COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 13.11.2007
SEC(2007) 1472

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying document to the

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL

amending European Parliament and Council Directives 2002/19/EC, 2002/20/EC and 202/21/EC

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL

amending European Parliament and Council Directives 2002/22/EC and 2002/58/EC

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND THE COUNCIL

establishing the European Electronic Communications Markets Authority

{COM(2007) 697 final}
{COM(2007) 698 final}
{COM(2007) 699 final}
{SEC(2007) 1473}

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Commission Agenda planning number: 2007/INFSO/001

I INTRODUCTION AND OVERVIEW

1. THE REVIEW OF THE REGULATORY FRAMEWORK FOR ELECTRONIC COMMUNICATIONS

Background

The EU's regulatory framework for electronic communications networks and services (eCommunications) was adopted by the European Parliament and Council in 2002 and became applicable in Member States in 2003. The framework provides a common set of rules for all communications that are transmitted electronically, whether wireless or fixed, data or voice, Internet-based or circuit switched, broadcast or personal[1]. It comprises five Directives: the Framework Directive (2002/21/EC), the Access Directive (2002/19/EC), the Authorisation Directive (2002/22/EC), the Universal Service Directive (2002/22/EC) and e-Privacy Directive (2002/58/EC)[2].

In 2006, the Commission undertook a review of the framework, and this has culminated in the current proposals for its revision. This impact assessment explores alternative policy options that have been considered as part of this review, and analyses the impact of the Commission's legislative proposals.

The current report builds upon the analysis undertaken in the first impact assessment[3] on the Commission's Communication of 29 June 2006[4], which outlined the main proposals for changes in the five Directives of the framework. That Communication and its associated documents were subject to a public consultation that ran from June to October 2006. The consultation also covered a proposed revision[5] of the 2003 Commission Recommendation on relevant markets, which is a supplementary measure defining those markets where economic *ex ante* regulation may be justified in the sector[6].

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1 Regulation of commercial content services - such as Information Society Services (e.g. electronic commerce) and broadcasting - that may be offered over transmission infrastructures are covered by other Community instruments (e.g. the e-Commerce Directive 2000/31/EC and the TV Without Frontiers Directive 89/552/EEC).

2 OJ L 108, 24.4.2002, p. 7; OJ L 108, 24.4.2002, p. 21; OJ L 108, 24.4.2002, p.33; OJ L 108, 24.4.2002, p. 51; and OJ L 201, 31.07.2002, p. 37 respectively. Transposition of the framework into the national law in the EU25 was completed in 2006 with the adoption of primary legislation by Greece. The two new Member States have also notified primary legislation, which in the case of Romania relates to the entire framework and in the case of Bulgaria covers a part. Alongside these Directives are several complementary measures. See overview of the framework in Annex 1 of the Impact Assessment Report SEC(2006) 817: http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/index_en.htm#communication_review

3 SEC(2006) 817.

4 COM(2006) 334. The Communication and associated documents can be found at: http://ec.europa.eu/information_society/policy/ecomm/tomorrow/index_en.htm

5 SEC(2006) 837.

6 C(2003) 497, OJ L 114, 8.5.2003, p. 45.

Purpose of the Review

The purpose of the review was to examine:

– How well the regulatory framework had achieved its objectives, namely promoting competition, contributing to the development of the internal market, and promoting the interests of citizens;

– How the framework could be changed in the light of technological and market developments[7] so that it continues to meet the needs of the sector and consumers over the coming decade.

The review also took into account policy developments that had taken place since the framework was adopted that needed to be incorporated into the EU legal framework.

The population affected by the proposed changes are business, society, government departments, institutions and every consumer and citizen in Europe, since all are users of electronic communications. In particular, the key players who will be affected by the review proposal are:

– Operators, service providers, broadcasters and others who may be directly affected by changes to the framework. This is not a homogeneous group: its members may often have conflicting interests; and

– National regulatory authorities, who have responsibility for applying EU rules at the national level.

Assessment at two stages

The first, initial impact assessment report of June 2006 aimed "*to inform stakeholder debate on the main issues and options, and their implications, in a form accessible to a broad public and decision-making constituency*." To this end it identified broad policy options for the main issues considered under the review, and provided a preliminary, mostly qualitative set of impacts of the different policy options.

The current impact assessment report deepens and refines the previous analysis, drawing particularly upon the stakeholder inputs and empirical evidence, i.e. studies and surveys conducted by external consultants and the Commission as well as market trend and economic data, which have become available since the first impact assessment was published. This consultation and discussion process has allowed the current report to focus on a more specific set of options covering the key areas.

Areas of analysis – options and impacts

Although, the legislative proposals taken as a whole comprise around 150 changes, many are quite minor updates of the provisions or repeals of obsolete provisions. Thus, this assessment report concentrates on the changes that have the most far-reaching effects (which are largely economic).

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[7] See Annex 3 of the Impact Assessment of June 2006 (SEC(2006) 817) on technological and market evolution, see URL in footnote 2.

Even by concentrating the evaluation on the main issues, the breadth and complexity of the issues under review is too great for a single set of evaluation options covering the whole package to address the issues at stake in sufficient depth. The report is therefore divided into five main areas of analysis (Chapters 5 to 9) each with its own set of options and impact analysis. These chapters fall under three broad themes: 'Better regulation', 'Completing the single market' and 'Connecting with citizens', which are reflected in the two proposed Directives amending the current set of Directives[8] and a proposal for a regulation creating a European Communications Authority.

In more detail the structure is as follows:

- Part II addresses 'Better regulation' in the context of *ex ante* regulation, competition and investment (Chapter 5), and better management of radio frequency spectrum in the EU (Chapter 6).

- Part III addresses 'Completing the single market in eCommunications' to create an internal market for consumers and businesses though a more effective regulatory model (Chapter 7).

- Part IV addresses the theme of 'Connecting with citizens', and assesses the impact of the changes to strengthen users' rights and consumer protection (Chapter 8), and those dealing with privacy and security (Chapter 9).

The proposals however do also constitute a single regulatory package; thus, whilst each option has to be examined on its own merits, some combinations of measures create important synergies. These synergies are further described in Part V – Overall Impacts.

Alongside its legislative proposals, the Commission is updating the Recommendation on Relevant Markets that defines which markets are susceptible to ex-ante regulation. This Recommendation provides a flexible tool to roll-back ex-ante regulation in areas where competition has successful been established. The evaluation has therefore examined the scope for reducing substantially the number of markets (see Chapter 4) and also the options of restricting, or even entirely removing *ex ante* regulation (Chapter 5).

The report also contains an annex on the administrative costs following the model of the Commission Impact Assessment Guidelines (Annex II).

Impact assessment steering group

In view of the broad scope and the cross-cutting nature of the subject matter at hand, an inter-service steering group of the Commission services was established for the impact assessment, which met eight times in 2006-2007[9].

Opinion of the Impact Assessment Board

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8 One Directive amending the Framework, Authorisation and Access Directives, and the other Directive amending the Universal Service and Users' Rights and ePrivacy Directives.

9 The following Commission services were invited to participate: Secretary-General; Legal Service; Competition; Economic and Financial Affairs; Education and Culture; Employment and Social Affairs; Energy and Transport; Enlargement; Enterprise and Industry; Health and Consumer Protection; Informatics; Internal Market; Justice, Freedom and Security; Regional Policy; Trade; Research; and Eurostat.

In its opinion of 26 July 2007, the Impact Assessment Board recommended the following improvements to the draft document:

– 'The IA report needs to explain better the changes in the regulatory environment that the new initiative is to bring. In particular, changes to Commission powers, and/or changes to procedures regarding Commission instruments in the field of privacy and security need to be clarified. Similarly, changes to the current functioning of the national regulatory authorities regarding the infrastructure (section 5 and 7) and the spectrum management (section 6 and 7) could be better explained.

– The relation between the actions proposed in the 5 main problem areas needs to be clarified. Should there be no trade-offs or synergies between them, it must be explained why they are bundled together in one impact assessment report.

– Environmental impacts should be better analysed. Whereas it might not be feasible to assess in detail environmental impacts for all policy options, their analysis should be improved. Discussion about consequences for waste generation and energy consumption on the one hand and replacing transport and travel with e-communication services on the other hand needs to be added to the IA report.

– The simplification resulting from proposed changes requires further clarification. Some of the elements (such as disclosure of security breaches) seem to create additional obligations for operators, whereas others (decrease in the number of markets) seem to aim at their reduction. Since the initiative is part of Simplification Rolling Programme, overall simplification effects need to be made more explicit. The report should state more clearly whether an assessment of the impact on the administrative burden will be carried out at a later stage, during the implementation process.

– The impacts of the various options (in the relevant sections) should be compared to the respective baseline scenario(s), in line with the IA guidelines. Therefore, the baseline scenarios in the comparison tables should not be marked with impact qualifiers (+/-); but only indicate the effect of the proposed changes with the baseline scenario as benchmark.

– A separate ex-ante evaluation of the European Authority needs to be carried out.

In response to these comments, the analysis of options and impacts has been further improved and substantiated with the requested elements. Part V now includes a detailed description of the synergies and links between the five main areas of analysis, more detailed analysis of the environmental impacts as well as an analysis of the key simplification elements of the initiative. As regards the administrative burden related to mandatory breach disclosure, Annex II provides further explanation why quantified measurement is not provided at this stage. Further assessment will be provided at the implementation stage. A summary of the ex-ante evaluation of the European Regulatory Authority satisfying the minimum requirements of the Financial Regulation is included in Annex III. Finally, the impacts of options in each area of analysis are now compared to the “no change” scenarios, which are used as a baseline for this comparison.

2. CONSULTATION AND EXPERTISE

The Commission's review proposals draw upon an extensive consultation process that was launched by a public call for inputs in November 2005, which resulted in over 150 written submissions and a public hearing of over 440 participants in January 2006. This was followed by several discussions with Member States and regulatory authorities[10] prior to the adoption of the Communication of June 2006 presenting the Commission's initial proposals.

At the second stage of the review, the Commission undertook another set of consultation activities:

– A public consultation that ran four months between June and October 2006. A total of 315 responses in eleven different languages were received from a broad range of stakeholders: Member States, regulators, network operators and service providers, broadcasters, users and consumers. 220 of the submissions concerned the regulatory review of the five directives, and 95 the consultation on the draft Recommendation on relevant markets[11];

– A public workshop was held on 13 July 2006 in which the Commission services presented the initial proposals for the review and responded to questions;

– A public workshop was also held on 10 October 2006 for all interested stakeholders to provide their comments to the Commission. Both of these workshops attracted several hundred participants. A number of national authorities also consulted/discussed with the stakeholders on the review at national level before submitting their response to the Commission's consultation;

– Discussions with Member States in High Level meetings with ministries in September 2005 and in March and November 2006, and June 2007, and in the Communications Committee and the Radio Spectrum Committee; and

– Discussions with the national regulatory authorities and the European Regulators Group (ERG).

In general, the results of the public consultation showed stakeholder views along the lines already expressed in the call for input launched in November 2006. The responses gave overall support for the regulatory approach to this sector, i.e. *ex ante,* market based and technologically neutral. There was moreover general support for most of the changes put forward by the Commission. These stakeholder views have been taken into account in the Commission's final legislative proposals and in this impact assessment.

The major sources of information for this impact assessment are the annual Commission Reports on Implementation of the Regulatory Package in general[12], and on the market reviews

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10 For more details on these consultation activities, see Chapter 3 of the impact assessment SEC(2006) 817, see URL in footnote 2.

11 Submissions - except where confidentiality was requested - are available at: http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/index_en.htm#communication_review

12 The latest report is the 12th Implementation Report on European Electronic Communications Regulation and Markets 2006, COM(2007) 155, available at: http://ec.europa.e/information_society/policy/ecomm/implementation_enforcement/index_en.htm.

("Article 7 procedure") in particular[13]; as well as studies and surveys commissioned from the external consultants for the review[14]. The current report has particularly benefited from a study the Commission commissioned on the issues relating to spectrum management[15]. In addition, the Commission conducted a questionnaire on administrative costs among the national regulatory authorities and markets players, the results of which are given in this document.

3. THE MAIN OBJECTIVES IN THE CONTEXT OF THE I2010 INITIATIVE

The Commission's i2010 initiative[16] stresses the crucial role of information and communication technologies (ICT) in achieving the growth and jobs objectives of the renewed Lisbon strategy. In the area of eCommunications, the i2010 initiative aims to create a Single European Information Space by 2010 that offers affordable and secure high bandwidth communications, rich and diverse content and digital services.

These objectives are underpinned by the current EU's electronic communications regulatory framework, which is designed to drive competition in the market, bringing investment and innovation, with choice, quality and lower prices for the consumer. This review has, accordingly, aimed at enhancing the ability of the framework to deliver on its objectives and supporting the i2010 policy, by proposing adaptations that build on experience to date and anticipate future market and technological changes.

A major aspect of the IA is therefore to assess the extent to which the main objectives of the regulatory framework had been met, i.e.:

1) to create an open and competitive single market for electronic communications services and networks in Europe, and thereby

2) to encourage innovation in communications networks and services, by both new entrants and existing operators, for the benefit of European businesses and citizens.

More specific objectives of the review are to examine:

– the impact of the regulatory framework on investment and growth;

– the scope for more efficient and flexible spectrum management in the EU;

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13 Communications on Market Reviews under the EU Regulatory Framework - Consolidating the internal market for electronic communications, COM(2006) 28 and COM(2007) 401, available at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/article_7/index_en.htm

14 *Preparing the next steps of eCommunications - a contribution to the Review of the eCommunications regulatory framework*, Hogan & Hartson LLP and Analysys Consulting, 2006; *An assessment of the regulatory framework for electronic communications – growth and investment in the EU eCommunications sector*, London Economics and PricewaterhouseCoopers, 2006; Report for a Cost Benefit Analysis of Options of Better Functioning of the Internal Marker in Electronic Communications, *Cost-Benefit Analysis of Option for Better Functioning of the Internal Market in Electronic Communications*, the European Evaluation Consortium – Economisti Associati Srl, 2007; and Eurobarometer Special – eCommunications household surveys 2006 and 2007, available at: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

15 *Benchmarking Impacts of EU Policy Options for Economically Efficient Management of Radio Spectrum*, SFC Associates, 2006.

16 COM(2005) 229.

– the possibilities to increase the consistency of regulatory actions in line with the i2010 objective to create a single e-communications market in Europe;

– ways to reduce red-tape and administrative costs associated with market reviews;

– the reinforcement of user rights and consumers protection; and

– ways to improve network security.

4. SETTING THE SCENE - THE E-COMMUNICATIONS MARKET IN THE EU

4.1. The overall benefits of telecoms liberalisation

This section will show that although a great deal of progress has been made through the current framework, there continues to be structural imperfections in competition which will perpetuate themselves in new markets and services unless appropriate regulatory steps are implemented.

The telecommunications industry in the EU has evolved very far over the past two decades, from state-run telephone monopolies to open competitive services that underpin Europe's capacity for innovation and technological change. Overall, progress has been steady, starting with the freeing up of terminal equipment (1988), extending into network and service markets (1998)[17] and culminating in the harmonised European regulatory framework (2002)[18] that is currently under review.

Price developments give a good indication of the extensive impact of liberalisation of telecommunications[19]. Figure 1 compares the price development telecommunications against other 'network industries' (i.e. electricity, gas, transport and postal services)[20], all of which are characterised by bottleneck networks assets. It shows clearly that the market opening and competition – combined with technological advances - have pushed down telecommunications prices. In 2006, consumers in the EU15 spent around 27 % less for the same telecoms services than 10 years ago - in real terms this represents a 40% decrease[21].

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17 The liberalisation at the EU level was initiated by the publication of the European Commission Green Paper in 1987 (*Towards a Dynamic European Economy - Green Paper on the Development of the Common Market for Telecommunications Services and Equipment*), COM(87) 290. On the history of the EU's telecommunication policy, see a short overview at: http://ec.europa.eu/information_society/policy/ecomm/history/index_en.htm.

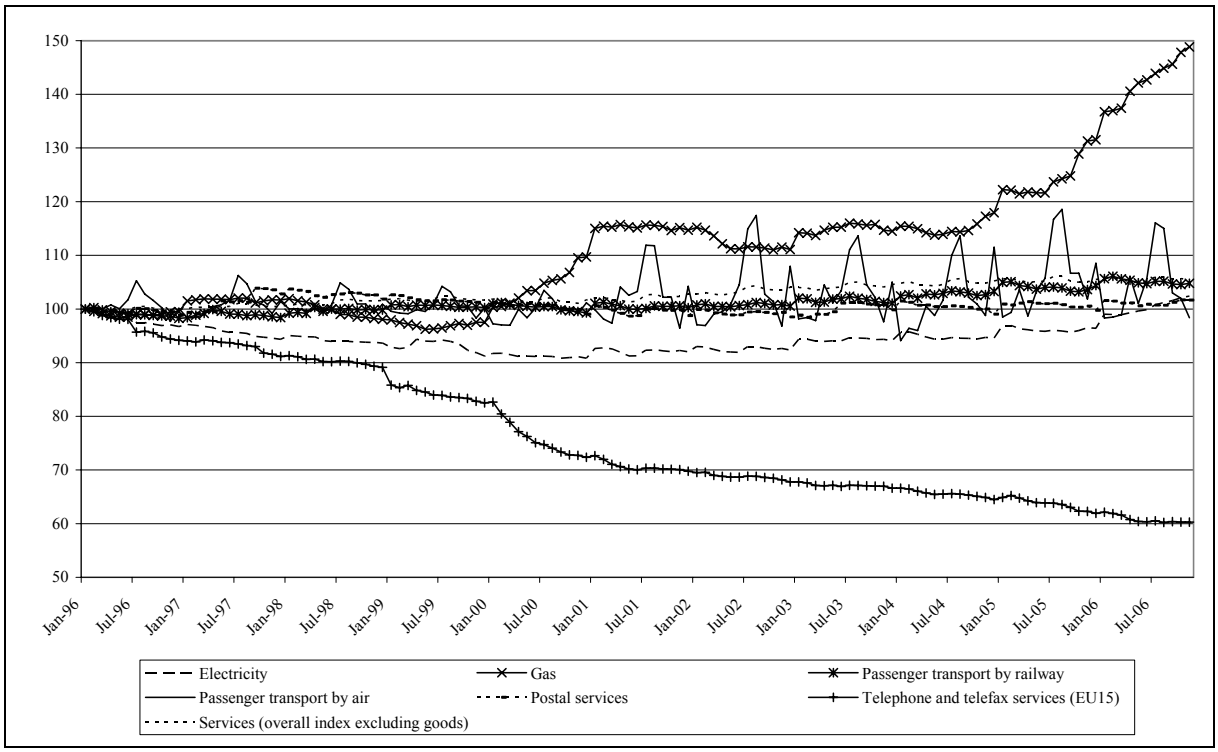
18 See the 1999 Communications review that led to the current framework: http://ec.europa.eu/archives/ISPO/infosoc/telecompolicy/review99/review99.htm

19 Prices are not the only indicator the Commission's annual implementation reports have tracked the changes in the sector over the last decade, covering a wide range of user and regulatory issues: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/index_en.htm

20 See the Annex to the *Evaluation of the performance of network industries providing services of general economic interest – 2006 Report*, Commission Staff Working Paper SEC(2007) 1024.

21 However, as pointed out in the above Commission Staff Working Paper, prices depend also on a range of variables other than the degree of regulation or liberalisation. Therefore, when analysing whether the market liberalisation in the telecommunications has been successful, the development since the market opening should be judged against a 'no liberalisation' counterfactual situation. An empirical study carried out by Copenhagen Economics in 2005 attempts to do this and suggests that telecommunications and rail transport prices in the EU15 were more than 20% lower in 2001 than they would have been without market opening. *Market Opening in the Network Industries*, Copenhagen Economics, September 2005: http://ec.europa.eu/internal_market/economic-reports/index_en.htm.

Figure 1. Evolution of network industry price indices relative to the all-items HICP* since 1996, EU-25



Note: The telephone and telefax services price index refers to the EU15 only.

**) HICP = Harmonised Index for Consumer Prices*

Source: Evaluation of the performance of network industries providing services of general economic interest – 2006 Report Commission Staff Working Paper, SEC(2007) 1024, (Commission calculations based on Eurostat)

4.2. Recent market developments: broadband

Accompanying and driving forward the process of market opening has been a revolution in information and communication technologies that has brought affordable digital communication technologies and services to the vast majority of citizens and businesses. These processes have shifted the emphasis away from fixed voice towards mobile and data, and in particular towards internet and audio visual services.

That is why, in the current review, the focus of the regulatory discussion has been on high-speed (broadband). Affordable broadband communications is now a prime objective both in terms of consumer welfare and digital inclusion, but also economic growth.

European broadband development in the international context

Broadband[22] is the fastest growing segment in the European eCommunications sector in terms of revenue growth, which was estimated at between 7.8% and 8.5% in 2006[23].

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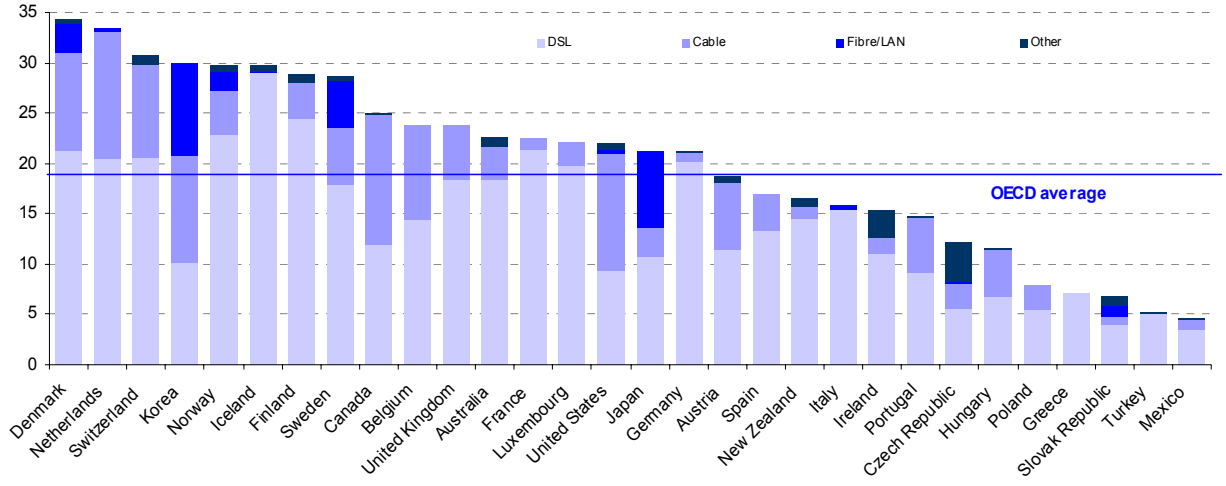
22 Broadband refers generally to always-on services that are considerably faster than the ISDN (Integrated Services Digital Network) with the capacity to transmit significant amounts of data at a high rate, ranging from 128 kbps (kilobits per second) to several Mbps (millions of bits per second) and beyond. 'Traditional' voice band modems typically offer a data rate up to 56 kbps. OCED defines broadband connection as downstream access of at least 256 kbps.

Figure 2 shows that several EU countries are now world-leaders with broadband penetration rate exceeding the 20%[24]. With the rate of reaching 35%, two EU Member States had surpassed Korea, which has traditionally ranked in the top of the league[25]. By July 2007, the average take-up reached 18.2% of the EU population (over 90 million lines), up from 14.9% in the previous year. Between July 2006 and July 2007, more than 21.5 million broadband lines were taken, an increase of over 31%[26].

Figure 2. OECD broadband subscribers per 100 inhabitants (by technology), June 2007



Source: OECD

Further examination of these figures assists the analysis of opening up competition in e-communications markets. In short, the highest levels of broadband penetration in the world are where there is effective competition. Both inside and outside the EU, the countries with the highest penetration rates either have a healthy cable television industry that is competing on internet services, (e.g. Netherlands and Denmark, or Switzerland and Canada) or there are new market entrants who have capitalised on easy access to facilities through strict unbundling requirements (UK and France, or South Korea and Japan).

Overall, the EU member states where the pro-competitive EU policy framework has been applied effectively have already achieved high penetration rates and continue to add subscribers much faster than the comparable third countries. In 2006, the EU average annual increase in broadband penetration was 16%, while growth rates were single-digit in comparable third countries (e.g. Australia 3.2 %, Canada 3.2%, Japan, 2.6%, Korea 1.1%,

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23 12th Implementation Report 2006. Communications Committee Working Document COCOM07-50 FINAL, 15 October 2007, available at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/index_en.htm

24 The latest available broadband statistics covering all the OECD Member States are from December 2006. Updates are available at: www.oecd.org/sti/ict/broadband

25 Korea already had 54% penetration rate for households in 2002 when broadband roll-out was just starting in the EU.

26 Communications Committee Working Document COCOM07-50 FINAL, 15 October 2007, available at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/index_en.htm

Switzerland 5.8% and US 4.7%)[27]. The expert estimates forecast that by 2012, the EU15 with 66% household rate will near that of Korea's at 69%[28].

As regards competition modes, there is relatively little full infrastructure competition in Europe due to the low and patchy coverage of cable. This compares badly with the USA, South Korea, and Canada, where broadband over cable is well developed. For Europeans, over 80% of broadband connections are DSL running via the fixed telephone line. This means that the vast majority of consumers are using the local access network of the traditional incumbent.

As far as new infrastructures are concerned, fibre-to-the-home (FTTH) networks are very little developed in Europe. This situation contrast strongly with the world leader, Japan, with 8.8 million fibre broadband subscribers in 2006[29]. The high Japanese take-up of fibre seems to be driven by relatively low costs (overhead cables are permitted) and intense local competition (in particular with electricity utilities). There is also strong evidence of demand for more bandwidth among consumers[30]. The USA also has higher levels of FTTH development in areas where cable and telephone companies are engaged in strong competition for market share.

4.3. Consumer benefits and digital divide

Consumers have gained many benefits from the liberalisation of eCommunications in recent years[31].

Lower communications prices: Competition has more than halved communications prices since liberalisation. On fixed lines, the EU weighted average charge of a 3 minute call has fallen by 65% and the cost of a 10 minute call by 74% since 2000. Prices for mobile services are now starting to fall as well, reducing almost 14% between 2005 and 2006[32].

Better access and choice: By end 2006, 95% of EU27 households had access to telephone services (fixed and/or mobile). In just eight years (1998–2006), overall mobile penetration grew from 13% to 103%[33]. Around 81% of EU27 households had at least one mobile phone and 72% had fixed lines. Today over one fifth (22%) of EU households have a mobile phone but no fixed line[34] (see Figure 3).

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27 See the 12th Implementation Report 2006.

28 Source: Omsyc, 2007: http://www.omsyc.fr/. Omsyc estimates a 23% average growth for EU15 broadband penetration during the decade, 2002-2012, whereas in Korea it would be 3% in the same period.

29 See *2007 White Paper – Information and Communications in Japan*: http://www.johotsusintokei.soumu.go.jp/whitepaper/eng/WP2007/chapter-1.pdf

30 12th Implementation Report 2006.

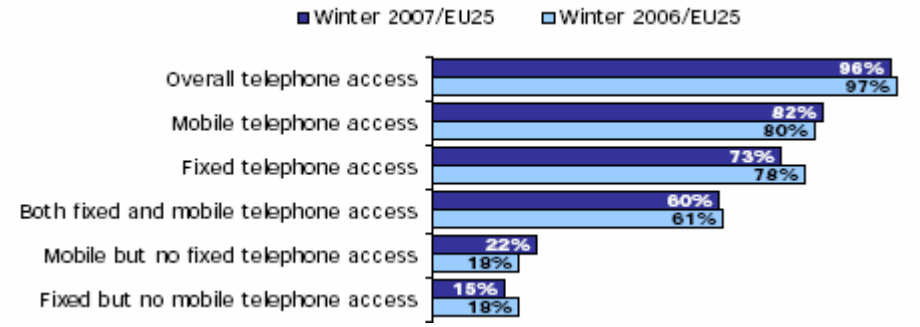
31 Options and impacts relating users' rights and consumer protection – including issues concerning users with disabilities - are further discussed in Chapter 8.

32 12th Implementation Report 2006.

33 Idem.

34 *Special Eurobarometer – eCommunications household survey*, April 2007, available at: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm
However, it should be noted that the number of lines does not impact traffic volume, and fixed line traffic remains higher than mobile traffic (between 2002-2006 fixed lines generated almost 60% of total telephony traffic). Omsyc's estimate expects that fixed line traffic will grow thanks to voice over broadband development so that in 2012, fixed traffic will still generate 59% of total telephone. When measuring telephony by the used minutes, landline telephony in the EU15 decreased an average 2% a

Figure 3. Telephone access, EU25 households, 2006-07



Source: Special Eurobarometer – eCommunications household survey, April 2007

Broadband: On average 29% of the EU households used broadband at the end of 2006 compared to 5% in 2002. Around 23% of households have broadband access, against 16% of households with a narrowband access[35]. By comparing the broadband price development worldwide, it can also be observed that, although Japan and Korea have the lowest consumer prices (measured by kbit/s), some EU countries are already among the cheapest, and that the prices in the EU have been generally falling much more rapidly than the global average (Fig 4).

Figure 4. International comparison of broadband prices

Economy	*Company*	*Speed kbit/s*	*Price per month US$*	*US$ per 100 kbit/s*	*Change 2005-06*
Japan	Yahoo BB	51'200	36.00	0.07	-12.5%
Korea (Rep.)	Hanaro	51'200	40.59	0.08	--
Netherlands	Internet Access Ned.	20'480	27.97	0.14	-81.3%
Taiwan, China	Chunghwa	12'288	22.67	0.18	--
Sweden	Bredbandsbolaget	24'576	56.08	0.23	-6.5%
Singapore	StarHub	30'720	73.17	0.24	-85.0%
Italy	Libero	12'288	37.23	0.30	-73.8%
Finland	Elisa	24'576	85.64	0.36	-51.4%
France	Free	10'240	37.29	0.36	-90.1%
United States	Comcast	4'096	20.00	0.49	--
Germany	Freenet.de	6'016	30.95	0.52	--
United Kingdom	Pipex	8'128	50.89	0.63	-53.6%
Hong Kong, China	Netvigator	6'144	51.17	0.83	-0.1%
Portugal	Sapo	8'128	75.82	0.93	-0.8%
Canada	Bell	4'096	41.26	1.01	-3.93%
Average		**18'278**	**44.33**	**0.43**	**-45.5%**
Best practice (top 20%)		**40'960**	**27.59**	**0.10**	**-46.9%**

Source: ITU

Broadband penetration is also slowly transforming voice services. **VoIP (voice over Internet Protocol)** is a generic term describing voice carried over IP-based networks (such as the Internet)[36]. For consumers, VoIP immediately cuts the cost of voice calls. Although the

year between 2000-2006, losing a total of 113 billion minutes (851 to 738 billion minutes), whereas in the same period mobile communications increased from 187 to 466 billion minutes, with average growth rate of 16%. See Quantifica (formerly OMSYC, World Observatory of Communication Systems): http://www.quantifica.fr/

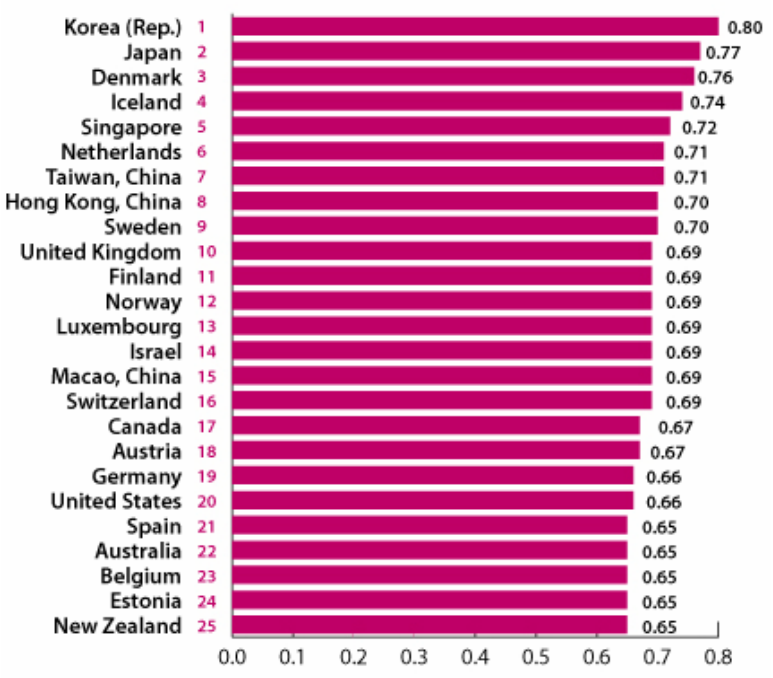
35 *Special Eurobarometer – eCommunications household survey*, April 2007.

36 On VoIP in general, see e.g. *VoIP: Developments in the market*, OECD, Note by TISP, 2006 (DSTI/ICCP/TISP(2004)3): http://www.oecd.org/dataoecd/56/24/35955832.pdf. VoIP and consumer

market is still at an early stage, VoIP on public broadband already accounts for more than 5% of Europe's fixed telephone traffic, up from 2% in 2005. In some countries VoIP is particularly popular, totalling 18% of fixed telephony traffic in France and 12% in Sweden. Forecasts indicate that VoIP might increase by an average 47% a year, by-passing traditional fixed calls by 2012 with 30% of overall telephony traffic (fixed and mobile)[37].

The Information Society for all: Broadband is now a fundamental indicator of an (information) society that is "*universal, ubiquitous, equitable and affordable*". The ITU's Digital Opportunity Index (DOI) measures the ability for citizens to benefit from access to information based on 11 internationally agreed indicators (including broadband). The index ranges from 1 (complete digital opportunity) to 0. The average DOI score 2005/06 worldwide was 0.40. Europe's average was 0.58, ahead of the Americas (0.45), Asia Pacific region (0.45) and Africa (0.22) as reported in the *The World Information Society Report 2007*[38] (see Figure 5). According to the report, "*Europe has achieved the largest overall gain in digital opportunity over the last two years*."

Figure 5. Digital Opportunity, top 25 countries, 20005/06



Source: The World Information Society Report 2007, ITU

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issues in the EU are examined in a report by the ERG's (The European Regulators Group) Report on "VoIP and consumer issues", ERG (06) 39: http://erg.eu.int/doc/publications/erg_06_39_report_voip_cons_aspects.pdf. In this context, it should be noted that the framework deals with the markets, and that the choice of technological means and devices is left to the undertakings and users. As discussed in the Review Communication of June 2006, this approach based on technological neutrality has shown itself capable of addressing new technologies like VoIP, with a capacity to accommodate further technological and market evolutions. See also the *Commission Staff Working Document on the regulatory treatment of VoIP under the EU regulatory framework*, 14 June 2004, available at: http://ec.europa.eu/information_society/policy/ecomm/library/working_docs/index_en.htm

37 Quantifica, 2007: http://www.quantifica.fr/

38 The report, published in May 2007, is available at: http://www.itu.int/osg/spu/publications/worldinformationsociety/2007/report.html

I BETTER REGULATION

Introduction

Better regulation is a central policy objective of the EU under the Lisbon Strategy for growth and jobs. A range of initiatives have been launched to cut-red tape by consolidating, codifying and simplifying existing legislation and improving the quality of new legislation through better ex-ante impact evaluations. The aim is to better define and justified public policy initiatives and to evaluate the costs and benefits of policy actions[39]. The regulatory environment should create incentives for business, cut unnecessary costs, remove obstacles to adaptability and innovation and ensure legal certainty. Better regulation also demands that policy should be applied efficiently at both EU and national level. The overall aim of better regulation therefore is effectiveness and efficiency of outcomes, not just fewer rules or fewer powers for regulators[40].

The existing regulatory framework for e-communications is already the product of a process of better regulation. Already in 2002 it involved the modernisation, consolidation and simplification of rules by replacing 22 legal measures by a streamlined set of five directives. It is also founded on the principles of technological neutrality, thus providing a flexible regulatory tool in the face of the fast technological change in the e-communications sector.

The aim of the current review is to apply again the principles and tools of better regulation in order to achieve a higher level of public policy efficiency and effectiveness of outcomes. Part II of this report therefore focuses on two areas where changes have been identified that could achieve increased efficiency simplification and legal certainty. These are: i) competition, investment and innovation; and ii) spectrum management.

5. COMPETITION, INVESTMENT AND INNOVATION

5.1. Identifying the problem

5.1.1. Background - Current framework: ensuring a level playing field for all operators

The basic concept of the framework is that effective competition and ensuring opportunity and reward for innovative companies is the key to promoting consumer interest and technological advance in today's converged communications environment.

Telecommunications markets are characterised by the concentration of essential networks in the hands of a few powerful operators. Historically, these networks were pure monopoly assets, but with the opening of competition – through application of the regulatory framework - there has been investment in competing infrastructures, particular on the more heavily trafficked core networks. In some cases, full end-to-end competition on fixed line telecommunications has emerged either through the upgrading of legacy cable networks to

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[39] See *Better regulation for Growth and Jobs in the European Union*, Commission Communication COM(2005) 97, and *A strategic review of Better Regulation in the European Union*, Commission Communication COM(2006) 689, available at: http://ec.europa.eu/governance/better_regulation/key_docs_en.htm.

[40] See also Communication from the Commission: *Action plan "Simplifying and improving the regulatory environment"*, COM(2002)278l, available at: http://eur-lex.europa.eu/LexUriServ/site/en/com/2002/com2002_0278en01.pdf.

provide telephone and internet, or through new-build fibre-to-the-home services. The term 'ladder of investment' has been coined to describe how the regulatory model works: having gained access to the network, market entrants start generating revenue, climb up the 'ladder of investment' and in the process, roll out their own infrastructures[41].

The framework is inherently deregulatory because it foresees a progressive rolling back of *ex ante* regulation, to be replaced by general competition law intervention ('*ex post* regulation'). However, ex-ante regulation can only be discarded once sustainable competition has been established. For example, for the vast majority of European fixed line subscribers, the traditional copper cable that links their premises to the network is the dominant – if not the only - means of connection. This "local loop" – which in most cases was installed in the days of state run monopoly telephony -represents an essential and often non-replicable asset which is in most cases fully in the hands of the incumbent telecommunications operator. *Ex-ante* regulation of such bottleneck assets ensures a level playing field for alternative operators[42].

Overview of the regulatory process under the framework

The framework requires the national regulatory authorities (NRAs) to encourage efficient investment and promote competition[43]. NRAs can impose *ex ante* regulation only after conducting a thorough market review.

Starting point: Recommendation on Relevant Markets

The national regulators must first examine those markets where competitive conditions are likely to be imperfect, starting from a list of markets in the 2003 Commission's Recommendation on Relevant Markets[44]. That Recommendation includes 18 wholesale and retail markets. To identify a market, three criteria must be met: 1) There are structural or regulatory entry barriers in the market; 2) The market has characteristics such that it will not tend towards effective competition; and 3) competition law is not sufficient to address the problem. Only exceptionally may a NRA consider regulating outside the listed markets. It should be noted that even if the Recommendation identifies a market, regulation will not be warranted if there is effective competition on that market. The Recommendation constitutes an important part of the overall design of the framework, because it allows the Commission to adapt *ex ante* regulation to technological and market trends.

Assessing competition in each market

After defining the relevant markets, NRA must assess competition in each market and particularly whether any firms in those markets have significant market power (SMP, i.e. a dominant market position that would allow them to operate independently of their competitors). If the markets are found not to be competitive - and when national and Community competition law is not sufficient to address

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41 See on 'ladder of investment' model and references for further reading, e.g. *Making the ladder or investment operational*, Martin Cave, 2004, available at http://itst.dk/static/Konferencer%20og%20seminarer/Cave%20for%20DTAG_ladder%20of%20investment.pdf, and *Ladder of Investment or Equality of Access: The Italian Way*, Elena Gallo and Enzo Pontarollo, available at: http://userpage.fu-berlin.de/~jmueller/its/conf/porto05/papers/Pontarollo_Gallo.pdf.

42 It should be noted that the Commission's Competition Directive 2002/77/EC (based on Article 86 of the EC Treaty, and which is not part of this review) requires the Member States 'not to grant or maintain' any exclusive or special rights in the markets for electronic communications networks and services. This Directive amended and consolidated the previous Directive 90/388/EEC on competition in telecommunications markets as amended by a number of other directives, such as the Mobile Directive 92/2/EC.

43 Article 8.2 of the Framework Directive.

44 Commission Recommendation C(2003)497, available at: http://ec.europa.eu/information_society/policy/ecomm/library/recomm_guidelines/index_en.htm

the problem - then the operators with SMP are subject to *ex ante* regulatory obligations (remedies), in order to stimulate competition. These remedies must be based on the nature of the problem identified, proportionate and justified[45]. Furthermore, *ex ante* access and price regulation must be set up in such a way that it does not negatively influence investment incentives for market players and encourages companies to 'ascend the investment ladder'[46].

Remedies: flexible 'toolbox' for national regulators

The EU framework provides the NRAs with a 'toolbox' of remedies, allowing for the flexibility to design appropriate measures to tackle market failures and achieve intended regulatory objectives in each Member State. These market failures might include excessive pricing, denial of access, delay for subscribers switching to alternative operators, limitations on providing wholesale service and other discriminatory treatment. If, however, the market is found to be competitive, then the NRA must remove existing SMP designations and any accompanying regulatory requirements[47].

Local loop unbundling

An important means of the market opening and competition in the sector is the unbundling of the local loop (LLU) [48], which requires incumbent operators to offer third parties access to their local loop at a cost-orientated price. This physical wire connection between customer and operators is normally in the hands of the incumbent. LLU allows the use of this bottleneck asset by multiple operators in a way that allows them considerably greater flexibility in configuring their service offer than if they have to use the configuration offered by the incumbent.

5.1.2. Deregulation under the current framework

As already noted, the Recommendation on Relevant Markets is an inherent instrument of better regulation as it allows the Commission to adapt *ex ante* regulation in response to technological and market changes (without the need to change the underlying EU legislation).

Indeed, in the consultation documents of June 2006, the Commission indicated its intention to take such a deregulatory step by removing a number of retail markets from the list of markets susceptible to ex ante regulation on the grounds that once there is effective wholesale regulation, retail regulation becomes unnecessary.

The system of defining markets in a Recommendation provides further scope for deregulatory flexibility in that, although it provides common guidelines, it does not prevent national regulators from making (well substantiated) departures from the list of markets. For example, geographical markets can be defined at a sub-national scale if justified by normal competition law assessment. Depending on the precise competitive conditions, this could result in rolling back regulation in some sub-national zones whilst continuing regulation in others. The

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45 Common principles and a methodology for this market analysis, based on European competition law, are provided in the Commission guidelines on market analysis and assessment of significant power, 2002/C 165/03. Under the previous rules, an operator was generally subject to more substantive regulatory measures once its market share went above 25%. Now, market power is essentially measured by reference to the power of undertaking to raise prices by a small but significant amount for a non-transitory period without incurring a significant loss of sales or revenues, while market shares are normally used as a proxy for market power.

46 Recital 19 of the Access Directive: "*The imposition by national regulatory authorities of mandated access that increases competition in the short-term should not reduce incentives for competitors to invest in alternative facilities that will secure more competition in the long-term*."

47 On the implementation of remedies in the Member States, see the 12th Implementation Report 2006.

48 Regulation (EC) No 2887/2000 of the EP and the Council made LLU obligatory in the Member States at the end of 2000.

existing consultation mechanism in Article 7 Framework Directive gives the Commission the necessary instruments to give guidance and to ensure consistency of the regulatory approach.

5.1.3. Challenge: to what extent does the framework encourage investment and innovation?

Investment in ICT is now the key driver of growth in an advanced economy because it increases productivity, generates new consumer services and creates jobs. There is strong statistical evidence that the overall performance gap between the USA and the EU in the past ten years has been due to lower investments and less efficient use of ICT in Europe. This is clearly illustrated by those countries that have achieved the fastest growth in per capita GDP over last ten years (Finland, Ireland, Sweden and the UK), which have all recorded considerably high growth rates in information technology investment and productivity[49]. Investment in ICT and its greater use have also clearly helped new EU Member States to catch up with the 'EU-15'[50].

Communications networks and services have meanwhile become the nervous system of the economy, which is why it so important that an open, competitive and innovative eCommunications market should be the centrepiece of EU regulatory policy[51]. Moreover, broadband penetration and investment in ICT infrastructure are nowadays generally seen as part of the structural factors necessary for innovation to take place[52].

eCommunications and growth

ICT represents over 5% of the total GDP driving about 40% of productivity growth and one quarter of overall growth in the EU. Of ICT sector revenues of approximately €649 billion in 2006, €289 billion were derived from eCommunications (fixed telephony, mobile telephony, fixed data services and cable), accounting for 44.5% of the total value[53].

Competition and innovation in eCommunications

Competition in communications infrastructure can be measured both at the infrastructure and at the service level (see further in Chapter 5.3.3). Service-based competition has brought lower prices over

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49 See *ICT and Europe's Productivity Performance; Industry-level Growth Account Comparisons with the United States,* Review of Income and Wealth, vol. 51 no. 4, December 2005, pp. 505-536: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1475-4991.2005.00166.x. *Reports on the European economy 2006 and 2007*, European Economic Advisory Group, March 2006, March 2007: http://www.cesifo-group.de/portal/page?_pageid=36,286932&_dad=portal&_schema=PORTAL; and *EU-KLEMS database*, March 2007: http://www.euklems.net and the accompanying *The EU-KLEMS Productivity Report, Issue 1, March 2007,* Bart Ark, Mary O'Mahony and Gerard Ypma: http://www.euklems.net/data/eu_klems_productivity_report.pdf.

50 See *The Potential of ICT for the development and economic restructuring of the new EU Member States and candidate countries*, Marcin Piatkowski, IPTS / JRC, Technical Report EUR 21589, 2005: http://fiste.jrc.es/pages/detail.cfm?prs=1256.

51 On the relationship between investment in ICT in general and particularly in communications infrastructures and economic growth, see e.g. *Infrastructure's contribution to aggregate output*, D. Canning , World Bank Policy Research Working Paper Series, November 1999; *Telecommunications Infrastructure and Economic Development : A simultaneous approach*, The American Economic Review, September 2001; *The contribution of Information and Communication Technology to Output Growth*, Paul Schreyer , OECD Science, Technology and Industry Working Papers, 2000/2, and *The Economic Impact of ICT : Measurement, Evidence and Implications*, OECD, 2004.

52 See e.g. *European Innovation Scorecard 2006*, Economic Research Institute on Innovation and Technology (MERIT) and the Joint Research Centre of the European Commission, 2007, available at: http://www.proinno-europe.eu/doc/EIS2006_final.pdf.

53 Source: EITO and IDATE, 2006. See further discussion in the 12th Implementation Report 2006.

the short term but infrastructure competition offers a more sustainable basis for long term competition and innovation[54]. Investments in competing infrastructures are more easily justified for business clients than for residential subscribers, because they spend more on communications services.

The opening up of competition has encouraged the emergence of new players not only new operators but also service providers such as internet companies providing IP-based telephony, which are leveraging their rapidly growing customer bases to gain competitive advantages. The increased competitive pressure constitutes a challenge for traditional operators to continue to increase revenues and maintain profitability. They are meeting this challenge through cost-cutting measures and efforts to retain customers through innovative flat rate pricing models. Both objectives are being achieved through substantial new investments in Next Generation Networks (NGN), that involves modernisation of both the 'core' network (i.e. moving to an all IP architecture), and the 'access' components of the network (i.e. rolling out optical fibre all or part of the way to the customers premises).

NGN core networks

The move to IP architectures in core networks increases flexibility and efficiency of network operation, since it allows multiple services to be offered over a single infrastructure. Subscribers will not only receive upgraded versions of existing services but also new content rich services[55].

For example, BT estimates that the reduced cost of upgrading its core network to a full-IP will bring around one billion pounds savings a year by 2008 / 2009 against an investment of £10 billion. Next generation access networks also bring financial advantages in the long term through greater reliability and lower maintenance costs. This is an especially important efficiency gain for incumbent operators, which had developed a variety of networks dedicated to the provision of different services, and which are still dependent for approximately 60% of their earnings[56] on their 'traditional' voice and access businesses[57]. In general new entrants have more modern core networks and many are already IP based.

NGN access networks

Most existing local access lines in Europe are copper (or metallic) loops from the operator's central office that connects the core network to the local access network. The cost of modernising these legacy copper networks by fibre links is very high in Europe. Generally, European planning rules require cables to run underground. Thus re-cabling the local access network calls for substantial civil engineering works, not least because only around half of the existing copper cables are in ducts, with the other half being buried in the ground[58]. These civil works can amount to 50%-80% of the total cost per customer, depending on the fibre solution selected and local characteristics (such as population density, existence and space capacity in the ducts, labour cost and digging conditions).

Construction costs appear to be higher in Europe than in other major regions as it is not usually possible to use aerial fibre (unlike the US and Japan)[59]. For a new entrant, the economics of rolling out

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54 *Infrastructure-Based versus Service-Based Competition in Telecommunications,* Jörg Kittl, Martin Lundborg and Ernst-Olav Ruhle, Communications & Strategies 65, 2006.

55 The fundamental difference between NGNs and "traditional telecom networks" is a shift from 'circuit-switched' voice-based single service networks to 'packet-based' multi-service networks, of which 'voice' will be only a one of a palette of available services. NGNs were discussed in the Annex 3 of the first IA of June 2006 (which also provides links to further reading), see URL in footnote 2.

56 When measuring profits by EBITDA: earnings before interest, taxes, depreciation and amortisation.

57 See the 12th Implementation Report 2006.

58 *The Fibre Battle – Changing dynamics in European wireline*, JP Morgan, 4 December 2006.

59 See idem. and e.g. Very high-*speed Point of reference and outlook – Press points 10 November 2006*, ARCEP: http://www.arcep.fr/fileadmin/reprise/dossiers/fibre/slides-fttx-prog-101106ang.pdf. A summary of various case studies is provided in *ERG Consultation Document on Regulatory Principles of Next Generation Access* (NGA) (07) 16: http://erg.eu.int/doc/publications/consult_regprinc_nga/erg_cons_doc_on_reg_princ_of_nga.pdf

fibre to either the cabinet or the home are challenging, in particular where it is not possible to make use of existing underground duct space.

As a way to reduce the costs of upgrading to access networks, several incumbents are implementing plans to extend fibre only as far as the street cabinet and then to deploy VDSL over the existing copper sub-loop between the street cabinet and the customer premises. In this way, fibre is brought closer to the subscribers allowing a higher speed service, whilst the costs of the upgrade are spread across all subscribers served by the street cabinet. Estimates indicate that the costs for incumbents to roll out VDSL would be around € 200 per household and for FTTH between € 500 and 2000 per household in the European metropolitan areas. This approach however is not viable where the local loop is long, which is the case in some European markets, and in those countries Next Generation Access can only proceed via a full deployment of FTTH (fibre to the home).

Competition has clearly been the main driver of investment in the sector in recent times. However, particularly as regards the large investments required to upgrade to high bandwidth and all-IP networks, regulation has to balance the immediate gains for consumers of fierce price competition (that keeps margins in the sector very sharp), and the long term stability of revenue that investors seek when making large commitments to infrastructural renewal.

More precisely, the question for this review is whether in this sector where technologies develop quickly and demands for higher speed and capacity of networks are always on the rise, the current EU framework has found the right balance between encouraging investment and innovation and promoting price-orientated service competition.

5.1.4. Evidence base for the problem

Chapter 4 has already described how broadband development in the EU measures up against other major regions in the world. This section discusses further the available evidence concerning the impact of regulation, competition and investment on broadband networks. It considers first, the situation regarding *ex ante* regulation and competition in the eCommunications markets, followed by an overview of investments in the sector.

EU framework as a factor for investment

The literature on regulation, investment and innovation has not yet been able to confirm an unambiguous empirical relationship between the current framework and investment. This would require a longer timeframe over which to conduct the analysis[60]. Nevertheless, an econometric study, commissioned to support this impact assessment, has been able to provide estimates of the level of eCommunications investment in the EU and to examine its main drivers[61]. The study covered the

[60] On the related research see e.g. the following (which also include further surveys of the literature): *Competition and Innovation: An Inverted-U Relationship*, P. Aghion, N. Bloom, R, Blundell, R. Griffith and P Howitt, Quarterly Journal of Economics 120, 2006, pages 701-728: http://www.jstor.org/journals/00335533.html; *The link between product market reform, innovation and EU macroeconomic performance*, Rachel Griffith, Rupert Harrison and Helen Simpson, Institute for Fiscal Studies (IFS) Economic Papers, DG ECFIN, 243, 2006: http://ec.europa.eu/economy_finance/publications/economic_papers/2006/economicpapers243_en.htm; *Regulating Infrastructure: The Impact on Risk and Investment*, Graeme Guthrie, Journal of Economic Literature, 2006, vol. 44, issue 4, pages 925-972: http://econpapers.repec.org/article/aeajeclit/v_3A44_3Ay_3A2006_3Ai_3A4_3Ap_3A925-972.htm.

[61] See further details in the study commissioned for this review: *An assessment of the regulatory framework for electronic communications – growth and investment in the EU eCommunications sector*, London Economics and PricewaterhouseCoopers, 2006: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

period for which investment data was available, i.e. 2001-2004. Although, given the short time over which the empirical observations run, its findings might be considered as preliminary[62], the results suggest that effective national regulation under the EU framework is associated with higher levels of investment in the sector alongside other positively correlated factors such as GDP per capita, market scale and population density. It is worth noting that larger firms tend to invest more due to their ability to spread investments across a number of markets, and that incumbents generally remain the largest players on the market.

1) Competition and ex ante regulation: situation in markets

Based on NRA analyses of national markets (as notified to the Commission under the Article 7 procedure), it is possible to compile an overview of the current situation of *ex ante* regulation and competition in eCommunications markets across the EU (Figure 6). 'No effective competition' means that NRAs are imposing obligations on operators with significant market power, whereas 'effective competition' means that no ex ante regulation is in place.

This shows that while a number of markets have already become effectively competitive, the overall picture is of market failures (especially dominance) across most markets. It is especially noteworthy that NRAs in all Member States have found that there is no effective competition in relation to retail fixed access services (markets 1 and 2). This reflects the lack of infrastructure competition over the 'last mile' (see further discussion below)[63].

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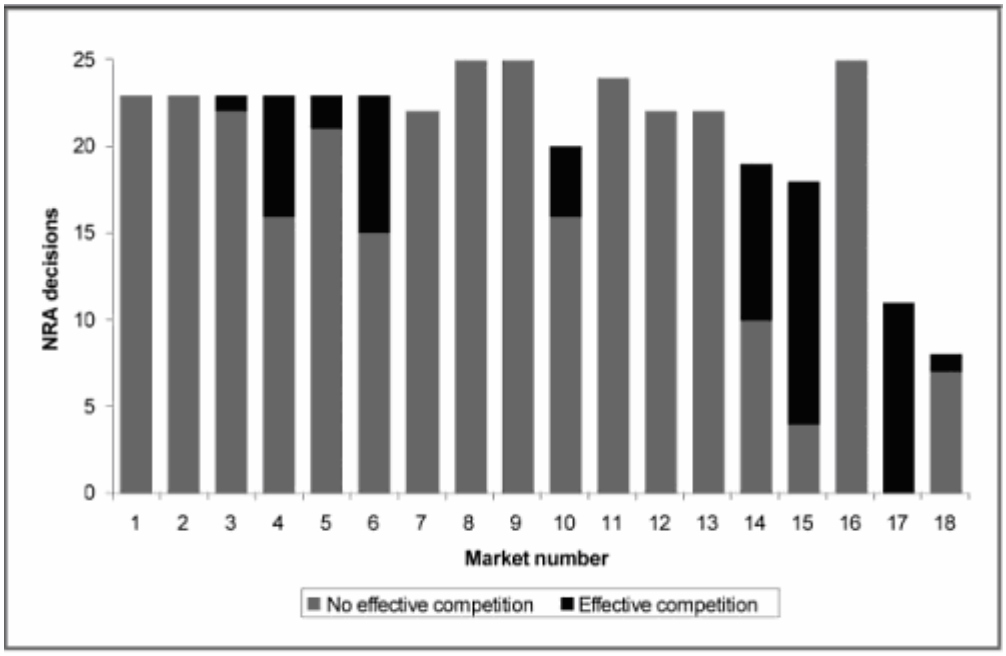
62 For criticism on the study, see. *Review of the EU Regulatory Framework for eCommunications: Analysing the relationship between Regulation and Investment in the Telecommunication Sector*, Hans W. Friederiszick and Lars-Hendrik Röller, ESMT, 2007: http://www.esmt.org/en/114288; and *Access regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation,* LECG Ltd, with support of ETNO, September 2007: http://www.etno.be/Portals/34/ETNO%20Documents/LECG_Final%20Report.pdf

63 While competition is prevalent in a number of Member States, it is considered that on balance the market for mobile call origination (market 15) should be kept under regular review, given the findings of single or joint dominance in some Member States as well as the development towards converged fixed-mobile products and trends for further consolidation of the sector. In addition, entry barriers remain high, although this may change in the light of the spectrum reform proposed by the Commission.

*Figure 6. Overview of market analysis under the framework, June 2007**



Source: European Commission[64]

*) In the table, 1 to 7 inclusive relate to fixed retail market, and markets 8 to 18 are wholesale markets, which comprise fixed services market (markets 8 to 14), mobile services (markets 15 to 17), and broadcasting (market 18).

2) Investment trends in eCommunications

The current EU framework became applicable in 2003, when the sector was just starting to recover from the financial crisis caused by the burst of the "internet bubble". From 1997 to 2001, increases in investments in the sector in Europe have been estimated as ranging from 50% to 100%. In the following years investment declined, levelling off in 2003 and rising in 2004 to slightly above the investment level in 1997[65].

In fact, 2006 was the fourth consecutive year of increased year-on-year investments levels in the European communications sector. Aggregate investment – measured in terms of capital expenditure – is estimated to have risen to more than € 47 billion in 2006, representing an increase of 5% over 2005[66]. The 2005 investment figure of € 45 billion ($ 65 billion) exceeded that of other major regions (Asia Pacific: $ 63 billion and North America: $ 62 billion)[67].

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64 This is a simplified table that does not take into account distinction between 'effective competition' and 'partial competition'. See the updated and more detailed table at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/article_7/index_en.htm

65 See *An assessment of the regulatory framework for electronic communications – growth and investment in the EU eCommunications sector*, London Economics and PricewaterhouseCoopers, 2006: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

66 The report's data is based on ECTA, ETNO, ECCA, OECD, Cable Europe, European Commission sources as well as financial research by investment banks Morgan Stanley and Goldman Sachs.

67 Infonetics, 2005.

The typical incumbent firm in the fixed or mobile sector invested approximately 13% of its revenues in 2006. This percentage is slightly below the levels seen in the late 1990s, although they are in line with long-run historical averages for the sector. As noted above, incumbents being larger and present in a wider range of markets continue to outspend their competitors in absolute (though not always in relative) terms.

The EU average telecommunications expenditure as percentage of GDP was 3.03 % in 2006. The highest figures are witnessed in fast growing EU Member States whose infrastructures have been undergoing a major renewal, such as Latvia (7.55%), Bulgaria (7.11%) and Estonia (6.8%). The average in the EU15 was 2.92%, moderately ahead of the USA (2.14%) but well behind Japans (4.2%)[68].

As for telecommunications expenditure per capita in 2006, the EU25 average was € 709 (EU15 € 826), with the highest expenditures in Sweden (€ 1.196), Denmark (€ 1.155) and Ireland (€ 990) followed by the Netherlands (€ 984) the UK (€ 990). This is again comparable with the USA (€ 769) but well behind Japan (€ 1.228)[69].

Investments in next generation networks

Both incumbents and alternative operators have on-going or announced investments in new generation core and access networks (NGAs). In absolute terms, according to publicly available data, the largest investment in next generation core networks in the EU is the €15 billion investment in the UK by the incumbent. As for access networks, the largest investment announcements have been by the Italian and German incumbents, € 6.5 billion and € 3 billion respectively. In the Netherlands and Belgium the incumbents are to invest around € 900 million and € 300 million, respectively.

As regards new entrant investments, announcements include: a German city network operator planning to invest € 250 million in fibre; three French DSL operators (with announcements summing to €1.6 billion) plus the cable operators with large scale fibre deployments. The French incumbent has yet to make major announcements. Cable companies elsewhere in the EU including Belgium and the Netherlands have also announced fibre deployment projects.

Besides private projects, there are also several public and public-private partnership projects, often backed by EU funding. For example, in Greece a major public-private partnership project of € 210 million is co-financed by the European Fund for Regional Development[70].

5.1.5. Summarising the problem

Regulatory action over the coming years will have a strong bearing on the pace and the manner of Europe's transition to a high-speed and full IP-based telecommunication infrastructure. *Prima facie,* the strong comparative position of the EU in terms of broadband penetration rates provides empirical evidence that the regulatory framework is encouraging innovation in new Information Society services.

However, it still needs to be verified whether the right balance between flexibility for the operators and predictability of regulation has been found, and to what extent the current framework contributes to investment and innovation. In particular, there is concern that if insufficient investments are made in new generation networks offering bandwidths several

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68 EITO 2007: http://www.eito.com/

69 Idem.

70 For an overview on NGA development and country cases studies, see *ERG Consultation Document on Regulatory Principles of Next Generation Access* (NGA) (07) 16: http://erg.eu.int/doc/publications/consult_regprinc_nga/erg_cons_doc_on_reg_princ_of_nga.pdf.

times faster than those currently available in Europe, the EU risks being outperformed by other major economies (such as Japan, Korea and the US) where such developments are already well underway. There is a potential risk here to Europe's competitiveness, as well as having detrimental effects to innovation, consumer benefits, digital inclusion and creation of a more sustainable knowledge-based economy.

In policy terms, the issue is to strike a regulatory balance between, on the one hand, allowing incentives for investors in new core and access networks – in the face of considerable uncertainty over the evolution of demand for these services – and, on the other hand, avoiding the immediate foreclosure of new markets by sanctioning the reassertion of monopoly privileges by the dominant market players over these new infrastructures[71].

A particular focus of debate has been the extent to which new generation networks in themselves constitute new markets[72]. Recital 27 of the Framework Directive notes that in newly emerging markets the market leader is *de facto* likely to have a substantial market share, and thus should not be subjected to inappropriate *ex ante* obligations. As already noted, however, new generation networks provide a technological platform for both more efficient delivery of existing services as well as the addition of new services. Thus, a new infrastructure cannot be considered, *a priori,* as equivalent to a new market. Indeed, new infrastructure investments can even be used to reinforce the dominance of the lead player in existing markets.

Nevertheless, the large investments involved in high-speed networks do require regulators to take into account the risks involved in making these investments and permit adequate returns on investments. Incumbents, in particular, criticise mandated access to their infrastructure and the price at which this is imposed (which they usually consider to be too low) arguing that it provides disincentives to investment, especially the major investments needed for next generation access. On this basis, some incumbents have called for a firm date to be set for the withdrawal of sector-specific *ex ante* regulation; whilst others for 'regulatory holidays' for major new investments. By contrast, alternative operators fear that the removal of access obligations – in particular the obligation to unbundle local loops and to provide backhaul connections to the alternative operators' network - would inhibit the emergence of infrastructural competition by undermining their growing investments in core networks. They argue therefore for their part that *ex ante* regulation and open access provisions on incumbents' networks are strongly correlated with increased investment and innovation.

The regulatory challenge is therefore to balance the conflicting interests of economic operators, all of whom need legal certainty about the future course of regulatory practice in order to make investment decisions. This means that ex ante regulation should be targeted on those areas where there are enduring bottlenecks that determine access to the marketplace, and that the regulatory measures should be effective and proportionate in order to make market entry possible for operators that are willing to invest in providing services, whilst safeguarding the long-term economic sustainability of the dominant network providers.

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71 Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03), OJ C 165 of 11.7.2002, p. 6: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/c_165/c_16520020711en00060031.pdf

72 See submissions to the public consultation on the review: http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/review_2/index_en.htm

5.2. The objective

The overall objective is to ensure that the EU's regulatory environment promotes competition, investment and innovation in electronic communications, so that user needs are met and consumer interests are protected.

The specific aims within this overall objective are:

– Ensure effective competition which brings tangible benefits to consumers in particular through greater choice of services and lower prices; and

– Promote investment and innovation in high-speed communications infrastructures and new services.

5.3. Policy options and assessment of impacts

Three main policy options[73] are explored:

Option 1: Adopt an 'open access' model for new network infrastructure (i.e. separating infrastructure provision from service provision to a greater or lesser extent);

Option 2: No regulation: remove or restrict sector-specific regulation ('regulatory holidays'); and

Option 3: Maintain the current model of the framework.

5.3.1. Option 1 – Adopt 'open access' model for new infrastructure: separate infrastructure from service provision

This option addresses the problem of trying to ensure fair competition in a market where some operators are vertically integrated, owning the network infrastructure and providing services, and others are not.

Network industries require a specific regulatory approach because the dominant players control access to infrastructures that are essential for competitors to provide services in the market place. These facilities are described as "non replicable assets" both because the costs of duplicating cannot be justified by any reasonable business case and also in may cases because there is no public will to see multiple physical networks serving the same purpose. They are therefore often described as "natural monopolies" and as such are subject to ex ante regulation in order to make sure that access to them is maintained on an equal footing in order to encourage competition.

The application of behavioural *ex ante* remedies (wholesale price caps, obligations to provide reference offers, cost orientation, etc) does not always lead to equivalent access to the bottleneck assets. Thus, alternative service providers often report problems of achieving equivalent treatment to the service provider of the incumbent operator. In short, the incumbent has both the motive and the means, through control of these bottleneck assets, to discriminate in favour of their vertically integrated subsidiaries.

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[73] Note that the numbering of the options here is different than in the IA Report of June 2006.

Where such access problems have a significant and enduring impact on competition, further regulatory intervention may be justified to require a transparent separation between the parts of the incumbent controlling the bottleneck assets and the other divisions. These interventions can be carried in a graduated way, which can be presented in simplified form as:

– Accounting separation means the keeping of separate revenue and cost accounts for different activities, in order to achieve a detailed and accurate statement of the cost and profits made by an operator for a specific activity.

– Functional Separation means the establishment of an operationally separated entities, the ownership of which remains with the parent company. The separate entities have separate accounts but they are not legally independent entities.

– Structural separation or 'ownership unbundling' or 'divestiture' means that some or the entire network is placed in a separate legal entity and is placed under different ownership.

Accounting separation can be seen as a complement to behavioural remedies in that it permits more accurate application of price control measures, in order to avoid price discrimination. However, it does not address non-price discrimination, such as delays in switching over customers to competitors, limits on wholesale product offers, differential service quality, etc. In addition, policing obligations for non-discrimination in vertically integrated undertakings are notoriously difficult[74]. For example, operators with obligations of accounting separation have incentives to obscure any anti-competitive behaviour in the accounts.

Thus, where discrimination is found to be a continuing impediment to competition, more fundamental separation measures might be warranted that not only increase the transparency of prices but also remove incentives to discriminate or deny access or use cross-subsidisation to compete unfairly by addressing the underlying motive for discrimination - the internal profit motive of the firm. In theory, both structural and functional separation of bottleneck network assets and network services would give the access provider an incentive to grant all access seekers (service providers) non-discriminatory terms and conditions. This is the fundamental aim of functional and structural separation in network industries[75]. And in so doing it should, in principle, create a level playing field for all service providers, promote competition in service provision and lead to better services at lower costs for consumers.

In network industries, vertical separation is being implemented in one form or another in most OECD countries (see figure 7). However, experience over recent years reveals that the vertical separation model is more likely to be successful in some sectors and countries than in others[76].

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74 In telecommunications, a vertically integrated company may achieve lower cost structures (for instance by spreading billing costs across a wide range of services) as well as by producing service packages at a lower cost than a firm producing the same services on a stand-alone basis. Vertical integration enables the firm to co-ordinate production and investment decisions by minimising external transaction processes and their attendant costs and delays. See e.g. *The benefits and costs of structural separation of the local loop*, Note by TISP, OECD (STI/ICCP/TISP(2002)13/), 2003: http://www.oecd.org/dataoecd/39/63/18518340.pdf

75 See e.g. *Structural Separation in Regulated Industries*, OECD 2001, DAFFE/CLP(2000)11: http://www.oecd.org/dataoecd/49/15/2474629.pdf.

76 See e.g. *World Development Report 2002: Building Institutions for Markets*, World Bank, Washington 2002, available at: http://www.worldbank.org/wdr/2001/fulltext/fulltext2002.htm, and *Vertical*

Figure 7. Vertical separation cases and projects in main OECD countries

	Telecoms	*Gas and electricity*	*Railroad*
USA		Several states (California…)	Amtrack
Japan			
South Korea	**KT**	KEPCO	
Australia	Telstra	Several states (Victoria, New South Wales…)	ARTC
France	***France Télécom***	RTE	RFF
United Kingdom	BT/Openreach	British Gas, NGC	British Rail
Italy	*Telecom Italia*	Enel/TSO	FS Infrastrutture
Germany			Deutsche Bahn
Spain		Gaz Naturel	RENFE/GIF
Netherlands		Gasune	**NS**
Sweden			SJ
Portugal		TSO/EDP	REFER EP

Accounting separation (*Vertical separation projects in italics*)
Operational/functional separation
Ownership separation

Source: IDATE, 2007[77].

A detailed analysis undertaken for the recent proposals for unbundling the energy sector in the EU concludes that "*the option of full ownership unbundling has a number of positive impacts on the market, in particular by stimulating investment in particular in interconnectors, reducing market concentration and bringing down prices*". At the same time, there is no indication that ownership unbundling would harm credit ratings, share prices, R&D activity or the relationship with external suppliers. The proposals for ownership unbundling ensure that EU energy networks cannot be owned by non-EU supply companies, or by EU supplier[78].

At an overall level in sectors such as telecoms, water, electricity and gas, the benefits of preventing foreclosure and the scope for innovation if competition is strong seem to be relatively high, whereas the costs in these sectors in terms of dis-economies of coordination and the costs of the split can be seen as moderate to low[79]. This goes someway to explain the problems that have been experienced in the case of structural separation of railways, where the net benefits of separation can be expected to be rather low[80].

Recent analysis of experiences in separation in different infrastructure sectors indicate that some of the theoretical disadvantages - particularly tendencies to over or under invest in the infrastructure and problems of coordination due to the rupture of the vertical integration or

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Restructuring (or Not) of the Infrastructure Sectors of Transition Economies, Russell Pittman, Journal of Industry Competition & Trade, 2003: 3, pp.

77 *The real impact of structural separation*, Julien Salanave, Communications & Strategies, no 65, 1st quarter 2007, p. 187: http://www.idate-shop.com/fic/revue_telech/624/CS65_SALANAVE.pdf.

78 European Commission Staff Working Document SEC (2007) 1179, Impact Assessment for the legislative package on the internal market for electricity and gas, 2007, available at: http://ec.europa.eu/energy/electricity/package_2007/index_en.htm

79 *Regulating Infrastructures: monopoly, contracts and discretion*, J. Gomez-Ibanez, Harvard University Press, 2003,

80 See e.g. the above-mentioned *World Development Report 2002: Building Institutions for Markets*, World Bank, Washington 2002.

double marginalisation - can be overcome through effective regulatory and private contracting arrangements[81].

Assessment of impacts of Option 1

a) General

It is evident from the above that not all sectors are the same as regards the application of vertical separation and that therefore the benefits and drawbacks of the two basic forms of vertical separation must be further analysed in the context of the specific techno-economic characteristics of the eCommunications sector.

Under the current framework, NRAs can already impose accounting separation and cost accounting in order to calculate appropriate wholesale access charges and to avoid price discrimination to operators designated having significant market power[82].

Structural separation cannot be imposed under the legal basis of the regulatory framework, but could in principle be imposed under competition law instruments (Council Regulation (EC) No 1/2003 permits the break-up of a company found to have infringed competition law, if it can be shown that no alternative behavioural remedy is equally effective)[83].

Techno-economic characteristics of eCommunications vs. other network industries

Although the eCommunications and other network industries share many similar characteristics, there are also a number of differences. The energy sector, for instance, is not as technologically dynamic as telecommunications networks, the services transmitted can be considered as commodities and there are fewer examples of competing network infrastructures because liberalisation and competition has not been achieved to the same degree. In energy networks the main bottleneck is long distance transmission networks rather than the local access networks that form the key remaining bottlenecks in telecommunications. Nevertheless, telecommunication networks are still characterised by strong market dominance which is based upon direct ownership of bottleneck assets by vertically integrated incumbents. Thus whilst the problems of discrimination are endemic to all network industries, the remedies cannot *a priori* assumed to be the same.

It should be noted that vertical separation does not remove the need for regulatory oversight of the dominant entity. If implemented effectively it resolves the problem of discrimination but it raises new demands for regulatory oversight such as controlling a tendency for excessive pricing by the infrastructure provider and ensuring that investment in the network infrastructure is adequate. These problems can be rather difficult to tackle, and some have argued outweigh the potential benefits of non-discrimination, especially in telecommunications given the high rate of technological change and the potential loss of

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81 See the review paper *Network separation and investment incentives in Telecommunication*, M. Cave, M and C. Doyle, University or Warwick, 2007: http://www.thinktel.org/inprimopiano02.asp?ID=391 and *Regulating infrastructure: the impact on risk and investment*, G. Guthrie, Journal of Economic Literature, 44: 925-972

82 Article 11 of the Access Directive, see further the Commission *Recommendation on accounting separation and cost accounting systems under the regulatory framework for electronic communications*, (C(2005) 3480, 19 September 2005.

83 Council Regulation on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (EC) No 1/2003 of 16 December 2002: http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=Regulation&an_doc=2003&nu_doc=1

economies of scope in the coordination of investments in services and infrastructures. That is why, as noted in the Impact Assessment of June 2006, it is essential that a careful cost benefit analysis is carried out in any serious consideration of vertical separation[84].

Regulatory developments in energy sectors and the issue of ownership separation

The Commission has recently proposed changes to the legal framework for the energy sectors. Its sector inquiry into competition in gas and electricity markets published at the beginning of 2007 found that despite the EU liberalisation directives, there are several sector-specific problems such as high levels of market concentration, vertical integration of supply, generation and infrastructure leading to a lack of equal access to, and insufficient investment in infrastructure[85].

The expert study commissioned for the regulatory review found stakeholder support for the notion that ownership separation ('full TSO[86] ownership unbundling') "*could remove the fundamental conflict of interest in a network owner affiliates and would contribute to ensuring non-discriminatory access. It was also felt that the creation of network-only businesses probably would make regulation easier. However, many respondents pointed out that there would be strong opposition to full ownership unbundling and that the benefits were not self-evident or possible to qualify*" [87].

Following these findings, the Commission has proposed ownership unbundling (i.e. structural separation) as the most effective means to ensure choice for energy users and to encourage investment[88]. In certain cases, where ownership unbundling is not practicable, a second option establishing an independent system operator (ISO) to carry out the operational management of the transmission has also been tabled, but under strict conditions. These conditions include, *inter alia*, that the candidate operator has at its disposal the required financial, technical and human resources to carry out its tasks; that it has committed to complying with a ten year network development plan proposed by the regulatory authority; and that it has demonstrated its ability to comply with its obligations on conditions for access to the network for cross-border exchanges in electricity[89].

b) Structural Separation

Structural separation has the advantage of providing a clear-cut regulatory response to serious competition problems in network industries. There are practical examples of structural separation being successfully implemented in telecommunications.

Structural separation of AT&T in the USA

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84 *Draft Report to Council on Experiences with Structural Separation*, Working Party No. 2 on Competition and Regulation, OECD, 2.8.2005 (DAF/COMP/WP2(2005)1/REV1), for official use.

85 See Communication *Energy Policy for Europe,* COM(2007) 1, 10 January 2007 and *DG Competition report on energy sector inquiry,* (SEC(2006)1724, 10 January 2007, available at: http://ec.europa.eu/comm/competition/sectors/energy/inquiry/index.html. Note that the conclusions of the European Council of 15 February 2007 called for "*effective separation of supply and production activities from network operations (unbundling), based on independently run and adequately regulated network operation systems which guarantee equal and open access to transport infrastructures and independence of decisions on investment in infrastructure."*

86 Transmission System Operators (i.e. entities operating the high voltage electricity networks and the gas transport).

87 *EU Energy Review – Stakeholder Consultation and Cost Benefit Analysis*, ECORYS, ECN and Moffatt Associates, 2007 (publication pending).

88 *Common rules for the internal market in electricity*, COM (2007) 0528, Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2007, 19 September 2007, available at: http://ec.europa.eu/energy/electricity/package_2007/index_en.htm

89 Idem, Art. 10.2.

The most famous example of divestiture in telecommunications – and which is also generally considered a success - is the separation of AT&T from the Regional Bell Operating Companies (RBOCs) in the United States in 1984[90]. With the divestiture, not only were the local operations of AT&T structurally separated from its long distance and international operations, but ownership of the two groups of companies was separated by means of a share swap. With their ownership separate from AT&T, the RBOCs (or "Baby Bells") no longer had an incentive to favour AT&T over its long distance competitors. Therefore, all long distance competitors obtained access to local telecommunications services from RBOCs on similar, non-discriminatory terms. The divestiture also eliminated concerns about anti-competitive cross-subsidies between AT&T's local and long distance operations.

However, structural separation also carries with it a number of significant regulatory difficulties. First, it makes it difficult to coordinate infrastructure investment with service development, which is particularly acute in the communications industry, where technological change is rapid. Furthermore, the pressing demands for investments in next generation networks (NGN) blur the split between competitive and bottleneck assets. As fibre is extended out from the central office to the street cabinet or to the home to enable fast broadband access (see Chapter 5.1.3), investment coordination is likely to become more important, not least due to the uncertainty of demand for new services and higher bandwidths.

Secondly, it is difficult to define the best way to split the operation into its component parts. The coming of next generation networks has been seen by some as creating a logical separation between the infrastructure that carries electronic communications and the services that that they comprise[91]. Indeed, next generation networks can in principle be completely blind as to the types of services and content that they carry, which is the ultimate commodification of telecommunications traffic.

However, a perfect split between the transport and the service layers may by no means as straightforward as it appears in theory. Rather, it is argued, networks will continue to be hybrids of different legacy systems which makes it difficult to identify an appropriate boundary at which to apply structural separation, given the uncertainties surrounding new network architectures. Moreover, once implemented, such separation is not easy to adapt afterwards. There is therefore a risk of an inappropriate market structure being imposed and becoming entrenched[92].

Thirdly, there are substantial one-off implementation costs associated with the break-up of the integrated firm (see Box). Structural separation of ownership may have a considerable impact on the share value of the regulated company Having said this there is evidence that voluntary

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90 The process was already initiated in 1974 by the U.S. Justice Department's anti-trust suit, which claimed that the vertical structure of the company provided an opportunity for unfair competition against other providers of long-distance service. For example, by charging high local rates or by providing poor local service to other providers of long-distance service (which require local service), AT&T could harm long-distance competitors. Another concern was the difficulty of monitoring cost-shifting among AT&T's regulated (telephone) and other relatively unregulated businesses (such as the manufacture of telephones and other equipment).

91 See *ERG Consultation Document on Regulatory Principles of Next Generation Access* (NGA) (07) 16: http://erg.eu.int/doc/publications/consult_regprinc_nga/erg_cons_doc_on_reg_princ_of_nga.pdf. This document uses the term NGA "*as the term NGN is often used as a catch-all phrase with regard to access networks, a NGA network is generally meant to be a packet switching (IP)-based access network reaching from multi-functional access and aggregation nodes to the end-users*".

92 See e.g. *Regulating for non-price discrimination. The case of UK fixed telecom*, Cave M., Correa L. & Crocioni P., in *Competition and Regulation in Network Industries*, 1(3), 2006, pp. 383.

divestiture of network assets from the service layer may actually create rather than destroy shareholder value, as is seen in the interest of the Irish incumbent to voluntarily separate its network from its service operations (see below).

Examples of estimated implementation costs of structural separation in telecoms

The implementation costs of structural separation include several components: branding (stationary, vehicles etc.), buildings, communications, and advertising (PR/media relations, website etc.), financial and management reporting systems, hardware and software, information systems, legal, office equipment, recruitment and transition planning[93]. Publicly reported estimates of structural separation of the last years include for instance the following (note that these estimates should be treated with caution, as they cannot be confirmed):

Australia: In 2003, Telstra (Australian incumbent operator) estimated that its full structural separation would cost AUD 2 billion in 2003 (around € 1.23 billion), and would require an annual incremental operating cost of AUD 80 million (around € 49 million) per year[94].

USA (Florida): In 2001, it was estimated that total economic costs of the proposed structural separation of BellSouth in Florida would have been USD 1.2 billion, including an estimate for additional costs of structural separation. The study concluded that: "Thus, the cost of structural separation exceeds the supposed benefit of local competition (in Florida, estimated to be as high as USD 248 million per year)"[95].

In summary, an OECD study on structural separation in telecoms notes that "*The impact on end-user consumers is uncertain. If competition strengthens significantly, it is possible that prices could fall, with innovation and quality of service improving. But there is inadequate evidence to generate confidence that this would necessarily happen. Prices could also rise significantly*"[96].

Moreover, a recent US study examined the issues of separation and monopoly in telecoms by using data from 67 countries that privatised the dominant telephone firm in the period 1984-2003. It found that mandatory vertical separation reduces international telephony usage and the number of fixed lines in service. The study concludes that "*monopoly and vertical separation harm those consumers that they were precisely designed to help: the downstream (business) users of international telephony and the upstream users of residential local telephony*"[97].

Given this experience and the high level and non revocable intervention involved, very significant benefits of mandated structural separation in terms of gains from achieving equal would have to be demonstrated for it to be a suitable remedy in the telecommunications sector.

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93 See e.g. *The benefits and costs of structural separation of the local loop*, Note by TISP, OECD, 2003 (STI/ICCP/TISP(2002)13/): https://www.oecd.org/dataoecd/39/63/18518340.pdf, and *Structural Separation of BellSouth Telecommunications and Its Effects on Florida Consumers,"* TeleNomic Research, July 31, 2001. Stephen B. Pociask.

94 Telstra Submission no 59 to Telstra Inquiry dated 31 January 2003: http://www.aph.gov.au/house/committee/cita/telstra/subslist.htm.

95 *Structural Separation of BellSouth Telecommunications and Its Effects on Florida Consumers,"* TeleNomic Research, July 31, 2001. Stephen B. Pociask.

96 *The benefits and costs of structural separation of the local loop*, Note by TISP, OECD (STI/ICCP/TISP(2002)13/), 2003: http://www.oecd.org/dataoecd/39/63/18518340.pdf

97 *Consequences of Vertical Separation and Monopoly: Evidence from the Telecom Privatizations*, Bruno E. Viani., AEI-Brookings Joint Center for Regulatory Studies, Working Paper 06-20, August 2006: http://www.aei-brookings.org/admin/authorpdfs/page.php?id=1318.

c) Functional separation

The risks associated with structural separation in the e-communications sector encourage a search for alternatives ways of correcting persistent discriminatory behaviour. Functional separation would be a less radical intervention but still hold out the prospect of the creating new incentives for access to be supplied on an equal basis to all services operators. Functional separation within an operator entails changes to its organisation and incentive structure, including setting up information barriers between the access and services part of the business, but it does not force the operator to sell off assets.

Functional separation has several advantages: Because it impacts several access markets at the same time, functional separation could address in a single remedy some of the difficulties that arise from compartmentalised analysis of individual markets. It also reduces needs for detailed enforcement of remedies and therefore contributes to better regulation. It has been seen therefore to give greater legal certainty to both incumbent and new market entrants, which can encourage investment in the market.

Functional separation can also help to unblock the problem whereby dominant carriers can delay investments in access upgrades to avoid cannibalising existing downstream revenues, as is the case, for example, with broadband in countries where local loop unbundling is not available on a non-discriminatory basis.

On the other hand, there are risks associated with functional separation: it may reduce incentives for new entrants to invest in alternative local loop infrastructures, and thereby inhibit infrastructure based competition in the access network as all market players would share the same infrastructures under exactly the same conditions. It is not necessarily the case however that functional separation will in itself lead to an under spend on next generation access. In a market driven situation, operators make investment choices based on their evaluation of the evolution of demand on the market. With functional separation, it is the regulator, through controlling the rate of return allowed to the incumbent's access division, who has to balance incentives for investment in new infrastructures against keeping wholesale prices at a competitive level. This means that, depending on the skill of the regulator and the cooperation of the incumbent, functional separation could as easily lead to over as under investment in the infrastructure.

And as in case of structural separation, functional separation may reduce economies of scope or make difficult to coordinate investments.

In the EU, functional separation has been already implemented in the UK, in 2006. BT agreed to implement a functional separation remedy under threat of the UK Competition Commission referral seeking full structural separation through divestiture of the network assets of the BT business. The UK situation, whereby the NRA also acts as NCA (national competition authority) for the sector - with appeal to the Competition Commission – is only present in five EU Member States.

Functional separation in the UK

To implement functional separation, BT set up a division called Openreach charged with freeing up access to BT's local exchanges. This separated the access and non-access (core and retail) services offered by BT without requiring BT to sell its infrastructure to third parties.

The undertakings given by BT[98] to the NRA (Ofcom) devise in particular managerial incentives, which should guarantee non-discriminatory separation of the new division. For example, the management team running Openreach has to be in a separate building from the rest of BT; managerial incentives depend only upon the performance of Openreach, not of BT Group as a whole. There are a number of rules and procedures to prevent the flow of sensitive information from BT Wholesale (including Openreach) to BT Retail. Openreach must provide separate financial statements and regulatory reports, and use the Openreach brand, which must be separated from the rest of BT. These arrangements are monitored by a complaints body called the Equality of Access Board (comprising five members, two from the BT Group and three independent members)[99].

As for costs, BT has reported that the one-off costs of setting up Openreach in 2006 were £ 70 million (around € 103 million)[100], which are an order of magnitude lower than the estimated costs of structural separation cited above. In addition, the Openreach decision is thought to have increased confidence in BT corporation as a whole that has lifted its stock market valuation substantially in the past 2 years. Some analysts suggest that this is because investors are now valuing BT shares in the same terms as utility stocks, which typically trade at much high ratios than mixed service and infrastructure firms.

The UK experience with Openreach is still rather recent and it is too early to assess its final outcome. However, it has been reported that when Openreach went into operation at the beginning of 2006, only 200,000 phone lines had been unbundled in the UK over the years. The number of unbundled lines has grown to over 3.3 million by October 2007[101].

The functional separation model has lately attracted attention in the other Member States. The Italian NRA (Agcom) is studying the possibility of Telecom Italia separating Telecom Italia's retail and network operation (Telecom Italia's network business would be placed into a new unit similar to Openreach). Also the Swedish regulator NRA (PTS) has indicated that in order to increase access to TeliaSonera's (a Swedish-Finnish incumbent) access network, it sees that '"*the most suitable model is one based on TeliaSonera being functionally separated*" following the Openreach example[102].

Despite these positive early signs from the UK situation, the drawbacks in terms of the level of intervention and the scale of costs involved indicate that it should be reserved for situations where there is an enduring problem of non-price discrimination that cannot be otherwise resolved. This clearly requires a thorough cost benefit assessment. In places such as the Netherlands, where infrastructure competition is highly developed, imposing functional separation on KPN could be disproportionate and could possibly harm infrastructure

98 See *Statements in the Strategic Review of Telecommunications and Undertakings in Lieu of a Reference under the 2002 Enterprise Act*, Ofcom, 22 September 2005, available at: http://www.ofcom.org.uk/consult/condocs/statement_tsr/statement.pdf

99 See Openreach web-site: http://www.openreach.co.uk/orpg/home/home.do, and the EAB: http://www.btplc.com/Thegroup/Theboard/Boardcommittees/EqualityofAccessBoard/EqualityofAccessBoard.htm

100 *BT's Annual Report and Account 2006*, available at: http://www.btplc.com/Sharesandperformance/Annualreportandreview/Annualreports/Annualreportsarchive.htm

101 See *Key Performance Indicators for Local Loop Unbundling*, 24.10.2007, Openreach: http://www.openreach.co.uk/orpg/products/llu/kpi/kpi.do

102 See *Proposal for Swedish Broadband Strategy*, PTS-ER-2007:7, 15.2.2007: http://www.pts.se/Archive/Documents/EN/Proposed_broadband_strategy_eng.pdf. Consequently, in April 2007, the Swedish government requested PTS to investigate the proposed function separation of TeliaSonera.

competition[103]. Similarly, in France where accounting separation and other behavioural remedies backed by effective sanctions seem to have resolved many of the problems of discrimination, functional separation may not even be a consideration[104].

d) Voluntary arrangements of separation

For the operators, there are potential advantages for undergoing some form of ownership separation. For example, it is reported that the Irish incumbent, eircom (which was recently purchased by a private equity fund) is currently considering a voluntary structural separation between retail division (which would be taken over by eircom's employee share ownership trust) and network infrastructure (which would be placed in the equity fund)[105]. This move is expected to increase the overall value of the entity (by better matching assets with investors) as the potentially high-growth retail division would be separated from the more stable and cash-generating wholesale division.

Another example comes outside Europe: in August 2006, Telecom Corp. of New Zealand announced plans to separate its wholesale and retail businesses[106]. However, in September 2007, the New Zealand government ordered Telecom Corp. of New Zealand to split into three operating divisions (wholesale, retail and network)[107].

Voluntary arrangements by operators, or between operators and government agencies, are not dependent on the EU framework for implementation. Nevertheless, there is an obligation on the Member States not to act against the provisions of the framework, and so it would be necessary for the Member State to ensure that any undertakings accepted are compatible with the framework.

5.3.2. Option 2 - No regulation: remove or restrict sector-specific regulation ('regulatory holidays')

Option 2 captures two related arguments in favour of the lifting of *ex ante* regulation in the eCommunications markets. The first argument is based on the inherently deregulatory character of the current framework in that it requires *ex ante* regulation of markets to be lifted when effective competition has been established. Some stakeholders, particularly incumbents, have argued that the level of competition on the market is now sufficiently stable for a fixed date to be set for the removal of *ex ante* regulation. This, it is argued, will provide greater regulatory predictability and thus give network operators a clearer financial incentive for investing in new infrastructures.

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103 OPTA's board is of the opinion that the Dutch market situation does not call for a remedy that would assume that effective and sustainable infrastructure competition is non-existent or not attainable. OPTA's letter, Brief aan marktpartijen inzake beleidsregels en functionele scheiding, 2 March 2007, available at: http://www.opta.nl/asp/nieuwsenpublicaties/achtergrondinformatie/document.asp?id=2138, see also *The business case for sub-loop unbundling in the Netherlands*, Analysys Consulting, Final Report for OPTA (public version), 26 January 2007, available at: http://www.opta.nl/download/Analysys+Final+Report%2Epdf.

104 See *La Lettre de l'Autorité,* N° 55, avril 2007, available at: http://www.arcep.fr/index.php?id=21.

105 See e.g. Wall Street Journal Europe, 3 November 2006.

106 See *Submissions on the Telecommunications Amendment Bill*, Telecom New Zealand, 15 August 2006, available at: http://www.telecom-media.co.nz/resources/938549-v5.pdf.

107 See e.g. Financial Times, 26 September 2007: http://www.ft.com/cms/s/0/7a4ce11c-6bec-11dc-b6a0-0000779fd2ac.html

A second, distinct but parallel argument concerns new generation infrastructures, which are seen as introducing new markets in which first movers have a *de facto* dominance as a direct result of their investments. This argument, which pleads in favour of "regulatory holidays", argues that such ground-breaking investors should not be disincentivised by being immediately subjected to *ex ante* regulation.

Assessment of impacts of Option 2

This option sets a clear deadline for the removal of *ex ante* regulation or exempts certain investments from regulation (at least temporarily). The supporters of this option are mainly incumbent operators who claim that they need a certain period of time without ex ante regulation of next generation infrastructures in order to be able to exploit the 'first mover advantage', which would enable them to recover the high and risky capital expenditure.

It is important to note that removing ex-ante EU telecoms regulation would not mean "no regulation". Investment projects would still be subject to national sector-specific rules, and EU and national competition law, i.e. *ex post* regulation, would be still applicable.

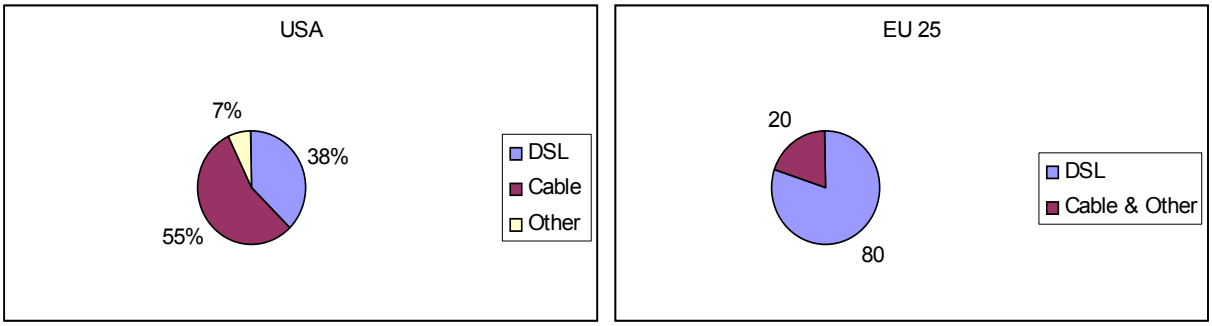
Instead of progressive deregulation based on how far sustainable competition has been established, the first variant of the option proposes a fixed date for total deregulation. The problem with this approach is that it essentially undermines the pro-competitive intent of the existing regulatory system. Experience shows that competition progresses at different rates in different markets, thus a blanket removal of regulation introduces a strong risk of the reassertion of monopolistic behaviour in those market where an incumbent operator retains its dominant position. This would have a considerable potential impact on the development of sustainable competition and consumer welfare.

As far as the second option – regulatory holidays on new fibre investments - is concerned, there is both empirical and theoretical evidence to call upon. As regards empirical evidence, some market players have supported their claim for 'regulatory holidays' by referring to the US broadband market where regulated access to new fibre investment by telecom operators is the exception, and where – according to this claim – the companies are therefore investing more and there is a faster roll out of high-speed fibre networks (see results from the public consultation in Chapter 5.5).

However, as regards penetration rates, it has already been demonstrated above that broadband take-up in the EU - especially in the best performing Member States - is now faster than in the USA. As regards speed, the US market dynamics are different mainly due to the widespread infrastructural competition between cable and telecommunications networks which is driving fibre investment figures above that of the EU.

As already noted in the first IA report of June 2006, relatively few US subscribers use DSL (Digital Subscriber Line) technology and the telecommunication companies are the minority player in the broadband market, which is dominated by cable (TV) companies (Figure 8). The greater local loop length in the US means that the copper telecommunications network cannot support very high speeds, and therefore the US telecom companies are forced to invest in fibre if they want to catch-up with a strong cable sector, which has been offering high bandwidth in the big cities for several years.

Figure 8. DSL and cable markets shares in the USA and the EU



Source: OECD, European Commission

The above figure also illustrates the reason why the regulatory approaches to broadband are different in the EU and US. The advanced infrastructural competition in the US led the Federal Communications Committee (FCC) to decide not to apply the unbundling provisions of the US Communication Act of 1996 to the broadband markets, relying predominately on inter platform competition between the telecom (xDSL) and the TV-cable networks[108].

The US experience does lend some plausibility to the argument that a "regulatory holiday" where there is infrastructural competition will stimulate investment in new networks. However, in the EU given the different network geographies, it cannot be assumed that this will result directly in massive fibre investments. Moreover, there are indications that the US regulatory approach to rely solely on infrastructure competition might be detrimental to consumer choice. The lack of access competition on the 'last mile' means that consumers are only offered what the "cable and telephone broadband duopoly" provide[109]. This issue is closely linked to the US debate on "net neutrality", which is further discussed in Chapter 7.

5.3.3. Option 3 - No change to the regulatory framework: maintain the current model

As described above, the current framework is based on regulation of markets. This market based approach is a response to convergence; it allows inter-platform competition to be fully taken into account, and avoids technology-specific regulation. The same regulatory principles apply regardless of which kind of existing or potentially new technology is involved. Regulation must be lifted when there is effective competition.

This option therefore implies that *ex ante* regulation should not be removed "*en bloc*" but progressively as an outcome of market analysis by the NRAs and revision of the list of relevant markets (of the Commission Recommendation) by the Commission, as competition becomes effective in these markets.

Assessment of impacts of Option 3

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108 See e.g. *Is the U.S. Dancing to a Different Drummer*? Scott Marcus, Communications & Strategies, No 60, 4th quarter 2005: http://www.idate.fr/fic/revue_telech/132/CS60%20MARCUS.pdf.

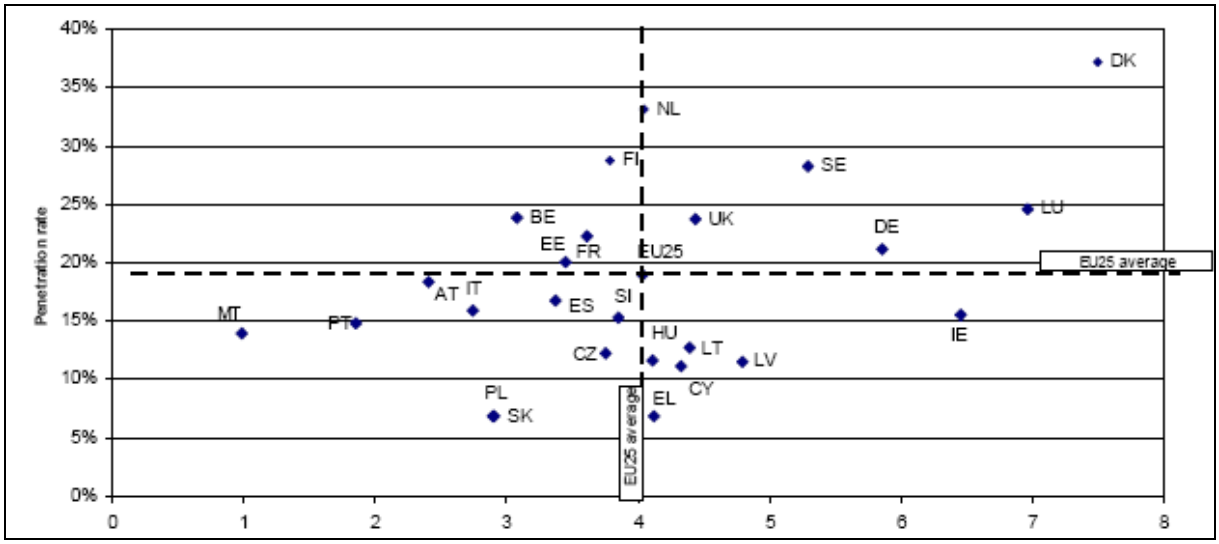
109 See e.g. *Broadband Reality Check II*, S. Derek Turner, Free Press, September 2006: http://www.freepress.net/docs/bbrc2-final.pdf and *America's Internet Disconnect*, Michael J. Cobbs (member of the FCC), Washington Post, 8 November 2006,: http://www.washingtonpost.com/wp-dyn/content/article/2006/11/07/AR2006110701230.html.

Maintaining the current regulatory framework (Option 3) provides continuity and the opportunity to build on existing achievements. The attraction of the current system is that it provides a consistent regulatory framework, but national regulators still have sufficient flexibility and possibility to design their interventions to suit the realities of the markets - including unbundling and wholesale broadband access markets - in each Member State. In essence, the NRAs have the flexibility to introduce measures to foster both infrastructure and service-based competition.

The recent market data provides evidence on the effects of option 3, by examining the results achieved so far under the current framework. As noted above, competition in broadband can be measured both at the infrastructure (local loop unbundling + other technologies, mainly cable modem) and at the service level (bitstream and resale of DSL lines). Take-up in the EU has been particularly strong in those countries where infrastructure-based competition has been effective, which allows consumers to choose between different modes of broadband access.

Thus, all leading Member States in terms of penetration, notably the Netherlands, Denmark, Finland and Sweden (see below figure), have also a high roll-out of cable and have arrangements in place which allow alternative operators to gain access to the existing telecoms networks[110].

Figure 9. Broadband penetration rate in the EU, July 2006-2007



Source: Communications Committee Working Document, COCOM07-50 FINAL, 15 October 2007

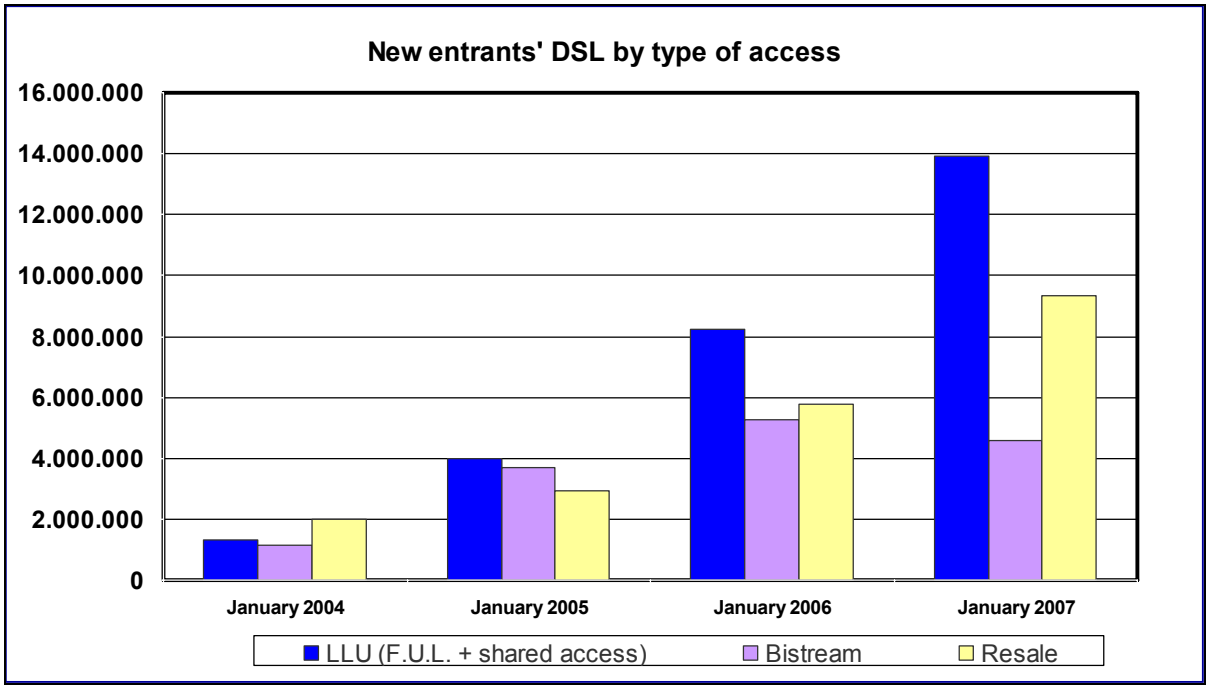
Effective market regulation permitting access to the incumbent's infrastructure also stimulates competition, and decisive regulatory action for example in France and the United Kingdom, has clearly been important. As a consequence, France has now one of the highest broadband penetration rates based on service-based competition. Also other Member States have significant service-based competition, generally based on full or shared local loop unbundling. In these countries alternative operators hold significant parts of the ADSL market (e.g. UK, Germany, Sweden, Finland and Austria)[111].

110 12th Implementation Report 2006.

111 Idem.

As can be seen from the figure below, there has been also a move from resale to local loop unbundling and shared access, which are crucial for the competitive supply of triple play services.

Figure 10. New entrants' DSL lines by access type, Jan 2004 – Jan 2007, EU 25



Source: Commission services

In January 2007 there were more than 5.6 million unbundled local loops (LLU) lines compared to January 2006. This can be seen as a positive structural change as the alternative operators are replacing bitstream wholesale access with fully unbundled or shared access lines. Successful wholesale access regulation has also contributed to the strong growth of resale, which grew by 3.5 million lines in 2006, as low entry barriers allow potential market players (who usually have low investment incentive) to enter the market.

It can therefore be observed that that from 2003 to early 2007, there has been a gradual but steady development of infrastructure-based competition. In 2006 alternative providers continued to 'climb the ladder of investment' with more than 4.1 million new fully unbundled local loops (up by 79% from 2005), investing in the process several billion euros into new infrastructure. On average, new entrants now have 52% of the EU market (if resale products are excluded, new entrants have market share of 40.7%). In some countries (e.g. Italy, UK and Spain), the rollout of own networks by the alternative operators has started to emerge[112].

As regards next generation network investments, guidance provided by the ERG could help to provide operators contemplating new investments to know how NRAs will apply the framework and which obligations they might apply in specific circumstances[113]. For example, NRAs can adapt the remedies to take account of the main costs of upgrading the local access network, which are usually not the costs of the fibre itself, but the costs associated with civil

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112 Idem.

113 ERG Opinion on Regulatory Principles of Next Generation, ERG (07) 16 Rev 2: http://erg.eu.int/documents/docs/index_en.htm

engineering works, i.e. the time it takes to be granted rights of way and to dig up roads and pavements to lay ducts.

In this regard, it is worth noting that duct sharing or joint duct usage would drastically reduce the costs for the roll out of parallel cable or fibre networks, thereby facilitating infrastructure based competition. It is already the case that NRAs can under the framework adapt remedies to facilitate sharing of passive infrastructures (ducts, inspection chambers, street cabinets, etc). Indeed, in one Member State duct sharing has been already imposed on the incumbent. The practical feasibility of this approach, however, varies considerably from place to place. For example, duct sharing appears to be feasible in greenfield situations where ducts have been installed relatively recently and are not congested[114].

As regards existing ducts there is no overall picture of the level of congestion and the physical condition in the EU, although it can be assumed from their age that many will be in poor shape and it is estimated that about 50% of local loops are buried directly in the ground. Passive infrastructure sharing in the EU therefore, while attractive in principle, requires a detailed local mapping of local loop networks to gauge its practicability.

5.4. Results of the public consultation

In general, the public consultation showed support for the current model of the framework that was seen to promote competition and investment. Especially new entrants saw that effective pro-competitive *ex ante* regulation and open access provisions on incumbents' networks are strongly correlated with increased investment and innovation[115].

As for the alternative options, only a limited number of stakeholders expressed their views. The new entrants and the European Regulatory Group as well as couple of Member States supported 'open access model' in its more limited form, i.e. functional separation. However, operators generally saw that this should be based on voluntary action. Several Member States preferred no change, whereas incumbents were clearly against forced structural or functional separation.

Critics of the current approach, in most cases the incumbent operators, argued that the framework does not promote future investment and innovation. Reference was made specifically to the NGNs, which in their opinion merit regulatory forbearance, as they should be considered new investments and therefore be treated as new and emerging markets. The argument is based on the fact that developing new consumer applications and video services will require more bandwidth than ADSL can provide and investment in high speed NGN access technologies of the FTTx[116] type is therefore necessary if Europe does not want to be

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114 Some ducts are 30-40 years old, are in a poor state of repair and congested with cables.

115 In this context, see in particular the 'Regulatory scorecard' commissioned by ECTA (European Competitive Telecommunications Association), which "*by measuring the powers and performance of NRAs and the regulatory regimes overall, seeks to determine how effectively countries promote investment and competition*". The latest 2006 Scorecard is available at: http://www.ectaportal.com/en/basic651.html. The construction of this scorecard has been criticised by a study commissioned by ETNO (European Telecommunications Network Operators' Association), see *A sound basis for evidence based policy? A critique of the ECTA regulatory scorecard and SPC Network papers on investment and broadband*, Indepen, June 2006. http://www.etno.be/Portals/34/publications/other/Indepen%20Study_June%202006.pdf.

116 FTTx stand for Fiber-to-the-x where "x" may be the home (FTTH), the curb (FTTC) or building (FTTB).

left behind[117]. Deregulation of the US broadband market was brought up as an argument against the EU regulatory approach, and predictions of faster fibre roll out in the US were presented as evidence supporting the claim for 'regulatory holidays'[118]. Alternative operators were strongly against such approaches as they fear that their investments in core networks will be threatened if incumbents re-exert their monopoly power over local access.

5.5. Comparison of options and impacts

Option 1

Option 1 (*'open access model'*) implies mandated vertical separation between infrastructure provision and service provision, and represents a major intervention into the property rights of firms

The evidence examined above suggests that in the telecommunication sector, the benefits of structural separation - in terms of a once-and-for-all regulatory solution to access discrimination - would be quite difficult to justify against the costs, in view of the high one-off costs to implement the split, the loss of economies of scope and increased difficulties of coordinating investment and innovations between services and the unbundled network operations.

In addition, as regards investments in next generation networks, the largest part of the potential reward for taking the risk of investing in these new networks would accrue to external service providers rather than an internal services division. Only direct regulatory incentives for the network operator (in the form of guaranteed rates of return) might overcome the reluctance of a separated access provider to make such investments, which then puts the burden of determining the pace of innovation onto the regulator rather than the market.

This problem is mitigated under the functional separation model. By maintaining common ownership of the two business divisions, the investment incentives and market signals are preserved to a large extent - even though co-ordination problems may still arise - whilst also increasing the incentive to behave in a non-discriminatory manner. Moreover, regulatory action can be taken to incentivise investments in the local loop. This is functional separation's biggest advantage over structural separation, and the primary reason why the stakeholders in the public consultation has suggested functional separation as a possible remedy and not divestiture.

Functional separation could serve to make competition more effective in a service-based competition environment where infrastructure-based competition is not expected to develop in a reasonable period. As a regulatory measure, it might be warranted when there are systematic market power problems identified across a number of markets (rather than on an individual market). It could therefore be considered when all other regulatory tools have proved inadequate to address market and competition failures.

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117 These arguments are advanced particularly by the FTTH Council Europe in its consultation contribution *The Business Case for Incumbent Telco Fiber Networks*, *prepared by Heavy Reading for FTTH Council Europe,* January 2006: http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/review_2/index_en.htm

118 See e.g. the contribution by ETNO at URL above.

However, there is a risk that different national approaches to functional separation could fragment the internal market and hinder both competition and investment. Setting common EU criteria for the implementation of functional separation would therefore improve legal consistency and certainty in the sector, thereby contributing to better regulation (note that regulatory consistency is further discussed in Chapter 7). In particular, the common conditions should not prevent appropriate investment co-ordination mechanisms between the different separate business entities in order to ensure that the economic and management supervision rights of the parent company are protected.

Moreover, the costs and benefits of functional separation, and therefore the desirability of imposing such a solution, depend on national circumstances. Before implementing this remedy, the national regulatory authority would need to undertake a detailed cost-benefit analysis and demonstrate that the proposed measure met the set criteria.

The remaining risk is that access infrastructure competition is weakened under functional separation (since competitors find it more attractive to 'rent' access than to invest in their own infrastructure), causing subsequent network investments to be delayed. However it is worth remembering that infrastructure competition on the access networks is relatively uncommon in Europe, with only about 20% of the market accounted for by alternative providers. Moreover, the costs and technical architectures of next generation access networks - such as VDSL networks - are likely to make the emergence of further access competition rather difficult, except in certain high density zones or in special cases such as new build cabling where duct sharing is commercially viable[119].

Options 2 and 3

From 2003 to 2006, there was a gradual but steady development of infrastructure-based competition. Alternative providers 'climbed the ladder of investment' spending in the process several billion euros for new infrastructure. In 2006 alone, the number of fully unbundled local loops grew by 4.1 million (up by 79% from 2005).

When considering Option 2 (*removing or restricting ex ante regulation*) and Option 3 (*'no change to the current model')* based on the available evidence, two features can be consistently identified. The presence of competing (effective) alternative infrastructures appears as a key element in broadband development. In the absence of such infrastructure competition, regulation plays a vital role in setting the right conditions for accessing the incumbent's infrastructure and thereby creating service-based competition. New players such as internet service providers exert pressure on traditional fixed and mobile providers to innovate and develop new strategies, including investment in broadband and next generation networks to create new, more lucrative revenue streams from, for example, consumer and business services.

The strongest record for investment and take up of new services can be observed in those Member States – led by Denmark and the Netherlands - where infrastructure-based competition between telecommunications operators and cable operators has been effective.

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[119] See further discussion in the context of the situation in the Netherlands, *The business case for sub-loop unbundling in the Netherlands*, Analysys Consulting, Final Report for OPTA (public version), 26 January 2007, available at: http://www.opta.nl/download/Analysys+Final+Report%2Epdf.

Regulatory holidays – even temporary ones - for dominant operators would lock out effective competition, while this operator itself would gain first-mover advantage across a wide range of telecom services. Although competition has become effective in several eCommunications markets over the last years, the monitoring data still reveals the existence of market failures in most markets and in particular in fixed line access.

As large European operators compete for global business in the each other's national markets, regulatory holidays would place some of them at an unfair advantage if they were protected from opening their own domestic broadband networks while at the same time they were able to gain access to broadband network in other countries through open access regulation.

Against this background, Option 2 (removing or restricting ex ante regulation) carries a strong risk of disrupting the level playing field between market players and causing consumer harm without any clear indication that it would lead to more investment and innovation. The mere installation of new technology or new infrastructure does not merit 'regulatory holidays' and cannot in itself change existing access obligations. "Regulatory holidays" may only (if at all) yield short-term benefits, but will not lead to sustainable investment and consumer-benefits in the long run.

The argument that a moratorium on regulation is financially necessary to justify investments in access networks can be met by a suitable adaptation of the existing regulatory pricing obligations. These can include recognition that where investing in access networks is more risky than maintaining the PSTN (Public Switched Telephone Network), incumbents should receive a greater return on capital at the wholesale level as already foreseen by the regulatory framework[120].

The table below provides a summary on main likely impacts and risks arising from the each of the three policy options with respect to the different economic and social dimensions. Impacts of Option 1 and 2 are compared to the “no change” option 3, which provides a baseline scenario for the assessment.

[120] Article 12 of the Access Directive.

Table 1. Summary on the main impacts and risks of the options

IMPACTS AND RISKS	**Option 1 – Adopt 'open access' model**	**Option 2 – Limit *ex ante* regulation**	**Option 3 - No change**
	ECONOMIC		
Investment and innovation	Higher predictability of regulation may lead to more investment and innovation by alternative operators. Risk of inadequate investment by structurally separated network operators / incumbents due to reduced investment incentive.	Higher predictability of regulation may lead to more investment and innovation by incumbents. Risk of less investment by alternative / new operators that may be driven out of market due to higher market entry barrier.	Competitive environment fostered by the framework should induce investment. Risk of heterogeneous implementation that may lead to regulatory inconsistency / lower predictability hence hampering investment and innovation.
Competition	Can lead to more service competition as separation between infrastructure and services removes operators' incentive to discriminate or deny access. Risk of removing incentives for access infrastructure competition where infrastructure can be replicated.	Can theoretically lead to more infrastructure-based competition where alternative infrastructures are possible, but bigger risk of reduced competition due to re-monopolisation where infrastructure is difficult to replicate (e.g. local loop).	Application of the framework in Member States has been shown to promote competition
Internal market	Could facilitate EU wide wholesale offers and thus open up internal market services for business and consumers, but diverging national approaches could emerge and divestiture would be disproportionate when infrastructure competition is effective.	Fixed date for removal ex ante regulation could distort the internal market (with monopolies in some markets/ MS and competition in others).	Consistent application of the framework in Member States would promote the internal market.
EU competitiveness (vis-à-vis third countries)	Impact depends on effect divestiture on competition and investment.	Potential short term gains from increased infrastructure investment, but re-monopolisation of markets would impact negatively on mid-term competition investment and innovation.	Effective implementation would increase competition and hence EU competitiveness.
Economic operators' costs and benefits	Outcome depends on the degree of separation. Implies high set-up and compliance costs. Mandatory measures could negatively impact share values of the service divisions of integrated operators but improve the market value of the separated entity as it would be subjected to utility style rates of return.	Lower compliance costs for operators with significant market power. May initially have a positive effect on the share value of the incumbents / network operators. Could undermine the business model of alternative operators.	Compliance costs (of the operators with significant market power) with the existing regulation remain but should gradually decrease as markets become effectively competitive and regulation is rolled back. Maintaining openness of key bottleneck assets open is crucial to alternative operator business models.
Public sector costs	Generally implies less administrative burden (but even in case of divestiture, regulation to prevent monopoly pricing required).	Outcome depends on the degree of limiting *ex ante* regulation. Generally implies less administrative burden.	Administrative burden associated with *ex ante* regulation remains but should gradually decrease as markets become effectively competitive.
Consumer benefits	Increased service competition may lead to more choice and lower prices. In longer term risk of slow next generation broadband deployment if regulatory incentives are not adequate.	High risk of re-monopolisation that would likely lead to less consumer choice and higher prices.	Development towards more choice and cheaper prices likely to continue and transition to new services if regulation is implemented effectively and consistently in MS.
	SOCIAL		
Social and digital inclusion	Depends on the degree of separation. Risks stem from attenuation of incentives to invest in new infrastructure in less attractive areas thus widening the digital divide.	High risk of re-monopolisation of some markets leading to higher prices and delays in rolling out new services in areas of weak demand, thus widening the digital divide.	Current *ex ante* regulation promotes competition likely to bring higher penetration of new services thus contributing to the digital inclusion, but move to high speed broadband in rural areas uncertain.
Employment and labour market	New jobs created in alternative operators and especially growth in indirect employment in web services are likely to outweigh market consolidation and rationalisation in the regulated firm.	Initial positive effects for incumbents, but risk of overall negative employment effects for other sectors of the economy through spill-over effects (e.g. through higher prices) and on alternative operators.	New jobs created in alternative operators and especially growth in indirect employment in web services are likely to outweigh market consolidation and rationalisation in the regulated firm.

5.6. Conclusion

The above analysis indicates that competition and convergence are key factors that are driving telecom operators to modernise their network and make substantial investments to Next Generation Networks (NGN). Recent technological and market developments indicate the need for some adjustments to the regulatory framework, although the empirical evidence suggests that the approach is fundamentally sound.

A combination of infrastructure competition and regulation seems to produce the highest national broadband penetration rates. In much of the EU – but by no means all – there is now infrastructure competition on the core networks. But, only in a small minority of cases is there infrastructural competition on access networks. In the absence of such choice of infrastructure, there is a continuing need to apply the ex ante regulation.

The market situation, however, is very different from one part of Europe to another, even from city to city and region to region inside the same Member State. That is why the flexibility that the current framework provides to the national regulators to take account of the specific situation in each market is crucial. NRAs can introduce regulatory measures to foster infrastructure or service-based competition, or a mixture of both, while taking into account of the need of risky investments to generate adequate return on capital when mandating pro-competitive access obligations. The current model also caters for the needs of the enlarged EU where the market conditions between the Member States are more diverse than before.

The revision of the 2003 Commission Recommendation on Relevant Markets – which has been conducted in parallel with this review[121]- shows that the existing model of the framework has the inbuilt flexibility to make possible substantial deregulation by phasing out 11 of the 18 markets previously considered susceptible to *ex ante* regulation. Regulation in the sector can therefore focus on wholesale markets, where the key bottlenecks for effective competition still remain as discussed above.

However, the key risk that the existing flexible approach carries is the danger of heterogeneous implementation of *ex ante* remedies, which can lead to lack of regulatory consistency in the single market, thereby hampering the emergence of services at a pan-European scale such as EU wide mobile, internet and business services, all of which are important for Europe's competitiveness, growth and jobs. This is further discussed in Chapter 7.

The Commission therefore considers that a modified Option 3 is the most appropriate option. The modification would be to add mandatory functional separation - as discussed under the Option 1 - as an exceptional measure available in the NRA's regulatory toolbox. This could serve to enhance competition in an environment where it could be demonstrated that standard remedies were insufficient to improve market failure and where there was little prospect of infrastructure competition within a reasonable timeframe. As it is an exceptional remedy, Commission oversight will be necessary to reduce the risk that different national approaches lead to fragmentation of the internal market.

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[121] See Recommendation C(2007) 5406 and its associated Explanatory Note, Commission Staff Working Document SEC(2007) 1483, available at: http://ec.europa.eu/information_society/policy/ecomm/tomorrow/index_en.htm.

6. SPECTRUM MANAGEMENT

6.1. Identifying the problem

6.1.1. Introduction

Introduction

The overreaching goal of spectrum policy is to ensure that spectrum is managed to deliver the most efficient use from a social and economic perspective. Spectrum management reform is probably the most important area of this review, certainly in terms of the potential gains for Europe. As highlighted already in the Impact Assessment of June 2006[122], spectrum policy in general must take into account not only the electronic communications services but also all other spectrum uses, such as defence, aeronautical, maritime, medical, scientific, industrial, etc. The analysis presented in this impact assessment focuses on implications for eCommunications services.

The relative importance of radio spectrum as a production factor for electronic communications services and networks (such as mobile, wireless and satellite communications, TV and radio broadcasting distribution, and other services such as transport, radio location and Galileo satellite system) has increased dramatically during the last decade, so has the importance of the provisions related to radio spectrum within the regulatory framework.

The "value" of spectrum

Spectrum can be considered as a public good; it has both public and market value. While it is difficult to measure the real economic value of spectrum as such[123], it is possible to express the importance of spectrum using the parameter of the total value of spectrum dependent services. It is estimated that the total value of radio spectrum dependent services in the EU today is about EUR 250 € billion[124].

The use of spectrum is determined in particular by two parameters, "Who decides who can use a spectrum band?", and "Who decides for what it can be used for?" Both these parameters have traditionally been under the control of Member States administrations, and the organisation of spectrum management varies widely from one Member State to the other[125].

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122 SEC(2006) 817, see Chapter 1 above.

123 A spectrum auction can assign a certain market value to a specific spectrum band. However, this can be a significantly distorted value as the current less than efficient spectrum management creates artificial scarcity and market prices can be inflated (as it was the case e.g. in the 3G auctions).

124 See study on *Conditions and options in introducing secondary trading of radio spectrum in the European Community*, Analysys Consulting, DotEcon and Hogan & Hartson, 2004 (hereinafter Analysys et al. 2004) which estimated that figure to be EUR 200 billion in 2004. The estimate covers the European Economic Area, i.e. all EU Member States and Iceland, Norway and Lichtenstein. The study is available at: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

125 See a table describing the organisation of spectrum management in the Member States at: http://ec.europa.eu/information_society/policy/radio_spectrum/general_overview/spectrum_member_states/index_en.htm

The most important problems related to the current system of managing spectrum can be summarised as follows:

– Spectrum is rigidly segmented between the classical services (broadcasting, fixed, mobile communications) and other applications;

– National borders are increasingly irrelevant for optimal radio spectrum use. Fragmentation of the management of access to spectrum rights limits investment and innovation and does not allow operators and equipment manufacturers to realise economies of scale;

– There are legacy issues related to diverging conditions to access radio spectrum for different spectrum users; and

– Access to spectrum for new and innovative services and technologies is limited and, as a result of the rigidity of current spectrum allocations, usually available only in higher frequencies with worse propagation characteristics.

In the current situation, spectrum is for the most part rigidly allocated to specific technologies and/or for specific usages, and its use is generally based on exclusive individual rights subject to stringent conditions with no possibility to sell or lease such rights to other potential users. Some users hold large amounts of valuable spectrum that they do not use to its full capacity, while for new entrants it can be very difficult to acquire suitable spectrum.

The problems of inefficiencies in distribution and use of spectrum result in increased costs, lost opportunities for operators and manufacturers and reduced investment in and take-up of new innovative applications and services. Evidence from recent studies and academic literature supports this general conclusion as described below.

In addition, the switchover to digital broadcasting and the emergence of the "digital dividend" (the switchover from analogue to digital terrestrial TV that will free up an unprecedented amount of spectrum in Europe) are poised to trigger the largest re-organisation of spectrum resources in Europe for decades. This formidable challenge is also an opportunity to put to work the new spectrum management reforms on a significant scale. This necessitates that the regulatory framework be adapted in time to be able to conduct the required coordination on a European level and reap the full potential of the digital dividend from a social and economic perspective.

However, this IA does not assess impacts of digital dividend as such but address the broader issues of spectrum management. In parallel to this Review, the Commission adopted a Communication on a common approach to the use of the spectrum released by the digital switchover.

Evidence base for the problem

During recent years, there has been a growing body of evidence suggesting that the mainstream way of managing spectrum is leading to a seriously sub-optimised use of the resource. For example, scans of the actual use of the spectrum such as those undertaken by the national regulatory authority in the UK (Office of Communications, Ofcom) at various

locations in 2004 confirm this impression[126]. Even in central London, much of the most attractive spectrum was left empty, although formally the entire spectrum measured had been allocated to a specific use. Another oft-quoted fact is that newer, and presumably better technologies, can only be introduced in the higher parts of the spectrum, which are less attractive due to poor propagation characteristics. It is clear that the present regulation of spectrum does not deliver.

Much of the early academic debate was split among two camps, those insisting on a pure economic approach using economic means to distribute spectrum and manage interference, and the other camp seeing a future paradigm of unlicensed use where everybody could access the spectrum under the condition that one abides by a limited set of rules to ensure interference management.

As the debate has matured and moved closer to the level of actual policy development, there has been a growing agreement that all three paradigms linked to spectrum management - administrative approach, market-based approach and unlicensed use - have a contribution to make to an efficiently managed spectrum policy. Apart from a number of studies conducted for Ofcom[127], the German national regulatory authority (*Bundesnetzagentur*, BNetzA) commissioned a very useful study[128], and the French *Commission Consultative des Radiocommunications* specifically studied the future use of the valuable UHF spectrum[129], while the European Commission has finalised two studies, specifically looking at the market-based approach and at the unlicensed use of spectrum[130].

Two other recent studies on the digital dividend have estimated that more flexible approaches to spectrum allocation in the UHF bands lead to respectively 20 billion euros of extra growth[131] or up to 0.6% p.a. extra growth between 2010 and 2020[132] .

Although these studies have different emphasis, the common thread is that they all conclude that *the removal of unnecessary restrictions on spectrum use, what we now call technology and service neutrality, would substantially increase the benefits that society derives from spectrum use.*

While the studies that were commissioned by national authorities quite naturally have focused on the regulatory actions that would prove most useful for national regulatory action, the studies commissioned by the European Commission were specifically directed at identifying the appropriate role for a common approach at the EU level. A study conducted in 2004

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126 See *Spectrum Framework Review*, Ofcom consultation issued on 23 November 2004, available at: http://www.ofcom.org.uk/consult/condocs/sfr/sfr2/.

127 For reference to these studies, see the above Ofcom consultation document.

128 *Towards More Flexible Spectrum Regulation*, WIK Consult, 2005, available at: http://www.bundesnetzagentur.de/media/archive/4745.pdf.

129 *Rapport du groupe de travail sur les enjeux et perspectives d'accès aux fréquences basses pour les services de communications électroniques*, 10 October 2007: http://www.arcep.fr/uploads/tx_gspublication/rapport-ccr-151007.pdf

130 See, respectively, Analysys et al. 2004 (see footnote 124 above) and study on *Technical, Regulatory and Economic issues relating to Collective Use of Radio Spectrum*, Mott MacDonald Ltd, Aegis Systems, IDATE, Indepen Consulting and WIK Consult, 2006, available at: http://ec.europa.eu/information_society/policy/radio_spectrum/archives/index_en.htm#compl_studies.

131 *Assessing the Impact of an Early Decision on Digital Dividend Spectrum Allocation*, Spectrum Strategy Consultants, 2007.

132 *The Mobile Provide, Economic Impacts of Alternative Uses of the Digital Dividend*, SCF Associates, 2007.

estimated that *even if Member States individually took the most appropriate action to modernise their spectrum management, the effect would be that Europe would fail to realise 30% of the potential benefits unless the Union coordinated its efforts*[133].

This study focused specifically on the issue of spectrum trading. To assess the potential impact of co-ordination, it examined different co-ordination scenarios and benchmarked them against the status quo (which assumed that the Commission undertakes no further action to co-ordinate trading or liberalisation of spectrum). The study concluded that the net benefits are greatest if all Member States introduce trading and liberalisation (i.e. more flexibility in spectrum management) in certain bands. The welfare benefits of this co-ordinated approach are potentially significant whereas the cost of introducing liberalisation alone is relatively small.

Future market developments

Apart from the body of evidence focussing on the reform of spectrum management, the recent data and studies on future market trends again suggest that the current system of managing spectrum is unsustainable from a mid-term and long-term perspective.

A study compiled for the European Commission / the Institute for Prospective Technological Studies (IPTS)[134] examined in particular the development of alternative wireless technologies, such as ultra-wide band, WiMAX, Flash-OFDM, WiFi or meshed networks[135]. These technologies represent an alternative and/or complement to the traditional 2G (GSM) and 3G. The study concludes that alternative wireless technologies (AWTs) have a big potential and their development could have important economic implications for Europe. One of the bottlenecks for AWTs development identified in the study is the existence of licensing regimes in many EU countries imposing limitations on spectrum availability.

Mobile and wireless technologies will be increasingly important for regions where high-speed fibre or cable networks cannot be deployed. In these geographical areas, more and more data will be transmitted via mobile or other wireless types of networks and consequently, more spectrum will be needed to account for the increasing needs for data transfer and higher speeds. In such areas, which largely coincide with rural areas and parts of Europe with a less developed infrastructure, it is likely to be necessary for new broadband systems to use spectrum from the digital dividend in order to become feasible.

According to expert forecasts, also the traditional mobile services are expected to grow in the coming years. The second generation of mobile services will be gradually replaced by the third generation with an increase from around 58 million mobile connections in 2006 to over 300 million 3G mobile connections in 2010[136] in Western Europe. With growing penetration of 3G technologies, an increase in usage of mobile data services can be expected (services such as mobile TV, location-based services, etc.), which will put additional pressure on availability of spectrum.

Fixed network incumbents start implementing fixed-to-mobile convergence solutions and offer services that can seamlessly switch between GSM (or 3G) network and WiFi network using dual-mode handsets. BT Fusion is one of the pioneers in this respect and forecasts that there will be 22 million dual-mode handsets in the U.K. by 2010[137]. These multi-platform solutions again require

133 Analysys et al. 2004, see URL in footnote 124.

134 IPTS is one of the 7 research institutes that form part of the European Commission's Joint Research Centre.

135 *Mapping European wireless trends and drivers*, E. Bohlin, S. Lindmark, C. Rodríguez and J-C. Burgelman, 2006, available at: ftp://ftp.jrc.es/pub/EURdoc/eur22250en.pdf.

136 These are estimates of the Gartner's mobile services forecasting model. *Mobile connections by technology, Western Europe, 2001-2010*, Gartner, July 2006.

137 *The Future of Consumer Voice – the Telcos*, Gartner, January 2007.

sufficiently flexible and available spectrum both for GSM/3G technologies and alternative wireless technologies.

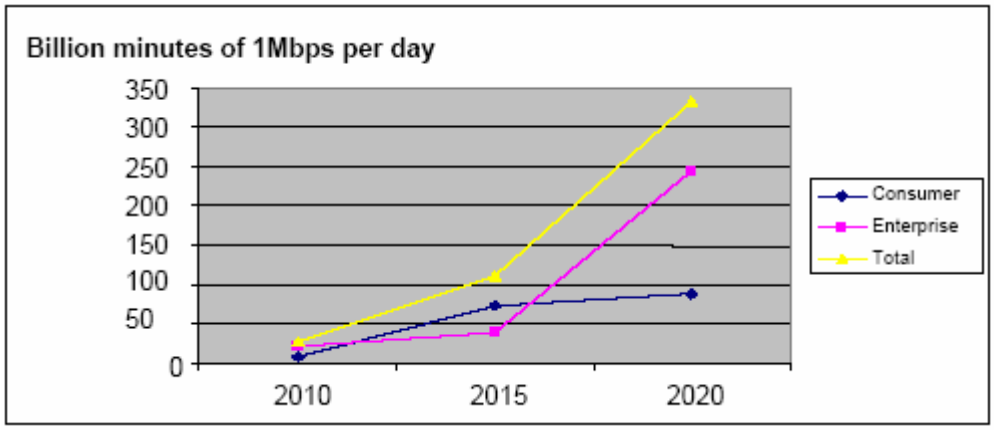
Availability of radio spectrum is essential for RFID applications. The market for RFID systems is growing rapidly with annual growth of 45% in the EU and almost 60% in the global market. The Commission recently issued a Communication on RFID in Europe[138] where the issue of RFID potential and spectrum availability is also discussed.

It should be remembered that communications between people is not the whole picture. Machine to machine communication, the so called 'Internet of Things' – means that there is a far larger population of users of the radio spectrum than just humans. Such applications are, for example, industrial telemetry, managing traffic flows in major cities or handling car-to-car communications to avoid accidents.

Potential demand for wireless services in the EU

A study commissioned by the IPTS on the demand for future mobile communications markets and services in Europe[139] presents alternative socio-economic scenarios from which potential demand for wireless services in the EU in the years 2010, 2015 and 2020 is derived[140]. The most realistic scenario ('Constant change scenario') suggests a sharp increase in wireless traffic, particularly for enterprises after 2015, as showed in the figure. Increase in the demand for wireless services is growing (not shown by the Figure 9), but growth is moderate before 2010 compared to afterwards.

Figure 11. Estimated mobile traffic (within the 'Constant change scenario')



Source: *The Demand for Future Mobile Communications Markets and Services in Europe,* S. Forge et al., 2006.

138 See *Commission Communication on Radio Frequency Identification (RFID) in Europe: steps towards a policy framework*, COM(2007) 96: http://ec.europa.eu/information_society/policy/rfid/index_en.htm

139 See *The Demand for Future Mobile Communications Markets and Services in Europe,* S. Forge, C. Blackman, E. Bohlin, April 2005, available at: http://fms.jrc.es/documents/FMS%20FINAL%20REPORT.pdf.

140 These scenarios are: 1) 'Smooth development': EU economies unite to provide growth and development, in a fair and managed way that brings prosperity across all 25 members; 2) 'Economic stagnation': the EU economy slowly declines, as did the Japanese economy between 1988 and 2003. Outputs gradually shrink and government policy reactions to strong deflation are unsuccessful or frozen. EU economic growth falls behind that of Asia; and 3) 'Constant change': The economy overall follows a moderately positive trend, with ups and downs. Ad hoc growth and recession often occur in parallel in different areas or countries, with stop-go progressions and regressions in specific areas of the EU. However, prosperity slowly increases for many in the EU.

6.1.2. Policy response to the identified problem so far

There has been a shift in the perception of the parties involved in developing spectrum policy in Europe during the five years that have followed the adoption of the Radio Spectrum Decision. As a case in point, the European Council in December 2006 referred to the immediate ICT policy needs as including "*the development of spectrum allocation models meeting all objectives, the fast promotion of advanced mobile services and to the extent possible a coordinated approach for the use of spectrum capacity, becoming available as a result of digital switch-over*"[141].

This realisation of the European dimension of the issue and the need to coordinate decision making and ensure the single market are increasingly present in exchanges between decision-makers. The Radio Spectrum Policy Group (RSPG), which is composed of high-level representatives from Member States, is advising the Commission on issues of strategic importance in this field. The group has developed the WAPECS concept (Wireless Access Policy for Electronic Communication Services) since 2004 and the work has been used in developing the present legislative proposal[142]. The RSPG has also highlighted the significant interest of a reinforced cooperation in EU spectrum policy in two other strategic areas: the deployment of multimedia services (RSPG Opinion number 5) and the future use of the digital dividend (RSPG Opinion number 7).

Under comitology, the Radio Spectrum Committee has provided the Commission with the support necessary to adopt a number of regulatory opinions. In previous years, these have mainly concerned ad-hoc Decisions supporting a specific use, such as automotive radars or assisted hearing devices, although a framework Decision on Short Range Devices[143] has also been adopted. In response to demand from operators and manufacturers, in 2007 several Decisions have been adopted with direct implications for electronic communications services, such as the Decision on 2 GHz mobile satellite systems, the Decision on harmonised availability of information regarding spectrum use[144], and the expected forthcoming Decision on harmonised use of the 900 and 1800 MHz bands (enabling 3G and other services to be used in the GSM bands) combined with the repeal of the 1987 GSM Directive and the Decision on Mobile Communication aboard Aircraft. These measures are interlinked with equipment regulations under the R&TTE Directive[145]. This Directive relies to a large extent on standardisation.

Despite these efforts, the reality in Europe is that there is still a system of cumbersome and top-heavy procedures, where decisions on use of spectrum are mainly taken by public administrations and specified in some detail. Even when EU-level agreement on technical harmonisation is achieved - which requires a complex coordination of schedules between the EU and the CEPT[146] - the ensuing licenses are still issued in 27 different ways. The review of the regulatory framework thus provides the occasion to propose a simpler and more efficient regulatory system.

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141 Presidency Conclusions of the European Council 16879/06 of 15.12.2006, see paragraph 30.

142 For more details, see RSPG's web-site: http://rspg.groups.eu.int.

143 Commission Decision 2006/771/EC of 9 November 2006, available at: http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/index_en.htm

144 Commission Decision (C(2007) 2085) of 16 May 2007, see URL above.

145 Directive 1999/5/EC of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

146 European Conference of Postal and Telecommunications Administrations: http://www.cept.org/

6.1.3. Summarising the problem

The available evidence shows that the importance of mobile and wireless communications markets and services will further increase, and that the current, predominantly command-and-control spectrum management system has reached its limits.

The problem is how to adapt the system to stimulate new and innovative services, which require much more flexible use of spectrum. The cross-border nature of wireless services also represents a strong case for harmonisation and better co-ordination at the EU level.

6.2. The objective

The overall objective of spectrum management in the EU is to ensure that a scarce resource in high demand is used for the maximum benefit of society, and that change in technology and demand structure can speedily be reflected in how the resource is used.

Specific aims within this overall objective are:

– Give spectrum users more freedom in deciding how they use spectrum by reducing the regulatory burden on them;

– Remove barriers to access for new entrants and new technologies;

– Ensure management of interference between users;

– Provide incentives for innovation and investment;

– Ensure that there is a co-ordinated approach to spectrum management at EU level: and

– Facilitate the optimisation of the potential social and economic value of the digital dividend.

At the same time, any change to the current system must ensure that current license holders will be able to retain the rights enjoyed under the licence, subject to review for very long-term licences.

6.3. Initial Policy options (June 2006)

The identification of options for spectrum management reform in this section is based on the initial set of options outlined in the Impact Assessment of June 2006. The Commission identified the following three initial options:

– Create an EU entity in charge of managing EU aspects of spectrum;

– Adapt the regulatory framework and improve co-ordination at EU level through wider use of committee mechanism; and

– No change to the regulatory framework.

These options were subject to public scrutiny during the subsequent public consultation and to further analysis with assistance of external experts.

6.4. Results of the public consultation

The public consultation showed reluctance in most responses to embrace unlicensed spectrum, citing concerns that interference would not be resolved. Some respondents were however strongly in favour, as they believe that interference management solutions are already available.

The responses on the proposed changes to the regulatory framework were in general in favour of service neutrality. The exception was the broadcasting community and the operators of distributions systems for terrestrial television. Most other negative answers had interpreted the term "service" as it is used by the ITU[147], rather than applying the definition in the regulatory framework. These answers more properly concern technology neutrality.

Technology neutrality was also mainly viewed favourably by most respondents. There were concerns that an excessively neutral approach would lead to a massive increase in interference. On the other hand, a careful removal of technical restrictions was welcomed. A particular case was the fear among satellite operators that terrestrial uses would overwhelm the weak satellite signals. This shows the need for a level of continuing technical regulation.

There was wide-spread recognition of the European dimension of spectrum policy and the need to strengthen the collaboration and coordination in spectrum management. Some respondents indicated a European Spectrum Agency as the preferred tool.

The public consultation confirmed the perceived trend towards welcoming secondary trading. Most Member States, industry associations and companies were in favour. The opposing view was mainly coming from terrestrial broadcasters and from some Member States, who were concerned that trading would affect broadcasting or that hoarding of spectrum would result in unfair competition and barriers to access.

In addition, the European Parliament by its own initiative adopted a resolution on 14 February 2007[148] addressing European spectrum policy. The resolution recognises the desirability to make more use of unlicensed spectrum as one of three spectrum management paradigms (unlicensed, spectrum markets and traditional). The Parliament strongly emphasises the efficient use of spectrum by all stakeholders and regulators. It endorses the principles of technology and service neutrality and the principle of viewing electronic communications spectrum as a coherent entity from a technology neutrality perspective. It stresses the need to safeguard the functioning of media services provided by broadcasters and notes that this may justify exceptions to service neutrality and the award of sufficient spectrum to such users.

The European Parliament identifies the necessity for EU harmonisation of spectrum combined with the removal of over-prescriptive regulatory constraints, to provide access for new services and new technologies. It also notes the need for clear definitions of rights and for efficient dispute resolutions mechanisms.

The Parliament furthermore notes that fragmented decision-making in Europe presented serious obstacles to the Single Market and called for enhanced cooperation. It welcomes the

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147 ITU uses very high level definitions, relating to technical characteristics of the networks and transmissions.

148 The provisional version of the resolution (P6_TA-PROV(2007)0041) is available at: http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/index_en.htm

Commission's market-based approach to spectrum, and notes that the traditional model would continue to be relevant, particularly where important public interests are at stake.

6.5. Revised policy options

As a result of the public consultation, the Commission has reconsidered some aspects of the initial policy options. The initial set of options dealt mainly with one aspect of the spectrum policy, i.e. the level of EU co-ordination. The option of "*creating an EU entity*" suggested strong harmonisation measures in the form of an independent EU body whereas the option of "*adapt the framework and improve co-ordination at EU level*" suggested improving co-ordination through comitology procedures.

The second aspect of spectrum policy is the actual substance of the spectrum policy reform, i.e. options for transition to a more efficient spectrum management system. The key problems identified in this chapter relate mainly to the substance of spectrum policy. The spectrum management chapter will therefore focus on assessing the various spectrum management models and on providing possible solutions to the problems identified. Co-ordination is discussed at a more general level and is addressed separately in Chapter 7 on Regulatory consistency and effectiveness. Chapter 7 analyses possible institutional arrangements and co-ordination mechanisms not only for spectrum management but for the whole area of regulation in electronic communications, including the option "creating an EU regulatory entity" of some sort.

6.5.1. Option 1 – adapt the regulatory framework by introducing the principle of technology and service neutrality and co-ordinated spectrum trading

A number of proposals reflected in this option are mirrored in the Commission strategy of a comprehensive spectrum reform, i.e. a strategy towards more flexible and efficient spectrum management. The general principles of the strategy for spectrum policy reform were already outlined in the Commission Communications of 2005[149] and are embedded in the WAPECS concept which have been endorsed and accepted by Member States and most stakeholder groups. The concrete legislative changes are closely linked to the specific objectives summarized in Chapter 6.2. The proposals relate to extending the concept of general authorisations to spectrum, introduction of technology and service neutrality and introduction of spectrum trading in specific bands.

Unlicensed spectrum as an extension of general authorisations

The regulatory framework would require national regulators to consciously assess whether a spectrum band that has become available would not be better used if allocated under a general authorisation, and justify when a licensed approach is chosen. The provision would future-proof the framework in that it enables regulators to adapt to technological developments without requiring revision of the legal text.

Strengthening of technology neutrality and the introduction of service neutrality

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[149] *A market-based approach to spectrum management in the European Union,* COM(2005)400, and final COM(2005) 400, and *A Forward-looking radio spectrum policy for the European Union - Second annual report,* COM(2005) 411, available at: http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/index_en.htm

This provision would reinforce the existing principle of technology neutrality, to the extent this can be done without worsening the situation for other spectrum users (through an increased interference) and without risking the functioning of safety-of-life services. Similarly, the requirement in the legislation to apply service neutrality would permit the delivery of any electronic communications service, with limited exceptions to ensure general interest objectives, such as the delivery of broadcast content services. In both cases there would be a consultation requirement to increase transparency.

The principles of service neutrality and technology neutrality would apply to new licenses, with an option for existing licenses to be transformed into technology and service neutral ones. A relatively long transition period is foreseen for the final transition of the existing licences to technology and service neutral ones. To ensure the consistency of the legal framework, both the Framework Directive, dealing with allocation of spectrum, and the Authorisation Directive, dealing with the individual rights, would have to be updated to reflect the principles. Harmonisation of technical parameters as applied to spectrum as is done under the Radio Spectrum Decision would proceed, and define the EU-level limitations to technology neutrality in a specific band.

This provision is related to the objective of giving spectrum users more flexibility in how they use spectrum by reducing the regulatory burden on them.

Progressive introduction of secondary trading in specified bands

The regulation of service and technology neutrality will release a lot of the potential uses of the radio spectrum, but seen in isolation, it would only affect the pool of existing spectrum usage rights holders. This entails the risk that users would seek to ensure their market position by adopting a position of no change, which could limit the introduction of new technologies and services. This would also limit the turnover of spectrum usage rights to the time of expiry of the license, which again would introduce an element of scarcity, in this case in time.

Therefore, the regulatory framework would introduce the provision that, in designated bands, users have the option to buy or sell spectrum usage rights through secondary trading, with this option applicable in every Member State (to safeguard the single market in services and equipment). The selection of bands, in which trading would be an option for the user, would be through comitology decisions. It should be noted that this provision would not change anything in the initial award of spectrum rights by the issuing authority, but only apply to subsequent trading between users. Trading is thus a necessary complement to technology and service neutrality.

In conclusion, this option creates basic conditions for flexible spectrum use and combines the three spectrum management models – the unlicensed, administrative and market-based[150] – in one policy framework. Every model would then be used according to the specific circumstances in specific bands. More flexibility does not mean "reallocation" of spectrum in the sense that spectrum would be taken away from one party and given to another. The principal idea is that spectrum would be made tradable or leasable through spectrum trading and made subject to service and technology neutrality, thereby giving greater choice and powers to spectrum users.

[150] See Chapter 6.6.1 below for more explanation.

6.5.2. Option 2 – no change to the regulatory framework

The Commission has already taken a number of steps towards more flexible spectrum use already under the current legislative framework[151]. However, the possibilities of introducing a more flexible and co-ordinated approach within the current legislation are limited. There is no mechanism to ensure a coherent designation of bands where the use of spectrum is subject to general authorisations and no mechanism to ensure a coherent introduction of spectrum trading. This leads to a patchwork of different regulatory solutions in different Member States.

The current framework did introduce sound principles such as general authorisations as a rule and exclusive individual rights as the exception, the principle of technology neutrality or the possibility of secondary spectrum trading. However, the current practice does not seem to reflect these general principles, no coherent application is ensured and most bands are systematically subject to individual rights. The procedure of assignment and authorisation for pan-European and/or cross-border services is very complex, lengthy and burdensome. Coordination among Member States is based on a voluntary approach which does not lead to any coherent implementation of the general principles. Staying with the current cumbersome system would therefore go against the main objective of simplification and better regulation.

In conclusion, this option would rely on the existing provisions and the voluntary approach to co-ordination to achieve the overall objective of more flexible and efficient use of spectrum. As a base-line option, it will be assessed against the other option.

6.6. Assessment of impacts

Assessment of economic and social impacts of spectrum policy reform is a very complex and challenging task. It requires a careful application of economic theory and models to the real situation on the market while taking into account future uncertainties and rapid technological development. To this aim, the impact analysis has been carried out in four stages:

i) Outlining the characteristics and impacts of the three basic spectrum management models – unlicensed approach, market-based approach and administrative approach;

ii) Quantitative modelling of impacts using three scenarios (see Annex I);

iii) Assessment of options and impacts; and

iv) Conclusion.

It has to be borne in mind that the econometric model used is a simplified representation of the reality and cannot capture all the details of the proposed policy and do not exactly mirror the policy options outlined above. However, the scenario approach represents a very useful basis for comparative assessment and impact simulation.

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[151] For example, the planned repeal of the GSM directive coupled with a Commission Decision for the harmonised use of the 900 and 1800 MHz bands will have important economic impact on the market, as it will allow mobile operators to use 3G technologies in the bands previously restricted only to GSM technology.

6.6.1. Three spectrum management models

In theory, three different models of spectrum management can be identified:

– *the administrative model* where states make decisions on allocation of spectrum and assignment of spectrum usage rights and no secondary trading is permitted;

– *the market-based model* where the state is responsible for primary assignment of usage rights and secondary trading and change of use is permitted; and

– *the unlicensed model* where users have complete autonomy over how they use spectrum and anybody has access to spectrum.

Spectrum management policy was traditionally based on the administrative model. Option 2 would be the one which most resembles the administrative approach. Although the current regulatory framework includes some provisions aiming at more flexible spectrum management, most Member States still largely apply the administrative "command-and-control" approach.

Throughout the academic debate, a preferred spectrum management model was promoted by its proponents by emphasising a particular benefit of that model. It may be useful to recall the sub-objectives and plot the models against them. Such an exercise indicates that there is no single "best" management model, but that all three have their place in a reformed framework.

"Unlicensed" approach

Regulatory burden	An unlicensed approach would provide the option to deliver any service. (++) It would also permit different technologies to be used. (++)
Access	Anyone could access and use the spectrum (++). New technologies could access spectrum, but there could be an issue of managing generational change (+)
Interference	The necessary technologies to implement interference management are today available for short range communications (+) Technologies for managing interference are a constraint on product design and require industry agreement and licensing (-) Longer range communications can as yet not be managed in this way (- -) In future this may move to a (+)
Innovation	It would enable innovation and investment in services, as well as increased competition (++)

"Market-based" approach

Regulatory burden	An introduction of secondary trading of spectrum usage rights between users would deliver some benefits though simpler transfer (+) If this is combined with a removal of existing restrictions on services and a limitation of technical restrictions to the least necessary the effect would increase (++)
Access	Secondary trading would complement administrative awards of spectrum (+) New technology generations can be implemented by the user (++)
Interference	The definition of technical parameters of spectrum usage rights would be crucial to interference management. Increased monitoring and enforcement would be required to

	manage the expected "denser" use (+)
Innovation	Innovation and investment would be strongly encouraged. Artificial regulatory bottlenecks constraining competition would be removed (++) Risk for this being replaced by hoarding (- -)

"Administrative" approach

Regulatory burden	Regulatory burden could be diminished, which would benefit existing users (+)
Access	Access to spectrum for new entrants would remain unchanged (=) If regulatory burden is lowered new technologies would have improved access provided that benefits existing users (+/=)
Interference	Interference management would remain at a high level (++)
Innovation	Innovation and investment would depend on administrative decisions. Limited competition would benefit operators and technology providers, but not consumers (-)

6.6.2. Quantitative modelling of impacts using scenarios

Ideally there should be a direct and measurable effect of a specific regulatory choice, so that action "A" would result in outcome "B". In the present case, such a mechanistic approach is unfortunately unavailable. Complexity is however no argument against a structured approach and the Commission decided to contract external support to construct an econometric model to identify the impacts of certain policy choices[152].

A model such as the one outlined in Annex I can be used only if there is a clear understanding of its limitations. It should be noted that building a verifiable econometric model is hampered by lack of comparable data or incomplete sets of statistics. To our knowledge, the econometric model developed for the current exercise in order to test the impacts of regulatory choices, is one of the first attempts to deliver an evidence-based impact assessment in the field of spectrum management.

6.7. Asessment of options and impacts

The modelling exercise described in Annex I shows that effective provision of services through unlicensed spectrum, in parallel with existing licensed services, would increase competition. However the necessary interference management technologies to permit a major expansion of the use of unlicensed spectrum are not available today. From a perspective of EU legislation, Option 1 would therefore require the national regulator to consider the availability of interference management technologies before issuing individual rights of use.

Impact of general authorisations The only viable economic justification for granting exclusive usage rights on the basis of individual licences is the fact that there is a significant risk of harmful interference with other technologies. However, as pointed out earlier, Member States often grant individual licences even if general authorisation could be a viable option.

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[152] *Benchmarking Impacts of EU Policy Options for Economically Efficient Management of Radio Spectrum*, SFC Associates, 2006, available at: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

This has clearly the effect of creating artificial barriers for any potential competition and artificial scarcity of spectrum on the market. Option 1 would require a justification whenever exclusive rights are granted. This would enable fast uptake of technologies that alleviate spectrum scarcity when they become available, but safeguard other users from interference until that time. This provision would contribute to the objective of better access to spectrum for new entrants and new technologies.

Impacts of technology and service neutrality

The establishment of service and technology neutrality as the main principles (proposed in Option 1) would remove most regulatory restraints, not only strengthening competition, but also reducing the regulatory burden on the user. It should be noted that to offer a different service or to adopt a different technology would be an option for the user, not imposed by regulation. The effect on innovation would be to enable an operator to introduce new technologies in the bands where he holds the usage rights. This would make it practical to deploy new technologies in the lower, more attractive bands, which in turn lower the cost of introducing new technologies and increase their uptake by consumers.

Impacts of spectrum trading

The effect of service and technology neutrality without spectrum trading would be to increase competition, but only within the existing set of spectrum users. Looking at experiences from other regulated industries, such limited competition would most likely lead to operators seeking to safeguard market share. The combination of service and technology neutrality with spectrum trading, complemented by enforcement of competition rules, would ensure open market access for new technologies and new service providers.

As noted earlier, the purpose of the reform is not to reallocate spectrum from one group of stakeholders (current spectrum holders) to another (new entrants). The three key elements of the reform proposed in Option 1 will create more flexibility, lower the barriers to entry and encourage more competition. Current spectrum holders will have to adapt to the new more competitive market but they will also have greater possibilities to use their spectrum more efficiently. Additionally, the digital dividend will have a positive impact in this process as it will release more spectrum for innovative services, which also helps to bridge the digital divide[153].

Co-ordinated approach

Option 1 incorporates strengthened co-ordination mechanisms (e.g. co-ordination of spectrum trading, co-ordinated identification of unlicensed bands, common definition of exceptions to technology and service neutrality, etc.), whereas Option 2 is based on voluntary co-ordination. Voluntary coordination without implementation requirements, such as is done through the CEPT today, results in substantial regulatory uncertainty and a fragmented regulatory system. This affects smaller operators and manufacturers more than larger ones, as the latter have well developed communication channels with administrations.

No modern radio technology for civilian use is developed with only one target market. The cost of development and the need to lower cost through large-scale production and purchasing

153 See discussion and reference to recent studies on this subject in Chapter 6.1.1.

necessitates a European, or even global, approach by industry. There is thus a strong market impetus to coalescing around common standards.

A future operator may wish to develop a service (or mix of services) using a technology covering several, and possibly all, Member States. Such a seamless network would deliver an increasing total value of the network, to the operator but also to society. These trends of reduced regulation and larger geographical target areas, combined with a need for stronger legal certainty, argue for limited regulation coordinated at EU level.

Impacts of Option 2 – no change

The effect of allocating a band of spectrum used for electronic communication services to a specific technology and service is to limit competition. This occurs mainly through limiting the number of licenses, i.e. competitors, but also by preventing the introduction of new technology. Option 2 (no change) is close to that situation because, although it allows for different management models (market-based, unlicensed or administrative), the reality is that a technology and service-based administrative model still prevails in most bands and in most Member States. The negative consequences of limited competition and artificial spectrum scarcity are discussed and quantified in more detail in the modelling exercise in Annex I and summarised in the table below.

As regards the impact on different stakeholders, it clearly varies, depending on whether they are current spectrum holders or not. Holders of large amounts of valuable spectrum (e.g. the broadcasting industry) would clearly benefit from the status quo situation. New entrants but also some incumbent operators, who see new opportunities in deployment of new technologies in more suitable spectrum bands, would clearly prefer more flexible arrangements.

The table below provides a summary on main likely impacts and risks arising from the each of the three policy options with respect to the different economic and social dimensions. Impacts of Option 1 are compared to the "no change" option 2, which provides a baseline scenario for the assessment. The signs represent a scale of possible impacts vis-à-vis the "no change scenario": **+** positive impact**, O** neutral impact, **−** negative impact.

Table 2. Summary on the main impacts and risks of the options

IMPACTS AND RISKS	**Option 1 – Introduce the principle of technology and service neutrality and co-ordinated spectrum trading**	**Option 2 - No change**
	ECONOMIC	
Investment and innovation	**+** More flexible and co-ordinated spectrum management will significantly encourage investment and innovation. New entrants will be able to acquire spectrum through spectrum trading or operate in unlicensed bands (if technologies managing interference are available).	Does not facilitate cross-border investment and deployment of new innovative cross-border services. Differences in regulation do not particularly encourage operators to invest in other MS.
Competition	**+/O** Introduction of co-ordinated spectrum trading could lead to more consolidation of the mobile/wireless market. Preventing spectrum hording through effective competition regulation will be crucial. Stronger competitive pressure on broadcasters. Gradual increase in competition from new entrants and new technologies as more unlicensed bands become available (i.e. development towards Scenario 1).	Limited competition, disadvantageous position for new entrants, and uneven development in Member States (some MS advanced in market opening and introduce more flexibility whereas others still rely predominantly on administrative model of spectrum management).
Internal market, regulatory consistency	**+** Improvements removing the current fragmentation in national spectrum policies – through strengthened co-ordination mechanisms. More opportunities for development or cross-border or pan-European services using frequencies.	Inconsistent application of rules, slow progress based on voluntary co-ordination with lengthy and cumbersome procedures, risk of increasing differences between MS. Slow deployment of cross-border services.
EU competitiveness	**+/O** More flexibility and better co-ordination of spectrum management should strengthen competitiveness of the mobile/wireless industry. Risk of spectrum hording and oligopoly situations (i.e. operators with "deep pockets controlling the market) if competition law is not properly enforced.	Risk of gradual erosion of the mobile/wireless industry's competitiveness vis-à-vis the rest of the world. Economies of scale and scope harder to achieve for mobile/wireless operators, slower uptake of cross-border services.
Economic operators' costs and benefits	**+/−** More opportunities for new entrants, challenges for incumbent telcos and distributors of broadcasting (see more detailed analysis of stakeholder impacts in Table X.)	Reaffirmed position for the current spectrum holders, high barriers of entry for new service providers and new technologies, impact varies by national spectrum regime.
Administrative costs, simplification	**+/O** Overall reduction due to lower administrative burden and less regulation for operators. Less burdensome general authorisations will be used more often than more burdensome individual licenses. Some additional burden related to transition to a more flexible and co-ordinated system.	No change, no reduction of administrative burden for operators. Partial reduction possible in MS which decide to implement a more flexible spectrum regime.
Consumer benefits	**+** More choice, more services, lower cost (especially if more unlicensed bands are used in the future).	Same choices as today, big differences between MS as regards service offerings and prices (not justified by differences in the underlying costs)
Overall economic growth	**+/O** Economic modelling using scenarios shows that more flexible and co-ordinated spectrum management has a significant and positive impact on GDP growth (the difference between the best-case and the worst-case scenario would be approx. 0.1% of the annual GDP growth)	Slower GDP growth than in Option 1 (scenario 3 shows the worst-case model for this option where MS withdraw from any EU co-ordination)
	SOCIAL	
Social and digital inclusion	**+/O** Impact will depend on other factors, such as the future universal service concept. Positive impact of co-ordination on regulatory consistency should have positive effect on digital inclusion across the EU. More choice and cheaper wireless services should contribute to social inclusion and bridging the digital gap between regions.	Impact will depend on other factors, such as the future universal service concept. Wireless services generally less affordable and less available across the EU than in Option 1. However, big differences between MS can be expected.
Employment and labour market	**+/O** Difficult to predict the outcome. Scenario modelling shows a positive impact on employment in knowledge industries. Positive spill-over effects to other sectors can be expected. Negative employment effect for market players who will not adapt to the change.	Only limited spill-over effects can be expected due to slower deployment of new wireless technologies and services.

6.8. Conclusion

This impact assessment has identified a number of problems and challenges in the current system of spectrum management. The prevailing administrative system of spectrum allocation does not provide sufficient flexibility, hinders new entry and access to spectrum for new innovative technologies. As the demand for spectrum is expected to rise in the coming years, the problem of allocation inefficiencies will get bigger and could result in lost opportunities for innovation and deployment of new technologies. Voluntary co-ordination does not provide sufficiently stable regulatory environment across the EU, leads to fragmentation, delays in implementation of policies and administrative burdens for cross-border operators or operators providing pan-European or cross-border services.

Two policy options related to the spectrum management systems were identified. Co-ordination mechanisms, particularly co-ordinated authorisation and regulation of pan-European services, are addressed in the section dealing with institutional issues. The econometric model suggests that more flexibility, service and technology neutrality and a co-ordinated approach at the EU level leads to better results in terms of GDP growth, consumer benefits and more competition in the market. In particular, the scenario assuming co-ordinated spectrum trading in combination with use of unlicensed bands is beneficial for competition, innovation and investment in new technologies. Option 1 (*introducing the principle of technology and service neutrality and co-ordinated spectrum trading*) would create a regulatory environment where a move to a wider use of unlicensed bands could become possible in the future. It has to be borne in mind, however, that the current state of technology does not enable substantial opening of bands for unlicensed use due to risks of interference. Until these changes, secondary markets would be the primary tool to lower the barriers to access, which in turn emphasises the need for a well-functioning competition regulation, particularly in the initial phase of implementation.

Voluntary co-ordination (Option 2, i.e. no change to the framework) or no co-ordination at all as described in the third scenario gives less advantageous results for all the macro-economic parameters. No co-ordination would lead to a set of smaller mostly national markets arising in both services and products. Economies of scale for equipment and many services would be difficult to realise. The current system of voluntary co-ordination has delivered results, despite being cumbersome. However, given the speed of technology development and the cross-border nature of many wireless services, fast and timely co-ordination will become even more crucial in the future. The Commission considers therefore that Option 1 (*introducing the principle of technology and service neutrality and co-ordinated spectrum trading*) is the most appropriate basis for a reformed spectrum management in Europe.

III COMPLETING THE SINGLE MARKET IN ELECTRONIC COMMUNICATIONS

Introduction

A major goal of the EU framework is to create an internal market of e-communications in Europe, in particular through transparent, predictable and effective regulation.

The attractiveness of the European Union as investment location depends *inter alia* on the size and openness of its markets and its regulatory environment. A fully integrated Internal Market would make the EU more attractive to investors and deliver benefits to citizens and

consumers travelling across Europe. In short, developing the Internal Market can significantly contribute to growth and investments and provide benefit to European citizens.

Since the framework was adopted in 2002, markets have become more integrated: although markets remain mostly national, except for satellite services, there is a noticeable trend towards consolidation of market players and the emergence of operators with a trans-national footprint. New technology - notably the use of IP-based networks and services – can be expected to reinforce this trend towards trans-national services extending outside the geographical frontiers of a Member State. The further emergence of strong pan-European communications services and operators crucially depends on the regulatory environment in the EU as a whole[154]. It is clear that a fully integrated Internal Market would significantly facilitate development of new technologies and cross-border services.

Despite the general acknowledgement of the potential benefit of a single European market for electronic communications, the internal market for eCommunications is far from being completed. In the current institutional model, Member States retain key responsibilities in managing spectrum, numbers and in regulating national markets. Implementation of the regulatory framework differs across the EU and these differences create in some cases significant barriers to development of cross-border services and cross-border investment. The following sections analyse the problem of regulatory inconsistency and internal market barriers in more detail.

7. REGULATORY CONSISTENCY AND EFFECTIVENESS: INSTITUTIONAL AND PROCEDURAL ISSUES

7.1. Identifying the problem

7.1.1. Institutional design

As initially described in the IA report of June 2006[155], the regulatory model of the framework has essentially two sides: it aims to create a consistent regulatory approach throughout the single market while at the same time decentralising the application to permit maximum flexibility in view of the NRAs' expert knowledge of local market conditions. The main features of the current institutional and procedural design are described in the box below.

Independent national regulatory authorities

The framework devolves ex-ante regulation of markets to national regulatory authorities (NRAs) on the grounds that they are closest to their markets and therefore better placed to regulate them. The main requirement of the framework is that the NRAs are genuinely independent and impartial. In particular, the Member States that own e-communications operators must clearly separate the regulatory tasks from the state's ownership and/or control activities to guarantee the impartiality of the NRA's decisions and consequently to ensure a level playing field for all operators[156].

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154 Pan-European or cross-Community services can be defined as a specific category of services, which are deployed across the entire Community or at least across several Member States. Pan-European operators are operators providing services across the whole EU or in the substantial part of it.

155 See Chapter 5.3.

156 Article 3 of the Framework Directive.

Detailed responsibilities and tasks of the NRAs differ among the various Member States, but all of them have at least one NRA who is charged with application of the rules particularly concerning regular supervision of the market.

Internal market consolidation mechanism – Article 7 procedures

In order to avoid the fragmentation that decentralisation could bring, the framework contains an 'internal market consolidation mechanism': the process of notification to the Commission and consultation of other NRAs under Article 7 of the Framework Directive.

Accordingly, if an NRA identifies competitive blockages at local and national level after conducting a market review, it must submit the draft regulatory measure (in case it may affect trade between Member States) for consultation to the Commission and to NRAs of other Member States. Each NRA must take full account of the opinions of other national authorities and of the Commission. Member States are also required to establish a single information point on all current consultations and to make the results of consultation publicly available.

The Commission has the additional power, after further examination, to ensure consistency of NRAs' measures by requiring the notifying NRA to withdraw the draft regulatory measure "if it would create a barrier to the single market or if it has serious doubts as to its compatibility with Community law". Whereas this power has been given to the Commission with regard to two aspects of ex ante regulation (defining relevant markets and designating undertakings as having SMP), it does not cover the regulatory 'remedies' being proposed.

The purpose of 'Article 7 procedure' is therefore to ensure that the benefits of consistent regulatory policy feed through to all European users and limit ex ante regulation to where it is really necessary. As recently reported in the 12th implementation report, most NRAs have now completed the first round of market analysis and notified the results to the Commission. The experience so far has demonstrated that the consultation mechanism of Article 7 procedures has indeed helped to bring more consistency across the EU as well more transparency to the regulatory process. However, consistency in regulatory remedies has still not been achieved, as discussed below.

European Regulators Group

As part of the cooperation between the Commission and the NRAs, the Commission established the European Regulators Group (ERG) in 2002 to "advise and assist the Commission in consolidating the internal market for electronic communications … in such a way as to contribute to the development of the internal market and to the consistent application in all Member States of the regulatory framework"[157].

The ERG brings together the heads of national authorities responsible for regulating e-communications markets[158]. It has adopted "common positions" to guide national authorities on regulatory implementation[159].

7.1.2. Inconsistency in remedies imposed by NRAs

The Commission's oversight of market review procedures has helped to strengthen the single market in electronic communications, particularly in the areas of market definition and market

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157 Commission Decision 2002/627/EC of 29 July 2002 as amended. Prior to the creation of the ERG, an informal forum, the Independent Regulators Group (IRG) was set up in 1997. It has coordinated regulatory practice among its member countries on voluntary basis by setting common rules, which its members pledge to observe to the greatest possible extent in their decisions.

158 For further information, see ERG's web-site: http://erg.eu.int/.

159 See for example, "*Revised ERG Common Position on the approach to Appropriate remedies in the ECNS regulatory framework*", May 2006: http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf.

analysis where a significant degree of consistency has been achieved[160]. Regulatory measures (i.e. remedies) imposed on operators with significant market power (SMP) are decided by NRAs who can choose from a list of remedies defined in the Regulatory Framework. The key question is whether an optimum degree of regulatory consistency has been achieved by the current institutional model.

As reported already in the first impact assessment, market players particularly continue to complain about regulatory inconsistency, i.e. that there are differences in approach of national regulatory authorities in different countries, and point to the increased cost for business of handling 27 different regulatory approaches.

A number of inconsistencies have emerged in the remedies imposed in a given market situation by different NRAs[161]. For example, accounting separation has been implemented effectively in only a few countries; naked bitstream and wholesale ethernet services are available in less than ten countries; and non-discrimination remains ineffectively enforced. In particular, there are considerable variations between Member States in applying certain regulatory obligations such as scope of access obligations and price control.

The second Commission Communication on market reviews under the EU Regulatory Framework and the accompanying Staff Working Document[162] provide concrete examples of inconsistent application of remedies. The average mobile termination rates (MTR) for example vary considerably across Member States. While part of this variation can be explained by different underlying costs of operators in different countries, the rest is due to different price setting methodologies used by the NRAs, different timeframes for reducing the MTRs, or the application of asymmetrical MTRs whereby some NRAs authorise higher termination rates for smaller operators. Similar differences exist for prices in other regulated markets, such as the monthly rental for leased lines, interconnection charges or costs of unbundled local loops. Prices in the cheapest countries can be up to 5 times lower than those in the most expensive countries.

Consistency in regulation at the wholesale level is particularly important as it provides input to retail services for customers. Availability of various wholesale access products on reasonable terms across the EU provides a possibility for operators to offer similar services to their customers in different Member States. For example, not all Member States obliged the incumbent to make available bitstream access which enables alternative operators to provide broadband to end customers without the obligation to rent a telephone line from the incumbent.

The ability to access consistent EU-wide wholesale offers is becoming increasingly important with the shift to internet-based services (such as VOIP, IPTV or Web 2.0 services – see section 7.1.3), which are inherently spatially unconstrained, not to mention the need for competitive wholesale offers to support the growth in EU-wide mobile data services which

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160 See e.g. the *2nd Commission Communication on market reviews under the EU Regulatory Framework*, 2007 (to be adopted).

161 See the *12th Implementation Report* and the *2nd Commission Communication on market reviews under the EU Regulatory Framework* – Consolidating the internal market for electronic communications, COM(2007) 401, available at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/article_7/index_en.htm

162 Idem.

rely on easy interconnection with trans-European backbone networks. Achieving this type of market opening is fundamental to achieving the scale economies that the internal market offers, so that Europe can lead in the convergence of network services and the emergence content-rich business and consumer offers.

Services of cross-border nature or potential would also benefit from a more consistent regulatory approach. There are very different operating conditions in different countries, which have significant implications for the internal market. In particular, the current situation in which similar situations are treated in distinctly different manners by NRAs - and consequently undertakings are subject to different obligations - is incompatible within a single market since it creates uneven access conditions and indirectly distorts the competitive environment.

Given the fact that already today market players generate around one third of their revenues in Member States other than their own[163], further cross-border growth would be enhanced if greater consistency were achieved, to the benefit of business and consumers. International voice roaming is now subject to a specific harmonised regulation at the EU level[164], due to the difficulties of regulating this complex market encountered by individual NRAs.

Inconsistencies may also arise from application of Art. 5 which empowers regulators to impose remedies, under certain conditions, on undertakings without Significant Market Power (SMP) in order to ensure adequate access and interconnection, and the interoperability of services. This should be seen as an exception to the normal approach whereby operators are not subject to ex ante obligations unless there is a lack of effective competition in the relevant market and they are found to have SMP in such a market. This provision may give rise to additional inconsistencies in the application of the framework, if no co-ordination mechanism is put in place.

The 12th Implementation report notes concerns remain regarding the effectiveness of some NRAs, which also depends on the resources they can call on and their ability to enforce their own decisions. The report also points out that independence of NRAs is still an issue in some Member States: …"*the extent of political influence over day-to-day regulatory decisions in some Member States is an issue calling for further examination*"[165].

Inconsistencies in the implementation of the regulatory framework create uneven conditions for service providers, particularly those who operate in different Member States (see below) but ultimately also to European consumers. Differences in regulatory approach result in different levels of availability or pricing of services in different Member States.

Stakeholders affected by the lack of harmonised conditions

Service providers active in different Member States and those providing services with cross-border or pan-European potential are the most affected by the lack of harmonised operating conditions.

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163 See the *12th Implementation Report*.

164 See *Impact Assessment of the Roaming Regulation*: http://ec.europa.eu/information_society/activities/roaming/docs/assessment_en.pdf.

165 See the 12th implementation report 2006, p. 14.

Regulatory consistency across the EU is particularly important for providers of services to international business users. International business customers expect a similar level and quality of services across national borders. Although these service providers are limited in number, the value of voice and data services they provide to business customers is already very significant in global terms and growing.

The lack of a coherent regulatory approach affects new entrants in particular, but increasingly fixed incumbents are investing outside their "home" territories where they face the challenges of being 'new entrants'.

A report sponsored by BT on the provision of electronic communications services to international business customers provides numerous case studies of businesses in different sectors and concludes that ubiquitous connectivity is essential for businesses and for Europe's competitiveness[166]. Businesses are dependent on availability of mutually compatible telecommunications inputs and find it difficult to cope with regulatory differences across Member States. Several interviewed companies point out that access products are more consistent in the US than in Europe. A wide variety of implementation of access regulation reduces the ability to implement seamless pan-European ICT systems. It also restricts the ability of SMEs to benefit from these systems.

For example, respondents from the oil industry suggest that "fragmentation of regulation and service providers does not allow the oil industry to operate at the same per unit ICT infrastructure costs as in the US, and within a few years will compare unfavourably with China, Russia and India"[167]. This will hamper the EU's competitiveness.

7.1.3. Barriers to provision of services with pan-European potential, particularly those needing numbers and/or frequencies

The importance of a coordinated European approach to enhance EU competitiveness and scale economies for these services for services with a pan European potential or with a cross-border dimension was highlighted in the ERG's response to the letter of Commissioner Reding[168]:

> "*We anticipate an increase in services with a pan-European potential (which can in principle be provided remotely to the customer from any physical location, such as VoIP), whose full potential cannot be realised without a common regulatory approach across Europe. We also anticipate an increase in services with a significant cross-border dimension (such as international roaming), where a coordinated European approach is required to overcome differentiated incentives across Member States resulting from regulatory differences. Indeed, regulatory coordination will be critical to ensuring that the scale of the European market can be fully exploited by European businesses, enabling Europe to compete effectively in the global economy*."

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166 *The Economic Benefits from Providing Businesses with Competitive Electronic Communications* (the document comprises a number of reports written by several authors), 5 June 2007, available at: http://www.btplc.com/Thegroup/Regulatoryinformation/Consultativeresponses/BTdiscussionpapers/Electronic/index.htm

167 *The Economic Benefits from Providing Businesses with Competitive Electronic Communications Services*, BT Global Services, EVUA & INTUG, June 2007.

168 ERG response from the 27th February 2007: ERG advice in the context of the Review of the Regulatory Framework for Electronic Communications Networks and Services.

Under the current framework, authorisation for these services is complex and based essentially on national procedures. Member States are responsible for authorisation of e-communications networks and services, and the conditions that apply to undertakings – including the rights of use for numbers and radio frequencies – vary between the Member States. Examples of such services today are mobile satellite services, or mobile phones on board the aircraft, in both cases crucially dependent on harmonised allocation of scarce resources such as radio spectrum.

The current fragmented approach exerts a particularly heavy cost on innovation and development in the area of allocating spectrum rights. The regulatory framework does require Member States to use general authorisations where possible, however the current practice in many Member States is still predominantly based on individual rights of use or the attachment of conditions to general authorisations, accompanied by administrative burdens and fees which differ widely between States. Divergent and inconsistent administrative practices undermine or reduce legal certainty and raise the cost of doing business across the EU.

In concrete terms, there are different ways of obtaining licences for operating services with pan-European potential under the current regulatory framework, depending on the type of service. For some services, such as mobile satellite, the Commission has already issued a decision designating certain frequencies for deployment of these services, which facilitates the process of applying to national administrations. Nevertheless, even in this case the selection and authorisation is slow, the process which concerns to small segments of the 2GHz radio bands, was launched in 2005 is not expected to be completed before mid-2008.

In other cases, the harmonisation of frequencies (or numbers) does not exist at all and operators must apply to each of the 27 national administrations separately for a licence in non-harmonised spectrum bands (or number ranges), which is even more burdensome. It is important to note that in both cases it is the national regulators who set the terms of award and conditions of use – these still vary from country to country.

If frequencies are not harmonised for a particular type of services, it could be very difficult for an operator to obtain the desired frequency in all Member States to be able to launch its service. For example, one Member State launches auctioning for a certain frequency band for which terrestrial and satellite operators are competing. Awarding the frequency band to the terrestrial operator seeking to launch a purely national service actually means that the competing satellite offer's chances to provide an international service across the continent are hampered[169]. It is obvious that for services with pan-European potential or significant cross-border dimension, the risk of market fragmentation is very real and significant in terms of lost market opportunities, barriers to entry and competitive conditions.

Voice over IP is a service with considerable market potential, and a direct competitor of traditional fixed and mobile services[170]. The 2006 ERG document[171] explains the significant number of issues where regulatory approach to VoIP differs across the EU. Apart from the differences in market definition, caller location and other issues which are partly discussed in other parts of this Impact Assessment (Chapter 8), the lack of common numbering policies in Member States is a problem that creates a significant barrier to deployment of VoIP on a

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169 See more in the report *The satellite industry: Growth paths for the medium term*, IDATE, 2006.

170 VoIP is discussed in the box under Chapter 4.2.

171 See the *ERG Report on VoIP and Consumer Issues*: http://www.erg.eu.int/doc/publications/erg_06_39_report_voip_cons_aspects.pdf

pan-European basis. VoIP is a typical example of a service which can be provided to a customer remotely from any physical location and differences in national procedures for obtaining numbers mean in practical terms significant administrative burdens and time delays for operators.

Moreover the absence of a mechanism for guaranteeing pan-European wholesale offers for IP-based services, of which VOIP is a forerunner, can be expected to become a significant barrier to the European information economy as the switchover to full IP-based services takes shape.

These limitations are likely to create a significant barrier to deployment of existing cross-border services and hinder the development of pan-European or cross-border services that may emerge in the next five to ten years[172].

7.1.4. Diverging approaches in National appeal procedures

The lack of consistency in the way that NRAs use the discretion available to them under the framework is compounded by delays and diverging approaches in the national treatment of appeals against NRA decisions.

The Framework Directive requires that an effective mechanism be available for appeals against the national regulatory authorities' decisions. Some Member States have specialised appeal bodies; others use national courts. The main concerns voiced by different stakeholder groups relate to:

– length of the appeal procedure;

– legal standards for suspension of NRAs Decisions; and

– standard of review.

The length of appeal procedures is of particular concern for alternative operators and for NRAs. Long appeal procedures do not facilitate effective decision-making and do not promote legal certainty. Proceedings in countries such as Italy or Portugal can last from four to six years. In Greece, the highest administrative court has not yet issued any decision, despite the fact that some cases have been pending since 2001[173].

In addition, in some jurisdictions (Belgium, Cyprus, Hungary, the Netherlands, Slovakia and Sweden), market review decisions are suspended systematically[174], in spite of the wording of the Framework Directive that the decision of the NRA shall stand during the appeal unless the appeal body decides otherwise. In other Member States, the legal standards that need to be satisfied before an order with suspensory effect is granted are very high. For market players these problems mean that uncertainty over what are the applicable regulatory conditions in the market can persist until the judicial process is completed. This, in its turn, clearly dampens the drive for new investments. The Commission has already initiated infringement proceedings

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172 As indicated by the study *Preparing the next steps of eCommunications - a contribution to the Review of the eCommunications regulatory framework*, Hogan & Hartson LLP and Analysys Consulting, 2006 (section 8.2.5, p. 226), pan-European authorisations for the services provided by satellite space stations or for ground base terminals could produce substantial benefit to the satellite sector and its consumers, by avoiding the need to satisfy diverse licensing procedures within the footprint of the satellite.

173 The 12th annual implementation report 2007.

174 Idem.

against those Member States where suspension of NRAs decisions was practically automatic. However, no action has been taken to harmonise the conditions for suspension.

According to Article 4 of the Framework Directive, "Member States shall ensure that the merits of the case are duly taken into account". However, the standards of review vary across the EU. Some Member States maintain traditional standards of judicial review while others have introduced full review on the merits. Nevertheless, many operators and NRAs share a general concern that problems with the current appeal system may lead to a 'litigation culture' where significant resources are spent on litigation and regulatory decisions are paralysed to a certain extent.

7.1.5. Summarising the problem: the internal market is not yet a reality in the sector

Despite the general acknowledgement of the potential benefit of a single European market for e-communications, problems of consistency, efficiency and speed of regulation threaten to become a considerable obstacle for the development of a competitive internal market.

As the e-communication markets are becoming more competitive, there are markets where regulation is not needed any more. On the other hand there is a need to concentrate on the bottlenecks which are likely to persist (e.g. mobile termination, local loop unbundling, wholesale broadband access). To tackle the remaining bottlenecks, a more consistent European approach is needed. Operators need to be assured that their investments can be planned in a regulatory environment that is stable, consistent and predictable throughout the EU's single market. Such a regime allows companies to operate on a scale which only a Europe-wide market can provide.

7.2. The Objective

The general objective is - in the light of the prevailing political and institutional context - to find the best regulatory model delivering a single market in e-communications through consistent and effective regulation while respecting the principles of subsidiarity and proportionality.

In order to fulfil the general objective, the following specific objectives have been identified:

– to remove persisting inconsistencies in implementation of the regulatory framework in Member States, in particular with respect to application of regulatory remedies;

– to encourage development of cross-border services and services with pan-European potential: and

– to improve effectiveness of the national appeals procedures.

7.3. Policy options

The debate on consolidation of the single market is necessarily a debate on the degree of harmonisation the EU would like to achieve. The options outlined below represent three possible alternatives. They focus on possible institutional arrangements, regulatory processes and division of competencies between national authorities and the EU. The substance of the policies to be implemented through the different procedures discussed below is analysed in the remaining four chapters.

7.3.1. Option 1: Single European Regulatory Authority with discretionary decision-making powers in market reviews and in charge of managing EU aspects of spectrum

The option of creating a single European Regulator was already debated in the context of the earlier regulatory reviews in the 1990s[175] and in the June 2006 Impact Assessment[176]. Option 1 considers a regulatory Authority with centralised decision-making involving discretionary powers which would be in charge of both the market review process and spectrum management. It would have strong implications for the current institutional balance in the sense that it effectively transfers most regulatory powers to the centralised level.

Option 1 envisages centralised decision-making in market reviews whereby NRAs would either cease to exist or would become national offices of the European Authority responsible for data collection and implementation of the centralised decisions. This would effectively mean that the current procedures based on Article 7 would have to change. Markets would be analysed directly by the European Authority which would also impose regulatory remedies.

As decisions concerning market reviews would be taken at the European level, appeals against these decisions would be dealt with by the European Court of Justice.

Under this model, the European Authority would in principle also be in charge of spectrum management, with a few exceptions such as spectrum used for national defence. It would pursue a policy reform towards more flexible use of spectrum, including use of general authorisations, introduction of market-based approach and technology and service neutrality (as outlined in Chapter 6).

7.3.2. Option 2: European Regulatory Authority without discretionary decision-making powers assisting in the implementation of reinforced Community procedures

Option 2 aims at achieving more regulatory consistency and a more harmonised approach to the market review procedures and to services with pan-European potential in particular, through more effective coordination mechanisms at the EU level but without upsetting the institutional balance. Some additional powers would be conferred on the Commission and an independent European Authority would be created to provide primarily technical expertise and advice in market review procedures and in authorisation of services with pan-European potential. The European Authority would bring together the existing national regulatory authorities in its decision-making structure, thereby capitalising on the expert knowledge and regulatory experience of the NRAs. At the same time, the political independence of NRAs would be strengthened. The Authority would have the status of an independent body, and would subsume the role of the ERG, which is currently established an advisory group to the Commission.

In concrete terms, this option would envisage:

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[175] The European Parliament favoured the creation of a European regulator (Opinion of the European Parliament of 14 February 1996, OJ No C 65, 4. 3. 1996, p. 69.), and therefore the Article 22 of the Interconnection Directive 97/33/EC (which has been repealed by the current rules) stated that "*The Commission shall also investigate…the added value of the setting up of a European Regulatory Authority to carry out those tasks which would prove to be better undertaken at Community level*".

[176] The following variants of the European regulator were mentioned in the IA: a) a decision central authority replacing the NRAs; b) a centrally-managed but geographically-dispersed authority, c) a 'European Central Bank' model and d) a European regulator that acted as an appeals body for decisions taken by national regulators, but without power to instruct an individual NRA in advance.

– Commission oversight of remedies and advisory role of the European Authority in Article 7 procedures;

– improved procedures for analysis of trans-national markets with advisory role of the European Authority;

– stronger powers for the Commission to act when an NRA does not carry out a market analysis within a given time limit;

– involvement of the European Authority in new EU level procedures for authorisation and regulation of services with pan-European potential; and

– more consistency in the criteria that justify suspension of NRA decisions by national appeal bodies.

Apart from these areas, the European Authority could play a role in co-ordinating policy on issues such as transparency for consumers, emergency services, eAccessibility, privacy and security, etc, as well as in advising the Commission on the exercise of its enhanced implementing powers[177].

Commission oversight of remedies and advisory role of the European Authority

These measures aim at addressing the issues of regulatory inconsistency and delays in conducting market analyses as explained in Section 7.2.1.

This option proposes strengthening of the Commission oversight of remedies, as a solution to the problem of regulatory inconsistency. The discretionary power of NRAs over remedies is an important one: NRAs can choose from a list of remedies defined in the Access directive and the potential impact of those remedies on market players concerned varies a great deal. As described in Section 7.1.2, the Commission may, under the current regulatory framework, require the notifying NRA to withdraw a draft regulatory measure concerning market definition and/or designation of SMP. Under Option 2, the Commission would be empowered to require the notifying NRA to withdraw also the draft regulatory remedies and furthermore, to suggest which remedies should be applied instead. Market analysis and Article 7 procedure with Commission oversight of remedies would have to be undertaken also in the case when NRAs impose obligations on non-SMP undertakings, as described currently in Article 5(1) of the Access directive. In keeping with the principle of subsidiarity, the Commission would use its power whenever the remedies proposed by national regulators were not consistent and led to significant differences in regulatory approach of the Member States. In its assessment, the Commission would still take into account differing circumstances and market conditions in Member States. In order to tackle the problem of late implementation of the regulatory framework, a firm time limit could be set for NRAs to conduct their market analyses. The Commission could have the power to conduct a market review in the event that an NRA did not commence it within a specified timeframe.

The newly created European Authority would play an important role in the market review procedures. It would provide technical expertise and advice to the Commission, in particular as regards the consistent application of regulatory remedies. The Commission would have to take the utmost account of the Authority's advice before any withdrawal of draft remedies is

177 For more information on these issues, refer to Chapters 8 and 9.

required. The advisory role of the Authority will not replace the Commission's role in cases where it carries out the market reviews, for which the Commission will be fully accountable. The Authority would also assist the Commission with identifying trans-national markets susceptible to regulation at the EU level, and would coordinate the analysis of trans-national markets and the application of appropriate remedies by NRAs. As markets become competitive and less regulation is required, routine notifications to the Commission could be relaxed somewhat.

Involvement of the European Authority in new EU level procedures for authorisation and regulation of services with pan-European potential using spectrum and/or numbers

This option would establish improved EU level procedure for authorisation and regulation of services with pan-European potential. It would envisage amendments of the current provisions of the regulatory framework so as to allow coordination of the following aspects of service authorisation at EU level:

- qualifying services as having pan-European potential or an internal market dimension, which would be a pre-condition for using the EU procedure for the coordination of authorisations;

- defining authorisations and selection methods for services with pan-European potential; and

- defining conditions attached to the rights of use for scarce resources (frequency bands and/or numbers) where appropriate (e.g., maximum duration of the rights of use, technological and operational conditions, etc), to be commonly applied by all Member States.

In view of the difficulty of establishing rights of use of spectrum and numbers at the European level, the role of the European Authority would provide advice and co-ordinate the procedures related to identifying services, defining common authorisations and selection methods and defining the conditions attached to the rights of use. Member States would still retain the power to issue the rights of use for pan-European services under a harmonised procedure and harmonised set of conditions laid down in a Commission Decision based on comitology.

If the Authority existed today, it would be dealing with services like mobile satellite services and mobile communications on board aircraft. By 2010 when the authority could become operational, there will be other - but similar - issues to be addressed[178]. The number of such services is relatively limited at the moment. However, based on the recent technological developments, it can be expected that the number of services with pan-European potential or cross-border characteristics will increase in the future.

ENISA

Under Option 2, considerations should be also given to the potential operational and administrative synergies incorporating the existing European Network and Information Security Agency (ENISA) into a new European Authority.

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[178] In the future there could be other usages of spectrum that would justify a pan-European authorisation. See *Preparing the next steps of eCommunications - a contribution to the Review of the eCommunications regulatory framework*, Hogan & Hartson LLP and Analysys Consulting, 2006.

ENISA was established in 2004 for a period of five years, with the goal of ensuring a high and effective level of network and information security within the Community, in order to develop a culture of network and information security for the benefit of the citizens, consumers, enterprises and public sector organisations of the EU, thus contributing to the smooth functioning of the internal market[179]. Based in Heraklion, Crete (Greece), ENISA became operational in September 2004. Its activities consist of giving advice and recommendations, data analysis, as well as supporting awareness raising and cooperation by the EU bodies and Member States. Its budget for the year 2007 is € 8 million, having a staff of about 50 people.

The Commission Communication of 1 June 2007 on the evaluation of ENISA, presented an appraisal of an external expert report[180] evaluating the performance of the Agency since its establishment and the recommendations of the ENISA Management Board regarding the ENISA Regulation and launched a public consultation.

The key findings of that expert report confirmed the validity of the policy behind the creation of ENISA and its original goals, and in particular its contribution to achieving a truly internal market in electronic communications. The report recommended extending ENISA's mandate beyond its current duration of 2009. At the same time, a number of problems were identified which affect the ability of ENISA to fulfil its role, including issues relating to its organisational structure, the skills mix and the size of its operational staff, and logistical difficulties.

In particular, the external evaluation highlighted that ENISA lacks a critical mass of operational staff to work effectively. The report concluded that:

> "*The Agency's size and resources should be increased to reach the critical mass necessary to act effectively and allow for an appropriate mix of skills and competences. […] Looking at the range of EU Agencies, it seems that a minimum size for effective action in the European Union could be at about 100 staff, with the administrative and support personnel representing about 25-30% of the total*"[181].

Therefore, from the pure cost-effectiveness point of view, Option 2 would provide the possibility of integrating ENISA into the new European Regulatory Authority, resulting in cost savings from the synergy of the two. The combined entity would benefit from economies of scale for administrative tasks, so that the relative share of resources for these tasks would be considerably lower than in ENISA's current organisational set-up. This would allow rebalancing of staff in favour of those working on network and information security issues. In this way ENISA could achieve the critical mass that it currently lacks. For further discussion on costs and benefits of a European Authority, see Annex III.

More strategically, there is a natural synergy between the ENISA and the new European Authority given that both fall under the provisions of the regulatory framework. In particular, Article 8 § 4(f) of the Framework Directive sets the requirement that regulatory authorities

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179 Regulation (EC) No 460/2004 of the European Parliament and of the Council of 10 March 2004 establishing the European Network and Information Security Agency. More information on ENISA can be found at the Agency's web-site: http://www.enisa.europa.eu/

180 *Evaluation of the European Network and Information Security Agency*, Final Report by the Experts Panel, IDC EMEA, 8.1.2007: http://ec.europa.eu/dgs/information_society/evaluation/studies/s2006_enisa/docs/final_report.pdf

181 See the above-mentioned Report by IDC (Chapter 6.2, p. 74).

have the task of ensuring that the integrity and security of public communications networks are maintained. Second, in its judgement of 2 May 2006[182], the European Court of Justice highlighted the close connection between the work of ENISA and the regulatory framework stating, inter alia, that: "[…] *the tasks conferred on the Agency [under Article 3 of the regulation] are closely linked to the objectives pursued by the Framework Directive and the specific directives in the area of network and information security.*"

These synergies can be exploited through a sharing of operational tasks such information gathering and dissemination, cooperation and networking not to mention the upgrading of ENISA through its association with a larger regulatory entity. The new regulatory entity in a streamlined form could - together with a clearer identification of tasks - ensure that objectives and tasks associated with ENISA can be fulfilled in a more efficient, focused and cost effective manner.

National appeals

As pointed out earlier in the text, the length and differing standards of national appeal procedures are generally perceived as a problem which could negatively affect legal certainty and implementation of the regulatory framework. However, the powers of the Commission or any central body to influence the length and effectiveness of national appeal procedures are limited. An amendment of Article 4 of the Framework Directive would be proposed in order to ensure that the NRA decisions adopted under the Framework can be overturned on an interim basis only in very limited circumstances.

Insofar as the regulation of trans-national markets and certain national markets is dealt with by the Commission acting on advice of the European Authority, its decisions would be subject to review by the European Courts in accordance with the EC Treaty.

7.3.3. Option 3 – Better co-ordination between the Member States

This option would constitute a modified 'status quo' in the sense that no legislative changes to the regulatory framework would be required. In order to solve the problems outlined above, it would rely on voluntary co-ordination without any transfer of power to a central authority. The existing institutional mechanisms would be preserved and the co-ordinating role of the current institutions including the ERG could be formalised and enhanced.

In concrete terms, this option would envisage:

- Co-ordination role of the ERG in the Article 7 procedures and co-ordination of NRA's remedies policy through a Commission Recommendation on remedies;
- Co-ordinated introduction of services with pan-European potential; and
- Better co-ordination between national courts in national appeals matters.

Co-ordination role of the ERG in the Article 7 procedures, guidance to NRAs through a Commission Recommendation on remedies

[182] Case C-217/04, United Kingdom v Parliament and Council, available at: www.curia.europa.eu. In this judgement the ECJ confirmed that ENISA was correctly established on the basis of the single market clause in Article 95 of the EC Treaty.

In order to improve consistency in application of the regulatory framework across all Member states, particularly as regards the application of remedies, the role of the ERG would be enhanced and formalised. The ERG could play a more formal advisory role to the Commission in the Article 7 procedures (especially in Phase II when the Commission issues so called "serious doubts letters"). The Commission would take due account of the ERG's position. In this respect, this option would propose a kind of self-regulatory framework among national regulators rather than an increased regulatory oversight of the Commission. The ERG has taken steps towards promoting a more co-ordinated approach to regulation[183].

Under this option, the Commission would seek to improve regulatory consistency by providing more guidance on remedies, including through a recommendation on remedies based on Article 19 Framework Directive. The aim would be to clarify best practice in this area and to give guidance to NRAs on how best to shape remedies. This would improve national regulation and facilitate Article 7 procedures without introducing Commission oversight of remedies or new institutional structures and is likely to lead to more harmonisation: pursuant to Article 19(1), NRAs will have to give reasons why they do not follow the recommendation if they wish to pursue a diverging approach.

Apart from enhancing the ERG role in the market review procedures, this option would also imply further streamlining such as the planned reduction in the number of markets outlined in the Recommendation on relevant markets, relaxing requirements for compulsory notifications to the Commission after the third round of market reviews, setting minimum standards for notifications, etc. These streamlining measures were proposed already in the Commission Communication on the Review in June 2006 and could be envisaged also in Option 2. The impact of these measures on administrative costs is analysed in the Annex II.

Co-ordinated approach to services with pan-European potential

The current regulatory framework makes it cumbersome to harmonise authorisation and selection procedures for services with pan-European potential and to define a common set of conditions attached to the rights of use. Harmonised selection and authorisation of a pan-European services is possible only if a specific Council and Parliament Decision under Article 95 of the Treaty is adopted. This in practice means that it is necessary to first adopt a Commission Decision harmonising a specified frequency band for the service and then proceed with a co-decision procedure to define common selection and authorisation methods and common conditions of use[184]. This option would leave this procedure unchanged.

Better co-ordination between national courts in national appeals matters

The Commission would encourage co-operation between national courts, provide regular information on the recent developments and specificities of the electronic communications sector and foster exchange of good practice and information between national courts. It would also encourage national courts to follow a common approach to suspension of NRAs

183 See the ERG Plenary Meeting conclusions of October 2006: http://erg.ec.europa.eu/doc/meeting/erg_06_52_erg18_conclusions.pdf

184 This procedure is currently envisaged for the systems providing mobile satellite services. For more information, refer to: http://ec.europa.eu/information_society/policy/ecomm/current/radio_spectrum/by_topics/mss/index_en.htm

decisions, i.e. the legal standards to be satisfied before a suspension is granted should be relatively high.

7.4. Results of the public consultation

In the public consultation, the lack of a true internal market was criticised both by the industry (UNICE, now BusinessEurope) and consumer organisations (such as BEUC). Europe's potential in the ICT sector – which is crucial for growth and jobs in Europe – appears to be seriously undermined by these regulatory deficiencies of the internal market.

In general, respondents to the public consultation, from industry (UNICE) to consumer organisation (BEUC), from new market entrants to telecom incumbents with international and cross-border business and Internet Service and Voice over IP providers, argued that having different regulatory approaches in different countries adds substantially to the costs of firms operating across multiple countries.

National regulators and the ERG, generally agree that a more harmonised approach to services with pan-European potential is needed, however most NRAs are opposed to the stronger Commission oversight of remedies.

7.5. Comparison of options and impacts

Option 1: Single European Regulatory Authority with discretionary decision-making powers in market reviews and in charge of managing EU aspects of spectrum

The most relevant arguments in favour of the single European regulator focus on the potential economic benefits of the single market. A European regulator acting outside the domestic politics of all Member States would remove national influences that colour many decisions of NRAs, and would promote consistent regulation across the EU. It represents a significant change in the institutional arrangements and would undoubtedly have a significant impact on the European electronic communications markets.

Centralised regulation may contribute to encouraging faster deployment of services with pan-European potential and international competition among operators, rather than fragmented competition in local/national markets. Operators active in several Member States would have a one-stop regulator system instead of having to deal with each different national authority and differences in implementation. This would significantly lower their administrative burden and compliance costs. Mobile and wireless markets would also undergo a significant transformation towards a European spectrum market with a greater emphasis on international competition[185]. Nevertheless, it can be expected that regulatory consistency and market consolidation would be the key features of this model.

Concerning the disadvantages of this regulatory model, the key constraints are based on subsidiarity and legal considerations. A European regulator as described above would effectively entail transfer of powers over electronic communications regulation to a supra-national body. This body would regulate not only markets with significant cross-border dimension but also all national markets. As long as electronic communications markets and services remain predominantly national, the scope of powers of the European Regulator in

[185] For example, the current mobile markets with 3-4 mobile operators per country could be transformed in a European mobile market with 7-10 big operators competing on a Europe-wide scale.

Option 1 would raise subsidiarity issues. The problem definition of this Chapter has demonstrated that a number of issues affecting cross-border services are not satisfactorily regulated by Member States. However, a policy response consisting of transfer of all the regulatory powers to an EU Authority would not be proportionate to achieve the objective of more consistent and effective regulation. Some stakeholders fear that a European regulator would be too far from the markets and would not be as effective as a national level authority which has the specialised expertise and all the detailed information about local market developments[186].

From the legal point of view, creation of a European regulatory authority with strong decision-making powers involving discretion would raise institutional concerns.

In summary, while this option could have positive economic impacts and has the potential to deliver a single market, there are significant subsidiarity and legal constraints which render this option unrealistic.

Option 2: **European Regulatory Authority without discretionary decision-making powers assisting in the implementation of reinforced Community procedures**

Commission oversight of remedies and advisory role of the European Authority in Article 7 procedures

A European Authority with an advisory role combined with the Commission oversight of remedies has the potential to deliver an efficient outcome in the sense of more regulatory consistency and a level playing field for operators and service providers across the EU. The role of the European Authority in this model is essential as it would provide technical expertise and advice with respect to regulatory consistency before a Commission decision is reached. The Commission will take the utmost account of the opinion of the Authority, while the discretionary decision-making power will remain with the Commission. The impact of more consistent application of remedies would be positive particularly for big operators and providers of services in multiple jurisdictions (including specialised SMEs). They would benefit from a reduction of the cost of doing business across Europe and availability of consistent wholesale products facilitating provision of services for business clients operating in several Member States and for emerging IP-based services. The threat of Commission's requirement to withdraw draft remedies could create incentives for the NRAs to choose more effective remedies and ultimately create a level playing field for operators with less divergent regulatory environment in each Member State. If this outcome is reached, incentives for operators to invest outside their domestic territories would be expected to increase.

It has to be noted that this measure would probably lead to more harmonisation but by no means to full harmonisation of regulatory outcomes. The Commission oversight of national regulation would be strengthened but no significant shift of regulatory balance would occur. This however might change in the future if more markets are identified as trans-national markets and consequently analysed and regulated at the EU level with the advisory role of the European Authority. This role will gain in importance as pan-European services such as mobile data roaming or VoIP become more widespread.

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[186] See e.g. a stakeholder consultation carried out within the study *Preparing the next steps in regulation of e-Communications,* Hogan&Hartson LLP and Analysys Consulting, 2006, or refer to responses from the October 2006 public consultation: http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/review_2/index_en.htm

In terms of resources, the additional power of the Commission over remedies (i.e. Commission power to require NRA to withdraw the draft remedy and to suggest which remedies should be applied instead) would require more time and resources devoted to the analysis of remedies. Independent opinion/advice of the European Authority prior to the Commission decision would also demand resources. It would be possible to party offset the resources needed for a more detailed analysis of remedies against gains from the reduced number of markets subject to market reviews and a general streamlining of the Article 7 procedures[187].

Option 2 has budgetary implications as the European Authority would be financed from the Community budget. An independent cost-benefit study undertaken to examine the cost-effectiveness of such an agency reported that, under a conservative scenario, the Authority has the potential of bringing economic benefits exceeding its budgetary costs by a factor of around 10-30 times (i.e. € 250 – 800 million). The major source of benefit is the reduction in the regulatory risk, reducing the cost of capital for industry. Additional gains particularly in wireless services would come for example from speeding up the process of assigning spectrum for pan-European services where one year saved can yield benefits of several hundred millions of euros. Creating a pan-European reference point for information on tradable user rights could save the satellite industry € 0.5 - 6 million per annum, and reduce the regulatory risks of R&D projects in the field of eCommunications, which must achieve EU economies of scale to enter the market and which currently face considerable uncertainties in the availability of spectrum (see Annex III).

Changes in the institutional set up should also feed through to benefit consumers. Impact on consumer choice, prices and availability of new innovative products and services would benefit from more rapid and effective regulation of markets – in particular wholesale – in order to stimulate competition. This has been the main tool that has consistently brought consumer gains in terms of lower prices and increased choice over the past 20 years of liberalisation. It should also allow some catch-up of service provision in Member States where market opening has been consistently behind that of the leading countries.

Emphasis on strengthening the internal market dimension of electronic communications networks and services would also be expected to lead to consolidation through mergers and acquisitions. The rising efficiency of the resulting larger trans-European operators would, however, be to the detriment of some small operators whose activities are limited to national markets.

Involvement of the European Authority in new EU level procedures for authorisation and regulation of services with pan-European potential

Providers of services with pan-European potential would benefit most from a more centralised institutional system, in particular from the coordinated regulation and authorisation of services. The clear advantage of a common authorisation procedure assisted by the European Authority means direct savings of administrative costs, compliance costs and reduction in the overall regulatory burden.

[187] Reduction in the number of markets subject to market reviews is foreseen in the reviewed Recommendation on relevant markets to be published together with the reviewed regulatory package.

Administrative burdens related to different authorisation, licensing regimes and user conditions in Member States would be significantly reduced with the introduction of a common authorisation system with harmonised conditions. This approach could lead to faster deployment of existing services with pan-European potential, such as VoIP or mobile satellite services, and foster investment in future cross-border services by reducing the uncertainty deriving from the application of diverging regulatory conditions. Another advantage related to the reduction of regulatory burdens is the speed and efficiency of the authorisation process. In fast-developing technological environments, time-to-market plays a crucial role for introduction of any new technology or service. Coordinating authorisations to operate services with pan-European potential across the EU would speed up the development of new services. This would go some way towards levelling the playing field for European business vis-à-vis the US where the problem of internal market fragmentation and differences in regulatory approaches does not exist.

The system outlined in Option 2, i.e. co-ordinated procedures based on comitology with advisory powers of the European Authority, does not imply one single pan-European authorisation at the EU level, as the authorisation of services would remain at the MS level but using the same harmonised procedure. While a single pan-European authorisation issued by the European Authority would be economically the most efficient solution, there are legal concerns as to whether such authorisation can be issued. Indeed, it might be argued that such an approach falls under the earlier discussion of an Authority exercising discretionary decision-making powers (see above). Co-ordination through comitology combined with advice from the European Authority would therefore be more legally secure.

Possible risks and uncertainties of this Option relate also to the question which services would be identified as services with pan-European potential and be subject to common authorisations under the coordinated system. At present, there are few examples of services with truly pan-European footprint as most electronic communications services remain national. However, as explained above, there is a significant potential for these services to develop in the future. A clear pre-requisite for this system to function properly is that Member States should agree which services shall be qualified as having pan-European potential or significant cross-border dimension. There is a risk that some Member States will not be willing to give up their discretionary power over regulating certain services at the national level. Additionally, the procedure whereby Member States decide – through a comitology procedure – to reserve certain spectrum bands or number ranges for cross-Community use could result in some delays in practice, if there is not sufficient commitment and consensus among Member States.

Social benefits stemming from a harmonised regulatory environment for services with pan-European potential are based on the assumption that more and more services will have pan-European potential or cross-border characteristics and the emergence of these services will benefit from simplified and harmonised regulatory procedures. Social impacts are directly linked to consumer impacts: with more competition and wider presence of pan-European services, consumers gain in terms of choice and the trickle down of productivity gains from economies of scale and scope from operating at a pan-EU level. Lower barriers to entry and a lower regulatory burden would, in a competitive market, lead to lower prices for consumers and a positive economic and social impact in terms of increased availability and affordability of services.

Option 3 – Better co-ordination between the Member States

Option 3 has some similarities to Option 2 but relies more on voluntary co-operation and co-ordination between Member States rather than on binding regulation regulatory measures at the EU level. The intended objectives, i.e. positive impacts resulting from more consistency and harmonised approach to regulation of certain services, remain the same.

Co-ordinated approach to market reviews

Again, the outcomes of this approach compared to Option 2 depend on the effectiveness of co-ordination among NRAs. If NRAs have the incentive to co-ordinate and take into account the element of consistency when analysing markets and drafting remedies, then the final outcome could be similar to Option 2. So far, there is no clear evidence that this has been the case. The current ERG serves as a useful meeting point for national regulators and a platform for exchange of experiences. However, individual NRAs are not bound to follow the ERG common line in their market reviews and their first priority is to analyse and remedy a particular situation in their Member State, rather than ensure consistency across the EU. Under current rules, there is no requirement for NRAs to be independent of government.

Whereas the commitment of NRAs to more co-ordination in the application of remedies could improve the current situation, this would depend on there not being significant differences of opinion within the ERG. It is also possible that the Commission could in some cases view consistency of remedies from a different perspective than the NRAs assembled in the ERG. A consensus position would have to be achieved before the Commission issued its comments on remedies. In any case, even if the Commission's comments are taken into account, the NRA's decision can still be overturned in a national appeal procedure. From this point of view, it would be more difficult to guarantee the consistency of all NRA's decisions over remedies, especially since the Commission comments do not have the legal status of a Decision.

A Commission Recommendation on remedies would give NRAs ex-ante guidance on the shape of appropriate remedies. An NRA that did not follow such a recommendation would have to inform the Commission and give reasons for its position.

Regulation of services with pan-European potential

The current procedure for authorisation of services with pan-European potential would not change. Services would be authorised on a case by case basis whereby a co-ordinated procedure will be possible only if an individual Council and Parliament decision under Article 95 is adopted. With a growing number of services with pan-European potential or cross-border dimension, the length and complexity of such a procedure could become unsustainable. Better co-ordination could affect the speed of comitology procedures and Commission decisions but would have probably little impact on the more time consuming co-decision procedure in the Council and Parliament. Operators would either have to wait for a co-ordinated mechanism to be put in place or seek individual national authorisations in all Member States where they want to operate. This implies significant time delays and poses a risk of underinvestment in, and slow development of, such services.

The table below provides a summary on main likely impacts and risks arising from policy Options 2 and 3 with respect to the different economic and social dimensions. Impacts of Option 2 are compared to the "no change" option 3, which provides a baseline scenario for the assessment. The signs represent a scale of possible impacts vis-à-vis the "no change scenario": **+** positive impact**, O** neutral impact, **−** negative impact**.**

Table 3. Summary on the main impacts and risks of the options

IMPACTS AND RISKS	**Option 2 – European Authority, stronger Community powers**	**Option 3 – Better co-ordination between Member States**
	ECONOMIC	
Investment and innovation	**+/O** Facilitates launching of cross border services and services with pan-European potential → more investment. Concerning approval of remedies, more regulatory consistency should facilitate investment across national border.	In principle Option 3 could improve consistency in market reviews, but uncertainty as to whether voluntary co-ordination will lead to more consistency. Does not facilitate cross-border investment and deployment of new innovative cross-border services.
Competition	**+/O** Level playing field for operators where competition can develop. Facilitates cross-border competition and encourages competition from new cross-border services. Outcome depends on implementation (especially concerning national appeals and remedies).	Uncertainty as to whether voluntary co-ordination will lead to more consistency. Competition would continue to develop predominantly in national markets, limited cross-border competition and difficulties for services with pan-European potential to compete across the EU.
Internal market, regulatory consistency	**+/−** Improvements in regulatory consistency of remedies, more efficient, harmonised procedures and conditions for services with pan-European potential, less differences in national appeals. Implies more co-ordination and transfer of some powers to the EU level;	No material changes to institutional balance. Lower probability of achieving regulatory consistency; lengthy and cumbersome procedures for authorisation of services with pan-European potential.
EU competitiveness	**+** Could enhance competitiveness by facilitating deployment of new cross-border services and creating favourable environment for investment.	Risk of fragmented regulatory approach and cumbersome procedures for services with pan-European potential put Europe in a disadvantaged position vis-à-vis third countries. A Recommendation on remedies would guide NRAs and inform them of best practice in the area
Economic operators' costs and benefits	**+** Positive impact on service providers operating in several MS, or those offering services with pan-European potential, less divergent regulatory environment, more legal certainty.	Some improvements in legal certainty and the overall regulatory environment for operators due to better co-ordination of market reviews. Providers of services with pan-European potential could not benefit from a more consistent regulatory environment.
Administrative costs, simplification	**+/O** Overall reduction due to streamlining measures, fewer markets in the Recommendation and a common authorisation conditions for services with pan-European potential. More time and resources needed for Commission approval of remedies and for setting up the European authority, but strongly positive cost-benefit assessment. Integrating ENISA to the new entity would provide operational efficiencies and reduce overall admin costs	Overall reduction due to streamlining measures and fewer relevant markets in the Recommendation. No major simplification for providers of services with pan-European potential
Consumer benefits	**+/O** Indirect impact on consumers. Increased availability of new innovative products and services across the EU, positive impact on consumer choice. Better and cheaper connectivity for business customers across borders.	**I**ndirect impact on consumers. Outcome depends on the efficiency of voluntary co-ordination. Slow up-take of cross-border services and services with pan-European potential.
	SOCIAL	
Social and digital inclusion	**+/O** Impact will depend on accompanying measures, such as the upcoming review of the universal service concept. Positive impact of co-ordination on regulatory consistency should have positive effect on digital inclusion across the EU. Increased effectiveness of ENISA in the interests of citizens.	Impact will depend on accompanying measures, such as the upcoming review of the universal service concept. Digital divide may persist in some countries if voluntary co-ordination is not effective.
Employment and labour market	**+/O** Difficult to determine. Stronger EU powers could lead to some consolidation of the market but positive spill-over effects on other sectors can be expected due to innovation and deployment of cross-border services.	No significant change on labour markets, positive spill-over effects rather limited.

7.6. Conclusion

The key questions of this section are: how to achieve more regulatory consistency across the EU and whether the current institutional model can deliver optimal results in terms of progress towards internal market in electronic communications.

Three main problem areas or barriers were identified. NRAs apply different regulatory measures in similar circumstances and the effectiveness of implementation is undermined by significant delays in market review procedures. Providers of pan-European services using spectrum or numbers are obliged to comply with 27 different selection and authorisation procedures and different operating conditions. Finally, the current system of national appeals can cause significant delays in implementation.

The options in this section offer different institutional arrangements with different balances of power between national authorities and the EU Authorities. Option 1 – creation of a single European Regulatory Authority with decision-making discretionary powers – is an option that could deliver a single market in electronic communications but was rejected on the grounds of subsidiarity and legal constraints.

With regard to the problem of inconsistency in remedies, Option 2 provides sufficient guarantee of regulatory consistency while preserving the decentralised system of regulation. It combines stronger Community powers with an advisory role of a European Authority. The co-ordination mechanism suggested in Option 3 could be effective only if all NRAs commit themselves to follow common guidelines and voluntarily agreed on pursuing the objective of more consistent application of remedies. This however has not been the case within the ERG to date, and there are insufficient guarantees that the voluntary co-ordination would work in practice. Moreover, the current system of Commission approval of market definitions and SMP assessment has shown positive results and could be effective also in the case of remedies.

Regarding the problem of existing barriers to provision of services with pan-European potential, Option 2 would provide for a more efficient outcome than Option 3. In Option 2, the European Authority would be involved in selection and authorisation of services with pan-European potential and in harmonising the conditions attached to the rights of use of frequencies/numbers. From the perspective of administrative and compliance costs, Option 2 is clearly the more advantageous for service providers, as it establishes one single selection and authorisation procedure for services with pan-European potential. However, legal uncertainties related to transferring the right to issue pan-European authorisations to the European Authority lead the Commission services to the conclusion that a co-ordinated approach with advisory role of the European Authority would represent the optimal solution. This would effectively mean one single selection procedure and harmonised conditions of use, based on Commission decisions using comitology, but with authorisations still being issued at national level .

Network and information security is seen to be a rising threat that has been shown by evaluation and public consultation to require greater efficiency. Thus, under Option 2, the functions of the European Network and Information Security (ENISA) would be merged into the European Regulatory Authority. This upgrading of ENISA to become an integral part of the European Regulatory Authority would provide gains in terms of operational performance and administrative efficiency.

The issue of differences in national appeal procedures is difficult to tackle at the EU level, as it touches upon Member States competencies and national judicial systems. Strong harmonisation measures are therefore not possible. At the same time, this issue is very important because problems caused by delays in appeal procedures can significantly hinder effective implementation of the regulatory framework. Upholding NRAs measures until they are overturned by the courts (proposed in Option 2) would be the best way forward[188].

Finally, an independent cost benefit analysis found that, even by applying conservative scenarios, the establishment of an Authority could generate net gains of 10 to 30 times of its costs due to reduction in regulatory risk, speeding up procedures and search costs. It is therefore an approach that would be cost-effective and fully justifiable from the EU budgetary perspective.

IV CONNECTING WITH CITIZENS

Introduction

A central goal of the regulatory framework is to provide substantial consumer benefits, and to do this in the context of an inclusive Information Society. To this aim, the EU rules rely largely on enhanced competition – as described in Chapters 4 and 5 - while it is also recognised that competition alone may not always satisfy the needs of all citizens and protect consumer rights. The competition-based approach of the framework is therefore complemented by specific provisions safeguarding universal service and users' rights as well as security and privacy in eCommunications. The horizontal provisions of the EU's consumer protection policy are equally applicable to this sector.

8. USERS' RIGHTS AND CONSUMER PROTECTION

8.1. Identifying the problem

Genuine competition combined with technological progress has delivered more choice, lower prices and innovation for consumers. At the same time, the bigger choice and complexity of offers are also bringing some difficulties for the users.

There are four main areas where the review has identified a need to update and future-proof specific provisions and/or problems with the implementation of the current rules. These are:

i) Transparency and publication of information for users;

ii) Users with disabilities;

iii) Emergency service (access to '112' and caller location); and

iv) Basic connectivity and quality of service ('Network neutrality and freedoms').

[188] At the same time, the Commission would continue to run seminars for judges involved in Article 7 appeals cases.

The individual legislative proposals comprise also other changes with less anticipated impacts, such as clarification the rights of subscribers to access all non-geographic numbers (e.g. freephone, directory services, and individual end-users).

The concept and general provision of universal service as such are not covered by this review. The results of the call for input on the review as well as the contributions received in response to the consultation on a number of long-term issues put forward by the Commission on the review of the scope of universal service[189], acknowledged the need for a fundamental reflection on current universal service arrangements. The Commission intends to publish a Communication on universal service in 2008 to fulfil its duty to review the scope of universal service periodically, and to express the Commission's position on the future of the universal service as regards electronic communications in Europe.

8.1.1. Transparency and publication of information

As the market is increasingly providing more communications products and services, users are calling for more transparency to make informed choices. The widening range of possible customer usage patterns, the variations in price levels and structures and the number of possible discounts and bundling schemes available on the market represent a challenge in providing price comparison services.

The latest EU-wide Eurobarometer survey found that on average, 38% of the mobile users, 34% of the fixed telephone users and 30% of the internet users in the EU25 found it difficult to compare the offers available. Consequently, consumers in countries with a high degree of competition find it most difficult to compare information across offers of multiple operators (53%-63% of the users find it "very difficult" or "difficult" to compare mobile telephone offers in Belgium, Denmark, France, Germany, the Netherlands and Sweden)[190]. In economics, it is generally considered that information asymmetry (i.e. different parties in an economic relationship having different amounts of price or other information)[191] leads particular to market inefficiencies or failures.

Two main problems can be identified in relation to transparency and publication of information. Firstly, callers are often unable to find out, or are not aware of, which tariff applies to their services (for example, international calls or mobile calls to a number that is advertised as “freephone”). Secondly, making price comparisons is difficult for a significant number of consumers, in particular in cases of service bundling.

Furthermore, the current text in the Universal Service Directive concerning transparency and publication of information refers only to information on the applicable tariffs and conditions of *public telephone services*, and not to *all* communications services (and operators), although consumers do not make or do not know such a distinction

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189 See the responses to the public consultation on the Communication COM(2005) 203 and the Communication regarding the outcome of the Review COM(2006) 163, available at: http://ec.europa.eu/information_society/policy/ecomm/library/index_en.htm

190 Special Eurobarometer 260 – Services of General Interest, July 2007, available at: http://ec.europa.eu/consumers/cons_int/serv_gen/cons_satisf/eb260_report_en.pdf. The survey found also that 34% of the respondents consider it difficult to compare banking offers.

191 In his well-known analysis, Akerlof called this the market for “lemons”, demonstrating how asymmetric information can cause certain markets to become nonexistent or lead to lowest quality production. *The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism*, George A. Akerlof, Quarterly Journal of Economics 84 (1970), pp 488-500.

8.1.2. Users with disabilities

In its Communication on e-Accessibility of 2005[192], the Commission highlighted the existence of significant barriers to achieve electronic accessibility for all citizens. In particular, many people with disabilities – who constitute about 15% of the European population - encounter barriers when using ICT products and services. To overcome the problems and challenges, the Communication identified three approaches, one of which is the use of legal measures. While some measures to aid users with disabilities are clearly relevant to the regulatory framework, others are of a more horizontal nature[193].

The aim of the framework is to guarantee that users with disabilities have access to eCommunications services equivalent to those enjoyed by other end-users. As part of the provision on universal service, the framework includes special rules as for disabled users and people with special needs. Members States have a duty to take specific measures in order to guarantee access to and affordability of all publicly available telephone services[194]. Some of these measures could include, for instance, making public pay telephones accessible to the disabled, providing public text telephones for deaf or speech-impaired people, providing directory enquiry services (or an equivalent) free of charge for blind people, etc.

In this context, it should be pointed out that the EU Member States have also signed the United Nations Convention on the Rights of Disabled People[195], which elaborates in detail the rights of persons with disabilities and set out a code of implementation. Article 9 of the Convention requires countries to identify and eliminate obstacles and barriers and ensure that persons with disabilities can access their environment, transportation, public facilities and services, and information and communications technologies.

Member States have wide discretion with regard to the specific measures identified in the EU framework, and although the provisions are generally transposed, the experience shows that the specific rules are implemented and interpreted in different ways in different Member States[196]. As a result, there is a European patchwork of national measures for disabled users as has particularly highlighted by the reports of the INCOM ("Inclusive Communication") sub-group of the Communications Committee[197], which has investigated and analysed these issues across the EU since 2003[198].

This situation does not correspond to the needs of the users with disabilities in the increasingly convergent environment. Instead, it leads to a lack of access for disabled users in

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192 COM(2005) 425, available at: http://ec.europa.eu/information_society/activities/einclusion/policy/accessibility/com_ea_2005/index_en.htm

193 E-Inclusion is also an important topic in the Seventh Framework Programme (FP7), which bundles all research-related EU initiatives. On the development in the area of e-Inclusion in general, see: http://ec.europa.eu/information_society/einclusion

194 Some of these measures could include, by way of example, making public pay telephones accessible to the disabled, providing public text telephones for deaf or speech-impaired people, providing directory enquiry services (or an equivalent) free of charge for blind people, etc.

195 See: http://www.un.org/disabilities/convention/index.shtml.

196 See especially the 11th and 12th Commission implementation reports on the regulatory package.

197 INCOM is a sub-group of the "Communication Committee" (COCOM).

198 See the latest, 2006 report by INCOM, available at: http://forum.europa.eu.int/Public/irc/infso/cocom1/library?l=/public_documents_2006/cocom06-16_incom_1/_EN_1.0_&a=d.

some cases, and to fragmented markets for accessibility solutions in other cases, thereby also hindering the development of economies of scale necessary for the production of equipment for disabled users at an affordable price.

Furthermore, access to European emergency number 112 is not always guaranteed for the disabled users, notably deaf persons, who have to deal with different emergency numbers (see also the section on emergency services below).

8.1.3. Emergency services: access to 112 and caller location

Access to emergency services is extremely important for the safety of all citizens – whether users of telephone services or non-voice services such as text communication for hearing and speech impaired users - who expect to be able to initiate a request for help in case of an emergency by using the European emergency call number 112 or other national emergency numbers.

Currently the framework requires that all end-users of publicly available telephone services (PATS), including users of public pay telephones, are able to call the emergency services free of charge, by using 112. The Member States are obliged to ensure that "undertakings which operate public telephone networks" make caller location information available to authorities handling emergencies when this is "technically feasible"[199]. Member States also have the duty, where appropriate, to take specific measures for disabled users in order to ensure access to emergency services.

In 2006, the number 112 was operational in all 25 Member States, and users of both fixed and mobile networks everywhere within the EU were able benefit from this service.

Emergency calls to 112 are transported over the network to a response unit known as a *Public Safety Answering Point* (PSAP), and a variety of technical requirements must be fulfilled in order to provide full access to emergency service[200]. While several Member States are currently in the process of upgrading their emergency response systems, implementation of caller location information remains a problem in some Member States[201].

In most of the Member States location data is currently provided only on request of the emergency service ("pull" method), instead of being automatically forwarded by the network to public safety answering points each time an emergency call is initiated ("push" method).

Nonetheless, the main problem shared across the EU is that the existing mechanisms to support emergency calls that have evolved within the PSTN are not appropriate to handle IP-based voice, text and real-time multimedia communications. In particular, nomadic IP

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199 According to information received from the Member States (through the Communications Committee), a number of Member States are currently in the process of thoroughly upgrading their emergency response system. These upgrades are closely related to the integration, either physical or virtual, of different emergency services within a single response unit, otherwise known as Public Safety Answering Points (PSAPs).

200 These technical requirements are described in detail in a draft document of the Internet Engineering Task Force (IETF) at: http://www.ietf.org/internet-drafts/draft-ietf-ecrit-requirements-13.txt.

201 12th Implementation Report 2006. A number of Member States are currently in the process of thoroughly upgrading their emergency response system. These upgrades are closely related to the integration, either physical or virtual, of different emergency services within a single response unit, PSAP.

terminals make it more difficult to know the location of the caller. This information is required: (1) to route the emergency call to the appropriate PSAP; and (2) to display the location of the caller to help in dispatching emergency assistance to the right location.

8.1.4. Basic connectivity and quality of service ('network neutrality and freedoms')

Issue in the USA

The concepts of 'network neutrality' (or 'net neutrality') and 'net freedoms' are closely linked to the on-going debate on the telecommunications reform in the United States that concerns the "openness" of the internet. This debate has extended internationally, particularly due to the global nature of many US internet services.

The issue of network neutrality contains many complex overlapping topics involving many competing interests. Nevertheless, the underlying dilemma is that whereas the Internet is very efficient for quickly routing large amounts of data, it was not designed to provide the guaranteed quality of service or security that many applications now increasingly require. Network providers have powerful tools that allow them to control, prioritise or block specific data transmissions. For example, traffic prioritisation can be used to improve quality of service on the network as well as potentially be employed in an anti-competitive manner to block or disadvantage competing services[202].

The US debate on 'network neutrality' concerns essentially the question whether the network should be non discriminatory or "neutral" to the content flowing through it, or whether a network provider could offer different levels of quality-of-service for this content. For the end-user (who has purchased broadband access) the latter would mean that he or she could experience differing response times in interacting with various content providers, some of whom paid the carrier a "premium" and some who did not. Some US operators argue that they have the right to charge for prioritised content, and in doing so, would be able to build out their networks to ensure prompt delivery of certain online services and content[203].

While there is a bulk of study on net neutrality in the US[204], only one instance concerning discrimination among suppliers of content has been publicly cited. In 2005, a regional telephone company (Madison River Communications) refused to carry internet phone traffic of the leading US VoIP provider (Vonage), which complained to the FCC. After the FCC's investigation under the US Communications Act, the FCC and Madison River reached a

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202 For a general overview on this subject, see Internet Traffic Prioritisation: An Overview, OECD, Note by TIPS, 2007 (DSTI/ICCP/TISP(2006)): http://www.oecd.org/dataoecd/43/63/38405781.pdf.

203 On the literature on regulatory issues related to net neutrality, see e.g. publications by the AEI-Brookings Joint Center for Regulatory Studies: http://www.aei.brookings.org/publications/index.php?menuid=3, including.

204 See the footnotes below that provide some links to the literature with references for further reading. See also, e.g. *Scenarios for the Network Neutrality Arms*, William Lehr, Jon M. Peha, Marvin A. Sirbu, Sharon Gillett, Proceedings of 34th Telecommunications Policy Research Conference *(TPRC)*, September 2006: http://web.si.umich.edu/tprc/papers/2006/561/TPRC2006_Lehr%20Sirbu%20Peha%20Gillett%20Net%20Neutrality%20Arms%20Race.pdf.

'consent decree', in which the company agreed that it "*shall not block ports used for VoIP applications or otherwise prevent customers from using VoIP applications*"[205].

'**Net freedoms**' is a term used by the U.S. Federal Communications Commission (FCC) to identify four principles "*to encourage broadband deployment and preserve and promote the open and interconnected nature of public Internet.*" These freedoms published in 2005 are: *1) consumers are entitled to access the lawful Internet content of their choice; (2) consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement; 3) consumers are entitled to connect their choice of legal devices that do not harm the network; and 4) consumers are entitled to competition among network providers, application and service providers, and content providers the right for users to access and distribute (lawful) content, to run applications and connect devices of their choice*[206].

Relevance of the problem in the EU context

In the context of the EU regulatory framework and i2010 Initiative, the debate on net neutrality and freedoms translates into the general concern that the potential of the Internet would be threatened if network or services providers and not users were to decide which content, services, and applications can respectively be accessed or distributed and run.

In the US discussion, much of the advocacy to legislatively mandated network neutrality is based on the assumption that differing charges to suppliers of content to the Internet for correspondingly differing speeds of delivery are inherently discriminatory[207].

However, product differentiation is generally considered to be beneficial for the market (particularly in industries with large fixed and sunk costs) so long as users have choice to access the transmission capabilities and the services they want. Allowing broadband operators to differentiate their products may make market entry of content providers more likely, thereby leading to a less concentrated industry structure and more consumer choice[208].

Consequently, the current EU rules allow operators to offer different services to different customer groups (and price such services accordingly), but do not allow those who are in a dominant position to *discriminate* in an anti-competitive manner between customers in similar circumstances.

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205 Madison River also agreed *"to make a voluntary payment to the United States Treasury*" of 15.000 dollars. See the consent decree between the FCC and Madison River Communications, FCC 05-543: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-05-543A2.doc.

206 See the FCC policy statement of 5 August 2005 at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A1.pdf.

207 There are a number of US studies that – based on the experience on telecoms regulation and economic analysis - warn against regulation mandating net neutrality as it would be very likely inefficient and harmful to the market and consumers. See e.g. *Network Neutrality and Industry Structure,* George S. Ford, Thomas M. Koutsky, Lawrence J. Spiwak, Phoenix Center Policy Paper Number 24, 2006: http://www.phoenix-center.org/pcpp/PCPP24Final.pdf;, *Telecommunications, the Transition from Regulation to Antitrust*, Alfred E. Kahn, AEI-Brookings Related Publication 06-21, 2006; *The Economics of Product-Line Restrictions With an Application to the Network Neutrality Debate*, Benjamin E. Hermalin, Michael Katz, AEI-Brookings Working Paper 07-02, 2007. *The Net Neutrality Debate: Twenty Five Years after United States v. AT&T and 120 Years after the Act to Regulate Commerce*, Bruce M. Owen, AEI-Brookings Working Paper 07-03, 2007, available at: http://www.aei-brookings.org/publications/index.php?menuid=3.

208 On the economic theory, see e.g. *Theory of Industrial Organization*, Jean Tirole, MIT Press, 1988 and *The Economic Theory of Product Differentiation*, John Beath and Yannis Katsoulacos, Cambridge University Press, 2002.

Where there is genuine competition in broadband access services, the EU consumer has a choice between alternative broadband access suppliers. If one supplier seeks to restrict user rights, the affected consumer can in principle switch to an alternative broadband provider.

In case a certain national broadband access market is not competitive (i.e. there would not be service-based competition), the national regulator can under the EU framework impose *ex ante* access obligations on the dominant operator so that alternative market players are given a chance to provide their own broadband access services[209]. In comparison, in the US (as discussed in Chapter 5), the consumer does not always have this choice (or there is only a choice between the 'duopoly' of telecom and cable providers), and *ex ante* access obligations are not usually applied.

From the point of this review, it can be concluded that the sector-specific regulatory issues raised in the net neutrality debate concern essentially barriers for competition that can be effectively addressed by the NRAs under the regulatory framework where appropriate, allowing pricing flexibility, and fostering more efficient use of spectrum to facilitate entry into the broadband market (see Chapter 6). The competitive markets together with the current provisions on access and interconnection, should therefore be sufficient to protect "net freedoms" and to offer a suitably open environment for both European consumers and service providers[210]. This could be further enhanced by the measures on efficient use of spectrum (that should facilitate easier entry into the broadband market, see Chapter 5) as well as on functional separation as an *ex ante* remedy by the NRAs (see Chapter 4)[211].

However, while the "net freedoms" are already embedded in the design of the framework, they are expressed as obligations on the undertakings and corresponding powers of the NRA, and not in relation to users' rights to ensure connectivity.

As for "net neutrality", the problem also remains that the current regulatory framework does not provide NRAs with the means to intervene were the quality of service for transmission in an IP-based communications environment to be degraded to unacceptably low levels, thereby frustrating the delivery of services from third parties[212]. In such an event, end-users' connectivity to services provided on the internet (TV, telephony, Internet, etc.) could be at risk. The impact of prioritisation or of systematic degradation of connectivity could be larger

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209 The Access Directive sets access and interconnection rights and obligations for the undertakings and the corresponding powers and responsibilities of the NRAs. As described in Chapter 4, operators with significant market power (SMP) are obliged to unbundle network elements and provide bit stream access so that other suppliers can provide local (broadband) services. If needed, the NRAs can impose obligations on the operators with SMP, and address access and interconnection issues to prevent any blocking of information society services, or degradation in the quality of transmission of eCommunications services to third parties, and to impose appropriate interoperability.

210 A recent OECD study notes that "*Open access networks that separate the provision of physical infrastructure from service delivery could significantly reduce anti-competitive traffic shaping incentives by allowing a variety of providers to offer video, voice and data services in the same market over the same physical infrastructure." Internet Traffic Prioritisation: An Overview, OECD*, Note by TIPS, 2007 (DSTI/ICCP/TISP(2006)): http://www.oecd.org/dataoecd/43/63/38405781.pdf

211 The above OECD study also notes that "*The debate over traffic prioritisation should focus on whether competitive market forces provide sufficient consumer safeguards on network operator behaviour. There are several factors that will affect network operators' incentives and behaviours. Market analysis should examine if these incentives and behaviours are likely to affect consumers adversely. These factors include the level of competition in the broadband access market, the capabilities of traffic prioritisation technology and the range of service offerings from providers in the market*".

212 Currently this is only possible when this is done by an SMP operator subject to a non discrimination obligation.

on services needing real-time communications (e.g. IPTV, VoIP, in which latency is critical) and ultimately affect end-user choice.

8.2. The Objective

The general objective is to provide sufficient safeguards for users' rights, consumer protection and public interest in a technologically convergent environment in line with the i2010 objectives of information society for all.

In order to reach the general objective, the following specific objectives have been identified:

– Facilitate better information provisions so that consumers are able to make informed choices regarding providers and services of eCommunications;

– Remove barriers hindering disabled users to access and use eCommunications services;

– Ensure that quality of emergency services can be maintained in all cases; and

– Ensure that users enjoy good quality of service.

8.3. Policy options and assessment of impacts

Three policy options to achieve the above objective can be identified

8.3.1. Option 1 – Encourage more industry self-regulation

Generally, self-regulation is defined as the possibility for economic operators, the social partners, non-governmental organisations or associations to adopt amongst themselves and for themselves common guidelines at European level (particularly codes of practice or sectoral agreements)[213].

The option of introducing self-regulation by the industry in the area of user rights and consumer protection in eCommunications would mean less intrusive intervention than setting regulatory obligations at the EU level. It would be the responsibility of the Commission to scrutinise self-regulatory practices in order to verify that they comply with the provisions of the EC Treaty[214].

Assessment of impacts of option 1

The results of the public consultation show that industry is generally in favour of self-regulatory approach. On the other hand, consumer groups and associations of disabled generally consider this approach as ineffective.

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213 See point 17 of the Interinstitutional Agreement on better lawmaking, OJ C 321, 31.12.2003, p. 1.

214 Another variation of less intrusive regulation would be the co-regulation approach, which implies a regulatory framework in which the overall objectives, the deadlines and mechanisms for implementation, the methods of monitoring the application of the legislation and any sanctions are set out. It would also determine to what extent defining and implementing the measures can be left to the concerned parties.

In the context of **transparency and publication of information for users**, the self-regulation option would mean that operators would agree on common commitments to increase transparency and information for consumers[215].

Evidence presented above and responses from the public consultation suggest that transparency remains to be a problem and that not all operators wish to take any actions in this respect. Operators often argue that mandatory transparency measures can affect negatively their ability to innovate and propose innovative pricing schemes to consumers. However, firms generally do not have sufficient economic incentives to compare their prices with those of their competitors or inform customers beforehand about the cost of phone calls. For this reason, voluntary self- and co-regulatory measures have been so far rather exceptional.

It should be noted, however, that several Member States have begun taking a more proactive approach to tariff transparency through web-based price comparisons or listings, and some NRAs have extended the scope of their internet based tariff comparison sites to cover fixed, mobile and broadband services. In some Member States these public services are supplemented by market players' own transparency initiatives[216].

As for facilitating use and access of eCommunications by **disabled users**, this option would require operators to agree on a voluntary basis to provide concrete solutions to the specific problems of disabled users.

In this context, a self-regulatory approach has already been proposed by the Commission in its Communication on eAccessibility of September 2005[217], which provided a time limited opportunity for non-legislative initiatives by promoting a consistent approach in the Member States through voluntary actions and fostered industry self-regulation[218]. However, this has not materialised in any significant scale since the publication of the Communication. Against this background, it is therefore very likely that self-regulation would fail again due to a lack of incentives and involvement of the industry (for example to improve access to 112 for the disabled).

As for **emergency services and access to 112**, some stakeholders favoured self- and co-regulatory approaches in the public consultation that could, for instance, include measure to inform consumers on the lack of availability of caller location information.

It can be observed that in some Member States, availability of caller location has improved considerably due to good cooperation between emergency authorities and operators[219].

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215 In the public consultation, some contributions from the industry representatives also suggested a co-regulatory approach, and France and Japan were cited as an example of how co-regulation can work in practice to improve transparency.

216 See the 12th Implementation Report 2006.

217 COM (2005) 425, see also the associated Impact Assessment, SEC (2005) 1095, which identifies co-ordination and concerted effort of stakeholders as the preferred option to "fully explore the possibilities available in current legislation".

218 The Communication suggests to first, making better use of the existing measures including self-regulation, after which the Commission is to evaluate the situation. If these measures are not effective, new legislation could be imposed after 2 years.

219 The 12th Implementation Report 2006 gives the examples of Czech Republic and Finland.

8.3.2. Option 2 – Update and strengthen the current provisions

This options aims at updating and strengthening the provisions on users' rights and consumer protection in the identified four main areas. To this end, the Commission put forward the following proposals in June 2006 (as outlined in the Review Communication and Staff Working Document), in short:

1) Improving the transparency and publication of information for end-users by:

i) giving NRAs powers to require from operators better transparency of tariff and other information (with the possibility to agree technical implementing measures at EU level) to ensure that consumers are fully informed of the prices and conditions before they purchase the service;

ii) ensuring that third parties have the right to use without charge or hindrance publicly available tariffs published by undertakings providing e-communication services, for the purpose of selling or making available comparative price guides; and

iii) empowering NRAs to make price guides available where the market has not provided them.

2) Facilitating the use of and access to eCommunications by disabled consumers by:

i) Introducing a Community mechanism to address eAccessibility issues. This would mean establishing a group consisting of all interested parties (such as the Commission, Member States, industry and associations of disabled users), which would provide advice to the Commission on matters relating to access and use of eCommunications services and terminal equipment by disabled users; subsequently, the Commission could take necessary technical implementing measures, following a public consultation; and

ii) Strengthening the right of disabled user' right to access emergency services via the number '112'.

3) Improving caller location obligations related to emergency services:

Caller location information should be provided to the emergency authorities in all cases and the cost of this transmission should be borne by the network operator.

4) Ensuring that regulators can impose minimum quality of service requirements:

The NRAs would have powers to prevent degradation of quality of service by allowing them to set minimum quality levels for network transmission services for end-users, with the Commission having powers to adopt technical harmonising measures.

Assessment of impacts of Option 2

Information is generally considered as a key factor for consumer choice and satisfaction. More available and **transparent information** on prices and tariffs and conditions of service provides for users to choose wisely among the diverse choice of communications services. In

particular, aged people who find it most difficult to compare the offers, would benefit from better transparency.

Transparency of tariffs prices and conditions is likely to lead fairer competition and stimulate innovation and the development of services, applications and end-user devices from a variety of providers. NRAs might also want to publish price guides even if such guides are already available on the market, simply because the commercially provided guides might lack credibility. Transparency would also force operator to disclose any access restrictions that they imposed; this will bring the forces to competition to bear on any restrictive practices. Combined with this will be a general principle for NRAs to safeguard users' ability to access legitimate content of their choice ('net freedom').

Strengthening of provisions under this option in favour of **disabled users**, elderly and people with special social needs should generally ensure that this significant part of the population would better benefit from using and accessing eCommunications services. This, in turn, is a key factor to address employability or social participation deficits in these population segments. Increasing employment rates would facilitate the development of a virtuous circle towards autonomy and less reliance on social security.

Setting up a Community mechanism involving all stakeholders should foster dialogue and increase the transparency and efficiency of possible accompanying measures. It is likely to provide a more flexible mechanism that allows regulation to be adjusted more quickly to market, social and technological developments, which should ensure that the views and needs of disabled are better taken into account, leading to a more consistent and comprehensive response to their needs.

Having a pan-European scope in the area of eAccessibility is likely to increase the scale advantages, potentially leading to reduced cost and better leveraging of investment. Moreover, new services, ease of use and simplification can also benefit mainstream users.

This option would also imply specific measures from the Member States to ensure that emergency services are accessible to disabled end-users, and that they can make use of special devices (such as devices for hearing-impaired users, text relay services, or other specific equipment) enabling them to make an emergency call to 112 number (see section on emergency services below).

For manufactures of goods and service providers, this option should also provide incentives to invest in new markets, including the growing and promising market of goods and services for the elderly. By 2020 25% of the EU's population will be over 65. However, severe vision, hearing or dexterity problems frustrate many older peoples' efforts to engage in the information society[220].

Having clearly defined pan-European requirements will reduce the compliance cost for operators and terminal equipment manufacturers in the long term. Nevertheless, for operators, the new requirements under this option would bring also some additional cost, e.g. to adapt services to improve eAccessibility.

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220 See *Aging well in the Information Society - An i2010 Initiative - Action Plan on Information and Communication Technologies and Ageing*, COM(2007) 332, available at: http://ec.europa.eu/information_society/activities/einclusion/policy/ageing/launch/index_en.htm

As for **emergency services,** strengthening the requirement to provide **caller location information** for calls made to 112 - irrespectively of the technology (fixed, mobile or IP-based) - will ensure that the facility is available throughout the EU. At present the provision of this facility is subject to its technical feasibility. However the Commission considers that it is technically feasible to provide this facility most of the time and has launched infringement proceedings against Member States that have not implemented the facility.

This option would address "**network neutrality**" and **basic connectivity** by establishing a safety net for quality of transmission: in case the elements of the basic connectivity would become seriously under threat, the NRAs could intervene by setting common **minimum quality levels** for network transmission services for end-users, based on standards agreed at EU level. This would guarantee minimal level of connectivity and greater choice for consumers ensuring the delivery of third party services at suitably high quality levels appropriate to their needs. Provisions in the area of 'net freedoms' would also be made more explicit.

It furthermore appears that in most of the analysed areas, there is a general need for better coordination and exchange of information and dissemination of best practice at the EU level (between the Member States, the NRAs and the Commission). This holds particularly true for the fragmented approach concerning issues of disabled users and eAccessability.

In all these areas, a European Authority (as discussed in Chapter 7 above) could play an important role, by providing technical advice and Opinions to the Commission prior to the adoption of any technical implementing measures.

8.3.3. Option 3 – No change to the regulatory framework

The current provisions provide already for the basic level of users' rights and consumer protection. The 'do nothing' option implies not taking legislative measure, but the NRAs could continue to take actions under the existing legislation to address (at least some of) the identified problems. The EU's role would provide guidance, supported potentially by coordination by the ERG among the national authorities.

Assessment of impacts of Option 3

This option would continue to rely on the existing provisions in the current regulatory framework and on initiatives carried out by private undertakings, industry associations and organisations representing consumers and disabled. There would be differences between Member States in interpretation of the rights of users. The question would remain whether the current provision can effectively provide sufficient consumer protection and adequate rights and benefits to disabled users across the EU. Non-transparent tariffs are likely to reduce competition as consumers are less sensitive to prices and thus less likely to change providers. As for quality of service, there would be also a risk of blocking or deliberately slowing internet traffic from third party service providers. This could hamper service provisions from innovative players and reduce consumer choice.

In particular for disabled users, this option would mean an increasing risk that issues concerning them and other people with special social needs would be left behind, even though new technologies have been developed which could facilitate their communications to the rest of society. The fragmented response to disabled needs would be likely to continue, leading to

an increase in proprietary national solutions. Manufactures and service providers would also have to deal with fragmented markets. On the other hand, for the operators this option would mean less uncertainty concerning possible future eAccessibility measures at the EU level.

Under this option, access to emergency services would not be brought in line with new technological solutions. As the market for communications services is very competitive, providers would be tempted to keep their costs as low as possible. In the absence of intervention, network providers and service providers are unlikely to make sufficient investments. In the absence of those investments, the number of people who can successfully place emergency calls, and who can be located swiftly in case of emergency, will go down, which will result in a decrease of quality of emergency service.

8.4. Results of the public consultation

Improving transparency and publication of information for users

Some operators expressed the view that there is no case for additional harmonisation at EU level since tariffs must reflect national competitive conditions. New entrants generally regarded that a co-regulation solution would be equally effective. It was noted that the proposed measures should not affect undertakings' ability to innovate, including pricing schemes. ERG and consumers associations welcomed the proposal. Several Member States supported the proposal while some were more critical, for example, regarding the imposition of mandatory solutions (such as price information appearing on terminals on a per-call basis) as the issue would be costly and complex to implement.

Facilitating the use and access to eCommunications by disabled users

Most stakeholders favoured the Commission's proposal to introduce a Community mechanism to address eAccessibility issues. While some service operators preferred voluntary industry-led and self-regulatory solutions, others did not object to the proposal, although pointed out that the needs of disabled users vary greatly. The associations of equipment manufacturers, consumers and disabled associations welcomed both the Community mechanism as well as the proposal to strengthen access to 112. The latter called, among others, for empowering the eAccessibility group to make swift decisions and ensure that action is taken on them. It was also pointed out that the split between the directives governing eCommunications and the RTTE directive (that governs the terminals) makes it more difficult to effectively address the issues of disabled stakeholders.

As for the proposal to strengthen access of disabled users to 112, operators preferred to solve the issue via the Public Safety and Emergency Communications Forum, or to have a separate dedicated number for text telephones. Several Member States supported the Commission's proposal (some also arguing, for example, that any solution should insure real-time transmission) while others had more mixed views (for example, in relation to question to the costs and who would bear them). One Member State also opposed the proposal.

Improving caller location obligations related to emergency services

Some incumbent operators argued that caller location information for emergency calls should be limited to a "pull" mode as this less costly solution is sufficient and proportional. Mobile operators objected the proposal to provide caller location information using the "push" mode (if operators are required to meet the cost of migration) and considered it unjustified and

disproportionate as it requires significant data traffic thereby causing network investments. They considered location info necessary only in a fraction of such calls, which could be easily obtained from the mobile operators (pull mode). Also a network dependent VoIP provider was critical on Commission's proposal.

Consumer organisations and ERG supported the proposal, and the latter considered that "push" mode should be used (although it expressed concerns whether the cost of caller location information should be borne by the operators). New entrants considered that it would be premature to impose a "push" obligation, while the cost - as related to a social obligation - should be compensated as a public service obligation. Several Member States expressed concerns regarding the proposals' impact on operators, and some favoured co-regulatory measures and alternative means (such as providing information for consumers on the lack of availability of Caller Location Information), while some considered that in certain cases technical difficulties will persist (VoIP, SIM-free calls). Member States had different views whether the costs should be borne by the industry or the state.

Basic access and quality of service ('net neutrality and freedoms')

In the public consultation, most Member States, ISPs, consumer organisations and some software companies were in favour of the proposed change to set quality standards. On the other hand, most operators were against the proposal arguing, among others, that any quality of service should be regarded as a result of market competition, or that the proposal would lead to an increase of price for end-users if it concerns all services at all times. The ERG noted that there is some uncertainty about whether the current provisions of the Access Directive are sufficient to deal with the blocking of information society services (which would be outside the scope of the framework). Consumers were concerned whether the process of setting standards at EU level would involve a sufficient level of consumer representation.

Only a small number of stakeholders commented "net freedoms" arguing that it is not necessary to change the framework in this respect. Some ISPs urged the Commission and national regulators to monitor the situation carefully and, if necessary, to review this stance at a later stage. On the other hand, some software companies wanted to see e.g. more legal clarity to resolve connectivity issues especially for the benefit of end-users, setting regulatory objectives of universal “net freedom” and granting NRAs carefully defined powers.

8.5. Comparison of options and impacts

The effectiveness of **option 1** *(encourage industry self-regulation)* depends highly on the consensus of all stakeholders involved (industry, consumers and regulatory authorities) and especially on the willingness of the industry to commit itself to concrete solutions and timetable, preferably at the EU level. However, in this respect there are big differences between the 27 EU Member States. At the present time it would be not feasible to expect that a voluntary self-regulation would guarantee a coherent solution to safeguard users' rights and public interest across the Union.

Option 2 (*update and strengthen the current provisions*), takes into account technological advances and market developments in relation to provisions concerning users' rights and consumer protection in the framework. It provides more legal certainty to consumers, so that consumer issues would be guaranteed by law and not simply enshrined in industry agreements. The public consultation revealed a need to refine the initial Commission proposals, but with such adjustments, Option 2 would seem to have broad political support.

The biggest costs under this option would relate to investments in new technologies to provide caller location for emergency services. However, neither technology nor cost should any longer be an obstacle to pass caller location information to emergency authorities with most technologies at the expected period for implementation of the revised regulatory framework (2010/211).

Option 3 *(no change)* could not address the identified problems relating to consumer protection and users' rights in eCommunications and would therefore not be in line with the i2010 objectives.

The table below provides a summary on main likely impacts and risks arising from the each of the three policy options with respect to the different economic and social dimensions. Impacts of Options 1 and 2 are compared to the "no change" option 3, which provides a baseline scenario for the assessment. The signs represent a scale of possible impacts vis-à-vis the "no change scenario": **+** positive impact**, O** neutral impact, **−** negative impact**.**

Table 4. Summary on the main impacts and risks of the options

IMPACTS AND RISKS	**Option 1 – Encourage more industry self-regulation**	**Option 2 – Update and strengthen current provisions**	**Option 3 - No change**
	SOCIAL		
Social and digital inclusion	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3. High risk that industry could not agree at EU level, due to different national circumstances and lack of economic incentive.	**+** Increased use and easier access to eCommunications services is likely to lead to higher social participation for disabled, people with special needs and elderly.	High risk that due to technological advance, current users' rights and consumer protection provisions become outdated, thus widening the digital divide between the "Haves" and the "Have nots".
Employment and labour market	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3. High risk that industry could not agree at EU level (see above).	**+** Higher social participation would facilitate higher employability in general and particularly in case of disabled and users with special needs and thus ease their reliance on social security.	Risk that digital exclusion of disabled and users with special need hinders employability and increases their reliance on social security.
Public safety	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could range between those of Options 2 and 3. High risk that industry could not agree at EU level (see above).	**+** Improving caller location would lead to better quality of emergency services.	High risk that an increasing number of people could not successfully place emergency calls.
	ECONOMIC		
Consumer benefits	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could range between those of Options 2 and 3. High risk that industry could not agree at EU level due to different national circumstances and lack of economic incentive.	**+** Provides better (legal) certainty in general incl. safety net for quality of transmission. Consumers benefit from more informed markets through better prices and service and a wider range of products.	High risk that due to technological advance, current provisions become outdated, thus undermining users' rights and consumer protection in the sector.
Investment and innovation	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3.	**+/−** A common EU approach is likely to create economics of scale e.g. in equipment markets for disabled and caller location with concomitant impact on investment and innovation. Risk that operators less inclined to invest/innovate.	Fragmented market for 'eAccessability equipments' and caller location applications discourage investment by manufactures. No effect to operator's investment incentives.
Competition	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3.	**+** Enhanced tariff transparency in the market place is likely to lead to fairer competition in eCommunications services.	Non-transparent tariffs are likely to reduce competition (as consumers are less sensitive to prices and thus less likely to change providers).
Internal market	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3.	**+** Promotes generally more efficient internal market though better tariff transparency and particularly creation of single market for 'eAccessibility equipments' and caller location applications.	Lack of tariff transparency has potential to inhibit the development of a more efficient market. Fragmented markets for 'eAccessibility equipments' and caller location applications remain.
EU compe-titiveness *(vis-à-vis 3rd countries)*	**+/−** Outcome depends on the range and extent of self-regulation. Impacts could vary between those of Options 2 and 3.	**+** Enhanced economics of scale imply strengthened competitiveness for the European manufactures of goods and services in this area.	Fragmented markets (see above) have negative impact for competitiveness of the European manufactures.
Economic operators' costs and benefits	**+/−** Implies development on a commercial basis, thus no regulatory compliance costs. Other impacts could vary between those of Options 2 and 3.	**−/+** Imposes generally more compliance costs, while harmonisation also reduces costs for firms operating across the EU. Enhanced caller location implies a rise in operating costs (investments in new technology, adjusting processes).	Current compliance costs remain.
Public sector costs	**+** No need for legislation and its associated regulatory costs.	**+/−** Increasing NRAs powers might entail more resources in some cases. Reduction of admin burden as the number of consumer complaints should decline.	Current administrative burden remains.

8.6. Conclusion

The Commission considers that option 2 is the most appropriate one, while not ruling out the possibility of self-regulatory developments within the legal framework that Option 2 would create where these would effectively achieve the results sought.

9. PRIVACY AND SECURITY

This chapter builds on the problem and options analysis from the previous impact assessment. It focuses on the most important changes covered mainly in the current e-Privacy and Universal Service Directives, assessing their impact in comparison with the "no change" policy scenario.

9.1. Identifying the problem

9.1.1. Main issues and challenges

One of the central goals of the regulatory framework is to promote the interests of the citizens of the European Union through, *inter alia*, ensuring a high level of protection of personal data and privacy and ensuring that the integrity and security of public communications networks are maintained.

Change of the threat landscape

According to reports from specialised entities, recent years have witnessed an important shift in the network and information security landscape. While in the past most attacks were motivated by search for certain notoriety, recognition of technical mastery, or causing disruption for its own sake, nowadays attacks are increasingly motivated by financial gain. Moreover, the number of variants and the rate of evolution of viruses and other forms of unwanted software code, often installed and executed remotely (using Internet connections) is increasing rapidly[221]. This is witnessed by neologisms like *botnets*, *adware*, *spyware* etc. This category of computer programs is usually referred to as "malware", which reflects the main feature of such code, i.e. unwanted (or even illegal) behaviour, most often performed without the consent or even knowledge of the computer system's owner or administrator (user).

In addition, evidence suggests that attackers are shifting their activities away from network infrastructures and operating system services towards attacks that focus on the end-user as the weakest link in the security chain. As an example, between July 1 and December 31, 2006, the home user sector was by far the most highly targeted sector in Europe, the Middle East and Africa, accounting for 99.4 percent of all targeted attacks[222].

Another worrying development is the fact that the telecommunications companies and Internet Service Providers (ISPs) are increasingly becoming targets of attacks alongside other sectors which traditionally have been appealing for attackers (such as the financial services and banking sector). For instance, the ISP sector was the most frequently targeted by denial-of-service (DoS)) attacks during the first half of 2006. In the same period, the ISP and telecommunications sectors together accounted for a large portion (46 %) of all DoS attacks. A possible explanation of this would be that a successful attack on an ISP can produce effects similar to multiple DoS attacks against a large number of users

221 COM(2006) 251.

222 Symantec *Internet Security Threat Report,* Volume XI: March 2007, available at: http://www.symantec.com/enterprise/theme.jsp?themeid=threatreport.

that depend on the services of that ISP. Secondly, ISPs provide Internet access to other organisations; rather than attacking such an organisation directly, attackers may instead target the ISP[223].

Cyber crime

The vulnerability of modern communications infrastructures to malicious or even criminal acts has been highlighted by recent cyber attacks against one of the Member States. The attacks, mainly in the form of Distributed Denial of Service (DDoS) attacks, primarily targeted government and police web sites, but private sector banking and on-line media were also targeted. The attacks affected the functioning of the rest of the country's network infrastructure rendering the targeted sites inaccessible for extended periods of time.

The fight against cyber crime has since long been high on the European policy agenda. The Commission has defined its global policy on the fight against cyber crime in a communication adopted in May 2007[224]. The main short term objectives include: improving and facilitating coordination and cooperation between cyber crime units, other relevant authorities and other experts in the European Union; developing a coherent EU policy framework on the fight against cyber crime and raising awareness of costs and dangers posed by cyber crime.

Spam

Unsolicited e-mail messages (spam) remain a problem. From a mere nuisance it evolved into a fraudulent and criminal activity (e.g. phishing) and a true security threat. Spam is increasingly a vehicle for viruses, spyware and other forms of malware which are surreptitiously installed on users' computers. Such malicious code can in turn take over control of a computer and turn it into a part of a "botnet", i.e. a remotely operated network of computers that, unbeknownst to their owners, are used to send out more spam, carry out DoS attacks, spread spyware and infect other machines.

The complex relationship between combating spam and other security threats has recently been analysed in a Commission Communication that, among other things, highlighted the importance of an adequate legal framework, accompanied by technical means as well as effective enforcement and sufficient resources at Member State level in the fight against spam.

The Commission identified improving security as one of the main challenges for the present review of the Regulatory Framework. This is in line with the "i2010" initiative[225] which recalled an urgent need to coordinate efforts in order to develop policies, regulations, technology and awareness, in order to increase trust and confidence in electronic communications and services among businesses and citizens. In May 2006, the Commission announced a comprehensive Strategy for a secure Information Society – "Dialogue, partnership and empowerment"[226] which emphasized the importance of network and information security as a key enabler for the further development of the Information Society in Europe and beyond. This general policy for network and information security is complemented by the European fight against cyber crime.[227].

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223 Idem.

224 *Towards a general policy on the fight against cyber crime*, Commission Communication COM (2007) 267): http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0267en01.pdf

225 *i2010 – A European Information Society for growth and employment*, Communication COM(2005)229, listed security as one of the main challenges for the creation of the European Information Space, next to speed (faster broadband), rich content and interoperability.

226 COM(2006) 251.

227 As most recently defined in *Towards a general policy on the fight against cyber crime,* Commission Communication COM(2007) 267: http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0267en01.pdf

In recognition of the importance of the regulatory approach which complements technological solutions, various forms of stakeholder partnerships and awareness raising, it also announced that the review of the regulatory framework for electronic communications "will consider elements to improve network and information security, such as technical and organisational measures to be taken by service providers, provisions dealing with the notification of security breaches, and specific remedies and penalties regarding breaches of obligations". Indeed, reliable electronic communications networks and services have gained an enormous economic and societal importance as they underpin more and more many critical aspects of our economy and society[228].

Trust and confidence

The importance of trust on behalf of users (both businesses and consumers) for the success of the electronic communications sector and the Information Society as a whole cannot be understated. This is why security (in the sense of "making the Internet safer from […] technology failures to increase trust amongst investors and consumers") has been singled out as one of the challenges addressed by the i2010 initiative[229].

Although concepts like confidence and trust are not easily definable or measurable, available data suggests that attitudes of consumers in particular can be negatively affected by experiences such as viruses, phishing, network down-time etc. For example, 28% of European Internet users declared recently that spam and viruses caused "significant problems" for them[230]. According to the same survey, a large majority of Europeans have installed on their computer antivirus software (EU27: 81%) and antispam software (60%).

While EU27 citizens seem in general satisfied with the quality of their Internet services, at the same time, a full 35% of respondents to the recent Eurobarometer survey disagreed with the statement that their Internet connection never breaks down[231] and 42% stated that their ISP usually does not pre-announce its network connection cuts (while 20% were unable to answer that question)[232].

RFID

RFID - also called smart radio tags – is a communications technology which involves tags that respond to radio signals, and reading devices that read and identify the tags. This process does not require direct contact or line-of-sight scanning between the tag and the reader. RFID tags can be used to give a unique identity to goods and devices, to store data on items and persons. Potential applications include logistics, retail, health care, access control, travel and security[233].

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228 SEC(2006) 656.

229 Note 1 above, p. 5.

230 *Special Eurobarometer – eCommunications household survey*, April 2007, p. 89. According to the report, "*the perceived levels of problems caused by spam, viruses or spyware varies widely between countries and can be attributed to many factors, such as the frequency of Internet use or the level of security and protection measures taken in order to prevent this from happening*".

231 On this issue, differences among Member States are clearly visible. For example, a high proportion of Austrians (76%), Swedes and Croats (both 71%) said that their Internet connections are reliable in the sense that they do not break down. However, the situation in Romania and France is somewhat different with 61% and 52%, respectively, disagreeing with the statement (source: *Special Eurobarometer, April* 2007, p. 93).

232 Idem, p. 92.

233 See *Radio Frequency Identification (RFID) in Europe: steps towards a policy framework*, Commission Communication COM(2007)96, available at: http://ec.europa.eu/information_society/policy/rfid/doc/rfid_en.pdf

Participants in the Commission's public consultation[234] on RFID in 2006 raised serious concerns that this technology might endanger fundamental values, privacy and lead to more surveillance. Adequate privacy safeguards are called for as a condition for wide public acceptance of RFID.

The principles of data protection are defined by the Data Protection Directive 95/46/EC and apply regardless of the technology used for data processing. The ePrivacy Directive 2002/58/EC complements the Data Protection Directive and translates the data protection principles into specific rules for electronic communications. An explicit reference to RFID in the ePrivacy Directive allows for appropriate measures with respect to applications of this communications technology.

The market data (see above) provides strong evidence that competition on EU electronic communications markets - combined with technological progress - has delivered more choice, lower prices and innovation for consumers. At the same time, however, the resulting multiplication of actors involved and the technological development (to mention but two major elements) have rendered the management of networks a very complex tasks and the division of responsibilities of various actors involved rather is unclear. The main developments are summarised in the following:

Convergence: new services and products

Liberalisation of the telecommunications markets combined with convergence between technologies and networks ("traditional" telephony, broadcasting, cable, Internet…) brought about a variety of new products and services and opened up new opportunities, both for businesses and consumers. They also resulted in a multiplication of heterogeneous operators on the market, operating increasingly complex networks and services according to various different business models. In addition, while in the past ensuring security and integrity of networks was based on a (explicit or implicit) understanding between the incumbent operator and competent national authorities, investing in security and integrity has become just one element of a business strategy, subject to forces of fierce competition and the "return on investment" imperative. This complexity, in turn, resulted in unclear division of responsibilities at national and EU level concerning the security of networks and services.

Mobile and IP networks gain importance

Communications networks and services based on IP (Internet Protocol), such as the Internet, gain growing importance in all walks of life. As an example, "traditional" telephony providers have been switching their operations to VoIP or have planned such moves as part of their Next Generation Networks strategies. Similarly, end-users and businesses alike increasingly rely on mobile telephony for their professional and private communications alike. A number of Member States enjoy higher mobile than fixed line penetration; while mobile penetration rates remain relatively stable, there is a clear tendency of decreasing fixed telephone penetration (at EU level, a decrease of 5 percentage points over one year)[235]. In addition to the more common and familiar forms of communication, upcoming services and new business models (e.g. mobile payments) also require reliable and available underlying infrastructure. Security and availability of IP and mobile networks is also a pre-condition for the roll-out of reliable and successful e-government services.

Ensuring adequate network and information security remains an important challenge for all stakeholders, including regulators, both at national and European level. In particular, trust and confidence of European citizens in electronic communications is a *conditio sine qua non* of a dynamic and thriving Information Society. The important question in this context is, whether

234 *Results of the public online consultation on future Radio Frequency Identification Technology Policy* "*The RFID Revolution: Your voice on the Challenges, Opportunities and Threats*", Commission Staff Working Document SEC (2007) 312, available at: http://ec.europa.eu/information_society/policy/rfid/doc/rfidswp_en.pdf

235 *Special Eurobarometer – eCommunications household survey*, April 2007, p. 35.

the current rules are sufficiently future-proof to protect consumers in the light of the current and anticipated trends and evolutions.

The June 2006 consultation document identified three problems with the current rules:

– divergence of national approaches to network and information security, and notification of risk;

– need to update the requirements on network integrity; and

– lack of adequate enforcement mechanisms under the ePrivacy Directive.

9.1.2. Divergence of national approaches to network and information security

Electronic communications service providers and network operators are currently obliged to take appropriate technical and organisational measures to safeguard security of their services and networks. However, these general requirements are interpreted and implemented in different ways in different Member States. As a result, Europe resembles a patchwork of national measures, with hardly any evidence of a common approach among European operators and service providers, as illustrated by a study conducted by the European Network and Information Security Agency ENISA in 2006[236]. Such a divergence of approaches to network and information security could result in obstacles to the internal market through, for instance, increased compliance costs for businesses operating in more than one Member State.

9.1.3. Notification of security breaches by network operators and ISPs

Article 4 of the ePrivacy Directive currently requires service providers to inform their customers about existing security risks. In the June consultation document, the Commission indicated a need to extend this notification to also cover situations where customers' personal data was compromised as a result of a security incident which had actually happened.

In US law, the issue of mandatory disclosure of security breaches involving personally identifiable information has been a heavily discussed topic since the first state (California) mandated such disclosure in 2003. At present, at least 30 states have enacted similar legislation. There are also several proposals pending at federal level. Generally, such laws require that any business (e.g. a bank) in possession of personal information about an individual must disclose any breach of security affecting that information to the person affected. Details vary from state to state. The rationale behind such regulation is that, on the one hand, breach disclosure requirements enable individuals to react and thus prevent possible cases of fraud (or identity theft) and, on the other hand, provide additional incentives to operators to ensure adequate levels of security of their services and networks – or receive complaints from the end-users affected or, at the very least, face adverse consequences of bad publicity in case of a breach.

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236 *Security and Anti-Spam Measures of Electronic Communication Service Providers - Status and Outlook*, deliverable ENISA/TD/SP/06/118, June 2006, available at: http://www.enisa.europa.eu/pages/05_01.htm

9.1.4. Future-proof network integrity requirements

As society becomes increasingly dependent on its information and communications networks and services for everyday life, security, availability and integrity of these networks are not only important for the eCommunications sector itself, but also for all other sectors of the economy and for the society as a whole. In the electronic communications sector, the impact of the EU competition driven policy and technological developments have produced substantial benefits for consumers in terms of both choice and innovation including in the development of security products and services. However, the market appears to have failed so far to provide sufficient incentives to address security problems, which was also confirmed by several contributions to the public consultation.

While network integrity has been a requirement of "classical" telecommunication networks (PATS) for many years, it is no longer sufficient to rely on these networks for the availability of communications services. On the one hand, Internet-based, mobile and other new services are becoming more and more important and are often the main technology used for some areas of application. On the other hand, even in the "classical" telecommunications networks the traditional switching technology is replaced more and more by IP-based components. Due to this convergence, the distinction between PATS and other types of networks no longer properly reflects the reality of the networks.

9.1.5. Enforcement mechanisms under the ePrivacy Directive

At present, the ePrivacy Directive only contains a general clause stating the applicability of the provisions of the general Data Protection Directive 95/46/EC in so far as judicial remedies, liability and sanctions are concerned. A survey of the situation in various Member States demonstrated that light sanctions and uneven enforcement have in some cases led to ineffective or insufficient protection of consumer rights in the areas covered by the ePrivacy Directive. In the June consultation document, the Commission indicated an intention to introduce new rules concerning the implementation and enforcement of the Directive and thus provide better incentives for regulated entities to comply with its provisions.

9.2. The objective

The objective is to contribute to an enhanced level of security and network integrity of electronic communications networks in Europe, which would provide tangible benefits for all citizens and the society as a whole, in line with the i2010 objectives.

In order to reach the general objective, the following specific objectives have been identified:

– Future-proof the security provisions in a way that is flexible enough to stimulate operators to invest in security and integrity in a competitive and fast changing technological environment; and

– Ensure that regulatory intervention is possible in situations where discrepancies between requirements at Member States level threaten to undermine the functioning of the internal market and/or in situations where market forces alone fail to ensure the security, stability and integrity of eCommunications networks and services.

9.3. Policy options

The first Impact Assessment of June 2006 assessed three policy options:

9.3.1. Option 1 - No change to the regulatory framework

The "do nothing" option implies not taking further legislative measures at this stage, but the competent authorities could continue to take action under the existing legislation to address some of the identified problems.

While it is true that self-regulation by the industry would mean less intrusive intervention than setting regulatory obligations at the EU level, it is not clear in what respect this option would be different from the "do nothing" option. Indeed, as numerous contributions to the public consultation pointed out, self-regulatory initiatives already exist in the broad area of network and information security.

However, there is so far no evidence to support the assertion that the market forces provide sufficient incentives for operators to address security matters in an adequate manner, including through self-regulation. Also, with respect to the specific area of protection of personal data and privacy, EU legislation contains provisions encouraging the drawing up of codes of conduct which would contribute to the proper implementation of the national data protection laws[237]. Therefore, for the purposes of the present impact assessment, self-regulation as a "stand-alone" solution cannot be considered as a realistic option as far as network and information security and privacy are concerned.

9.3.2. Option 2 - Update and strengthen the current provisions

This option would aim at improving security by specifying general security and integrity requirements at EU level and setting out a flexible framework enabling competent authorities at Member States level to implement and enforce them.

It builds upon the basic approach of the framework as it stand but aims to clarify some provisions, where it has been observed that the current text of the Directives has allowed a wide margin of interpretation and implementation, leading to considerable differences between markets. It grants the Commission power to adopt appropriate instruments under comitology procedure to provide a common set of guidelines to the Member States to achieve greater harmonisation. When preparing such a measure, the Commission would take into account the administrative burden among other factors.

9.3.3. Option 3 – Introduce a new, detailed instrument dealing with security and integrity

In this option security and integrity issues would be regulated in detail by means of a new legislative instrument, a specific "security and integrity directive" or even a regulation. The Commission would propose EU-wide, detailed technical and organisational requirements on market players, including specific security standards which providers of electronic communications networks and services would have to respect.

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[237] Article 27 of the general Data Protection Directive 95/46/EC.

9.4. Results of the public consultation

In June 2006, the Commission put forward the proposals in the following areas (see the Review Communication and the Staff Working Document for a more detailed description of these proposals[238]):

1) Obligation to take security measures and grant powers to NRAs to determine and monitor technical implementation;

2) Notification of security breaches by network operators and ISPs;

3) Future-proof network integrity requirements; and

4) Improving enforcement mechanisms under the ePrivacy Directive.

The results of the public consultation showed overall support for the security-related proposals. However, concerns were often expressed as to how the review of the Regulatory Framework is positioned vis-à-vis the overall Strategy for network and information security, as set out in the Strategy Communication COM(2006) 251. Such concerns may result from a misinterpretation of the overall Commission approach. As mentioned above, the 2006 Communication indicated some of the areas in which changes to the regulatory framework could be considered. In addition, the current proposals would not come into force before 2009-2010, which would allow any results of the broad multi-stakeholder dialogue taking place in the follow-up of the 2006 Communication to be fed into the implementation process at Member States level. There is, therefore, no contradiction between the general strategy and the proposals currently under consideration.

Generally speaking, Member States are cautiously supportive of the Commission proposals. Consumer organisations are also in favour and Data Protection Authorities even consider that the Commission proposals often do not go far enough. Among the industry, software manufactures and security solutions providers were in favour of the proposals whereas operators generally opposed them.

Obligation to take security measures and grant powers to NRAs to determine and monitor technical implementation

In the public consultation stakeholders appeared particularly divided on this issue. Several Member States favoured the Commission's proposal to set out in greater detail at EU level what is meant by "technical and organisational [security] measures", while other disagreed or expressed certain reservations. Data Protection Authorities and consumer associations considered even that the proposals do not go far enough. On the other hand, the majority of operators opposed the proposals, stressing that voluntary industry-led and self-regulatory solutions would be more appropriate, as they offer more flexibility to address new issues in the fast-changing technological landscape and are more likely to be technology neutral. Others had more mixed views, stressing that the proposals might be going in the right direction, but more details would be needed before they can be properly assessed.

238 See footnote 4 for URL.

Notification of security breaches by network operators and ISPs

The majority of Member States, as well as consumer organisations and Data Protection Authorities generally supported the proposals. Some operators, along with representatives of the security industry were also in favour, recognising that a requirement to notify security breaches could indeed provide the missing incentive for market players to invest more in security (as it has arguably been the case in the United States following the adoption of similar legislation at state level). On the other hand, and not surprisingly, the majority of electronic communications industry opposed the Commission's proposals.

Future-proof network integrity requirements

The majority of Member States supported the proposals, although some expressed concerns regarding the proposals' impact on operators (mainly in terms of costs). Some industry associations and several operators expressed the view that there is no case for extension of integrity requirements beyond PSTN and expressed concerns that such extended requirements would be costly and complex to implement. Other industry players welcomed the proposals in principle, but stressed the need for a proper assessment of the technical characteristics of the various networks and a thorough cost-benefit analysis of any legislative proposals.

Improving enforcement mechanisms under the ePrivacy Directive

The majority of the Member States, consumer organisations and part of the industry welcomed the Commission's proposals in general, but there were many reservations with respect to the proposal to introduce a liability clause for those not in compliance with the provisions of the Directives. In particular, it was pointed out that this would mean putting unfair and unnecessary burden on ISPs and network operators who would in essence be held responsible for the whole security chain, while only a small fraction of it is actually under their control. That could in turn dramatically increase their costs of doing business which would ultimately have to be passed on to consumers, but could also stifle innovation in the otherwise dynamic sector.

In turn, there was a broad support (including the Internet Service Providers community) for the proposal to allow operators to take direct court or administrative action, for instance against spammers, on behalf of their customers

9.5. Assessment of impacts

The results of the public consultation indicate that the third option for a specific legal instrument on security as set out in the first impact assessment does not enjoy general support by the stakeholders at the moment. In effect therefore, the two options considered for further analysis are:

1. Option 1: ***"****Do nothing****"*** as in the original Option 1 (and possibly rely on self-regulation by the industry); or

2. Option 2: Update and strengthen the current provisions in specific areas.

   Option 2 builds upon the basic approach of the framework as it stand but aims to clarify some provisions, where it has been observed that the current text of the Directives has allowed a wide margin of interpretation and implementation, leading to considerable differences between markets. It grants the Commission power to

adopt appropriate instruments under comitology procedure to provide a common set of guidelines to the Member States to achieve greater harmonisation. When preparing such a measure, the Commission would take into account the administrative burden among other factors.

Under Option 2, considerations can be also given to the potential synergies between the existing European Network and Information Security Agency (ENISA) and the new European Regulatory Authority discussed in Chapter 7.

Assessment of Option 1 - No change to the regulatory framework

Under this option, the Commission would continue to rely on the existing provisions in the current regulatory framework and on initiatives carried out by private undertakings, industry associations and (other stakeholders). There would be differences between Member States in the interpretation of the existing provisions of the Directives. The question would remain whether the current provision can effectively provide sufficient incentive to operators to address security and integrity in an adequate manner across the EU.

In the context of introducing **an obligation to take security measures** and granting powers to NRAs to determine and monitor technical implementation, the results of the public consultation show that industry is generally in favour of self-regulatory approach. On the other hand, consumer groups and some national authorities generally consider this approach as not far-going enough. Arguably, including such explicit provisions in the regulatory framework would codify what *de facto* should already be reasonable regulatory practice in any Member State. Moreover, evidence presented in the problem definition section and responses from the public consultation suggest that security remains a problem and that many operators are not prepared to take any action in order to improve the situation. Operators often argue that mandatory security measures can affect negatively their ability to innovate and propose innovative pricing schemes to consumers. However, from an economic point of view, firms generally do not have sufficient economic incentives to spend adequate percentages of their investment budgets on security measures Also for this reason, voluntary self- and co-regulatory measures have been so far rather exceptional and there is no evidence to support the view that the situation would dramatically change in the near future.

In the context of **notification requirements**, the disclosure of breaches in which personal data are compromised would remain regulated by article 4 of the ePrivacy Directive. Member State regulation may be more specific where it concerns the nature of "particular risks" and the legal definition of a "breach of security". The mandatory disclosure of security breaches resulting in interruptions in the continuity of service would remain covered by Article 22 of the Universal Service Directive, leaving it up to NRAs to specify QoS parameters and the contents and methods of disclosure. At the same time, the Commission could use various methods of communication, coordination and collaboration, for example, to encourage Member States to develop national mandatory disclosure requirements, or to encourage effective self-regulation by service providers and data controllers.

Leaving initiative to the industry (e.g., through self-regulation initiatives) seems unlikely to result in breach notification arrangements for the simple reason that businesses in general have a disincentive to voluntarily disclose information related to security breaches, fearing damage to their reputation. Also, there is a strong negative externality to every individual decision to disclose such information: if a company notifies its customers of every (risk of) security breach and its competitors do not do so or do so less frequently, the company's

reputation will be damaged more severely. On the other hand, while certain Member States (e.g. Finland) have already introduced such measures based on legislation currently in force, other Member States have not followed suit, which suggests that the "do nothing" option is not likely to result in more uniform standards for breach notification across Europe in the foreseeable future.

As for **future-proof network integrity requirements**, option 1 would include leaving legislation as is (i.e. integrity requirements applicable to PSTN only), but pursuing coordination/cooperation activities as a follow-up to the May 2006 Commission Communication on a Strategy for a secure Information Society[239]. This approach would not ensure a uniform or synchronous application of rules across the EU. Success would largely depend on the initiative, resources and competence of the MS authorities and industry. It could result in diverging requirements, implemented according to different timescales. Network integrity across technologies and integrity of cross border services would not be guaranteed and the risk of market fragmentation would not be addressed.

The importance of putting in place **effective enforcement mechanisms** under the ePrivacy Directive, in particular in the context of the fight against spam, spyware and malicious software, has been highlighted by a Commission Communication on that topic[240]. It seems that, at least in some Member States, the responsibilities to deal with infringements have not been allocated clearly enough and are often not accompanied by sufficient resources. In addition, enforcement before national courts has not been uniformly successful across the EU. The difficulties related to that are best illustrated by anti-spam cases. In such cases, ISPs suffer measurable damages due to increased load of traffic on their networks (and the necessity to deploy additional equipment), costs of filtering software, additional maintenance etc. However, it is very difficult (if not impossible) to prove which part of such additional cost is related to activities of a given "spammer", which makes obtaining damages in a civil law suit all but impossible. This situation clearly is not satisfactory and there seems to be room for more enabling provisions at EU level.

Assessment of Option 2 – Update and strengthen the current provisions in specific areas

The impact of regulation on the overall levels of network and information security (and, indirectly, of trust) is difficult to quantify. In addition, not only eCommunications providers, but also other industry groups and stakeholders (equipment manufacturers, producers of software and end-users themselves, to name but a few) have their responsibilities in that respect which lie beyond the scope of the present proposals. Consequently, regulatory intervention within one sector could never be a "silver bullet" solution for all security-related problems. It should also be kept in mind that only a fraction of the problems mentioned in this chapter could be remedied by electronic communications sector operators. Nevertheless, service providers and network operators have an important role to play as the first "point of contact" and a gateway through which end-users access the converging world of electronic communications.

Concerning **the obligation to take security measures** and grant powers to NRAs to determine and monitor technical implementation, option 2 would mean the introduction of a high-level, general requirements to secure networks and services in the Framework Directive

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239 COM(2006) 251.

240 COM(2006) 688.

(while maintaining the existing obligation to adopt security measures in Article 4 of the ePrivacy Directive). The implementation and enforcement at national level would be for the competent authorities and a comitology procedure would be in place to ensure a certain level of harmonisation among the Member States.

This option would in particular address the current problem related to different definitions given by Member States to terms such as "appropriate technical and organisational measures"[241]. It would also provide for the flexibility necessary to adapt the measures to changes in technology and developments in the area of security.

Concerning the proposal to introduce **breach notification requirements**, two possibilities should be considered, separately or jointly:

1) a notification required for security breaches which result in personal data being compromised; and/or

2) a notification required for security breaches which result in a "downtime" or interruption in the continuity of service.

The first type of breach disclosure obligation could be seen as a logical extension of the current obligation to disclose security risks in Article 4 of ePrivacy Directive 2002/58/EC. A similar approach can be found in numerous US state laws, as well as draft bills pending at federal level (see box below). Concerning the second type of breach disclosure, similar rules are already in force in the Unites States[242], as well as in Finland[243]. At EU level, it would be a new provision to be introduced in the Framework[244]. The basic justification would be to provide the NRAs with enough information about the actual level of (in)security of the networks under their jurisdiction so as to enable them to make informed policy choices.

Mandatory disclosure of security breaches – discussions in the USA

In US law, the issue of mandatory disclosure of security breaches involving personally identifiable information has been a "hot topic" since the first state (California) mandated such disclosure in 2003. At present, at least 30 states have enacted similar legislation. There are also several proposals pending at federal level.

Generally, such laws require that any business (e.g. a bank) in possession of personal information about an individual must disclose any breach of security affecting that information to the person affected. Details vary from state to state.

The proposed security breach notification at EU level would be fundamentally different in that it would only apply to a limited group of undertakings, namely providers of electronic communications services and networks. The justification for this "special treatment" is that, as "gateways" through

241 *Preparing the next steps in regulation of electronic communications*, Analysis et al., June 2006.

242 See Federal Communications Commission document, *New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, FCC 04-188, August 19, 2004.

243 Finnish telecom operators are obliged to report information security violations and threats, faults and disturbances. In the event of a significant incident, the operator has to report the source and extent of the violation or threat, how it was caused and the measures taken to address it or prevent future incidents. In addition, customers must be informed about measures they have to take, as well as on the effects the breach might have on them (recommendation FICORA 9 B/2004 M).

244 Although an amendment to Article 22 of the Universal Service Directive could be considered as an option.

which users can access the Internet, ISPs and network operators carry a special responsibility with respect to their customers' privacy.

Both possibilities would require a number of decisions to be made, in particular with respect to the following issues:

Notification to whom: Breaches can be disclosed to the customers involved, to all customers of a service provider or data controller, to the NRA in the country where the breach occurred, to the NRA in the country where the service provider's headquarters are located or to the NRAs in all EU markets in which a service provider is active.

Clear definition of the risks warranting disclosure: Types of risk that may warrant disclosure are (i) significant harm to an individual, (ii) significant financial loss to a customer, (iii) significant loss to a subcontractor or other party with whom the service provider has a contractual relationship, (iv) significant damage to critical (information) infrastructures[245]. Notification may include third-party risks, concerning breaches that occur under the responsibility of subcontractors or intermediaries with whom the service provider has a contractual relationship and that form an integral part of the provision of services by a service provider or data controller.

a) Legal time limit for notification: The Commission can include a legal time limit for notification, essentially defining the longest delay allowed in all MS for the disclosure of breaches to NRAs, customers, and third parties. There will be exceptions to this delay, for example to give law enforcement the opportunity to capture cybercriminals. "A standard time should be set that is long enough for an organization to clearly determine the mechanism and extent of the compromise and also short enough so affected individuals can be warned in enough time to protect themselves from increased identity theft risk"[246].

b) Instruments for compliance and enforcement: The Commission could provide NRAs with the possibility of imposing a financial sanction for failure to disclose and link this sanction to the number of customers whose personal data have been compromised or the duration of an interruption in service.

c) Information to be disclosed: The information that may be disclosed to NRAs, customers, and other parties includes the number of compromised records or accounts and the number of customers affected, the type of private information involved, the mechanism of the security breach, the estimated costs of the damage to the company and to customers and others affected, steps taken by the company to prevent the breach from recurring, and recommendations to and support for the affected customers to help them protect themselves from the increased risk of identity theft.

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245 In the USA, some states leave it to companies to decide if a security breach is serious enough to warrant disclosure, while in other states the requirement is dependent on the number of people affected by the breach. See *Beyond Media Hype: Empirical Analysis of Disclosed Privacy Breaches 2005-2006 and a DatasSet/Databse Foundation for Future Work*, R. Hasan and W. Yurcik, October 23, 2006: http://www.ragibhasan.com/publications/papers/rhasan-wesii2006.pdf

246 Idem.

Under option 2, the Directives would be revised to include a general obligation on Member States to impose disclosure requirements, while the definition of the detailed modalities (including, but not limited to issues listed above under a. to e.) would be left for decision at national level at the implementation stage. However, in order to avoid possible obstacles to the internal market that could arise from 27 potentially different notification regimes, some form of a harmonisation mechanism (a "comitology" procedure) would need to be envisaged.

Concerning potential economic impacts, the expected positive side-effect of sorts of such requirements would be an incentive for operators to "take security seriously" - operators, afraid of potential negative publicity (the "shaming and blaming" effect) in case of a breach, would increase their security budgets. Steps need to be taken to avoid "notification fatigue" among individuals, high compliance cost for businesses (in particular, the cost of notification), e.g. only breaches causing "significant risk of harm to an individual" would have to be notified; or a notification may be delayed if it could otherwise jeopardise an on-going law enforcement investigation of the breach etc. There are also various possibilities concerning the addressees of a notification, i.e. (only) the customers affected; all customers of a given provider; the NRA; a combination of those. Justification and impacts would be different for each of those categories.

As far as disclosure of network outages is concerned, the experience from existing schemes (FCC, FICORA) suggests that such reports are a very valuable source of information, enabling the authorities to identify problems and helping them with developing adequate regulatory measures for outage prevention. Since such reports are not public, there is no adverse impact on a company's reputation.

As for administrative costs, the decisions on the above parameters would be eventually taken by the Member States. However, to achieve harmonisation, the Commission would issue an appropriate instrument according to the comitology procedure, to provide a common set of guidelines to the Member States. When preparing the draft in that procedure, the Commission would take into account administrative burden among other factors. Therefore, given that: 1) no reliable quantification can be provided at the current stage[247]; 2) a detailed analysis of administrative burden would be part of the implementation process, once the present proposals are adopted; and 3) the actual impact on administrative burden is expected to be low[248], a detailed analysis on administrative costs cannot be considered useful in the context of the current IA report.

In terms of societal impacts, no significant changes would be expected, at least with relation to notification of network downtime or outages to competent authorities. On the other hand, notification to individuals on occasions where their personal data had been compromised

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247 While quantified information is not available, it should be noted that during the public consultation no respondent has argued that the problem would not exist or would not be relevant. Critical respondents expressed concern about the effectiveness of the measure proposed, and requested more details, but did not dispute the issue to be addressed.

248 According to the standard cost model, estimates of additional administrative burden would be based on the assumption that market players are 100% compliant with the current framework and would be 100% compliant with the modified framework. Under this assumption, the additional administrative effort would be limited to the actual transfer of information already available in the company to the responsible national authorities, as the current provisions require already that companies have a system in place that allows them to detect and analyse security incidents, and to assess the impact they have on privacy. The cost of transfer to the NRA could appear to be negligible in comparison to the other tasks to be performed in the case of an incident.

could potentially discourage certain groups from using new technologies altogether or limit their use to the absolute minimum. However, this possible negative effect could be counter-balanced by the experience of empowerment and "being in control", at least with respect to personal data. Indeed, when asked whether they would like to be informed if their personal data[249] was lost, stolen or altered, 64% of Europeans responded positively "in all circumstances" and further 14% "in case there was a risk of a financial loss". Only 12% indicated that they would not like to be informed[250]. These results can be seen as yet another proof that data privacy is highly valued by Europeans.

As for **future-proof network integrity requirements**, this option would consist in defining general objectives at EU level which would apply to a broader set of networks than it is currently the case (also IP-based and mobile networks, not only PSTN). Such general objectives would in turn be implemented by the national authorities, which would explicitly be granted the powers to define specific technical requirements and audit their implementation. This approach could help to ensure an equal level of integrity across the EU, addressing also cross-border services. Coordination among national authorities, whether voluntary or through "comitology" approach, is likely to result in the creation of economies of scale for the technical equipment market.

Modern ICT infrastructure is essential for the successful supply of electronic communications services. Telecom operators have an important role to play as suppliers of ICT infrastructure and services to their customers; they also require an efficient network infrastructure as well as powerful and secure Internet connections for the provision of their services and the use of advanced e-business applications. A recent report states that in fact the Internet has already become the main channel of communication and the primary way to store and access information in the sector. It would seem, therefore, that many players in the sector (both mobile and IP network operators) have sufficient business incentives to invest in a robust and secure infrastructure. The potential economic impact of the proposal on those actors would normally remain limited. Costs of compliance might be higher for companies that so far have not treated security and integrity as priorities. However, evidence[251] of "*pronounced awareness of security issues* [in the telecommunications industry]" suggests that this group is likely to be limited in number.

As for societal impacts, benefits could be expected in the long run, as the overall reliability of networks and services improves in a way noticeable to their users.

Concerning **improving the enforcement mechanisms**, including specific provisions in the ePrivacy Directive itself (rather than a general reference to Directive 95/46/EC) would encourage Member States to assign appropriate priority to enforcement of the rights of citizens under the Directive (in so far as this has not been the case up till now). Moreover,

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249 The question referred to personal data collected by telecom providers, such as name, address and credit card details.

250 In every country except for Romania the majority of the respondents would like to be informed in all circumstances. This is particularly the case in the three Nordic countries and Malta. A quarter of respondents in the Czech Republic would like to be informed if there was a risk of financial harm, followed by 24% of Austrians. On the other hand, Hungarians and Austrians state most often that they would *not* like to be informed, no matter the consequences (26% and 22% respectively). *Special Eurobarometer 274, E-communications household survey*, July 2006: http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

251 European Information Technology Observatory EITO 2007, p. 134: http://www.eito.com; see also the industry's contributions to the public consultation on the Review proposals.

empowering ISPs to take legal action (whether in a court of law or before a competent national authority) in defence of their legitimate business interests and interests of their customers should facilitate actual prosecution of spammers.

In all these areas, the new **European Regulatory Authority** could play an important role by providing technical advice and opinions to the Commission prior to the adoption of any technical implementing measures. Furthermore, Under Option 2, operational problems identified with the existing European Network and Information Security Agency ENISA could be tackled by integrating ENISA in the Authority, as discussed in Chapter 7.

9.6. Comparison of options and impacts

Option 1 *(no change to the regulatory framework)* would mean that the review would not address the existing big differences between the 27 EU Member States with respect to the application of "technical and organisational [security] measures". Also, requirements concerning network integrity would remain applicable to fixed telephony networks only, which would substantially reduce their relevance in the future, with networks evolving towards all-IP environment.

Self-regulatory initiatives or co-regulatory measures in the Member States cannot be out ruled, but their effectiveness would highly depend on the consensus of all stakeholders involved (industry, consumers and regulatory authorities) and especially on the willingness of the industry to commit itself to concrete solutions, preferably at the EU level. However, in this respect there are no indications that a voluntary self-regulation would take place at a broader scale any time soon or that it could guarantee a coherent approach to network and information security across the EU.

At the same time, it should be kept in mind that in most areas discussed in this section, self-regulation would remain possible even if the other options would be implemented.

In the public consultation, the Commission' initial proposals received generally a broad support, although it became apparent that some adjustments would have to be made at the stage of drafting the actual legislative proposals. In particular, strong opposition from most stakeholders groups was voiced against the proposal to introduce **liability** for operators for non-compliance with security and privacy requirements. In view of the arguments put forward (unfair burden on one group; increased costs for consumers; potentially significant adverse impact on innovations), it has been decided not to include this item in the legislative proposal.

Concerning the obligation of operators to implement and maintain security measures, the main concern of stakeholders, and in particular of the industry was that more and detailed legislation could significantly increase their cost of doing business and thus adversely impact competition, and in particular new entrants. For these reasons, **option 3** *(introduce a new, detailed instrument dealing with security and integrity)* should be discarded.

By the same token, **option 2** (*update and strengthen the current provisions*) seems to address the issues at hand in a harmonised manner without running the risk of being too prescriptive. In all the areas where changes had been proposed, it is likely to ensure sufficient flexibility, necessary to adequately respond to new technology developments and emerging security trends. At the same time, it would provide for mechanisms to ensure a sufficient level of harmonisation across Europe. That seems to be particularly important in the case of specifying the technical and organisational security measures to be implemented by operators

and service providers, but this approach also seems appropriate for the issue of introducing mandatory security breach notification at EU level.

The table below provides a summary on main likely impacts and risks arising from the two policy options with respect to the different economic and social dimensions. Impacts of Options 2 are compared to the "no change" option 1, which provides a baseline scenario for the assessment. The signs represent a scale of possible impacts vis-à-vis the "no change scenario": **+** positive impact**, O** neutral impact, **−** negative impact

Table 5. Summary on the main impacts and risks of the options

IMPACTS AND RISKS	**Option 1 – No change**	**Option 2 – Update and strengthen current provisions**
	ECONOMIC	
Investment and innovation	Risk of underinvestment in security, however, little regulatory risk of mandating inefficient investment in security and integrity. Voluntary co-ordination and self-regulatory measures may not result in more investment in security.	**+/−** Positive impact on investment in security can be expected. However, risk of lower return on investment due to higher compliance costs for businesses and impacts on reputation (in the case of mandatory breach disclosure). The final outcome will depend on implementation of the general provisions in the individual Member State..
Competition	Lower risk of creating "walled gardens" as a result of too strict security measures. Less transparency on the market as regards security "performance" of service providers.	**+/−** More transparency on the market, security and reliability could become a factor of competition among service providers. However, higher compliance costs could raise barrier to entry for new service providers.
Internal market, regulatory consistency	Diverging requirements on operators in different Member States, additional cost of compliance with differing regulatory regimes, network integrity across technologies and across borders would not be guaranteed. Voluntary co-ordination between MS can improve the situation but improvements would be slower than in Option 2.	**+/O** More consistent application of rules across the EU, level playing field for businesses and more regulatory certainty. However, detailed application of the general requirements will still depend on implementation in Member States,
Economic operators' costs and benefits	Overall, lower compliance costs for operators than in Option 2. Differences in implementation in Member States, therefore differences in costs for operators in different Member States.	**O/−** Higher compliance costs for operators. Additional burden will be probably higher for SMEs than for big operators. Magnitude of the burden will depend on concrete implementation provisions in MS. Thresholds for notification can mitigate the costs. Some operators fear that mandatory notifications could create "walled gardens" and encourage the industry to rely more on proprietary systems.
Administrative costs for public and private sector	Overall reduction due to lower administrative burden and less regulation for operators. Less burdensome general authorisations will be used more often than more burdensome individual licenses. Some additional burden related to transition to a more flexible and co-ordinated system.	**−** Increase in administrative costs associated with the legal obligation imposed on services providers to inform customers and NRAs about security breaches. Some increase in administrative burden and enforcement costs for NRAs.
Consumer benefits	No improvement in security, risk of deterioration of the situation in the medium to long term. Consequently, risk of low trust of consumers in ICT, lack of public information on security "performance" of service providers.	**+/−** Higher quality and security of networks and services can be expected. More information and transparency for consumers. However, at least part of the costs may be passes on to consumers which could lead to higher prices in short to medium term. Risk of "notification fatigue"
	SOCIAL	
Social and digital inclusion	Risk of lower trust of consumers in ICT will not benefit digital inclusion for all EU citizens. Differences in approach to security in MS would lead to inequalities between European citizens as regards rights for information on security breaches and guaranteed level of security of networks.	**+/O** More information and transparency and trust should encourage uptake of ICT. Quality and security of service will become a selection criterion for consumer. Risk of discouraging certain social groups from using new technologies as a result of breach disclosure. However, evidence suggests that most consumers prefer to be informed.
Privacy, security and safety	No real improvement in security, risk of deterioration as the number and severity of security breaches increase. Overall result heavily depends on voluntary commitment of operators and co-ordination among Member States. If no co-ordination is achieved, differences in approach to security will persist.	**+** Overall improvement in security of networks and electronic communications services. Better information on the level of security of networks and services. Gradual building of reputation of reliable service providers, increased trust in e-Communications networks and services. Lower risk of outages.

9.7. Conclusion

The Commission considers that **option 2** (*update and strengthen the current provisions in specific areas*) is the most appropriate one offering balance of harmonisation, predictability and flexibility to allow future security threats to be addressed in a timely way.

V OVERALL IMPACT

10. OVERALL EFFECT AND SYNERGIES OF THE LEGISLATIVE PACKAGE

This Impact Assessment report has examined separately five key areas of the regulatory framework for eCommunications. In each area, several options are analysed and a preferred option is identified. This section looks at the options at an overall level to examine the synergies between options and the overall effect of the measures as a package. The following also discusses the key simplification elements and the overall environmental impacts of the package.

10.1. Synergies between different areas of analysis

Taken as a whole the measures proposed in the reform should support the multiple objectives of the regulatory framework – to create an open and competitive single market, to encourage innovation and investment and to ensure secure and affordable high speed networks and services.

The strongest thrust of the reform is to achieve a "more competitive and open single market encouraging new investment and innovation." The mix of options discussed in Chapters 5, 6 and 7, taken both separately and together, are targeted upon specific improvements that can be made to the existing framework in order to make regulation more consistent and to focus it on areas where there are enduring barriers to competition. Spectrum reform proposed in Chapter 6 (Option 1) and reinforced measures to counter discrimination on access markets (functional separation as a new exceptional remedy proposed in Chapter 5) are clearly aimed at providing scope for more competition and innovation, and thereby investment.

Both these elements also have a deregulatory effect in that they create new structures for market regulation that require less routine interventions, and thus greater legal certainty. However, taken on their own they would not necessarily reinforce the single market, i.e. the creation of a common playing field in the EU telecommunications markets. Both will only be really effective if implemented inside a harmonised approach. For example, functional separation requires a major intervention on the part of the regulator that could have distorting effects on neighbouring markets if not carried out according to commonly agreed guidelines. Spectrum decisions also are well recognised to need broad harmonisation efforts so as to optimise the use of this valuable resource, and radio waves do not respect national frontiers. For these reasons a reinforced coordination function is needed to assist the emergence of the single market in Europe. An independent European Authority is considered as the best option to improve the existing co-ordination mechanisms, given the current legal conditions and limitations. A stronger internal market dimension will at the same time improve the conditions for cross-border investment while providing more legal certainty and consistency throughout the EU.

Options in Chapters 8 and 9 analyse possible ways of strengthening user rights, consumer protection and security of networks. Overall, a certain balance has to be found between the level of consumer protection and the regulatory burden imposed on business. Very restrictive consumer protection and/or security measures could hamper or at least slow down achievement of the objectives in the competition and investment area. Additionally, Chapters 8 and 9 have a direct link to the institutional arrangements discussed in Chapter 7. Enhanced co-ordination can be beneficial in areas such as the effective implementation of the emergency call number, eAccessibility, transparency and information for end-users or co-ordination of network integrity requirements. Here again, the European Authority would help realise potential synergies between the different areas of regulation and consistency in application of the regulatory framework in different Member States.

10.2. Simplification and reduction of administrative burdens

Simplification of the regulatory environment for businesses is one of the priorities of the Commission's Better Regulation Strategy. The review of the regulatory framework is listed in the Commission Simplification Rolling Programme for 2007 as an initiative that should lead to significant simplification of the current regulatory obligations.

The current regulatory package was already a major simplification of the prior *acquis*, It is also inherently deregulatory: with an in-built mechanism to roll back regulation where competition is established in the form of the Commission Recommendation on relevant markets which is being updated alongside the reform proposals. The proposed new list of markets susceptible to *ex ante* regulation will not only be substantially shorter, but will focus regulation on wholesale markets. This is a significant simplification that will reduce the regulatory burden for businesses in the sector and cut their compliance and administrative costs.

Moreover, the future, the key simplification proposals of the regulatory package include:

– Simplified market review procedures: relaxation of notifications to the Commission will be introduced. This will bring additional cost reductions particularly for NRAs.

– Reduced regulatory risk and faster regulatory decisions due to the action of the proposed Authority, which is expected to yield substantial gains for the sector in terms of lower cost of capital and greater incentives to innovate.

– Simplifications in the management of spectrum: proposals for spectrum reform represent significant simplification of administrative procedures for providers of spectrum-dependent services. General authorisations instead of individual licences, service and technology neutrality principles and a simplified procedure for authorisation of services with pan-European potential will reduce both administrative and compliance costs of operators and speed up procedures.

On balance, the regulatory package contributes to the simplification objective. Where there are additional obligations for businesses, it is due to the focusing of the framework on the areas where there are persisting or emerging areas of concern such as the new consumer protection and security measures (e.g. mandatory breach disclosure requirements).

As regards the related issue of administrative burden, the main areas of reduction are as follows:

– Lighter market review procedures – current costs and future reductions are quantified in Annex II; and

– Streamlined spectrum management and authorisations of services with pan-European potential – reductions in administrative burden are related to simplification benefits.

Benefits from the reduction in administrative costs in these areas must be compared to additional costs, e.g. those related to the legal obligation of mandatory breach disclosure. As explained in Chapter 9, although reliable quantification of the administrative costs cannot be provided at this stage - detailed analyses of administrative burdens will be part of the implementation process - a net reduction of administrative burden is expected.

10.3. Environmental impacts

The key impacts of the regulatory framework for electronic communications are economic. The detailed analysis of options in each of the five areas focused mainly on the economic and to a lesser extent on the social dimension, bearing in mind that the environmental impact of certain options (in particular in the institutional area) is very indirect and therefore difficult to assess. The whole package of measures nevertheless has certain environmental implications. For this reason, the discussion on environmental impacts is presented in this section dealing with overall impacts and synergies.

Firstly, the ICT sector in general, and electronic communications networks and services in particular, play an important role in the debate on energy efficiency. eCommunications services contribute to more energy consumption[252] (use of more devices, higher capacity and performance of networks and network equipment requiring more energy, computers being left on with broadband connections, etc.).

Secondly, the sector is an important generator of electronic waste. Ubiquity and variety of communications services implicitly means that the number of electronic devices increases. The life cycle of products is relatively short and new devices appear rapidly as the pace of technology development and innovation increases. The rapid development of the electronic communications sector could thus have negative environmental implications. On the other hand, if the sector has sufficient funds to invest in research and development, new technologies reducing energy consumption and waste generation can be developed. The issues of energy consumption and electronic waste are however not dealt with in the regulatory framework but in other Community legislation.

On the positive side, eCommunications have a significant potential to accelerate the transition of the traditional, material-based economy to a knowledge-based society. This potential has not yet been fully realised. Communications services can replace transport and travel (through teleworking and video-conferencing and internet services), help change consumption patterns towards more sustainable ones, and introduce new working methods (such as eCommerce, eGovernment, eLearning). The advantages from this transformation would significantly outweigh the disadvantages related to energy consumption and waste generation of the industry.

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[252] According to available estimates, ICT consumes around 2-4% of global energy (figures presented by Sun Microsystems at the Commission seminar *Mainstreaming sustainability in the ICT agenda*).

For example, a study by the RAND Corporation on future electricity requirements of the ICT industry in the US argues that *"even large growth in the deployment and use of digital technologies will only modestly increase electricity consumption in the United States over the next two decades"*[253]. In Europe, there are already examples of voluntary industry initiatives aiming at a more sustainable provision of products and services and minimising negative environmental impacts[254].

The question is: How can the regulatory framework help accelerate the transition? As noted earlier, the impact of the framework on the environment is indirect in the sense that it does not regulate environmental issues related to eCommunications networks and services. Nevertheless, the framework can strengthen the positive contribution of the sector to the environment and to sustainable development through acceleration of deployment and uptake of advanced electronic communications services. Only when these services become a mass market for domestic and corporate users, can their potential be realised. The high level goals of the regulatory framework and of the i2010 strategy (Single European Information Space with available and affordable high speed networks and services) are fully in line with the EU's renewed Sustainable Development Strategy and their achievement will help accelerate the transition to a more sustainable economy.

10.4. Synthesis of the preferred options

The following table summarises the key economic, social and environmental impacts - as well as risks and uncertainties – arising from the preferred options in each area examined by this report. It aims at showing the synergies between the options across the five key areas of analysis and at providing an overall synthesis assessment of the proposed legislative package, so that the broad impacts of the review can be appreciated.

IMPACTS	***Positive effects of proposed approach***	***Risks/Uncertainties***
ECONOMIC IMPACTS		
Internal market and regulatory consistency	Positive impact of enhanced co-ordination in spectrum management (i.e. co-ordinated introduction of spectrum trading), of harmonised conditions and procedures for pan-European services using frequencies and numbers. Strengthening of regulatory consistency through the Commission approval of remedies and establishment of an independent European electronic communications market Authority, which will also give advice in spectrum and number management for services with pan-European potential	Implies more co-ordination and transfer of some powers to the EU level; but national control of spectrum and numbering resources will continue to result in inconsistencies of approach.
Competition	Functional separation as a new remedy could improve service-based competition where competition problems and bottlenecks persist and where other remedies are not effective. Spectrum reform introducing more flexibility in the market	Risk of reducing access infrastructure competition where infrastructure can be duplicated, as new entrants can rely on the incumbent's

253 *Electricity Requirements for a Digital Society*, RAND Corporation, 2002.

254 The Sustainability Charter of the European Telecommunications Network Operators' Association (ETNO) is an example of such initiative. See the ETNO Sustainability Report 2006 at: http://www.etno.be/Portals/34/publications/other/Sustainability_Report_2007.pdf.

	will reinforce competition in wireless industries.	infrastructure - risk of dependency on regulation.
Investment	Competition (whether arising from the market or supported by regulation if and when necessary) should drive investment in existing and new networks. Functional separation, appropriately implemented, should preserve investment incentives. Spectrum reform will encourage investment and create new investment opportunities particularly for new service providers through lower costs of entry. More regulatory consistency and simplified procedures for pan-European services should facilitate investment across national borders. More investment in security is expected as a result of new security measures.	Empirical evidence providing direct links between the regulatory framework and investment is still being accumulated (due to the relatively recent implementation of the framework and differences among MS). Ineffective implementation and risk of regulatory failure would lower the investment incentives.
Speed and effectiveness of implementation	Positive impact of streamlining of market reviews, changes concerning national appeals and reduction in the number of markets in the Recommendation. Significant efficiency gains for market players from reduced regulatory uncertainty due to the Authority. Positive impact of spectrum reform – simplified procedures, general authorisations as a rule, harmonised conditions for pan-European services, contribution of Authority . Enhanced enforcement mechanisms should improve implementation of the ePrivacy directive.	Implementation remains national issue, despite strengthened Commission oversight and co-ordination in some areas.
Consumers – individual and business users	More choice, more services at lower cost as a consequence of more flexible spectrum management. High-speed broadband more available and affordable across the EU. Better tariff transparency and guarantee of minimum quality of service if NRAs use their new powers. More information for consumers about security breaches. Possibility to offer similar services under similar conditions to business users across the EU.	Benefits for consumers across the EU depend among others on the quality of implementation. Impact of new approach to spectrum will take time to feed through to consumers as tangible benefits.
Compliance cost for private sector	An overall trend towards less regulation (i.e. especially reduction in the number of relevant markets and spectrum reform) would lead to lower compliance costs for companies in general. Faster more consistent regulation will reduce uncertainty and thus lower costs.	Increased compliance costs for some companies, as a result of, mandatory disclosure of security breaches, new network integrity requirements, caller location obligations. Uncertainty over possible imposition of functional separation by NRAs.
Administrative cost for private sector and public sector	Overall, lower administrative burden for operators and NRAs, essentially due to reduction of administrative costs of market reviews (see Annex II for details).and 'one stop shop' provided by Authority	Some increase in administrative costs related to new reporting obligations for security breaches.
Incumbent operators	Less regulation overall, particularly for fixed operators (most retail regulation will be removed from the Recommendation). Benefits from regulatory consistency across the EU.	Risk to new investment by incumbent operators if regulatory cost orientation is set too low to incentive

		investment in next generation access.
Alternative operators	Positive impact, more opportunities to access spectrum for mobile/wireless service providers, access to incumbent's networks through regulation where justifies, benefits from regulatory consistency across the EU. Will benefit from equivalence of access where functional separation is imposed.	Risk of deterring investments in alternative access networks and
SOCIAL IMPACTS		
Employment and labour market	Some evidence exists about the positive impact of competition on employment in the sector[255]. The latest research suggests that full market opening of all network industries (electricity, gas, transport, communications and postal services) could create 140.000 - 360.000 new jobs in the EU15. The job effects are expected to take place in the other sectors of the economy through spill-over effects, generated for instance by price reductions[256]. In wireless industries, increased competition should lead to withdrawal of inefficiencies and possibly reorganisation of the market with positive employment effect on certain wireless/mobile operators. This assertion is confirmed by the results of the quantitative model (Annex I). Apart from employment effects in the sector, available and affordable communications networks and services have the potential of boosting employment in the whole economy.	The overall employment effects depend on many different variables and the influence of the regulatory framework is difficult to single out.
Social/digital inclusion	In general, effective competition and more investment in networks should result in more affordable and available services for all social groups. However, complementary policies may be needed to tackle the demand side and provide public funds where private incentives are not sufficient (e.g. broadband coverage). New approach to spectrum will facilitate wireless broadband access in less populated areas.	Risk of not achieving sufficient synergies between the different policy instruments at the EU, MS and regional levels (universal service concept, Structural Funds, eGovernment, eHealth policies, education and training, etc.).
Disabled users	Concrete measures for disabled users will facilitate access to electronic communications services (strengthening the right of disabled users to access emergency services via 112, new Community mechanism to address eAccessibility, including a specific role for the Authority.	Risk that the new requirements would mean less incentive for operators to innovate due to the risk of potential imposition of regulatory measures concerning eAccessibility.
Privacy and security	Consumers will have better information to providers' security and integrity standards (due to mandatory disclosure of breaches). Lower	Costs of new security measures could be passed on to consumers.

255 For example: *The Positive Effects of Competition on Employment in the Telecommunications Industry*, Phoenix Center Policy Bulletin No 7, 2003.

256 *The potential economic gains from full market opening in network industries*, Copenhagen Economics, January 2007, available at: http://www.dti.gov.uk/files/file37074.pdf. Note that the study covered only the 'old' EU Member States, i.e. 'EU15'.

	economic risk of outages, higher reliability of networks.	
ENVIRONMENTAL IMPACTS		
Sustainable development	A key element of the EU's over-arching renewed Sustainable Development Strategy (SDS) is to "reconcile environmental protection and smart economic growth and exploit win-win opportunities"[257]. The accelerated deployment and uptake of advanced e-communications services is recognised as the principle way in which this could be accomplished. Therefore, the regulatory framework has a clear link to the SDS, however the impact of individual measures on environment is hard to determine.	Uncertainty as to whether the transition to more sustainable economy will happen fast enough even if the technologies and e-communications services are available on a large scale.
Waste production/ generation, recycling	A healthy eCommunications industry will have the funds to research new technologies that could reduce power consumption and cut electronic waste. The electronic waste directive currently under review deals with the issue of electronic waste[258].	Market growth could lead to an increase in the amount of electronic waste. Risk of negative environmental impact.

VI MONITORING AND EVALUATION

The Commission annual implementation reports on European electronic communications regulation and markets provide comprehensive data and analysis of market, regulatory and consumer developments in the sector. These reports cover a broad set of indicators such as prices, number of alternative providers, investment by incumbents and new entrants, market shares of operators, broadband penetration, and development of new technologies. The latest report of 2006 (published in March 2007) was the 12th consecutive report that for the third time covered the sector in 25 Member States[259].

The implementation reports are assembled on the basis of information received from various sources in particular through missions carried out in the Member States by staff of the Directorates General for Information Society and Media and for Competition, analysis of the notifications of national transposition and implementing measures received from Member States, market data received from national regulatory authorities and surveys commissioned on price developments.

The existing collection of data appears to be sufficient to monitor the proposed changes. The annual implementation reports will therefore remain the main tool for monitoring and evaluating the implementation of the regulatory framework also after the current legislative changes to the directives have been implemented. This data collection and monitoring is also continuously being developed in order to better assess the effects of EU rules in the dynamic sector.

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257 See: http://ec.europa.eu/sustainable/docs/renewed_eu_sds_en.pdf.

258 Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE).

259 The reports are available at: http://ec.europa.eu/information_society/policy/ecomm/implementation_enforcement/index_en.htm.

In addition, the Commission will continue to conduct household surveys to measure the attitude of European households and individuals in particular towards telephony, Internet access, TV broadcast services, bundled offers, 112 emergency call number, telephone directories, privacy and security.

ANNEX I: ECONOMETRIC MODELLING OF THE IMPACT OF SPECTRUM REFORM

The main features of the econometric model

The basis for the econometric model used in the study *Benchmarking Impacts of EU Policy Options for Economically Efficient Management of Radio Spectrum* (SFC Associates, 2006)[260] is three regulatory scenarios that were discussed in Chapter 6.6.1. For each scenario, the predicted rational response from the individual operators to the regulatory choice is used to develop four predicted data sets at the microeconomic level, building on known historical data. The model then uses an identified historical correlation between:

a) Four microeconomic parameters:

1. Average revenue per user of mobile telephony
2. Mobile subscribers above saturation per 100 people
3. Range of services (in everyday use by most subscribers)
4. Coverage of most advanced services; and

b) Five mesoeconomic parameters:

1. Growth of wireless industries (as # of WiFi hotspots)
2. Average mobile subscribers per 100 people
3. E-Readiness[261]
4. Consumer expenditure on communications
5. Consumer expenditure as % of total disposable income.

All of these micro/meso correlations are weighted and used in the model. The five meso-economic parameters are separately correlated against four macroeconomic parameters:

1. EU employment in knowledge industry
2. EU GDP growth rate %
3. EU GDP/head
4. Foreign Direct Investment – as index of opportunity

The best of those individual meso/macro correlations is then used to estimate the effect at the macro level of regulation as in the figure below.

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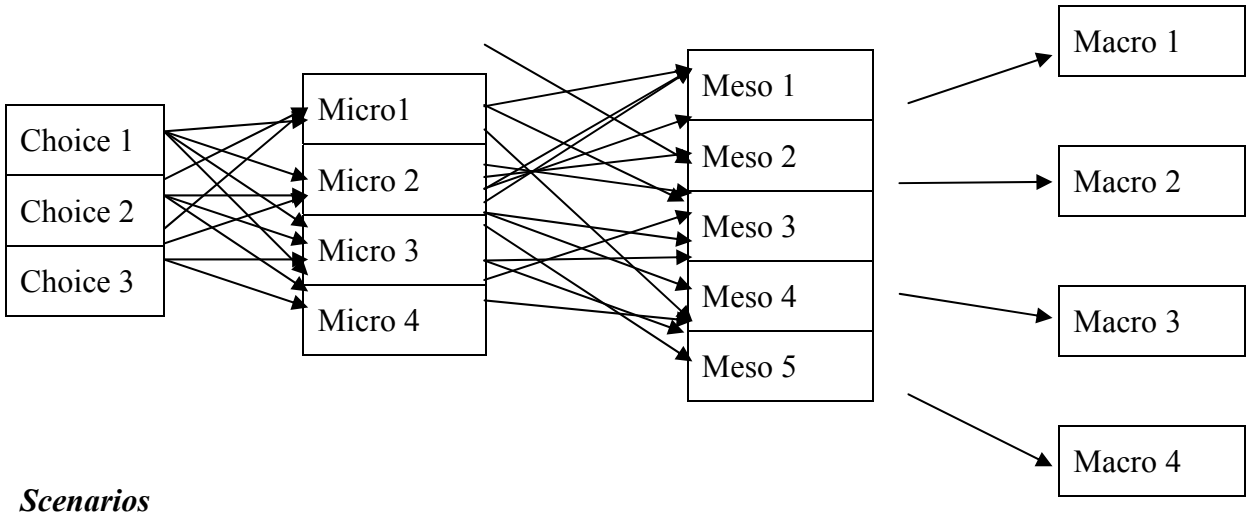
260 The study is available at: http://ec.europa.eu/information_society/policy/ecomm/tomorrow/index_en.htm.

261 E-readiness is the "state of play" of a country's ICT infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. It is based on over 100 separate quantitative and qualitative criteria in six weighted categories: 1. Connectivity and technology infrastructure (25%); 2. Business environment (20%); 3. Consumer and business adoption (20%); 4. Legal and policy environment (15%); 5. Social and cultural environment (15%); 6. Supporting e-services (5%). See http://graphics.eiu.com/files/ad_pdfs/2006Ereadiness_Ranking_WP.pdf.

The relation between micro and meso is based on weighted cross-correlation of historical data (and with varying weighting dependent on scenario) and as always the past is an uncertain predictor of the future. A best-fit correlation as between meso and macro should also preferably be tested over time.



Scenarios

The consultants have clearly acknowledged the limitations of the model and used three scenarios, which should be seen as simplified representations of different regulatory options and their projections to the future. Although these are scenarios bordering on the extreme, they do highlight how policy choices and the regulatory environment have real effects on the European economy and our efforts to bridge the digital divide. The scenarios are briefly discussed below:

Scenario 1

The regulatory choice, based on EU coordination, is to open up several important bands to unlicensed use, combined with the introduction of secondary trading of spectrum usage rights and service and technology neutrality. Technology to manage interference is assumed to be available. Enforcement of competition regulation is limited.

The operator at the micro level would under this scenario try to ensure market share by buying spectrum to prevent new competing entrants. Increasingly, commercial services based on unlicensed use of spectrum would appear as the prices of the necessary technology would fall, making competition with traditional licensed service a viable alternative.

Scenario 2

The regulatory choice, based on EU coordination, is to open up most spectrum to secondary trading of spectrum usage rights. Enforcement of competition regulation is limited.

In this scenario, survival and expanding market share become the drivers for an individual operator. The logic of preventing access for new competitors would lead to a scramble for all available spectrum. The introduction of new technologies would happen only where it does not upset the market balance.

Scenario 3

The regulatory choice is to step back from EU coordination. Member States establish secondary trading of spectrum usage rights according to national criteria. Regulatory action aims at securing a market for local suppliers of equipment and services.

An operator would in this scenario primarily aim at increasing the market share. Technology under existing European standards such as GSM or DVB would remain in use also when obsolescent. New services would emerge in "islands" of Member States and slowly seep back to the others. Member States without a manufacturing tradition may leapfrog those with an industry to protect.

No single scenario mirrors exactly the policy options outlined in Chapter 6.5.1. However, scenarios 1 and 2 can be said to inform Option 1 while scenario 3 may be seen as an extreme version of Option 2. The relationship between options and scenarios is further discussed in Annex II.

In brief, the modelling results of the scenario approach indicate that:

– Scenario 1 would give a higher GDP growth and higher GDP/head development due to opening the spectrum and creating more competition. The total market would quickly separate in two markets – with the traditional established services being at the centre of the trading markets and new technologies to share spectrum appearing in the unlicensed bands.

– Scenario 2 would result in limited competition due to the market effects such as spectrum hording. Operators with 'deep pockets' would be driven by not only gaining market access but also by preventing others from using any part of the spectrum available for a competing offer. This scenario assumes that spectrum will slowly become a scarcer asset as it is progressively concentrated in fewer hands by consolidation because market transactions naturally favour those with deepest pockets. Increasingly, market players would be bought solely for being owners of spectrum assets and a trend that will progress with the degree of consolidation.

Scenario 3 would leave the NRAs to make local decisions and seems to give less advantageous results in the scenarios. Those member states where local forces for national champions are seen as benign and advantageous would go for their own regimes. Regional clustering around common regimes can be expected with advantages in product costs, services costs and media content sharing.

The table below summarizes the impacts of the scenarios on different groups of stakeholders:

Table X. Summary of impacts for stakeholders by scenario

Stakeholder	Scenario 1	Scenario 2	Scenario 3
Citizens	*More choice – more services, lower cost with more offerings (and offerers); more types of k-society use*	*Few changes in offerings but expect progressively higher charges, to pay for spectrum*	*Same choices as today: few changes in services and product pricing and technologies*
Regulators	*More co-ordination, and move to more unlicensed; more market control of traded bands*	*More market control for traded bands*	*Same regimes and rules*
Incumbent telcos	*More challenges from new entrants/service types/technologies*	*Must move quickly to maintain position with spectrum acquisition*	*Old rules rule*
New service providers (SPs) and new radio product entrants	*More opportunities – low cost entry*	*SPs must bid against the largest for prime cuts of spectrum or take the crumbs*	*Varies by national spectrum regime; little difference to today*
Media and content players	*Business opportunities as players expand, especially in mobile content*	*Few changes as players are mainly conservative and will not have access to wide swathes of bandwidth for broadband mobile on a one user/one band approach as too expensive; limited 3G market could finally take-off*	*Same rules and players – may slowly change as mobile media arrives and incumbent telcos follow media convergence (e.g. BT in UK); limited 3G sales in some MS*
Broadcasters, terrestrial & satellite	*More competition from mobile media*	*Must move quickly to maintain position with spectrum acquisition. Form tacit alliances with incumbent telcos*	*Same rules, few changes*
Equipment suppliers including networking, handsets, etc	*Higher competition from new entrants plus rapid technology introductions demands higher R&D efforts to keep up*	*Few and slow changes in offerings or prices – conservative market; prices and margins maintained.*	*Roughly the same technologies, products and pricing; volume production limited ; national champions can flower*
Other suppliers – software ISVs, VARs, system integrators etc	*More opportunities as new networks, services and technologies*	*Same relationships and opportunities*	*Same relationships and opportunities*

Relationship between options and scenarios

As pointed out in Chapter 6.6.1., no single scenario mirrors exactly the outlined policy options. However, scenarios 1 and 2 can be said to inform Option 1 while scenario 3 may be seen as an extreme version of Option 2.

Option 1 aims at more flexibility and creates the basic conditions for a concerted introduction of secondary trading and opening up bands to unlicensed use. The speed of this opening will crucially depend on the availability of technologies to manage interference. From that point of view, the provisions in Option 1 put in place an enabling mechanism, which can be used once the time for unlicensed spectrum is mature.

Comparing scenario 1 and 2 also serves as a stark reminder of the continuing need to enforce competition law.

Both scenarios presuppose EU co-ordination, technology and service neutrality, limited enforcement of competition law and a possibility to trade spectrum on secondary markets. The basic difference is that scenario 1 assumes that technologies able to manage interference are available (which is not the case today) and hence, unlicensed spectrum would be introduced in more bands and, as a consequence, technologies using this spectrum will become serious competitors of the traditional GSM and 3G technologies. On the other hand, scenario 2 that companies could develop a dominant market position through spectrum holdings and thus prevent widespread use of interference management technologies in unlicensed bands.

Option 1 has been developed to avoid the pitfalls that were highlighted in scenarios 1 and 2. The option extends competition regulation to cover spectrum holdings. Given application of such regulation, the option is otherwise close to scenario 2, ensuring strong competition. It would, however, over time move to approach scenario 1, by being open to, but not pre-empting, technical means of managing interference. Option 2 aims in essence at reducing one of the two main factors impeding competition in electronic communication services, namely the scarcity of spectrum. The other, cost of infrastructure, might also in effect be reduced through more intense use of it.

However, there might be a risk of inappropriate application of competition law and ex-ante regulation in some Member States or a risk of delays in implementation, which could effectively result in impacts identified for scenario 2 (see below).

Finally, Option 2 shows a degree of similarity with the Third Scenario. The Third Scenario represents a “no co-ordination” scenario with a mix of different allocation methods (administrative, market-based, and unlicensed) in different Member States. The difference between Option 2, as it is formulated above and the somewhat extreme assumptions in the Third scenario is that according to the Third Scenario, Member States would deliberately withdraw from co-ordination at the EU level and would focus only on their national interests. Option 2 on the contrary involves a significant degree of voluntary co-ordination, though not always effective and relatively cumbersome. Scenario 3 was deliberately chosen to show the added value of a co-ordinated approach to EU spectrum management.

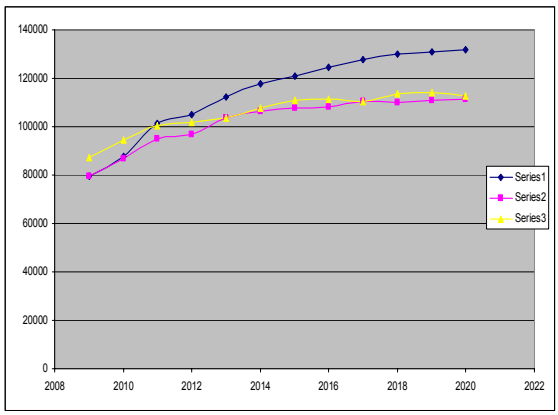
Outcome of the model and its interpretation

Using the correlation coefficients at the micro-, meso- and macroeconomic level, the model is able to extrapolate the start values forwards to simulate possible future values for the given economic parameters to 2020. This method does not provide accurate “predictions” of the future values of the parameters but it does clearly reveal the likely trends, the order of magnitude of the possible changes and the differences between the individual scenarios.

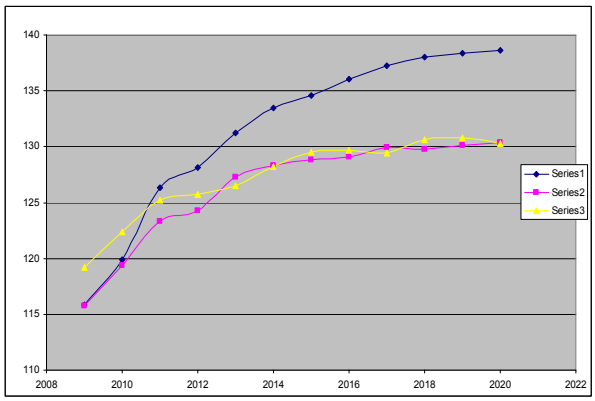
Figure 1 shows the results of the simulation for the set of the five meso-economic parameters. Scenario 1 shows the most positive results for all parameters. Number of WiFi hot-spots (indicating increase in the availability of WiFi) would rise significantly faster in Scenario 1 than in Scenarios 2 and 3. The same holds for the parameter "average mobile subscribers per 100 of population". The graphs show that in terms of the meso-parameters, there is a significant difference between Scenario 1 and Scenarios 2 and 3.

Figure 1. Time series for Meso-economic parameters to 2020

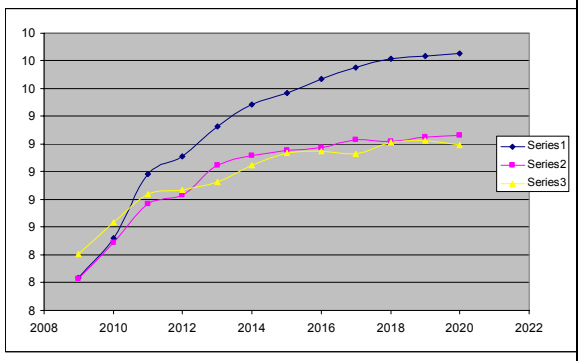
Meso 1 Growth of Wireless industries (as numbers of WiFi hot-spots)



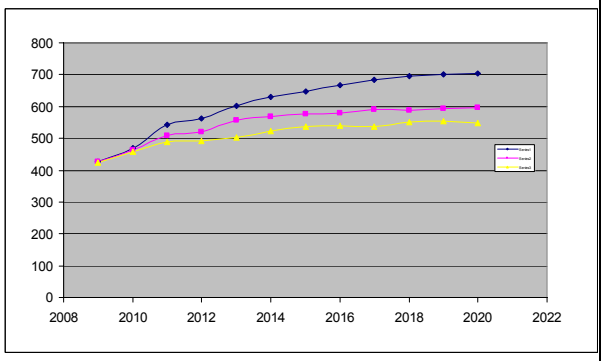
Meso 2 Average mobile subs per 100pop EU-25



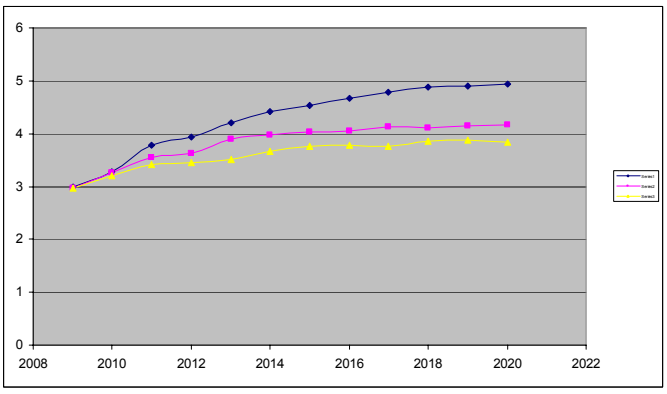
Meso 3 e-Readiness



Meso 4 Consumer expenditure on communications (Euros)



Meso 5 Communications expenditure as % total disposable income



1 Radio mix
2 Radio Bazaar
3 Radio Dropouts

Macro level

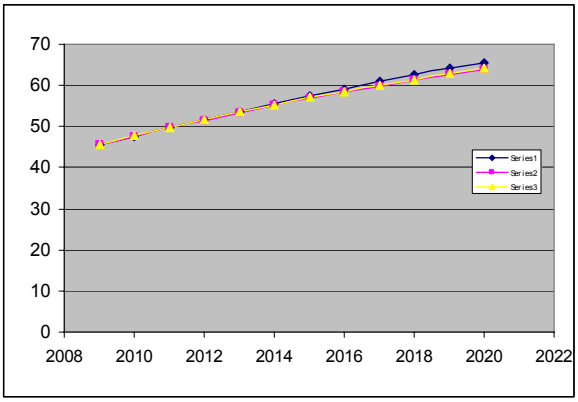
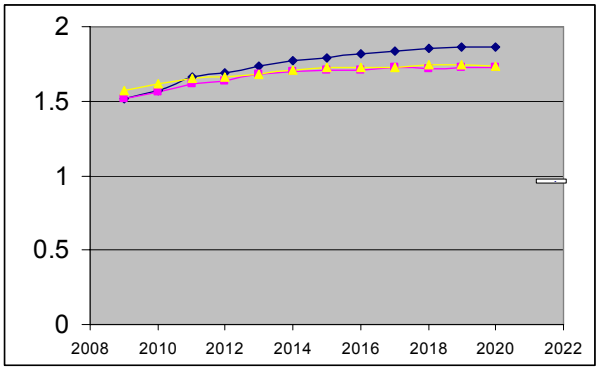
Macro-economic parameters are of course in the centre of attention of this impact assessment, as they are very closely linked to the objectives of the Lisbon agenda for growth and jobs. It has to be borne in mind that connecting micro-economic analysis of individual operators' behaviour through meso-economic level up to the macro-economic parameters such as GDP growth is a very challenging task and in many respects an unexplored territory. This model attempts to make this connection and the limitations of this approach are clearly recognised. The study itself suggests areas of future research and improvement of this approach, such as:

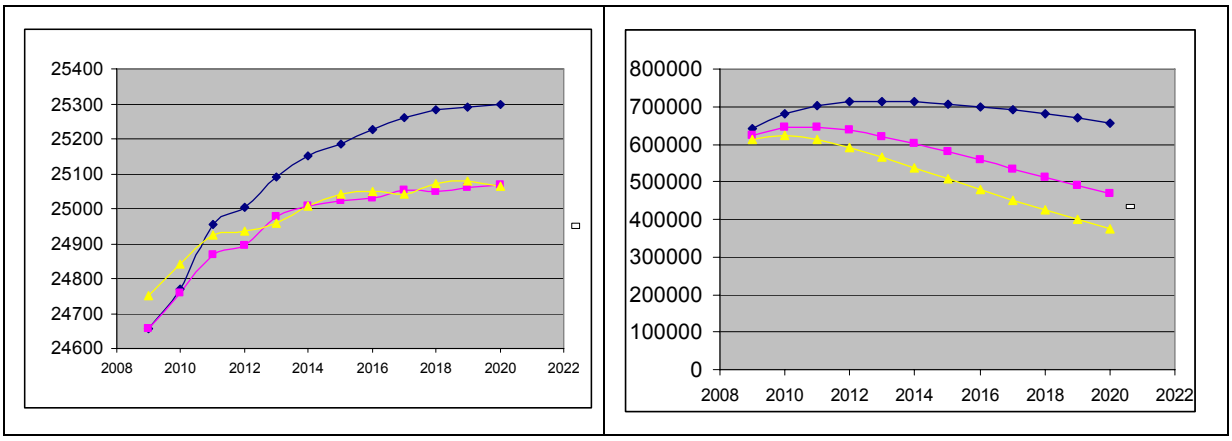
- use multiple parameters for correlation and for simulation of the next level of aggregation rather than the single parameters used in the final stage (for this, statistics and indicators must be readily available and reliable)
- non-linear regression using multiple parameters for each of the scenarios (this step is feasible but would require more time and resources)
- allowing sufficient weighting for non-linear supplementary effects of saturation, and technology diffusion curves in cross variable analysis
- use of techniques for detecting signals in noise, both deterministic and non-deterministic

Having taken these limitations into account, the macro-economic parameters show similar development as the meso-economic parameters. Differences between the 3 scenarios are not substantial for the indicator "employment in knowledge industries". However, in all the remaining parameters, scenario 1 scores significantly better than scenarios 2 and 3.

For GDP growth in particular, the difference between a best case scenario (scenario 1) and the worst case scenario (scenario 3) would be 0.1% of the annual GDP growth, which is a substantial potential contribution to the European economy, equivalent to around € 10 billion. This difference may is mainly due to increased competition in the sector.

Figure 2. Results for macro-economic parameters for the 3 scenarios

EU Employment in Knowledge industries, % workforce	EU GDP Growth Rate %
	
EU GDP per head, Euros	FDI – as index of opportunity (Mn US$)



It is clear from the model results that lowering the barriers to access spectrum would result in new technology being available faster, less rigid allocation of technologies and services would enable a mix and match of services adapted to population density and local social conditions and an increased uptake of subscriptions to services such as mobile communications. Alternative business models, such as delivering competing services over alternative technical platforms or through unlicensed spectrum, ensure that competition remains healthy to the benefit of the consumers, who in turn would use more services.

It should be noted that it is the regulatory choices underpinning the scenarios that are significantly simplified and based on a number of assumptions (as explained above). The predicted actions of individual operators, given these scenarios, would seem to be borne out by the experiences of many other sectors where competition is limited by definition, an example being the airline industry.

ANNEX II: ASSESSMENT OF ADMINISTRATIVE BURDENS

In recent years the issue of administrative costs imposed on businesses and public authorities by legislation has gained increasing attention both at the EU level and in Member States. The Commission is therefore increasing its efforts to measure and better manage the administrative costs incurred European legislation. In the context of this review, the administrative cost of the most important changes is assessed both quantitatively and qualitatively.

The regulatory framework contains a number of information obligations which generate administrative costs for operators and/or NRAs. In line with the principle of proportionate analysis, this impact assessment focuses on quantitative measurement of the measures entailing relatively significant administrative cost – i.e. market review procedures, including notifications to the Commission. Administrative costs of other changes to the regulatory framework are assessed qualitatively in the specific sections of the impact assessment.

Security and privacy is another potential area for measurement of administrative costs, in particular the new mandatory breach notification obligations. However, an important obstacle to useful quantification is the absence of reliable and undisputed information about the frequency of breaches to be notified. It is indeed one of the purposes of the proposed provisions to contribute to better knowledge of the size of the problem. As noted in Chapter 9, a more detailed assessment of administrative burden will therefore be carried out in the implementation phase.

Applied methodology

The measurement and calculation of administrative costs of the market review procedures was done in two steps:

1. Assessment of the current administrative costs associated with market reviews incurred by operators and NRAs

2. Estimation of the future administrative costs based on the proposed streamlining and simplification.

Data for the first step was collected through an on-line survey from NRAs and operators; data for the second step is estimated by the Commission on the basis of the expected effects of the proposed changes – e.g. future reduction in the number of markets analysed by NRAs. The methodology used for collecting and processing the data is based on the standard cost model (SCM) and is fully in line with the Commission's Impact Assessment Guidelines[262].

The standard reporting sheet suggested in the Guidelines was not used in this case because, in order to provide a realistic picture of the aggregated costs of the whole market review process in all 27 Member States, much more detailed data would be needed. The survey among operators and NRAs has shown that there are big differences in costs depending on the size of operators, on the market for which they provide data, on the collection methods used by NRAs, etc. In the view of this, extrapolation of the available data to all market reviews would

[262] Annex 10 of the Commission IA Guidelines SEC(2005) 791.

be very imprecise and significantly more time and resources would be needed to collect detailed data on all the 18 market reviews on a per country basis. Therefore, a sample market was chosen and costs for operators and NRAs were calculated on that basis.

Step 1 – Current Administrative Costs

Current administrative costs are related to the following stages of market review procedures:

– collecting market information and data from operators – this stage entails costs both for operators and for NRAs;

– market analysis, national public consultation on draft measures organised by NRAs – entails the cost of data processing and drafting measures by NRAs, preparing the public consultation, collection of inputs, and the cost for operators of providing comments on the NRA draft measures; and

– notification of market definition, market analysis (including designation of SMP) and proposed remedies to the Commission – entails cost of preparing notifications by NRAs.

NRAs and operators provided data for all the relevant stages of the market review process: i.e. number of hours spent and hourly labour costs of each stage of one market review. NRAs and operators were also asked to estimate a percentage reduction in administrative cost of the next round of market reviews in order to account for the learning process and increased efficiency of the future market reviews.

It has to be noted that the collected data are mostly expert estimates, as neither operators nor NRAs have the obligation to monitor and assess their administrative costs related to market reviews. Also, in order to provide a more accurate baseline measurement, more time and resources would have to be deployed by the Commission and by the respondents. Despite these limitations, the collected data provides a relatively good estimate of the order of magnitude of the administrative costs incurred in market reviews.

Results of the baseline measurement

Operators providing electronic communications services

The Commission received 208 responses to the online questionnaire on administrative burdens, out of which 184 responses were submitted by operators. All the information is presented in aggregated form, as data from individual operators is confidential. The tables below indicate the distribution of respondents according to different characteristics:

Please define the size of your company in your country.		
	Number of operators in each category	Percentage of operators in each category
below 500 employees	124	(67.4%)
501 - 10000 employees	50	(27.2%)
above 10000 employees	10	(5.4%)

How would you characterize your operations? (more than one answer is possible)		
	Number of operators in each category	Percentage of operators in each category
fixed network operator	108	(58.7%)
service provider	97	(52.7%)
mobile network operator	45	(24.5%)
cable operator or broadcaster	31	(16.8%)

According to the results of the questionnaire, big companies with more than 10.000 employees spend on average more time on information obligations than middle-sized and small companies. The table below indicates average cost of labour per hour and average number of hours spent on providing (1) data and information for one market review, (2) input and comments for one national consultation associated with one market review.

size of the operator	Data and information for one market review – average number of working hours	Labour costs per hour (including overheads, social security payments, taxes, etc.) (€)	Input and comments for one national public consultation – number of working hours	total cost for one market review per company (€)
above 10.000 employees	217	69	528	51.669
501 - 10.000 employees	180	64	268	28.864
below 500 employees	32,5	73	35	4.979

Big operators with more than 10.000 employees spend on average around €50.000 on one market review. Most operators provide data for several markets, depending on the scope of their activities. The final cost to the operator very much depends on the method used by NRAs to collect data and information from the market. Some NRAs collect data for each market separately, some for a whole cluster of markets. The amount of data required by national regulators varies from country to country. Some operators also spend time and resources on appeals against NRA's decisions, however, this is not considered as administrative costs in the SCM used by the Commission.

When compared to the revenue streams and financial position of big operators, the administrative costs of market review procedures for them are not substantial[263]. On the other

[263] E.g. the annual revenue of Deutsche Telecom in 2005 amounted to almost €60 billion, of France Telecom almost €50 billion and Telefonica to €37 billion. More than half of the total revenue is realised on the domestic market.

hand, administrative burden for SMEs can be in some cases relatively significant, especially if they are obliged to make an initial investment in data collection and monitoring systems for the purpose of market reviews[264].

Given different approaches to data collection at national level, estimating the total administrative costs of all the market reviews in the EU is very complex and would require a more sophisticated data collection method. It is however possible to provide an estimate of the total administrative costs of one model market review. The following model case illustrates the costs of a market review involving mobile network operators – e.g. market 16 of the Recommendation on relevant markets, "voice call termination on individual mobile networks".

In order to analyse market 16, national regulators send data requests to mobile network operators (in most member states 3 to 4 operators) and to mobile service providers, which are defined as mobile virtual network operators, enhanced service providers or simple resellers. According to the 12th Implementation report, the total number of mobile network operators in the EU is 78 (EU25, data from July 2006), the total for mobile service providers is 290. The following table shows average costs of a mobile network operator, of a mobile service provider and the total for the whole EU in Euros.

Category of mobile operator	Data and information for one market review – average number of working hours	Labour costs per hour (including overheads, social security payments, taxes, etc.) (€)	Input and comments for one national public consultation – number of working hours	Total cost per category of mobile operators (€)
mobile network operator	264	76	419	4.053.637
mobile service provider	80	64	61	2.647.288
Total costs EU25				**6.700.925**

The total cost for the whole EU of one market review, based on a model case of the market 16 is approximately € 6.700.000 for the total number of mobile operators and service providers in the EU.

It is necessary to note that this figure represents approximate costs of analysing one of the most resource-intensive markets. Also, the proportionality of these costs needs to be judged against the size of the market. According to the latest figures, mobile market revenues continue to grow and amounted to approx. €128 billion in 2006[265]. Against this background, administrative costs of one market review represent for operators approximately 0,005% of their annual revenue.

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264 Initial investment in data collection systems were mentioned by several small operators as an additional burden.

265 Internal Commission data used for the 12th Implementation report.

National regulatory authorities

The Commission received 24 responses to the on-line questionnaire from NRAs. As in the case of operators, figures must be considered as expert estimates because most NRAs do not have detailed statistics on administrative costs of market review procedures. The questionnaire included questions on administrative costs of all the three stages of the market review procedure – i.e. collection of data from operators, national public consultation on draft measures and notification to the Commission. The second stage proves to be the most burdensome for national regulators, as it includes formulation of draft decisions, based on the analysis of data obtained from operators.

National regulators deal with markets of very different sizes and the number of staff dedicated to electronic communications issues and more specifically to market reviews differs from country to country. In general, around 10% to 20% of the staff working on electronic communications issues works specifically on market review procedures. In order to analyse the responses more closely, countries were divided into 3 groups according to the size of each country and size of the regulatory authority. Small countries with small regulatory authorities (such as Cyprus, Luxembourg, Latvia or Estonia, Slovenia, Malta) spend less time and resources in absolute terms on market reviews than big countries. Nevertheless, taking into account the size of the country and of the national market, these costs are proportionately higher than the administrative costs in big countries. The table below shows average administrative costs of all three market review stages for the three groups of countries:

	Data collection - no of hours	Labour cost per hour	Public consultation - no of hours	Notification to the Commission - no of hours
Small countries[266]	363	28	292	107
Middle-sized countries[267]	820	46	674	170
Big countries[268]	1770	46	1092	973

The following table shows the total cost in Euros of each stage of the market review for each group of countries. Costs were calculated as a sum of hours multiplied by hourly labour costs provided by each NRA, on the basis of the average number of hours and average labour cost for each group of countries, indicated in table above.

	Data collection - total cost in €	Public consultation - total cost in €	notification - total cost in €	Total cost per group of countries
Small countries	42.029	36.967	17.007	96.003

266 Small countries: Luxembourg, Latvia, Estonia, Slovenia, Malta, Cyprus.

267 Middle-sized countries: Lithuania, Sweden, Netherlands, Ireland, Denmark, Hungary, Austria, Czech republic, Belgium, Slovakia, Finland, Romania (figures from Romania do not include the cost of notification to the Commission, as Romania and Bulgaria did not submit any notifications to the Commission prior to their accession).

268 Big countries: Poland, Germany, Spain, Italy, UK, France.

Middle-sized countries	478.586	377.786	102.503	958.875
Big countries excluding France[269]	240.850	248.010	252.805	741.665
Total cost EU 23				**1.796.543**

The total cost of € 1.796.543 includes 23 EU countries and excludes costs of France[270], Bulgaria, Portugal and Greece. Bulgaria, Portugal and Greece are relatively small countries and their costs can be estimated using the average figures for small countries in the above table. The total cost of one market review for the 27 NRAs in the whole EU would then amount to approximately € 2.3 million.

Conclusion

The first step of administrative burden assessment provided an indicative quantification of the costs of one market review both for operators and for NRAs. It has to be born in mind that the figures provide only an indication of the order of magnitude of these costs; a more accurate estimation would require more time and resources as data collection systems and methods of carrying out market reviews vary from country to country. The total cost of all market reviews is difficult to obtain: every market has a different resource-intensity and different number of operators required to provide data and input. This section estimated the cost of one market review for mobile operators at around € 6.7 million and the cost of one market review for NRAs at around € 2 million[271]. Viewed from the perspective of the size of the market for electronic communications services[272], the administrative costs are not substantial. Nevertheless, there is some scope for streamlining and simplifying the procedures with a view of cutting the unnecessary administrative burden. Options for reducing the unnecessary administrative burdens will be described in the second step.

Step 2 – Estimation of future administrative burdens

The baseline measurement of administrative costs related to market reviews (Step 1) is based on real data provided by operators and NRAs. In the second step, the Commission can rely only on rational estimates and projections of the current costs to the future. Given the variety of operators and national approaches to data collection, the exact quantification of total administrative costs is very difficult to obtain and would certainly require more detailed data collection in each Member State. The assessment of future administrative burdens will therefore be based partly on the available data for the current administrative burden and on a number of assumptions.

Assumption 1: other things equal, the next round of market reviews will be less resource-intensive due to a learning process

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269 French NRA provided only a figure for the total cost of one market review and not costs divided into the three stages.

270 Idem.

271 This is an indicative cost of one of the resource-intensive market reviews, as most NRAs calculated the cost as an average between markets 12 and 16.

272 The size of the ICT sector (revenues) was around €649 billion in 2006, € 289 billion being derived from eCommunications, source: 12th Implementation Report 2006.

Market reviews were introduced by the current framework as a new element in regulation of electronic communications. Both NRAs and companies had to get acquainted with the new procedures and learn how to apply them more effectively. For this reason, it is supposed that thanks to the accumulated knowledge and experience from the first market reviews, the next rounds will be somewhat less resource intensive and that the administrative burden would gradually decrease (for examples, methodological and issues pertaining to the organisational process would be already in place, needing at the most some fine-tuning). Operators were asked about their perception of the cost reductions resulting from accumulated experience in the next round of market reviews. The tables below show the results for data collection phase and national consultation phase respectively. It has to be noted that these figures take into account neither the Commission proposal on cutting the number of relevant markets in the Recommendation nor the proposals to streamline market reviews and Article 7 procedures.

By what percentage will the cost of providing input for a single market review (Art 5 of the Framework Directive) be reduced in the next round of market reviews? Please tick the appropriate range below.

	Total number of answers indicating the given range of cost reduction	Percentage of answers indicating the given range of cost reduction
1% - 10%	66	(35.9%)
0%	51	(27.7%)
11% - 20%	29	(15.8%)
21% - 30%	21	(11.4%)
above 40%	9	(4.9%)
31% - 40%	8	(4.3%)

By what percentage will the cost of providing input for a single national consultation for one market review (Art 6 of the Framework Directive) be reduced in the next round of market reviews? Please tick the appropriate range below.

	Number of answers indicating the given range of cost reduction	Percentage of answers indicating the given range of cost reduction
1% - 10%	72	(39.1%)
0%	57	(31%)
11% - 20%	26	(14.1%)
21% - 30%	15	(8.2%)
above 40%	9	(4.9%)
31% - 40%	5	(2.7%)

Similarly to operators, also NRAs were asked about their expert estimate of the reduction in administrative burden in the next round of market reviews (excluding the effect of the proposed reduction in the number of markets and the Commission streamlining proposals). The tables below indicate the distribution of responses.

By what percentage will the cost of data collection from operators and its processing for a single market review (Art 5 of the Framework Directive) be reduced in the next round of market reviews? Please tick the appropriate range below.		
	Number of answers indicating the given range of cost reduction	Percentage of answers indicating the given range of cost reduction
0%	7	(29.2%)
1% - 10%	5	(20.8%)
11% - 20%	5	(20.8%)
21% - 30%	3	(12.5%)
31% - 40%	2	(8.3%)
above 40%	2	(8.3%)

By what percentage will the cost of a single national consultation for one market review (Art 6 of the Framework Directive) be reduced in the next round of market reviews? Please tick the appropriate range below.		
	Number of answers indicating the given range of cost reduction	Percentage of answers indicating the given range of cost reduction
1% - 10%	9	(37.5%)
0%	8	(33.3%)
11% - 20%	4	(16.7%)
above 40%	2	(8.3%)
21% - 30%	1	(4.2%)
31% - 40%	0	(0%)

By what percentage will the cost of a single notification to the Commission (Art 7 of the Framework Directive) be reduced in the next round of market reviews? Please tick the appropriate range below.		
	Number of answers indicating the given range of cost reduction	Percentage of answers indicating the given range of cost reduction

1% - 10%	10	(41.7%)
0%	6	(25%)
11% - 20%	5	(20.8%)
above 40%	2	(8.3%)
21% - 30%	1	(4.2%)
31% - 40%	0	(0%)

The tables show that most operators and NRAs situate the possible reduction of administrative costs due to accumulated experience somewhere between 0% and 20%.

Assumption 2: the reduction in the number of markets in Commission Recommendation on relevant markets will reduce the administrative costs of fixed network operators by approximately 25-30%[273] and those of NRAs by approximately 30-40%. The Commission will table a proposal for a revised Recommendation on relevant markets together with the legislative proposals reviewing the regulatory framework. The revised Recommendation will cut the number of relevant markets by more than 50% (i.e. from 18 to 7). Retail markets will be removed. It is supposed; however, that NRAs will still monitor the retail market prices, therefore the reduction of administrative costs will be less than 50%. Fixed network operators will have to provide some data on retail markets but mostly only for monitoring purposes. It is assumed that the cost reduction for NRAs will be larger compared to operators because NRAs will not prepare a formal notification for the deleted markets[274].

As for internet service providers and cable network operators, their cost reduction will probably be negligible. The markets where these operators are involved stay on the list of the Recommendation on relevant markets. For mobile operators, provision of information about roaming will be handled under the Regulation on Roaming[275] and not under this Recommendation.

Assumption 3: Streamlining of market reviews will bring further cost reductions for NRAs and operators.

The Commission announced in its Communication on the review from June 2006 the intention to streamline and simplify market reviews through:

– introduction of simplified procedures for notifications of markets which were found competitive and for notifications where only minor changes are proposed;

– rationalising of the market review procedures in one single instrument; and

– introduction of minimum standards for notifications.

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273 The reduction will be lower for fixed operators who at the same time provide internet access and/or mobile services.

274 Technically, the NRAs can notify also markets which are not explicitly included in the Recommendation; however they must justify this using the three criteria test. It is supposed that in most cases the NRAs will not notify the removed retail markets.

275 OJ L 171, 29.6.2007, p. 32.

Some simplification of the notification process can be achieved under the current legislation. This could reduce the administrative burden for NRAs by 10-20%, depending on how many notifications fall into the categories of "notifications of markets which were found competitive" and "notifications where only minor changes are proposed"[276].

Further simplification to be introduced once the Directives are amended could result in a saving for NRAs in the order of additional 20-25%.

Administrative costs of different institutional arrangements

Chapter 7 of this Impact Assessment proposes a number of options related to different possibilities for institutional arrangements in regulation of electronic communications markets. From the point of view of administrative costs of market reviews, the differences between the three options are not significant. Option 1 would not involve costs of notifications as markets would be analysed directly by the single European Regulatory Authority. Data collection costs and costs of public consultations would remain. Option 2, stronger Community powers with advisory role of the European Authority, does not add on administrative burden in terms of creating new information obligations for businesses and/or NRAs. Clearly, establishing a new authority involves set-up and operational costs, however, these are not counted as administrative burden. Finally, Option 3 would entail similar cost reductions due to streamlining and reductions in the Recommendation.

Administrative costs of different institutional arrangements

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Conclusion

Administrative burden related to market reviews will be reduced in the next rounds both for operators and for NRAs. The most important factors of this reduction are the streamlining measures proposed by the Commission and reduction in the number of markets in the revised Recommendation on relevant markets. According to the survey carried out by the Commission, some reductions can be expected as a result of a learning process and experience with the first round. The proposed streamlining of the procedures means that NRAs will benefit from substantial reductions of costs of notifications in the longer term. As for

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276 According to the latest statistics on market reviews, the number of markets found competitive oscillates between 1 and 7. It is difficult to foresee how many future notifications will propose only minor changes, therefore the Commission makes a conservative estimate of 10-20% overall reduction. See: http://ec.europa.eu/information_society/policy/ecomm/doc/article_7/competition-regulation%20first%20round%2008-05-2007_nonewmarkets.pdf

operators, cuts in the number of relevant markets in the Commission Recommendations will bring cost reductions mainly to fixed network operators.

ANNEX III: EVALUATION OF COSTS AND BENEFITS OF THE EUROPEAN AUTHORITY WITH ADVISORY ROLE IN ELECTRONIC COMMUNICATIONS

This annex summarises the costs benefits[277] that would result from the establishment of a European Authority with an advisory role for electronic communications issues (Option 2 discussed in Chapter 7 of this report), since this would involve financing from the Community budget.

While cost-effectiveness analysis looks at the costs impacting the EU budget as a result of carrying out the EU intervention, cost-benefit analysis must look more widely on long-term costs and benefits for different actors involved, and quantify them where possible. To support this assessment, the Commission commissioned a study to provide quantitative and qualitative information on the costs and benefits and added value of such an Authority[278].

The main aim of the European Authority is to contribute to greater consistency in regulation of eCommunications across the EU and to simplify the regulatory environment particularly for providers of services with pan-European and cross-border services. The Authority's tasks can be grouped in three main areas: (1) issues of regulatory inconsistency, delays in conducting national market analysis and promoting the identification of pan-European / trans-national markets; (2) improving EU procedures for authorisations and regulation of services with pan-European potential, and (3) other activities, including those related to network and information security formerly undertaken by ENISA.

The following quantifications of benefits in areas (1) and (2) above are based on an estimate that the Authority's budgetary costs would be around € 150 million over five year period (with yearly appropriations of around € 27 million). The benefits in area (3) have not been quantified.

Under a conservative scenario, it can be estimated that the European Authority has the potential of bringing total economic benefits exceeding its budgetary costs by a factor of around 10-30 times (i.e. the order of magnitude of the benefits would be around € 250 – 800 million). This factor can be even higher if the more optimistic scenarios on the number and size of pan-European markets to be authorised and subsequently regulated were to materialise.

A major source of such benefit is the reduction in the regulatory risk[279] that would be achieved through the contribution of the Authority. Even a marginal reduction in the regulatory risk (of around 10%) across Europe, will be reflected in lower cost of capital for the industry. In addition, the Authority's involvement will speed up the process of assigning spectrum for pan-European services; if implementation of major projects of this type can be

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277 See the requirements for *ex ante* and cost-benefit analysis stipulated in Article 21 of the Implementing Rules of the Financial Regulation, Commission Regulation No 1248/2006 of 7 August 2006, and point 47 of the Inter-institutional agreement between the European Parliament, the Council and the Commission on budgetary discipline and sound financial management, 2006/C 139/01. These documents can be found, respectively, at: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_227/l_22720060819en00030021.pdf and http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c_139/c_13920060614en00010017.pdf

278 *Cost-Benefit Analysis of Option for Better Functioning of the Internal Market in Electronic Communications*, Final Report, 22 October 2007, the European Evaluation Consortium – Economisti Associati Srl, 2007.

279 Risks associated with the potential for regulation to change and impact investments.

brought forward by just one year, the economic benefits can be in the range of several hundred millions euros.

From the pure cost-effectiveness analysis point of view, it is clear that integrating the already existing European Network and Information Security Agency, ENISA into the new European Authority would result in cost savings from the synergy of the two. As discussed in Chapter 7 of this report, the problem with ENISA (which was established in 2004 with the goal of ensuring a high and effective level of network and information security within the Community) is that it has not had a critical mass of operational staff to work effectively[280]. The combined entity under the new Authority would benefit from economies of scale for administrative tasks, allowing the number of operational staff working on network and information security issues to be increased as compared to ENISA.

There are also additional benefits to be expected from other, less predictable areas of the Authority's activities. By way of example, it is estimated that the Authority (as a centralised pan-European reference point) could save the satellite industry € 0.5 - €6 million per annum by reducing information costs (i.e. reducing the transaction costs caused by national differences in the legal format of the tradable user rights).

There are other important qualitative considerations supporting the establishment of the Authority that cannot be adequately quantified or monetised in a cost-benefit analysis. In particular, as discussed in the Impact Assessment report, there are strong indications that the telecommunications market is evolving towards technological and management models, making the current regulatory approach of defining (national) markets less relevant, requiring instead a much more co-ordinated EU-wide regulatory approach. In the long run, enabling competition between different new technological platforms is likely to be one of most important economic benefits associated with the Authority.

The Authority could also substantially contribute to reduce the regulatory risks of R&D projects in the field of eCommunications, which must achieve EU economies of scale to enter the market and which currently face considerable uncertainties in the availability of spectrum. Any reduction of such risk could thus increase the tendency to invest in R&D and thereby contribute to bridge the gap between actual and socially desirable level of investments in a market-efficient way.

Most of the above benefits are not replicable by the current - or strengthened - co-ordination between the Member States based on the loose co-ordination structure of the European Regulators Group (ERG) composed of the heads of the national regulatory authorities (Option 3 examined in Chapter 7 of this report). ERG's peer-review without any veto power cannot be considered equally credible mechanism to reduce the risk for regulatory error across Europe or to decrease perceived market uncertainty related to regulatory discretion factors. Furthermore, ERG's involvement in spectrum management issues has been limited, and it also lacks operational experience in this field. Some of ERG's national member organisations do not have competence in this field. In some other areas of the possible mandate of the

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280 See the Communication *On the evaluation of the European Network and Information Security Agency (ENISA)*, COM(2007) 285 of 1 June 2007: http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0285en01.pdf and *The Evaluation of the European Network and Information Security Agency*, Final Report by the Experts Panel, IDC EMEA, 8.1.2007: http://ec.europa.eu/dgs/information_society/evaluation/studies/s2006_enisa/docs/final_report.pdf

Authority, ERG involvement is simply not possible (replacement of missing national analyses) or severely hindered by lack of sufficient incentives or legal mandate at the national level (trans-national markets).

Therefore, even by applying conservative scenarios on the potential benefits and related costs, the establishment of the Authority is cost-effective and fully justifiable from the EU budgetary perspective. This does not rule out the possibility that operational savings can be achieved if some of the assumptions on the Authority scope of activities can be better fine-tuned in getting closer to the commencement of its activities.

The table below summarises the main costs and benefits related to the establishment of the European Authority.

Summary table of costs and benefits related to the European Regulatory Authority

Authority's contribution in the various policy areas	**Annual Costs**	**Possible benefits*** (orders of magnitude)	***Key Assumptions***
Oversight of NRA remedies	€ 0.7 mn	€ 50 - 120 mn	*Authority reduces by 10% regulatory risk across EU* *There are some yearly 40 NRA remedies with hidden unexploited deadweight effects*
Replacement of NRA not carrying market analysis in time	€ 2.7 mn	€ 20 - 80 mn	*1-2 delays in carrying out market analysis are experienced on a yearly basis*
Authorisation and regulation of services with pan-European potential	€ 7.9 mn	€ 180 - 600 mn	*Every three years the launch of one pan-European market is shortened by one year bringing one-off benefits of some € 180 – 600 mn*
Other operational and management activities	€ 16 mn		
TOTAL COSTS AND BENEFITS	**€ 27 mn**	**€ 250- 800 mn**	
Potential additional costs /benefits			
Procedures for analysis of trans-national markets	€ 24 mn	€ 300 - 600 mn	*If 1-2 transnational markets were identified and regulated in the period*

Source: European Commission, based on a study '*Cost-Benefit Analysis of Option for Better Functioning of the Internal Market in Electronic Communications'*, the European Evaluation Consortium – Economisti Associati Srl, 2007.

*) This is not an exhaustive list of benefits.

Further details of the methodological approach and underlying assumptions can be found in the above-mentioned study.

Staffing

In the long term it is estimated that the new Authority would need a staff of around 60 people to carry out the operational functions of (i) strengthening the internal market; (ii) harmonisation of rights of use; and (iii) dissemination of best practices and information, not including administrative staff. These staff numbers will built up over the first 3 years of operations of the Authority.

In addition, in 2011, the Authority will take over the work currently carried out by ENISA that will result in a significant increase of staff in that year. Prior to 2011, there will be no duplication between the activities of the European Authority and ENISA.

Administrative staff will be built up in line with the growth of the operational staff such that the total number of posts will be 134 from 2012 onwards.

With the creation of the Authority, one additional AD post for the Commission is foreseen for audit purposes. The task of ensuring cooperation and coordination between the Authority and the Commission would be accounted for by redeploying the administrative and human resources of the Commission currently allocated for cooperation and coordination with the ERG and with ENISA.