the Structural Funds, and to provide inter-regional guidance and learning[13]. Based on the success of IRISI a new generation of innovative actions for the information society (RISI) under Art.10 of the ERDF and Art.6 of the ESF has been launched[14].

THE WAY FORWARD

9) The debate and more policy initiatives relating to the information society, which have initially focused on technological and supply-side aspects, are now also focusing on social and demand side aspects. The pervasive and systemic nature of the changes brought about by the information society necessitate both the integration of all pertinent areas of action and the participation of all interested actors at local, regional, national and EU level.

Advancing cohesion through the regulatory process ...

10) Taking into account the dynamic and evolutive nature of universal service, which must be kept under continuous review, the Commission is due to report[15], for the first time, on the scope, quality, level and affordability of universal service by January 1st, 1998. It must also examine and report to the European Parliament and to the Council on the functioning of the Directive on the application of Open Network Provision (ONP) to voice telephony and on universal service before December 31st, 1999[16].

There is a broad recognition that universal service must respond to technological evolution and changes in the needs and expectations of Europe's citizens. In the future, in the context of the development of the concept of universal service or the development of public service obligations, different levels of minimum service could be imaginable, adapted to different user groups, such as SMEs, health centres or educational institutions. Access to more advanced services and subscriber connection to digital switch might pave the way towards ISDN provision.

Public and "community" access, involving the connection of schools, colleges, hospitals, public offices, libraries and other public access points may be of particular importance to LFRs where there may be a risk of delay in accessing advanced telecommunications services if left to market forces alone[17]. In that context, assessing periodically also the need for any reshaping of the concept of universal service and/or universal access at a European level will be part of the review exercise.

Indeed, if all the population is to share the benefits of the information society, then a consensus must be achieved around the shape universal service should take and the ways to pay for it.

Therefore, in order to aid the review process, the Commission urges and supports Member States and regions to continue in the course of 1997, and thereafter, a wide and structured consultation on universal service and on public access involving the general public, SMEs, community organisations, educational institutions and local communities. The outcome of that consultation will constitute a fundamental and necessary input for the future shape of universal service and to the mandate of National Regulatory Authorities in each Member country. In this way, the full transparency of the review process will be ensured[18].

Complementary to any evolution in the scope of universal service, developing public access as part of a demand stimulation strategy is an important element and will be further discussed under point 13.

11) Member States have a key responsibility in rapidly adapting the regulatory framework to the new competitive environment. The Commission recommends that they complete the liberalisation process as soon as possible. The slow pace of regulatory reform in some countries is likely to be counter-productive in terms of cohesion since uncertainty in the regulatory environment may well deter new investments. The licences awarded to telecommunications operators represent a powerful cohesion instrument which, taking into account the proportionality principle and the necessity of open and competitive markets in the European Union, could be explored in view of integrating coverage targets including less favoured regions. Competition policy plays an important role and the Commission will continue to ensure that recently liberalised markets and/or newly emerging markets are not foreclosed.

... *completing the network infrastructure* ...

12) The primary responsibility for the development and deployment of the information society rests in the hands of private business, telecom operators and service providers. Even within LFRs, investment in telecommunications infrastructure is potentially profitable in many sub-regions. The digitalisation of trunk lines and local exchanges and the extension of GSM, to take a few examples, are likely to be profitable from the very outset in the most densely populated urban areas.

Yet the investment gap in cohesion regions compared to the rest of the Union remains significant. In addition, in Objective 1 regions (and, more in general, in

poor/rural/peripheral areas) the cost of installing and operating new lines is often higher than in other areas and levels of GDP per capita tend to be lower. For example, the cost of digitalising the last 10% of the network in Greece, Ireland, Italy, Portugal and Spain has been estimated to be in the range of ECU 4 to 5 billion[19]. A truly universal digital network would thus require considerable extra investment. Furthermore, there may be a "time gap" concern which justifies public interventions, whereby support is meant to anticipate the diffusion of a given infrastructure or service (as the STAR Programme has amply demonstrated). As acknowledged in the First Report on economic and social cohesion, the cohesion countries may require accompanying measures to help accelerate the development of networks under a liberalisation regime.

The Commission invites Member States and the regions concerned to carefully assess investment decisions (also in the framework of the current ERDF programming period), identifying the link between investment and regional performance, and to target investment on projects that optimise the contribution to cohesion and on areas where investment would not otherwise be forthcoming under market conditions. In the context of EU structural policies, the Commission, in partnership with Member States, will strictly evaluate where and when there is a strong case for public support for telecommunications investment in line with the competition rules.

... *and stimulating demand*

13) The role of policy action for demand stimulation as a means to speed up and smoothen the transition to the information society has been emphasised, for example, by the Competitiveness Advisory Group[20] and has been widely acknowledged[21].

Assessing real need and demand, as part of the exercise to review the scope of universal service, is particularly complicated in the information society because services may require more up-front resources, acting as barriers for many potential users, who cannot experiment the new services to determine their utility[22]. Supporting the direct access of the public to new information services in institutions such as schools, public libraries and local development centres can provide a cost-effective solution[23]. In these circumstances, the general public would be given access that would otherwise be denied them, but at a tiny fraction of the cost of providing the service to every home; training and support can be offered in a cost-effective form; and the utility and popularity of different services can be tested. The feasibility of using the Structural Funds to provide assistance for such schemes will be explored.

14) Currently, regional ICT programmes often lack the adequate measures complementary to the development of new advanced infrastructures and applications. Initiatives need to be taken to integrate ICT programmes with ICT training and awareness schemes, regional structural economic support, project seed money and risk capital for users[24].

Also, LFRs are often characterised by traditional organisational structures and lack of intermediary institutions, resulting in many cases in the inability of decision-makers to formulate relevant information society objectives and to implement effective plans. Initiatives should be launched to offer training courses for the development of organisational and managerial skills and to support the dissemination of such skills in the region[25]. In addition, stimulating co-operation between enterprises and between

companies and knowledge resource centres seems an effective way to mobilise demand for new services and applications.

Finally, lack of experience in using ICTs represents a barrier to the participation of some LFRs in the information society. Effective use of advanced ICT applications requires computer literacy, availability of appropriate supporting and maintenance services, and language skills - to mention but a few. Therefore, initiatives are necessary to reinforce educational programmes on ICTs, to support the ability to develop distance working relations, to promote awareness campaigns and training and re-training schemes in communication and information inquiry[26].

15) The information society is a dynamic concept. As the IRISI initiatives have demonstrated, it is likely to take different forms in different contexts depending on the structure of local productive systems, local institutions, and the demand expressed by the population. For this reasons, the Commission has no ready-made solutions; it does, however, have a methodology to propose and the instruments to accompany it. The point of departure is the recognition that the regional level is the most appropriate for identifying the opportunities offered to it by the information society. Only an approach based on consensus, partnership and dialogue among users and ICT providers within the regional context can make the information society a reality adapted to the needs of people and firms rather than a celebration of technology. This bottom-up approach mirrors the approach of the territorial employment pacts as launched by the European Confidence Pact for employment and supports the role of small and medium-sized enterprises as the driving force for regional development and employment creation. It should contribute to realising the potentially powerful role of the information society in building European awareness of indigenous regional potential, identifying and encouraging expanded cross-border trading possibilities and economic opportunities.

The regions involved in the IRISI and RISI initiatives exemplify this approach. Mainstreaming these types of actions through the use of the Structural Funds in close co-ordination with other financing mechanisms available at the EU level, in particular projects within the framework of the Information Society Action Plan, will be one of the priorities[27].

The Commission will carry out an in-depth assessment of the information society content of the new Obj.2 programmes and of Obj.1 programmes, both before and after the review due by mid-1997. This analysis will assist the Commission, Member States and regions to identify opportunities for supporting information society activities within existing programmes and to define their priorities for the future.

Already, the Commission has recently issued guidelines for programmes in Obj.2 regions for the programming period 1996-99 which affirm that the emphasis "*should be on practical IT applications and services proven to be effective for employment and business creation and retention*" with particular attention to awareness and training actions. With the same spirit, the Commission is preparing the new guidelines for Obj.1 regions whose programmes are due for revision in mid-1997. Within the margins available, Obj.1, 5(b) and 6 regions and Member states are invited to explore how to increase the number of actions related to the information society.

Further to operations in Obj. 1 and 2 regions, the Commission intends to harness the possibilities offered by operations in Obj. 3 and 4 to support the provision of information society skills training in favour of those unemployed and those at risk of being unemployed. In particular, the development of preventive approaches in enterprises, and facilitating the introduction and adaptation to new forms of work organisation combined with training and retraining of workers, is seen as essential in the process of transition to the information society.

16) The participation of actors from LFRs in the 4th Framework Programme already provides a basis for the take-up and diffusion of results, applications and best practices. The preparation of the 5th Framework Programme for RTD provides a further opportunity for better integrating the cohesion dimension in RTD policy and responding to users' needs, particularly in the area of the information society. The guidelines proposed by the Commission[28] identify the creation of a "user-friendly information society" as one of the priorities of the 5th Framework Programme. In order to improve the complementarity with structural policies, the active participation of regions in the implementation phase will need to be promoted.

CONCLUSIONS

17) Information is increasingly recognised as a key resource on which the world economy depends. Progress in ICTs has the potential to reduce the economic significance of distance, potentially affording firms and households with access to vital information independent of their location. By uniting traditionally separate sectors (i.e. telecommunications, computers and media) it has created vast possibilities for the emergence of new activities, services and jobs. Yet, the capacity to access and effectively use the information society is unevenly distributed across European regions.

18) Aiming at reducing these disparities and improving economic and social cohesion, this Communication attempts to lay down some key working principles in the area of regulation, infrastructure investment and demand stimulation.

- Member states should ensure appropriate development of their regulatory framework. In particular they should:

  ⇒ continue the debate on the scope of universal service and on the concept of public access in the information society in order to contribute towards the future development of the regulatory framework involving individuals, SMEs, community organisations, educational institutions, regions and local communities;

  ⇒ provide for early completion of the liberalisation process;

  ⇒ explore licensing regimes with a view of integrating coverage targets including less favoured regions, taking account of the proportionality

principle and the development of open and competitive markets throughout the European Union.

- **It is recommended that Member states should:**

  ⇒ **give priority to the completion and upgrading of the telecom networks, identifying the link between investment and regional performance. Given the existing budgetary constraints, support should be targeted on telecommunication infrastructure investments that optimise the contribution to economic and social cohesion and which do not distort competition in the new environment;**

  ⇒ **adopt a strategic and integrated approach to the information society in partnership with regional and local authorities, social partners, infrastructure and service providers and other relevant actors;**

  ⇒ **establish public/private partnerships, where necessary, so as to involve the private sector thus ensuring the selection of suitable projects, their effective implementation and their long-term economic sustainability.**

  ⇒ **launch a range of initiatives (including within the framework of the Structural Funds) in the areas of education, training and work organisation as already proposed in the Commission action plan "Learning in the information society" and the Green Paper "Living and working in the information society - People first". Increasingly, efforts must concentrate on education and training;**

- **The Commission intends to:**

  ⇒ **take into account the results of the consultation carried out at the Member state level (see above) when developing further its policy on universal service in the context of its legislative initiative and in view, particularly, of the report on the Directive on the application of ONP to voice telephony and on universal service due by 31 December 1999;**

  ⇒ **increase the coherence of its actions in the field of the information society; in particular, in the relation between the 4th Framework Programme for RTD and the Structural Funds. It will also intensify its efforts for mobilisation and awareness raising and ensure that the needs of users continue to be truly represented in the 5th Framework Programme for RTD;**

  ⇒ **prepare for spring 1997 a communication describing the set of actions to be undertaken as a follow-up to the consultation and debate process on the Green paper "Living and working in the Information Society". This will develop a focused "People first" approach to social policy in the information society that responds to the demand for practically oriented activities;**

  ⇒ **grant technical assistance to Member States and regions for promoting new ICTs including electronic commerce; and increase, in the framework of its**

enterprise policy, the access of SMEs to the opportunities granted by the information society, both considering their specific needs and reinforcing the information efforts as regards these opportunities;

⇒ accompany and continuously support the actions of Member states and regions in the framework of the Structural Funds, in particular, in order to devise integrated and strategic approaches to the information society, to enhance regional capacity building at all levels. The Commission will also carry out an in-depth assessment of the information society content of Obj.1 and Obj.2 programmes; highlight the importance of the information society in the new guidelines for Obj.1 regions and harness the possibilities offered in the framework of Objectives 3 and 4 and ADAPT-BIS.

STATISTICAL ANNEX

GENERAL TELECOMMUNICATION/INFORMATION SOCIETY INDICATORS[29]

1.1 Access indicators

The first prerequisite for active participation in the information society is for firms and households to have ready access to the underlying networks and devices. Though converging in many aspects, significant geographical variations remain in the European Union in terms of the time a subscriber may have to wait for the installation of a line; the quality of the service on that line and the range of services which that line can support.

NETWORK OR SERVICE	CORE AVERAGE[i]	COHESION AVERAGE	COHESION DIVERGENCE (%)
PSTN			
- Faults per 100 Main Lines '94	11,3	32,6	*+ 188.0*
- Digital lines (%) '94	71,2	60,6	*- 15,0*
ISDN (Primary Rate)			
- Geographic coverage 1994	85,0	32,3[ii]	*- 62,0*
- Projected Coverage 1996	100,0	80,0	*- 20,0*
Public On-line services			
- CompuServe nodes per 1M '95	0,54	0,05	*- 91,0*
- Dial-up numbers per 1M '95	1,94	0,36	*- 81,0*

[i] The European core, as defined in the NEXUS study, includes all EU Member states except the cohesion countries (Ireland, Greece, Spain and Portugal) and the cohesion regions in Italy.

[ii] At the end of 1995, the Spanish Operator Telefonica claimed a full geographical coverage either directly from an ISDN exchange or by using remote links. Similarly, Portugal Telecom declared a virtually 100% coverage (including Atlantic islands like Madeira). The installation time is typically 4 weeks, in many areas it is much shorter, but in remote regions operations take up to 8 weeks.

For example, in 1995, the actual time for being connected to the network amounts to 20 working days in the German Western Länder, to 8 working days in the UK and in France compared to 80 days in Greece.

Similarly, the quality and reliability of Public Switched Telephone Networks (PSTN) lines vary quite considerably both between Member States and between different regions. In 1994, for example, Greece had on average 53.0 faults per 100 main telephone lines compared to an average of the European core of 11.3 faults (an almost fourfold difference).

A further indicator of accessibility relates to Integrated Service Digital Network (ISDN)[30] provision: almost 85% of the territory of the European core was covered by ISDN in 1994 against only 32.3% in the cohesion regions.

Another indicator for the different national and regional levels of access to the information society can be derived from the prevalence of commercial on-line services. In 1995, there were 180 dial-up numbers to on-line services (1 every 320.000 inhabitants) in the UK, 63 in Germany (1 every 1.150.000 inhabitants), 3 in Portugal (1 every 3.200.000 inhabitants) and 6 in Spain (1 every 6.600.000).

1.2 Affordability indicators

The physical accessibility of networks and services is a necessary but not sufficient condition: firms and households should be able to afford to use them. Again, important differences emerge between countries when tariff structures[31] are compared.

For example, in 1994, the cost of a residential subscription to the telephone (as a percentage of GDP) was two times more expensive in the cohesion regions (3 and 2,5 times so in Portugal and Ireland respectively).

SERVICE COST	CORE AVERAGE	COHESION AVERAGE	COHESION DIVERGENCE (%)
PSTN (ECUs)			
- Residential installation	107.5	142.4	*+32,46*
- Residential subscr. (bimonthly)	21.7	18.4	*-15,44*
- Local call (peak 5 minutes)	0.22	0.16	*-26,45*
Cellular Mobile costs (1994 US$)			
- Connection	64.6	83.8	*+ 29,7*
- Monthly subscription	42.7	29.6	*- 30,7*
- Local Call (3 minutes)	1.4	1.73	*+ 23.6*
Leased line tariffs			
- Connection (ECU)	502.2	396.6	*-21,0*
- Monthly Rental 50km (ECU)	353.0	429.0	*+21,4*
- Monthly Rental 250km (ECU)	844.0	829.0	*-1,8*

Moreover, the ongoing process of tariff rebalancing[32] tends to modify tariff structures in the sense of a faster increase of the residential component of fixed charges and of an absolute increase of local call charges and a decrease in the price of long-distance and international calls. According to an OECD study[33], between 1990 and 1994, the average monthly subscription for business users rose by 5.5% in real terms, and the average residential monthly subscription rose 15.5% in real terms. The same study indicates that between 1990 and 1994 local charges increased by 37.3%, while long-distance and international charges decreased by 24% and 25.5% respectively.

1.3 Uptake indicators

Affordable access, however, does not guarantee that people will use the services, and uptake indicators are also a central feature in any attempt to measure the cohesion gap and its implications. A common indicator used for measuring the uptake of basic telephony is the number of main lines per 100 inhabitants. In 1995, on average, there were 54.3 main lines for every 100 inhabitants in the core regions against 40.2 in the cohesion regions.

Though voice telephony represents the main form of communication for most firms and households, the advent of an information society presupposes an increasing use of other forms of electronic communication such as text, images and other forms of data. An indicator of the capacity of regions and countries to participate in the information society is, for example, the number of Internet hosts. On average, in 1995, there was 1 Internet host every 200 people in the core regions compared to 1 every 1300 in the cohesion regions.

UPTAKE OF USAGE INDICATOR	Core average	Cohesion Average	Cohesion Divergence (%)
Teledensity '95			
- Main lines per 100 inhabitants	54,3	40,2	*-26,0*
Mobile telephony '95			
- Cellular terminals per 100	9,1	3,7	*-59,4*
Cable television			
- % of cabled households '95	51,4	8,0	*-84,4*
- % of satellite households '95	13,8	4,4	*-68,1*
Data Communications			
- Packet switched subscrip. per k	1,5	1,3	*- 13,3*
- Videotex subscrip. per k	32,5	6,3	*- 80,6*
- ISDN subscrip. per k	2,4	0,2	*- 91,7*
Internet			
- Internet Hosts per 1000 ('95)	5,3	0,6	*- 88,7*

An additional indicator is the telecom investment per head of population: on average, the cohesion regions invested 40% less than the core regions in the telecommunication sector. Especially startling are the figures concerning the penetration of PCs, the indispensable tool for entering the information society: in 1995, there were 15.2 PCs per 100 population in the core regions against 3.1 in Greece, 8.6 in Spain, 6 in Portugal and 8.9 in Italy.

EXPLANATORY NOTES

[1] *"Without any doubt, new ICTs provide tremendous opportunities for new growth and employment creation; for a more efficient use of inputs [...]; for higher income and more broadly higher welfare; for more decentralised organisations forms [...]; for more consistent regional and urban development patterns; for individual enrichment as well as more democratic decision making. All of these opportunities for higher economic productivity growth crucially depend on congruence between the technological, economic and social dimensions."* CEC, **"Building the European Information Society for Us All - First reflection of the High Level Group of Expert"**, p. iii, Interim Report, January 1996.

[2] The study **"Effects on employment of the liberalisation of the telecommunication sector"**, undertaken on behalf of the Commission by BIPE Conseil, IFO and LENTIC in 1996, has examined the impact of the liberalisation of telecommunications under different scenarios of liberalisation and diffusion of technologies. All scenarios examined in the study suggest that the liberalisation of telecommunications should lead to an accelerated diffusion of telecommunications and price reductions. These should have indirect positive effects on the economy as a whole, largely offsetting the negative effects of the liberalisation of telecommunications on employment at public operators. In a scenario of rapid liberalisation and rapid technological diffusion there could be a net creation or maintenance of 1.3 million jobs throughout Europe by 2005, of which 93.000 jobs will be in the telecommunications sector itself. The latter figure is explained by the fact that the employment creation induced by liberalisation in new telecom service providers, equipment manufacturers, distributors of telecom equipment and direct suppliers of operators will more than offset the losses for the traditional telecom operators.

[3] *"It is essential and urgent for companies and organisations of all sizes to adapt their organisations and structures. Until this process is well underway, the Information Society looks likely to destroy more jobs than it creates."* **"Networks for People and their Communities - Making the Most of the Information Society in the European Union"**, Information Society Forum, First Annual Report, Executive summary, 1996.

[4] See, for a comprehensive debate on these aspects, the Green Paper **"Living and working in the information society: people first"**, CEC July 1996. The social cohesion aspects of the information society will be further developed in the forthcoming action plan that the Commission is preparing as a follow-up to the Green Paper.

[5] *"Because of their social and industrial composition, effective use varies widely across different types of regions. [...]. The geographical gradient of demand declines more or less smoothly outward from the central business districts of so-called world cities, rising here and there where there are concentrations of business users and falling away more rapidly in sparsely settled or particularly poor regions. [...]. At the same time, and no less importantly, there is also a characteristic geography to the cost of providing telecommunications services which, in general, inverts the pattern of effective demand. On this side of the equation, costs are generally lower in areas which are more densely settled [...]."* NEXUS et al. **"An assessment of the social and economic cohesion aspects of the development of the Information Society in Europe"**, January 1996, Vol.IV, p.9. The Commission has fully recognised this problem by elaborating a range of policy and regulatory documents defining the place of universal service in its telecommunication policy. See, for example, the Directive 90/388/EEC on the "Implementation of full competition in telecommunications markets" (OJ 22/3/96) which define universal service principles and explains how the net cost of universal service shall be shared and, more recently, COM(96)608 of 27 November 1996 on the "Criteria for the assessment of national schemes for the costing and financing of universal service and guidelines for the operation of such schemes". Moreover, COM(96)73 of 13 March 1996 on "Universal service for telecommunications in the perspective of a fully liberalised environment" provides the definition, scope, and revision mechanisms for universal service highlighting its dynamic and evolutive character.

[6] The British experience, however, suggests some caution. *"In the United Kingdom, which has one of the most liberal telecommunications regimes in the EU, the landscape of telecommunications provision is highly differentiated. In the City of London, firms are confronted with a host of competing suppliers and the most advanced services. In the central business districts of other major cities, and on business parks and other concentrations of business activities, firms have a range of potential suppliers and access to most advanced services. In the remaining urban areas firms have a more restricted choice of supplier, with direct connections only usually available from the former PTT and, where infrastructures have been built, from the local cable operator. In many small towns and rural areas customers are confronted with a de facto monopoly supplier in the former PTT. Indeed, in a number of areas, mainly rural, customers do not even have direct access to digital exchanges capable of providing services as basic rate ISDN."* See "**Regional Development in the Information Society: A Review of Analysis**", p. 23, CURDS 1996, paper prepared for the European High Level Expert Group on the Social and Societal Aspects of the Information Society. In this respect, the Commission intends to examine existing experiences of liberalisation (e.g. UK, USA, Finland, Sweden and New Zealand).

[7] CEC internal working document, **"Telecommunications, Postal and RTD aspects of structural interventions plans for 1994-1999"**, Brussels 1996. The cross-sector and pervasive character of the information society on the one hand; the nature of the Structural Funds programming procedure, the different approaches of Member States in structuring their plans, and their different timetables on the other; call for caution in interpreting and using the figures derived from this analysis. Information society related expenditures are often extrapolated from aggregate figures which are associated with other domains such as industry and R&D. Nevertheless, they provide a good idea of the importance of the information society in Member States' policy agendas.

[8] For example, Sweden and Finland do have a comprehensive approach to the information society. These two countries not only allocate a bigger chunk of the available funds to information society-related measures but also concentrate their efforts on improving the conditions of the demand, e.g. by improving the information society-related skills of the workforce, providing schools with the necessary connections, and developing appropriate services and applications. From the outset, the strategy of the Swedish single programming document (SPD) for Obj.6 identifies one of the horizontal criteria for assessing the quality of specific actions as "*making the best use of information technology in all areas of socio-economic activity*". Thus, a central characteristic of the information society - its cross-sectoral, pervasive nature - is immediately recognised. Then, "*the increased use of information technology applications and the acquisition of information technology skills and expertise*" is set as one of the general targets of the SPD paving the way for creating new jobs, the central objective of the Swedish plan. Moreover, the information society appears as a key element for developing all the five priorities set in the SPD and is recognised as a key tool in virtually all sub-themes.

[9] The Special Telecommunications Action for Regional Development (STAR) provided, between 1987 and 1991, 780 million ECUs of funding from the European Regional Development Funds (ERDF) in order to *"break the cycle by which demand for advanced telecommunications services (ATS) is too low to justify supply on commercial grounds, in which case lack of awareness of the benefits of ATS depresses demand still further"* in the LFRs of seven Member States. Although the STAR programme included measures to stimulate demand (e.g., the development and promotion of databases and videotext services for SMEs), 80% of the budget was spent on improving infrastructures with the main thrust being towards network digitalisation, public data networks and cellular mobile. The programme was successful in bringing forward the investment plans of the public telecom operators, including accelerating network digitalisation in Greece by two years and bringing forward the launch of the cellular radio network in Portugal, again by two years. See Ewbank Preece Ltd, "**STAR - Community level evaluation**", Final report, Executive summary, CEC, 1993.

[10] The TELEMATIQUE programme, which took over from STAR in 1991 with a budget of about 233 million ECUs, sought to step up the introduction and use of advanced telecommunications services, especially data services, within SMEs and national administrations. The approach was at once distinct from and complementary to STAR, involving stimulation of demand for practical

applications in various sectors of activity so as to promote the development of one or more regions. A parallel aim was to enable these regions to benefit from the services opened up to competition by Community law. Thus, the TELEMATIQUE programme reflected a new priority for Community measures favouring applications and the telematics services capable of supporting them.

[11] ESF interventions through the different Objectives intended to support human resources development directly related to the information society have been roughly estimated to amount to 4 MECUs for the 1994-99 programming period.

[12] The Commission is already co-financing some actions, e.g. for setting up tele-cottages in rural areas, under Objectives 1, 5(b) and 6, and local telematics projects under the Community Initiative LEADER II. For example, under a 5(b) programme in Finland, the South-West and the Archipelago region of Finland has a project to develop a network to promote tele-working and training in telematics. Clearly, there are many other Community actions related to the information society. For example, stimulating the use of electronic commerce among SMEs in LFRs was the task of the WOLF pilot projects. Seven regions collaborate with the Commission to identify the social, economic and technical factors affecting the deployment of telecommunication services in disadvantaged regions. WOLF, with a budget of 530 000 ECUs, is financed under the Article 10 of the ERDF. Other examples are represented by the IMPLACE initiative to stimulate the use of advanced ICTs by manufacturing SMEs in LFRs and the MARSOURCE initiative to favour the use of electronic trade systems for fishery products thereby contributing to overcome the disadvantages of remote areas.

[13] The innovative aspect of the IRISI approach rests on the institutional mechanisms by which the strategy has been developed, i.e. a partnership between regional and local institutions and the business associations plus representatives from training and education institutions, trade unions, chambers of commerce, the co-operative movement and the voluntary sector. The six participating regions - Saxony (D), Northwest England (UK), Nord-Pas de Calais (F), Piemonte (I), Valencia (E) and Central Makedonia (EL) - had to outline a strategy for the information society by analysing the base-line situation and assessing the opportunities for building the information society, through a concerted effort bringing together all the relevant regional actors.

[14] With a budget of 6 million ECUs, the RISI1 projects concerns 23 regions across Europe. This means that, overall, nearly 25% of all eligible regions under the Structural Funds are currently engaged in this process of strategy building and of its translation into an action plan. Moreover, the Commission is planning to launch 10 pluri-regional pilot applications under Art.10 of the ERDF and Art.6 of the ESF, with a budget of 15 million ECUs, for demonstrating best practice in the regional deployment of the information society (RISI2).

[15] See COM(96)73 of 13 March 1996 on **"Universal service for telecommunications in the perspective of a fully liberalised environment"**.

[16] See COM(96)419 of 11 September 1996, proposal for a European Parliament and Council Directive on the **"Application of open network provision (ONP) to voice telephony, and on universal service for telecommunications in a competitive environment"** (replacing European Parliament and Council Directive 95/62/EC).

[17] See the section on "Public access to information society services" of COM(96)73 of 13 March 1996 on "Universal service for telecommunications in the perspective of a fully liberalised environment", section IV, p.19.

[18] "*The way we develop the information society, the most fundamental change of our time, must reflect the ideas and values upon which the European Union is shaped. These ideas and values should be transparent in order to gain and deserve the broad support of European citizens*" in **"Living and working in the information society: people first"**, Green Paper, Executive summary, July 1996. Furthermore, any evolution of universal service must also be consistent with the general approach to general interest services in Europe. See, in particular, COM(96)443 final of 11 September 1996 on "General interest service in Europe".

[19] See NEXUS et al., vol.II, pp.20-21.

[20] See the **First Report of the Advisory Group on Competitiveness**, June 1995, p.17.

[21] See, among other, the recently-published **First Report on Economic and Social Cohesion** (CEC, November 1996), chapter 4, pp.78-81.

[22] Insufficient income and consumption capacity may indeed constitute important barriers. The 1995 US Department of Commerce's Survey "Falling through the net: a survey of the have nots of rural and urban America", shows a clear positive correlation between the level of income of households and the availability of a computer at home: between 4.5 and 8.1% of the households in the lowest income bracket (less than 10 000 US$) have a computer at home, whereas between 59.6 and 64.4% of the households in the upper bracket (75 000 US$ or more) have one. Similar data are not available for the Community.

[23] See COM(96)73 of 13 March 1996. This view is supported, among others, by the Information Society Forum which indicates the "*creation of local access points at public libraries, schools and other community meeting places*" as a way to minimise the dangers of a two-tier society. In addition, it is worthwhile to mention here the High Level Expert Group which, in its interim report, stresses the need to investigate the notion of "universal community services", extending universal service provision to incorporate a basic level of access to new information service, but limited in scope to educational, cultural, medical, social or economic institutions in local communities. Similarly, the First Report on Economic and Social Cohesion indicates the provision of "*broader access to the Information Society to, for example, schools, hospitals and libraries*" an option to be considered by policy-makers.

[24] It is also necessary to encourage the implementation of ICTs by public administration (i.e. the IDA programme at Community level) which can have a catalyst effect for the region and trigger many private sector initiatives.

[25] See the Green Paper "**Living and working in the information society: people first**", CEC July 1996.

[26] See for a comprehensive approach to the question of education and training in the information society the Commission Action Plan "**Learning in the information society**" COM(96)471 of September 1996.

[27] It is, for example, already co-financing training in telematics applications, for setting up tele-cottages in rural areas under Obj.1, 5(b) and 6, and local telematics projects under the Community Initiative LEADER II.

[28] See COM(96)332 final of 10 July 1996 on "**Inventing tomorrow - Europe's research at the service of its people**" and COM(96)595 final of 20 November 1996 on "**Additional elements to the guidelines for the 5th Community RTD Framework Programme".**

[29] Some data can be found in the study "**An assessment of the social and economic cohesion aspects of the development of the Information Society in Europe**" prepared by NEXUS et al. for the Commission and concluded in December 1995. Although an attempt has been made in this annex to provide more updated data, some caution is warranted because the evolution in the telecommunication sector is very fast. The reader must be aware that the evolution of information society in the less favoured regions is far from being a linear, statistically predictable phenomena. For example, the number of mobile subscribers in Spain grew from 230.000 to more than a million during 1996; ISDN coverage in cohesion countries evolved from nil to almost full coverage during the last three years; and more that 500.000 Internet users at the end of 1996 could be spotted in Spain by the end of 1996, while usage of Internet there was almost anecdotal a few years ago. Moreover, current developments on digital satellite broadcasting (DSB) are likely to offer an alternative to cable TV thus helping LFRs to catch up in this area.

[30] ISDN is an acronym describing the provision of a wide range of existing and new telecommunications services over digital network. ISDN removes barriers between speech, data, text and video services, integrating them into a single digital telecommunications network. ISDN provides significant benefits to the customers in terms of availability of services and usage flexibility.

[31] The term "tariff structure" defines the balance between fixed (installation and subscription) and usage (call) charges in the customer's total bill.

[32] The process known as "tariff rebalancing" is intended to bring the costs of providing each tariffed service into balance with the prices charged.

[33] Y.Kato and S. Paltridge, "**Telecom tariffs and the move to markets**", The OECD Observer, No.191, December 1994/January 1995.

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