EUROPEAN
COMMISSION

Brussels, 11.9.2013
SWD(2013) 329 final

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

COMMISSION RECOMMENDATION

on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment

{C(2013) 5761 final}
{SWD(2013) 330 final}

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1. INTRODUCTION

1.1. Regulatory context

Since 2002 and following the liberalisation of the telecommunications sector in the 1990s, national telecommunications regulators (national regulatory authorities, or NRAs) have been required by the EU Regulatory Framework for electronic communications (Regulatory Framework)[1] to analyse on a regular basis markets in order to identify those markets that are not effectively competitive[2].

In non-competitive markets, NRAs must identify operators that have "significant market power" (SMP), i.e. operators that have the ability to act independently of competitors, customers and consumers. NRAs must impose regulatory obligations on SMP operators to ensure the development of a competitive market. Such regulatory obligations (or remedies) chosen by the NRAs should be based on the nature of the problem identified, proportionate and justified to achieve the overall regulatory objectives of (i) promoting competition, (ii) contributing to the development of the internal market, and (iii) promoting the interests of the Union's citizens[3].

These obligations imposed on the SMP operator can include[4]: providing third parties with access to their network, transparency of access conditions, non-discrimination (i.e. equivalent access under equivalent conditions), separation of accounts between the different activities of the SMP operator, price controls (e.g. cost orientation or requiring that access prices reflect the costs incurred by the SMP operator) and accounting obligations regarding the prices that the SMP operator charges to third party access seekers.

As an exceptional measure[5], NRAs may impose functional separation – an obligation which obliges SMP operators to separate the access division controlling the communication network from the SMP operator's service branch - but only if the imposition of standard remedies has failed to achieve effective competition.

Before they adopt such obligations, NRAs must submit draft measures to the Commission under the so called 'Article 7 procedure'[6], which has the objective of developing the internal market for electronic communications by ensuring a consistent application of the Regulatory Framework. Under this Union consultation process, the Commission can provide comments,

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1 Consisting of the Framework Directive (2002/21/EC) and specific Directives, such as the Access Directive (2002/19/EC) and the Authorisation Directive (2002/20/EC), which are relevant for the purpose of this policy proposal.

2 Commission Recommendation 2007/879/EC of 17 December 2007 on relevant product and services markets within the electronic communications sector susceptible for *ex ante* regulation in accordance with the Framework Directive, OJ L 344, 28.12.2007, p. 65 (Recommendation on Relevant Markets).

3 Article 8 (2), (3) and (4) of the Framework Directive.

4 Articles 9 – 13 of the Access Directive.

5 Article 13a of the Access Directive.

6 Article 7 and 7a of the Framework Directive.

which NRAs must take into utmost account. When the Commission considers that the draft measure would create a barrier to the single market or if it has serious doubts as to the compatibility with Community law it can delay the adoption of a draft measure. If this is because of serious doubts expressed on market definition or on the designation of operators as having SMP, the Commission can then adopt a decision requiring that the NRA withdraws its proposed measure. Since 2011, and as a result of a review of the Regulatory Framework in 2009, in circumstances where the Commission delays the adoption of a measure because of serious doubts in relation to the proposed remedies, it can then adopt a Recommendation requiring the NRA in question to amend or withdraw the draft measure.

Furthermore, the Regulatory Framework empowers the Commission to issue Recommendations[7] where it finds that divergences in the implementation by NRAs of their regulatory tasks may create a barrier to the internal market. NRAs must take utmost account of such Recommendations. On this basis, in 2010 the Commission issued the Recommendation on regulated access to Next Generation Access networks (the NGA Recommendation)[8].

In the electronic communications sector two main types of relevant markets are considered, that of services or facilities provided to end-users (retail markets) and that of access to facilities for operators necessary to provide such services to end-users (wholesale markets). A variety of market players are delivering broadband services at retail level over a vast range of technologies[9]. Within this context, NRAs usually regulate wholesale access to the fixed networks of SMP operators. Regulated fixed networks usually comprise copper lines (the legacy network), used for traditional telephony and Internet services, as well as, in some cases, the next generation access networks (NGA), which are based on more up to date technologies such as optic fibre cables.

Before liberalisation the electronic communications sector was characterised by national monopolies. This legacy has an important impact on the main market players in the broadband sector active in the Union today. Former monopolies in each of the Union's Member States have often retained SMP in certain product markets because of their continued ownership of the legacy fixed networks that were deployed to a large extent prior to liberalisation. Former monopolies (also known as 'incumbents') are in these circumstances the key providers of wholesale services, while they are also active on the retail market. The companies that seek access to the fixed networks of SMP operators (also known as 'alternative operators' or 'access seekers'), on the other hand, are a plethora of extremely diverse companies. As access seekers they compete with SMP operators on the retail market. Some of them also compete on the wholesale market when they invest in their own infrastructure.

Against this background, under the Regulatory Framework, two main wholesale broadband markets are subject to regulation: the wholesale physical access to networks at a fixed location (also referred to as the last mile from the network to the homes or offices of end-

7 Article 19 of the Framework Directive.

8 Commission Recommendation on regulated access to Next Generation Access Networks (NGA), 20.09.2010, OJ L 251/35.

9 Broadband can be delivered over fixed networks, or mobile or wireless networks.

users), and the wholesale broadband market. They are considered essential bottlenecks at the wholesale level for delivering various retail services (such as Internet access, voice, and TV).

1.2. The policy context

The Digital Agenda for Europe (DAE), one of the flagship initiatives of the Europe 2020 Strategy, sets ambitious broadband coverage and speed targets. Achieving the DAE targets is critical to Europe's recovery and future prosperity. In this context, Member States have endorsed ambitious broadband targets aiming for 100% broadband coverage by 2013 for all Europeans and increased speeds of 30Mbps for all, with at least 50% of the European households subscribing to Internet connections above 100Mbps by 2020. Smart, sustainable and inclusive growth as envisaged in the Europe 2020 strategy will very much depend on the availability and widespread use of high speed Internet. A high quality digital infrastructure underpins virtually all sectors of a modern and innovative economy. It is the backbone of the Single Market, a major and still to a large extent untapped source of growth, and a key factor for the EU's competitiveness.

The strong link between high speed Internet deployment and competiveness has been recognised inside and outside Europe. However, investments in high speed broadband are taking place more quickly in parts of Asia and in the United States. Network operators in Europe have been reluctant to invest large sums in new ultrafast networks due to (i) the current, unfavourable, economic situation, (ii) structural problems including the high levels of indebtedness many of them face and (iii) despite the growth in traffic volumes, declining revenues for the past three years. In addition, market players are faced with diverging regulatory approaches within and across the telecommunications markets in Europe.

Europe must not fall behind the rest of the world. It is a mix of Union policy responses that will foster the roll-out of high speed Internet infrastructures through promoting competition, incentivising investment, and driving demand. For that, the Commission must (i) put in place a predictable and consistent legal framework and (ii) achieve a competitive single market for telecommunications.

The approach recommended in the present IA, is to be seen as part of a holistic approach to NGA deployment in line with the DAE, i.e. it is part of a regulatory package including also the upcoming revision of the Recommendation on Relevant Markets, the forthcoming Regulation on Cost Reduction for Civil Engineering, and the work taken forward to foster the demand in bandwidth hungry applications.

Economic context of the Internet

The importance of Internet for the **economy** is well documented. Focusing on 13 countries that account for over 70% of the global GDP, McKinsey Global Institute (2011) estimates that *Internet economy* generates on average 3.4% of their GDP (with up to 21% of GDP in some cases), with a great potential for growth still unexploited. Moreover, several studies[10] show a significant and positive impact of Internet on *GDP growth.* The most widely quoted one, Czernich & al (2009) concludes that a 10% increase in broadband penetration results in a GDP growth between 0.9% and 1.5%. This growth can be explained as follows.

[10] Koutroumpis (2009), Thompson and Garbacz (2009), The Allen Consulting Group (2003).

Internet gives a *competitiveness boost to enterprises:* a survey of The McKinsey Global Institute (2011) shows that SMEs with strong web presence grow twice as fast and export twice as much as the ones with minimal or no web presence. High speed Internet generates *productivity gains*. Several studies[11] explain the link between broadband penetration and productivity growth, with gains ranging from 5 to 20%. Fast Internet provides also a platform to support *innovation* throughout the economy, stimulating a virtuous cycle in the development of the digital economy: it allows new services to take off and fuels a growing demand for bandwidth. Services such as high definition video conferencing, cloud computing, smart services, and even social media have changed the way business is done today.

Broadband rollout is also a **net job creator**: as any infrastructure project it acts over the economy by means of multipliers, generating not only direct but also indirect jobs, via positive spillovers in a variety of sectors. While direct jobs and some of the indirect jobs are temporary, coinciding with the works, certain indirect jobs are long lasting (e.g. jobs in content provision and in equipment manufacturing). In a research on this topic, Tech4I2 and Analysys Mason (2012) reviewed six recent studies[12] and concluded that the indirect jobs created are even more numerous than the direct ones.

Beyond direct benefits, high speed Internet **enables major societal and governmental reforms**, allowing for example diminishing costs and improved performance in health care, energy, transport, education, public safety, etc. Based on the estimation that investment in broadband produces a 20:1 benefit ratio[13], the OECD concludes that the cost savings in just four sectors of the economy (transport, health, electricity, and education) would justify the construction of a national FTTH network[14].

Internet **also reduces the isolation of individuals and regions.** It connects customers, businesses and governments, it makes it easier for rural businesses to grow, to improve life quality in rural areas, making it then easier for further locations to attract and retain their residents[15].

A further number of studies[16] investigate the benefits of broadband for the **environment**. According to their findings, a wide adoption and use of high speed Internet would enable the proliferation of smart buildings, smart grids, would reduce travel needs, etc. all resulting in a significant reduction of greenhouse gas emissions. For example, studies[17] confirm that the

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11 Micus (2008), and Strategic Economic Solutions (2007) and Zhen-Wei Qiang, Rossotto and Kimura (2009).

12 Crandall et al (2003), Atkins et al (2009), Katz et al (2008), Katz et al (2009), Katz et al (2010), LSE Enterprise (2009); Liebenau (2011).

13 Shearman, 2011.

14 Network developments in support of innovation and user needs, OECD, 2009.

15 Allen Consulting Group (2009), McKinsey Institute (2011).

16 Fuhr and Pociask (2007), Davidson, Santorelli and Kamber (2009), McKinsey Global Energy and Materials (2009).

17 ICT Applications for the Smart Grid: Opportunities and Policy Implications, OECD Digital Economy Papers, No. 190, OECD Publishing.

introduction of smart grids only could reduce carbon emissions by 12% by 2030[18] with main levers being the integration of renewable energy sources and electric vehicles.

More generally, living in a connected society changes the economic, **entrepreneurial** and social environment. A high quality digital infrastructure is a key enabler of these economic and societal transformations and a condition for next generation technologies, services and applications to develop. In fact, a high quality digital infrastructure is considered as essential for 21st century's society as rail was in the 19th century and electricity was in the 20th century.[19]

1.3. Commission studies and external assistance

1.3.1. Study on costing methodologies to foster the transition to fibre access networks[20]

This study by Charles Rivers Associates (CRA) focuses on identifying and assessing different costing methodologies used to determine the prices of regulated wholesale access products to allow the proper functioning of the internal market in a manner consistent with i) fostering fibre investment and take-up, ii) ensuring retail competition in the long-term, and iii) allowing an efficient operation of legacy copper networks during the transition from copper to fibre. The study considered all wholesale access services included in markets 4 and 5 in the Recommendation on Relevant Markets[21].

1.3.2. Assistance to the Commission in the preparation of the Recommendation on costing methodologies for key wholesale access prices

This external assistance provided by Europe Economics aimed at providing the Commission with assistance in the preparation of the Recommendation on costing methodologies for setting wholesale access prices by (i) describing and classifying the costing methodologies available to NRAs when setting the prices of regulated wholesale access products, and (ii) providing an assessment of the classified costing methodologies, namely by identifying practical issues related to the implementation of each costing methodology. The ultimate aim was to identify the most efficient regulatory approaches (including in an NGA context) and to support their further development and consistent application across the EU. The assistance provided considered all wholesale access services included in markets 4 and 5 in the Recommendation on Relevant Markets. The consultants' deliverables under this project were in the form of on-going consultancy and individual working papers. Europe Economics also provided further assistance evaluating the economic effects of the proposed approach. This assessment included the expected general effects, effects on prices, effects on revenues, effects on retail prices as well as an overview of likely effects in individual Member States.

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18 The Smart Grid: An estimation of the Energy and CO2 benefits, 2010, Report by Department of Energy's Pacific Northwest National Laboratory.

19 McKinsey Global Institute 2011.

20 http://ec.europa.eu/information_society/policy/ecomm/doc/library/ext_studies/20120705_finalreport_costing_cra.pdf

21 Commission Recommendation 2007/879/EC of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Recommendation on Relevant Markets), OJ L 344, 28.12.2007, p. 65.

1.3.3. Assistance in the preparation of a Commission Recommendation on the application of a non-discrimination obligation

The Commission contracted with WIK-Consult GmbH (WIK). On the basis of the Commission services' specific questions and by way of dedicated meetings the Commission was able to receive detailed input as to the costs and benefits and potential welfare gains, which can be attributed to the proposed approach. The consultants' deliverables were in the form on-going consultancy and individual working papers to verify the accuracy of the Commission services' approach.

1.4. Impact Assessment Steering Group

To support the preparation and drafting of this Impact Assessment (IA), a Commission inter-services steering group was established. The following Commission Services were invited to participate: SG, LS, COMP, ECFIN, MARKT, ENTR, EMPL, SANCO, ENV, and TAXUD. The Group met three times: 16 November 2011, 17 October 2012 and 26 October 2012.

In the first meeting CONNECT, COMP, MARKT and TAXUD participated. Several participants of the Inter-Service Group asked CONNECT to provide as far as possible, quantitative data in its impact assessment. COMP pointed out that the Impact Assessment should contain an assessment of the impact of the proposed measures on the application of competition law.

In the second meeting CONNECT, COMP, TAXUD and SANCO participated. The main issues raised were the need to clarify the presentation of the key issues for the benefit of outsiders. COMP pointed out that the potential interaction with competition law enforcement should be considered.

In the last meeting CONNECT, SG, COMP, TAXUD and SANCO participated. The main issues raised were presentational improvements, a more detailed impact analysis of the choice of soft law (Recommendation) and clarifications that the approach does not prejudice competition law enforcement. The members of the group then gave their agreement in principle to submit the revised draft Impact Assessment to the Impact Assessment Board subject to any changes made to take into account of the comments given during the meeting and written comments submitted by COMP and by SG. On 30 October 2012 the members of the group gave their final approval to submit the revised Impact Assessment to the Impact Assessment Board.

1.5. Impact Assessment Board

On 23 November 2012 the Impact Assessment Board (IAB) issued its final opinion on the current IA. The IAB recommended several improvements that are all included in this final IA report. Following the suggestions of the IAB, the report has been improved in terms of: presentation of the policy context, improving the problem definition and the explanation of the underlying causes, as well as of the internal market dimension of the current problems. Further, more details have been provided on comparisons between Europe and other parts of the world, on the role of key market players in Europe and on the impact of the Regulatory Framework, in particular since its revision in 2009. The baseline scenario has been strengthened, including by assessing the impact of other initiatives at Union and Member State level, such as the BEREC 2012 CPs, and of the evolution of demand. The definition of

the objectives has been improved by presentation in 'SMARTer' terms, for better clarity regarding problems, options and intended results. The report, and in particularly the quantitative assessment, provides a more balanced assessment of relevant costs and benefits of the various options underpinned by evidence, in particular with respect to expected price changes. Finally, the report has been improved to better reflect the views of stakeholders particularly in the discussion of the options and when their views are divergent or conflicting.

2. PROBLEM DEFINITION

2.1. Lack of regulatory consistency and predictability across Europe

In the two areas of interest for this report - the approach of NRAs when imposing on SMP operators access price-setting as well as non-discrimination obligations - the Commission has witnessed significant variations which were not always justified by differences in national circumstances, despite the development of Commission decisional practice[22] and the publication of the NGA Recommendation by the Commission.

The main underlying cause of this differential pattern and intensity of non-discrimination and access price-setting is largely linked to the level of discretion enjoyed by the national regulatory authorities, their technical and institutional capacity, and the national market structure. Sector regulation is indeed perceived by market players as being too focussed on national markets. As a result, the potential market for pan-European products and services faces many of the same problems that are regulated at the national level.

Regulatory heterogeneity substantially decreases the benefits which the internal market could deliver. It prevents national markets from opening up further and it increases uncertainties for entrepreneurs at various levels in the supply chain, preventing them from attaining economies of scale throughout the supply chain. The "Cost of non-Europe" study[23] commissioned by the Commission also puts forward the discrepancy between the capacities of NRAs to incorporate long term market dynamics in the regulatory market analyses as another problem driver in terms of regulatory heterogeneity. With respect to the regulation of NGA, this may hamper the sustainability of competition, create legal uncertainty for market players, and reduce the incentive to invest in NGA. This is not only counterproductive in realising the DAE broadband targets; it also prevents the materialisation of the full potential of pan-European scale economies in next generation services.

In defining an appropriate consistent Union regulatory approach to access price setting, the Commission must allow for sufficient flexibility to ensure that specific national circumstances can be taken into account. There are indeed other underlying causes to the inconsistency in regulatory outcomes that cannot so easily be tackled. These concern for example different cost structures, historical developments or regulatory policy choices, population density, labour costs, market maturity. A Union regulatory approach to consistent price regulation should therefore focus on guaranteeing that a common costing methodology is used consistently across Europe so that any price difference can easily be detected, and explained,

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22 Through the Union consultation process, the so-called 'Article 7 procedure'.

23 'Steps towards a truly internal market for e-communications in the run up to 2020', by Ecorys, TU Delft and TNO, Rotterdam, 14 November 2011.

on the basis of objective national specificities, both by market players and the regulatory community.

Regulatory inconsistency across Europe hampers the development of the internal market for electronic communications. It makes it more difficult for market players to operate across borders within the Union and benefit from economies of scale that allow them to invest in next generation broadband networks. These networks are key to meeting the Digital Agenda broadband targets and for Europe to maintain its competitiveness on the global scale. Regulatory inconsistency in these two crucial areas of regulation is further explained in the next two sections.

2.1.1. Inconsistent application of the non-discrimination obligation across Europe

Discriminatory behaviour can often be observed in a market characterised by the presence of a dominant operator[24]. It tends to take both the form of price or non-price discrimination.

Non-discrimination as an *ex ante* obligation is imposed by an NRA on an SMP operator in a binding decision. It is designed to promote competition on a forward looking basis, ensuring consumer benefits and to avoid a distortion or restriction of competition. It must be devised in an appropriate manner to tackle the market situation effectively. In line with the whole discipline of market regulation, it seeks to prevent discriminatory behavior from the outset, and therefore should be seen as a tool to create the conditions for proper competitive dynamics.

The Regulatory Framework leaves considerable room for interpretation and a margin of discretion for the individual national regulators in this area. National regulators have, initially, focussed their main attention on tackling price discrimination by imposing obligations such as accounting separation or, under certain circumstances, in using margin squeeze tests in order to prevent excessive prices. However, cases of non-price discriminatory behaviour (e.g. quality discrimination, access to information, delaying tactics, undue requirements, strategic design of product characteristics etc.) are often more numerous and can be equally, if not even more, severe and are in general more difficult to detect. As a result, NRAs recently changed their focus and have begun to set out in more detail the type of non-discrimination obligations imposed on the SMP operator. On the other hand, there are still a number of cases where NRAs did not even impose a non-discrimination obligation at all, despite the fact that the Commission considered such obligations to be warranted and appropriate due to the prevailing market conditions.

There is thus a large variety of approaches currently applied by NRAs. This can lead to significant differences in the application of the obligation across the 27 Member States thereby creating barriers to the internal market. An overview of divergences in the application of the non-discrimination obligations as experienced by the Commission can be found in Annex 1.

[24] According to competition law, any agreement, decision or concerted practice which includes joint intention of undertakings to conduct themselves in the market in an uncompetitive manner, falls under Article 101 of the TFEU. Moreover, decisions taken under Article 102 of the TFEU relative to price discrimination are addressed to undertakings which have abused their dominant position and are case specific. The imposition of behavioral and even structural obligations on the undertaking which was found to abuse its dominant position under Article 102 of the TFEU is possible.

2.1.2. Inconsistent application of the cost orientation obligation across Europe

Price regulation based on cost orientation on the wholesale access market has proven to be an appropriate obligation where SMP cannot be expected to erode within a reasonable period. This obligation aims at (i) mimicking an effectively competitive market performance by promoting downstream competition and (ii) ultimately benefitting consumers, while (iii) giving the appropriate investment signals.

When setting cost oriented access prices, NRAs can use different *cost models,* e.g. fully distributed costs (FDC)[25] or long-run incremental costs (LRIC)[26]. These can be combined with different *modelling approaches*, e.g. top-down, bottom-up[27], or a hybrid model to reconcile the two.[28] Within these models, NRAs can make use of different *asset valuation methods,* e.g. historic costs[29] or current costs[30]. Each regulator must make a methodological choice on each of these elements when estimating the cost of the wholesale services provided by the SMP operator to third-party access seekers.

Choosing the right costing methodology for setting wholesale access prices is particularly important in the context of recent market developments. On the one hand, the issue of incentives to invest in new NGA networks (capable of contributing to the Digital Agenda for Europe targets) is critical because of the lack of investments and the resulting limited roll-out of NGA infrastructures (as further discussed below). A network requires considerable investments and involves a significant risk which should be duly remunerated. These considerations would argue in favour of the use of current cost methodologies. On the other hand, models based on current cost methodologies[31] imply relatively high access prices (and

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25 Under FDC, all costs, including joint and common costs, are fully allocated to all the operator's services/products according to a specified distribution/allocation key. Therefore, the costs of a given service/product are composed of direct volume-sensitive costs, direct fixed costs and a share of joint and common costs.

26 The LRIC approach would calculate the incremental costs (including a reasonable rate of return) which the SMP undertaking incurs when providing an additional wholesale access service to independent retail undertakings (including its own retail arm). In the long term, all costs are considered to be variable because the production capacity is not a constraint (as it is the case in the short term). Therefore, LRIC includes capital and the volume-sensitive costs resulting from a substantial change in production.

27 The bottom-up (BU) approach develops the cost model on the basis of the expected demand in terms of subscribers and traffic and sets the network design and estimates the related costs on the basis of a network engineering model. In a top-down (TD) model the starting source of information is the cost actually incurred by the operator derived from the operators' accounts.

28 E.g. some NRAs use a hybrid TD-BU modelling approach, i.e., whilst taking account of actually incurred costs, adjustments are made for efficiencies.

29 Historic costs reflect the cost at the time of purchasing the asset. Historic cost accounting (HCA) is a specific method for applying historic costs in which accounting depreciation (e.g. straight line depreciation) is applied to derive the annual capital cost.

30 Under current costs various valuation methodologies can be identified: (i) replacement cost (i.e. the cost of replacing the existing cost with another of similar performance characteristics), (ii) the realisable value (i.e. the amount which could be obtained from selling the asset) and (iii) economic value (i.e. the sum of the discounted flows that an asset is expected to generate). When applying current costs, the common practice is to value the assets at their replacement costs because they appear to be easier to both calculate and be verified by third parties.

31 Not only bottom-up or top-down LRIC models but also CCA FDC models.

low margins) for alternative operators. Indeed, access prices affect the ability of alternative access-based operators to compete on the basis of today's access products - which still mainly rely on copper networks - against SMP operators and alternative infrastructure-based operators in terms of speed[32] and prices.

In the frame of the transition from legacy copper networks to NGA networks, NRAs are reviewing their currently imposed costing approaches. The Commission has observed that not all NRAs respond to the technological and policy challenges in the same manner. They are not proposing the same costing methodology to set cost oriented access prices in the same regulated markets. The Commission has also observed that even when NRAs propose the same asset valuation method for the same access products, there are significant divergences in terms of implementation. An overview of divergences in the application of the cost orientation obligation as experienced by the Commission can be found in Annex 2.

Although underlying costs, which form the basis of a cost oriented pricing model, to a certain extent depend on competitive and structural national circumstances (e.g. infrastructure, market, and competition developments as well as geographical topologies, labour costs and inflation rates), the discrepancies in monthly average total costs per fully unbundled copper loop – which range from the extreme of €5.34 /month in Poland to €14.37 /month in Finland[33] - do not appear to be justifiable only on the basis of differing national specificities. Discrepancies in access prices alone are not a sufficient indicator of the lack of consistency in regulatory approaches. However, when considering countries where the conditions of competition are similar and whose labour costs are comparable, the local loop unbundling (LLU) price nevertheless vary significantly. An in-depth analysis of these divergences in wholesale LLU prices can be found in Annex 3. A costing methodology that would be applied consistently across the Member States would allow for the identification of those cost elements that are purely linked to national specificities and of those other cost elements that should in principle be similar across the EU.

2.2. The lack of regulatory consistency and predictabililty across Europe hinders the development of the internal market in electronic communications

The previously mentioned Cost of non-Europe study indicates that barriers to the internal market in electronic communications hamper the potential welfare gains for the overall economy. The main barriers perceived by stakeholders interviewed in the context of the study are inter alia (i) barriers stemming from regulatory uncertainty, which makes markets less attractive for entry and reduces incentives to invest; (ii) heterogeneity in the implementation of regulation, which forces multi-country operators to duplicate costs thereby limiting opportunities to realise economies of scale, and (iii) national orientation of sector regulation, which results in a lack of standardised wholesale offers fit for multinational corporations and thus increases the operating costs for multinational operators.

The Commission's experience described in the sections above reveals that regulatory obligations for non-discrimination and wholesale access price obligations, in particular cost orientation still vary considerably across Europe, even where the underlying market problems

[32] The Commission understands that the upgrade of cable TV networks to DOCSIS 3.0 allows very high broadband capacities (up to 100Mbps shared capacity albeit non-symmetric and non-dedicated).

[33] Full LLU Monthly Rental charge in October 2011 according to the Digital Agenda Scoreboard 2012.

are very similar.[34] These different regulatory approaches results in regulatory uncertainty in a time of transition for legacy to NGA networks, because where every NRA follows a different path to solving similar problems of transition, this creates a perception in the market that there is no robust and common response of the EU's regulatory community. These approaches also create heterogeneity and force operators to devise nationally orientated responses to individual national regulatory approaches, which limit the opportunities for realising economies of scale across the EU.

As stated in the Cost of non-Europe study, these perceived impediments to achieving a true single market in electronic communications come with a high cost: they hamper cross-border investment, reduce competition and impede innovation. The extent of this problem in terms of the lack of investment is further discussed in the next section.

2.3. Europe is lagging behind in next generation broadband rollout

The deployment of an NGA network requires considerable investments and involves a significant risk which should be duly remunerated. According to recent estimates[35], it could cost more than €200 billion to bring high speed Internet (with fibre to the home (FTTH)) to all Europeans in line with the agreed Digital Agenda targets.

The Digital Agenda Scoreboard[36] shows that some progress has been made in the deployment of fast (over 30 Mbps) and to a lesser extent of ultra- fast broadband lines (100 Mbps and above), which is mostly driven by cable upgrade (DOCSIS 3). However, the coverage of networks capable of providing speeds of 30 Mbps and above was only of 50% at the end of 2011[37]. Indeed, a survey[38] confirms that around 50% of Union homes (105 million) have NGA broadband available to them (i.e. speeds of at least 30 Mbps).

These figures show that the roll-out of NGA networks is still limited in most Member States and further substantive investments in NGA networks are needed in order to meet the two 2020 targets; the current NGA coverage (i.e. 50% households with at least 30 Mbps) represents only just over half the coverage required to fulfil the second key target (i.e. the entire Union to be covered by broadband above 30% by 2020) and is very far from fulfilling the third key target (i.e. at least 50 % take-up of broadband above 100 Mbps in the Union by 2020).

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34 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions on market reviews under the EU Regulatory Framework (3rd report) - Further steps towards the consolidation of the internal market for electronic communications (COM(2010) 271 final).

35 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - European Broadband: investing in digitally driven growth, Brussels, COM(2010) 472.

36 Telecommunication Markets and Regulatory Developments, Commission Services working document issued as part of the Scoreboard 2012, http://ec.europa.eu/information_society/digital-agenda/scoreboard/

37 Digital Agenda Scoreboard 2012. As stated above, the DAE targets include coverage of above 30 Mbps for all Europeans by 2020.

38 Broadband coverage in Europe in 2011, Mapping progress towards the coverage objectives of the Digital Agenda. Figures concern EU 27 + 2 (Norway and Iceland) for broadband services provided over NGA technologies (i.e. Cable TV upgraded to DOCSIS 3, VDSL and FTTP including FTTH and FTTB).

In addition:

- Most of the current NGA broadband connections in the Union are provided through cable networks where no further expansion is expected (only upgrade of current networks) and therefore their coverage remains and will in the future remain limited to the most urban areas.

- Investment in Fibre to the Premises (FTTP) networks has been so far very limited and is statistically most relevant in central Europe where the immediate need for high bandwidths is greatest because of the limitations of the traditional copper access networks, and where the most prevalent type of residential building (multi-dwelling units) is most favourable.

- As to investment in VDSL[39] networks, which is the most rapidly growing NGA technology in Europe, only a small group of the most urbanised countries have already achieved significant coverage: although six countries have around 40% coverage, another 13 countries still have limited VDSL coverage (ranging from 0.7% to 27%) and the 10 remaining countries have no commercial VDSL services on offer yet.

Moreover, the leading developed countries in Asia and North America are ahead of Europe with regard to the roll-out of fibre networks. According to recent studies[40]:

- Asia has the largest market for FTTX technologies, with the highest population penetration in Taiwan, Hong Kong and Japan. North America (US & Canada) also achieve good records in terms of NGA network coverage with nearly 50% of the fixed broadband market served by cable while the coverage of FTTH networks is expanding[41].

- Japan leads over Union countries, such as the UK, France, Germany, Italy, Spain, Ireland and Poland in terms of the availability of networks capable of delivering superfast broadband with 94% of premises having access to fibre-based broadband at the end of 2011. For the first time in 2011, other countries showed comparable levels of availability to those in Japan. The Netherlands was closest, with 91% of premises having access to a superfast cable broadband connection, whereas in Sweden, Canada and the US, at least 70% of premises were able to access superfast broadband services[42].

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39 Very-high-bit-rate digital subscriber line.

40 Similar results were already reported (e.g. Briglauer, W, Ecker, G & Gugler, K (2011): "Regulation and Investment in Next Generation Access Networks: Recent Evidence from the European Member States". Working Papers / Research Institute for Regulatory Economics, 2011,4. Forschungsinstitut für Regulierungsökonomie, WU Vienna University of Economics and Business, Vienna. Quoting: *"Whereas leading Asian countries such as Japan and South Korea already reached fibre coverage levels of round 35% by mid of 2011, some Eastern European and Scandinavian countries were lagging behind with coverage levels at 10 and 15%. The majority of countries (including e.g. Germany and United Kingdom (UK)) still show coverage levels of around 1%. NGA coverage in the United States (US) of ~ 7% was significantly above the average of the 27 European member states (EU27) of 4.7% by the mid of 2011".)*

41 Point Topic, World Broadband Statistics, Q2 2012.

42 International Communications Market Report 2012 Research Document produced by Ofcom published in 13 December 2012.

Besides the low coverage, the take-up of ultra-fast Internet access also appears to be limited. The superfast connections of 30 Mbps and above represent 8.5% of the fixed broadband connections whilst those above 100 Mbps remain very scarce, at 1.3 %[43]. Fibre broadband take-up was highest in Japan at the end of the year 2012, where 62.7% of fixed broadband connections were fibre-based. Japan, Sweden and the US were the only countries where more than 5% of broadband connections used fibre. In countries such as Germany, Ireland and Poland, less that 1% of connections used a fibre technology while in the UK, France, Italy and Spain this figure does not reach 3%[44].

2.4. Conclusion

Europe must step up its investments in broadband in order to keep its global competitiveness. Investment and competition are held back by legal uncertainty. Enhancing consistent and predictable regulation will render the regulatory environment more stable and contribute to overcoming the fragmentation of the internal market.

We conclude that we are lacking a stable and balanced regulatory approach to non-discrimination and costing methodologies that can be consistently applied across the EU. Such an approach would promote efficient investment, innovation in new and enhanced infrastructure (capable of contributing to the DAE targets) whilst ensuring effective competition on the broadband markets and allowing for sufficient flexibility to take into account national competitive and structural circumstances. A stable and transparent regulatory approach with regard to NGA will create the right eco-system to incentivise the development of next generation services capable of meeting consumers' increasing needs, both in the business and consumer segments across Europe.

The inconsistent application of these remedies creates legal uncertainty for all market players and barriers to the internal market. Legal certainty is particularly important against the background of current market developments where operators are starting to invest in NGA networks, the significant costs of which will require a long time to be recovered and for which demand is still uncertain. Without increased consistency through Commission guidance, the divergent regulatory approaches are likely to result in (i) a lack of clarity surrounding the scope of non-discrimination and wholesale access price regulation (in particular cost orientation obligations); (ii) a too lenient approach in some Member States towards the implementation of non-discrimination obligations resulting in an increased need for more intrusive regulation associated with higher regulatory costs; (iii) divergent approaches to costing methodologies; (iv) not providing the appropriate balance between safeguarding competition and fostering investment; and (iv) threats to the development of an internal market for electronic communication services and realising economies of scale across the borders of Member States.

The Commission has a role to play in realigning regulatory approaches across Member States to a competitive single market for electronic communications. The recently revised Regulatory Framework confirmed the central role of the Commission by giving it additional responsibilities related to the consistent imposition and implementation of obligations by

[43] Digital Agenda Scoreboard 2012. Commission Staff Working Document (section 2, page 5).

[44] International Communications Market Report 2012 Research Document produced by Ofcom published in 13 December 2012.

NRAs to enhance legal predictability for market players investing in telecoms across borders. The lack of internal market equally hinders investments and innovation, limiting the potential for realising economies of scale beyond national borders and increasing costs for multinational operators.

3. STAKEHOLDERS CONSULTATION

3.1. Who is affected by the problem?

The stakeholders affected by the inconsistent application of costing methodologies and non-discrimination obligations can be divided in four main categories:

- Network operators with significant market power;
- Access seekers and service providers;
- End-users (both businesses and consumers); and
- Public administration and specific authorities (NRAs, the Body of European Regulators of Electronic Communications - BEREC[45]).

3.2. Commission cooperation with the relevant BEREC Expert Working Groups (EWG)

The Commission services have worked and continue to work closely on the application of regulatory remedies with BEREC, which has provided highly valuable input to the Commission's ongoing evaluation of the implementation and enforcement of non-discrimination and cost orientation obligations. This impact assessment draws greatly on the work carried out by BEREC and in particular on the revised ERG Common Position on the approach to appropriate obligations ("Obligations" document)[46] and on the three Common Positions (CPs) covering key wholesale access products – wholesale unbundled access, wholesale broadband access and wholesale leased lines - developed by the ERG in 2006 and 2007[47], which have recently been reviewed.

3.2.1. BEREC EWG on Cost Accounting

The BEREC Regulatory Accounting Project Team has been reporting on the implementation of regulatory accounting systems in Member States with respect, amongst others, to NRAs'

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45 BEREC and its support Office were created to improve the consistency of implementation of the EU Regulatory Framework. BEREC is the successor of the European Regulators Group (ERG) which was set up by the Commission to provide a suitable mechanism for encouraging cooperation and coordination between national regulatory authorities and the Commission, in order to promote the development of the internal market for electronic communications networks and services.

46 ERG (06) 33.

47 ERG (06) 70 Rev 1 Common position on Wholesale local access; ERG (06) 69 Rev 1 Common position on Wholesale broadband access; and ERG (07) 54 Common Position on Best Practice in Obligations Imposed as a Consequence of a Position of Significant Market Power in the Relevant Markets for Wholesale Leased Lines.

cost orientation obligations to assist price control decisions. While the first Regulatory Accounting in Practice Report (2005) showed a range of accounting practices used across Europe, the 2006, 2007 and 2008 reports illustrated that a growing number of countries use current cost accounting (CCA) as the asset valuation method and long run incremental costs (LRIC) as the costing methodology to set telecoms access prices. The 2009 Report confirmed this trend albeit with signs of stabilisation.[48]

The 2010 and 2011 Reports confirm the trend towards using CCA and show a fairly even distribution of LRIC and FDC costing methologies being used by NRAs for the key wholesale acess markets, i.e. unbundled access, broadband access and terminating segments of leased lines. For wholesale line rental, FDC is the preferred costing methodology but historic cost accounting (HCA) and CCA are used in the same proportion to set the asset values.

3.2.2. BEREC EWG on Obligations (Non-Discrimination and pricing amongst others)

In 2012, BEREC decided to update the above-mentioned CPs in relation to non-discrimination, access (including issues relating to NGA), pricing and other issues since the above mentioned three markets remain key bottlenecks and thus susceptible to *ex ante* regulation. BEREC carried out a public consultation and adopted revised CPs on wholesale local access (WLA), wholesale broadband access (WBA) and wholesale leased lines (WLL) at the BEREC Plenary on 7 December 2012[49]. BEREC shares the Commission's desire to provide the market with clear, coherent and predictable regulatory signals, and recognises these are the necessary conditions for enabling investment in high-speed broadband networks in Europe. BEREC states that it is also mindful of the need to ensure that the competitive gains made over the last ten years are not lost in the process of securing investment.

3.3. Meetings with interested parties

During the preparation of the Commission's proposal for a Recommendation on both costing methodologies for key wholesale access products and non-discrimination, the Commission services held numerous meetings with the main stakeholders, in particular BEREC, individual NRAs, industry associations representing both incumbent operators (e.g. ETNO) and new entrants (e.g. ECTA) and a large number of telecom operators to collect their views and suggestions.

3.4. Public consultation

On 3 October 2011, the Commission launched two eight week EU-wide public consultations, one on costing methodologies for key wholesale access prices and one on the application of non-discrimination obligations, in electronic communications as the Commission services initially considered issuing two separate Recommendations. However a holistic approach to the issues of non-discrimination and wholesale access prices through a single Recommendation was considered a superior policy option because it allows to better signify and reap the potential benefits of the recommended approaches. The content and the

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48 The Commission services participate in the Regulatory Accounting Project Team's work since 2009.

49 http://berec.europa.eu/eng/news_consultations/whats_new/1274-the-revised-berec-common-positions-on-wholesale-local-access-wholesale-broadband-access-and-wholesale-leased-lines

principles discussed in the two public consultations remain valid in the case of a single Recommendation.

3.4.1. Costing methodologies

The questionnaire put to public consultation was intended to stimulate an open and wide-ranging debate on the principles of costing methodologies with the objective of providing Union guidance to NRAs on how to set wholesale access prices in the transition period from copper to fibre-based networks, as announced in the DAE. The questionnaire broadly put forward the problem definition, the legal context, which access products could be addressed by the forthcoming Recommendation, possible cost models, modelling approaches and asset valuation methods including replicability considerations. The questionnaire also suggested access pricing to foster investment in NGA networks, allowing on the one hand for higher cost oriented copper prices in return for NGA network investments, i.e. an average of copper and fibre prices which would increase with fibre investment or equal copper and fibre prices, and on the other hand a downward glide-path towards cost oriented copper prices in the absence NGA network investments.

The Commission received 60 responses to the public consultation.[50] An overview of the responses to the public consultation can be found in Annex 4.

3.4.2. Non-discrimination

The questionaire on the application of a non-discrimination obligation invited comments of interested parties on a wide range of issues surrounding non-discrimination. These issues for the public consultation were structured along the main themes for discussion: general principles; scope of non-discrimination in the Access Directive; application and monitoring; enforcement; and functional separation. The Commission had put forward a number of questions on the general need for Commission guidance in the area of *ex ante* non-discrimination obligations, the advantages and disadvantages of a stricter (precise, detailed) or more flexible (general, broad) European approach to non-discrimination obligations, the merits of various equivalence models, advantages and disadvantages of common (comparable) measuring and monitoring tools (KPIs, KPOs, SLAs, SLGs), non-discrimination in the broader context of migration towards NGA networks, and functional separation.

The Commission received 47 responses to the public consultation.[51] An overview of the responses to the public consultation can be found in Annex 5.

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50 The non-confidential submissions of the stakeholders within the public consultation were posted on the Web site on 16 December 2011:

http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/cost_accounting/index_en.htm

51 The non-confidential submissions of the stakeholders within the public consultation were posted on the Web site on 16 December 2011:

http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/non_discrimination/index_en.htm.

3.5. Technical meetings with NRAs and BEREC and BEREC Opinion

3.5.1. Costing methodologies

On 10 November 2011, the Commission services organised a technical meeting on costing methodologies for key wholesale access products. In total, 50 representatives from 23 Union NRAs, BEREC, the EFTA Surveillance Authority and representatives from other non-EU regulatory authorities participated in the meeting.

The participants did not have an official single view on the issues raised in the public consultation. They mainly raised the need to further assess to which extent price differentials stem from national specificities or from the inconsistent application of costing methodologies and emphasized that any proposed costing methodology should respect the principle of technological neutrality and avoid promoting a particular network roll-out. Some NRAs considered that a 'retail minus' approach could be sufficient in the light of increasing competition, others mentioned that the use of CCA does not always lead to increasing (copper) access prices. The *replicability considerations* put forward appeared to leave some scope for interpretation. As to the *pricing scheme fostering investment in fibre networks*, NRAs mainly indicated that (i) it should also foresee a scenario in which alternative operators, and not (only) the incumbent, roll-out the fibre network, (ii) it could create further price divergences within and between countries and (iii) it might not protect consumers if the existing services are priced higher.

3.5.2. Non-discrimination

On 11 November 2011, a half day technical meeting for regulatory experts from the NRAs was held on the application of a non-discrimination obligation. More than 40 participants from BEREC, 23 Union NRAs, the EFTA Surveillance Authority and representatives from other non-EU regulatory authorities attended the meeting.

The representative of BEREC welcomed the proposal from the Commission services to issue guidance on non-discrimination underlining that such guidance should maintain some flexibility for them in order to adapt regulation to their national circumstances.

In addition to these technical workshops, the Commission services organised meetings with individual NRAs in order to acquire first-hand information on their regulatory practice, on implementation issues and likely obstacles in the Member States.

3.5.3. BEREC Opinion

Pursuant to Article 19 of the Framework Directive, the Board of BEREC adopted on 26 March 2013 an opinion on the draft Recommendation. BEREC indicated that they share the Commission's objectives as set out in the draft Recommendation, i.e. not imposing wholesale access price obligations for NGA services if effective non-discrimination and sufficient competitive constraints are ensured, ensuring predictable and stable regulated wholesale copper access prices, and ensuring a level playing field between the SMP operator and alternative operators through the implementation of effective and proportionate non-discrimination obligations. BEREC regards these objectives as critical building blocks for European regulation. BEREC further commented that NRAs should retain their flexibility to apply their judgement and rely on their expertise and experience of the particularities of their

national markets, when deciding how best to apply the available regulatory tools in the pursuit of these objectives. To that end, BEREC asked in particular the Commission to clarify, on a number of points, in the final text of the Recommendation that the implementation of the recommended approach remains subject to a proportionality analysis, leaves some leeway to the NRAs and avoids inconsistencies with previous Commission guidance.

The Commission has taken utmost account of BEREC's Opinion and modified the draft Recommendation to the largest extent possible.

4. WHY IS PUBLIC INTERVENTION AT UNION LEVEL NECESSARY TO ENSURE CONSISTENT PRO-INVESTMENT REGULATION WITHIN EUROPE?

As set out in sections 2.1 and 2.2, there are persisting divergences in the application of non-discrimination and wholesale access price obligations across the EU, resulting in risks of not consolidating the single market for electronic communications and of hampering investment in innovative networks and services.

The Regulatory Framework highlights the need for public intervention, in particular to give guidance to national regulators, to ensure that in similar circumstances similar rules apply. This need was confirmed in the DAE which stated that the Commission will prioritise the provision of guidance on key regulatory concepts under the electronic communication rules, in particular costing methodologies and non-discrimination, thus increasing legal certainty across the EU.

During the stakeholders' consultations, Member States, NRAs and operators have asked the Commission to clarify and/or to provide further guidance on the application of non-discrimination, and wholesale access price obligations.

On costing, the Commission issued in 2005 a Recommendation on accounting separation and cost accounting systems[52] to improve transparency at Union level. This Recommendation does not, however, recommend a specific costing methodology NRAs should apply. In addition, the evolution of the markets over the past years has created the conditions for a new, enhanced approach. This was recognised by the Union legislator in the Better Regulation Directive of 2009[53] which notes the continued lack of an internal market for electronic communications and the need for further action.[54] Any new initiative on obligations that

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52 Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC), OJ L266/64 (11/10/2005).

53 Directive 2009/*140*/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services OJ L 337, 18.12.2009, p. 37–69.

54 *[…] Monitoring of the market by the Commission and, in particular, the experience of the procedure under Article 7 of Directive 2002/21/EC (Framework Directive), has shown that inconsistencies in the national regulatory authorities' application of obligations, even under similar market conditions, could undermine the internal market in electronic communications.*

affect broadband connectivity must also take into consideration the technological changes in this area as marked by the European legislator in the Better Regulation Directive.[55]

4.1. Can the Union act - principles of subsidiarity and proportionality

The internal market is an area where the Union and Member States share competences[56]. Article 5 of the TFEU sets out that the use of Union competences is governed by principles of subsidiarity and proportionality. The principle of subsidiarity allows Union action to be expanded where circumstances so require, subject to a requirement of a legal basis and to the principle of proportionality, i.e. the expansion of the Union action must seek to achieve objectives of the Treaties and must be necessary for achievement of the intended aim.

4.1.1. The objectives of proposed action cannot be sufficiently achieved by the Member States

In this case, the principle of subsidiarity dictates that action be taken at Union level since the objectives stemming from the Treaty cannot be sufficiently achieved by the Member States alone.

The creation of an internal market for electronic communications is a fundamental objective as stated above. The development of the internal market for electronic communications services requires a consistent regulatory approach that spans across Member States. Ineffective application of non-discrimination and wholesale access price obligations in SMP markets has transnational aspects which cannot be addressed satisfactorily by individual Member States alone. Each Member State, through its NRA, only has jurisdiction to impose and enforce non-discrimination and wholesale access price obligations within its territory and is therefore not best placed to take into account the general interest of all Member States. No single NRA, acting on its own, can assure sufficient consistency of regulatory measures across the EU. The experience up to now indicates that continued individual action by Member States would not be sufficient to lift the existing obstacles for the development of the internal market.

This structural limit was highlighted by the Commission in proposing the Better Regulation Directive, when it stated[57] that the implementation of the Union rules via 27 separate national regulatory systems has resulted in two major drawbacks: the artificial segmentation of markets on a national basis and a fundamental lack of consistency in the way the Union rules are applied. Individual non-coordinated actions by Member States might hamper further development of the internal market and create obstacles to the internal market since European

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55 *In order to achieve the goals of the Lisbon Agenda, it is necessary to give appropriate incentives for investment in new high-speed networks that will support innovation in content-rich Internet services and strengthen the international competitiveness of the European Union. Such networks have enormous potential to deliver benefits to consumers and businesses across the European Union. It is therefore vital to promote sustainable investment in the development of these new networks, while safeguarding competition and boosting consumer choice through regulatory predictability and consistency.*

56 Article 4(2)(a) TFEU.

57 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and The Committee of the Regions - Report on the outcome of the Review of the EU regulatory framework for electronic communications networks and services in accordance with Directive 2002/21/EC and Summary of the 2007 Reform Proposals, Brussels, 13.11.2007 COM(2007) 696.

service providers and consumers would be treated differently in various Member States. Further co-ordination at Union level is therefore required.

Lack of EU action would conflict with the requirement of the TFEU, stipulated in Article 114 TFEU, which requires the Union to adopt approximation measures for the establishment and functioning of the internal market. This general principle is reflected in the Commission's power to issue Recommendations or decisions pursuant to Article 19 of the Framework Directive, on which basis the Commission proposes to act. The discrepancies highlighted in the problem definition and the resulting fragmentation of the internal market along national or sub-national lines represent an obstacle to the internal market, giving therefore rise to an obligation to increase the level of approximation of regulatory rules in accordance with Article 114 TFEU.

Action at Union level through a Commission Recommendation would enable a Union-wide approach, which would increase clarity and predictability of regulatory action across Member States, representing a clear benefit compared with action at the level of each individual Member State. Such benefit would be both in terms of scale - i.e. predictable rules would affect the internal market as a whole, not just its national sub-parts - and effects - given that the Recommendation does not aim to neglect the experience and specific knowhow that each NRA has of its national circumstances, but rather to establish a supra-national approach that takes into account technological development and the promotion of competition. It will still be for the NRAs to apply the general approach to the specific circumstances of the sectors in the markets they regulate.

4.1.2. Action at Union level is proportionate to achieve the objectives

The proposed action is proportionate because it does not exceed what is necessary to achieve the objectives of the Treaties – in particular as set in Article 114 TFEU and in the Regulatory Framework, specifically Article 19 of the Framework Directive. A recommended common approach across all Union Member States concerning non-discrimination and wholesale access price obligations will help to effectively achieve:

(i) the policy objectives laid down in the Regulatory Framework, in particular Article 8 of the Framework Directive which:

- requires NRAs to promote competition in the provision of electronic communications services, i.e. to ensure a level playing field for competitors and, ultimately, maximum benefits for consumers;
- aims to contribute to the development of the internal market by *inter alia* requiring the establishment of consistent regulatory practice and consistent application of the Regulatory Framework;
- recognises the promotion of the interests of the citizens of the European Union as another key policy objective of the Regulatory Framework.

(ii) the regulatory principles laid down in the Regulatory Framework, in particular Article 8 of the Framework Directive which:

- requires to apply objective, transparent, non-discriminatory and proportionate regulatory principles by *inter alia* (a) promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods, (b) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings

providing electronic communications networks and services, (c) safeguarding competition to the benefits of the consumers, and (d) promoting effective investment and innovation in new and enhances infrastructures, while ensuring that competition and the principle of non-discrimination are preserved. This latter regulatory principle is fully consistent with the call made in the Digital Agenda for Europe, to enhance the availabilty of enhanced broadband for European citizens.

The action is necessary to achieve the desired end: an improved, consistent regulatory approach to non-discrimination and regulated wholesale access pricing obligations to develop the internal market for electronic communications and boost investments in NGA networks to meet the Digital Agenda broadband targets. The current regulatory tools have so far not been sufficient to eliminate the problems highlighted in the problem definition.

The measure is suitable for the achievement of the Treaty-based objectives: this is demonstrated by the positive effect that similar Recommendations in other product markets have had, e.g. Recommendation on Fixed and Mobile Termination Rates or the NGA Recommendation.

5. DEFINITION OF THE POLICY OBJECTIVES

5.1. General objectives

The current initiative has its roots in the EU 2020 Strategy[58], which aims at turning Europe into *'a smart, sustainable and inclusive economy delivering high levels of employment productivity and social cohesion',* and in the Digital Agenda for Europe, one of the building blocks of the EU 2020 Strategy, which aims at *'delivering sustainable economic and social benefits from a Digital Single Market based on fast and ultra-fast Internet and interoperable applications'*. The general policy objectives, which this initiative aims to pursue, flow directly from Article 8 of the Framework Directive:

- *Objective 1: Contributing to the development of the internal market for electronic communications networks and services*;
- *Objective 2: Promoting competition in the electronic communications sector for the benefits of consumers and citizens*;
- *Objective 3: Promoting efficient investment and innovation in new and enhanced infrastuctures in the electronic communications sector*.

5.2. Specific objectives

Specific objectives are derived for each of the above main general objectives:

- Objective 1(a): Establishing a consistent regulatory practice and the consistent application across the Union of non-discrimination obligations and of costing methodologies.
- Objective 1(b): Removing obstacles to the provision of pan-European

[58] Communication from the Commission: Europe 2020 – A strategy for smart, sustainable and inclusive growth, COM (2010) 2020 of 3rd March 2010.

electronic communications services.

- Objective 2(a): Creating a level playing field by avoiding distortion and restriction of competition in the sector through improved enforcement of non-discrimination and costing obligations.
- Objective 2(b): Allowing consumers to benefit from greater choice in terms of innovative and affordable services.
- Objective 2(c): Ensuring transparency.
- Objective 3(a): Fostering NGA roll-out and development of new and innovative services.
- Objective 3(b): Creating an investment friendly environment through creating increased regulatory predictability.
- Objective 3(c): Strengthening the competitiveness of the Union industry.

5.3. Operational objectives

For each of the specific objectives presented above, a number of operational objectives are identified:

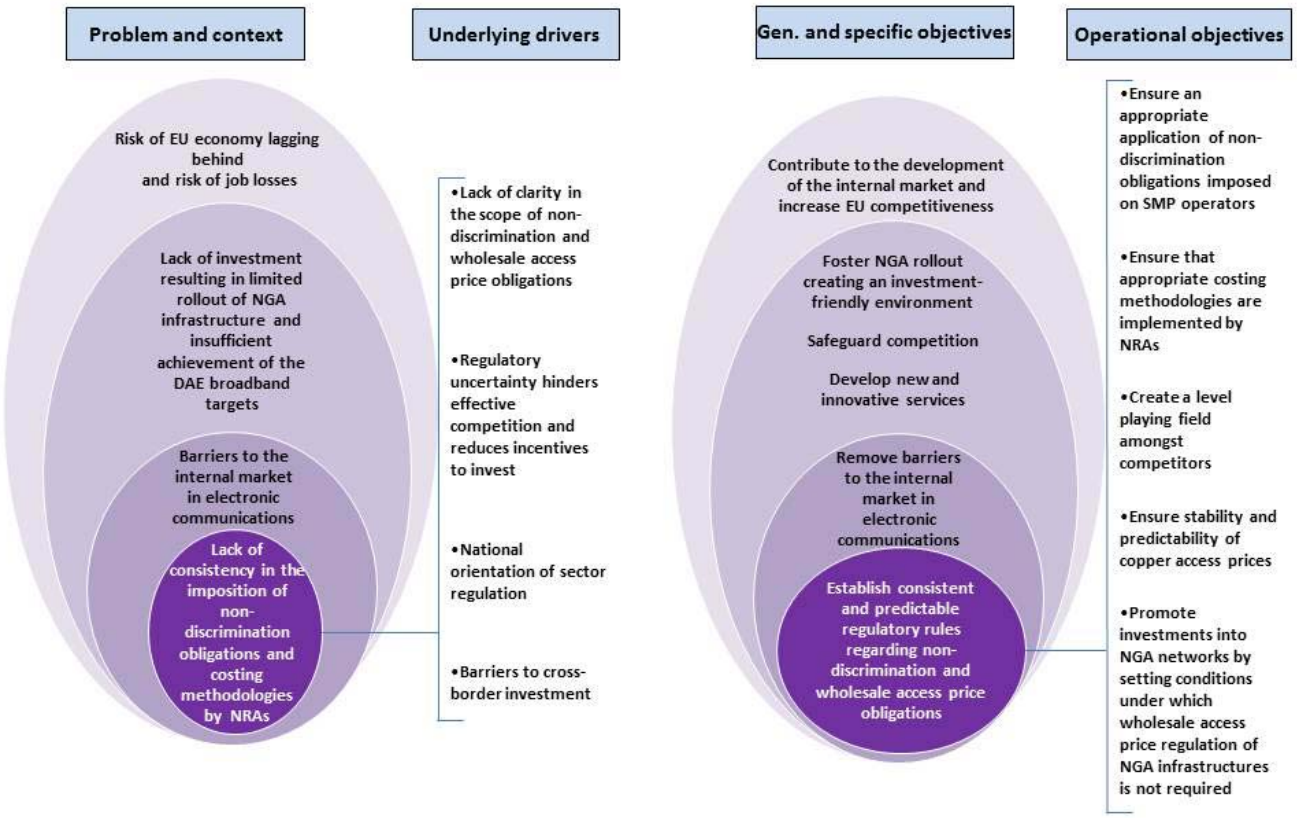
Specific objective	Operational objectives
Objective 1(a): Establishing a consistent regulatory practice and the consistent application across the Union of non-discrimination obligations and of costing methodologies.	• Ensure that the most effiecient non-discrimination obligation is imposed on SMP operators in terms of sustaining and furthering competition; • Foster the consistent implementation of non-discrimination obligations in all Member States, i.e. ensure that similar regulatory approaches towards non discrimination are applied in similar circumstances; • Ensure that a future proof costing methodology which can produce transparent regulated access prices is applied by NRAs; • Ensure regulatory consistency of costing methodologies in all Member States i.e. guarantee the similar treatment of similar regulatory issues.
Objective 1(b): Removing obstacles to the provision of pan-European electronic communications services.	• Diminish the regulatory burden on operators by allowing them to be subject to predictable and consistent regulatory approaches across the Union to facilitate cross-border investment.

Objective 2(a): Creating a level playing field through avoiding distortion and restriction of competition in the sector by improved enforcement of non-discrimination and costing obligations.	•	Improve the prevention of discriminatory behaviour by SMP oprerators so that alternative operators benefit from improved market conditions, which allow them to better compete with vertically integrated SMP operators and other alternative operators/platforms in the relevant markets;
	•	Ensure that regulated access prices are send the correct build-or-buy[59] signals to all market players.
Objective 2(b): Allowing consumers to benefit from greater choice in terms of innovative and affordable services.	•	Ensure that consumers are able to reap the benefits of increased competition, in terms of enhance end-user choices, innovative services and affordable prices.
Objective 2(c): Ensuring transparency.	•	Improve transparency for stakeholders, in particular for SMP operators and alternative operators in terms of regulated access conditions and prices to foster a level-playing field in using/acquiring infrastructure access products.
Objective 3(a): Fostering NGA roll-out and development of new and innovative services.	•	Ensure that regulation appropriately takes account of the NGA investments required and of the risk inherent to such investments;
	•	Ensure that regulation facilitates end-user take-up of new services.
Objective 3 (b): Creating an investment friendly environment through creating increased regulatory predictability.	•	Ensure predictability of access prices to promote investments in NGA.
Objective 3(c): Strengthening the competitiveness of the Union industry.	•	Ensure that Union industry remains competitive vis-à-vis its international partners;
	•	Contribute to achieving the DAE broadband targets in terms of speed, coverage and take-up.

[59] If operators were able to provide the service more efficiently (i.e. at a lower cost), they would 'build' it themselves, otherwise operators would buy it from the dominant operator.

5.4. Logic of Intervention

The graph below illustrates a summary of the logic of intervention, starting from the problem definition and concluding with the definition of set objectives.



Policy options

For the purposes of this impact assessment we have identified four main potential approaches for addressing the problems highlighted in previous sections, which are:

(1) Business as usual: This option consists in maintaining the status quo. No Commission Recommendation would be adopted. The Commission would continue to provide case by case guidance under the so called 'Article 7 notification procedure', NRAs therefore would continue (i) applying non - discrimination obligations on a more general (usually not very strict) basis and (ii) adopting diverging regulatory measures as wholesale price regulation.

(2) Stricter regulatory approach: This option is the most far-reaching in pursuing the best conditions possible for access seekers. It would recommend a range of very detailed provisions regarding the application and enforcement of non-discrimination obligations and a costing methodology for access to legacy copper

networks that would result in significant price reductions in several Member States.

(3) Targeted regulatory approach: This option aims at striking the balance between ensuring that all market players (including the SMP operator, access-based alternative operators as well as alternative operators that have their own infrastructure) have a level playing field, whilst ensuring that operators that invest in NGA have certainty of an adequate return on their investment. It would recommend that NRAs implement sufficient non-discrimination safeguards coupled with a costing methodology ensuring price stability for legacy (copper) infrastructure, thus providing a strong competitive constraint so that there is no need to impose wholesale price regulation for NGA networks.

(4) Light touch regulation: This option is the most far-reaching in protecting the future revenues of the SMP operators in order to ensure sufficient returns on their investments, but to such extent that it would compromise competitive conditions in the market. It would recommend general non-discrimination principles and the removal of the cost orientation obligation for NGA networks, as well as a costing methodology for access to legacy copper networks that would result in significant price increases in several Member States.

We have assessed but discarded the option of adopting a binding legal instrument, such as a directive or a regulation. Whilst this option would have brought greater legal certainty, it would have taken time to prepare, adopt and implement. Acting rapidly is of the essence, given that the electronic communications markets in the Union are at a crucial stage in the transition towards NGA.

Furthermore, Article 19 of the Framework Directive grants the Commission the power to adopt a recommendation or, subject to certain conditions, a decision on the harmonised application of the provisions in the Regulatory Framework, where it finds that divergences in the implementation by the NRAs of the regulatory tasks specified in the Regulatory Framework may create a barrier to the internal market, taking into utmost account the opinion of BEREC. When the Commission issues a recommendation pursuant to Article 19, Member States are obliged to ensure that national regulators take utmost account of it in carrying out their tasks. Ultimately, through the Article 7 process, the Commission will monitor and assess the appropriateness and proportionality of the measures proposed by NRAs.

A recommendation with a strong legal basis in Article 19 of the Framework Directive was considered to be the most appropriate instrument to meet the objectives in a reasonably short timeframe.

A recommendation under Article 19 of the Framework Directive would be without prejudice to the way in which similar concepts and legal principles are understood and implemented under Union competition law enforcement.

Each of the above four options must be considered as a "package" that mirrors the positions that have been put forward by different stakeholders with sometimes opposite interests. Therefore each option is coherent in its combined effect.

5.5. Option 1: Business as usual

Under the first option the Commission would refrain from setting out any additional guidance to NRAs in a Commission Recommendation on how they should impose remedies of non-discrimination and cost orientation on operators that have SMP. It would rely on NRAs to apply the provisions of the existing framework without additional guidance aside of the guidance already given in the Commission's Article 7 cases and in the NGA Recommendation.

Under this option, NRAs would be left with a wide margin of discretion as to how to apply or enforce non-discrimination obligations. This would include discretion as to whether and, if so, how to ensure equivalence of access or replicability and whether or not to make use of Key Performance Indicators (KPIs). In essence, this option would maintain the NRAs' flexibility to impose any equivalence model, i.e. either Equivalence of Output (EoO) or Equivalence of Input (EoI)[60] or, indeed, no specific equivalence model at all.

As regards price control, the Commission would, in this scenario continue to provide additional guidance through the Article 7 notification process, by assessing on a case-by-case basis the draft measures proposed by NRAs to set, where appropriate, cost oriented access prices rather than providing an overall uniform guidance. However, its ability to press for a more coherent costing approach across the Union would be limited.

NRAs would take utmost account of BEREC's 2012 CPs. However, as stated by BEREC in the cover letter to the CPs, these "are based on the collective past experiences of BEREC members, they are different in nature to the Commission's draft Recommendation, which is forward-looking. Furthermore, the CPs are different in scope to the draft Recommendation. They cover best practices in the areas of access, transparency, migration, pricing as well as non-discrimination, and do not include the detailed costing issues", which on the other hand would be covered in a Commission Recommendation[61]. The likley combined effect of the BEREC CPs would therefore not change the scope of the baseline scenario described above.

In summary, option 1 would maintain the status quo and would not envisage any further guidance from the Commission on the implementation of these remedies.

5.6. Option 2: Stricter regulatory approach (reinforced and detailed non-discrimination and costing remedies, reducing price for copper access)

Under this option the Commission would recommend that NRAs impose a stricter regulatory intervention both when imposing non-discrimination and cost orientation obligations on SMP operators, as follows:

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60 These terms are explained in Annex 12.

61 Cover note to the revised BEREC Common Positions on wholesale local access, wholesale broadband access and wholesale leased lines,

http://berec.europa.eu/files/document_register_store/2012/12/BoR(12)125a_CP_Cover_note_final_CLEAN.pdf

(i) the Commission's Recommendation would prescribe strict non-discrimination principles aiming at ensuring a homogeneous implementation of the non-discrimination remedy by NRAs throughout the EU; and

(ii) it would recommend that NRAs prescribe cost orientation obligations and costing methodologies for both copper and NGA networks, leading to lower prices for copper.

5.6.1. A reinforced non-discrimination obligation

According to this prescriptive approach, the Commission would set out in a Recommendation a range of very specific and detailed non-discrimination measures, which NRAs would be asked to implement in order to apply and enforce non-discrimination obligations in the same way throughout the EU. Under this approach, the required involvement of NRAs, for example through prescribing network architectures, the technologies and the quality of services conditions for providing electronic communications services would be far-reaching.

Under this option it would be recommended that NRAs implement EoI by default for the main SMP access products. Furthermore NRAs would be asked to control *ex ante* the design of new wholesale products that SMP operators offer to access seekers, i.e. NRAs would ensure that the SMP operators' wholesale products are designed in a way which does not result in a competitive disadvantage for alternative operators or which has a negative impact on the functionality of the access seekers' products. For that purpose, NRAs could consider prescribing certain network designs and topologies (e.g. connection points or backhaul options for new wholesale products and ancillary services). Also, as suggested by some stakeholders, the Commission's Recommendation would prescribe an extensive list of detailed and uniform KPIs, which should be applied in all Member States.

This approach would also require NRAs to set detailed rules as to the competitive conditions for the launch of new services by the vertically integrated SMP provider. In this respect NRAs would oblige the SMP operator to make available new wholesale broadband access products sufficiently before the SMP operator or its retail subsidiary markets its own new retail services. Such lead times would be identified *ex ante* and prescribed in detail by the NRA. The SMP operator would be obliged to notify the NRA of its plans prior to the launch of a new or modified offer for consumers at the retail level, in order for the NRA to assess whether a retail offer can be competitively provided by other operators as well on the basis of the SMP operator's wholesale input.

5.6.2. Strict cost orientation obligation resulting in low access prices

In addition to the approach on non-discrimination set out above, option 2 recommends the use of two different cost models for copper and NGA networks: (i) a top-down Fully Distributed Cost (TD FDC) model for copper; and (ii) a bottom up long run incremental cost plus (BU LRIC+) model for NGA networks.

The TD FDC model calculates the costs of the copper network on the basis of historic costs. This methodology values the assets at the cost at which they were acquired based on (i) the SMP operator's historical cost accounts or (ii) the reconstruction of the costs incurred by capitalising the labour, materials and services purchased by the SMP operator to deploy the legacy copper network. According to this model, the assets of the copper network are

depreciated over its assumed useful lifetime using typically the accounting method of straight line depreciation.

NGA networks would be modelled according to a BU LRIC+ model, which assumes the construction of a new, efficient NGA network. This type of cost model calculates the costs (including those which are sunk) from using the most efficient means which are commercially available today for providing access services on a NGA network.

This option of broadly endorsing the use of two different methods for asset valuation of copper and NGA networks and relying on the historic costs incurred by operators for setting copper access prices is strongly promoted by alternative operators (e.g. ECTA).

In summary, option 2 is a far reaching regulatory approach applying strict non-discrimination obligations and with different costing models for copper and NGA, leading to a significant decrease in copper access prices.

5.7. Option 3: Targeted regulatory approach (reinforced non-discrimination remedies with stable price for copper access and flexibility for next generation access)

Under this option the Commission would recommend targeted regulation based on three intertwined pillars: no regulated wholesale access prices on NGA wholesale inputs, in the presence of (1) a set of well-defined non-discrimination principles that ensure that access seekers can effectively compete with the SMP operator; and (2) a costing methodology for copper that reflects the competitive process and ensures stable copper prices that would act as a constraint to NGA prices[62] or alternative infrastructures that can exercise a demonstrable retail price constraint.

5.7.1. An effective non-discrimination obligation

To create a true level playing field between vertically integrated operators that have SMP and the access seekers, the Commission would recommend that the SMP operator provides the same wholesale services on a non-discriminatory basis both to its subsidiaries or affiliates, and to third parties:

(i) Equivalence of Inputs

In principle, non-discriminatory behaviour by the SMP operator is best achieved by the application of *Equivalence of Inputs* (EoI). It must be recognised that imposing EoI can be disproportionate where the compliance costs imposed on regulated SMP operators (e.g. through an obligation to re-design of existing systems) outweigh potential competition benefits. The Recommendation would advocate that where such proportionality concerns are unlikely to be an issue, especially regarding the provision of new wholesale services over new systems (given that the incremental cost of implementing such an obligation should be marginal), EoI should be applied by NRAs as the standard form of non-discrimination obligations, in particular in view of the possibility to not impose regulated wholesale access

[62] The definition of NGA should be understood to be technologically neutral in line with the EU Regulatory Framework and EU Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks (2013/C 25/01).

prices on NGA networks (see below). Where the NRA shows that the costs of implementing EoI significantly outweigh the expected competition and consumer benefits, NRAs would be asked to ensure, at a minimum, *Equivalence of Output (*EoO).

(ii) Technical replicability

Under this option the Commission would also recommend that NRAs ensure *technical replicability* in relation to new services offered by the SMP operator on the basis of specific wholesale products. Differently from option 2, the NRA would not be involved directly in the design of new wholesale products.

The proposed Recommendation, especially in cases where EoI is not mandated, would identify some factors that NRAs should take into account when assessing *technical replicability*, such as (i) the availability of wholesale services for offering competitive new retail services, (ii) the availability of corresponding Service Level Agreements (SLAs) and Key Performance Indicators (KPIs), (iii) the risk of monopolisation on the downstream retail markets, and (iv) the impact on innovation. Whilst the Recommendation would stress the need for wholesale offers to be available in time for alternative operators to develop their own competitive offers, the Recommendation would not prescribe specific *lead times*. In addition, the Recommendation would clarify under what circumstances NRAs could make use of their powers under the Regulatory Framework in order to suspend, where possible, the launch of retail services in case of an immediate risk to competition.

(iii) Key Performance Indicators, Service Level Agreements and Service Level Guarantees

NRAs should implement *Key Performance Indicators* (KPIs) to detect potential discriminatory behaviour and enhance transparency with respect to the delivery and quality of the SMP operator's wholesale products in the relevant markets. KPIs should be complemented by Service Level Agreements (SLAs) and Service Level Guarantees (SLGs). The Recommendation would set out a number of areas, in which basic KPIs should be used but would refrain from prescribing a list of detailed and uniform KPIs to be applied in all Member States. This would increase transparency, promote harmonised delivery processes across the Member States.

5.7.2. And a costing methodology resulting in price stability for copper wholesale access prices

This option suggests an economics-based approach which considers the competitive process for each asset individually and constructs the costing methodology for each access service on the basis of the recommended valuation methods for the assets that it comprises. Whilst setting prices at an efficient level, valuation methods and wholesale price setting would be favouring stability and predictability over time of access prices. Convergence of prices in Europe will also be facilitated.

The use of a BU LRIC+ model is proposed for copper and NGA-based wholesale access services, provided that the asset valuation is based on replicability considerations as set out in Annex 7. Replicability is assessed by considering the following elements: (i) *technological change* (e.g. the capacity of mobile networks to provide broadband services with similar functionalities as the ones provided through fixed networks), (ii) *retail demand* (e.g. the development of applications which foster the demand for broadband) and (iii) *the state of*

competition (e.g. the presence of alternative competing infrastructures such as cable and other local area networks) over a sufficiently long time horizon.

On the basis of this replicability analysis, option 3 proposes that the cost oriented access price for the SMP operator's copper network would be calculated by building a single BU LRIC+ model where (a) only the cost of an NGA, or a copper-fibre overlay, network is calculated, thereby reflecting the cost incurred by a modern efficient network to provide the access services; (b) the civil engineering assets are not valued on the same basis as the rest of the assets (in particular, they are not entirely valued at the current costs corresponding to the costs of replacing them with new non-depreciated civil engineering assets); and (c) the resulting cost of the NGA network is adjusted to derive the copper cost.

Where NRAs apply a cost orientation obligation on access to the SMP operator's NGA networks because the conditions for the absence of wholesale price obligations explained below do not apply, they should adopt this BU LRIC + model to calculate the SMP operator's costs. The Recommendation would make provisions for a transitory period.

5.7.3. No wholesale price regulation of NGA networks

Lastly, this option would recommend that NRAs refrain from imposing regulated wholesale access prices on NGA networks of SMP operators in situations where NRAs impose (i) non-discrimination obligations according to EoI and (ii) technical replicability principles as set out above, as well as (iii) economic replicability, and provides evidence of (iv) demonstrable retail price constraints on the SMP operator, exercised either by cost oriented copper access prices, or by at least one alternative infrastructure which can exercise a demonstrable retail price constraint.

NRAs should carry out as a safety net an *ex ante* economic replicability test [63] to further address the risk of anti-competitive pricing behaviour by the SMP operator[64] with regard to the most relevant retail services provided over a given NGA-based infrastructure. The proposed Recommendation will identify a set of transparent parameters that NRAs would need to set out *ex ante* and consult publicly before running an *ex ante* economic replicability test for these specific regulatory purposes, including: (i) the relevant downstream costs taken into account, (ii) the relevant cost standard; (iii) the relevant regulated wholesale inputs

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63 Such a test would be assessed by the Commission under the Article 7 procedure in the context of market analysis procedures carried out under Article 15 and 16 of the Framewok Directive when a NRA determines that the a broadband market is not effectively competitive and imposes on a SMP operator obligations of non-discrimination pursuant to Article 10 of the Access Directive and of price control and cost accounting pursuant to Article 13 of the Access Directive, and would thus be specific to the attainment of the regulatory objectives set out in the Regulatory Framework. This assessment is without prejudice to any other assessment of margin squeeze tests that would be carried out by the Commission by virtue of its powers under EU competition law. Against this background, the objectives, the scope and the implementation details of the proposed ex ante economic replicability test (e.g. identification of the services and bundles subject to the test) would, under no circumstances, prejudge of a finding in a proceeding under EU competition law. Furthermore the scope of the proposed test would be limited to creating a safeguard relating to pricing of regulated wholesale access products.

64 Such discriminatory behaviour by the SMP operator could be, for example, the attempt to raise wholesale input prices for everyone, including its downstream arm, and taking advantage of its vertical integration by aiming to compensate any resulting retail losses through increased revenues at the wholesale level.

concerned and the relevant reference prices; (iv); the relevant retail products; and (v) the relevant time period for the test.

In summary, option 3 is a targeted regulatory approach that foresees no wholesale access price obligations for access to NGA networks, in the presence of the competition safeguards of strict non-discrimination obligations, technical and economic replicability and evidence of a demonstrable retail price constraint attributable to stable cost oriented prices for access to the copper network of the SMP operator, or at least one alternative infrastructure-with comparable reach.

5.8. Option 4 - Light touch regulation (general non-discrimination principles, no cost orientation for next generation access and rising price for copper access)

Option 4 puts forward an approach whereby the current approach to regulatory remedies would be relaxed and regulation of NGA products would be kept at a minimum, effectively prioritising dynamic efficiency considerations to the detriment of static efficiency considerations.

Differently from options 2 and 3, in this scenario non-discrimination principles would not be further specified and their application when imposing obligations on SMP operators would remain according to the NRAs' discretion and interpretation of the general provisions of Article 10 of the Access Directive.

NRAs would be recommended not to impose cost orientation when imposing access obligations on NGA networks. SMP operators would have the freedom to experiment with their wholesale prices, subject only to the check of *ex post* competition enforcement by competition authorities.

Access to the copper network would remain cost oriented but copper access prices would be subject to upwards pressure through the adoption of a BU LRIC+ model where the cost of providing the wholesale access services over a new efficient copper network is calculated. All the assets, including civil engineering assets, would be valued at the current costs of acquiring/building new assets according to the current market prices. Furthermore, the assets would be re-valued each time that the NRA determines the access prices. Past depreciation of the existing assets would not be taken into account when calculating the asset base for each regulatory period, but rather the model would assume that a new copper network is built at every regulatory review. This cost model for copper follows the line advocated by incumbents (ETNO) and some of their investors.

In summary, this option would focus on increasing revenues and no wholesale price regulation on NGA networks, but without any competition safeguards.

6. ASSESSMENT OF THE POLICY OPTIONS

6.1. Qualitative assessment

Together with a more general description of the expected consequences of the implementation of each option, an analysis is made of the type, magnitude and expected impacts analysing the main elements of the policy in question, and the likelihood of ensuring an approach for non-

discriminatory regulated access to copper- and NGA-based services which promotes efficient investment and innovation in new and as well as enhanced infrastructures on the broadband markets, while safeguarding competition.

All the options are assessed on the assumption that NRAs will correctly and fully implement the proposed Recommendation within the timeframe of the next market reviews that they must conduct according to the Regulatory Framework (therefore in principle no longer than three years).[65]

6.1.1. Option 1: Business as usual

The Commission has observed, as illustrated above, that NRAs adopt inconsistent approaches when setting access prices and imposing non-discrimination and that the guidance the Commission is able to offer through the Article 7 procedure is not sufficient. Despite the fact that the need for investment in NGA networks is widely acknowledged by all stakeholders, ideas differ widely on how to best achieve such investment to bring forth the added value very high speed Internet can provide to consumers and to the European economy in terms of new and enhanced services.

Maintaining the current state of affairs would not be effective to establish a consistent regulatory practice and a consistent application of the Regulatory Framework, which would hinder the achievement of a single market for electronic communications. On the contrary, in a context where the traditional copper networks are increasingly replaced by new NGA-based networks, and where new and enhanced services are to be offered, such an approach would perpetuate obstacles to the provision of electronic communications services within the single market and slow down the dissemination of ICTs throughout the EU. This would be to the detriment of both investments in NGA and of strong competition across Member States borders. The *status* quo would not enable to fulfil the objective of fostering investment in NGA networks and, as a consequence, the achievement of the Digital Agenda goals would be put at risk.

Within the baseline scenario and as already set out in the problem definition, the evolution of demand for high speed broadband connections would also not constitute a sufficient catalyst for fostering investment because of the low take-up of very high speed Internet services in Europe. The superfast connections of 30 Mbps and above represent 8.5% of the fixed broadband connections whilst those above 100 Mbps remain very scarce, at 1.3%[66]. It takes time for consumers to realise the benefits of faster speeds and be ready to pay a premium for it. A recent Report on the socio-economic impact of bandwidth commissioned by the Commission[67] has shown that it is already evident that bandwidth requirements for

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65 Whilst there are reasons to be optimistic on the implementation success of Recommendations based on Article 19 of the Framework Directive, it is also the case that NRAs will retain a certain scope to interpret the obligations of the Framework and that the full extent of the success of the proposed initiative will depend to a significant extent on its implementation by NRAs in the specific circumstances of the markets that they regulate.

66 Digital Agenda Scoreboard 2012. Commission Staff Working Document (section 2, page 5).

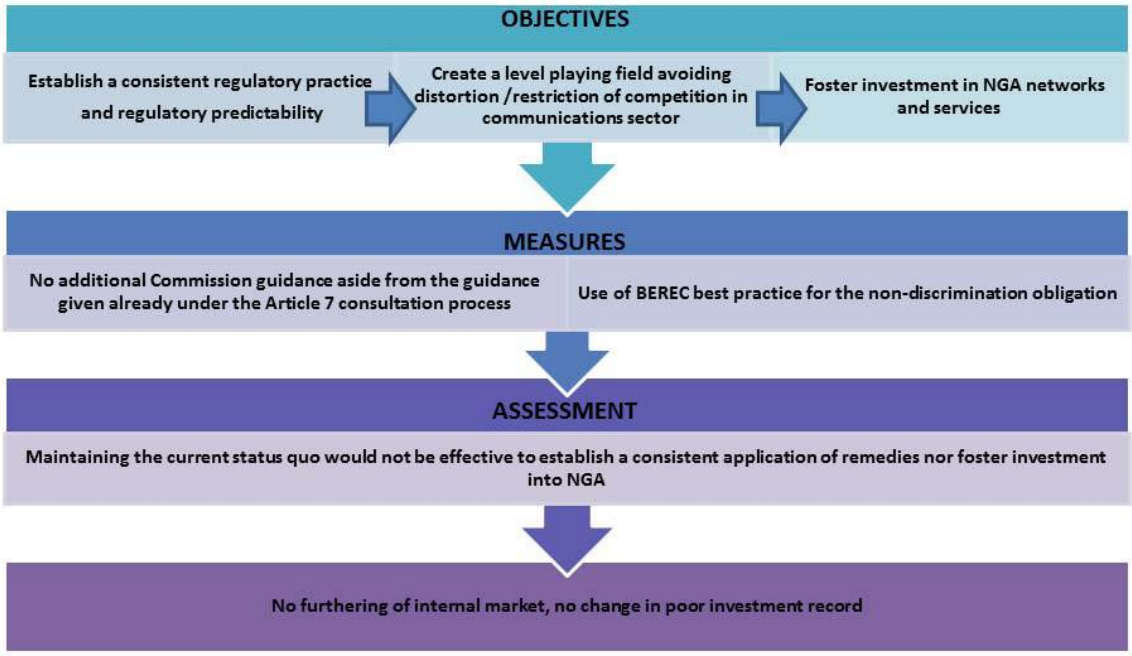
67 Study on the socio-economic impact of bandwidth (SMART 2010/0033), Final report – A study prepared for the European Commission DG Communications, Networks, Content & Technology, available at http://ec.europa.eu/digital-agenda/en/news/study-socio-economic-impact-bandwidth-smart-20100033 (released on 26 March 2013).

households and businesses could easily exceed 30 Mbps with existing applications. It is expected that demand for new online services (e.g. telehealth, energy monitoring and home security) will put even more pressure on networks to deliver higher bandwidth. The Report stresses that the fact that high-speed broadband development has not been largely deployed is likely to have restrained the deployment of bandwidth-hungry applications in Europe. However, if investment is undertaken, the evolution of services provided over fast speed connections drives demand in the medium term. Ultra-fast broadband services are generally regarded as improving customers' satisfaction of their broadband experience. Drivers are mainly related to TV/video service consumption and simultaneous usage of a household. Main barriers are related to pricing and lack of availability.

Most stakeholders, whether network owners or alternative operators, do not favour the status quo but rather propose co-ordinated EU-wide approaches – although they also would prefer the status quo to changes that are adverse to them. The approaches proposed by different stakeholders can be radically different or even opposite. However, maintaining the status quo would not take into account any of the constructive proposals that stakeholders have made to improve the EU's regulatory approach[68].

[68] Annexes 4 and 5 contain a summary of the stakeholders' contributions to the public consultations.

Option 1 would fail in delivering the regulatory certainty necessary to ensure a coherent approach to non-discrimination and costing methodology in the Union (Objective 1). In addition, no positive impact on investments in NGA networks or on competition is expected (Objectives 2 and 3).



6.1.2. Option 2: Stricter regulatory approach

6.1.2.1. Non-discrimination

A detailed Commission Recommendation setting very specific and detailled *non-discrimination* measures that NRAs must impose on SMP operators would ensure a quick harmonisation of the non-discrimination remedy in the Union and would be very prescriptive on a number of issues (e.g. an extensive list of KPIs, EoI by default, specific lead time for SMP wholesale inputs). As a result, access seekers would benefit from fit-for-purpose wholesale inputs on the SMP operator's network. Such conditions would enable them to deliver NGA-based services in conditions that are very similar to the SMP operator's own offer.

However, under this approach NRAs would not be left with sufficient discretion to take account of national circumstances[69], and, on the other hand, implementing a detailed set of

[69] This may not only be against the principle of subsidiarity but would also require NRAs to be involved at a very early stage in a costly micro management of network and technology deployments. In this regard, the

non-discrimination obligations would be costly both for the industry and the regulators. As widely acknowledged by stakeholders, identifying and monitoring an extensive list of KPIs would facilitate detailed monitoring and EU-wide comparison, but would also come at substantial additional implementation costs. Similarly, mandating EoI by default for the main wholesale access inputs (including those running over legacy networks and systems) without leaving NRAs any discretion would require considerable implementation costs. As a result there is a significant risk of creating unjustified regulatory costs, which would in turn be detrimental to investments.

Furthermore, the impact on competition would also be ambiguous. It could be expected that ensuring very strict non-discrimination obligations would put all operators in the same competitive conditions and would allow alternative operators to replicate the SMP operators' services in the short term. However, long term competition would not be ensured since product differentiation would become more difficult to achieve[70] and because the operators would not be incentivised to increase their investments into NGA networks that are subject to such stringent and costly obligations.

6.1.2.2. Costing methodology

For *costing*, this option foresees the adoption of an FDC model based on historic costs for determining cost oriented access prices to the copper network, and a BU LRIC+ model for determining cost oriented access prices to NGA networks.

The main argument underpinning this costing option is that copper access networks are (i) largely sunk and depreciated, (ii) not expected to be duplicated and therefore they should be valued at historic costs just to ensure cost recovery. Historic costs valuation would lead to a considerable decrease of copper access prices and consequently would allow alternative operators to compete more effectively on the retail market accessing the SMP operator's copper network. The rationale of this option indicates that this would create an incentive to invest in NGA and would prevent the SMP operator from gaining supra-normal profits on copper.

However, this option fails to properly take into account that broadband services provided over copper and NGA networks are viewed as substitutes by end-users. If access prices for the copper network decrease significantly, this will lead to an erosion of retail prices for copper-based products, and consumers will be less ready to switch to NGA-based products, due to the resulting higher retail price differential between copper and NGA. Consequently, this option would send negative signals to invest in NGA, due to the lower prospective profitability.

As highlighted in the study commissioned by the Commission from CRA, there are reasons to believe that lower copper access prices will negatively impact investments in NGA. Indeed, from the point of view of the access provider, the negative effect on investment stemming from lower retail prices seems stronger than the potential positive effect stemming from lower

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direct involvement of an NRA to control every aspect of the design of a new wholesale product appears difficult to reconcile with the technological neutrality principle - which is one of the principles that underpins the Regulatory Framework, specifically as stated under Article 8 of the Framework Directive. This would also present many NRAs with very difficult resource issues.

70 E.g. if too specific lead time would be prescribed, first-mover advantage would be considerably reduced or eliminated.

opportunity costs, i.e. the lower cost of losing the revenue stream from the copper network following investment in NGA. This is outlined in further detail in the quantitative assessment section below.

There might be also the risk that the lowering copper wholesale prices would not benefit end customer in terms of lower retail prices, but would simply increase the margins for copper access seekers, not necessarily resulting in increased fibre investment by these alternative operators.

The impact of lower copper access charges may be positive for both consumers and investments in a scenario where NRAs could promote a rapid migration from copper to fibre and the switch off of the copper-based network.

If the copper network is switched off, the "business replacement effect" stemming from a greater difference between the retail prices of copper-based and NGA-based products will be neutralised. The opportunity costs effect, on the other hand, caused by lower rents from the copper-based network would result in rapid fibre deployment.

However, the public consultation has indicated strongly that the scenario under which incumbent operators could be induced to voluntarily switch off their copper networks was considered highly unlikely and that the transition from a copper to an NGA network might require longer periods of parallel running of both networks in order to continue delivering certain critical services, such as for example traffic lights.

In terms of consumer benefit there are also uncertainties concerning (i) the potential bill shock that consumers may face when migrating to the fibre network, (ii) the prospect for rural areas where NGA networks are unlikely to be profitably deployed. Consequently the overall effect of lower copper prices on investment is considered to be more likely to be negative.

6.1.2.3. Expected result for investments in NGA networks

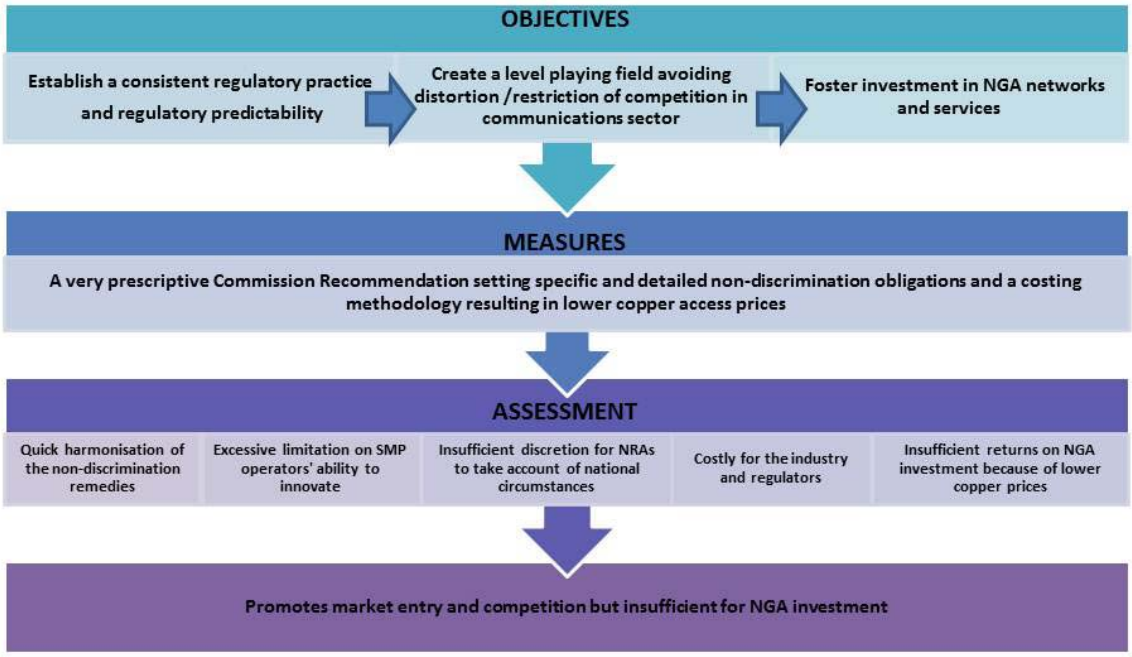
Option 2 would specify that access to NGA networks, as well as copper network, would be cost oriented in all cases. In order to assess the impact of this choice, it must be noted that investment into NGA is at its initial stages in a large part of the EU.

The deployment of NGA networks entails large and sunk investments to meet a demand subject to a significant level of uncertainty. Under these circumstances cost oriented access to an NGA network might introduce an asymmetry between the access provider and the access seeker. If the demand for the NGA product turns out to be less than expected, the infrastructure owner would bear the entire cost. On the contrary, if the take-up of NGA products is higher than expected the access provider would share the revenues with the access seeker. The downside risk of the investment are, therefore, born by the access provider whilst the upside benefits are shared. Such regulatory approach grants the access seekers for free the highly valuable option to wait and make a better informed and less risky decision to invest.

Therefore, there is a risk that regulation negatively affects incentives to deploy an NGA network. This risk has been highlighted in the independent study commissioned by the Commission from CRA, which provided the assessment of this risk on the basis of the review of several economic studies.

The existing provisions of the NGA Recommendation foresee the setting of a risk premium for the access prices to the fibre network in order to duly reward the access provider for the risk incurred. However, it appears that it has not been extensively applied so far by the NRAs. The approach in Option 2 would go the furthest in meeting the requests of the alternative operators and access seekers. This type of policy mix would, on the other hand, be most detrimental for SMP operators that are regulated network owners, and which therefore oppose it strongly.

Option 2 would improve consistency in regulatory practice with regard to non-discrimination and costing methodologies (Objective 1). It would ensure that alternative operators are provided with a very detailed set of non-discrimination safeguards and benefit from low copper access prices. Such an approach is prone to ensure short-term entry in NGA-driven markets but would have a detrimental impact on investments -in particular from SMP operators- and on innovation, and its effect on long term competition is also doubtful (Objectives 2 and 3).



6.1.3. Option 3: Targeted regulatory approach

6.1.3.1. Non-discrimination

As for *non-discrimination*, this option aims at ensuring a delicate balance between a more general approach (ensuring sufficient flexibility in rapidly evolving market circumstances) and a more specific approach (increasing legal certainty and clarity of non-discrimination remedies) to ensure a true level playing field.

Under this option, a more flexible approach to the definition and monitoring of KPIs, lead times, and wholesale products to be made subject to EoI would be recommended (see Annex 6 for a detailed presentation). To that end, the list of areas for which KPIs should be used would be detailed enough to ensure consistency across the EU. KPIs should be complemented by Service Level Agreements (SLAs) and Service Level Guarantees (SLGs). Moreover, in that context, EoI would be subject to proportionality considerations and where imposing EoI appears too costly, NRAs should be left with the ability to resort to less intrusive measures, such as EoO. As a result, regulatory costs to implement the different components of the non-discrimination remedies would be limited to what is strictly necessary to ensure a coherent approach in the EU.

Furthermore, under this option NRAs would – without controlling the design of new wholesale products as such - ensure that technical replicability of the new services based on those wholesale products is ensured. This requirement is a central tool for NRAs to put under scrutiny the ability of the SMP operator to exploit potential loopholes to favour its subsidiaries or affiliates or to disadvantage a specific competitor. However, product differentiation and ability to experiment with prices at retail level would still be possible so that the SMP operator would not lose all the benefits of being vertically integrated.

More fundamentally, implementing EoI in combination with a technical replicability test and an *ex ante* economic replicability test as recommended here, creates a level playing field in using/acquiring infrastructure access products and is expected to have a strong disciplinary effect on the SMP operators' potential anticompetitive strategies.

In the scenario where EoI and technical replicability are implemented and correctly monitored, the SMP operator is unlikely to have many incentives or much ability to provide wholesale services above costs and to discriminate on non-price terms and conditions. Furthermore, where, under the above-mentioned scenario, there are demonstrable retail price constraints on the given market either through the costing methodology applicable to copper (see below), or through sufficiently strong infrastructure-based competition, imposing intrusive additional *ex ante* pricing remedies, appears less justified. The improved competitive conditions could in this case thus warrant the removal of wholesale access price obligations relating to the NGA networks of SMP operators, which are in a phase of deployment and are sufficiently constrained from the outset (see below).

6.1.3.2. Costing methodology

With respect to the *costing methodology* Option 3 assesses a BU LRIC+ model for copper and NGA networks, where only an NGA, or a copper-fibre overlay, network is modelled, a different asset valuation method is applied to the non-replicable civil engineering assets and the copper cost is derived from the NGA cost. This costing methodology is proposed to be applied to all copper networks, as well as to NGA networks in circumstances where NRAs consider price control obligations appropriate, having found that the non-discrimination safeguards cannot be implemented and competitive safeguards are not present.

By definition a LRIC model estimates the relevant costs in a competitive process because it measures the incremental cost for the provision of a service, usually at replacement cost. So far such a model has been considered well suited for regulatory purposes because the price of a regulated asset is geared towards the costs that an efficient operator would incur to acquire that asset today in a competitive market. However, the main question when trying to reflect

the competitive process is not related just to the cost model (e.g. LRIC) as such[71] but also, and more importanlty, to the value at which the assets enter the model[72].

The BU LRIC+ model, under option 3, aims to better reflect the competition process associated with the provision of the access services and the related broadband retail services compared with options 2 and 4, in order to set those wholesale access prices that ensure both efficient entry (static efficiency) and efficient incentives for sunk investments to be made (dynamic efficiency) and to better reflect the competitive dynamics that affect individual asset classes within an access network.

Under this option NGA networks are considered for setting copper access prices since for copper-based services the only sensible reference for a build-or-buy decision are networks which are partly or fully based on fibre, i.e. cable, LTE, and FTTX networks. SMP operators are themselves upgrading or replacing their copper networks with NGA networks.

NRAs would be recommended to build a single BU LRIC+ model to set both the copper and NGA access prices. While NGA access prices (where they are regulated) would be determined by direct application of the model, copper access prices would be determined by adjusting the costs to reflect the different features of wholesale access services based entirely on copper. Such approach would properly reflect the competitive process and not distort the build-or-buy investment decision since it recognizes that NGA-based products can be sold at a premium on retail markets.

The initial RAB for civil engineering assets would differentiate between "reusable" legacy assets and new assets, ensuring that both older and new civil engineering infrastructure are correctly valued at the outset (i.e. in order to calculate the costs of rolling out such NGA network). The value of civil infrastructure assets that are reused from the copper network would be set at the regulatory accounting value, net of the accumulated depreciation at the time of calculation, indexed by an appropriate price index while other assets would be valued at replacement costs.

The costing methodology in option 3, unlike options 2 and 4, would also address two principal concerns.

Firstly, unlike options 2 and 4 and as further explained in the quantitative section, option 3 is expected to result in a stable average copper unbundling price in Europe (which is estimated to fall within a band of €8-10 per month), some local variation is expected and may be quite normal given the differences between the networks in the different Member States.

The expected result of the application of this methodology was confirmed by the consultancy Europe Economics in its technical assistance provided to the Commission. Their assessment was done by comparing the result in 2016 (which would be the end of a transition period by which the recommended methodology should be implemented at the latest) with the application of the features of the costing methodologies that are currently applied in the

[71] Indeed, LRIC+ and FDC models based on current cost may result in similar results and the same applies to TD and BU LRIC models, which could theoretically produce the same results.

[72] The concept of current costs for valuing assets is rather broad. The value of the assets would also be affected by the choice of parameters such as the lifetime of assets and depreciation methods.

Member States. Since most currently employed methodologies would lead to a price increase by 2016 absent any change, the recommended methodology will neutralize the expected increases and stabilize the prices around the current average.

In other words, stability would be reached by calculating the access costs of an NGA network and thus counteracting the volume effect (due to decreasing demand) which has been leading to higher unit costs. Such volume effects would see copper prices rising as customers switch to NGA products, because the same cost base of copper would be distributed between a smaller number of lines. In the proposed methodology, the model includes both copper and NGA lines, and therefore only traffic volume moving to other infrastructures (e.g. cable, mobile and alternative operators' fibre) would entail an inflation of unit costs[73].

Further to that, the use of indexed regulatory accounting values for civil engineering and the locking in of reusable civil engineering assets would avoid the cost inflation caused by universal current cost valuation at replacement costs, and would more accurately reflect the competitive process surrounding those particular assets, which are unlikely to be replicated.

Secondly, option 3 is geared towards current practice of those NRAs, which have a good track record in unlocking investments in NGA networks. The Swedish NRA has adopted the Modern Equivalent Asset (MEA) approach, and the French, UK, Danish and (at proposal stage for the time being) Belgian authorities are already today differentiating asset valuation methods to reflect competitive dynamics, which has resulted in a stable access price without causing a drastic decline in access prices.

This stabilising effect, as is demonstrated in the quantitative section below, brings about important dynamic benefits in terms of investment in new communications infrastructures with the associated benefit for consumers in terms of quality and choice.

6.1.3.3. Expected result for investments in NGA networks

Option 3 takes into account that whilst the copper networks have been deployed for a long time and would require gradual additional investment, the NGA networks are new, require large and sunk investment and there is uncertainty about consumers' interest and their willingness to pay for NGA ultra-fast broadband products.

No wholesale price regulation for NGA access would allow the network operators and access seekers to share some of the risk by differentiating wholesale access charges according to the level of the access seeker’s commitment: e.g. lower prices for long-term agreements with volume guarantees, which would reflect that the access seeker takes on some of the risks associated with uncertain demand or, on the contrary, higher charges for short-term ‘pay as you go’ access services, which would compensate the access provider for bearing greater levels of risk.

Indeed, no wholesale price regulation at the wholesale level is a necessary condition to allow both the vertical integrated network operator and the access seekers to introduce price differentiation on the retail broadband market in order to better reflect consumer preferences and foster broadband penetration, i.e. maximise the output. If wholesale access price obligations were imposed on the access to fibre networks the scope for reaching these win-

[73] However, this effect would equally affect access seeker and access provider.

win solutions would be severely reduced.

Such absence of wholesale access price regulation should not lead to excessive prices in so far as the inbuilt competitive safeguards are maintained, as these would ensure that there is sufficient level of NGA infrastructure competition and/or the copper-based cost oriented access service impose a sufficient constraint ("copper anchor"). For this reason, the lifting of regulated wholesale access prices for NGA networks is proposed only if these conditions are met, together with the imposition of effective non-discrimination obligations.

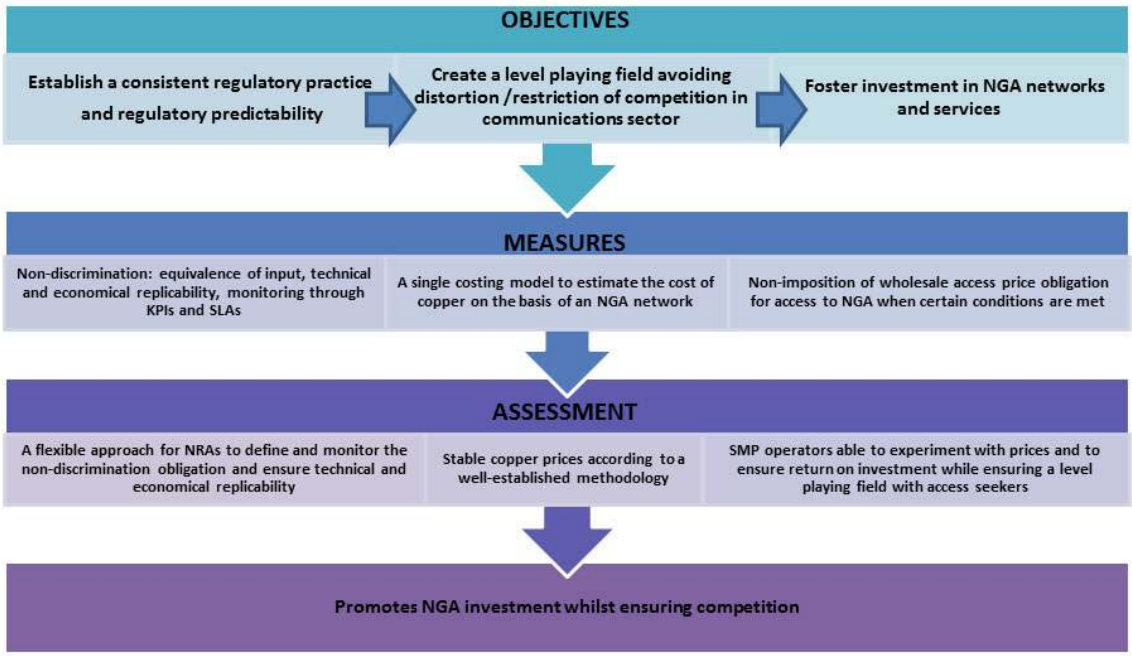
In particular in relation to the "copper anchor", since (i) copper and fibre broadband products are currently considered to be at least partial substitutes by end users, and thus would be part of the same retail broadband market, (ii) consumers focus on the premium of the NGA price (compared to copper) rather than on the absolute price and (iii) the prices of the copper retail products, that constitute such price reference, reflect the cost oriented copper access prices, it could be concluded that the latter, i.e. copper wholesale access prices, act as an anchor for the fibre retail prices thereby impeding excessive prices.

Not imposing price regulation on the NGA-based wholesale access products would allow a sufficient return on the NGA investment without having to develop a methodology for calculating the risk premium as in option 2.

Finally, this option is complemented by an *ex ante* economic replicability test for NGA-based wholesale access products which would no longer be subject to regulated wholesale access prices. This is because the lack of economic replicability might remain a risk in the absence of regulated prices for the NGA-based wholesale access products, as the SMP operator could still set NGA retail prices that would squeeze out the NGA-based access seekers (by not allowing for a sufficient margin to recover the downstream costs). The NGA-based access seeker would be unable to compete on a profitable basis and would eventually be excluded from the high end of the broadband market which could turn out to be the core broadband market in the medium/long term. The SMP operator in those circumstances would be only constrained from alternative infrastructures and the resulting tight oligopoly might not ensure effective competition.

The approach in Option 3 aims to balance the concerns expressed by SMP operators and by access seekers: it recommends the strengthening of competition safeguards for alternative operators, particularly thanks to stricter non-discrimination obligations. However, provided sufficient competitive safeguards are guaranteed, it recognises the advantages of allowing network owners that are investing in new infrastructures the ability to experiment on prices in relation to NGA networks.

Option 3 would improve consistency in regulatory practice with regard to non-discrimination and costing methodologies (Objective 1). It would furthermore ensure that the imposition of stricter non-discrimination obligations, coupled with a costing methodology for copper that constrains NGA-access prices fosters competition (Objective 2) or the presence of one infrastructure competitor which can exert a demonstrable retail price constraint allows removing price regulation for access to NGA networks, which in turn ensures the right incentives are in place for encouraging investments into NGA networks (Objective 3).



6.1.4. Option 4: Light touch regulation

According to this option, the Commission would recommend the imposition of light-touch regulatory mix of remedies on SMP operators, including the obligation to provide access to third parties, but only according to general non-discrimination principles, with no cost orientation on NGA and regulated but high copper access prices. Whilst it might seem that such freedom would provide incentives to invest by allowing high revenues, however such policy would be unlikely to have the desired effects because of its detrimental effect on competition caused by the risk of excessive pricing of NGA wholesale access products.

Such risk could endanger the continued ability of alternative providers to compete, which would have detrimental effects both in terms of consumer welfare and in terms of incentives for innovation and investment. Indeed, the incumbent operator could price squeeze the fibre based access seekers, with no further competitive safeguards in place, in order to impede them from competing in the potentially most profitable part of the broadband market and restrict the competition, at best, to a tight oligopoly.

Given the need to ensure competition in the market as stipulated in the Regulatory Framework and in the NGA Recommendation (which requires access and price regulation except in specific market circumstances and in the presence of safeguards), it would also be problematic from a legal point of view, and would not strike a balance between competition and investment.

From the *non-discrimination* perspective, the analysis of option 4 would be the same as for

option 1, as this option would not achieve the goal of achieving consistency in the application of remedies in the internal market.

Further, on the envisaged *cost model*, option 4, like option 3 would apply the LRIC methodology to set copper prices at a level that builds investment incentives for NGA networks.

The calculation of the replacement cost on the basis of an LRIC model of the copper access network (like the model of an NGA network as proposed in option 3) is also thought to promote investments and ensure that build-or-buy decisions are not unduly distorted. This also matters where inter-modal competition (i.e. competition with enhanced cable and mobile infrastructures) prevails, because investments carried out by other infrastructure operators will remain viable. Valuing the assets at their replacement costs offers very good returns on an old infrastructure, which can be used for investments in NGA, and consumers are more likely to switch to NGA-based products due to a smaller retail price differential.

Advocates of this option argue that in order for take-up of NGA-based products to not be delayed, the difference in price of copper- and fibre-based products should not be too large. If the price difference would be too large, NGA take-up would be artificially slow since consumers would prefer the cheaper copper-product, even if this means a slower connection. The willingness to pay for fibre-based products does not appear to be very high at present, since most copper connections can deliver speeds sufficient for today's mass market retail services including IPTV.

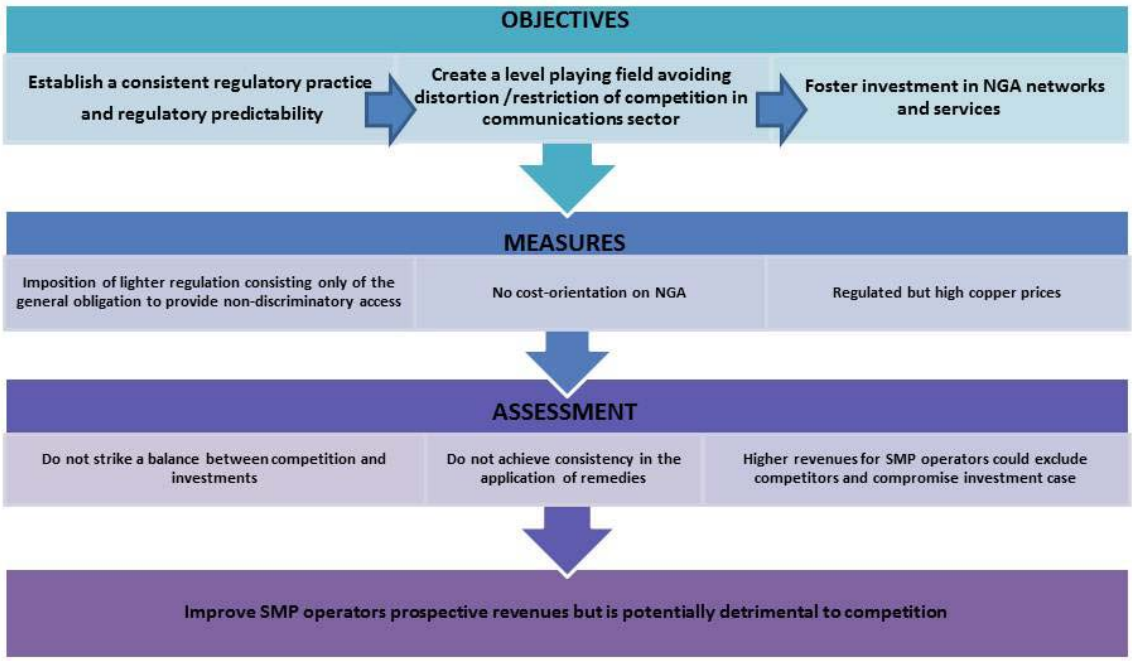
However, the valuation of all assets according to current costs, without the adjustment for civil engineering proposed in option 3, is likely not to provide the appropriate price signal in those circumstances where the entry and thus the deployment of an entire parallel access network (or important parts of it) is neither economically feasible nor desirable in the light of the huge fixed sunk cost which the new entrant would incur (compared to the incumbent operator), especially where existing assets still have spare capacity. Under those circumstances, the building option would not be relevant for those assets which are unlikely to be replaced, such as for example the civil engineering infrastructure, and more relevant for those assets which are replaced, such as for example active equipment and eventually the copper lines. An inflationary effect would therefore be expected if assets that will not be replaced and that have already to a certain extent been depreciated, would be priced at replacement costs.

Another inflationary effect of the above approach comes from modelling the copper network, the so called "volume effect". Active copper lines are decreasing due to customers migrating to cable, fibre and mobile networks. As a result, more or less stable fixed network costs would have to be distributed over a smaller number of copper lines leading to an increase in unit costs. A single model for copper and fibre could neutralise the volume effect at least with regard to fibre migration. Using copper, instead of NGA, as the modern technology may lead to a further overcompensation since the material value of copper has increased since the network was first rolled-out. Moreover, such approach could not ensure regulatory predictability to a sufficient extent as the copper price does not appear to follow a stable trend and it might vary significantly from one year to the next. Provided such price volatility, the setting of the relevant period for calculating the copper price variation and updating the current cost accordingly can be controversial and subject to excessive discretion.

As a consequence of these effects outlined above (i) access-based alternative operators could be subject to a margin squeeze if the regulated incumbent operator reduced the retail prices to match offers from operators based on alternative infrastructures, (ii) in case that the latter was not feasible, because of *ex ante* regulation on price squeeze, the number of active copper lines would further decline resulting in a further increase of the copper costs and a vicious circle may ensue, and/or (iii) the NRA might eventually depart from strict cost orientation and impose alternative price control mechanisms such a retail minus, reasonable prices, etc. to the detriment of the transparency and consistency of the *ex ante* regulation within (amongst) the Member State(s). In any case, (iv) overcompensating regulated operators for their copper infrastructure now may in turn make it unattractive to invest in fibre due to the supra-normal profits that they would receive on the existing copper network. Consequently the migration from copper to fibre might not occur at the desirable speed.

To conclude, Option 4 appears to provide revenues and freedom to SMP operators. However, the lack of safeguards would be detrimental to competition in the long-term (contrary to Option 3), which would not only contradict the objectives of the Regulatory Framework, but would also jeopardise the case for investment into NGA by SMP operators and alternative operators.

Option 4 would improve consistency in regulatory practice with regard to non-discrimination and costing methodologies (Objective 1). It favours a consistent but less stringent implementation of the non-discrimination principle and allows for an increase of copper prices providing higher revenue prospects for the SMP operators and the financial community to invest in NGA networks (Objective 3). However, without well-defined safeguards, this option runs the risk not to deliver a sustainable service-based competition (Objective 2) and could also jeopardise the case for investment (Objective 3).



6.1.5. Relationship with the NGA Recommendation

If Option 1 was chosen, the NGA Recommendation would remain in place unaffected, however with limited incentives for investment.

Option 2 would provide further details for certain areas that are addressed by the NGA Recommendation, such as the cost methodology that should be adopted when imposing cost orientation on fibre.

Option 4 would contradict the NGA Recommendation in recommending no cost orientation on NGA networks, regardless of the conditions of competition in the market.

Option 3 reflects most closely the aim of the NGA Recommendation, i.e. to promote efficient investment and it would provide further guidance on principles that are already present in the NGA Recommendation in relation to the application of specific obligations in the Regulatory Framework.

The NGA Recommendation provides a Union framework and a common approach for regulating NGA-based infrastructures. Guidance is given on the appropriate access and price control remedies NRAs must impose on SMP operators. The NGA Recommendation recognises as well that *ex ante* regulatory intervention should be adapted in situations when NRAs find that sufficient competitive constraints exist on the SMP operators. The NGA Recommendation results in several possible scenarios:

In a first scenario, access at several network levels and cost oriented price control (including an appropriate risk premium, and, for FTTH lines, subject to long-term access pricing adjustments or volume discounts if suitable) are to be mandated.

In a second scenario, the competitive constraints can be found strong enough to lead to the partial or total lifting of *ex ante* regulation. This should be the case when an NRA finds that effective access remedies on the upstream market to the one that the NRA is analysing are likely to result in effective competition at the downstream level in a specific geographic area.[74] The same result can occur when after having assessed the competitive conditions and the development of infrastructure competition, the NRA finds that there is no SMP in a given geographic area.[75] So far, this scenario has proved very difficult to be found in practice, in particular because the NRAs have very little influence on the development of infrastructure competition, and because identifying stable and substantial divergences of competitive conditions warranting the definition of sub-national geographic markets is challenging.

In a third scenario, even if platform competition has not yet developed, the NGA Recommendation recognises that putting in place some stringent forms of non-discrimination may be enough to discipline SMP operators and make mandated wholesale broadband access prices unnecessary on NGA networks.[76] This scenario is more readily applicable compared to the others because it foresees that NRAs can – contrary to the previous scenarios - influence directly the behaviours of the SMP operators with the imposition of obligations[77]. However, NRAs currently lack some crucial details of how to implement it.

Building on the openings towards not imposing wholesale access price obligations contained in the two last above-mentioned scenarios, the proposed Recommendation is intended to complement the NGA Recommendation in order to give the NRAs guidance for making the lifting of wholesale access pricing (including cost orientation) for NGA products more operational and at the same time within the control of the NRAs. It would set out in more detail when cost oriented wholesale access to NGA broadband may not be necessary, as

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74 Point 37 "Bitstream" access could in this situation be removed. The fact that competitive constraints on an operator holding SMP in an upstream market and stemming from other infrastructure-based competitors or from wholesale regulation are sufficient, under certain circumstances, to lead to a removal of remedies in the related wholesale broadband markets (market 5) has long been acknowledged by the Commission. See UK/2007/0733 where the Commission endorsed a partial lifting of remedies on the Bitstream market.

75 Point 22 specifies that the access remedy on FTTH networks could be removed where the presence of several alternative infrastructures in combination with competitive access offers is likely to result in effective competition at the downstream level. Recommend 28 also specifies that the joint deployment of FTTH networks based on multiple fibre lines by several co-investors may, where specific safeguards exist, lead to the removal of ex ante regulation.

76 Point 36 asks NRAs to analyse whether an obligation of cost orientation on mandated wholesale broadband access is necessary to achieve effective competition in case functional separation *or other forms of separation* have proved effectively to guarantee equivalence of access and when NRAs monitor the SMP operator's pricing behaviour by applying a properly specified margin-squeeze test. See also Recital 39, which states that, "in particular, the price of the Bitstream product could be left to the market".

77 Against this background, under the Article 7 consultation process, the Commission has called on NRAs to impose competition safeguards, so as to ensure effective equivalence of access, either through functional separation or similar arrangements and conversely to assess if this, under certain circumstances, can lead to a situation where other remedies, such as price control, can be lifted. See for instance DK/2012/1341, PL/2012/1311.

presented in the NGA Recommendation. It would also specify scenarios, in which established competitive safeguards should lead to NRAs deviating from the general principle of cost oriented NGA access as expressed in the NGA Recommendation. Further, the principles to be set out in the proposed Recommendation should clarify the characteristics of a future proof and transparent cost model for copper and NGA access as well as the regulatory and competitive conditions under which NRAs can refrain from regulating wholesale NGA access prices. Therefore, NRAs should take into account both Recommendations when analysing and regulating the market for wholesale physical access to networks at a fixed location and the market for wholesale broadband access.

Option 3 is based on two assumptions: first, that copper and NGA-based networks remain, for the time being, in the same product market and functionalities of access over one (copper) or the other (NGA) are sufficiently close for end-users to remain on the legacy copper product if prices of the new access product become too high.[78] Secondly, that the cost orientation obligation applied by NRAs to the legacy copper access product of SMP operators needs to be sufficiently strict and properly imposed to act as a constraint on NGA pricing (as described above).

Option 3, under which the stricter non-discrimination obligation will be complemented by vertical safeguards (i.e. guaranteed technical replicability of downstream products and *ex ante* economic replicability tests) in conjunction to horizontal safeguards (i.e. EoI and wholesale regulation), intends to extend the rationale for not mandating unnecessary remedies in the wholesale broadband market, in particular cost orientation, as outlined in Recommend 36 of the NGA Recommendation, to the wholesale physical network infrastructure (market 4).

In option 3, it is also recognised that in the presence of the described non-discrimination safeguards, a well-developed inter-platform competition at the physical network level (i.e. through significantly strong infrastructure-based competition) or the existence of a cost oriented legacy copper access product in the same market (i.e. copper anchor) could exercise a demonstrable retail price constraint on the SMP operator, preventing it from raising wholesale prices above costs, and thus render redundant an additional wholesale access price obligation on its NGA wholesale inputs.

6.1.6. Summary

Option 2 is an option that would strongly favour alternative operators who would see the cost of their access to the incumbent's networks reduced and the conditions of that access to be strictly imposed with a heavy regulatory burden on the network owners.

Option 4 is an option that would strongly favour the network owners, by allowing them to increase revenues from the legacy copper networks, to not be subject to price regulation on NGA networks and only requiring general non-discrimination compliance for the conditions that they impose on access.

Option 3, on the other hand, aims at supporting the business case for NGA investment by

[78] This assumption has been evidenced in a number of Article 7 cases. From a market definition perspective, except for the specific case of the business services, NRAs do not differentiate between copper-based services and NGA-based service. This situation is likely to be perpetuated in the medium term if copper networks are upgraded to VDSL vectoring solutions as currently witnessed in several Member States.

network owners by not imposing wholesale access price obligations on NGA networks and stable copper prices, but only if competition by alternative operators is safeguarded, particularly in relation to the non-discrimination obligations.

In order to facilitate the comparison between the options on a structured, consistent and simple basis, the following table shows the components or "building blocks" of each option and summarizes how these options and their respective components contribute to the achievement of the main objectives, which are specified in light of the problems observed.

	Objective 1 **Internal Market Regulatory consistency and predictability**	**Objective 2** **Promoting Competition Level playing field and consumer benefits**	**Objective 3** **Promoting Investment NGA network roll-out and new services**
Option 1: Business as usual	No improvement ✗	Depending on the approach chosen by individual NRAs but limited impact for the Union as a whole ✗	Depending on the approach chosen by individual NRAs but limited impact for the Union as a whole ✗
Option 2: Stricter regulatory approach **Strict and very detailed non-discrimination obligation for copper and NGA wholesale access services** **Cost orientation obligation on copper and NGA leading to lower copper access prices**	Harmonization on the basis of excessively prescriptive non-discrimination rules The use of historic costs would not improve the transparency sufficiently because it would rely on historic data of the operators ✓	Promotes access-based competition but might be detrimental for new investment given the strong downward pressure on copper prices Too prescriptive non-discrimination obligations might dampen innovation and delay the launch of new products ✓ (short term) / ✗ (long term)	Infrastructure-based competition negatively affected Could compromise NGA business case because insufficient NGA retail revenues due to relatively low priced copper retail products (business migration effect) Low incentives to invest in NGA networks ✗
Option 3: Targeted regulatory approach **Strict and sufficient detailed non-discrimination obligation for copper and NGA wholesale access services.** **No wholesale price regulation for NGA wholesale access services subject to competitive safeguards (including an economic replicability test)** **Stable cost oriented copper based access services**	Harmonization on the basis of a balanced approach: sufficiently detailed non-discrimination obligations, transparent costing methodology for copper and flexibility for NGA pricing if certain pro-competitive conditions are met ✓	Right balance between promoting competition and NGA investment Access based competition is ensured to a level that does not reduce the incentives to invest in NGA networks (trade-off between the strict non-discrimination obligation and no wholesale price regulation on NGA) Copper costs are stable and linked to NGA costs ✓	Right balance between promoting competition and NGA investment Infrastructure based competition is preserved and incentivised as long as it does not hinder access based competitors: cost oriented copper access prices, strict non-discrimination rules and economic replicability test Stability and predictability is ensured in the costing methodology High incentives to invest in NGA ✓
Option 4: Light touch	No significant improvement as regards the non-	Access based competition is severely affected due to a	Despite the regulatory holidays on NGA networks

regulation **Non imposition of the cost orientation and the non-discrimination obligations for NGA wholesale access services** **Maintain the status-quo on the non-discrimination obligation for copper wholesale access services** **Cost orientation obligation on copper and NGA leading to high copper access services**	discrimination obligation The costing methodology for copper access services based on a LRIC model would be transparent but not necessarily stable (re-valuation of all the assets, volatile copper price) ✓	very permissive framework as regards the non-discrimination and high risk of price-squeeze in the provision of copper based access services Risk of re-monopolisation in the provision of NGA services ✘	SMP operators' incentives to invest would not be maximised because of the high profitability of the copper business Risk of geographical imbalance in the NGA investment to be concentrated only in urban areas where competing infrastructures may be viable ✓

6.2. Quantitative assessment of the proposed approach

When setting (price and non-price) access conditions there is a fundamental balance to be found between (i) promoting competition and efficient entry with the ensuing benefit for consumers ("static efficiency"), and (ii) providing sufficient incentives for (sunk, irreversible) investments ("dynamic efficiency").

The assessment of the first effect requires a static analysis of welfare, i.e. the overall impact on consumers and producers of the possibility for competitors to replicate the offers of the SMP operator, as well as the impact of the level of access charges that are prevalent at the wholesale level. The analysis of the second effect requires an analysis of the impact of those factors on investment incentives and the provision of new services, and in particular on NGA investments.

The welfare analysis is static thereby focusing on the current competitive conditions in the provision of the current set of services. It aims to show the effects on allocative efficiency, which concerns how the price reflects the costs of providing a particular service, *ceteris paribus* regarding all other variables. This welfare analysis does not address the effects on dynamic efficiency and it is not sufficient to quantify the impact of a proposed approach. What matters for the overall assesment is whether any gains in welfare are outweighed by the loss in investments, and how this compares with the specific objectives of the proposed initiative. This is the subject of the following sections.

The quantitative analysis assesses the effect of the proposed policy option assuming that all NRAs will take the proposed Recommendation into utmost account in accordance with the requirements of the Framework and in principle within the timeframe of the next market reviews that they must conduct according to the Regulatory Framework (therefore no longer than three years). As stated in the qualitative assessment, the Commission's past experience with Recommendations of this type indicates a positive track record of the capacity to lead to a more consistent regulatory approach across Member States.

6.2.1. Static analysis (promoting competition and efficient entry beneficial for consumers)

It is very difficult to fully assess the impact of the proposed approach in the individual

Member States in quantitative terms, given that competitive and structural national circumstances (e.g. infrastructure, market and competition developments as well as geographical topologies, labour costs and inflation rates) also determine the level of the underlying costs independently of the costing methodology applied by the NRAs. Even if all regulators in all Member States applied the recommended approach, the outcome would still reflect these national specificities. In addition, the overall outcome in terms of competition and consumer surplus, will not relate solely to the implementation of the recommended approach; it of course also depends to a large extent on externalities.

Furthermore, in no Member State has the regulator applied the non-discrimination and costing methodology as proposed under option 3. With regards to the recommended non-discrimination obligation, the UK has an EoI approach but in combination with a form of separation (OpenReach) which goes beyond the proposed approach. With regard to the costing methodology, several NRAs set cost oriented wholesale access prices by means of LRIC models but do not distinguish in the valuation of assets within the costing methodology (replicability concept) but rather refer to either historic or current costs. The proposed approach is based on best practice considerations, limiting as such regulatory burden for NRAs, and considers the competitive process for each asset individually so as to ensure a sound economics-based approach.

As regards non-discrimination, a strict enforcement of such obligation allows alternative network operators to make more effective and efficient use of wholesale inputs, which in turn creates more competition in the retail market for broadband access despite the cost for implementing such a stringent remedy.[79] This greater competition improves market performance in terms of increased broadband speeds, consumer choices (bundled offers), and lower retail prices. These lower retail prices will induce higher penetration rate and thus create consumer surplus for new (previously disconnected) subscribers.

Despite the difficulties in fully assessing the full impact of the proposed approach in the individual Member States, WIK has, in research conducted for the European Commission, attempted to calculate the increase of the consumer surplus to estimate the benefits derived from a strict enforcement of the non-discrimination obligation, including the following obligations: (i) to separately measure and publish KPIs for the internal and external supply of access services, namely for delivery, fault repair and availability of services/systems and (ii) to use equivalent systems and procedures for internal and external supply, notably in conjunction with a wholesale management platform, which is a set of Operational Support Systems (OSS) with a Single Gateway that supports equivalent delivery and fault repair.

According to WIK the enforcement of the non-discrimination obligation allows the alternative operators to make a more effective use of wholesale access, it lowers barriers to entry and it results in the SMP operator providing more unbundled local access and bitstream lines, thereby improving competition in the market.

WIK further indicates that the competition improvement resulting from a more effectively applied and enforced non-discrimination remedy across the Union is likely to lead SMP

[79] See Ofcom Strategic Review Telecommunications Phase 2 consultation document, Issued: 18 November 2004. In assessing the impact of mandating the principle of EoI, Ofcom stressed in particular that more vigorous competition downstream and reduced final prices in the retail market could be expected.

operators and alternative operators to offer higher bandwidths and lower prices where (i) the increase in the bandwidth (equivalently, the improvement of product quality) implies a higher willingness to pay by the existing customers and (ii) the lowering of prices implies that the existing customers pay less for the actual broadband subscription and new customers can afford a broadband subscription.

Based on empirical data (including, for example, current average broadband speeds, broadband penetration, projected willingness to pay for additional speeds and projected decrease in average subscription prices) WIK estimated that (i) an increase by 50% of the difference between the initial average bandwidth and 30 Mbps combined with the willingness to pay for extra speed results in a gain of consumer surplus corresponding to existing subscribers of €4,255 million per year[80] and (ii) a decrease of 5% of the broadband subscription price results in a gain of €2,997 million per year (2,958 and 39 corresponding to the existing subscribers and newly connected subscribers, respectively). In total it would equal to €7,252 million

The overall consumer surplus for the Union is estimated in the range[81] of €4.3[82] to €11.5 billion per year.[83] This would be the impact that could be expected from both options 2 and 3 that envisage a stricter enforcement of non-discrimination. On the contrary, the non-discrimination elements of options 1 and 4 would not lead to major improvements in welfare.

As regards cost orientation, the choice of the costing methodology determines the level of wholesale access prices that would affect the corresponding retail broadband prices, assuming that operators will decrease retail prices to reflect lower wholesale prices. If, for example a reduction (increase) of LLU prices was considered, DSL retail prices would decrease (increase) and this price change would oblige (allow) the competitors, relying on alternative broadband infrastructures (including fibre), to reduce (increase) their prices.[84]The choice of costing methodology would therefore also have an impact on prices the short term.

However, the specific quantification of the impact of the choice of costing methodology on wholesale copper access prices is a complex exercise. The impact will first of all depend on the costing methodology that each NRA is currently applying and whether such NRA is in the process of switching asset valuation methods as is currently the case in some Member States. Further, the number of variables that contribute to the calculation of a cost oriented access price is so large, that it is not possible to calculate with precision the effect of policy choices without running the revised model in the specific circumstances of each individual network.

We should further note that the estimates are more likely to reflect the fluctuation in the cost

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80 Such gain of consumer surplus for existing customers would be equal to €8,509 million per year if the average speed was assumed to increase to 30Mbps.

81 According to WIK the gain in consumer surplus depends on the various scenarios for speed and price changes.

82 Based on the assumption that the average speed increases by 50% of the difference between the initial average speed and 30Mbps and that the average price remains constant.

83 Based on the assumption that the average speed increases to 30Mbps and the average price decreases by 5%.

84 This competitive process therefore would lead to a variation of both producers' and consumers' welfare as is explained in detail in Annex 8. For sake of simplicity we focus on a reduction of LLU prices.

base, whilst it is unclear how the reduction or increase in access costs would usually be passed through to access prices. An NRA could for example apply historic costs for estimating copper access costs but impose a glide-path to set the prices for copper access services whereas another NRA might opt for current costs for copper costs and set the copper access prices equal to the resulting costs, without any transitory period for the new prices. Different costing methodologies could therefore yield similar access prices in a particular year.

Against this uncertain background, we can however compare the expected impact of different costing methodologies relative to each other. We do not expect the costing methodology proposed in option 3 to result in major changes to the Union average LLU price compared to options 2 and 4[85]. Indeed any potential copper LLU price reduction over time that might result from option 3 would depend on the exact share of the reusable legacy civil engineering assets[86] amongst all assets valued, as well as the lifetime considered for those assets. On the other hand, options 2 and 4 would respectively result in a significant decrease or increase in access prices in a number of Member States.

In its assistance provided to the Commission, Europe Economics included an overview of the expected changes resulting from the application of the proposed costing methodology depending on the currently applied models. Where a BU-LRIC+ model is currently applied, the main parameter affecting the LLU cost is the valuation of the civil engineering assets which will result in a cost saving.

Where a top- down model with current cost asset valuation is employed there are three main drivers which will affect the outcome; (i) the valuation of civil engineering assets, as civil engineering costs may have risen faster than general inflation in many Member States, and since the current cost models reflect inflation and technical progress specific to each asset type, the proposed methodology would introduce a saving, (ii) if the current costs represent replacement of existing assets rather than NGA MEA, the proposed methodology with an MEA valuation would mean a further saving and (iii) using efficient instead of top -down levels of operating and maintenance costs would further reduce total costs in the model. Nonetheless, where there are significant fully depreciated assets, a change from a top- down model with current cost asset valuation to the recommended approach could lead to cost increases.

Finally, a small number of Member States apply top-down models with historic cost valuation. In these cases, a mechanistic application of the proposed methodology might instead result in increases of the LLU cost. Notably, the effect will also depend on factors outside the scope of the Recommendation, such as the annuitisation method chosen, since different methods will lead to different cost results in individual years (but not over the total asset lifetime). Where the NRA in view of specific national circumstances is not able to use historic regulatory accounting values for the purpose of establishing the RAB this will also affect the outcome.

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85 As regards option 1, it has to be borne in mind that the status quo, against which other policy measures can be assessed, does not in itself lead to stability in the longer term. Currently several NRAs are revising their costing methods for the calculation of key access products. Further, the volume effects described above, whereby the copper infrastructure loses customers to alternative infrastructure, therefore resulting in higher per-unit costs, will continue to put an upwards pressure on access prices in the absence of an intervention.

The conclusion of Europe Economics is that the overall impact of introducing the recommended costing methodology will be no expected price increase. A modest price increase is only considered possible in Estonia, Lithuania, Malta and Portugal, all Member States which currently use historic cost valuation.

Option 2 would result in a deflationary effect on the copper access price in Member States applying any type of current cost accounting to copper (either TD / BU LRIC, or FDC). It has been estimated that assets valued at current costs would be valued at a cost that is 25% to 50% higher than assets valued at historic costs. WIK Consulting in its estimations conducted for ECTA considers that the historic costs of the copper network represent around 50-75% of its LRIC based cost, so that a transition from current costs to historic costs would result in a reduction of costs between 25% and 50%.

Option 4 would result in an inflationary effect on the copper access price in those Member States that currently do not use a strict BU LRIC model (where all assets are valued at replacement costs), and would result in long-term inflationary effects on copper access prices in all Member States.

As shown in Annex 8 any policy option which is decreasing copper access prices would in a static analysis lead to an increase in welfare, simply because of the reduction of the so called deadweight loss. Therefore, on the basis of the above expected changes in the wholesale access prices, option 2 would maximise the welfare gain whilst policy option 4 would diminish it because the former results in the highest reduction of the copper access price and hence of the broadband retail prices. Option 3 is likely to neither increase or decrease total welfare since it would not lead on average to a price change.

In summary, by taking as the starting point the estimated gains of consumer surplus resulting from a strict enforcement of the non-discrimination obligation, the approach for costing methodologies in:

- Option 2 would result in higher gains stemming from further price reduction in access prices due to the application of FDC (based on historic costs) for copper bases access services.

- Option 3 would result in a gain stemming from the benefits of pricing stability resulting from the costing methodology which is not expected to result, on average, in a price increase or decrease in the EU.

- Option 4 would result in no gain for the consumer because no stricter enforcement of the non-discrimination obligation is foreseen and the proposed costing methodology based on LRIC is expected to yield higher copper costs and thus higher prices for copper based access services.

6.2.2. Dynamic analysis (incentives to invest in NGA networks)

This analysis indicates that no price regulation of NGA networks, effective non-discrimination and stable copper access prices all contribute to the dynamic efficiency of the broadband markets. Dynamic efficiency is enhanced by finding the right balance between competition and the ability to price products in a way that ensures the recovery of investments. Firms will not invest if they do not believe that they will recover their

investment, but they will also not invest in the absence of competition and of the need to differentiate themselves from competitors.

Implementing strict non-discrimination obligations has an impact on the SMP operators' investment strategies if there is no certainty that investments will be recovered.[87] However, option 3 strives at achieving the best possible result for dynamic efficiency, by not imposing or maintaining wholesale access price regulation on condition that competitive pressures are maintained through the imposition of strict non-discrimination obligations, together with the outlined competitive safeguards. This element of conditionality counterbalances the impact on investment that a strict non-discrimination obligation might have, while effectively safeguarding competition for access seekers.

Therefore, to the extent that such strict imposition of the non-discrimination obligation would allow for lifting (or not imposing) regulated wholesale access prices on fibre networks the SMP operator would benefit from more flexibility when setting NGA wholesale and retail prices that would contribute to foster NGA investments.

In assistance provided to the Commission, WIK estimated the additional investment that the implementation of option 3 is expected to yield compared to a scenario where access to the NGA network is subject to a cost orientation obligation (option 2). WIK argues that not imposing wholesale access price obligations on NGA wholesale services will allow the SMP operator to generate additional profits and therefore additionally invest in non-rural non-cable areas because (i) in the cable areas they have no other choice but to invest (given the competitive constraint exercised by the cable operators) not imposing wholesale access price obligations would have no effect and (ii) in the rural areas it would not be profitable to invest.

On this basis, WIK estimates that (i) 82 million homes in the EU-27 can potentially benefit from additional roll-out of NGA infrastructure, predominantly FTTC/VDSL and (ii) the investment will amount to between €24 and €29 billion depending on the percentage of VDSL lines for which vectoring is used.

We would not expect that option 4 would result in higher investment than option 3 because despite the fact the NGA network would not be subject to any *ex ante* obligation (and in principle this would favour investment) the copper access prices would be higher than in option 3 and the SMP operator might prefer to continue benefiting for the high profitability of copper business (as is explained below as regards the replacement effect).

Option 2 is considered not to generate additional NGA investments because, independently of the regulatory regime, in the cable areas these investments will be made due to the competitive pressure exerted by cable operators. However, the fact that a cost orientation obligation would be imposed on NGA networks would not allow the SMP operators the flexibility and additional profits that would allow them to invest in non-cable areas on a profitable basis.

Besides not regulating prices on NGA wholesale and retail services, the level of copper access

[87] See Ofcom in Strategic Review Telecommunications Phase 2 consultation document, Issued: 18 November 2004). Under equivalence the incumbent might have a reduced incentive to introduce new wholesale products in the first place as it will only be able to capture part of the returns this might generate downstream.

prices (in absolute terms and relative to the fibre access prices) is also relevant to examine dynamic effects. The study commissioned by the Commission from CRA provides a dynamic analysis and assesses the relationship between copper access pricing and the incentives for current copper network operators to invest in fibre in a transitory scenario (from copper to fibre) where (i) both infrastructures are likely to exist and (ii) it is likely that the incumbent copper network operator will be a possible (in some cases the only realistic) investor in fibre, and a potential alternative investor in fibre may also be an access seeker on copper infrastructures.

Based on the work carried out by Bourreau et al[88], CRA identifies and models the following three effects that shapes such a relationship:

- The replacement effect. The incumbent owning the existing copper network will have less incentive to invest in NGA networks because the existence of a fibre network will reduce the profits he makes from the copper network. According to CRA, this implies that the incentives for copper incumbents to invest in NGA networks will be increased by lower access prices for copper, because there is then 'less to lose' by cannibalising copper related revenues; the opportunity cost of investing in fibre is lowered.
- The business migration effect. This effect arises when the copper network and the fibre network are operated in parallel. In this situation the wholesale (access) and retail prices on copper-based products will constrain the retail prices on the fibre-based products. In particular, lower copper prices will imply lower fibre prices, which will reduce the incentive to invest in a fibre network. According to CRA, this implies that the incentives for copper incumbents to invest in fibre will be increased by higher access prices for copper. This effect, therefore, works in the opposite direction of the replacement effect discussed above.
- The pre-emption effect. There may be a 'race to invest' if there are multiple possible investors in fibre and there are advantages to being the first (perhaps because it is only viable to have one fibre network and one would rather sell access than buy it). The potential existence of other fibre investors, in addition to the copper incumbent, would mitigate the replacement effect because the copper incumbent would lose the profits that it makes from selling copper access even if he does not invest in fibre; in case he does not invest, an alternative operator would do so. According to CRA, the higher the copper access prices, the greater the incentive for copper access seekers to want to avoid these prices by investing in fibre themselves.

From its competition model, CRA finds that increases in copper access prices could have a positive effect on fibre investment if that increase is limited (infra-marginal), whereas the effect of an increase of the copper access price would be in principle ambiguous (and could be negative) for greater (marginal) increases. According to CRA, the incentive to invest in fibre is largely determined by discrete changes in the number of access seekers, which are induced by changes in access prices. If the "pre-emptive" risk of a potential alternative fibre investor is taken into consideration, CRA's model would suggest that even the effect of a (greater) marginal increase would be positive.

The CRA study finds a threshold for copper access price (i) below which the incumbent

[88] Bourreau, M, Cambini, C & Hoerning, S (2011): "Ex ante regulation and co-investment in the transition to next generation access".

operator does not find it profitable to invest in fibre and run both networks in paralell and therefore would prefer to remain as a pure copper incumbent and (ii) above which the positive difference between the profit of operating both networks and only the copper network diminishes and hence the incentives to invest in fibre do not increase[89].

On this basis, option 2 bears the highest risk of severely reducing the incentives to invest in fibre since it results in the strongest price reduction in copper access prices. This is not the case for policy option 3 and 4 as they would not result in a price reduction that would be detrimental to fibre investments. Nonetheless, there would be the risk that option 4 result in copper access prices that would be too high for incentivising NGA investment, i.e. above the above mentioned threshold, especially if alternative operators are not expected to to deploy their own NGA network.

Europe Economics in its assistance to the Commission makes similar findings. First of all, investment plans of telecom operators are likely to be determined by expected profitability rather than retained revenues. In case of LLU price decreases, SMP operators are expected to make cost savings in response to these, resulting in the effect on net revenues being less than the effect on gross revenues. Access seekers are expected to keep at least some of the increased margin resulting from potential LLU price decreases. The stabilisation of LLU prices will as such provide for a more positive prospect for NGA investmnets also by alternative operators who will, at least for some time, enjoy increased margins since a full cost reduction is not expected to be passed through to end customers immediately.

Further, according to the proposed approach, the provisions for not imposing wholesale access price obligations will reduce the regulatory risk and should add to the attractiveness of NGA investments. Regarding the types of NGA investment, Europe Economics concludes that the recommended approach is technologically neutral and will not distort the choice between different types of investment but rather improve the overall efficiency of investment decisions by bringing prices closer to underlying costs.

6.3. Assessment of the costs of implementing the policy options (incl. feasibility)

As stated above, the stakeholders affected by this initiative can be divided in four main categories:

- Network operators with significant market power;
- Access seekers and service providers;
- End-users (both businesses and consumers); and
- Public authorities (in particular NRAs, but also BEREC).

The speed of implementation might vary between Member States because the Recommendation is a soft-law instrument that relies on NRAs for its implementation. However, the expectation of this impact assessment is that NRAs will take the Recommendation into utmost account within the timeframe of the next market reviews that they must conduct according to the Regulatory Framework, and therefore in principle no

[89] Figure 13, page 70, CRA Study. CRA further sets out that this result is robust to changes in the model parameters such as the levels of (i) fibre access prices, (ii) copper and cable valuations, (iii) cost of copper and fibre and (iv) transportation costs, reflecting the preferences of consumers.

longer than three years.

Our assessment has highlighted that the two stakeholders that could incur most costs as a result of the implementation of each of the options are NRAs and SMP operators (the regulator and the regulated entity).

For the SMP operators, with regard to the implementation of the non-discrimination obligations there would not be any additional costs in case of option 1 and 4. Costs and feasibility would vary from Member State to Member State and from network to network in case of options 2 and 3, though in general option 2 would be more costly because an extensive list of KPIs and mandating EoI by default for all services (including those running over legacy networks and systems) without leaving NRAs any discretion would require considerable implementation costs.

In the case of option 3, on the other hand, the obligations would only be imposed if they were considered proportionate by the NRA. Therefore, such costs would not be imposed if the regulator did not consider that in the specific national circumstances the benefits outweigh the costs, and that the implementation is feasible. Indeed, we understand that SMP operators in some Member States are themselves offering the implementation of obligations of the type proposed as the most effective way to implement their non-discrimination obligation transparently.

For both options 2 and 3, the majority of additional costs would be related to the implementation of EoI principle. The one-off costs of the implementation of EoI (establishment of new IT systems and procedures, business processes, etc) in all Member States has been estimated by WIK to amount to **103.7 million Euro annually** over the period of 5 years. This estimate has been based on the publicly available figures concerning the establishment of a new wholesale platform for internal and external supply of wholesale products in UK[90].

Furthermore, the SMP operators would also incur recurring costs, mainly related to the provision and publication of KPIs, usage of systems and procedures. Such recurring costs are relatively negligible; some of such costs would likely also be incurred by the SMP operators for their own commercial purposes (for example monitoring of KPIs).

The implementation of a new costing model would represent an additional cost for SMP operators only where this represents a substantial change from the one currently adopted by the NRA, because of the necessary adjustments to the reporting of data to the NRA and of the routines that are already in place. Whilst the feasibility of each option should be the same, the cost of each option would therefore vary between Member States, but in each case costs would have to be incurred by SMP operators in at least some Member States. Compared with options 2 and 4, SMP operators may incur slightly more costs with option 3 if they have not

[90] According to BT, overall capital expenditures on property, plant and equipment and computer software increased in the 2007 financial year by £ 70 million (4%). BT states that "this reflects increased capital expenditure to prepare for the 21CN and investment in new systems to ensure compliance with the Undertakings." (BT Annual Report 2007). Additionally BT stated that establishing Openreach and delivering the undertakings created an operating expenditure of £ 153 million in the financial years 2006-2008 (£ 70 million in 2006, £ 30 million in 2007, £ 53 in 2008) (BT Annual Reports and Form 20-F) 2007, 2008 and 2009.

provided data relating to civil engineering separately before. Once the system is in place, the costs of each of policy options 2, 3 and 4 would be relatively similar.

For the 27 Member States together, implementing KPIs and equivalent systems and procedures would result in an overall cost of **€1.1 – 13.0 million per year**.

Table 5: Incremental average costs per year of NRAs (€ per year), EU 27

One-off cost per NRA per year if distributed over 5 year period	€0.02 million
Recurring cost per year per NRA	€0.02 – 0.46 million
Total cost per year per NRA	€0.04 – 0.48 million
Total cost per year for EU 27	**€1.1 – 13.0 million**

Source: WIK-Consult

The estimated total cost may be overestimated, if one assumes that some NRAs have already implemented proposed remedies in full (e.g. UK) or in part (e.g. Italy, Poland and Ireland). In addition it may be expected that the proper implementation of a non-discrimination remedy will lead to at least the removal of some more intrusive remedies, for example cost orientation, and hence lesser burden on the regulatory authorities.

As to the implementation of a new costing model, the cost would be the highest for NRAs that have never modelled a network according to the LRIC methodology. Setting up cost models usually involve high costs initially in terms of developing the cost model, often involving support of consultants and requiring both the NRA and operators concerned to participate in meetings, data gatherings and industry consultations.

However, these costs will be mitigated in the proposed Recommendation by allowing for a long implementation period, potentially of several years. Such implementation period could be imposed for any of options 2, 3 and 4 and would in effect render the feasibility of options 2, 3 and 4 equivalent.

For NRAs already in possession of costing models, policy options 2,3 and 4 are assessed as being quite equal in terms of compliance costs. Option 2 requires the NRA to run two models, one for the copper and one for the fibre network. The development of a second model should probably not be as costly as the development of one model where no model previously exists since parts of the existing model should be able to be copied and reused. Policy option 3 does not require the NRA to run two models in parallel but will require the NRA to retrieve data on the civil engineering infrastructure separately. Option 4 requires the NRA to run only one model.

Once the model is set up, its future implementation would not constitute an additional cost for regulators compared to their current obligations. Option 3, which is more new in its approach, will initially imply increased supervision costs.

We expect access seekers and service providers to have no additional costs from the

implementation of a revised costing methodology. Alternative operators are typically involved in the development of cost models through the public consultation procedures; however this participation is on a voluntary basis. We also expect them to have limited costs to adapt to any new non-discrimination procedure that may be implemented by the SMP operator.

As our proposal concerns the regulation of wholesale markets, its implementation will result in no costs for end users, whether they are business or consumers. This category is therefore not discussed further in our analysis.

In the table in Annex 9 we have summarised our assessment of the cost impact and feasibility of individual options. Administrative costs and compliance costs might be somewhat overlapping but the distinction that is made in this assessment is that compliance costs are rather referring to costs that will initially occur for the parties directly affected by the policy options while administrative costs are costs that the parties will continue to bear throughout the period of the regulation.

In summary, option 1 would entail no additional administrative or compliance costs or feasibility issue since the NRAs will not be required to implement a new regulatory model generating such costs.

For the other options, option 2 would require the highest costs and feasibility risks in so far as the non-discrimination obligations are concerned, whereas option 4 would require less costs. As regards the costing methodology, any approach will result in change in at least some Member States, and in those Member States NRAs and SMP operator will incur some costs. However, such costs would be commensurate to the costs that are incurred in the management of the Regulatory Framework as a result of already existing obligations. The options are on balance equivalent, with Option 3 potentially requiring SMP operators and NRAs to incur costs in more Member States because the approach is more innovative, and option 2 also requiring additional costs for having two cost models, one for copper and one for fibre. Developing costing models are often costly and will require skills and resources both within the NRA as well as within the organisation of the operator concerned. However, BEREC reports of an increasing use of CCA and cost orientation models across the Member States, and through BEREC, smaller NRAs or NRAs that are new to this type of price regulation should be able to take advantage of the experience held in the NRAs which are currently applying LRIC-type models. The Recommendation can take into account the needs of smaller NRAs when indicating timelines for implementation.

6.4. Cost-Benefit analysis summary

This table presents the summary of the figures that have been provided across the Impact Assessment on the basis of several cited studies, in order to facilitate the comparison between the data available to assess the options considered[91].

[91] The cost of implementing refers only to the implementation of the non-discrimination obligations, for the costing please to the qualitative table in Annex 9.

	Option 1	Option 2	Option 3	Option 4
Consumer surplus increase in the Union (million € per year)	0	> (4,300 – 11,500)	(4,300 – 11,500)	< 0
Fibre investment increase in the Union (in 5 years' time)	0	0	(24,000 – 29,000)	< (24,000 – 29,000)
Implementation costs for NRAs in the Union (million € per year)	0	> (1.1 – 13.0)	(1.1 – 13.0)	0
Implementation costs for SMP operators (million € per year over a period of five years)	0	> 103.7	103.7	0
Final outcome	0	Negative (insufficient NGA investments)	Positive	Negative (high broadband retail prices)

An overall assessment of the policy options is included in Annex 10. It provides a qualitative analysis of the effectiveness[92] and the coherence[93] of each option by assessing and comparing them against each of the objectives considered. The effectiveness of each option has been further measured in quantitative terms on the basis of the (i) increase of consumer surplus (related to the objective 2) and (ii) increase of NGA investments (related to the objective 3).

The issue of efficiency[94] is addressed in qualitative terms in the table of Annex 9 where the compliance costs and the administrative costs of each option are assessed for each of the relevant stakeholders (SMP operators, NRAs and access seekers). Furthermore, the efficiency of each option has been measured in quantitative terms on the basis of the implementation costs for the main relevant stakeholders, i.e. the NRAs and SMP operators. The results are depicted in the summary table above.

7. CONCLUSION: THE PREFERRED OPTION

The Commission's experience reveals that regulatory obligations still vary considerably across the EU, even where the underlying market problems are very similar. Electronic communications network and services providers face different access rules and tariffs in different Member States. In particular in the two areas of interest for this report – non-discrimination and costing methodologies – the Commission has witnessed significant

92 Assessing to which extent options achieve the objectives of the proposal.

93 Assessing to which extent options are coherent with the overarching objectives of Union policy, and the extent to which they are likely to limit trade-offs across the economic, social, and environmental domain.

94 Assessing to which extent objectives can be achieved for a given level of resources/at least cost (cost-effectiveness).

variations which were not always justified by differences in national circumstances. The absence of a single market in turn hampers cross-border investment in NGA, fair competition and indispensable innovation. This results in a serious impediment to achieving a true single market in electronic communications at a critical moment for the telecoms industry in Europe with the shift from traditional copper-based to the new generation fibre-based networks and services.

Against this background, the main objective underlying this guidance exercise is to achieve regulatory consistency in order to increase legal certainty thus ensuring appropriate incentives for efficient investment and innovation in NGA whilst at the same time preserving competition. Creating an environment in which access seekers will face comparable access conditions across the Union and allowing access providers at the same time a degree of flexibility to respond to uncertain demand, will contribute to the furthering of the internal market for electronic communications, the enhancement of competition and innovation for the benefit of consumers, and – as a result - ultimately contribute to the achievement of the DAE targets.

The instrument chosen is a Recommendation pursuant to Article 19 of the Framework Directive. This is the type of measure that is foreseen by the Regulatory Framework in cases where the Commission identifies that the implementation of the framework by NRAs creates barriers to the internal market. It is also an instrument that maintains a level of flexibility for NRAs, which, particularly for the assessment of the proportionality of the measures proposed, is appropriate. Four policy options have been assessed. The first option (Business as usual) would fail to deliver the regulatory certainty necessary to ensure a coherent approach to non-discrimination and costing methodology in the EU. In addition, no furthering of the internal market and no positive impact on investments in NGA networks is expected. The second option (Stricter regulatory approach) would ensure that alternative operators are provided with a very detailed set of non-discrimination safeguards and benefit from low copper price. Such an approach is prone to ensure short-term entry in NGA-driven markets but would have a detrimental impact on investments -in particular from SMP operators - and on innovation. The fourth option (Light touch regulation) would favour a less stringent implementation of the non-discrimination principle and allows for an increase of copper prices increasing revenue prospects for the SMP operators. However, without well-defined safeguards, this option runs the risk of not delivering a sustainable service-based competition and could jeopardise the investment case.

As a result, the report concludes that the third option (Targeted regulatory approach) would allow not imposing price regulation on NGA in the presence of tighter non-discrimination obligations coupled with a costing methodology for copper that constrains NGA prices, and would thus in turn, in the presence of competitive constraints, ensure that the right incentives are in place for investments into NGA networks.

The potential advantages of the proposed Option 3 are far reaching. Regulatory obligations would only be imposed where they are most useful (i.e. ensuring a fair competition on the retail markets) and least burdensome on the operator's commercial activities (i.e. no price regulation subject to competitive controls, should allow for both incumbent and alternative operators testing the market). Regulatory monitoring is therefore made easier for the NRAs. The potential de-regulatory effects (through a removal of a wholesale access price obligation in (parts of) the broadband markets) sends a positive signal to the investor community while

legal certainty is achieved with clearly specified *ex ante* regulation ensuring the conditions for not imposing wholesale access price regulation on new wholesale NGA products. Such an approach implements a more flexible regulation in order to offer the operators the ability to explore new possibilities (e.g. bundling, pricing schemes, and marketing strategies) in a transition phase from one technology to the other. In turn, the combination of investment-friendly conditions and competition safeguards provide with the right framework for the investors to commit to the heavy investments required to rollout NGA infrastructure throughout the EU.

The costs of implementing this option would be somewhat higher than the implementation of options 1 and 4, but the potential advantages that have been described outweigh such costs. Option 3 – contrary to option 1 and 2 – then ensures an approach for non-discriminatory regulated access to copper- and fibre-based which promotes efficient investment and innovation in new and as well enhanced infrastructures and effective competition on the broadband markets.

8. EVALUATION AND MONITORING

Monitoring of the implementation by NRAs of the recommended approach (Option 3 - Targeted regulatory approach) will be carried out by the Commission in the framework of the existing arrangements between the NRAs and the Commission under the Article 7 procedure (described above in Section 1.1). Since NRAs have a legal obligation to take the Commission's comments into utmost account and to send the Commission the final adopted measure, the Commission will be able to scrutinise the NRAs' adherence to the recommended approach.

Furthermore, once the recommended approach has been effectively implemented by the NRAs in the form of obligations imposed on the SMP operator(s), the NRAs will itself monitor (e.g. through potential complaints from alternative operators) future compliance of the SMP operator(s) with the non-discrimination and cost orientation obligations imposed on them. This will permit NRAs to assess the imposed obligation in light of the market developments. This assessment will then be submitted to the Commission according to the aforementioned Article 7 procedure. Hence, subsequent market analyses will also permit the Commission to monitor the implementation of the recommended approach.

Moreover, the Commission and BEREC have agreed that the implementation of the recommendation will be closely followed in a dedicated network of experts between the Commission and BEREC. This network will monitor the impact on investment, competition and retail prices and will as such serve to address any unintended consequences in a timely and cooperative manner. It will also, if necessary, provide further guidance to the NRAs.

NRAs have the obligation, in principle, to review markets every three years. We would therefore expect that, subject to any transition periods that the Recommendation may set, each of the 27 NRAs would implement the recommended approach no later than during the next market review period.

As to attainment of the expected results in terms of competition and investment, any contribution will also be visible in the country chapters which are an integral part of the DG CONNECT Digital Agenda Scoreboard yearly monitoring exercise. The implementation of

the recommended approach will also be monitored within the relevant BEREC expert working groups (EWGs).

9. LIST OF ANNEXES

Annex 1

Divergences in the application of non-discrimination obligations – the Commission's experience under the Article 7 procedure

Annex 2

Divergences in the application of costing methodology - the Commission's experience under the Article 7 procedure

Annex 3

Divergences in wholesales access prices in the Union: differences in LLU prices

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Annex 1

Divergences in the application of non-discrimination obligations – the Commission's experience under the Article 7 procedure

Recent experience has shown that the regulatory initiatives of NRAs attribute the application of a non-discrimination obligation increasingly a key role in addressing potential market failures in SMP markets. Since 2010, the Commission has assessed more than 350 cases notified by NRAs, almost all of which included a proposal of non-discrimination. An increasing number of national regulators has recently considered a more sophisticated and detailed application of a non-discrimination obligation as part of their regular market reviews (especially on Markets 4 and 5), as is evidenced by the growing number of regulatory measures[95] notified to the Commission in this regard. However, the notifications to the Commission of these obligations also show that there are significant emerging divergences among NRAs with regard to the scope and exact application as well as the compliance monitoring and enforcement of this obligation.

In many cases NRAs impose a non-discrimination obligation without any further detail as to the exact scope of the obligation or with regards to how it is implemented in practice[96]. In these cases the general wording of the obligation often results in the absence of meaningful parameters which are helpful in detecting potentially discriminatory behaviour by the SMP operator. On the other side of the spectrum are those NRAs, which provide detailed clarifications regarding the scope of the imposed non-discrimination obligation and set out which behaviour would be in compliance with the obligation and which would not[97].

A certain degree of detail can be observed in the adoption of Service Level Agreement (SLA). In fact, many notifying NRAs required the SMP operator to include SLAs and SLGs in the standard Reference Offer in order to ensure that the service provided to access seekers should at least meet a certain quality level. Usually, in such cases an automatic monetary compensation is guaranteed should the service levels fall below the agreed standard[98]. An increasing number of NRAs (e.g. in Ireland, Belgium, Denmark, Greece, France) require the use of Key Performance Indicators (KPIs), although the regulatory provisions do not always contain a reference as to how those KPIs are made available and how their compliance is ensured[99]. Regarding the monitoring and enforcement mechanism only a few NRAs adopted an indicative list of KPIs[100], usually covering the main phases of the process necessary to access SMP products and services.

The picture is similar regarding the lead time, the access to information and design of

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95 The cases mentioned in this impact assessment can be found at: https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp.

96 See cases FI/2008/0839, FI/2009/0900, LT/2010/1035, LT/2005/0267, LV/2010/1043, SK/2012/1308, SK/2012/1345, LU/2006/0509, LU/2006/0510, SE/2010/1061-1062, and LT/2012/1369.

97 See cases HU/2011/1190, HU/2011/1191, EE/2009/0943, CZ/2012/1322, and CZ/2010/1070.

98 See case PT/2008/0850.

99 See cases DK/2012/1339, DK/2012/1340, FR/2011/1213, and FR/2011/1214.

100 See cases IE/2011/1185 and CY/2009/0869.

products in relation to which only a few NRAs give clear guidance and combine the requirements with an effective enforcement mechanism[101]. In the context of NGA networks and services, the issue of migration times[102], which can have a discriminatory effect was often not sufficiently tackled by the NRAs' proposals.

In addition, some NRAs have also imposed measures regarding pricing practices sometimes directly under the umbrella of the non-discrimination obligation or in relation to such an obligation. [103]

Finally, the number of NRAs, which have notified a more complex system to ensure a certain degree of equivalence of access is very limited and the forms of separation chosen varies significantly[104].

[101] See Cases DE/2010/1116, HU/2011/1191 and AT/2010/1136; PT/2008/0851, ES/2011/1194 BE/2011/1227, and BE/2011/1228.

[102] See Cases UK/2010/1065, CZ/2010/1070 and RO/2010/1101.

[103] See Cases CY/2012/1396; NL/2012/1407-1048, IE/2012/1382, and IE/2012/1404. The non-discrimination obligation includes for example a prohibition to charge tariffs that would lead to margin squeeze. See also comments of the Commission in Case DE/2012/1350.

[104] See Cases IT/2009/989; PL/2010/1137, UK/2010/1064, PL/2012/1311, IE/2012/1404 and NL/2012/1407-1048. The UK model, imposed under competition law powers, of the sectorial regulator, Ofcom, is closest to the functional separation obligation envisaged under Article 13a of the Access Directive. *Legally binding undertakings* were given by BT to Ofcom under the Enterprise Act 20021 in 2005. The BT Undertakings deliver equality of access by means of two main obligations: equivalence of inputs (EoI) at product level and functional/operational separation. In Italy, AGCOM accepted, in 2008, a set of *undertakings* offered by Telecom Italia which are mainly related to the objective to grant equality of access to the existing copper network using an Equivalence of Output (EoO) approach. In Poland, an agreement signed by TP and the NRA (UKE) on 22 October 2009 was designed as a solution to eliminate the existence of persistent competition problems and to avoid formal and complicated process linked with the imposition of functional separation. In the Netherlands, OPTA imposed on KPN a non-discrimination obligation on the basis of EoO. In Ireland, ComReg imposed on Eircom to provide a set of services on a EoI basis (in particular the next Generation Bitstream and VULA) while the other services would be provided at least on an EoO basis.

Annex 2

Divergences in the application of costing methodology - the Commission's experience under the Article 7 procedure

The divergence of costing methodologies is illustrated by the following overview of the cost orientation proposals of the NRAs for copper and fibre-based wholesale network access products.

With regard to wholesale physical infrastructure copper-based network access, NRAs have proposed to use (i) a *LR(A)IC methodology* (e.g. IE, RO, SI, UK, EL, HU, AT, BU, ES (foreseen; currently FDC), DE, DK (except for excavation, ducts and cables, which are valued on the basis of historical costs[105])), (ii) EDC (NL); (iii) *FDC* (e.g. LT, LV; MT, PT, and EE); benchmarking and retail minus (PL); (iv) *LRIC with a retail minus correction* that could bring prices significantly below the FL-LRAIC methodology applied (AT), or (iv) a hybrid LRIC/FDC (CY). The Swedish NRA also applies a LR(*A*)IC methodology and uses fibre as the MEA for copper whereby the price is set on the basis of an average cost of deploying fibre. The Belgian NRA uses a bottom-up efficient operator cost model and a margin squeeze test. Within these models, NRAs value their assets on the basis of HCA or of CCA or "coûts courants économiques" (CCE). Some NRAs have reverted to HCA from using CCA for certain assets (UK) or have reconstructed the incumbent's historic costs (FR). It is however noteworthy that the implementation of HCA or CCA asset valuation is not always carried out in the same way. NRAs may for example differ in terms of asset lifetimes and the depreciation methods chosen. NRAs choices seem to depend *inter alia* on the availability, the accessibility and/or the reliability of the incumbent's cost accounting system.

For wholesale physical infrastructure fibre-based network access, the pattern is even patchier. In several Member States, FTTH (or even FTTX) is not included in the market definition; otherwise the same assets are not always regulated in all Member States. In some cases only the civil engineering and/or dark fibre was proposed to be regulated on the basis of either LRIC (IT) or FDC (LT) while in other cases, fibre access is based on a DCF methodology (NL[106]), on a LRIC methodology which uses modified tilted annuities and a discounted cash flow (DCF) which would grant the SMP operator flexibility in setting access prices that would incentivise investment in FTTH (MT[107]). In one Member State a virtual unbundled access product was proposed to be made available on an equivalence of input basis (UK), while in another Member State fibre costs are set on the basis of a LRIC methodology but prices are differentiated according to geo types (SE). In other Member States, FTTH and FTTC (HU) or fibre and dark fibre (SI) are regulated on the basis of a top down CCA LRIC methodology. One NRA sets cost oriented prices for fibre based access products but proposed no cost orientation for FTTH (DE).

[105] Case DK/2012/1399.

[106] Cases NL/2011/1278 and NL/2012/1407.

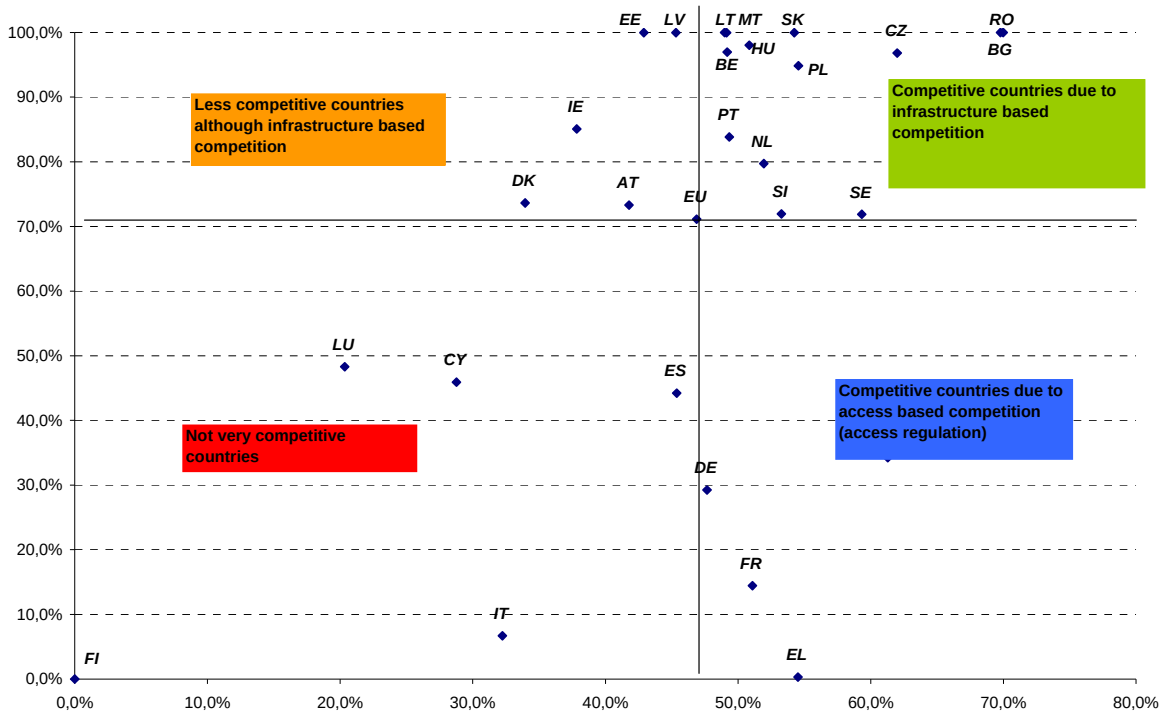
[107] Case MT/2012/1374.

Annex 3

Divergences in wholesales access prices in the Union: differences in LLU prices

The following graph[108] intends to identify clusters of Union countries sharing similar retail broadband market conditions in terms of market structure and level of competition (at the wholesale and retail levels). These clusters do not represent "rankings" in the Commission's view but have rather been created as a tool to analyse the pricing levels of copper access products in Member States that share similarities in their competitive landscape. The graph shows the following:

- The horizontal axis depicts the level of competition. It is estimated as the share of the retail broadband lines provided over LLU and over alternative operators' own infrastructure in the retail broadband market. The higher this share, the more competitive the market is supposed to be, as the alternative operators reach a higher market share[109].
- The vertical axis depicts the type of competition. It is estimated as the share of the retail broadband lines provided over alternative operators' own infrastructure out of the total number of lines provided by alternative operators (based on both LLU and their own infrastructure). The higher this share, the stronger is infrastructure-based competition - whereas the lower the share, the stronger is access-based competition (only LLU).

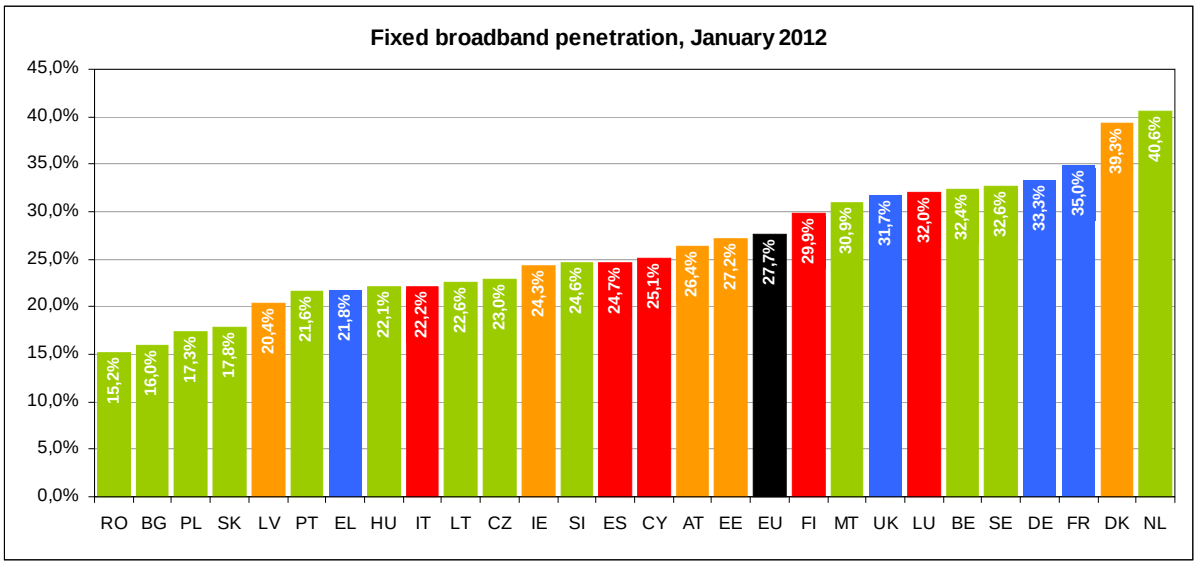


The next graph shows the relationship between (i) market infrastructure (and the level of competition) and (ii) broadband penetration. It may be expected that broadband penetration in the most competitive countries (RO, BG, PL, SK, PT, EL, HU, LT, CZ, SI, MT, UK, BE, SE,

108 The data underpinning the graphs was derived from the Digital Agenda Scoreboard 2012.

109 Bitstream and resale based retail broadband lines are only considered in the total number of lines.

DE, FR, NL) should be above the Union average. This hypothesis does not seem to be consistently met, but the analysis enables the identification of clusters that correlate the level of competition and the stage of development of the national broadband market.



By combining the market structure/level of competition and the level of broadband penetration the following clusters may be identified:

Cluster	Market structure/broadband penetration	Countries
Group 1	Competition based on infrastructure competition Low penetration level	RO, BG, PL, SK, PT, HU, LT, CZ, SI and LV.
Group 2	Competition based on infrastructure competition High penetration level	BE, SE NL and MT (to a lower extent, EE, and AT)
Group 3	Competition based on access regulation High penetration level	FR, UK and DE
Group 4	Less competition Lower penetration level	IT, CY, ES and IE
Group 5	Outliers	DK, FI, LU and EL

If the above clusters are representative, and if price setting in Member States is set to mimic competitive dynamics, Member States within the same cluster should be expected to have similar prices. The table below compares access prices for full and shared LLU in each cluster[110]. It shows that within each group the variation is still significant. These differences cannot be simply explained with variables such as labour costs: countries within the same

[110] Monthly Average Total Cost for full and shared LLU as at October 2011, according to the Digital Agenda Scoreboard 2012.

group that have comparable labour costs[111] still have divergent LLU access prices – e.g. in October 2011, within the Group 1, full LLU monthly rental in Poland and Slovakia were €5.34 and €5.37 respectively whilst in the Czech Republic it was €11.07, i.e. more than double; or in the Netherlands and Belgium (both Group 2) full LLU monthly rental was €7.02 and €9.84, respectively; i.e. a difference of 40%. Even in less competitive countries, the variation between €9.99 in Italy and €13.22 in Ireland cannot be explained by national circumstances alone – given also that both countries in principle adopt the same BU LRIC model.

	Full LLU			Shared LLU		
	Average	Lowest	Highest	Average	Lowest	Highest
Group 1	8.10	5.34	11.07	3.75	1.67	6.91
Group 2	9.25	6.26	13.99	3.28	0.74	6.42
Group 3	11.05	10.39	11.83	3.08	2.90	3.37
Group 4	10.49	8.99	13.22	2.32	1.58	2.96
EU[112]	**9.70**	**5.34**	**14.37**	**2.90**	**0.74**	**7.91**

This analysis shows that the implementation of costing methodologies in the Union broadband markets is currently not consistent. The *status quo* therefore does not appear to be in line with objectives of the Regulatory Framework and in particular with Article 8(5) of the Framework Directive.

[111] According to Eurostat data published at http://epp.eurostat.ec.europa.eu

[112] The highest full and shared LLU prices are registered in Finland, a country which belongs to Group 5 (outliers).

Annex 4

Overview of the responses to the public consultation on costing methodologies for key wholesale access products

While incumbents do not see a need for greater consistency in access pricing, alternative operators do so. BEREC, responding NRAs and some fibre investors emphasise that a 'one size fits all' approach could in fact lead to greater inconsistencies and that national structural factors, such as differences in national competitive conditions, geographies and network topologies, should appropriately be taken into account.

For the copper network, the valuation of at least some network elements based on HCA[113] has been rejected by incumbents and supported by alternative operators. In this respect, the criterion of replicability for asset valuation is generally considered one possible way forward, which appears to be in line with the ARCOR judgement of the CJEU[114]. For fibre, a discounted cash flow (DCF)[115] model is favoured both by incumbents and investors; alternative operators see problems in using incumbents' own predictions for modelling purposes. The modern equivalent asset (MEA) approach is seen critically by a number of stakeholders but not outright rejected.

Regarding the incentive pricing scheme proposed in the consultation which would link the copper price to fibre deployment, both incumbents and investors emphasise the need for high copper prices as a signal for attractive returns. Equally, smaller fibre investors warn that a decline in the copper price could devalue existing and future investments. Alternative operators see some merit in an averaged copper/fibre price where investments are made but would favour a universal decline in copper prices to historic cost levels. A new proposal is the creation of a fibre investment fund. According to this scheme, a surcharge on top of the HCA price would be paid into a fund and all operators could apply for this money in order to (co-) finance their fibre deployment. This would somehow address the problem that higher copper prices in return for investment would not normally benefit investors other than the incumbent.

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113 I.e. using historical information provided by statutory accounting systems, at original monetary value.

114 Case C55/06 Arcor [2008] ECR I 2931, para 119, where the Court stated that "when applying the principle that rates for unbundled access to the local loop are to be set on the basis of cost orientation, laid down in Article 3(3) of Regulation No 2887/2000, in order to determine the calculation basis of the costs of the notified operator, the NRAs have to take account of actual costs, namely costs already paid by the notified operator, and forward looking costs, the latter being based, where relevant, on an estimation of the costs of replacing the network or certain parts of it".

115 Forward looking analysis of the incremental cash-flows (in terms of both costs and revenues) that are expected to arise from a service, including an assessment for risk.

Annex 5

Overview of the responses to the public consultation on non-discrimination and functional separation obligations

Principles and scope on non-discrimination

Most respondents were in favour of Commission guidance in this area. The respondents stressed that the Commission should ensure in its guidance on non-discrimination a delicate balance between a more general approach (ensuring sufficient flexibility in rapidly evolving market circumstances) and a more specific approach (increasing legal certainty and clarity of non-discrimination obligations). This view was not only expressed by individual NRAs (the Irish NRA, ComReg, the Spanish NRA, CMT and the Polish NRA, UKE), but also supported by individual industry members as well as their associations (BT, AIIP).

ETNO was of the view that divergent implementation of the non-discrimination may be justified by the underlying differences of national or local circumstances. Therefore, any guidance from the Commission needs to be considered extremely carefully in accordance with the principle of proportionality. Some incumbent operators (Telefonica, Telecom Italia) also emphasized that too prescriptive guidance will limit the capacity of NRAs to adapt regulation to national specificities and needs. In addition, prescriptive guidelines are likely to become a set of technical rules, which are difficult to be enforced and are unable to cope with the complexity of the specific conditions of each market.

Other incumbents (e.g. Orange/France Telecom) have a more balanced approach and stress that, although it is normal to observe different country-specific approaches in implementing non-discrimination, best practices should be shared to avoid major discrepancies, which have a negative impact on trans-border provision of services.

ECTA presented an opposite opinion and states that divergent practices by NRAs regarding the application of the non-discrimination obligations contribute to the fragmentation of the single market. Alternative operators stressed that too wide a margin of interpretation is left to NRAs when imposing obligations and that the implementation of such an obligation should be made more efficient and effective. This opinion is shared by some other stakeholders (e.g. FTTH Europe) who claim that divergent practices will lead to different access regimes in practice with higher/lower costs of deployment depending of the efficacy of that access regime.

Implementation and enforcement

For BEREC and NRAs (CMT, ComReg)**,** incumbent and alternative operators may take part in the design process of the obligations (in particular the design of Key Performance Indicators, KPIs), but NRAs should have the last say as to design and implementation. All stakeholders stress that periodical audits should complement the use of KPIs, although there is concern that the additional audit costs could be passed down to the end-user.

ETNO believes that it is sufficient and more efficient to monitor KPI calculations in tripartite meetings involving the NRA, the SMP operator and the alternative operators, without need for

intervention by an independent body. If auditor's intervention is required, the relevant costs should be shared among the market players. On top of that, ETNO stresses that SMP operators take more and more voluntary measures, which could be seen as 'self-preservation' efforts to avoid complaints, disputes and/or stricter regulatory obligations.

ECTA is of the view that it is very useful but not absolutely necessary to have an independent body representing the interests of end-users and competitive operators by monitoring and ensuring that the obligations are observed by the dominant operator.

Functional separation

In their submissions NRAs consider that functional separation may be used to support the general principle of non-discrimination; it is also a means to ensure permanent and full non-discrimination, through taking away any business and economic incentives to discriminate. As to the evidence needed to justify the imposition of functional separation, the Commission should not formulate a "closed list". Potential criteria should include: results of control of compliance with regulatory obligations; market analysis indicating strong SMP despite imposed obligations; complaints and evidence of discrimination. The Commission should not require an unreasonably high level of proof, and should frequently interact with NRAs wishing to impose such obligation. NRAs have also pointed to existing BEREC guidance on Functional Separation (BoR(10) 44Rev1)[116].

For industry it was important to underline that functional separation is not a standard obligation, but an exceptional measure of last resort, which could be potentially applied in case of explicit "failures" of the other, previously imposed obligations. Some underlined that non-discrimination and functional separation differ in terms of nature, objectives, and intrusiveness.

ETNO stated that functional separation clearly refers to a measure of "last resort". ETNO wishes to stress that while functional separation may be depicted as a measure that aims to ensure a level playing field, it does in reality not guarantee that high quality levels will be provided; rather, it guarantees equally lower quality.

ECTA insisted that the Commission should consider recommending, and BEREC/individual NRAs should develop a Common Position in which specific thresholds (based on lack of compliance with KPIs) would be defined to indicate under which circumstances functional separation has to be imposed.

[116] BEREC's guidance of February 2011 can be found under the following link: http://www.irg.eu/streaming/BoR%20(10)%2044%20Rev1%20Guidance_on_Functional_Separation_final.pdf?contentId=547126&field=ATTACHED_FILE.

Annex 6

Details of the non-discrimination obligation under Option 3

KPIs

In order to ensure equal access conditions there is first a broad consensus amongst industry and NRAs that Key Performance Indicators (KPIs) are the most appropriate tool to detect potential discriminatory behaviour and enhance transparency with respect to the delivery and quality of the SMP operator's wholesale products in the relevant markets. It is also widely acknowledged that there is only a limited cost involved in setting a range of basic KPIs covering the entire provision cycle, as in most cases the processes are already monitored. On the other hand harmonisation of an extensive list of detailed KPIs throughout the Union would result in substantial compliance costs without necessarily bringing significant additional competition benefits. In addition, the implementation of a limited number of basic KPIs should be sufficient to allow NRAs to monitor effectively compliance with a non-discrimination obligation. The proposed list of areas for which KPIs should be used should be detailed enough to ensure consistency across the Union but leave enough room for flexibility for NRAs to take into account specific national requirements (including potential cost implications for the national SMP operator).

SLAs and SLGs

NRAs should require the SMP operator to implement Service Level Agreements (SLAs) alongside KPIs and provide corresponding Service Level Guarantees (SLGs) in case of breach of the SLAs. Sanctions should be dissuasive and provide incentives to the SMP operator to comply with its delivery obligations.

EoI/EoO

The current shift towards fibre-based services and the parallel switch to new provision systems represents a unique opportunity for non-discrimination safeguards being built in the systems of the SMP operator. In that context, implementing Equivalence of Input (EoI) as a standard for the non-discrimination remedy is in principle the surest way to ensure effective non-discrimination. However, proportionality considerations have to be taken into account. As a result, where imposing EoI appears too costly, NRAs should be left with the ability to resort to less intrusive measures, such as implementing Equivalence of Output (EoO). However, such proportionality considerations are less likely to prohibit the imposition of EoI for SMP products provided over new systems and processes given that the incremental compliance cost (to design such systems EoI compliant) of such an obligation would be marginal (new NGA-based systems will in all likelihood have to be developed in any case). Such an approach would be in line with the NGA Recommendation, which requires NRAs to implement strict equivalence of access to civil engineering infrastructures (the equivalence of access concept as defined in Annex II of the NGA Recommendation looks prima facie much closer to EoI than to EoO). Furthermore, extending the obligation to provide EoI beyond civil engineering infrastructures to address also systems and processes for the provision of next generation unbundled and bitstream services would be justified given that - as recent Article 7 case law shows - there may be a transitory period during which VULA-type services might be the only alternative to provide physical wholesale access and that the standardisation of the

next generation unbundling products (WDM) is still in its infancy.

Technical replicability

Moreover, under the preferred option NRAs should – without controlling the design of new wholesale products as such – ensure that replicability of the new services based on new wholesale products is ensured. One argument against such an approach could be that performing a technical replicability test may result in costs for the NRAs in terms of gathering the information on the wholesale and on the retail market and conducting an appropriate replicability assessment. Furthermore, such an approach could discourage innovation and prevent (potentially legitimate) first mover advantages if alternative operators are always allowed to replicate the same retail services as the SMP operator. On the other hand, the proposed Recommendation giving guidance on the timeframe and the main factors to be taken into account for ensuring technical replicability will bring more legal certainty and reduce the risk of dissimilar approaches if NRAs are left with broad discretion to decide on such a test. In several Article 7 cases, the Commission already suggested a replicability test (although without explicitly using this term) and found justified and proportionate, for instance, the imposition of a Bitstream product which includes a multicast functionality given the trend verified in Belgium towards the provision of multiple play offers, with the capacity to offer TV services. Competition is now largely driven by bundles. It is critical that alternative operators using the same platform as the SMP operator can compete on an equal footing when providing bundled services. Ensuring technical replicability would allow alternative operators to compete more efficiently with the incumbents and other alternative operators/platforms in the relevant markets and, in turn, will foster dissemination of new services throughout the Union and enhance users' choice.

Economic replicability

Generally speaking, two tests are used by NRAs to assess economic replicability or conduct an *ex ante* margin squeeze test: the equally efficient operator test (EEO) and the reasonably efficient operator (REO) test. Where no wholesale access price obligation for NGA wholesale inputs is imposed and additional safeguards are implemented, the Recommendation foresees that a lack of economic replicability could be demonstrated by showing that the SMP operator's own downstream retail arm could not trade profitably on the basis of the upstream price charged to its competitors by the upstream operating arm of the SMP operator ('equally efficient operator' (EEO) test). This test enables NRAs to support the SMP operators' investments into NGA networks and incentivises to innovate for providing NGA-based services. Only where specific market circumstances apply such as, for example, sustained lack of market entry or expansion NRAs may make adjustments for scale to the SMP operator's costs, in order to ensure that economic replicability is a realistic prospect. The Recommendation will provide NRAs with guidance on the general principles to take into account when carrying out such a test.

Any such assessment of economic replicability in the context of this Recommendation is without prejudice to any other assessment of margin squeeze tests that would be carried out by the Commission by virtue of its powers under Union competition law. Against this background, the objectives, the scope and the implementation details of the proposed *ex ante* economic replicability test (e.g. identification of the services and bundles subject to the test) would, in no circumstances, prejudge of a finding in a proceeding under Union competition law. Furthermore the scope of the proposed test would be limited to creating a safeguard

relating to pricing of regulated NGA wholesale access products.

Enforcement

As for the enforcement of the non-discrimination obligation, the EU Regulatory Framework provides a broad range of regulatory enforcement tools, which could prevent SMP operators from discriminatory practices with no delay. However, national practices vary greatly. Providing guidance seems therefore appropriate for the effective enforcement of non-discrimination obligations. In addition to having clear principles in this respect it is important that NRAs can use their powers to sanction non-compliance, for example by using any powers to cease or delay the launch of the relevant retail product. Recommending the use of safeguarding mechanisms (i.e. the use of KPIs, suspension of non-replicable retail offers, swiftly addressing the economic replicability issue) preventing SMP operators from discriminatory practices would be beneficial to avoid long administrative (and court) proceedings concerning either dispute resolutions or fines.

Annex 7

Valuation methods of the principal asset categories along a broadband network value chain based on a replicability assessment

(i) Equipment

These assets are considered to be the most replicable network elements. The relatively lower amount of funds required and the rapid technological change, which shortens their economic lifetime, would justify the use of current costs based on the replacement cost corresponding to the modern equipment in order to estimate the relevant costs in contestable markets.

(ii) Copper loops[117]

Copper loops appear to be replicated in an increasing number of countries/regions where cable, fibre and mobile networks are competing against the copper networks. This competitive threat obliges incumbents to upgrade their copper networks and progressively replace them with fibre. This trend in the competitive process cannot be ignored when choosing the appropriate asset valuation method. Current costs would therefore be proposed as the asset valuation method for the copper loops, where the replacement cost based on NGA technologies (either fibre or a mix of fibre and copper) would be calculated.

When determining access prices that are entirely based on copper NRAs would estimate the cost difference between an access product based on FTTC/FTTH and the copper access product by replacing the optical elements with efficiently priced copper elements, where appropriate, in the NGA engineering model. Alternatively, NRAs could obtain the copper access cost by modelling an NGA overlay network (where two networks, copper and fibre, share to an extent the same civil infrastructure).

(iii) Next generation loops[118]

Next generation loops have at least the same potential as copper loops to be replicated since fibre constitutes the competitive response to alternative infrastructures such as mobile and cable. Most likely, fibre has more potential for competition as it is capable of delivering greater functionalities, to further expand the demand and to lower entry barriers (especially if regulated access to the civil engineering is ensured). Some alternative operators are already deploying their own fibre networks and new business models are emerging (such as co-investment).

(iv) Civil engineering infrastructure (ducts, trenching, poles)

Civil works are characterised by little technological development (although some changes may occur, e.g. micro-trenching) and rising real costs (labour costs) over time showing that replicating the access infrastructure is too costly and therefore there is no/little prospect of assets such as trenches and poles being duplicated.

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[117] Including both copper loops (from the Main Distribution Frame – MDF– to the premises) and copper sub-loops (from the cabinet to the premises).

[118] Both the fibre feeder and/or drop segments (from the ODF to the premises and/or to the cabinet).

Since the competitive process would most likely not lead to these assets being replicated, estimating the costs incurred by a new efficient operator in deploying a new civil infrastructure network would not be required[119]. Therefore, the civil infrastructure network should be valued by taking into account that i) the existing civil engineering network is generally capable of hosting also the fibre network ii) some civil engineering assets will have to be newly constructed to host a fibre network (iii) the regulated operator has already been compensated at least for parts of the civil infrastructure, and therefore the value of the civil infrastructure should properly reflect the loss in value of those civil engineering assets (up to the date of setting the RAB), which are re-used for deploying the fibre network. The Regulatory Asset Base (RAB) corresponding to the reusable legacy civil engineering assets would not be valued at the cost of replacing them with new civil engineering infrastructure but at the regulatory accounting value, net of the accumulated depreciation at the time of calculation, which would take account for their elapsed useful life and thus the costs already recovered by the regulated SMP operator. As long as it is based on replacement costs this approach sends efficient market entry signals for build or buy decision but avoid the risk of a cost over-recovery for reusable legacy civil infrastructure that would not be justified to ensure efficient entry and preserve the incentives to invest because the build option is not economically feasible for this asset category.

In practical terms:

- The initial RAB corresponding to the "reusable" legacy civil engineering assets would be set at the regulatory accounting value (at the time of setting the initial RAB) indexed by an appropriate price index, such as for example the retail price index (RPI), leading therefore a valuation of assets that is equivalent to a current cost valuation. Assets that are already fully depreciated would not enter into the initial RAB. The initial RAB would be locked-in and rolled forward from one regulatory period to the next.
- New civil engineering assets necessary for the deployment of a fibre optic network would enter the RAB at current costs based on replacement costs as it is proposed for the other asset categories.

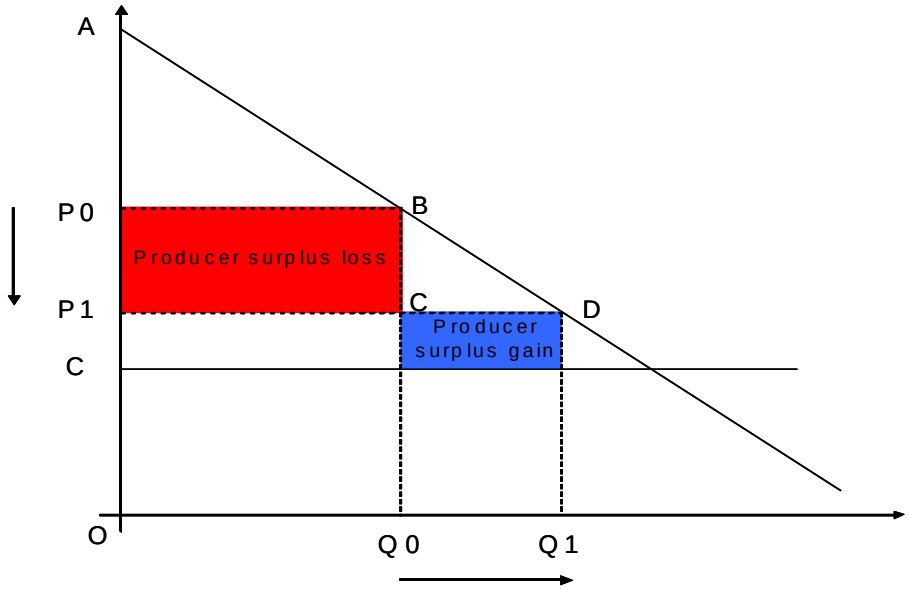
[119] Within the "build-or-buy" investment decision the option to build a civil infrastructure would no longer be considered as an option for a new entrant.

Annex 8

Static welfare analysis

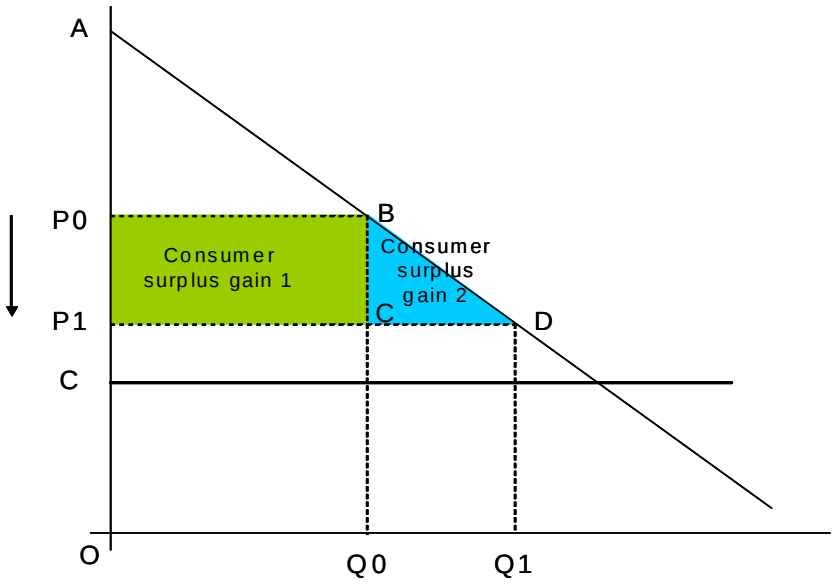
In the event of a decrease in access prices, from the producers' side, the operators would provide the actual broadband lines at a lower price, thereby leading to revenue losses (the so called producer surplus loss) but also expand their customer base as new customers would now subscribe to a broadband network thereby leading to revenue gains (the so called produce surplus gain).

Figure 1: Variation of the producer surplus



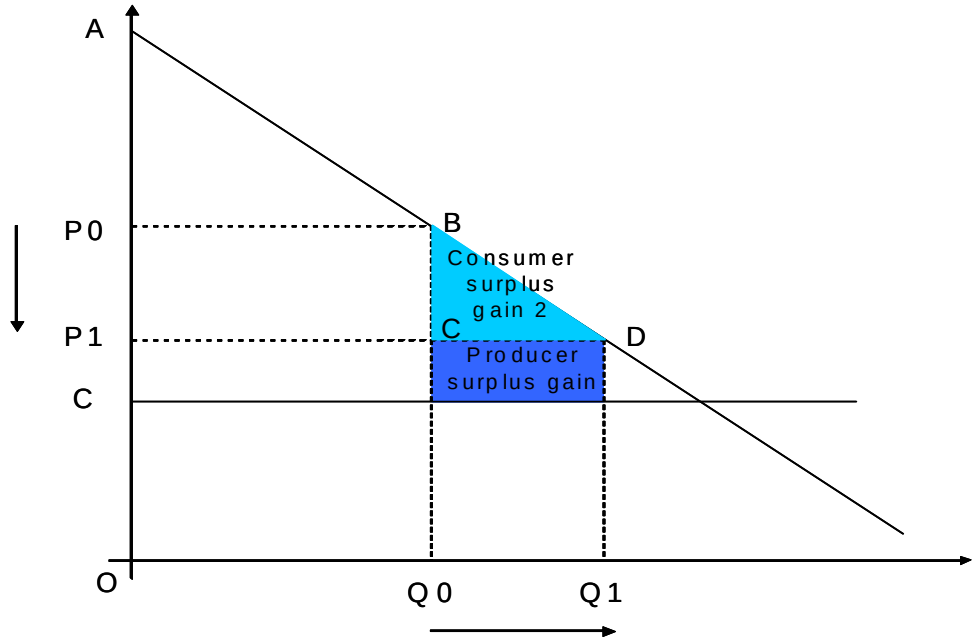
From the consumers' side, the actual end-users would benefit from paying less for their broadband connection (the so called consumer surplus gain 1) and new customers would also benefit because they can now afford having a broadband connection (the so called consumer surplus 2) as their willingness to pay is now higher than the new price.

Figure 2: Variation of the consumer surplus



The net effect on welfare would be calculated as the sum of the variations in the producer welfare and consumer welfares. Since the surplus loss by the producer and part of the consumer surplus gains[120] are cancelled out, the increment of the welfare is equal to the sum of the producer surplus gain and the remaining part of the consumer surplus gain as depicted in the following graph[121].

Figure 3: Variation of welfare



120 The consumer surplus gain 1.

121 Following the same reasoning, an equivalent increase in the retail prices (from P1 to P0) stemming from an increase of the wholesale price would lead to a welfare loss of the same amount as the welfare gain resulting from a decrease of retail prices.

Annex 9

Summary table of the implementation costs and feasibility

	Option 1	Option 2	Option 3	Option 4
Compliance costs				
SMP operators	No additional compliance costs	Cost of implementing detailed non-discrimination obligations Minor additional costs for the cost model to adjust the reporting of accounting data needed in Member States that apply the LRIC methodology differently	Costs of implementing non-discrimination obligations if such obligations are proportionate. Costing model possibly slightly more costly than options 1 and 2 if data for civil engineering not yet identifiable.	No additional compliance costs for non-discrimination Minor additional costs for the cost model to adjust the reporting of accounting data needed in Member States that apply the LRIC methodology differently
NRAs	No additional compliance costs	Cost of implementing detailed non-discrimination obligations Cost of reviewing the LRIC model (where already present) or of constructing it (where not yet present)	No additional compliance costs for non-discrimination Cost of reviewing the LRIC model (where already present) or of constructing it (where not yet present)	No additional compliance costs for non-discrimination Cost of reviewing the LRIC model (where already present) or of constructing it (where not yet present)
Access seekers and service providers	No additional compliance costs	Minor additional costs to adapt to new systems for non-discrimination	Minor additional costs to adapt to new systems for non-discrimination	No additional compliance costs
Administrative costs				
SMP operators	No new administrative costs	Higher administrative costs for non-discrimination monitoring No additional costs are expected once the cost model is in	Limited administrative costs for non-discrimination monitoring No additional costs are expected once the cost model is in	No new administrative costs for non-discrimination No additional costs are expected once the cost model is in place

		place	place	
NRAs	No new administrative costs	Higher administrative costs for non-discrimination monitoring Increased costs for the costing model due to the need for running two models, one for the copper network and one for the fibre network	Limited administrative costs for non-discrimination monitoring Less costs for the costing model as only a single fibre model is required. Developing new method for adjusting the model to reflect copper costs may require increased supervision initially	No new administrative costs for non-discrimination Less costs as for the costing model as only a single copper model is required
Access seekers and service providers	No new administrative costs	No new administrative costs	No new administrative costs	No new administrative costs
Feasibility				
SMP operators	N/A	For non-discrimination, risk that obligations would be disproportionate For costing, it should be feasible to adapt current processes	For non-discrimination, the proportionality test ensures feasibility For costing, it should be feasible to adapt current processes; new internal processes might be needed if the SMP shall provide data that has not been provided before	No feasibility issue for non-discrimination For costing, it should be feasible to adapt current processes
NRAs	N/A	For non-discrimination, risk that obligations would be disproportionate For costing, it should be feasible to adapt current processes in Member States that have an LRIC model. Otherwise, more time will be	For non-discrimination, the proportionality test ensures feasibility For costing, although the approach is more innovative it should be feasible to adapt current processes in Member States that have an LRIC model. Otherwise,	No feasibility issue for non-discrimination For costing, it should be feasible to adapt current processes in Member States that have an LRIC model. Otherwise, more time will be required but no feasibility issue

		required but no feasibility issue provided sufficient time is given	more time will be required but no feasibility issue provided sufficient time is given.	provided sufficient time is given
Access seekers and service providers	N/A	No feasibility issue	No feasibility issue	No feasibility issue

Annex 10

Overall assessment of the policy options

	Option 1	Option 2	Option 3	Option 4
Objective 1 (a): ***Establishing consistent regulatory practice and consistent application of the Regulatory Framework***	In the absence of any Recommendation, the procedure under Article 7 would be insufficient to ensure consistency in the application of the non-discrimination and cost orientation remedies	This option will ensure a development of consistent regulatory practice and will contribute to consistent application of the Regulatory Framework while restricting significantly flexibility for NRAs to take into account specific national circumstances The use of historic costs relying on companies' accounts in FDC models for setting copper prices would not ensure the same level of consistency as the LRIC models due to the different quality of the accounting records in the Union countries The need to reconstruct the past investment in copper in circumstances where accounts are not reliable could give rise to further discrepancies among Union countries The assumed switch-off of the copper network could be implemented on a very different basis in each country	This option will ensure a development of consistent regulatory practice and will contribute to consistent application of the Regulatory Framework while leaving flexibility for NRAs to take into account specific national circumstances Since BU LRIC models are considered theoretically sound and well established in the EU, the modelling would be similar and the parameters would be more easily comparable. Indeed, the BU approach would allow for sufficient flexibility to reflect the different national circumstances on a consistent basis (e.g. through the modification of the same parameters) The potential sources of divergences would concern (i) the initial RAB of the reusable civil infrastructure, where regulatory accounting values are used and (ii) the adjustment of the NGA-based network cost to set	This option would be insufficient to ensure consistency in the application of the non-discrimination remedy and it would grant maximum flexibility for NRAs to take into account specific national circumstances On the contrary, this option would ensure a consistent application of the cost orientation obligation on copper, in line with option 3 because both advocate for the use of a BU LRIC model

			the copper price as the methodology would be new and more subject to interpretation	
Rating (1=worst / 4 =best)	1	2	4	3
Objective 1 (b): ***Removing obstacles to the provision of pan-European electronic communications services***	Inconsistent approaches to details of the non-discrimination remedy and inconsistent determination of access prices, leading to different access prices which do not just reflect different national circumstances, will not lead to level-playing field for Union operators and result in the continued prevalence of existing barriers Cross-border investments can be hindered	Consistent approach as to the details of the non-discrimination remedy As to access prices this option would tend to yield declining copper prices over the time. The historic costs of the SMP operators may lead to different access prices in the Union, reflecting past decisions that were not necessarily based on the different competitive circumstances	Consistent approach as to the details of the non-discrimination remedy Copper access would remain stable and converge to Union average Additionally the cost model would tend to be stable and predictable once the cost model is designed and implemented, facilitating cross-border investment decisions The use of MEA counteracts the volume effect (due to decreasing demand) and yields more stable cost estimates than in option 4 The risk of divergent results across Member States, stemming from the use of indexed regulatory accounting values as a starting point for the civil engineering assets, would be less significant than in option 2 since it would be limited to the reusable civil engineering infrastructure	Inconsistent approach as to the details of the non-discrimination remedy Insufficient stability as regards copper access prices since (i) all the assets, including the entire civil infrastructure, are to be re-valued at replacement cost at every review period and (ii) the decline in volumes of copper active lines could also result in strong increases of the copper cost over time

Rating (1=worst / 4 =best)	1	3	4	2
Objective 2 (a): ***Create a level playing field through avoiding distortion and restriction of competition in the sector by improved enforcement of non-discrimination and costing obligations***	Slow and uneven improvement of the competitive conditions in the Member States	Improved market conditions as regards non-price issues of the access but substantial additional costs for the operators and NRAs Micro-management of network and technology developments by the NRAs Potential breach of principle of technology neutrality From a static point of view it would (i) reduce the incentive to run a legacy copper network for the SMP operator, (ii) contribute to ensure higher margins for access based competitors and (iii) allow the latter to trigger or to sustain strong price competition The strong price reduction in copper access prices could affect negatively the value and business case of those competitors that have deployed (or plan to deploy) their own infrastructure and could be unable to recover the cost due to downward pressure on broadband retail prices	Level-playing field in the market in using and acquiring infrastructure access products is ensured Less intrusive intervention by the NRA for non-discrimination remedies, innovation is market driven Technical and economic replicability of new services is ensured As regards copper access pricing this option aims to be neutral since it reflects the competitive process, on the basis of asset replicability and using a single model for copper and NGA access products	No improvement in the market conditions as regards the non-price issues of access Technical and, especially, economic replicability of new services is not ensured because of the lack of guidance on non-discrimination and the absence of an economic replicability test The copper access prices would be too high and they could squeeze out access-based alternative operators or lead to high retail prices. The potential over-compensation of SMP operators and their better financial position would put them at an advantage. This might deter competitors because the latter might fear not being able to face an aggressive pricing policy of the SMP operators

		This option could hinder competition in provision of new and/or enhanced services		
Rating (1=worst / 4 =best)	2	3	4	1
Objective 2 (b): Allowing consumers to benefit from greater choice in terms of innovative and affrodable services	In the current circumstances consumers do not sufficiently benefit from innovative and affordable services	Consumers might benefit from relatively low (reduced) broadband prices and broader choice for existing products (e.g. new tariff structures) at the expense of the innovative services over NGA. The latter would be provided with a delay due to the prescriptiveness of the non discrimination obligation and the relatively low prices of the broaband retail services Potential bill-shocks might arise due to the need to migrate to the NGA network when the copper network is switched off	Since this approach ensures technical and economical replicability of the NGA retail products and wholesale copper access prices also anchor NGA retail products, consumers can benefit from innovative services at affordable prices at a quicker pace	The affordability and take-up of broadband services migh be reduced. Low-end customers would be negatively affected while high-end ones could benefit from more innovative services provided over NGA at higher prices in geographic areas where infrastructure competition requires innovation
Rating (1=worst / 4 =best)	1	3	4	2
Objective 2 (c): ***Ensuring transparency***	The market in some Member States can lack sufficient transparency which inceases possibility of distortion of competition Insufficent compliance monotoring can continue to exist in some Member	As regards non price issues the SMP operator does not gain undue competitive advantage through granting its downstream business preferential acess to relevant information on wholesale services	As regards non price issues the SMP operator does not gain undue competitive advantage through granting its downstream business preferential acess to relevant information on wholesale services	As regards non price issues the SMP operator may gain undue competitive advantage though granting its downstream business preferential acess to relevant information on wholesale services

	States	Extensive list of Key Performance Indicators is able to detect discriminatory behaviour and enhance transparency on quality and development of SMP operators' acess products to bigger extent but the implemnation cost can be disproportionate As regards price issues, the use of a FDC model based on the SMP operator's accounts reduces the level of transparency and grants the SMP operator a informational advantage over the access based alternative operatores and the NRA	Key Performance Indicators in specific areas are still able to detect discriminatory behaviour and enhance transparency on quality and development of SMP operators' acess products As regards price issues, the use of an engineering BU LRIC model ensures transparency for all the stakeholders	As regards price issues, the use of an engineering BU LRIC model ensures transparency for all the stakeholders because NRAs consult them on the details of such theoretical model
Rating (1=worst / 4 =best)	1	3	4	2
Objective 3 (a): ***Fostering NGA roll-out and development of new and innovative services***	The *status quo* situation has not and is not contributing to spread the NGA roll-out across the EU, which is still quite limited compared with other regions of the world This option does not incentivise more investment Attainment of DAE goals is more difficult and uncertain	Too prescriptive approch can lead to increase costs for the SMP oprators which combined with strict cost orientation can lead to decresed investments in NGA networks and innovations This option does not incentivise more investment Attainment of DAE goals is more difficult and uncertain	As equivalence of input for products or services in acess markets could, under certain conditions, lead to no regulated wholesale access prices on NGA networks, it would create a balance between promoting competition and investment in NGA infrastructures Incresed incentives to invest in more risky business Increasing	This option would maximise revenues for SMP operators but might not incentivise NGA investment because of high copper revenues and the damage made to competition Attainment of DAE concerning the take-up of NGA services could be uncertain The high copper prices (in some cases increased) would ensure sufficient return on

		The expected reduction in the wholesale access prices in many Member States would reduce the incentives to invest in NGA The transition from copper to NGA would be difficult given the resulting increase on the premium of NGA products with respect to copper, the potential insufficient revenues per user and the requirement to switching off the copper network in a timeframe, which might not be either technically or economically feasible (and also desirable)	likelihood of attainment of DAE goals Investments from outside the Union can be equally attracted With this option, operators will be compensated at the adjusted current cost of deploying an NGA network so the cost recovery is ensured and the incentives to invest in new technology are not distorted but fostered The costs of those parts of the network that are less contestable (i.e. civil engineering infrastructure) are modelled and valued to ensure predictability and a strict recovery of costs	both copper and NGA-based broadband connections for the SMP operators who might have the resources to make the necessary investments. The transition to NGA would not be hindered as the premium on NGA products would not be very high
Rating (1 = worst / 3 = best)	2	1	4	3
Objective 3 (b): ***Creating an investment friendly environment through creating increased regulatory predictability***	Due to the lack of regulatory consistency and predictability the investment environment would not improve	Despite its predictability, the excessive downward pressure on broadband retail prices would not contribute to create investment friendly environment	Balance between static and dynamic efficiency and stability in the copper access prices would create an investment friendly environment	Imbalanced investment environment where actual SMP operators might enjoy too favourable conditions at the expense of access based competitors Relatively high copper access prices might lack sufficient stability and would tend to increase overtime
Rating (1 = worst /	2	1	4	3

3 = best)				
Objective 3 (c): ***Strengthening the competitiveness of the Union industry***	The existing barriers to the internal market limits the possibility of developing pan-EU operators, putting European industry at a disadvantage compared to other operators active in larger integrated markets	The Union could lag behind in network penetration and provision of new and innovative services under this approach, which would be too presciptive and desincentivises NGA investment, espcially if the average revenue per user (ARPU) is negatively affected	Fewer bur clear rules coupled with no wholese price obligations on NGA, subject to effective implementation on the obligations of non discrimination and cost orientation on copper, contributes to foster the investment and take-up of NGA services	Higher risk of re-monopolisation of the NGA network. In the medium-term access based operators might not effectively compete and invest, reducing in turn the SMP operators' incentives to invest
Rating (1=worst / 4 =best)	1	2	4	3
Assessment score	**11**	**18**	**32**	**19**
Compliance costs ***(1= most costly / 4 = least costly)***	4	1	2	3
Administrative costs ***(1= most costly / 4 = least costly)***	4	1	2	3
Feasibility ***(1= least feasible / 4 = most feasible)***	4	1	3	2
Final score	***23***	***21***	***39***	***27***

Annex 11

List of acronyms

BEREC - Body of European Regulators of Electronic Communications

BU - Bottom Up

BU LRIC+ - Bottom Up Long Run Incremental Cost Plus

CCA - Current Cost Accounting

CJEU – Court of Justice of the European Union

CP - Common Position

CRA - Charles Rivers Associates

DAE - Digital Agenda for Europe

DCF - Discounted Cash Flow

ECTA - European Competitive Telecommunications Association

EDC - Embedded Distributed Cost

EEO - Equally Efficient Operator

ETNO - European Telecommunications Network Operators

EFTA - European Free Trade Association

EoI - Equivalence of Inputs

EoO - Equivalence of Outputs

ERG - European Regulatory Group

FTTC - Fibre To The Cabinet

FTTH - Fibre To The Home

FDC - Fully Distributed Cost

GDP - Gross Domestic Product

HCA - Historic Cost Accounting

IAB - Impact Assessment Board

ICT - Information and Communication Technology

KPI - Key Performance Indicator

KPO - Key Performance Objective

LLU - Local Loop Unbundling

LRIC - Long Run Incremental Costs

MDF - Main Distribution Frame

MEA - Modern Equivalent Asset

NGA - Next Generation Access

NRA - National Regulatory Authority

ODF - Optical Distribution Frame

RAB - Regulatory Asset Base

REO - Reasonable Efficient Operator

SLA - Service Level Agreement

SLG - Service Level Guarantees

SMP - Significant Market Power

TD - Top Down

TFEU - Treaty on the Functioning of the European Union

VDSL - Very high bit-rate Digital Subscriber Line

VULA - Virtual Unbundling Local Access

WDM - Wave-length Division Multiplexing

Annex 12 – Glossary of Technical Terms

‘Bottom-up modelling approach’ means an approach that develops a cost model starting from the expected demand in terms of subscribers and traffic. It then models the efficient network required to meet the expected demand, and assesses the related costs using a theoretical network-engineering model, for the purpose of calculating the cost on the basis of an efficient network using the latest technology employed in large-scale networks.

‘Common costs’ are shared costs for products or services produced jointly which are not attributable to any single product or service.

‘Copper anchor’ is a cost oriented copper wholesale access product which constrains the NGA prices in such a way that NGA services will be priced in accordance with the consumers’ willingness to pay for the additional capacity and functionalities an NGA based retail product can provide in comparison with a copper based retail product.

‘Current costs’ means the costs resulting from valuing an asset at its replacement cost, i.e. the cost of replacing it with either the same asset or another asset of similar performance characteristics, allowing for wear and tear and adjustments for efficiency.

‘Depreciation methods’ are methods for allocating the value of an asset over the life of the asset, thus influencing the profile of the allowable earnings for the asset owner in any given period.

‘Downstream costs’ are the costs of retail operations, including marketing, customer acquisition, billing, and other network costs, incurred in addition to those network costs already included in the wholesale access service.

‘Equivalence of Input (EoI)’ means the provision of services and information to internal and third-party access seekers on the same terms and conditions, including price and quality of service levels, within the same time scales using the same systems and processes, and with the same degree of reliability and performance. EoI as defined here may apply to the access products and associated and ancillary services necessary for providing the ‘wholesale inputs’ to internal and third-party access seekers.

‘Equivalence of Output (EoO)’ means the provision to access seekers of wholesale inputs comparable, in terms of functionality and price, to those the SMP operator provides internally to its own downstream businesses albeit using potentially different systems and processes.

‘Incremental costs’ are costs that are directly associated with the production of a business increment, i.e. the additional cost of supplying a service over and above the situation where the service was not provided, assuming all other production activities remain unchanged.

‘Key Performance Indicators (KPIs)’ are indicators that measure the level of performance in the provision of the relevant wholesale services

‘Long Run Incremental Costs (LRIC)’ means the incremental costs corresponding to a time horizon where all factors of production, including capital equipment, are variable in response to changes in demand due to changes in the volume or in the structure of production. Therefore all investments are considered as variable costs.

‘Mark-up’ means the addition made to the incremental cost of a specific service in order to allocate and recover the common costs through allocation to all services for which those common costs are relevant.

‘Non-reusable civil engineering assets’ are those legacy civil engineering assets that are used for the copper network but cannot be reused to accommodate an NGA network.

‘Regulatory accounting value’ is the value of an asset as recorded in the audited regulatory accounts of an undertaking which considers actual utilisation and lifetimes of the assets, which are typically longer than those recorded in statutory accounts and which are more in line with technical lifetimes.

‘Regulatory Asset Base (RAB)’ means the total capital value of the assets used to calculate the costs of the regulated services.

‘Reusable civil engineering assets’ are those legacy civil engineering assets that are used for the copper network and can be reused to accommodate an NGA network.

‘Service Level Agreements (SLAs)’ means commercial agreements under which the SMP operator is obliged to provide access to wholesale services with a specified level of quality.

‘Service Level Guarantees (SLGs)’ form an integral part of SLAs and specify the level of compensation payable by the SMP operator if it provides wholesale services with a quality inferior to that specified in the SLA.

‘Wholesale inputs’ means an access product required for access seekers to supply end-users with a broadband service on a retail market and consisting of an active or passive product or a virtual access product offering equivalent functionalities to a passive access product. Wholesale inputs can be provided over legacy copper network infrastructures or NGA-based infrastructures.