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**Impact Assessment
Annexes V-XI**

Accompanying the document

**Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE
COUNCIL**

**on measures to reduce the cost of deploying high-speed electronic communications
networks**

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ANNEX V

LIST OF DISCARDED OPTIONS

This Annex lists group of proposals that have been discarded from further analysis of impacts because they were manifestly not in line with the subsidiarity or proportionality principles, ineffective or inefficient vis à vis the specific objectives of reducing broadband deployment costs and/or counterproductive in view of other objectives or EU policies (such as competition, technological neutrality, etc...).

- **Measures incentivising broadband investments** (such as public funding for the execution of coordinated civil engineering works projects or tax exemptions for infrastructural investments in passive infrastructures).

While **public funding** may be considered an important factor to ensure the roll-out of NGA networks in particular in remote areas, this kind of measures would not tackle the more specific objective to reduce the costs of deployment pursued by this initiative and affecting both privately and publicly funded projects. Moreover, tax harmonisation would also go beyond the scope of powers provided for at EU level.

- **Full harmonisation of construction and urban planning law applicable to passive infrastructures** (including harmonisation of right to expropriate, restrictions to separate public works in order to force co-deployment, etc...)

While some minimum requirements of permit granting procedures may be essential to reduce the red tape limiting investments, a full harmonisation at EU level would run against the subsidiarity principle. In alternative, a benchmarking exercise of time and cost for permit granting at local level at EU level could be ineffective and highly costly.

- Imposing specific **cross-utility business models** for the provision of wholesale access to new and/or existing passive infrastructures (such as mandating passive infrastructure clearing houses or cross-utility network companies managing the access to the passive infrastructure or mandating specific rules on tariff regulation of the main service ensuring sufficient incentives to share the infrastructures with electronic communications networks)

Different business models may develop in the market in order to better exploit the synergies across utilities and the timing mismatch of investments in passive infrastructures. However a mandatory wholesale business model would run against the proportionality principle. In addition, **mandating a specific tariff regulation** of the main services provided by other utilities would not fit with the scope of the initiative and could interfere with the pursuit of the general interest linked with the provision of these services and the related regulatory system.

- Mandatory **exemption from permit granting procedure for civil works** concerning passive infrastructure for broadband.

While certain civil works may have limited impacts and could well be exempted from permit granting in order to reduce administrative costs, a general exemption from permit granting of civil works concerning passive infrastructures for broadband laid down in EU law could be not proportionate vis à vis other general interests in some other cases and it could run against the subsidiarity principle.

- **Tacit approval for permit granting** of civil works concerning passive infrastructures for broadband

While presumption of tacit approval in the absence of an explicit decision concerning the permit may well be an instrument provided for in national law in order to ensure the interest of the applicant to obtain a decision within a reasonable time and therefore to reduce administrative costs of permit granting procedures, a mandatory principle of tacit approval for permit granting

concerning passive infrastructures established by EU law could impinge on competences of national authorities and the subsidiarity principle.

- Imposing **specific constructions techniques and/or network topologies** with the aim to reduce deployment costs
Instructions concerning the technologies to be adopted would impair competition among operators and could stifle innovation, in contrast with the technological neutrality principle.
- **Mandatory switch-off of the copper network** by a predefined date (including removal of un-used cables)
Such a measure would mainly deal with demand stimulation, rather than addressing the objective of cost reduction, while at the same time running against the technological neutrality principle. The mandatory removal of un-used cables could prove to be not proportionate, while it could be an element for commercial negotiation when market interest arises.

ANNEX VI

ANNEX VI

Relevant provisions under the current electronic communications regulatory framework

The table below summarises the provisions under the current framework for electronic communications relevant for cost reduction measures. These are enshrined in the Framework Directive 2002/19/EC as amended by Directive 2009/140/EC (FD) and the Access Directive 2002/19/EC as amended by Directive 2009/140/EC (AD) and cover both asymmetric and symmetric obligations that can be imposed in particular on electronic communications operators. The main limitations for each measure are identified in bold.

Measure	Legal basis	Scope	Specific requirements	Enforcement	Cost sharing principle
Sharing of passive infrastructure	Art. 12(1)(a) AD	<u>Subject:</u> Electronic communications network operators with significant market power (SMP) <u>Object:</u> Buildings, entries to buildings, building wiring, masts, antennae, towers and other supporting constructions, ducts, conduits, manholes, cabinets	- based on the nature of a market problem identified by a market analysis - proportionate and justified in the light of the objectives laid down in Art. 8 FD - public consultation - European coordination according to Art. 7/7a FD	NRA	Cost orientation
	Art. 12(1) FD	<u>Subject:</u> Electronic communications network operators that are holders of rights of ways or beneficiaries of expropriation procedure <u>Object:</u> Buildings, entries to buildings, building wiring, masts, antennae, towers and other supporting constructions,	- measures taken should be objective, transparent, non-discriminatory, and proportionate	NRA Empowerment but no obligation	Private arrangement

		ducts, conduits, manholes, cabinets			
Mapping of facilities	Art. 12(4) FD	<u>Subject:</u> Electronic communications operators <u>Object:</u> Information necessary to establish a detailed inventory of the nature, availability and geographical location of facilities	- upon request by the competent authority	Competent authority together with NRA Empowerment but no obligation	n.a.
Facilitating co-deployment and coordination of public works	Art. 12(2) FD	<u>Subject:</u> Electronic communications network operators that are holders of rights of ways or beneficiaries of expropriation procedure <u>Object:</u> Facilitating the coordination of public works	- in order to protect the environment, public health, public security or to meet town and country planning objectives - public consultation	Member State (legislator or administrative authority) Empowerment but no obligation	Rules for apportioning the costs can be imposed
Streamlining administrative procedures	Art. 11 FD	<u>Subject:</u> Electronic communications network operators <u>Object:</u> Granting rights of ways only	- simple, efficient and transparent procedures - transparent and non-discriminating conditions - decision within six months of the application	Competent authority	n.a.
In-house equipment	Art 12(3) FD	<u>Subject:</u> - Electronic communications network operators that are holders of rights of ways or beneficiaries of expropriation procedure - owners of wiring <u>Object:</u> Sharing of existing wiring	- where justified on the grounds that duplication of such infrastructure would be economically inefficient or physically impracticable - public consultation	NRA Empowerment but no obligation	Rules for apportioning the costs can be imposed, including risk adjustment where appropriate

		inside buildings or up to the first concentration or distribution point where this is located outside the building			
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Annex VII

ANNEX VII

Analysis of the evolution of broadband rollout, the digital divide and the achievement of the Digital Agenda targets by 2020

This annex presents the two scenarios which served as a basis for quantifying certain aspects of the problem definition and especially of the analysis of impacts. It draws largely from an extensive study prepared by Analysys Mason and Tech4i2, to be published in January 2012¹.

This study forecasts that under a scenario with no public intervention (**the do nothing scenario**), the private sector will invest EUR 76 415 million in next generation access (NGA) deployment by 2020. This level of investment will mean that 93.6 per cent of EU27 households (208.6 million) are passed by NGA (i.e. will have fast internet of 30 Mbps available) and 41.5 per cent of households (92.4 million) will be connected with at least 30 Mbps speed². This would still leave 14.2 million household not passed by NGA and therefore a significant percentage of households and businesses still unable to access the Internet-based digital services that NGA makes possible. As for the 100 Mbps target (at least 50% of homes subscribing), relying exclusively on commercial deployments, we could only reach 26% and public interventions are even more relevant for this target.

To ensure equity of access and to achieve the Digital Agenda targets, public intervention is needed with both cost reduction measures and public funding.

The study also estimates that in a **major public intervention scenario** (including 10% deployment cost reduction, which is a rather conservative estimate, related to soft measures, as the potential of such measures can in reality reach 20-30 %³), the assessed needed intervention to provide coverage in all areas not covered by fixed NGA and to reach the 50% take-up target on 100 Mbps would be of EUR 57 084 million⁴. This level of intervention investment encourages commercial leverage of EUR 118 203 million (2.07 times the intervention investment). Under this scenario an additional 5.7 million households are passed by NGA by 2020 (in comparison with the do nothing scenario). This scenario also leads to an additional 46.5 million households connecting to NGA.

The two scenarios are summarised below:

Scenario	Total NGA investment (EUR million)	Intervention investment (EUR million)	Commercial leverage due to intervention (EUR million)	Households passed by NGA in 2020 (thousands) (% EU27 households)	Households connected to NGA in 2020 (thousands) (% EU27 households)
Do nothing	76 415	0	0	208.592 (93.6%)	92 432 (41.5%)

¹ See Analysys Mason and Tech4i2 "The socio-economic impact of bandwidth" (SMART 2010/0033), Chapter 9.2. NGA investment and deployment

² Euromonitor predicts there will be 222 825 500 households in the EU27 member states in 2020

³ Analysis Mason "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)"

⁴ In the major intervention scenario it is assumed that to reach the 100Mbps target (where the estimated gap is much larger in relation to that target) we need 82% of coverage of 100Mbps to ensure 50% take-up including additional funding to be used as end-user subsidy.

Major intervention	211 179	57 084	118 203	214 314 (96.2%)	138 915 (62.3%)
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Although the number of houses remaining to be connected seems small, in fact, the smaller this number, the higher the connection costs. This is because the remaining households are located in areas where income from users will not meet the cost of deployment, and those deploying NGA would make a loss. In that sense, cost reduction measures would help in shifting the break even line for companies wishing to deploy in this areas (with or without public money support) and thus would help reduce the digital divide. Such cost reduction measures would render public investments more efficient, too.

This same study quantifies broader economic impact of high speed broadband deployment under these two scenarios described above. While the do nothing scenario would be closed to the business as usual scenario under the present impact assessment, the level of investment reached in the major intervention scenario implies in addition to cost savings of 10% a huge public resource intervention that is not the objective of the analysed cost reduction initiative. However the assessment of benefits linked to the two scenarios still gives a quantification of impacts that would be reached in the do nothing case and in the case when we consider the achievement of the most ambitious DAE target.

Scenario	Total NGA investment (EUR billion)	Input–output benefits (EUR billion)	Jobs created (million)	Consumer surplus benefits (EUR billion)
Do nothing	76.4	181.2	1.35	26.5
Major intervention	209.3	569.4	3.94	31.9

The table demonstrates that considerable benefits will arise from investment in broadband deployment. Input output benefits provide far higher levels of benefit than those achieved by consumer surplus analysis under both scenarios - under the *do nothing* scenario consumer surplus benefits contribute 12.8 per cent of total (input output and consumer surplus) benefits, they comprise 5.3 per cent of total benefits in the *major intervention* scenario.

Job creation benefits are relatively high. But job creation impacts are relatively slow to materialise. In the first three years of the major intervention scenario less than a third of the total jobs are created with 27.5 per cent (1.083 million jobs) of total jobs in the first three years. Intervention to support broadband deployment will help to stimulate economies and create jobs but the effects are not as immediate as would be desirable in the current economic circumstances.

Annex VIII

ANNEX VIII

Analysis of distributional effects – costs and benefits for direct stakeholders

1. Costs & benefits for direct stakeholders under *OPTION 1*

Stakeholders	Benefits	Costs	Cost benefit assessment
Undertakings deploying broadband	A few undertakings in a limited number of Member States would profit from cost reduction measures, which would however be limited in the scope (telecoms infrastructure only, rights of way only, as determined by the current regulatory framework).	A few undertakings in a limited number of Member States would incur certain administrative and operational costs (e.g. transparency of planned works, duct rental, etc.)	Although benefits would outweigh costs for a minority of undertakings deploying broadband, the effect across the EU would be insignificant.
Passive infrastructure owners ⁵ (telecom)	A few undertakings in a limited number of Member States would have increased revenues from infrastructure rental, assuming a satisfactory compensation. However prices of passive infrastructure access vary widely across Europe and for example the monthly charges for access to incumbent owned ducts are ranging from 0.01 in PT to 0.85 in AU, while the cost oriented price appears to be less than EUR 0.30 per meter monthly ⁶ .	A few undertakings in a limited number of Member States would incur certain administrative and operational costs (e.g. mapping of infrastructure and of planned works etc.). They might also have reduced incentives to invest unless compensated satisfactorily.	The cost benefit ratio would be highly dependent on the prices set by regulators. Moreover, as this would apply only to a minority of undertakings deploying broadband, the effect across the EU would be insignificant.
Passive infrastructure owners (non telecom)	No major impacts.	No major impacts.	No major impacts.

⁵ **Passive infrastructure owners** are all the actors owning passive infrastructure suitable for broadband roll out, ducts, conduits, manholes, cabinets, poles, masts, antennae, towers and other supporting constructions. This would in principle include telecom and non telecom owners, like public authorities (for ex.owning transport infrastructure), municipalities and utilities (energy networks, sewers etc.).

⁶ For an analysis of duct and poles rental prices see Analysis Mason Paragraph 4.4 of "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)"

Housing sector	No major impacts.	No major impacts.	No major impacts.
Public authorities	Member States and regions remain free as to whether and how to implement the measures.	No support or detailed guidance is granted as to the implementation of the measures. Costs are fully dependent on solutions adopted by Member States, therefore they could differ substantially.	The cost benefit ratio varies greatly across Member States. Yet, it can be assumed that Member States would minimise / optimise their costs in function of the already existing institutions and structures.

The figure below is meant to help the reader visualise the relative importance of direct economic impacts under Option 1 and is not meant to give a quantitative assessment of costs and benefits, which are qualitatively described in the table above.

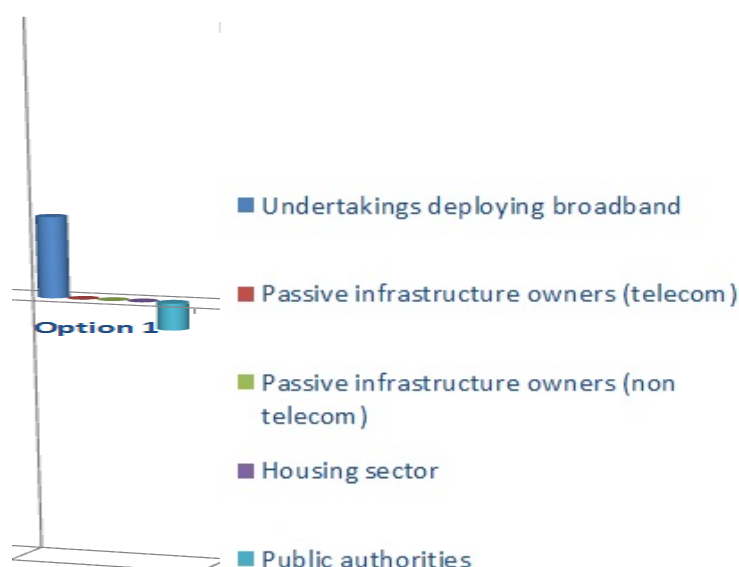


Figure 1: Direct economic impacts of Option 1 per category of stakeholder

2. Costs & benefits for direct stakeholders under OPTION 2

Stakeholders	Benefits	Costs	Cost benefit assessment
Undertakings deploying	All undertakings in a certain number of Member States would profit from Increased efficiency in the planning of infrastructure	All undertakings in a certain number of Member States would incur certain administrative and operational	The benefits would overweight costs (as confirmed in the consultation process) and

broadband	deployment, increased opportunities for telecom infrastructure access, and for co-deployment between telecoms, lower costs for negotiating sharing and co-deployment arrangements, the CAPEX savings on investments ⁷ (25% to 75% savings for duct sharing, 15% to 60% savings for co-deployment, 20% to 60% savings for in building wiring) and quicker NGA deployment, savings in terms of human resources and time devoted to obtaining rights of way, and increased legal certainty.	costs (e.g. transparency of planned works, duct rental, etc.) The costs would vary especially in function of rental charges which at present vary greatly in the EU, but are still considered relatively low.	these effects would be felt by a larger number of undertakings deploying broadband than under the previous option, given the nature of the instrument. Therefore the direct impact on these undertakings across the EU would be higher.
Passive infrastructure owners (telecom)	All telecom passive infrastructure owners in a certain number of Member States would better exploit their assets due to an increased sharing of infrastructure, resulting in additional revenues. For those companies involved in co-deployment, the increased coordination of works would lead to a reduced cost for joint tendering and joint permit granting requests.	All telecom passive infrastructure owners in a certain number of Member States would incur increased costs for collecting and sharing data on existing passive infrastructure and on planned investments, as well as related to allowing access and negotiating sharing arrangements. Disincentives to invest might appear if access is granted at a low price.	Although the access to infrastructure might affect passive infrastructure owners negatively if the costs for access are too low, we consider that the benefits would outweigh the costs, in particular given the other measures. Also, an EU market for passive infrastructure would be created, given the nature of the instrument.
Passive infrastructure owners (non telecom)	No major impacts.	No major impacts.	No major impacts.
Housing sector	Potential financial benefits in selling NGA access ready labelled buildings would derive from recognisable value in the market	Market development might compel construction companies to incur additional costs to equip buildings as	The benefits would compensate for the incurred costs.

⁷ On savings see also Chapter 2.4 of this Impact assessment, Annex VI with Detailed analysis of impacts and Analysis Mason "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)"

	and would influence property purchasers and increase the value of properties.	NGA ready.	
Public authorities	Member States would benefit from detailed guidance as to how to implement the measures and to obtain efficiency gains.	The requirement to harmonise specific features of already existing databases would create some administrative costs. Additional costs would be incurred in relation to the alignment of the rights of way processes. For those Member States that decide to implement the Recommendation from scratch, the costs could be substantial.	Direct impacts on public authorities, including administrative burden, are considered moderately burdensome: Member States would either need to implement a clearly defined and limited set of harmonising measures or give reasons for not implementing it.

The figure below is meant to help the reader visualise the relative importance of direct economic impacts under Option 2 and is not meant to give a quantitative assessment of costs and benefits, which are qualitatively described in the table above.

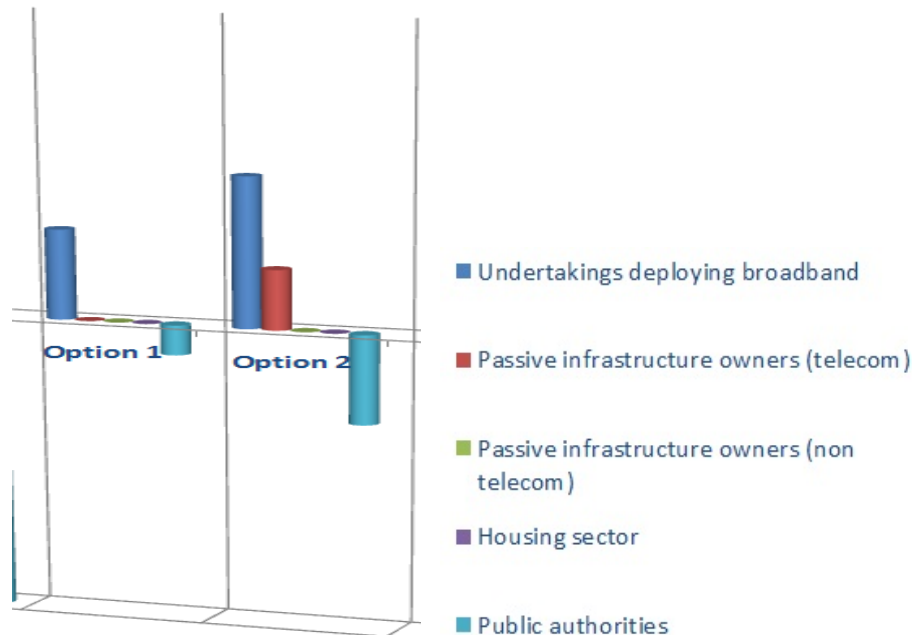


Figure 2: Direct economic impacts of Option 2 per category of stakeholder, as compared to Option 1

3. Costs & benefits for direct stakeholders under *OPTION 3*

Stakeholders	Benefits	Costs	Cost benefit assessment
Undertakings deploying broadband	Undertakings throughout all Member States would be able to improve infrastructure planning due to increased transparency and would benefit from increased opportunities for access, including non-telecom infrastructures, and for co-deployment between various actors across sectors due to transparent information on planned investment and access to civil works. The CAPEX savings on investments ⁸ (25% to 75% savings for duct sharing, 15% to 60% savings for co-deployment, 20% to 40% savings for in building wiring) and quicker NGA deployment (due to sharing, permits, NGA ready buildings, etc.) would reduce the break even point and increase number of profitable investments. Increased legal certainty and dispute settlement mechanism would lower costs for disputes. Cross border operators would benefit most from harmonised rights and obligations throughout the EU.	All undertakings throughout the EU would incur certain administrative and operational costs (e.g. duct rental costs, costs for detailed ground surveys, transparency of planned works, etc.)	The benefits would greatly outweigh costs for this category of stakeholders and the effects would be felt by all EU undertakings wishing to deploy broadband. Therefore the direct impact on these undertakings across the EU would be quicker and significantly higher.
Passive infrastructure owners (telecom)	All telecom passive infrastructure owners throughout the EU would better exploit their assets due to an increased sharing of infrastructure, resulting in additional revenues. Mapping	All telecom passive infrastructure owners in a certain number of Member States would incur increased costs for collecting and sharing data on existing passive	Benefits would be higher than the costs, in particular given that access would be granted following commercial negotiations, allowing

⁸ Savings are estimated on the basis of case studies in different Member States, see also Chapter 2.4 of this Impact assessment, Annex VI with Detailed analysis of impacts and Analysis Mason "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)"

	would decrease excavation damage (savings estimated at tens of millions of Euro per year per Member State). For those companies involved in co-deployment, the increased coordination of works would lead to a reduced costs for joint tendering and joint permit granting requests.	infrastructure and on planned investments, as well as related to allowing access and negotiating sharing and co-deployment arrangements.	for profits for all undertakings across the EU which are infrastructure owners, as well as the measures in the other areas (e.g. permits, co-deployment, etc.)
Passive infrastructure owners (non telecom)	Utilities' infrastructure owners would better exploit their assets due to cross-utility sharing of infrastructure, resulting in additional revenues. Greater benefits could derive from synergies in the deployment of smart grids and increased civil engineering works coordination.	Costs for utility infrastructure owners would be mostly related to allowing access, negotiating sharing and co-deployment arrangements, including responding to security concerns.	Benefits from the additional revenues and in particular from the potential co-deployment (smart grids) would outweigh the costs. In addition, competition issues would be less relevant.
Housing sector	Some benefit for the housing sector would derive mainly from selling new "NGA access ready" labelled buildings, with increased recognisable value in the market, as compared to old houses.	Developers and construction companies would incur some additional costs to equip and certify buildings as NGA ready.	The benefits would be just slightly higher than the incurred costs.
Public authorities	A small reduction of the administrative burden would be experienced by public authorities concerning the granting of rights of way and other permits, due to increased public works coordination and increased use of existing passive infrastructure.	Public authorities would incur non-negligible costs in relation to the setting up and managing of atlases including suitable infrastructure of utilities (from the low millions to tens of millions, depending on the degree of complexity of the mapping), the creation and running of a platform collecting announcements of planned investments and the establishment of the single point of information on permits. Significant costs might also be related to	Although the costs of these measures seem very high, there are many synergies between them, which would reduce the overall costs. Moreover, often part of the cost of mapping systems might be already sustained or planned for spatial planning purposes (e.g. INSPIRE Directive) or exist in the data bases of companies. Therefore synergies could be

		dispute settlement systems related to access to infrastructure, co-deployment agreements across sectors, as well as to permit granting.	created for sharing the cost of atlases between different functionalities/sub products of existing or planned mapping systems.
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The figure below is meant to help the reader visualise the relative importance of direct economic impacts under Option 3 and is not meant to give a quantitative assessment of costs and benefits, which are qualitatively described in the table above.

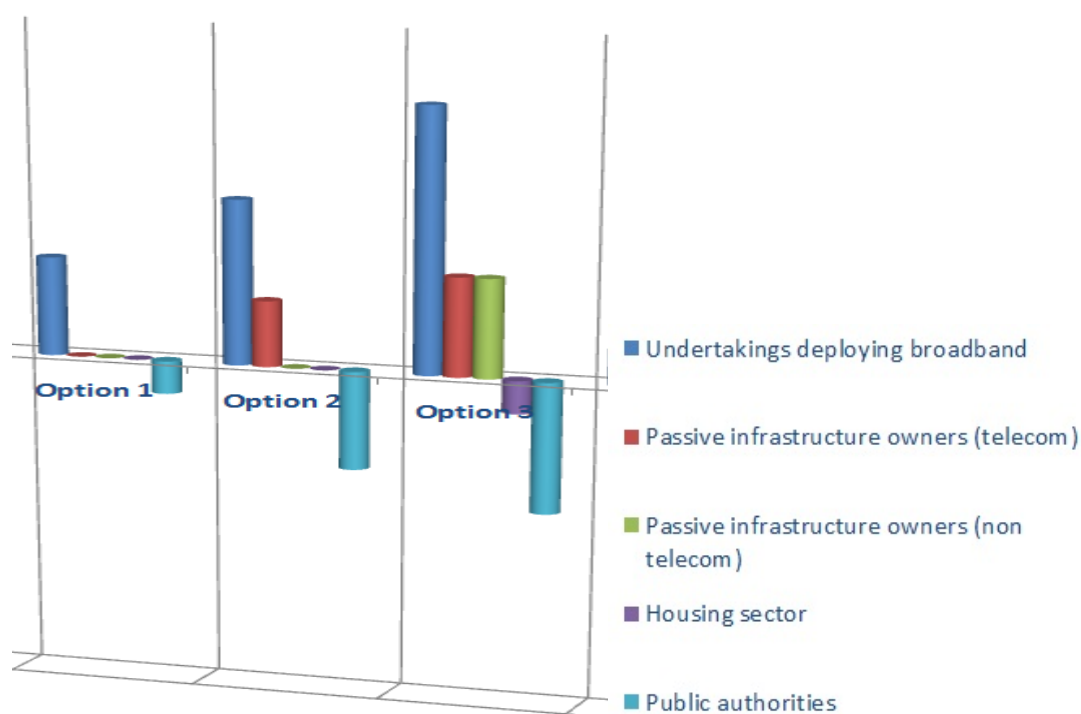


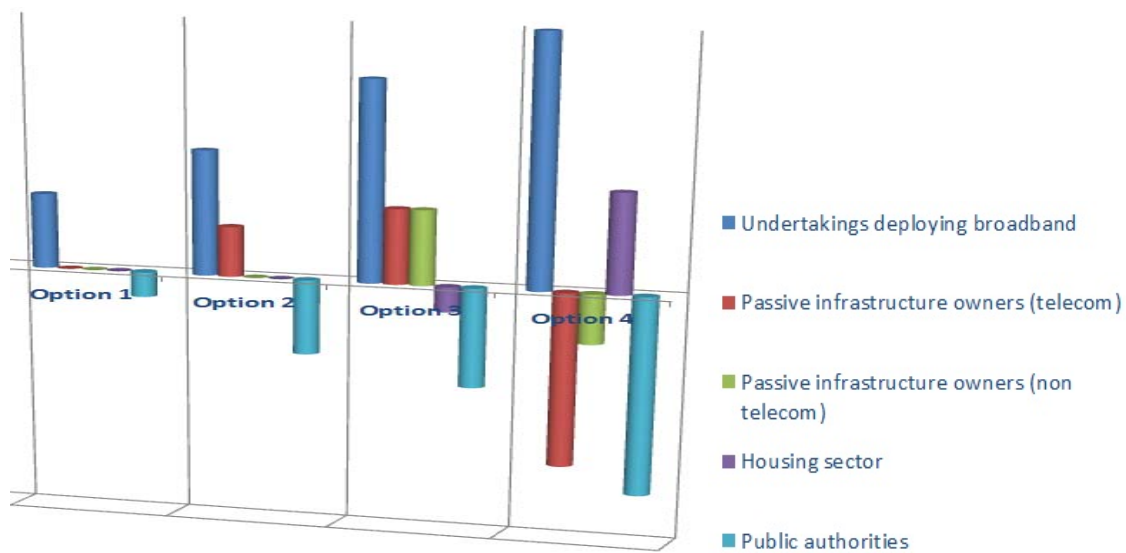
Figure 3: Direct economic impacts of Option 3 per category of stakeholder, as compared to Options 1 and 2

4. Costs & benefits for direct stakeholders under *OPTION 4*

Stakeholders	Benefits	Costs	Cost benefit assessment
Undertakings deploying broadband	All benefits for undertakings deploying broadband spelled out under the previous option would be maximised, in particular due to the cost orientation of acquiring access, the possibilities for co-deployment offered by public works / by the extra capacity (spare ducts) laid by the public authorities, the Full one-stop-shop and the fact that all buildings become NGA ready (leading to increased demand).	These undertakings would still incur certain administrative and operational costs, but these would be significantly reduced (e.g. duct rental costs)	The benefits for this category of stakeholders are maximised under this option.
Passive infrastructure owners (telecom)	The main benefits for telecom passive infrastructure owners throughout EU would be the decreased excavation damage, the increased possibilities to co-deploy, and the streamlined permits regime.	Telecom passive infrastructure owners throughout EU would not be able to make profits, but just to cover their costs. The main costs would be related to collecting and sharing data on existing passive infrastructure and on planned investments, as well as related to allowing access and negotiating sharing arrangements.	This option would lead to a significantly reduced business interest on the side of passive infrastructure owners due to cost-oriented prices for access, thus to a potential disincentive to invest.
Passive infrastructure owners (non telecom)	Benefits for utility companies would mainly derive from synergies in the deployment of broadband (e.g. smart grids, smart transport systems, etc.)	Costs for utility infrastructure owners would be mostly related to allowing access, negotiating sharing arrangements, including responding to security concerns. Moreover, under this option, revenues would only be allowed to the extent that	The business interest on the side of the utilities would be lower due to the cost oriented prices. The synergies in the deployment of broadband might however mitigate to an extent the inconveniences of

		they cover these costs.	sharing infrastructure.
Housing sector	Construction companies would derive benefits from extra works due to the need to equip all buildings with NGA.	Construction companies and property developers would incur additional costs related to the need to certify buildings as NGA ready.	The benefits would outweigh for the incurred costs, in particular given the extra demand for works.
Public authorities	A higher reduction of the administrative burden would be experienced by public authorities concerning the granting of rights of way and other permits, due to increased public works coordination and increased use of existing passive infrastructure. Also, certain functions (e.g. maintenance of EU mapping system) would be taken over at EU level.	The implementation and managing of mapping databases at EU level would be significant and would potentially duplicate some of the costs already incurred at national level. Additional costs as compared to the previous options would relate to the definition of ex ante cost-oriented prices across industries, and to the deployment of additional empty ducts for all public works. Also, significantly higher costs in human resources, legislative changes and possibly IT investment for the fulfilment of the full one-stop-shop on permit granting procedures since various competencies would need to be merged and integrated.	In terms of administrative burden and costs for public authorities, this option seems rather ambitious and heavy.

The figure below is meant to help the reader visualise the relative importance of direct economic impacts under Option 4 and is not meant to give a quantitative assessment of costs and benefits, which are qualitatively described in the table above.



Figure

4: Direct economic impacts of Option 4 per category of stakeholder, as compared to Options 1, 2 and 3

Annex IX

ANNEX IX

ANALYSIS OF IMPACTS AND IMPLEMENTATION AND ADMINISTRATIVE COSTS BY OPTION

The tables below are mainly based on findings presented in the Analysis Mason study "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)" and on feedback to the public consultation, with particular reference to implementation and administrative costs incurred by public authorities in Member States that implemented measures that are similar to those proposed under this impact assessment.

For each policy options benefits and costs for main stakeholders are presented followed by an additional analysis related to the implementation and administrative costs.

IMPACTS AND ADMINISTRATIVE COSTS OF THE OPTION 1 "BUSINESS AS USUAL "

Benefits for main stakeholders involved/positive direct economic impacts

Guidance on Art. 11 and 12 of the Framework Directive regarding infrastructure mapping and sharing, cooperation in civil engineering works, rights of way, and in-house wiring would stimulate the utilisation of the possibilities offered by the current regulatory framework. The exchange of best practices might furthermore offer practical solutions and raise awareness on measures adopted in Member States sometimes going beyond the regulatory framework.

The actual utilisation and cost benefit ratio of these measures would **depend, among others, on the implementation details in each region or Member State**. Clear **limitations** would however be related to the types of infrastructure envisaged for reuse or co-deployment (telecoms only), to rights of way in a strict sense (rather than all permits), and to sharing in-building infrastructure (rather than ensuring NGA ready buildings), unless Member States pass additional legislation.

Undertakings deploying high speed broadband in those specific Member States/regions benefit from:

- **Higher efficiency and reduced costs in the planning of infrastructure deployment** due to increased transparency and clarified rules on sharing passive infrastructure
- **Reduced costs for investments** (cost savings due to access to shared infrastructure are estimated between 30 and 60%, while coordination in civil engineering works might occasionally lead to savings up to 50%).
- **Time and cost savings for rights of way in the area of in-house equipment.**

Those operators would then be able to profit from major savings and facilitation measures and thus be **able to invest in areas where investments would otherwise not be economically feasible**, eventually **increasing competition**.

Costs for main stakeholders involved/negative direct economic impacts

For undertakings which are mainly or solely telecom **infrastructure owners**, the measures concerning infrastructure sharing could on the other hand reduce the incentives to invest, unless they are compensated in a satisfactory way.

IMPLEMENTATION AND ADMINISTRATIVE COSTS OF THE MEASURES INCLUDED IN OPTION 1

PUBLIC INFRASTRUCTURE DATABASES OR ATLASSES TRANSPARENCY MEASURES (Guidance on transparency mapping)	Administrative burden for authorities: As regards administrative costs, this option would be a rather easy and cheap one to implement. Member States and regions would remain free as to whether and how to implement the measures. They would not need to adapt mapping exercises to the type of pre-existent information on network infrastructures, since no requirement on transparency of already existing information would be imposed. It can therefore be assumed they will minimise / optimise their costs in function of the already existing institutions, mechanisms, and structures. This includes, for instance, adapting mapping exercises to the type of pre-existent information on network infrastructures. Cost of setting up and managing mapping systems for authorities: MS are already implementing different transparency systems. As indicated across sections 2.6 and 4.1, according to the information available to the Commission a number of EU Member States has implemented infrastructure atlases or infrastructure registers or is currently working on introducing such solutions (AT, BE, CY, CZ, DE, DK, FI, FR, IT, LU, NL, PL, PT, RO, SI, ES, SE, UK). This list includes mapping systems created with a view to prevent damages at the time of civil works and local initiatives, limited to one city (e.g. AT, IT). This means that these Member States or specific regions/cities already sustained some costs for setting up mapping systems and yearly costs for managing those systems including costs for collecting, updating and processing data. Some additional investments might however be needed for the fulfilment of the provisions concerning transparency of information on existing and new passive infrastructures as well as on access on these infrastructures that are envisaged by the current draft EU Guidelines for the application of state aid rules. Those measures are requiring Member States to provide for detailed mapping and analysis of coverage of areas benefiting from state aid. In applying the Guidelines, therefore, Member States will have to set up a dedicated central website at national level, concerning on-going state-aid tenders, information on the available infrastructures and conditions for access to existing infrastructures, transparency on the aid granted, including comprehensive and non-discriminatory access to information on the subsidised infrastructure. This compulsory database would therefore not address the need of transparency related to the telecom passive infrastructure that was not financed through state aid and would cover other passive infrastructure of other sectors (energy, sewers, transport) suitable for broadband roll-out only insofar this infrastructure was explicitly included among those to be re-used for the roll out of the subsidised network. In some Member States part of the cost of mapping systems might be already sustained or planned for spatial planning purposes, in application of the INSPIRE Directive, which however covers mainly infrastructure owned by public authorities or by companies mandated by public authorities. The scale of additional investments in MS on top of the cost that they already sustain for financing mapping exercises will depend on the following characteristics of existing mapping exercises: the geographic scope (national/local), the type of infrastructure mapped (telecoms infrastructure/all
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	passive infrastructure), the scope of information required/provided from/to operators/utilities. Obviously, those MSs that have not started yet considering a mapping exercise will have to incur bigger costs, once they decide to do so. Synergies between costs/significant overlaps: Limited savings possible for joint implementation since Member States are usually not implementing all off the databases that could allow for synergies, where economies of scale can be created with mapping jointly with the platform for announcement of planned investments for coordination of civil works and damage prevention and eventually It based permit granting systems However part of the cost of mapping systems is already sustained or planned for spatial planning purposes, therefore synergies could be created for sharing the cost of atlases between different functionalities/sub products of existing or planned mapping systems; Administrative burden for business and other infrastructure owners In some MS infrastructure owners will sustain a cost for collecting and sharing data on existing infrastructure which will however depend on the level of detail of the information chosen and from the level and quality of already existing information in single Member States and on the spatial planning instruments already implemented in Member States.
ACCESS TO PASSIVE INFRASTRUCTURE AND DISPUTE SETTLEMENT MECHANISMS (Guidance on infrastructure sharing)	Administrative burden for authorities NRAs that are imposing SMP access obligations and symmetric sharing based on art.12 are already sustaining cost of dispute settlement mechanisms, according to mechanisms already ensured by the present regulatory framework (see Annex VI). Those costs would continue to be sustained without substantial changes, however still in a limited number of Member States. Administrative burden for business and other infrastructure owners Telecom infrastructure owners subject to SMP obligations on access to passive infrastructure and those subject to symmetric sharing based on art.12 obligations are obliged to give information on their infrastructure to interested access seekers and negotiate access agreements. Those costs would continue to be sustained without substantial changes, however still in a limited number of Member States.
COORDINATION OF CIVIL ENGINEERING WORKS (Guidance on transparency requirements on planned civil works)	Civil works coordination costs at local level would continue to be sustained in a limited number of Member States (coordination meetings, negotiation costs related to access to civil works as in France etc.). Administrative burden for authorities: would be mainly linked to the cost of voluntarily organising coordination meetings at local level and creating and running the database/technological platform collecting announcements of planned investments. As indicated across sections 2.6 and 4.1, the coordination of civil works is taking place mostly at a local level (BE, FI, DK, DE, LU, NL and SE) in the form of ad hoc meetings or on more formalised way. This includes the Member States which have introduced digging alert systems with an option allowing for coordination of planned works already in (or could be further developed into platforms for the announcement of planned investments. Some other MSs require some sort of coordination of civil works at the time of public roads construction (MT, PL,UK), whereas a few others imposed by law coordination system at local (FR) or central level (PT).

	We can give some examples of cost of creating and running the platforms already sustained by MS E.g. the cost of Finnish Johtotieto (co-digging portal) was EUR 200 000 with an on-going yearly cost of 100 000, whereas Swedish Lendingenskolle dig alert system that could be developed in a planned investments announcement database cost EUR 1.8 million to implement between 2007-2010 and approx. 700.000 per annum to run. NRAs that are imposing co-deployment obligations based on art.12 would be sustaining relatively small cost of dispute settlement mechanisms. For the MS that are already addressing the coordination issue those cost would continue and likely even increase as in the Swedish case where there are plans to further develop the Lendingenskolle system. In these Member States public authorities would have to incur the costs of investing in electronic communication network with a view to announcing their own planned investments and the cost of creating and running the database/technological platform collecting announcements of planned investments. However many member states are not developing any system of announcement of planned investments and we assume that they would not significantly increase this spending on transparency aimed at incentivising co-deployment. Administrative burden for business and other infrastructure owners As regards the administrative burden on actors deploying broadband (mainly private operators) and on owners of infrastructure (utilities and operators), in MS where they are already required to coordinate civil works, they would continue to send information on owned infrastructure and to announce planned investments. We assume that the situation would not change considerably, given the soft character of the measures and that investors would continue sustaining a small cost for sharing data on planned investments in the limited number of MS where this system exist. There is a consequent slightly reduced administrative burden for joint tendering and joint permit granting for construction work in the few Member States where coordination is happening on a wider basis and not only in exceptional circumstances. .
STREAMLINING OF PERMIT GRANTING PROCESSES – COORDINATION, TRANSPARENCY, E-PERMITS (Guidance on facilitating permit granting)	Implementation cost and administrative burden for authorities Cost for facilitation of permit granting (IT supported permit granting, or single contact point coordinating function for permit granting) Only a minority of Member States created and are running the database/technological platform facilitating permit granting. Netherlands introduced the possibility of electronic submissions of requests for permits, whereas Greek NRA introduced a single contact point for mobile permits. Poland and Portugal have adopted laws limiting the powers of local authorities to deny rights of way for telecoms operators wishing to deploy electronic communications networks. Only one MS has implemented already the single contact point for permit granting. The cost incurred for setting up the Single Contact Point system for the Licensing of Antenna masts in Greece developed internally by the Greek NRA was the equivalent of 24 man-months (IT analysis and programming with the aid of Spectrum Department personnel) and 25.000 Euro in computer and network systems for hosting the Single Contact Point (central database replication, web

	application hosting, multiple connections handling). The costs of implementation of the relevant legislation in Poland from the perspective of costs incurred by the NRA or implementing authorities were low, as they consisted on adoption of relevant legislation. We assume that Member States that haven't yet introduced possibility of submission of electronic requests are not going to invest additional resources in this regard and furthermore single contact point like mechanisms are not going to be widespread. Therefore the administrative costs would be limited to Member States that are already implementing similar kind of measures. Administrative burden for business and other infrastructure owners No major savings are to be expected in terms of time an administrative savings for operators due to reduced complexity of the permit granting procedure and the coordinating role exercised by the designated authorities. However some savings might occur, as for example, in case of the AGIV's KLIP system in Belgium that is in part designed to simplify the planning and permit granting process, AGIV estimates that the systems overall saves the operators and authorities combined EUR 29,5 million per annum.
ALIGNMENT MEASURES FOR IN-HOUSE INFRASTRUCTURE FOR NEW BUILDING PROJECTS	Administrative burden for authorities Best practices on in house infrastructure might spread in some additional Member States. Further to the example of FR and ES, no significant additional administrative burden is expected. The cost to the government and/or the NRA is negligible (with the obvious exception of the initial consultation and drafting of the legislation).
	Implementation cost and administrative burden for business and other infrastructure owners Operators have not incurred any costs when new laws obliged new and refurbished buildings to be fitted with common NGA infrastructure. However, in France, it is up to the operator to build this terminal segment in such a way that it can be shared by other operators, which may incur some addition cost. On the other hand, installing the in-building installations in new buildings is on the construction firms that must cover these costs, although these are relatively low (much lower than the cost of in-building water and gas distribution, for example). As access to NGA services becomes more and more important to consumers, it is possible that these construction firms may see a future benefit from the measures, with pre-wired buildings being sought-after by property purchasers. Therefore the construction sector could become more willing to deploy NGA infrastructure as consumer demand grows for NGA services.

IMPACTS AND ADMINISTRATIVE COSTS OF THE OPTION 2: PROMOTING EFFICIENCY GAINS

Benefits for main stakeholders involved / positive direct economic impacts
Compared to a guidance document or best practices, a Recommendation would help in achieving a more consistent application of the regulatory framework by being more prescriptive and would therefore ensure in general higher impacts. A Commission Recommendation would, indeed, have more weight and provide more guidance to Member States and subsequently local authorities. While Member States are not obliged to follow it, they are required to justify a decision not to do so. Furthermore, a Recommendation would be limited as regards the types of infrastructure envisaged for reuse or co-deployment (telecoms only), to rights of way in a strict sense (rather than all permits), and to sharing in-building infrastructure (rather than ensuring NGA ready buildings). In those Member States that would apply the Recommendation, the following benefits would be visible for the main stakeholders:
<i>For undertakings deploying broadband:</i> - Increased efficiency and reduced costs in the planning of infrastructure deployment linked to facilitated sharing and co-deployment arrangements due to some degree of harmonisation of inventories and planned infrastructures announcements affecting awareness on existing and planned infrastructure; harmonisation would particularly facilitate cross border providers; - Increased opportunities for telecom infrastructure access seekers due to transparency and symmetric sharing (that would most probably be more widely applied); operators would be able to make better strategic decisions on network development; - Increased opportunities for co-deployment between telecom due to transparency on planned investments; - Cost for negotiating sharing and co-deployment arrangements would decrease due to increase clarity on sharing obligations and possible co-deployment arrangements enhanced by NRAs; - Capex savings on investments: reduced duplication of excavation works leading to reduced cost for self-digging and quicker NGA deployment potentially up to 60% (or 30% in case of tower sharing⁹); - Savings in terms of human resources and time devoted to obtaining rights of way and negotiating conditions with authorities and land owners due to minimum requirements in transparency and non-discrimination in granting rights; - Cost savings on in house equipment would be achieved due to defined rules for in house sharing and specific conditions;
<i>On all electronic communication infrastructure owners</i> - Assets would be better exploited due to an increased sharing of infrastructure resulting in additional revenues for infrastructure rental; - Increased coordination of works/co-deployment would lead to a reduced cost for joint tendering and joint permit granting requests.
<i>On construction companies</i> - Potential financial benefits in selling NGA access ready buildings if property purchasers would consider the increased value of properties.

⁹ E.g. the initial cost of network deployment in Western Europe using existing ducts ranges from EUR 20 to EUR 25 per metre, rather than an average of EUR 80–100 per metre for deployments that require digging, thus resulting in a 75% cost saving (ENGAGE Group) other estimates confirm a range between 60% and 30% savings, with 30% savings for tower sharing, see Analysis Mason.

Costs for main stakeholders involved / negative direct economic impacts

For undertakings deploying broadband:

- **The total cost of passive infrastructure rental** such as ducts, poles, towers etc. would increase, due to increased infrastructure sharing (but this would be certainly compensated by the savings on civil engineering works. The overall cost benefit ratio in this respect would vary in function of rental charges which at present vary greatly in the EU, more specifically from 0.01 to 0.85 euro monthly for access to incumbents ducts¹⁰).

For all electronic communication infrastructure owners:

- **Infrastructure owners will sustain a cost for collecting and sharing data on existing infrastructure and on planned investments** which will however depend on the level of detail of the information chosen and from the level and quality of already existing information in single Member States and on the spatial planning instruments already implemented in Member States. As such, there might be costs of migration from databases of electronic communication infrastructure owners to a unified information system;
- **The inconveniences and costs related to allowing access and negotiating sharing arrangements** due to widely implemented symmetric access would increase. Alternative operators would increasingly need to provide access on their own infrastructure, while this is only exceptionally the case now (at present only 6 MS are imposing symmetric obligations). The symmetric access obligation could, in very specific cases, affect already acquired competitive advantages, which however could be mitigated by the flexibility of commercial negotiations in defining access conditions. Should MS decide imposing access obligations at a low cost this might create a disincentive to further invest in passive infrastructure.

For construction companies

- Market developments might compel construction companies to incur **additional costs to equip buildings** as NGA ready.

IMPLEMENTATION AND ADMINISTRATIVE COSTS OF THE MEASURES INCLUDED IN OPTION 2

The administrative cost to be sustained by public authorities would related to a more coherent implementation of the regulatory framework .

Typology of costs would not differ radically from the administrative costs analysed under the baseline scenario that was already considering the application of the current framework, except from the fact that **those implementation and administrative costs would be sustained in a bigger number of Member States**, since we presume that the Recommendations would be more effective in promoting already existing regulatory measures if compared to a simple guidelines and best practice exercise.

For the public authorities

- The requirement to harmonise specific features of already existing databases (facilities to be covered, the information to be included and ensuring access for interested parties) and to introduced transparency on planned investments would create **additional administrative costs, as compared to the usual costs of developing and maintaining such databases**; However no additional cost would be sustained to ensure transparency on non –telecom infrastructure and neither to enhance

¹⁰ Analysis Mason, "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)".

	coordination of civil works cross-sectors, since recommended measures would exclusively be limited to the telecom-sector. Presuming a wider application of symmetric obligation within the telecom sector also the cost for NRA to regulate and the related cost for dispute settlement sustained by the NRA would slightly increase, even if considering that departments are already in charge of remedies and solving disputes, this should not lead to a radical increase in those costs. - Additional costs would be incurred in relation to the alignment of the rights of way process in terms of minimum requirements for transparency and non-discrimination.
On all electronic communication infrastructure owners	Recommended transparency measures related to owned infrastructure and planned investments would create a slight increase of the cost for collecting and sharing data. Those costs would however be similar to the one sustained under baseline scenario, even if those would be sustained in a bigger number of Member States. Legal uncertainty would be reduced since the Recommendation would ensure more precise guidance reducing controversies regarding correct implementation of e.g. duct sharing obligations, with corresponding litigation costs. Availability of dispute settlement mechanisms would further reduce costs in case of disputes;

IMPACTS AND ADMINISTRATIVE COSTS OF THE OPTION 3 ENABLING EFFICIENCY GAINS

Benefits for main stakeholders involved / positive direct economic impacts	
Compared to a Recommendation, a regulation would have significantly increased and quicker impacts due to the creation of directly applicable rights and obligations for actors beyond the limits of the current regulatory framework. Universal access to passive infrastructures across utilities accompanied by infrastructure mapping systems would ensure that virtually all infrastructures suitable for broadband rollout can indeed be used. The potential for civil engineering works coordination would be truly enabled, given the obligation to announce planned investments and to negotiate co-deployment when requested, which would be applicable across sectors thereby also facilitating a change of culture on the long run. Additional opportunities would be given by the separate regime of access to public civil engineering works. The establishment of a "single contact point" through a legal instrument would present the guarantee of a comprehensive solution for all permits necessary to rollout networks. EU rules mandating that all new and extensively reconstructed buildings are equipped to be "NGA ready" would ensure major savings and easier/faster in-building deployment for electronic communications operators. In particular, the following benefits would occur rather fast and throughout the entire European Union:	
<i>On undertakings deploying broadband:</i>	
- Increased efficiency and reduced costs in the planning of infrastructure deployment; Setting up of cross-sector inventories of infrastructure suitable for broadband rollout would effectively ensure awareness on existing and planned infrastructure. Such transparency mechanism would enable eliminating cases where access or co-deployment are <i>de facto</i> blocked by lack of knowledge on passive infrastructure network suitable for broadband roll out and cooperation is not possible due to lack of transparency on planned investments. When coupled with a suitable access regime and measures to encourage co-deployment (like right to access to public works) this would trigger more investments, including in 'difficult' areas where currently individual investments are too burdensome. Increased transparency would also reduce the costs of access seekers (less administration, less field studies prior to investment, etc.) and lower the market entry barrier for smaller operators. - Increased opportunities for cross-infrastructure access seekers;	

Since the proposed measures would clearly cover all civil engineering works (not just telecoms actors as it is currently the case for the regulatory framework), the possibilities for cooperation would be significantly increased and thus also the economic impacts of the measure.

In particular, transparency, rights to on demand surveys and universal access obligation applicable also to infrastructure that is not under the authority of the NRA would increase the 'pool' of infrastructure suitable for broadband investments (this is especially relevant when incumbents ducts are full or do not exist). Opening up infrastructure that belongs to actors outside the telecom world (e.g. utility ducts) would ensure that the measure is advantageous not only for alternative operators, but also to incumbent operators and other utilities.

- **Increased opportunities for cross-border access seekers;**

Harmonisation of minimum transparency rights and obligations could also be beneficial to cross-border operators, who would have the guarantee of essential information on passive infrastructure across the EU and a widespread universal access obligation.

- **Increased co-deployment opportunities** due to transparency on planned investments and granted access to civil engineering works of public undertakings, provided that they do not entail additional costs for the public operator;

- **Capex savings on investments : reduced duplication of excavation works leading to reduced cost for civil engineering works and self-deployment and quicker NGA deployment;**

Measures reducing duplication of works have a huge saving potential. The initial cost of network deployment in Western Europe with the use of existing ducts ranges between EUR 20 to EUR 25 per metre, whereas deployments that require digging - EUR 80–100 in average per metre. This means 75% costs saving¹¹ when no digging is required. In case of tower sharing the savings amount to 30%. Overall, savings from rolling out networks based on existing ducts and some self-deployment, as opposed to greenfield investments, are estimated to range between 29 and 58%, including administrative and rental costs, corrected to net present value¹².

Alternatively for the case of **co-deployment linked to enabled coordination of works** the estimated range of potential cost savings for coordinating civil engineering works varies from 15% to 60%¹³. As the examples of Lithuania and Portugal¹⁴ show, relevant measures on transparency and access translate into more NGA networks and generate more resources for greenfield investment in new areas that would not be normally covered by the service. Utility companies might furthermore have a role in increase NGA coverage, and possibly, increase competition in the provision of broadband services¹⁵

- **Cost savings on pre-wiring new and extensively reconstructed buildings;**

EU binding rules according to which all new and extensively reconstructed buildings shall be "NGA ready" will ensure major savings¹⁶ time-wise (for surveys and negotiations with tenants, landlords, building owners) and money-wise (cost of retrofitting existing buildings assessed at 60% of versus 2.5% of construction works in case of new buildings¹⁷) for electronic communications operators, allowing further investments and enhancing competition throughout the EU. According to different estimations, the range of potential cost savings per building for in-building wiring amounts from 20% to 60%.

¹¹ ENGAGE Group, *ibid*.

¹² Analysis Mason Research (2012), PIA versus self-build in the final third: digging into the costs. cited by Analysis Mason *ibid*, page 2637

¹³ *Ibid*.

¹⁴ *Ibid*.

¹⁵ European investment in smart grid should reach 56 billion euro by 2020 (cumulative investments 2010-2020) as specified in Pike Research's report, "[Smart Grids in Europe](http://www.pikersearch.com/research/smart-grids-in-europe)" that examines smart grid trends in Europe and forecasts the size and growth of the market for smart grid technologies through 2020 (<http://www.pikersearch.com/research/smart-grids-in-europe>). Part of this investments could result in the co-deployment of dual use infrastructure.

¹⁶ As reported by many stakeholders in the public consultations. Analysis Mason, *ibid*. gives examples of 20% reduction of costs in France

¹⁷ Public consultations; Analysis Mason, *ibid*.

- Revenues from NGA services would come sooner; This would be possible thanks to speeding up the administrative procedure for necessary permits and effective implementation of in-house wiring regulations encouraging NGA deployment. - Cost savings in the permit granting process In particular cost savings would be possible in terms of human resources and time devoted to obtaining permits and negotiating conditions with authorities and land owners; This is confirmed by best practices example, like the Amsterdam Municipality that is coordinating co-deployment of civil engineering infrastructure through the Amsterdam Smart City platform. The Platform allows providers to submit long term plans for civil infrastructure deployment, so that other interested providers could share the cost of deployment. One right of way is then granted for large areas of the city and for a long period of time. The co-deployment includes the energy DSO and a black fibre provider, while the Municipality also replaces its sewers and ducts for traffic lights. As a result, not only the cost of deployment but also the environmental nuisance are significantly reduced. - Cost savings related to increased legal certainty and availability of dispute settlement mechanisms that would further reduce costs in case of disputes.
<i>On infrastructure owners:</i>
- Reduction of costs related to excavation related damages to existing infrastructures; All actors undertaking civil works would benefit from the decreased risk of accidents since the location of existing infrastructure would be known and alert systems could be easily implemented. According to different estimations, these savings can be significant and amount up to EUR 50 000 000 per year¹⁸. Thus, cost savings from damages on existing infrastructure alone could equate the cost of implementing an infrastructure atlas in perhaps two three years (in NL the amount of incidents was around 40.000 incidents per annum leading to EUR 40 million and EUR 80 million in direct and indirect losses, in Sweden after the introduction of Dig alert systems operators reported 80% reduction of incidents). - Better exploitation of assets due to revenues for granting access; In some cases (e.g. sewer networks in Netherlands and Scotland¹⁹) the rental fees can be an attractive supplement to the main business case. It has to be noted however that the rental prices are in some cases not significant enough to create a business interest for utilities, if compared to their core business, therefore a universal access obligations is important in ensuring the possibility for sharing this infrastructure for broadband deployment. In view of the fact that there is no mandated access to ducts on a cost oriented basis and that there is room for commercial negotiation under reasonable terms, the disincentive to invest appears not to be significant. - Reduced cost for tendering and permit granting; Such savings would be possible thanks to joint tendering for construction work and joint permit granting. - Facilitated co-deployment of smart grids for the electricity sector; - Financial benefit for construction industry. The benefits could result from increased value of NGA access ready-buildings, as this is becoming increasingly important for property purchasers.
<i>On authorities:</i>
- Reduced administrative burden for public authorities concerning the granting of rights of way and other permits, due to increased public works coordination and increased use of existing infrastructure, both leading to less need for digging reducing the amount of requests for permits.

¹⁸ Ibid.

¹⁹ Ibid.

Costs for main stakeholders involved / negative direct economic impacts
<i>On undertakings deploying broadband:</i>
- Cost related to ground detailed survey; These costs would appear once the inventory would be in place and there would be interest in sharing infrastructure. The costs will reflect specific requests by interested operators to verify feasibility of deployment through sharing (rights to on demand surveys could be envisaged with specific fees being paid by access seekers as it is already done for example in Portugal, to avoid universal survey programme that could in certain cases represent an excessive expense). - Cost of passive infrastructure rental An increased level of shared infrastructure could lead to increased overall infrastructure access costs for broadband deployment in absolute terms, it would however be overcompensated by the significant savings due to avoided digging expenses (at present monthly charges for access vary greatly in EU).
<i>On infrastructure owners:</i>
- Cost related to collecting and sharing data on infrastructure and on planned investments; This cost would mainly be applicable to utilities and alternative operators, as SMP operators are often subject to information obligation. The exact cost will depend on the level of detail of required information as well as the state of existing data basis collecting relevant information in Member States, where a certain degree of information is already undertaken in application of the INSPIRE Directive. E.g. In case of BNetz mapping system the incurred costs were small²⁰. - Cost related to migration from infrastructure owners databases to general unified information systems; Utilities and some operators normally already have detailed information databases on their infrastructure. This data can be re-used, if made available to interested parties. This means migration which may require format adjustment. However, in Germany for example the NRA tried to minimize this cost accepting data in a range of electronic formats
<i>On construction industry:</i>
- Costs related to obligation to equip new and renovated buildings with passive infrastructure for high-speed Internet access would be probably incurred by housing industry or infrastructure owners. In case of costs for construction industry many sources indicate that this would be an incremental cost (up to 2.5% of construction works) that would be significantly lower than the costs for other services (water, gas)²¹.
<i>On the authorities (for assessment of costs see also the table below with implementation and administrative costs of the measures of Option 3)</i>
- Cost of setting up and managing mapping systems including suitable infrastructure of utilities; Costs and administrative burden of setting up infrastructure mapping system very much depends on the information already available in the specific Member States; however it can be relevant (in particular where such information is not directly available to infrastructure owners. Costs for running those databases yearly also vary significantly - Cost of creating and running the database/technological platform collecting announcements of planned investments; - Cost for single contact point coordinating function for permit granting (human resources and possibly IT investment facilitating the single contact point function); While the establishment of a single contact point would not deprive the competent authorities from their decision making powers, a small part of the cost (mainly of dealing with the operators) would be transferred to the single contact point. At the same time, the costs of creating a single contact point can be maintained relatively low by appointing an existing authority to deal with this issue, rather than establishing a new authority, as well as by

²⁰ Ibid.

²¹ Ibid. study - max 20,000€ per 10apt dwelling

transferring a small part of the new costs to the industry. Yet, these costs are limited and estimated to be significantly lower than the overall benefits of the measure.

- Cost related to running dispute settlement systems related to access to infrastructure, co-deployment agreements, permit granting.

Dispute settlement systems are already in place for the disputes between undertakings according to the telecom regulatory framework.

The costs for disputes could be reduced by making known in advance the main elements to be taken into account when assessing unreasonable refusals and in view of the development of case law decided by the central dispute settlement body

IMPLEMENTATION AND ADMINISTRATIVE BURDEN OF THE MEASURES INCLUDED IN OPTION 3

Obligation to provide information for every owner of passive infrastructure (suitable for broadband rollout)

Implementation costs and administrative burden for authorities:

Costs and administrative burden of gathering information on passive infrastructures suitable for broadband rollout (in particular of setting up infrastructure mapping systems) depend very much on the information already available in the specific Member States and on the level of detail of the information required. However this cost can be relevant in particular where such information is not directly available to infrastructure owners.

These costs can be optimised by not requiring an unnecessary level of detail from infrastructure owners, by using existing data as much as possible, and also by giving multiple functions to the setup system, leading to further important savings (e.g. preventing damage from excavation, facilitating co-deployment across sectors with significant savings in case of joint implementation of the mapping system and of the coordination platforms for the announcements of planned investments and possibly the electronic permit granting procedures). Additional costs may appear in case of the decision on accepting data in different formats, which would however strongly favour implementation and reduce burden on infrastructure owners.

Moreover, often administrative costs are not to be seen entirely as an additional administrative burden related to the EU level initiative, since part of the cost of mapping systems might be already sustained or planned for spatial planning purposes (INSPIRE directive); therefore part of those costs are already incurred by Member States and synergies could be created for sharing the cost of atlases between different functionalities/sub products of existing or planned mapping systems. Often the issue is also the availability of the information for the relevant stakeholders.

Cost for the authorities can include:

- *Cost for setting up the system* E.g. cost of setting such atlas may vary from relatively low amounts 1-2 million (German Infrastrukturatlas and Portugal CIS database implemented by the two NRAs) to 75-77 million (for the Flamish mapping system and Polish GBDOT) for complex system that are however satisfying wider spatial planning purposes (INSPIRE Directive) which goes beyond the minimum requirements laid down in the proposed option.
- *Cost of collecting and processing data*, including information from different sources in one atlas (operators information, other utilities) Costs for running those databases yearly vary significantly.
- *Cost of surveys*: the cost of implementing an infrastructure atlas is largely dependent on the detail of the data included in the database, it might make

sense in some Member States to implement such a measure using a two-phase approach. The first phase could contain geographical information of existing passive infrastructure, populated by requesting the information from the operators and utility companies; this could be similar to Infrastrukturatlas, and may cost EUR several million to implement. The second phase may provide more detailed information about the (likely) shareability of each duct, from the results of a ground survey; this could be similar to projects in Poland and cost EUR hundreds of millions to implement, depending on the geographical extent of the infrastructure mapped and the number of different types of infrastructure covered.

Synergies between costs/significant overlaps:

- *Significant savings possible with joint implementation:* depending on the choices of Member States, the costs for the implementation of this measure and the platform for announcement of planned investments for coordination of civil works and damage prevention and eventually IT based permit granting systems are partially overlapping and should therefore not be considered two times.

Part of the cost of mapping systems is already sustained or planned for spatial planning purposes, therefore synergies could be created for sharing the cost of atlases between different functionalities/sub products of existing or planned mapping systems.

- *Reduction of costs related to damage prevention systems* that could be incorporated in infrastructure atlases systems; When a damage prevention system would be implemented, as it happens in some Member States in connection with mapping systems, all actors undertaking civil works would benefit from the decreased risk of accidents since the location of existing infrastructure would be known and alert systems could be easily implemented. According to different estimations, these savings can be significant and amount up to EUR 50 000 000 per year. Thus, cost savings from damages on existing infrastructure alone could equate the cost of implementing an infrastructure atlas in perhaps two three years (in NL the amount of incidents was around 40.000 incidents per annum leading to EUR 40 million and EUR 80 million in direct and indirect losses, in Sweden after the introduction of Dig alert systems some operators reported 80% reduction of incidents, in NL after the introduction of the KLIC database, overall damage to existing infrastructure was down by around 10% per annum).

Some examples of costs for mapping databases incurred in Member States:

Summary of costs (EUR millions)

Implementation cost			Ongoing costs	
Member State	NRA	Operator	NRA	Operator
Germany	1	Low	n.a.	Low
Portugal	2	Low	n.a.	n.a.
Netherlands	0.076	Low	n.a.	n.a.
Belgium	77	n.a.	~7	n.a.
Poland	75	n.a.	n.a.	n.a.
Sweden	0.075 – 1.8	n.a.	0.006 – 0.08	n.a.

Source: Analysis Mason, "Support for the preparation of an impact assessment to accompany an EU initiative on reducing the costs of high-speed broadband infrastructure deployment (SMART 2012/0013)"

	German Infrastrukturatlas – the project cost for the NRA was approximately 1 million euro, since rather than undertaking a complete mapping operation the authorities have simply collected location data from infrastructure owners. Furthermore, the incremental cost of adding newly constructed infrastructure to the database is likely to be negligible. Portuguese Central Infrastructure Atlas (CIS) has cost EUR 2 million. Since most operators have adequate data on the geographical routes of their networks and are able to upload this information to the system, and so expensive ground surveys are rarely required. The incumbent, Portugal Telecom is required to provide information on the available capacity of a duct using a red-amber-green system. To determine this availability, duct surveys are carried out when another operator has expressed interests, and they must pay a one-off survey fee for this. For further details see Analysis Mason study.
	Administrative burden for business and other infrastructure owners – Cost for operators and other infrastructure owners for providing location data to the mapping system. – Very limited additional cost for the provision of information related to newly built infrastructure, since most of the information is already produced for the execution of works, and would just need to be transferred to the mapping system. – Administrative burden depends on the level of detail of the information chosen: for already existing infrastructure cost of ground surveys, could be needed to send the needed information to the mapping system if the information is not available.
Mandating "reasonable" access to all existing infrastructures suitable for network deployment, while foreseeing a dispute-settlement mechanism	Implementation costs and administrative burden for authorities Cost of dispute settlement mechanisms or for exercising the mediating function for the NRAs or other chosen competent authorities need to be taken into account. Competencies across sectors will have to be put together and a mechanism will have to be developed concerning the application of the reasonableness test.
	Administrative burden for business and other infrastructure owners Since access agreements are to be defined through negotiation no additional administrative cost is borne by owners of infrastructure to define reference offers. However costs might have to be incurred ex post (during negotiation, or in case of litigation, etc.)
Transparency requirements on planned civil works for all investors (public and private) with an obligation to negotiate and a dispute-settlement mechanism. Also, an obligation to grant access for all public works (civil works financed with public money)	Implementation and administrative burden for authorities - Cost of creating and running the database/technological platform collecting announcements of planned investments; E.g. the cost of Finnish Johtotieto (co-digging portal) was EUR 200 000 with an on-going yearly cost of 100 000, whereas Swedish Lendingenskolle dig alert system that could be developed in a planned investments announcement database cost EUR 1.8 million to implement between 2007-2010 and approx. 700.000 per annum to run. - Cost of public authority to manage the platform for announcement of planned investment that could probably only partially be recovered by contributions from infrastructure owners (ex in the form of very small administrative fee for planning applications as in the Flemish example) - Cost for all public authorities to announce their own planned investments - Reduced administrative burden for local authorities since an increase in the civil

	work coordination would reduce the number of needed permits and rationalise civil works authorisation process. The database would provide however a very useful planning instrument for the public authorities, that would allow to have an overview of all planned civil engineering works in a given territory and timeframe, possibility to ensure rationalise permit granting process a decreased level of demands for rights of way since works would be better coordinated and joined for the same location and better exploitation of planned public works investments, sharing its civil works cost component with other interested parties. - Administrative costs for dispute settlement or for exercising the mediating function
	Administrative burden for business and other infrastructure owners - Small administrative burden for concerned actors announcing planned investments in infrastructure. - Slightly reduced administrative burden for joint tendering and joint permit granting for construction work.
Single contact point with coordinating function for permit granting	Implementation cost and administrative burden for authorities While the establishment of a single contact point would not deprive the competent authorities from their decision making powers, a small part of the cost (mainly of dealing with the operators) would be transferred to the single contact point. At the same time, the costs of creating a single contact point can be maintained relatively low by appointing an existing authority to deal with this issue, rather than establishing a new authority, as well as by transferring a small part of the new costs to the industry. Yet, these costs are limited and estimated to be significantly lower than the overall benefits of the measure. Costs would typically be: - Cost for exercising the coordination role (human resources). - Costs for IT investment facilitating the single contact point function and electronic permit granting management. To some extent these costs would have to be incurred anyway, in the light of the e-administration targets, therefore synergies in planning expenditures could be achieved while introducing electronically based procedures for granting permits. The cost incurred for setting up the single contact point system for the Licensing of Antenna masts in Greece developed internally by the Greek NRA was the equivalent of 24 man-months (IT analysis and programming with the aid of Spectrum Department personnel) and 25.000 Euro in computer and network systems for hosting the OSS (central database replication, web application hosting, multiple connections handling). - Cost savings due to streamlined permit granting processes facilitated by IT system (see below estimates in the case of Flanders)
	Administrative burden for business and other infrastructure owners - Time an administrative savings for operators due to reduced complexity of the permit granting procedure and the coordinating role exercised by the OSS E.g; In case of the AGIV's KLIP system in Belgium that is in part designed to simplify the planning and permit granting process, AGIV estimates that the systems saves the operators and authorities combined EUR 29,5 million per annum.
Obligation for new (and majorly renovated) buildings that in-house	Implementation and administrative costs for authorities - No significant additional administrative burden, except for monitoring compliance, potentially issuing guidelines) The current construction works anyway

equipment is NGA compatible and mandating access to in-house NGA equipment for all buildings	are subject to permits such costs can therefore be minimised by integrating the implementation of the new rules with already existing permission processes.. Mandating NGA ready in-house equipment would therefore influence conditions of granting such permits, without altering much the procedure of issuing permit Further to the example of FR and ES, no significant additional administrative burden is expected. The cost to the government and/or the NRA is negligible (with the obvious exception of the initial consultation and drafting of the legislation).
	Implementation and administrative burden for business and other infrastructure owners - Costs of negotiating access to in house NGA infrastructure. Operators have not incurred any costs when new laws oblige new and refurbished buildings to be fitted with common NGA infrastructure. However, in France, it is up to the operator to build this terminal segment in such a way that it can be shared by other operators, which may incur some addition cost. On the other hand, installing the in-building installations in new buildings is on the construction firms that must cover these costs, although these are relatively low (much lower than the cost of in-building water and gas distribution, for example). As access to NGA services becomes more and more important to consumers, it is possible that these construction firms may see a future benefit from the measures, with pre-wired buildings being sought-after by property purchasers. Therefore the construction sector could become more willing to deploy NGA infrastructure as consumer demand grows for NGA services.

IMPACTS AND ADMINISTRATIVE COSTS OF OPTION 4 MANDATING EFFICIENCY GAINS

Benefits for main stakeholders involved / positive direct economic impacts

Under this option, an EU infrastructure atlas would be required, access to passive infrastructures would be imposed at cost oriented prices, and certain forms of coordination of public works would be imposed (mainly as regards public works). Finally, an EU one-stop-shop on permit granting would be established and all buildings would need to become NGA ready by 2020. This option is very clear as regards the scope of its obligations, including obligations across utilities.

The main benefits for the direct stakeholders are to an extent similar to the ones described in option three. Compared to those, the **differences** are as follows:

For undertakings deploying broadband:

- **Higher savings in infrastructure deployment** in particular through access to infrastructure at cost oriented prices, the right to co-deploy when public works are undertaken at a marginal cost, and an increased availability of spare capacity (e.g. extra ducts laid by public authorities);
- **Higher savings in terms of human resources and time devoted to obtaining permits** due to an EU one-stop-shop for companies willing to invest cross border;
- **Increased cost and time savings** on access to in-house NGA of all buildings;
- **Potentially faster revenues** from NGA services due to these time savings.

Costs for main stakeholders involved / negative direct economic impacts

The main costs for the direct stakeholders are to an extent similar to the ones described in option three. Compared to those, the **differences** are as follows:

For (all) infrastructure owners:

- **Significantly reduced revenues** resulting from granting access to their infrastructures given the cost orientation of offerings, which would reduce the business case for infrastructure owners; this brings a significant risk that owners are disincentivised from further investing in their passive infrastructure.
- **Higher cost of collecting and providing fully harmonised data** on infrastructure to a central EU body;

For construction companies and building owners:

- **Significantly higher cost** to equip all new and old buildings with passive infrastructure for high-speed Internet access

For public authorities

- **Cost for the implementation and managing of mapping databases at EU level would be significant and would potentially duplicate some of the costs already incurred at national level**, implying cost of migration from national to EU wide system. This would adversely affect in particular Member States that already implemented their own mapping systems.
- **Additional costs of defining ex ante cost-oriented prices across industries**, while most Member States do not have regulators which are competent across several sectors;
- The cost for deployment of **additional empty ducts** for all public works to overcome time discrepancies in civil works coordination would need to be covered by additional public funding. Although this cost is estimated to be marginal, question marks might nevertheless appear on the efficiency of such intervention;
- **Significantly higher costs in human resources, legislative changes** and possibly IT investment for the fulfilment of the **full one-stop-shop** on permit granting procedures since various competencies would need to be merged and integrated.

IMPLEMENTATION COST AND ADMINISTRATIVE BURDEN OF THE MEASURES INCLUDED IN OPTION 4

The cost to be sustained would be significant and higher than in Option 3.

For the public authorities	The administrative costs for the implementation and managing of mapping databases following harmonised EU standards, with a central access point at EU level, would be significant. Although important synergies exist with the INSPIRE Directive and with the Broadband State Aid Guidelines, additional efforts would be required to cover all telecom infrastructure in a relatively short timeframe. The costs of defining ex ante cost-oriented prices across industries would also be significant, considering that most Member States do not have regulators which are competent across several sectors. Additionally, the cost for deployment of additional empty ducts for all public works to overcome time discrepancies in civil works coordination would need to be covered by additional public funding. Although this cost is estimated to be marginal, question marks might nevertheless appear on the efficiency of such intervention. Significantly higher costs in human resources, legislative changes and possibly IT investment for the fulfilment of the full one-stop-shop on permit granting procedures since various competencies would need to be merged and integrated.
On infrastructure owners	The measures regarding the EU infrastructure atlas seem to add administrative burdens compared to the previous policy option also to operators in case they would need to share fully harmonise data on their own infrastructure.

ANNEX X

ANNEX X

ASSESSMENT OF THE EFFECTIVENESS, EFFICIENCY AND COHERENCE

Section 1 - EFFECTIVENESS OF OPTIONS

Are the measures proposed in the policy options sufficient to attain the operational objectives set?

Option 1 Business as usual	Measures proposed under option 1 would consist mainly in the propagation of best practices and guidance from the Commission to the extent currently provided for by the Regulatory Framework. The decision to apply the relevant practices would be in the hands of the Member States, thus the effectiveness of the propagated measures across the EU would be uneven. The lesson learnt from existing practices could be applied to a limited extent, given the scope of the regulatory framework; further guidance could be provided, however limited to the telecom sector only. Thus, the specific objective to reduce the costs of network deployment in the EU is not ensured by this policy option. This policy option falls short to achieve the desired objectives as defined in section 3.
Option 2 Promoting efficiency gains within the telecom sector	While measures proposed under option 2 could have positive effects in terms of a more coherent implementation of existing powers, their effectiveness across the EU would be comparable to measures considered under option 1/baseline scenario. This is because the scope and scale of this option remains limited to telecom operators and the implementation of any promoted measures would remain voluntary. As a result, the objective to reduce broadband deployment costs across Europe would be limited to telecom providers only and in those countries that would follow any promoted measures. This implies the risk that the uneven playground in the EU for telecom providers would persist or even increase.
Option 3 Enabling efficiency gains across sectors	The measures foreseen under this option would address all of the identified inefficiencies and bottlenecks effectively across sectors and in a proportionate manner. Thanks to a set of rights and obligations telecom providers would receive tools to overcome existing barriers in a 'business friendly' way. In particular, the establishment of a right to use existing passive infrastructures under reasonable terms, coupled with a dispute settlement mechanism in case of failure, would ensure the possibility to exploit the potential of duct sharing, while preserving commercial negotiations. Moreover, the definition of a minimum set of information coupled with the right to request more detailed information/in site visits would keep the costs reasonable and limit the obligations on operators to what is necessary to ensure the objective. Providing a single contact point to the market would make permit granting procedures and conditions more transparent and predictable, while leaving the decision to the authorities closest to the specific aspect to be regulated; finally restricting NGA-ready in-house equipment to new buildings or major reconstruction works, would keep the costs on operators and owners reasonable. The scope of these measures is wider than the baseline scenario and also the scale of the intervention corresponds to the defined objectives. As such, the proposed measures meet the effectiveness test. They do not go beyond that what is strictly necessary to attain these objectives. However, their effectiveness will be more limited if the proposed measures combine a binding legal instrument and a Council Recommendation as proposed under sub-option B, as implementation of the recommendations might differ across the EU. Yet, thanks to

	enabling efficiency gains by means of a basic set of rights and obligations under a binding instrument, this hybrid approach would still be much more effective than the baseline scenario, option 1 or option 2. The adoption of a binding instrument (sub-option A) endorsing all the rights and obligations would ensure a uniform application across the EU making the objective to reduce broadband deployment costs across Europe more plausible than option 1/option 2 or the baseline scenario. All in all, regardless of the legal form for implementation of proposed measures, the effectiveness of this option is good or very good.
Option 4 Mandating efficiency gains across the EU	The measures proposed under this option entail full harmonisation across the EU by means of mandated solutions. While the scope of this option is similar to option 3, its scale differs visibly. This option could in practice generate a number of obligations and constraints not necessarily proportionate to the desired objective, if not counterproductive. As far as transparency is concerned, the setting up of such a system would require significant operational costs for public institutions, information providers and access seekers. In addition to that, access to a European central point might not always be appropriate for access seekers, while mandating centralised features and a common database format might lead to some relevant information being lost in the harmonisation process. The imposition of ex ante cost orientation, in particular for access to telecom ducts and co-deployment, while reducing the costs for access seekers, could also undermine the incentives to invest. As such this measure could exceed what is necessary to reduce barriers to deployment. Similarly, the imposition on public actors of an obligation to deploy empty ducts when other infrastructure is laid down could reduce the incentive of private investors to invest in the first place, while waiting for future public investments, and it would entail investments which might not be recouped in the absence of market interest. Moreover permit granting requires local knowledge, which might not be ensured with centralisation. Finally, generalising the obligation to equip building with NGA-ready infrastructure would generate significant costs on property owners. In view of the above this option would go beyond what is necessary to achieve the envisaged operational objective, while putting at risk the general objective to which this initiative subscribes. Thus, despite the same scope this option ensures more limited effectiveness compared to option 3. Despite the highest legal certainty, especially in comparison to the baseline scenario, the effectiveness of the proposed measures is low and thus falls short to achieve the desired objectives.

Section 2: EFFICIENCY OF OPTIONS

Efficiency, including costs and benefits, of the measures (as described in chapter 5)

Option 1 Business as usual	There is currently a patchwork of rights, obligations and procedures applied by Member States governing the deployment and use of passive infrastructures suitable for broadband networks, despite the fact that some obligations concerning the roll-out and the use of passive infrastructures may be imposed to electronic communications network providers according to the existing Regulatory Framework. Despite the presence of several initiatives at local and national level, in order to enable operators to enhance cross-utility synergies, effective coordination of works, transparency of available infrastructure or to promote NGA-ready in-house infrastructures, important issues of barriers across utilities as well as lack of coordination among the authorities involved have not been sufficiently addressed. There are little synergies between national approaches and the best practices are rarely followed by others. The limited coordination that could be achieved by guidance at EU level could only provide some common elements or best practices for consideration by central and/or local authorities when deciding to act. The cost both for administration and communications providers would however be limited. In conclusion, while this option would not imply significant costs (mainly collection of best practices and guidelines), cost savings would only remain marginal.
Option 2 Promoting efficiency gains within telecoms sector	This option would consist in promoting the provisions and tools provided for in the regulatory framework, and in particular those in Articles 11 and 12 of the Framework Directive. Thereby it would reduce costs more than measures under the baseline scenario,. Yet, these gains would be moderate. Measures proposed under this option would facilitate broadband deployment in infrastructures of telecom providers, with very limited or no impact beyond the scope of the Regulatory Framework. Similarly to option 1 or the baseline scenario Member States would remain relatively free to decide whether or not to implement these powers. In those Member States, where recommendation(s) would be followed, telecom providers might sustain some additional costs to ensure transparency of existing passive infrastructure and planned investments. The benefit could be relevant when sharing and co-deployment would happen, ranging from 29% to 58% cost saving from infrastructure sharing coupled with self-digging (up to a 75% in case of full duct sharing) and from 15% to 60% cost savings of new deployments in case of coordination of civil engineering works. However, their savings would remain scattered. When adopted by Member States, those measures could lead to non-negligible administrative costs for national authorities, which would however affect only a limited number of authorities and telecom operators. The scale of the costs would differ among Member States. Yet, in case of a follow-up, these costs could be slightly higher comparing to option 1, depending on the extent in which the recommendations would be followed. While voluntarily applied recommendation(s) could lead to a more efficient deployment, fragmentation regarding the use of non-telecom infrastructure and the coordination of civil engineering works across sectors would not be improved, which would limit the efficiency of the option, leaving the full costs saving potential of cross-sector cooperation unexploited.

	This option is therefore only partially effective in terms of costs and benefits and therefore it is not sufficient to fully reap the cost-reduction potential.
Option 3 Enabling efficiency gains across sectors	Providing market players with rights and obligations would lead to removing existing regulatory and unreasonable commercial barriers to infrastructure sharing and to coordination of planning civil engineering works, including cross-sector ones, while preserving commercial negotiation, subject to an ex post dispute resolution system aiming at ensuring a fair exercise of those rights. This option would also increase transparency, an important driver of infrastructure sharing, which in turn has an impact on costs related to broadband roll-out. The telecom providers would also be entitled to transparent procedures and conditions for permit granting; they would benefit from economies of scope and scale in equipping new buildings with NGA-ready infrastructures, whereas consumers could take advantage of such NGA ready equipment. Compared to option 1 and 2, where decisions about implementation of the measures currently available or promoted by the Commission depend on the Member States, a key element of the proposed measures lies in the cross-sector nature of those measure, which involves all the steps of network deployment. In case of sub-option 3B providing for a mixed legal instrument, the benefits and costs would be less significant for measures subject to a (Council) recommendation. The efficiency of measures introduced by means of a binding instrument accros the four operational objectives in sub-option A would be much more important. This option would imply different kinds of administrative costs for operators and authorities (see for details Ch. 5), exceeding those under option 1. Some of them would be negligible (implementation of the obligation, extended dispute settlements mechanisms), while other could be relevant, as those for the setting up and managing the required central contact point. However the actual costs would depend on the amount of information already existing in specific MS, while significant savings would be possible if these measures are implemented jointly (as showed by Analysis Mason Report cost savings from avoided damages on existing passive infrastructure could alone equate the costs of implementing an infrastructure atlas). Additional savings would be ensured by pre-wiring of new and refurbished buildings where the cost would be mainly sustained by the housing sector partially compensated by the added value of a high- speed communications infrastructure. Therefore these costs appear to be offset by the benefits in terms of increased efficiency in broadband deployment for the operators and quicker and broader broadband coverage for the society as a whole. In view of the above this option would enable operators to fully or mainly exploit most of these synergies while ensuring fair balance between benefits and costs. The overall efficiency of this option would be significant.
Option 4 Mandating efficiency gains across EU	Compared to option 1 or the baseline scenario, this policy option would entail a full harmonisation of measures aiming at reducing costs in order to guarantee that all EU operators will be able to operate in the same regulatory environment in deploying their broadband networks. This option would ensure the availability of the same information on the infrastructures suitable to host electronic communication networks all over the EU through a single point of contact, favouring in particular cross-border providers. The imposition of ex ante cost orientation regulation in the use of existing passive infrastructures and negotiating co-deployment would extend the regulatory competences already envisaged under the

	current Regulatory Framework to potentially every passive infrastructure and planned work and without the need of a market analysis, in view of ensuring as much cost reduction as possible. Moreover, in order to fully exploit the synergies of coordination of works financed with public money and to address the timing mismatch in investment decisions, the general obligation to lay down empty ducts suitable for electronic communications networks further aims at increasing effectiveness of the measure. A unique authority at Member State level would address completely the identified problems of lengthy, complex, diluted, and different permit granting procedures at local level in a number of Member States. Finally general obligation to have NGA-ready buildings by a specified date would entail that by the indicated date all the buildings in the EU would have to be NGA-ready in terms of in-house equipment, in-house wiring and termination segments. The implied costs of mandating measures both on the communications providers and authorities would have been very high, negatively impacting the expected benefits. This option would aim at ensuring homogeneity across the Union. At the same time, as illustrated in Chapter 5, this would imply significant administrative costs at EU level for Member States and operators. Thus the efficiency of this option would be smaller, due to unbalanced ration of costs and benefits.
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Section 3: COHERENCE OF OPTIONS

Coherence: Is the balance between effects across economic, social and environmental domains ensured? Are they coherent with the overarching objectives of EU policy?

	Overall economic impact = positive – negative impact	Social impact	Environnemental impact
Option 1	0	0	0
Option 2	□	□	□
Option 3	□ □ □	□ □	□ □
Option 4	□ □	□ □	□ □

Option 1 Business as usual	The choice of option 1 is not effective from the perspective of the objectives and as such would not contribute much to the achievement of objectives as defined in Digital Agenda for Europe, Guidelines for Broadband State Aid, Single Market Act II. As explained in section 2.1.4 (new measures to stimulate broadband) the Commission has undertaken a number of actions to step up its efforts to stimulate broadband rollout. From this perspective option 1 does not bring much added value. All identified economic, social and environmental impacts would not be measurable.
Option 2 Promoting efficiency gains within telecoms sector	Comparing to the option 1 and baseline scenario, the expected economic, social and environmental impacts of the measures proposed under option 2 would contribute to the overarching EU objectives, as defined for example, in the Digital Agenda for Europe, Guidelines for Broadband State Aid and considered under Single Market Act II. Yet, given the limited effectiveness of these measures, the coherence of this option remains at very basic level.
Option 3 Enabling efficiency gains across sectors	Given the expected impacts of the measures under option 3, especially if translated into a binding measure, the coherence of this option with the general objectives of the Digital Agenda for Europe, Guidelines for Broadband State Aid and Single Market Act II as well as other undergoing initiatives, is much more significant than under option 2 and baseline scenario. All three types of impacts are positive and therefore balanced, despite a predominance of positive economic impacts over the social and environmental ones.
Option 4 Mandating efficiency gains across EU	The measures proposed under option 4 would contribute to the objectives of Digital Agenda of Europe, Guidelines for Broadband State Aid Single Market Act II and other on-going initiatives more than option 2 and baseline scenario. The positive balance of the economic, social and environmental impacts remains preserved. On the other hand, the risk of being counterproductive makes these measures costs-benefit inefficient also in the wider context and thus, their coherence would not be significant.

Annex XI

ANNEX XI

GLOSSARY AND BIBLIOGRAPHY

BEREC: Body of European Regulators of Electronic Communications

CAPEX: Capital Expenditure

DAE: Digital Agenda for Europe

DER: Distributed Energy Resources

EFTA: European Free Trade Association

FTTH: Fibre To The Home

GDP: Gross Domestic Product

GSM: Global System for Mobile Communications

IASG: Impact Assessment Steering Group

ICT: Information and Communication Technology

LTE: Long Term Evolution

NGA: Next Generation Access

NRA: National Regulatory Authority

OECD: Organisation for Economic Co-operation and Development

RSPP: Radio Spectrum Policy Programme

SME: Small and Medium Enterprises

SMP: Significant Market Power

TFEU: Treaty on the Functioning of the European Union

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