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Part 2

COMMISSION STAFF WORKING DOCUMENT

Impact Assessment
Annexes I-III

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 I

Results of the Public Consultation on how to reduce the cost of roll out of high speed broadband

Q1. *What are the benefits (including approximate savings) that could be achieved for NGA rollout by a more intensive infrastructure sharing within the EU, including the infrastructure of utility companies?*
Nearly all the respondents to the public consultation identified significant benefits for NGA rollout from a more intensive infrastructure sharing, including the infrastructure of utility companies, although different estimates of savings were put forward, depending on the existence, availability and conditions of access to passive infrastructure. While most respondents identified bigger cost and time saving potential in urban areas, sharing can nevertheless also be beneficial for extending the reach of NGA to remote and less densely populated areas. Enhanced sharing was identified by utility operators as a factor reducing the investment amortisation time and improving the investment over revenue ratio.
While for vertical integrated operators, both incumbents and ANOs, as well as public authorities and some utilities companies, enhanced sharing of infrastructure would lower barriers to entry and foster infrastructure competition, a limited number of replies, in particular from some ICT and dark fibre operators argue that, ultimately, these benefits come to the expense of service competition, because the limited space in the existing ducts would only allow collocation of a small number of operators. The conclusion according to which better use would lead to favourable urban planning, less digging and less nuisance, thus presenting significant social and environmental benefits was nevertheless unanimous.

Q2. *What are the benefits that could be achieved by a more coherent regime of infrastructure sharing within the EU, including the infrastructure of utility companies?*
Most public authorities would welcome a more coherent regime of infrastructure sharing as it would create a favourable investment environment, improve the competitiveness of the EU and contribute to the single market by facilitating the emergence of transeuropean operators. Providers acknowledge the potential for simplification of administrative procedures and underline that a coherent regime would ensure equal treatment of operators and transparency. Nearly all respondents agreed that coherence would increase visibility and legal certainty of facility sharing, thus promoting this mode of deployment and achieving the benefits underlined in the previous question. A minority of public authorities and associations of local utilities companies pointed to the additional costs related to the use of utilities' infrastructure and highlights the local character of the deployment, arguing for a case by case cost-benefit analysis of using the infrastructure of utilities companies for broadband deployment and against a Europe-wide regulation.

Q3. *Which are the main bottlenecks (practical, administrative, technical or legal) that operators wishing to deploy high-speed communication networks are confronted with when accessing existing infrastructures?*
Higher operational and maintenance cost of shared ducts, complexity, technical incompatibilities, higher risk for network security and integrity were reported as practical obstacles to accessing existing infrastructures more by the telecom operators and the public authorities, than from the utilities companies' side. Utilities companies concentrated on the

local character of deployment and on the *ad hoc* potential for cost reduction through sharing. Telecom operators seem more concerned about the different topology of utility networks, with different access points, as well as with the discrepancy of business models and of deployment timeframes between telecom and utilities companies. Lack of accurate information was the most recurrent topic when highlighting bottlenecks to sharing infrastructure, irrespective of the background of the respondents.

The cost of access to infrastructures, not only in terms of high prices or abusive conditions, but also of lack of transparent rules for construction, operation and maintenance cost apportioning, was almost unanimously identified as an obstacle discouraging access seekers. The absence of a legal obligation to share, or inversely of a right to access passive infrastructure was reported mainly by the incumbent operators and the public authorities, while NRAs insisted on the lack of clear rules dealing with liabilities. It seems that the refusal to grant access concerns equally private and public owned infrastructure and is linked to the disincentive of the first mover to allow access to a potential competitor. The question of ownership and exclusive rights to use infrastructure was raised in particular by some NRAs. Regulatory obstacles were identified by incumbents who highlighted that low prices of access to SMP infrastructure act as a disincentive for cross-utility sharing. Telecoms in general and some NRAs perceive the different conditions for access to public or private infrastructure as an important bottleneck, mainly for access to in-building wiring. In the case of mobile networks, sharing is impeded, according to the wireless operators, by legal provisions setting low frequency emissions thresholds.

Administrative obstacles were raised by all respondents More specifically, energy utilities companies emphasized on delays due to the lack of adequate procedures for handling infrastructure sharing, while the telecoms insisted on delays in permit granting and on incompatibilities of administrative procedures for telecoms and utilities companies. NRAs insisted on the absence of adequate dispute resolution mechanisms adjusted to the particularities of infrastructure sharing. A considerable number of local authorities admitted the existence of red tape, hindering co-deployment efforts. Lack of knowledge of the cost reduction potential of infrastructure sharing was outlined by public authorities, telecom operators and utilities companies.

Q4. *What are the good practices in the EU and in third countries that could be identified and be promoted with respect to achieving a more intensive infrastructure sharing with a view to deploying high-speed communication networks?*

A number of good practices have been identified as having the potential to be generalised across the EU (France, Spain, Germany, Portugal, Lithuania, Sweden, Scotland, UK for sharing of electricity poles Finland, Malta, Italy,) and beyond. France, Germany and Portugal were relatively popular examples.

Q5. *What would be the main benefits and disadvantages for broadband investment if access to ducts were mandated across infrastructures?*

The potential effect of a mandated access to ducts proved to be the question which divided respondents. Most incumbent operators and central authorities, including NRAs put forward more benefits than drawbacks, while the tendency is clearly reversed for alternative, dark fibre, cable operators and local authorities who warned against the eventual disadvantages of a mandated access to ducts. Utility operators (mainly energy) appear to be rather divided. As benefits, the opportunity to allow for a quicker and cheaper deployment of NGA networks, thus reaching grey, remote and less sparsely populated areas is withheld. The main disadvantage attributed to such a symmetrical regulation was that it could prove to be a

disincentive for operators to invest in passive infrastructure. Operators could be inclined to invest less in civil infrastructure, satisfying only immediate needs without building spare capacity, so as to avoid giving access. Alternative and dark fibre operators stressed that such a measure could be disproportionate and cable operators insisted that it could unduly favour the incumbent operators. A symmetrical obligation could accentuate the need for regulation, in order to be effective. From a technical point of view, such an obligation would induce all operators to follow the same topology, which is regarded from the ICT and equipment sector as negative, but does not seem an issue for the telecoms or the utilities companies.

Q6. *What measures could be envisaged to increase the business interest on the side of the utility companies to provide access to their infrastructure for broadband investment?*
Economic incentives, in the form of a fair and reasonable rate of return on investment are unanimously considered necessary to increase the business interest on the side of the utility companies to provide access to their infrastructure. In this sense, a number of utility companies argue in favour of lifting legal obstacles where they exist, especially the principle "charges cover cost", which acts as a disincentive for utilities companies to exploit their passive infrastructure. The creation of a market for passive infrastructure was advocated by the telecom sector. Alternative telecom operators would favour the generalisation of mandated access to suitable ducts. The development of a wholesale model, with clear definitions of cost items and cost models, defining in particular maximum values was suggested. The vast majority of the other categories of respondents however suggested that rates should not be cost oriented, but defined on fair terms. Reciprocal exchange of services was also largely supported from the telecoms and the utilities sectors and the public authorities. The possibility for the energy sector in particular to deploy faster and cheaper smart grids, in respect of the legal obligations imposed on these providers, seemed to attract the consensus from all sectors, while central public authorities saw a business case for energy operators to enter the telecommunications market and introduce more competition. Tax exemptions, proposed by some incumbent and wireless operators, were less popular.
Besides financial incentives, another recurrent set of measures increasing utilities' business interest in sharing passive infrastructure concerns dealing with technical and administrative obstacles. The establishment of standardised rules and procedures, broad enough to cover safety and health concerns would pave the way for an easier approach between the telecom and utilities sectors according to alternative operators, equipment manufacturers and public authorities, including NRAs. A coordination of permit granting, in the sense of the necessary update of the rights of way and permits in order to allow the sharing of infrastructure, was advocated by alternative operators. The existence of updated and accurate maps was also suggested by a fraction of alternative operators, so as to create a market place for infrastructure sharing.

Q7*: How do you assess the importance of systematic infrastructure mapping / of drawing up consistent inventories of infrastructure? Besides the potential economic advantages for electronic communications operators, do you see other advantages that such mapping could entail for citizens, public authorities or other (economic) operators?*
Overall, a certain degree of consensus appears to emerge across different categories of stakeholders as to the potential benefits of enhanced transparency concerning the existing passive infrastructures and in particular of systematic mapping. Nearly all respondents to the public consultation have recognised its positive added value, both in terms of economic advantages for the operators and of wider benefits for the society as a whole.

With regard to the economic aspects, the replies to the public consultation highlighted benefits both at the planning and the execution phases. Regarding the former, most incumbents, alternative operators as well as public authorities, *inter alia*, suggested that systematic knowledge of existing passive infrastructures is essential in order to plan the deployment of the network in view of the possibility to share existing facilities and to negotiate access with the owners of these facilities. In addition to that, the responses also showed significant benefits stemming from enhanced transparency in the execution phase. First of all, most respondents highlighted the positive impact of enhanced transparency in reducing damages to other passive infrastructures. Furthermore, knowledge of the utilities' infrastructures in a given area might facilitate coordination of works (mentioned by both telecoms and utilities companies), as well as maintenance activities (in particular for telecoms).
Besides the economic advantages for the operators, all categories of respondents mentioned additional benefits accruing to the society as a whole thanks to systematic mapping of passive infrastructures. Many national and local authorities suggested that systematic mapping enhances urban planning and soil management, as well as the adoption of broadband plans concerning the reduction of the digital divide. Both operators and public authorities also suggested environmental benefits, in terms of reduction of need for civil works and better coordination, as well as administrative benefits with regard to the management of permit granting procedures. Other utilities companies and public authorities finally mentioned the benefits of systematic knowledge of networks' infrastructures in order to improve disaster management.

Q9. *What information should be included in such maps with a view to facilitating cooperation, infrastructure sharing and broadband rollout? Who should be in charge of such mapping exercises and at what level should it be organised?*
The modalities of implementation of a mapping exercise bear a great relevance in view of their impacts on the costs, depending on the extent of the scope of passive infrastructures and information covered.
As to the information to be included in the inventory, there is a widespread consensus as to the need to include some geo-referenced information (GIS location, route of the network) as well as the type of utilisation and the size of the facility including also aerial lines. Several respondents also pointed out the need to include a contact point (the owner or the manager of the passive infrastructure), information on access points to the network (manholes, junctions, etc…) as well as quota and depth references. Additional information concerning the availability of space is considered important by several alternative operators and other utilities companies, although it is often acknowledged that it might be costly to maintain this information up-to-date and that availability in the context of mapping does not eliminate the need for in-site inspection. Some alternative operators considered that access to the incumbent's maps should be granted, while some incumbents also suggested including information about the in-house facilities or at least the existence of mutualisation points at the entrance of the building. Finally some respondents mentioned the inclusion of conditions for access (both economic and administrative ones).
Regarding the scope of the facilities to be included, some respondents (in particular utility companies) suggested that only passive infrastructures technically suitable for broadband roll-out should be included, while others (in particular among incumbents and local authorities) stressed the importance of having information on all utilities companies owned or managed by public and private bodies, also in view of reducing damages and facilitating coordination. With regard to this latter aspect, most recognise the added value of including information

about the planning of civil works, while others mentioned the risk that too early disclosure of investment plans might have negative impacts on competition.
Concerning the organisational modalities of a mapping system, most respondents across sectors pleaded for common mapping standards and access point at national level. In particular, many respondents pointed out that this should be managed by a body independent from the operators involved, also taking into account the safety concerns when defining conditions to access. At the same time some local authorities as well pointed out the merits of common standards at national or EU level. On the other hand, the added value of the involvement of the local authorities in terms of availability and accuracy of information (in particular by alternative operators, vendors and local authorities) is appreciated, in the form of federated systems accessible via a common interface. Finally some public authorities as well as incumbents suggested that in some cases mapping services might be available on a commercial basis and this might provide a market incentive to gather this information.
The BNetzA's atlas was the most recurring example cited by stakeholders, mentioning its broad scope, the national coverage and its gradual implementation (a first voluntary phase followed by a mandatory application), but also its weaknesses. Klic and Klip initiatives (in the NL and Flanders respectively) as well as the local initiatives in Sweden and Oslo were suggested as best practices, in particular in view of reducing damages in civil works. Other on-going projects were also mentioned (in Italy, Czech Republic, Finland).

Q10. *What would be the approximate cost of introducing systematic mapping?*
Together with the broad consensus on the potential benefits of systematic mapping, most respondents of all stakeholders' category are equally sensitive to the significant costs of this exercise, for both public authorities and operators contributing to the inventory.
Several estimates are mentioned by respondents, either on a per unit basis (few €/per connection mapped CAPEX + few €cents/per connection OPEX; 1 to 4 € per squared meter mapped), or based on existing experiences (77mln€ CAPEX in Flanders, approx 9-10mln€ OPEX for the Dutch KLIC system; 4mln€ contract tendered by ANACOM in Portugal; 300mln PLN (≈1 230 mln €) CAPEX + 30mln PLN (≈123 mln €) administrative costs in Poland) or extrapolation (between 500mln€ and 2bil€ for the EU). In particular, both set-up and maintenance costs might be relevant, depending on the level of detail of the information included, the need to update it, the inclusion of old infrastructures whose information might not be available, at least in digital format, as well as on the need to adapt to a standard format in view of the different mapping systems used by each operator or across sectors and countries.
A few respondents considered that, at least for old passive infrastructures, costs would outweigh the benefits, while confirming its feasibility for new facilities. The vast majority of respondents, on the contrary, stressed the importance to find the right balance in defining the level of detail of the information, also on the basis of the available existing information, in order to reduce the costs of the exercise, while at the same time ensuring most of the benefits. In particular, it was stressed that the systematic information needed at an early stage, such as in planning and negotiation phases, is significantly different from the more granular and detailed information needed in the execution phase. Moreover, in-site inspections are in any case needed in order to assess the current state of the facilities. In conclusion, while standardised and easily accessible basic information appears to be highly valuable at an early stage, systematic high level of detail might not bring significant added value, while it has a significant impact on the overall costs of the system.
Several respondents, including incumbents, alternative operators, public authorities and other utilities companies, also mentioned the need to take into account security and confidentiality

concerns while providing access to this information. Rather than preventing *in toto* any mapping exercise, these contributions point out the need to adopt some safeguards in defining the detail of the information required (in particular for some critical infrastructures such as water and energy networks) and, above all, in restricting access to access seekers with specific interests for the information provided (such as public authorities, operators, building companies, etc…). As far as confidentiality is concerned, information about investment plans and installation of active equipment should not be disclosed, according to some alternative operators.

Q11. *In your view, which substantial benefits would exist in offering possibilities to systematically lay new ducts when undertaking (public) works? In your experience, to what extent would additional potential revenue outweigh the extra costs?*
Many respondents across different categories of stakeholders have pointed out the significant potential for reduction of civil works costs stemming from a systematic policy envisaging additional spare capacity for future broadband network in performing public works. In particular direct reductions in the range of 10 to 50% for trenching costs are mentioned, as well as social benefits stemming from reduction of works and extension of covered areas, with limited additional costs in the performance of public works. In this latter regard, some local authorities nevertheless pointed out that while benefit could be significant, additional public funding would be necessary, in particular at EU level.
However, most contributions across stakeholders have also highlighted that this cost-saving potential might effectively be exploited only on a case by case basis. Most public authorities and telecom operators in particular point out the need to assess the supply and demand conditions as well as the future needs in order to decide where the additional capacity might be effectively used in the foreseeable future and before degradation of the infrastructure; at the same time, from a technical point of view, they stress that an overall network plan is needed (including a coherent design as well as additional facilities such as junctions, manholes, etc.) for a passive infrastructure to be suitable for broadband. Defining clear liability and cost sharing rules, moreover, could be a challenge. Finally the risk of a negative impact on incentives to invest for private operators is also mentioned. In conclusion most respondents across stakeholders warn against the risk of inefficiencies of a mandatory blanket obligation to lay down additional capacity whenever public works are undertaken, while some (in particular among telcos and public authorities) suggested that the outcome could be significantly positive if such a policy was included in more general broadband plans and/or policy assessing local demand and supply conditions (in particular in un-served areas) and defining transparent processes in order to include broadband passive infrastructure in on-going public works.

Q 12 and 15*: 12. What good practices are you aware of concerning transparency and coordination of civil engineering works? Should this be mandatory in the case of publicly financed works? 15. What other best practice examples to improve coordination of civil engineering works are you aware of?*
The following best practices were reported by the respondents:
Most systems aiming at coordinating civil works are implemented by local authorities, in view of their oversight of the works on-going on their territory. Many initiatives are based on informal regular coordination meetings at local level with the utilities companies concerned (once or twice a year) and in the context of the permit granting process, in order to share working plans in the concerned area and find solutions for coordination. This informal coordination may also be carried out at national level (e.g. Slovenian NRA) or backed by

general rules on consultation (for example for road authorities), or on mechanisms preventing recurring road works (like in Brussels) or on general rules mandating NGA-ready passive facilities for greenfield development areas (in Milan). IT-tools are also available at local level, in order to give visibility to the public plan of works (including atlas) or entailing alerting/noticing systems concerning forthcoming civil works, mainly in order to reduce risk of damages. More rarely these are implemented on a larger scale (Klic and Klip in NL and Flanders respectively). In other cases, coordination of works within the telecom sector is ensured by the industry association of telecom operators (Denmark) or by means of framework agreements with the incumbent (Italy), while commercial "work-exchanges" systems have also been reported in some countries. In Spain the Ministry can give opinions on the urban development plans concerning future broadband needs, while transparency and non-discrimination rules should be respected by local authorities when sharing civil works with other utilities companies. Finally general national rules on coordination of works, including apportionment of costs, are provided in the French CPCE Law L-49.
The respondents also mentioned general obstacles that hinder coordination, in particular cross-utility, like the mismatch of timing in both planning and executing phases. While in the former case it is often considered necessary to have a clear assessment of the potential demand in the area before deciding to join other civil works, with regard to the latter, the different execution techniques for the utilities companies involved may slow down broadband roll-out, in particular where less invasive techniques are available, such as micro-trenching. Other obstacles are also mentioned with regard to the fragmentation of procedures as well as with the risk of additional administrative burden in case of coordination, like the need for modification of building permits, increase of fees, delays in the replies to the call for coordination.
With specific regard to the scope of mandatory coordination mechanisms (the need to consult interested operators, dispute settlement mechanism or the obligation to accept co-deployment) most respondents (including public and private stakeholders) consider that they should be applied to public works only (i.e. financed with public money), while some alternative operators also included SMP operators and suggested that it should also involve the terminating segment in the end-user premise. In addition, the need for more transparency for urban and work plans and conditions (including fees) to join the public works was highlighted. Finally the risk to increase administrative complexity and red-tape with mandatory coordination mechanisms was mentioned.

***Q.13-14**: 13. Are you aware of any sources of information concerning planned civil engineering works? To what extent are they comprehensive (for instance covering different types of infrastructure) and easy-to-access? 14. To what extent would inventories of infrastructure be suitable for high speed communication infrastructure rollout? What kinds of infrastructures would you consider most suitable for being included in such an inventory? Who should be in charge of such an initiative? Should the obligation to announce planned investments apply only to the public sector, or also to private investors? What time horizon would you consider relevant for the availability of information about individual planned projects, so that this could lead to setting up concrete co-deployment projects? What are in your view the main organisational requirements, including costs, necessary for the establishment and maintenance of such an inventory?*
With regard to enhanced transparency of planned public works, a distinction could be drawn between long-term investment planning and short-term execution working plans. Concerning the former, most incumbents as well as some public authorities pointed out the need that transparency of detailed plans should be mandatory only for public entities, in order to protect

confidentiality but also to avoid anti-competitive coordination. Regarding short term information on executive works, on the contrary, there is a certain degree of consensus about the benefits stemming from the applicability to both private and public works; the issue of costs of the system, like in the case of mapping of existing infrastructures (see question 10), is also raised, but at least from the operators' point of view it has a more limited impact. However, also in this case there are divergences about the timing of the transparency system. Most incumbents and some public authorities and alternative operators identify the need for a long timeframe in order to trigger effective coordination (at least 6-12 months before the execution), although it is also often considered that from a pure technical point of view, coordination, in particular with other telecom operators, could take place in a much shorter timeframe (90 days or even less, up to 15 days before the execution).
As to the systems for ensuring transparency, many respondents mentioned the added value of information held by local authorities that should be primarily in charge of ensuring coordination of civil works, but the need is generally stressed to have some common standard of information transmitted and some degree of central coordination, like the inclusion in a broader mapping system, in order to avoid fragmentation. On the other side, it has been also noted that if included in a general mapping system, this information should be provided in a simplified form or it risks overburdening the functionality and also its effective use.

Q16. *How do you estimate the costs and period of time needed for a company to receive all the necessary permits needed to roll-out a high speed electronic communications access network?*
The responses confirmed the existence of a patchwork of lengthy, uncoordinated and unclear permit granting procedures, varying between countries and levels of administration and hindering the efforts of operators to roll-out high speed electronic communications access networks. Permit granting for radio-networks appears to be significantly more time-consuming than for fixed networks. While for the latter, the time varies between 2 weeks and 9 months, delays for receiving the necessary permits to roll-out radio-networks can go up to years and the industry notes a trend towards increasing timetables. Delays are attributed to the different administrative requirements, even within Member States, regions and municipalities, which require a huge amount of paperwork but also to the fact that radio-networks rely more on the use of private land, a factor which further delays deployment. Access of private buildings and property from fixed network providers appears also quite problematic and significantly delays NGA network deployment.
Most of the respondents were not in a position to provide accurate information about the cost of acquiring the necessary permits, as these are seldom harmonised in each Member State and vary depending on a number of heterogeneous parameters like the number of the competent authorities, the owner of the infrastructure, the extent of the project etc. The main costs include those of acquiring the permits (fees, but also paperwork) and the annual fees for land use. Calculation modes also differ significantly amongst Member States, different models currently being in force, from one-off fees based on the extent of the works to annual fees depending on the number of subscribers served.
A number of respondents provided actual data about the costs. It appears that permit granting for radio-networks is substantially more expensive than for fixed networks: While for fixed networks, the costs are in the order of few hundreds of euro, for mobile networks they can reach thousands. In some Member States, no fees for rights of way are collected, whereas in other, fees are quite expensive. It would be impossible to extrapolate from the responses to the public consultation an average of the cost of permit granting in the EU. Some respondents indicate that this could lie between 10% and 1/3 of the total cost of the infrastructure.

Q17. *What measures could help increase transparency and streamline the process of granting such permits? What kind of permits should be covered by such measures?*

Harmonisation of permit granting procedures was unanimously considered by the electronic communications sector as necessary in order to tackle their proliferation and lack of coordination. Standardisation, flexibility and streamlining, through a reduction of the number of the procedures, should cover permission requests, forms, deadlines, but also digging instructions. Uniform and transparent rules across each Member State were acclaimed by public authorities, local and central. The importance of eliminating divergence in the interpretation of rules was also acclaimed. Different suggestions for streamlining include establishing a code of conduct between NRAs and electronic communications providers on one side and local or other authorities on the other, or promoting regular coordination meetings. The introduction and generalisation of electronic means for the submission of requests, the exchange of necessary documents, the tracking process for managing applications, the issuing and publication of permits, through an appropriate interface is seen as a measure capable of reinforcing transparency and equality in permit granting. This interface would best be, according to central authorities, the same for all local authorities and providers should find there all necessary requirements for permits.

The need to harmonise fees within each Member State was particularly highlighted by the incumbent and dark fibre operators, as well as by trade associations of the electronic communications sector. Alternative operators and central authorities, including NRAs, insisted more on the need to ensure that fees are not arbitrary, but reasonably justified or even covering only the administrative cost of permit granting without being a source of income for local authorities. Synchronisation of the different timetables of competent authorities was particularly acclaimed by electronic communications providers, especially in view of the potential for co-deployment with utilities companies. The establishment of tacit approval, whenever the administrative deadlines expire without a decision being adopted is popular amongst operators not only of the electronic communications, but also of the utilities companies. The idea of benchmarking at EU level, with performance indicators measuring time and cost for permit granting at each local authority was backed by a few incumbent operators and NRAs.

Electronic communications providers, incumbents and alternative operators insisted on the need to introduce safeguards against unreasonable conditions attached to permits, in the sense of unreasonable technical requirements concerning depth or profile of the ditches and asphalting roads, unreasonable easement payments, fees for inspection and general prohibitions of civil works, or to define a white list of acceptable terms and conditions.

Telecoms and public authorities (ministries and NRAs) advocated the need to streamline the laws and regulations regarding civil works, including town planning, environment, and public health. Useful measures could also include exemption of categories of small works or infrastructures. Lastly, both dark fibre and wireless operators would appreciate if the legal framework allowed for a single authorisation for the deployment of a complete network in a region or municipality, irrespective of the different owners of infrastructures and the different authorities competent for permit granting. The need to introduce these measures in the National Broadband Plans was highlighted by certain incumbent operators.

Q18. *What kind of coordination would, in your view, facilitate the most the permits granting process? How should such coordination be best organised? How far should such coordination go and what would be the benefits achieved of the suggested level of coordination?*

As regards the kind of coordination which would facilitate the most the permits granting process, the public consultation reveals a clear tendency from all categories of respondents in favour of the establishment of a one-stop-shop. Only a small minority of respondents, mainly incumbents, rejected the idea of a one-stop-shop, in view of the difficulty to set it up. Most respondents do not consider that the establishment of such a one-stop-shop is incompatible with the respect of the different levels of authority for permit granting. However, two questions divide the respondents: which should be the powers of the one-stop-shop and which body should be vested with these competencies.
While some respondents, mainly a minority of the incumbent operators, manifested their preference for the establishment of a "full" one-stop-shop, concentrating competency for all permits required for the deployment of NGA networks, most of the respondents argued that a single point of contact, a single interface between the providers and the competent authorities, concentrating all permit requests, without however having the decision making power would be more efficient. The one-stop-shop could act as a single information point, ensuring transparency and predictability. It should be able to inform providers willing to deploy NGA networks, not only on the different permit granting requirements, but also on the available infrastructures and possibilities for co-deployment. In addition, it could act as a single interface for the submission of requests and should act as an intermediary, routing the applications to the competent local or central authorities. It could also actively manage the process, by using performance indicators and by intervening between the providers and the decision making authorities in case of delays and be able to escalate cases when deadlines are not respected. Lastly, it could publish all requests and permissions granted, so as to ensure transparency and equal treatment of the providers and ensure that all legal deadlines are respected by the competent authorities. Such a process could be linked to an appropriate complaints and dispute resolution process.
As regards the authority best suited to act as one-stop-shop, the trend from the answers, especially of the providers investing in NGA, shows preference for a central authority, like the telecom or energy NRA. Nevertheless, even if this body should preferably be at the central level, incumbent operators, utilities companies and local authorities underlined that, in order to be effective, coordination should be achieved at local level.

Q19. *How do you estimate the costs incurred by any measure suggested?*
No respondent has provided an estimation of the costs incurred by the suggested measures. The majority of the respondents consider however that the potential benefits would compensate the costs, which are expected to be low.

Q20. *What existing requirements under construction laws are you aware of regarding in-building equipment for electronic communication infrastructure? Please specify the Member State, region or municipality.*

Several requirements under construction laws were reported including standardisation of in-house wiring (AT, DE, Scotland, FI, Switzerland), exemption from building permit (CZ), obligation (FR) or recommendation (LUX) to equip new buildings with fibre, shared access to in-house wiring (DE, FR, PT, ES, Switzerland), obligation to lay down ducts in new urban areas (UK, IT).

Q21. *What is, in your view, the most suitable and cost effective way to ensure the existence of adequate and state-of-the-art in-building equipment, while also securing open access for electronic communications providers?*

Many respondents pointed to the need to distinguish the situation in buildings under construction and already existing ones. Clearly, the upgrading of installations in existing buildings, which amount for most of the buildings, generates the most onerous problems. Both incumbents and alternative operators referred to administrative procedures related to retrieving permissions for works from the owners, significant civil works' costs, regulatory barriers related to visual impact of the installations in buildings facades and absence of technical standards. To tackle this issue, several solutions were proposed varying from information campaigns addressed to buildings owners and trainings for construction companies, to the use of public funds and tax exemptions.

As regards buildings under construction, most respondents (telecom operators, authorities, associations, equipment manufacturers) favoured a legislative measure imposing obligations on construction developers. The expectations as to the scope of such measure differ among the respondents but these differences are not clearly related to the type of organisation they represent. Some pointed to the need of building standards and certification methods by independent bodies, including a 'neutral' communication box per each household, a utility room in the base of the building (eventually equipped with power supply independent from the building) or an empty electronic communications duct connecting the building to the street. Other respondents cautioned from over specifying the measure as this could inhibit innovation and breach the technological neutrality principle and favoured guiding principles like, for example, to equip buildings with a star-shaped empty pipe infrastructure, starting from the connection of the building.

All the respondents were clear as to the addressee of such obligation(s). The construction companies should ensure NGN ready telecoms installations on the same way as they are bound to provide energy, water and other utilities companies. On the contrary, imposing on telecoms operators to install in-house cabling at their own costs could lead to higher retail prices for the provided services and to unequal treatment of those building owners who have already invested in NGN ready in-building network.

The new rules concerning the state of the art in building equipment could be provided in construction codes or could also be specified when releasing building permits. If a binding legislative measure could not be proposed, professional organisations could develop 'good practices', such as foreseeing in the construction phase an empty electronic communications duct connecting the building towards the street. To ease the introduction of new rules a progressive removal of copper could be foreseen. After that date only fibre in new or refurbished houses would be allowed.

The main opposition to the concept of mandating NGN ready in building equipment came from cable industry and dark fibre operators, who identified a threat to technological neutrality and property rights. In their opinion, such obligation would endanger their business cases which currently depend on the long time return on investments in in-building installations.

As regards access to in-building infrastructure, the telecom operators favoured symmetric obligations in this regard, with, for example a requirement to adhere to the rules on sharing and maintenance costs of vertical network, whereas cable operators supported by some local authorities opted for non-mandatory open access based on voluntarily negotiated arrangements between the parties concerned.

Q22. *What would be the advantages and disadvantages of an obligation to equip buildings with open next generation access? How do you assess the additional costs incurred?*

Virtually all operators agreed that an obligation to equip buildings with open next generation access would considerably reduce roll-out costs of network operators, with the result that the

future generation services (e-health etc.) would be better accessible for individuals. The relevant regulation would boost the penetration rate and competition between the providers as well as stimulate technical innovation. On the other hand, some central authorities noticed that investment in in-house infrastructure, without equal improvement in the access networks, could be lost. They argued that wireless solutions could render in-house wiring obsolete. In addition, imposing NGN ready in-house wiring could be questionable in view of the consumers' choice not to get back to a 'wired solution'. Strong concerns were also expressed regarding the viability of the regulated NGN ready in-building infrastructure from the perspective of the technological development.
According to data from one of the NRAs, the cost of installing telecom infrastructure is capped at 2.5% (2% on average) of a new building's total construction cost. Comparing to the costs of other engineering systems (water, energy), they seem marginal. On the other hand, the cost of upgrading in-house cabling can amount up to two thirds of the total NGA roll-out cost.

Q23. *Are you aware of any good practices or measures other than those discussed above undertaken in order to facilitate the deployment of high speed broadband access networks? What has been their impact so far? How would you estimate the cost-saving potential of such measures?*
Several best practices were reported, with the Finish, French and Dutch example being the most popular. When it comes to different techniques, micro trenching, façade installation and setting up excavation standards were put forward.

Annex II

EUROPEAN COMMISSION
Directorate-General for Communications Networks, Content and Technology

Electronic Communications Networks and Services
Regulatory Coordination and Business

Ref. Ares(2012)1190957 - 10/10/2012

Inter-Service Working Group on an EU initiative to reduce costs and increase efficiency in the deployment of high-speed broadband Minutes of the meeting of 28 September 2012

Present:
DG CNECT Unit B1: Wolf-Dietrich Grussmann; Philippe Gerard; Enrico Camilli; Gerasimos Sofianatos; Alexandra Rotileanu; Erika Busechian; Joanna Borzecka; Ana Gradinaru; Unit B3: Jesus Pascualena; Guido Dolara; Unit H5: Merce Grido I Fisa;
DG MARKT: Denis Sparas
DG COMP: Bertrand Vandeputte; Soren Nirbel
DG ECFIN: Dimitri Lorenzani
SEC. GEN.: Stéphanie Vaddé
Excused: DG ENV, LS

UPDATE ON DEVELOPMENTS

- **Introduction**

CNECT B1 reported on the meeting with Neelie Kroes and explained that she is eager to see this initiative launched as soon as possible. The agreement of the IASG in order to send the document to the Impact Assessment Board is therefore essential. In parallel, it was reminded that this initiative was expected to be part of the Single Market II package, and that any legislative proposals would aim to be adopted in the first quarter of 2013.

The aim of this meeting is therefore to discuss and seek the IASG's approval on the draft Impact Assessment. Final agreement was aimed by Friday 5th of October 2012 at the latest. ENV previously informed that they would not participate but that they had no comments on the draft IA.

- **Results of the Public Consultation**

CNECT B1 presented the main results of the public consultation, which had attracted over 100 replies.
DG COMP enquired whether there was consensus among respondents regarding in-house wiring of all buildings. CNECT B1 replied that there was not really a consensus in this respect, most contributions indicating that in-house wiring for old buildings would be very costly, and on top of this, is it not certain that all buildings need NGA-ready access.

Unit B5 of DG CNECT asked what the view of utilities was as regards giving access to their ducts. Utilities insisted on the legal obstacles in sharing their infrastructures with the electronic communications operators and highlighted the potential of synergies with regard to smart grids. CNECT B1 reminded that sharing ducts should be based on commercial agreements, and that the initiative aimed at enabling sharing rather than mandating sharing.

SG stressed the importance of incorporating the messages from the public consultation within the text of the draft Impact Assessment, and noted a few additional points. Firstly, liability issues would arise. CNECT B1 explained that liability issues would be part of commercial agreements, hence would not be harmonised. Secondly, SG wondered about the amount of information to be shared as regards mapping and the need of explaining to citizens limitations of inventories access. CNECT B1 clarified this by referring to the preferred option, Option 3, which defines the scope of the access also based on feedback received in the public consultation. Under this scheme, the information would mainly be available on request. Lastly, the issue of business secrets was raised, and more specifically, how to avoid disclosure. CNECT B1 replied that competent authorities should manage the information exchange so as to ensure that these issues are taken into account indeed.

- **Results of Analysys Mason Study**

CNECT B1 briefly presented the study carried out by Analysys Mason, which will be annexed to the IA and is used to qualify the impact assessment. Among the findings of this study, it confirmed the overall saving potential, and it put into light additional savings for example thanks to preventing damages and synergies related to the different information systems involved.

In conclusions, CNECT B1 highlighted the willingness to reflect in the IA data and information coming from the public consultation, the studies, as well as the views previously expressed by the members of the IASG.

DRAFT IMPACT ASSESSMENT

- **Presentation of main changes in the document distributed pursuant to comments received**

CNECT B1 explained how the comments submitted by the members have been addressed in the version that the IASG members have received in advance of this meeting.

CNECT B1 highlighted the willingness to further reflect in the draft IA data and information from the public consultation, as well as from the study and opened the floor for additional comments.

- **Feedback /comments from representatives of the other DGs**

CNECT H5 was generally supportive. Input was provided on smart grids prior to the meeting, which had been incorporated. H5 stressed their wish to see positive environmental impacts of option 3 reinforced and provided reference to further studies giving estimates the greenhouse

gas reduction potential of smart grids. Great potential of exploiting synergies between telecom and energy sector was to be highlighted in the IA.

MARKT reminded that this initiative is important and part of the Single Market II and therefore fully support it. In particular, the amount of data in the IA was appreciated.
MARKT also asked whether the situation according to which energy companies cannot give access was routed in national or EU law. CNECT B1 replied that so far, this has only been seen under national law. MARKT also explained that it would be good to define the scope of the exercise (Articles 11 and 12 of the Framework Directive) by explaining shortly that SMP obligations are excluded.

MARKT also wondered about the level of ambition of the access pricing under Option 3. CNECT B1 replied that the approach to access pricing is a line of demarcation between Option 3 (access at reasonable conditions) and Option 4 (cost-orientation). While Option 4 is the most ambitious according to CNECT B1 there would be a number of negative impacts. MARKT explained that they would send drafting suggestion on the points mentioned.

COMP considered that this is a good document in which substantial time and effort were invested. They asked in particular if state aid issues would be taken on board. This was confirmed by CNECT B1. They wanted to see the discarded options included in the Annexes (see below). They also suggested clarifying and aligning the terminology by using co-deployment and not co-investment, passive infrastructure and not infrastructure only. In the problem definition, COMP also suggested to clarify Figure 1 under section 2.2 of the draft IA and add a list of passive infrastructure concerned by the proposed means.

ECFIN was pleased to notice that most comments on previous versions have been taken into account in the latest. Nevertheless, it was requested to take into account some further remarks: i) the missing issue of the operators' possible disincentive to invest as a consequence of the envisaged provisions, raised also by the stakeholders and to be duly developed; ii) in terms of data, a more consistent presentation of cost and benefits figures
(sometimes referred to a "typical" situation, some others presented as a range, without further explanation); iii) as regards the structure of Chapter 5, the impacts of each option should be assessed per category of stakeholder and then summarised, to provide an overview: iv) finally, ECFIN was asking for clarification on the lack of details about some of the proposed measures, e.g. the dispute settlement mechanism. CNECT B1 clarified that incentives to invest would indeed be addressed further in IA. As regards data it would be difficult to do more than is provided via the study in particular. CNECT B1 also explained that the purpose of the proposal is to build a common understanding more than to fix all details, which applies also to the dispute settlement mechanism, which satisfied ECFIN.

SG was positive about the added value brought to the draft impact assessment by the study. More details on cost experienced by Member State when implementing similar measures to the one proposed in the preferred option would be appreciated, preferably in a table format.

One additional question was whether the initiative can go beyond broadband rollout and serve other purposes. CNECT B1 replied that while the legal basis (Article 114 TFEU) and the time horizon put limits on possibilities to address all possible synergies between sectors in the initiative, the latter should not prevent other sectors from benefitting from synergies.

SG also asked to clarify the consequences of the initiative on property rights, on SMP regulation, as well as the difference between ducts and networks, and the lack for standardisation. SG also wondered about the relationship between mapping and Open Data Strategy. CNECT B1 clarified those issues.

In general terms, SG suggested to reflect a bit more in the titles of the options their actual contents, to shorten Option 1, and to add a list of discarded options (see below). CNECT B1 confirmed that those issues would be addressed.

Finally, SG wondered about the opportunity to impose "one stop shop" by way of regulation under Option 3. Finally SG asked if comitology would be considered. CNECT B1 replied that one stop shops would be targeted and hence fit with the chosen instrument and that comitology is not excluded.

- **Additional modifications**

CNECT B1 recalled that the IA would be further adjusted on the basis of the public consultation, the study and input received from ENISA as regards network security.

Comments expressed above would also be taken into account.

As regards Chapter 5, the text will be cut down: text that was in the previous version will be moved to the Annex, summary tables with costs and benefits by stakeholders would be added. No changes on substance were expected. This revision aims at making the analysis more systematic (per category of stakeholder) thanks to the new tables included; helping the reader to visualise the cost and benefits better.

- **Presentation of Annexes on baseline scenario and on discarded options**

The list of annexes was presented. As regards the Annex on discarded options, SG explained that they could be grouped, and that they should provide a short reasoning justifying why they were discarded.

CONCLUSION AND NEXT STEPS

In conclusion, CNECT B1 thanked the members for their valuable participation and input into the draft impact assessment. It was noted that all those efforts had made it possible to reach a document on which members could agree in principle, subject to comments by 5 October (lunchtime) on the final changes to be sent out by CNECT B1 early next week.

Ana Gradinaru

Annex III

Annex III

Baseline Scenario – existing measures and plans

This Annex analyses the existence, the nature and the maturity of measures throughout the EU in relation to:
- Public infrastructure databases or atlases
- Mandated Access to Passive Infrastructure
- Coordination of Civil engineering works
- Streamlining of Permit Granting Processes
- In-house equipment

Under point 1 of the Annex a general overview of existing measures is presented. In green are marked those existing practices that could be considered the best in the class, whereas in yellow are marked all other existing or planned measures. The following tables (2-6) present specific measures across the Member States per area. In these tables the dark yellow indicates good practices and light yellow marks local solutions, plans or rudimental measures (e.g. general legal basis without implementing measures).

The information provided in this Annex comes from the following sources:
- Deloitte study on cost-reduction practices with regard to broadband infrastructure roll-out : Deloitte Tech4i2 "Study on cost-reduction practices with regard to broadband infrastructure roll-out" 13/09/2012. Part of Study leading to an Impact assessment on the structuring and financing of broadband infrastructure projects, the financing gaps and identification of financing models for project promoters and the choice of EU policy. (SMART 2007/0035);
- Analysys 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);
- inputs to public consultations on an EU Initiative to Reduce the Cost of Rolling Out High Speed Communication Infrastructure in Europe (27 April – 20 July 2012);
- draft Report of PT TRIS (ECC);
- own resources (questionnaire concerning national initiatives related to ducts);
- Cullen 'cross country analysis' .

Table of content

1. OVERVIEW OF EXISTING MEASURES

- measures scattered, partial or not adopted yet
- good practices
- lack of relevant measures
- no information available

Measure/ Country	Measure 1 Mapping	Measure 2 Mandated Access to Passive Infr.	Measure 3 Coordination of civil engineering works	Measure 4 Permit Granting Process	Measure 5 NGN ready In-house wiring
AT					
BE					
BG	-		-	-	
CY					
CZ					
DK					
EE					
FI					
FR					
DE					
EL	-				
HU					
IE					
IT					
LV	-				
LT					
LU					
MT	-				
NL					
PL					
PT					
RO					
SK	-				
SI					
ES					
SE					
UK					

2. PUBLIC INFRASTRUCTURE DATABASES OR ATLASES

BEST - Best practices
GOOD– Good practices of limited scope
LIMITED – Planned/Local/Basic measures
NOT-RELEVANT – No relevant measures reported
NA - No information available

	Country	Status	Measures
1	***AT***	No national public infrastructure database. Art.13a TKG gives a legal basis for a register of very limited data[1]. The City of Vienna has digital maps of all urban infrastructures. Part of it is publically available at http://www.wien.gv.at/viennagis/index.html.[2]	**LIMITED**
2	***BE***	No database at federal government level. In 1995, the Flanders region of Belgium implemented a Geographic Information System (GIS) decree, which aimed to create a geographical database of environmental and human factors covering the region. The agency in charge of the project is known as Agentscahp voor Geografische Informatie Vlaanderen (AGIV). In 2009, GIS framework was updated with the Spatial Data Infrastructure (SDI) programme, to bring the project in-line with the Commission's INSPIRE initiative. This consisted of three decrees, one of which is the Kabel-en Leiding Informatie Portaal (KLIP) decree, which is specifically with regards to cables and conduits[3].	**GOOD**
3	***BG***	No information available[4].	**NA**
4	***CY***	Geographic Information System for ANOs (unified project in progress)[5].	**LIMITED**
5	***CZ***	On 27 November 2008 the Memorandum on cooperation in the preparation, testing and implementation of the "digital map of public administration" was signed, under which the Interior Ministry started the project of the digital map of Public Administration (DMVS). The digital map of Public Administration offers the unification of data from various geographic information systems in one application. The project aims to facilitate the administration and access to spatial data for the authorities and the public in line with the Smart Administration, promoting efficient and user-friendly public administration, and development of eGovernment in the country. The DMVS will comprise the Digital Technical Map (DTM). DTM will be a large-scale computer-based map, describing the surface situation and elements of engineering networks (ie, including electronic communications). The primary users will be the public administration, citizens and it will also be a major source of unified and up-to-date information for the Integrated Emergency System of the Czech Republic[6].	**LIMITED**

[1] Own resources (questionnaire)
[2] Deloitte study, public consultations
[3] Analysys Mason study
[4] Deloitte study
[5] Own sources (questionnaire)
[6] Public consultations

6	***DK***	The Danish Register of Underground Cable (www.ler.dk) - managed by the Danish Enterprise and Construction Authority - contains information on all companies and associations who own underground cables in Denmark. The register is established in order to prevent accidental damages to underground utility cables. All owners of cables have registered their areas of interest in the register. An area of interest is the geographical area in which an owner of cables own cables. The exact location of cables is thus not registered. The Danish Telecom Industries Association maintains a database from which interested telecom companies automatically will receive an e-mail with offers of joint digging efforts from other telecom companies digging in a certain area. However, the database does not contain up-to-date information on the placement of telecom infrastructure[7].	**GOOD**
7	***EE***	A duct database in Estonia is owned by the incumbent and is accessible for all operators. The costs of using and maintaining the database are shared between the incumbent and the operators that make use of the database. The incumbent Elion owns almost 100 % of cable ducts. In accordance with the Estonian Construction Law, civil engineering infrastructure data are kept in an asset register, which is managed by the Ministry of Economic Affairs and Communication. This covers Utilities as well as telecoms[8].	**GOOD**
8	***FI***	In Finland state owned company (Johtotieto Oy) has quite comprehensive database on underground wires/pipelines and the situation is getting better all the time. This database is today mainly used for avoiding cable breaks while digging/constructing. Cities also own databases of their underground constructions. Cable position information is confidential due to security of the society[9].	**GOOD**
9	***FR***	There is no centralized passive infrastructure database in France, but France Télécom has developed a database with spatial data, based on GIS Arcview. However, the database is far from complete. Upon request of an alternative operator, France Télécom shares data on a specific area (raster map, vectorial map). France Télécom also gathers data from other operators and stores them in the database. Under the law of August 2008 any operator has an obligation to give geographical data on its network to local authorities on their demand, free of charge. The French national telecom regulatory authority (ARCEP) has recently published a guide for local authorities to help them formulate their demands vis-à-vis operators. In France there is a digital data basis for the routes and nature of existing copper networks operators including incumbents (France Télécom). It can be integrated into GIS systems by local authorities. The quality of data available is very heterogeneous[10].	**GOOD**
10	***DE***	In 2009, Bundesnetzagentur, the German Federal Network Agency, introduced the Infrastrukturatlas programme to map existing infrastructure that could be used for deployment of NGA networks. Infrastructure covered	**BEST**

[7] Deloitte study
[8] ibidem
[9] Public consultations
[10] Public consultations, Deloitte study
[11] Analysys Mason study

		includes: - wired telecoms infrastructure (line profiles of fibre, including cable core networks and last-mile fibre; nodes such as main distribution frames (MDFs) and cabinets; empty telecoms ducts) - wireless telecoms infrastructure (transceiver sites; fixed links; backhaul to transceiver sites) - other infrastructure (utilities such as electricity, gas, water and sewers; utility poles, including antenna masts; potential antenna sites on tall buildings; windmills; church towers) - transport networks (conduits on roads, highways, waterways and railways)[11]. The atlas is not related to particular wholesale products or market segment and currently does not contain data regarding the availability or the physical characteristics of the infrastructure. The infrastructure atlas can only be used by operators for specific projects. It is contains data on telecoms and Utilities[12]. In Bavaria it has been introduced a database with geographical information. Based on this database various applications are envisaged. One of them is a repository of building plans including civil and underground engineering.	
11	***EL***	No information available[13].	**NA**
12	***HU***	In Hungary, the SMP operator has to provide information about its civil engineering infrastructure upon request, on a case-by-case basis. The SMP operators are not obliged to establish an infrastructure database, nor has this database been established by the NRA or other institutions[14].	**LIMITED**
13	***IE***	No public infrastructure database exists[15].	**NOT-RELEVANT**
14	***IT***	In Italy, the SMP (Telecom Italia) is obliged to establish a database containing data on its own passive infrastructure (i.e. ducts, fiber). Local authorities maintain databases of the passive infrastructure of other operators, public entities and municipalities. According to the Italian Communication Code, data on new infrastructure needs to be notified by operators and local authorities to the Ministry of Telecommunication (now the Ministry of Economic Development)[16]. At the end of 2011 the Italian NRA issued a Decision (n. 622/11/CONS) that set up the infrastructure cadastre that will collect all the suitable pipes and ducts information for TLC use. Such a cadastre even if set up until now is not operative because operative rules for its implementation are still ongoing. The NRA will grant access based on the principle of reciprocity. Regione Emilia Romagna has promoted and led a project to include all the municipalities in a homogeneous documentation effort to document all underground infrastructures. The role of the Regione is fundamental in promoting uniform procedures, tools and documentation and geo-referencing techniques and in collecting at regional level all the local municipalities repositories of data by using a data federation structure (Lepida of regione Emilia Romagna)[17].	**LIMITED**

[12] Deloitte study
[13] ibidem
[14] ibidem
[15] ibidem
[16] ibidem
[17] Public consultations

15	***LV***	No information available[18].	**NA**
16	***LT***	No transparency obligation. Incumbent's RO for duct access is publicly available since 2005. No access to the Incumbent's e-map is offered. Municipalities keep information about the Civil Engineering infrastructure; some of them grant access to GIS-based tools with civil engineering infrastructure data[19]. A project is being developed to develop access to the e-maps managed by the municipalities in order to make information about civil engineering infrastructure available for developers of the broadband networks[20].	**LIMITED**
17	***LU***	The government asked in 2010 (ultra-fast broadband networks strategy) called for two national registers: for works and for infrastructure. (Art. 44(4) of the Law of 27 February 2011)[21].	**LIMITED**
18	***MT***	No information available[22].	**NA**
19	***NL***	The Kadaster (Land Registry) is responsible for maintaining the register of cables and infrastructure in the Netherlands, using the KLIC portal (system pools infrastructure data from all types of excavators such as gas, energy, internet, etc. and manages the exchange of infrastructure information). Although not a map as such, this database contains the locations of active infrastructure. Any organization that wishes to undertake excavation work is mandated by law to check the system to see which operators are active in the area in question. The law and the system are primarily in place to avoid accidents. However, it is envisaged that the system will be further developed into a complete centralised information system to meet the EC's INSPIRE directive over the next few years.[23] Coordination of civil engineering works already exists in the Netherlands. Such coordination is organized at local or regional level. The method and organisation varies but in essence it requires that information about upcoming engineering projects is shared between the various players (sewage, water, gas, electricity and telecommunication). Based on this information the interested parties to can decide to cooperate and as a result share the cost of the civil engineering works. Especially in the case of the development of new areas which require a completely new infrastructure such cooperation is common practice[24].	**GOOD**
20	***PL***	Polish operators are mandated to provide information on new deployments annually to the NRA, UKE. However, rather than detailed maps, they are required only to submit the location of nodes and the approximate location of connections between them. According to UKE, many Polish operators have their detailed network information stored as paper maps rather than in electronic form[25].	**GOOD**
21	***PT***	ANACOM, the Portuguese NRA, decided in 2009 to implement the Centralised Information System (CIS), a central infrastructure atlas aimed at reducing the cost of deploying new electronic communications equipment. Providing and regularly updating information is mandatory for all	**BEST**

[18] Deloitte study
[19] ibidem
[20] Draft report of PT TRIS (ECC)
[21] Own sources/Cullen analysis
[22] Deloitte study
[23] Analysys Mason study
[24] Public consultations
[25] Analysys Mason study

		organisations that own or operate infrastructure suitable for accommodating electronic communication infrastructure (including roads, railways, water and gas infrastructure). This requirement applies to local authorities, state-owned companies, utility companies, electronic communications companies, and any other bodies that may own relevant infrastructure. It extends further to the incumbent, Portugal Telecom, which must provide information on available space within its ducts[26].	
22	***RO***	The Pilot project to create a GIS for certain segments of the underground public electronic communications networks and of the associated infrastructure elements within cities. Together with that an inventory of these network segments and the associated infrastructure elements is being developed. GIS will encompass complete information on the development and geographical location of the network segments and of the associated infrastructure elements[27].	**LIMITED**
23	***SK***	No information available[28].	**NA**
24	***SI***	The Ministry which is also responsible for electronic communications (MVZT) runs a database on all public infrastructure, both telecoms and Utilities, which also include information on ducts, however only geographical and spatial data and no specific information on available capacity[29]. There are ongoing negotiations on an agreement with the Surveying and Mapping Authority on the upgrading of the existing Cadastre of Commercial Public Infrastructure and the creation of a browser that will offer a more detailed view of the characteristics of the network. The upgrading of the Cadastre and the creation of the browser are planned to be completed by the end of 2013, which would mean that tangible results would be available in 2014[30].	**GOOD**
25	***ES***	The incumbent runs a database as a part of its wholesale offer for duct access. The database provides information about the geographical location and characteristics of the civil infrastructure (ducts, manholes, poles, etc), i.e. Utilities as well as telecoms. There is a GIS based online database.[31] In the view of CMT decision of 5 July 2012, the incumbent has timeframes to update passive infrastructure information within 15 working days in case of vacancy information from any time when infrastructure is visited in the context of sharing visits, maintenance or cables, and 1 month on case of update or completion of technical information[32]. There were also positive experiences reported with commercial initiatives for mapping information. See, for example, the company INKOLAN active in Spain (http://www.inkolan.com/Contenidos/Ficha.aspx?IdMenu=A2238BD0-3048-4D9D-AB8CC91C6FDFD475). INKOLAN provides digital information about public services infrastructures: water, gas, electricity, telecoms and municipal networks. In this case, the market is providing a solution for the information needs of operators. Comparing to that a general obligation to have the information available in a public database may be a much less	**GOOD**

[26] ibidem
[27] Draft report of PT TRIS (ECC)
[28] Deloitte study
[29] ibidem
[30] Public consultations
[31] ibidem
[32] Cullen analysis

		efficient way of obtaining the information. Specialized companies can be more efficient[33].	
26	***SE***	There are three separate projects in Sweden. The first is an annual broadband survey in Sweden that maps out which services are available to each home. The second project is inspired by the Infrastrukturatlas and aims to develop a map that shows both existing and planned network deployments, thus to encourage infrastructure sharing and to attract players to deploy in new areas. Finally, there is the dig alert system, Ledningskollen, https://www.ledningskollen.se, which is designed to reduce damage to existing infrastructure during construction works. This splits the country into 1km-sided grid squares and provides information to those intending to carry out civil engineering works regarding which infrastructure owners are active in which areas. The database logs telecoms related cables but is accessible to all including Utilities for reference[34].	**GOOD**
27	***UK***	The National Joint Utilities Group (NJUG) is a UK organisation that aims to promote best practice for public street civil engineering works. Members include a number of UK water supply and energy companies, as well as Openreach, the local access network provider, and Virgin Media, the UK's largest cable operator. One initiative of the NJUG is to map existing underground assets to create an infrastructure atlas for the UK. In addition to the estimated 1 million kilometres of gas and water mains and sewers, and 500 000 kilometres of electricity cables, NJUG believes there are 2 million kilometres of telecoms cabling, all of which it wishes to map[35].	**LIMITED**

[33] Public consultations
[34] Analysys Mason study
[35] ibidem

3. MANDATED ACCESS TO PASSIVE INFRASTRUCTURE

BEST - Best practices
GOOD– Good practices of limited scope
LIMITED – Planned/Local/Basic measures
BASIC – Only asymmetric obligations to provide access to ducts
NON-RELEVANT – No relevant measures reported
NA - No information available

AS – asymmetric obligation to provide access to ducts
S - symmetric obligation to provide access to ducts
NR - not regulated

	Country	Status	SMP	Measures
1	***AT***	Operators that have exercised rights of way for the installation of network infrastructure on public or private land must permit other operators to share their infrastructure to the extent that such shared use is economically reasonable and technically feasible[36]	AS	LIMITED
2	***BE***	No specific measures are known to have been adopted[37]	NR	**NOT-RELEVANT**
3	***BG***	No specific measures are known to have been adopted[38]. There is an asymmetric obligation to provide access to ducts[39]	AS	**BASIC**
4	***CY***	The obligation to provide access to ducts is provided together with an obligation to reserve capacity in ducts (max 30% for own use). The NRA is setting the pricing for ducts access. However, in practice, the high price makes cheaper digging other ducts[40].	AS	**BASIC**
5	***CZ***	No specific measures are known to have been adopted[41].	NR	**NOT-RELEVANT**
6	***DK***	No specific measures are known to have been adopted[42]. Incumbent is not obliged to reserve capacity. However, there is an obligation to provide thorough documentation if neither ducts nor dark fibre is available in a specific area [43]. The Danish utilities often deploy FTTH through an extended use of trench sharing where overhead power lines are buried along with cables for streetlight and fibre ducts[44]	AS	LIMITED
7	***EE***	No specific measures are known to have been adopted[45]. There is an asymmetric obligation to provide access to ducts[46]	AS	**BASIC**
8	***FI***	No specific measures are known to have been adopted.[47]	Despite the legal	**NOT-RELEVANT**

[36] Deloitte study
[37] ibidem
[38] ibidem
[39] Own sources/Cullen analysis
[40] Deloitte study
[41] ibidem
[42] ibidem
[43] Own sources (questionnaire)
[44] Public consultations
[45] Deloitte study
[46] Own sources/Cullen analysis
[47] Deloitte study

			basis, in practice the obligation to provide access to ducts is not used.	
9	***FR***	Access to infrastructure, overseen by the French electronic communications and postal regulatory authority (ARCEP) is to be provided on a non-discriminatory basis by France Telecom, which must grant reasonable requests for access, make capacity available where constraints exist ("desaturation"); and provide planning information.[48] There is an obligation to reserve sub-duct for maintenance but in specific cases (feeder segment) this means 'sufficient space' to undertake corrective maintenance and necessary developments in the copper network. The same mount of spare should be reserved for ANOs as it is reserved for the future needs. In practice, by November 2011 around 6 050 km of ducts have been leased by ANOs from incumbent[49].	AS S	**LIMITED**
10	***DE***	The Federal Network Agency, BNetzA has imposed an obligation for passive infrastructure owners to provide access[50]. The incumbent may refuse access only in specific cases. Legislation is currently being put in place that obliges public utility companies to provide access to their infrastructure upon request. Steps are also being taken to apply similar measures to all owners of relevant infrastructure, including private utility companies. It is envisaged that an arbitration process will be put in place to settle any disputes that arise[51].	AS	**GOOD**
11	***EL***	The incumbent is encouraged to install, according to market demand, sufficient capacity in construction projects of technical infrastructure (i.e. ducts, sub-ducts, manholes, masts) so that other operators could use them[52]. Besides that no specific measures are known to have been adopted.	AS	**LIMITED**
12	***HU***	No specific measures are known to have been adopted[53]. There is an asymmetric obligation to provide access to ducts[54]	AS	**BASIC**
13	***IE***	No specific measures are known to have been adopted.[55]	AS	**BASIC**
14	***IT***	Non discrimination obligation applies to the space reserved by incumbent for maintenance. There is also an obligation to 'adopt	AS	**GOOD**

[48] Deloitte study
[49] Own sources (questionnaire)
[50] Deloitte study
[51] Analysys Mason study
[52] Own sources/Cullen analysis
[53] Deloitte study
[54] Own sources/Cullen analysis
[55] Deloitte study

		every possible measures' to decongest existing ducts. Different operators entered into agreements concerning duct sharing[56]. I n addition there is an obligation for a builder to make multiservice ducts available in new buildings[57].		
15	***LV***	No specific measures are known to have been adopted[58]	NR plans	**NOT-RELEVANT**
16	***LT***	Compulsory sharing of all passive infrastructure was introduced in 2004. Detailed regulation on the construction of network infrastructure and infrastructure sharing was introduced in 2005. Following a number of disputes, a second level of regulation was introduced in November 2011 that places a more asymmetric obligation on incumbent. These additional measures allow the NRA to regulate the operational problems that the previous complaints had referred to, as well as regulating access pricing, if two telecoms companies fail to reach an agreement and a dispute ensues. If another infrastructure company becomes involved in a dispute, the case will be escalated to the courts. The role of the NRA in case of these other infrastructure companies is to provide clarifications on the access obligations. There are a number of key areas of legislation considered to be the key in ensuring that the obligations to share infrastructure are clear, and thus keep disputes to a minimum[59].	AS S	**BEST**
17	***LU***	Shared access is mandated at planning permission stage and existing infrastructure cannot be duplicated [60].	AS	**GOOD**
18	***MT***	No specific measures are known to have been adopted[61]. There is an asymmetric obligation to provide access to ducts[62]	S	**BASIC**
19	***NL***	Third parties in the Netherlands are mandated to share their networks with telecoms operators when requested, provided this is technically feasible. In addition, the right to deploy in house wiring is considered to be a part of rights of way, which are granted free of charge for all providers of publicly available electronic communications provider [63].	S	**GOOD**
20	***PL***	No specific measures are known to have been adopted[64]. There is an asymmetric obligation to provide access to ducts[65].	AS	**BASIC**
21	***PT***	The national telecoms regulator has the power to determine the terms under which passive telecoms infrastructure can be shared – and has established regulations which must be satisfied before any operator may share infrastructure[66]. The laws state that all existing ducts that are suitable for the provision of electronic communications networks must be made available to operators. This includes:	AS	**BEST**

[56] Own sources (questionnaire)
[57] Deloitte study
[58] ibidem
[59] Analysys Mason study
[60] Deloitte study
[61] ibidem
[62] Own sources/Cullena analysis
[63] Deloitte study
[64] ibidem
[65] Own sources/Cullen analysis
[66] Deloitte study
[67] Analysys Mason study

		-infrastructure owned by the state, local authorities and Autonomous Regions -infrastructure owned by entities under the supervision of the state, local authorities and Autonomous Regions - public infrastructure and utility companies such as water, gas, transport and sewerage companies, as well as roads, railways and ports. Access to these ducts is defined as the owner making available physical infrastructures such as buildings, ducts, masts, inspection chambers, manholes and cabinets for the purpose of the accommodation, setting up and removal, and maintenance of electronic communications transmission systems, equipment and resources. The cost of access varies depending on who owns the infrastructure. For example, ANACOM, the Portuguese NRA, sets the prices for access to local authority-owned infrastructure, whilst electronic communication companies must charge each other cost-oriented prices. No specifications are imposed on operators deploying new ducts. Instead, the deploying operator is obliged to consult with other operators in order to determine if any other operator is interested in deploying along that route. If they are, the deploying operator must install ducts that are suitable for sharing; if they are not, then the duct operator is free to choose which type of duct is deployed.[67] It has been reported 16 operators sharing ducts[68].		
22	***RO***	A new Infrastructure Law was adopted recently which allows access to ducts, pillars or any other passive infrastructure, suitable for broadband rollout. The NRA is empowered to intervene if the conditions for access are considered by the access seeker unreasonable[69].	NR	**LIMITED**
23	***SK***	No specific measures are known to have been adopted[70].	NR	**NOT-RELEVANT**
24	***SI***	No specific measures are known to have been adopted. There is an asymmetric obligation to provide access to ducts [71].	AS	**BASIC**
25	***ES***	Shared access to capacity within a duct is granted only is no full sub-ducts are available. In practice, since mid September 2008 till April 2012 - 2 624 km of incumbents ducts have been accessed by ANOs (out of 6 500 requests)[72]. Besides that no specific measures are known to have been adopted[73].	AS	**LIMITED**
26	***SE***	No specific measures are known to have been adopted[74]	NR	**NOT-RELEVANT**
27	***UK***	As a result of the recent wholesale market access review, the incumbent is now subject to an obligation to provide access to its ducts and poles[75]. Besides that no specific measures are known to have been	AS	**BASIC**

[68] Cullen analysis
[69] Deloitte study
[70] ibidem
[71] Own sources (questionnaire)
[72] Cullen analysis
[73] Own sources (questionnaire)
[74] Deloitte study
[75] ibidem

		adopted. Scottish Water (SW) has pioneered the use of the public sewer network and property assets over recent years to extend fibre-optic infrastructure. SW's intention is to partner with a small number of companies who have a desire to act as asset brokers with a process to install fibre76.		

[76] ibidem

4. COORDINATION OF CIVIL ENGINEERING WORKS

BEST - Best practices
GOOD– Good practices of limited scope
LIMITED – Planned/Local/Basic measures
NOT-RELEVANT – No relevant measures reported
NA - No information available

	Country	Status	Measure
1	***AT***	No specific measures are known to have been adopted[77].	**NOT-RELEVANT**
2	***BE***	Since several years, various coordination regimes have been imposed in different regions. Formal procedures are set out and regular coordination meetings take place to discuss with all infrastructure providers the middle and long term public road interventions (Brussels, Flamish, Wallonie). The Brussels Region in Belgium has a 'Cellule de Coordination des Chantiers' to which anyone planning significant infrastructure works must file its plans to make them accessible to other major infrastructure companies, facilitating co-investment and co-ordination (in particular co-trenching) (OSIRIS). In the Flemish region, a pilot phase for a dedicated platform (GIPOD) is expected to start in September 2012. In Flanders the KLIP platform is available for professional and private customers.[78]	**BEST**
3	***BG***	No information available.	**NA**
4	***CY***	No specific measures are known to have been adopted[79]	**NOT-RELEVANT**
5	***CZ***	No specific measures are known to have been adopted[80]	**NOT-RELEVANT**
6	***DK***	An agreement exists to coordinate works between telecoms operators. Apart from minimizing costs for the involved parties and stimulation of competition in the market for the provision of infrastructure, the purpose of the agreement is to ensure non-discriminatory and transparent conditions for all parties joining the agreement, and to meet the authorities' requirements with respect to coordination of digging in order to minimize traffic inconvenience to citizens and businesses. The Agreement applies to deployment (digging) in areas/locations subject to public regulation, such as in road areas where the public authority must give permission for digging. A link to the Industry Agreement: http://www.teleindu.dk/t2w_757.asp There is also a solution that seems to provide useful support to the undertakings operating in the civil work activities is run in Denmark provided by the company GlobalConnect (see www.globalconnect.dk)[81].	**GOOD**
7	***EE***	No specific measures are known to have been adopted[82]	**NOT-RELEVANT**

[77] Deloitte study
[78] Public consultations
[79] Deloitte study
[80] ibidem
[81] Deloitte study, Public consultations, Analysys Mason
[82] Deloitte study

8	***FI***	In Finland there are regular meetings among different utility companies, municipalities and telecom companies. In these meetings participants share their plans and decide how and where it's possible to cooperate. For example the City of Joensuu has for years held regular joint construction meetings between different parties. The meetings are mainly occasions in which the parties are informed about matters. A state-owned company "Johtotieto Oy" has an internet-based service where operators able to share information on the planned works with each other to facilitate joint construction http://www.yhteiskaivu.fi[83] Prior to the launch of the portal, in December 2010, LVM published a guide to best practice for jointly constructing infrastructure. This was produced after interviewing a number of operators, and listed a number of challenges faced by such a scheme. Currently, there is no dispute resolution process in place, and is thought that in the case of a dispute, parties are left to negotiate freely between themselves.[84]	**BEST**
9	***FR***	Construction companies and builders must inform local communities of works on public buildings and thorough fares - the DICT (Déclarations d'Intention de commencement de Travaux)[85]. Infrastructure owners who are about to carry out installation or maintenance projects of „significant length (~150m in urban areas and ~1km in rural areas) are obliged to announce their plans for surface works (such as stripping and replacing surfaces/façades), works on overhead lines, and any works which require excavations to the local authorities. These infrastructure owners are also obliged to allow operators to install electronic communications equipment in any trenches that are created during the work. The operator must compensate the infrastructure owner for any extra costs that are incurred during the process, and the operator subsequently becomes the owner of the electronic communication equipment that has been installed, and thus is ultimately responsible for maintaining it.[86] A 2009 French law (L49 CPCE) requires local authorities to inform operators in particular of their willingness to launch new construction projects or to improve existing infrastructures (beyond a given length). In this case, operators or other public authorities can request permission to install their electronic communications cables. This permission can only be refused for reasons of security or network integrity. They must bear the additional costs of hosting the cables and part of the common costs. At regional level, there are some isolated initiatives. One example is CRAIG (Centre Régional Auvergnat de l'Information Géographique) : http://www.craig.fr[87].	**GOOD**
10	***DE***	The coordination of regional public works is normally in the competence of local authorities, and therefore it is a matter for the local administration. The annual coordination meetings initiated by the local authorities with other carriers or media wishing to build networks, have proven successful. In development planning in Germany the needs of telecommunications as well as the energy and water suppliers are mandatorily taken into account[88].	**GOOD**

[83] Public consultations, Deloitte study
[84] Analysys Mason study
[85] Deloitte study
[86] Analysys Mason study
[87] Public consultations
[88] Deloitte study
[89] Public consultations

		Some Federal States in Germany have launched first pilot inventories, e.g. the civil engineering works map ("Grabungsatlas") in Bavaria, the Hessen broadband-internet information system (HesBIS) or the construction sites map ("Baustellenatlas") in Lower Saxony. Bremerhaven has so-called "sub-groups" who hold trans-sectoral discussions about civil engineering work at regular intervals. Geographic information systems, in which construction sites are documented, are kept in part on the level of municipalities, counties or states. These are often available over the Internet and also serve other purposes such as information on traffic delays. In this context, a voluntary involvement of infrastructures that are eligible for the shared use would be quite reasonable[89].	
11	***EL***	No specific measures are known to have been adopted[90]	**NOT-RELEVANT**
12	***HU***	No specific measures are known to have been adopted[91]	**NOT-RELEVANT**
13	***IE***	Government consultations in progress[92]	**NOT-RELEVANT**
14	***IT***	An AGCOM decision is pending that would mandate: A negotiated technical framework agreement for rights of way with operators; Impose an obligation to build ducts suitable for fibre infrastrucuture for any new public work; Impose an obligation to inform AGCOM's registry of the planned works on the infrastructures.[93] In the municipality of Milan, whatever a public civil work is undertaken (e.g. road construction or maintenance works) the local authorities give the opportunity to private operators to lay their own infrastructures. In areas of new urbanization, even without the application of the operators, it's mandatory for the constructor to lay ducts, just in case of future demand by operators. The municipality of Milan, before starting planned civil engineering works, notifies all operators. Unfortunately, sometime the short time of notice does not allow operators to catch every opportunity. The sources of information used to notify about planned civil engineering works are: - written communication; - or "conference services" that is a meeting, with the electronic communication operators and the underground infrastructures owners involved in the projects, with the aim to share all the info for the project. These processes, that cover different types of infrastructure, are not very effective. It would be preferable to have an IT based process[94].	**LIMITED**
15	***LV***	Since 23.03.2012 in accordance with the Latvian Government Act for electronic communications networks construction regulations, information regarding the planned electronic communications ducts (planned for optical cables) construction works should be published on the Local Authorities internet web sites, but the regulation does not work because of paragraph's imprecise wording.[95]	**LIMITED**

[90] Deloitte study
[91] ibidem
[92] ibidem
[93] ibidem
[94] Public consultations
[95] ibidem

16	***LT***	No specific measures are known to have been adopted[96] According to the NRA, the Lithuanian government is looking to draft legislation that mandates public infrastructure companies to co-ordinate civil work, with help from the NRA. It is accepted that it is more difficult to enforce this on private companies from a practical point of view, and a softer „best recommendations guide approach is being considered instead[97]	**LIMITED**
17	***LU***	By convention (unregulated) different parties active in civil-working inform one another about planned civil-works[98]. City authorities for urban development shall share, long enough in advance (6-12 months), the relevant information about which areas are planned to be renewed and the number of new constructions planned. This will help to improve network extension planning for telecommunication operators[99]. A national construction works register is currently being developed to provide an online directory of all future civil engineering works to be carried out. In addition, guide prices will be listed for telecoms operators that are interested in participating in the civil engineering works in order to deploy their own infrastructure[100]	**GOOD**
18	***MT***	Malta's National Roads Authority road permit system informs all the utility services companies about the type of infrastructure that will be installed and gives each the chance to amalgamate any proposed works from the respective entities. This applies to all trenching works by utility services companies when installing any underground infrastructure. When the works are to be carried out on the strategic road network (arterial and distributor roads), the coordination is even more extensive and the coordination is broader and in more detail so as to minimise financial and disruptive impact.[101]	**GOOD**
19	***NL***	Since 2007 in the Netherlands local authorities have an increased role in coordinating civil engineering works in public grounds, requiring consent before actual work may start. In many cases however local authorities make use of excessive administrative fees for this role, which may even be prohibitive for actual fibre roll out.[102] The 'KLIC system' serves to coordinate works and creates a cadastre of underground infrastructures, aimed especially at avoiding damage to existing infrastructure from new works, but potentially also to explore sharing opportunities.[103] In addition, GBKN has been reported, meaning Large Scale Standard Map of the Netherlands - a detailed map which will in the future be integrated into the Registration Large Scale Tpography (BGT) - a detailed digital map of the Netherlands containing all objects such as buildings, roads, water, railroad and green objects in a unified way.[104]	**GOOD**

[96] Deloitte study
[97] Analysys Mason study
[98] Deloitte study
[99] Public consultations
[100] Analysys Mason study
[101] Deloitte study, public consultations
[102] Public consultations
[103] Deloitte study
[104] Public consultations

20	***PL***	In accordance with Article 62 of the Act for the Promotion of the Development of Telecommunications Networks and Services, road operators are required to locate telecommunications ducts within road lanes during road construction or reconstruction. Pursuant to Article 39 paragraph 6a, road operators must publish the following information on their website at least 6 months before submission of an application for a decision on environmental conditions, a road investment permit or a road construction permit: - Intention to start construction or reconstruction of the road, - Availability of the service duct. Road operators must notify the President of the Office of Electronic Communications (UKE), which publishes the information on the planned investment on its website. The UKE website also features mandatory notices published by its President in accordance with Article 39, paragraph 7c of the Act on Public Roads. The information includes the location of the planned service duct and the deadline for submission of the lease application. Browser link: http://www.ktech.uke.gov.pl/ In addition to that Poland has an inventory of the underground and aboveground infrastructure of all owners - Broadband Infrastructure Inventory System (SIIS), run by the Office of Electronic Communications.[105]	**GOOD**
21	***PT***	Mandatory regulatory system for making planned works public to facilitate sharing available, including on the CIS national centralised information system. The law stipulates that the performance of works which enable the construction or expansion of infrastructure suitable for the accommodation of electronic communication networks be made public so that electronic communication companies can become associated with the planned work. This is an obligation applicable generally to public sector companies and to electronic communication companies. The notice must contain information on the characteristics of the intervention to be performed, the period envisaged for its completion, charges and other conditions to be observed, as well as the deadline for joining the work and point of contact for obtaining clarifications, as well as any preclusive provisions affecting future interventions in the area covered by the notification. Notice of the performance of works must be given on the centralised information system CIS, to which all electronic communication companies have access (article 9 of Decree-Law no. 123/2009). Notices of the performance of works shall, in accordance with Decree-Law no. 123/2009, be given by the respective promoting entities no less than 20 days prior to the start of execution, whereas the deadline for joining the work to be performed can be no less than 15 days following the date of the notice given of the performance of the same work. To date, operators have informed ANACOM of these notices by email, whereas ANACOM, while the CIS is not operational, announces them, in a simplified manner, on its website, indicating the entity promoting the work and point of contact. In relation to the organisation requirements necessary for the establishment and maintenance of a system to register infrastructure suitable for the accommodation of electronic communication networks, as referred to above, in the particular case of ANACOM, tender specifications were drawn	**BEST**

[105] Deloitte study, public consultations
[106] Public consultations

		up with a view to launching a public tender to award the design and management of a CIS. For this purpose a Multidisciplinary Working Group was set up with personnel from the area of inspections (inspection of telecommunications infrastructure in buildings), of information systems, of regulation of infrastructure and legal. The tender specifications included the definition of the technical specifications of the CIS, whose implementation and management was to be tendered. In terms of the costs of implementing such an information system, it can be reported that in the public tender to award the CIS, published in Portugal's Official Gazette (Diário da República of 23 November 2010), a value of four million euros was considered as a base price for the procedure[106].	
22	***RO***	Transparency measures (i.e. an obligation to publish planned works on the website of local authorities) have been introduced in the recently adopted Infrastructure Law[107].	**LIMITED**
23	***SK***	No specific measures are known to have been adopted[108].	**NOT-RELEVANT**
24	***SI***	Operators must publish the intention for building their infrastructure on APEK's website and call for co-investors if there are any. Allied to this is a requirement to inform the portal of the Cadastre of the public economic infrastructure[109].	**GOOD**
25	***ES***	Recommendations have been published by the Telecommunications Market Commission. No mandatory regulatory procedures are known to have been adopted. Coordination works well at national road level but at municipal level it is said to be poor [110].	**LIMITED**
26	***SE***	Ledningskollen e-service used for checking cable location but not specifically fro enabling sharing of works.[111] The system works by splitting the entire country into 1km square grid cells; infrastructure owners then provide data on which cells they have deployments within (hence although spatial resolution is relatively high, Ledningskollen is not a true map-based system and was not conceived with the INSPIRE directive in mind). Ledningskollen will send these infrastructure owners automated messages if another party is planning on digging within this cell, thus the capabilities of the system have some overlap with the infrastructure atlas and the single information point for rights of way. Now, ~EUR600 000 of extra funding has been made available for a pilot scheme between PTS and a municipality in the south of Sweden, which aims to investigate what the cost and time savings of civil engineering works co-ordination are, whether the Ledningskollen platform is sufficient to facilitate such a scheme, and how much further development would be required. The CESAR system is currently only available to members of SSNf, and thus SSNf would have to consider modifying its business model if CESAR was to be modified into a portal for the co-ordination of civil engineering works. Any development would also require funding. The proposal for the Swedish Broadband Strategy was published in February 2007, and recommended that the viability of co-ordinating civil engineering works should be investigated by the government as a priority, in order to reduce the cost of, and speed up, the deployment of NGA services.	**BEST**

[107] Deloitte study
[108] ibidem
[109] ibidem
[110] ibidem
[111] Deloitte study, public consultations

		Further to this, in December 2011, PTS published a document that detailed its decisions and recommendations for broadband duct protocols[112].	
27	***UK***	In the UK there is a certain amount of coordination between utility companies laying equipment in a highway prior to the local authority undertaking major road works. There is little beyond this - and the company contractors rarely operate in the same road opening - they dig their own trenches. Nevertheless, there is web-based system for recording and notifying all road works under the UK's 'New roads and streets work act' of 1991. It is a well-established framework providing a standardised process in the UK for digging and re-instatement of trenches, accompanying notices provided to local authorities and to other utilities, and with set time scales. Under the terms of the legislation the highways and utilities committee has been also created, which meets on a quarterly basis to give guidance to councils on effective implementation and the coordination of works between various utilities. Under this system all works on the highway are co-ordinated and some companies are prevented from installing ducts if their works would cause too much disruption. The system is designed to protect the integrity of the highway network and the traffic disruption caused by road works, rather than any desire to co-ordinate the work in a collaborative manner. This operates in England and Wales, and the LGCSB plans the creation of an online application and tracking process for the management of applications for road opening permits in Ireland[113]. In 2007, a statement of understanding with regard to advance co-ordination was signed by four utility companies, although neither Openreach nor Virgin Media appears to have taken part to date[114]	**GOOD**

[112] Analysys Mason study
[113] Public consultations
[114] Analysys Mason study

5. STREAMLINING OF PERMIT GRANTING PROCESSES

BEST - Best practices
GOOD– Good practices of limited scope
LIMITED – Planned/Local/Basic measures
NOT-RELEVANT – No relevant measures reported
NA - No information available

	Country	Status	Measure
1	***AT***	The 2003 Austrian Telecommunication Act (Telekommunikationsgesetz – TKG) grants wayleave rights to telecoms companies, for public property such as streets and pavements, and grants conditional rights for wayleaves on private land, subject to compensation for the land owner. Municipalities cannot refuse rights of way, but have some powers to impose conditions regarding issues such as the timing of any street works[115].	**GOOD**
2	***BE***	No specific measures are known to have been adopted[116]	**NOT-RELEVANT**
3	***BG***	No information available[117]	**NA**
4	***CY***	The NRA has a strong coordination role and acts as a contact point, intermediate between the providers and the local authorities[118]	**LIMITED**
5	***CZ***	Government ministries responsible plan to prepare guidelines for local construction authorities to simplify the procedure for permits and rights of way, to revise the Construction Act in order to streamline the administrative process and to provide coordinated information on telecoms infrastructure (on public property) and on ongoing construction sites, in order to reduce the overall cost of network deployment and the administrative burden[119]	**LIMITED**
6	***DK***	No specific measures are known to have been adopted[120]	**NOT-RELEVANT**
7	***EE***	No specific measures are known to have been adopted[121]	**NOT-RELEVANT**
8	***FI***	Permits to lay cables along public roads are concentrated to ELY in the city of Tampere, as one-stop-shop[122]	**LIMITED**
9	***FR***	Access to infrastructure, overseen by the French electronic communications and postal regulatory authority (ARCEP) is to be provided on a non-discriminatory basis by France Telecom, which must grant reasonable requests for access, make capacity available where constraints exist ("desaturation"); and provide planning information[123].	**LIMITED**
10	***DE***	The Federal Network Agency, BNetzA is able to provide a right of use of public traffic ways free of charge for telecommunications lines serving public services. Private land owners are obliged to give access but if not given can be enforced within 10 weeks by the Agency[124].	**GOOD**

[115] Analysys Mason study
[116] Deloitte study
[117] ibidem
[118] Codification of the provisions for granting rights of way
[119] Deloitte study
[120] ibidem
[121] ibidem
[122] Contribution of the Finnish Ministry of Transport and Communications
[123] Public consultations
[124] ibidem

11	***EL***	A single point of contact is being established instead of the current 18 different authorities for antennas and base stations permit granting. Exemptions have also been made for small antennas and low emission sites, which provide time benefits and legal certainty, and electronic submission of applications is being introduced[125]	**BEST**
12	***HU***	No specific measures are known to have been adopted[126]	**NOT-RELEVANT**
13	***IE***	According to the Irish Department of Communications, Energy and Natural Resources (DCENR), existing public infrastructure is being used to facilitate the deployment of NGA networks, with fibre being deployed along existing rail, electricity, road and gas infrastructure. The DCENR already publishes maps of existing public infrastructure, and has also been considering the implementation of a one-stop-shop for access to state infrastructure, which would simplify any issues surrounding rights of way and administrative procedures for service providers[127]	**LIMITED**
14	***IT***	Permission is granted by regulatory statute and is delivered through means such as local zoning planning and integrated development plans [128]	**LIMITED**
15	***LV***	No specific measures are known to have been adopted [129]	**NOT-RELEVANT**
16	***LT***	No specific measures are known to have been adopted [130]	**NOT-RELEVANT**
17	***LU***	No specific measures are known to have been adopted [131]	**NOT-RELEVANT**
18	***MT***	No specific measures are known to have been adopted [132]	**NOT-RELEVANT**
19	***NL***	1998, this legislation was updated to give rights to all providers of electronic communications networks. In 2007, the legislation was further updated with the Telecommunications Act to remove the power of public bodies such as municipalities to deny rights of way for licensed companies wishing to install electronic communications networks. According to Article 5: - Public bodies must tolerate access to their grounds for operators to install or maintain cables. - This obligation is also extended to uninhabited privately owned land, although rights of way are automatically granted to inhabited privately owned land for the case of connecting a building to a telecoms network, and in this case the operator is also permitted to carry out any required maintenance or the removal of existing wiring where necessary. - If a body is constructing overhead wires for a non-telecoms use, such as power distribution, that body is obliged to allow telecoms operators to co-locate and subsequently maintain wiring along the infrastructure. Digging on public land requires a permit from the concerned municipality prior to digging. Written notice must be made to both the Mayor's office and the city council about the work, detailing the proposed time, place, and how substantial the proposed works are. In order to ensure public safety and	**BEST**

[125] Analysys Mason study
[126] Deloitte study
[127] Analysys Mason study
[128] Deloitte study
[129] ibidem
[130] ibidem
[131] ibidem
[132] ibidem
[133] Analysys Mason study

		reduce civil disturbances, the Mayor's office may impose requirements on the place of work, the timing of works (which must be within 12 months of the request). Municipalities must promote sharing, and thus also co-ordinate upcoming civil engineering works or duct sharing where possible, in order to minimise civil disruption. Automated or electronic systems are therefore likely to exist in some municipalities, as the system is broadly standardised. When wishing to work on private land, operators must send a letter to the land owner detailing the proposed plans, and undertake an individual negotiation. If no response is received after four weeks, a second letter is sent. The land owner can either then allow the operator to carry out the works, or raise a dispute with OPTA. If no dispute is raised within two weeks of the second letter, the operator is allowed to carry out its planned works. Automated or electronic systems might therefore be inappropriate for the case of private land owners, as each case is negotiated individually and some land owners may not have access to a computer. A key detail in the regulations is that there is no compensation for access for either private or public land owners. Operators are obliged to ensure that excavated ground is replaced and brought back to its original condition. Municipalities normally charge an administration fee for the required permit, but this is generally small, and is not compensation for digging. This makes deployment relatively cheap (in addition, the ground in the Netherlands is generally soft, so digging is cheap). However, operators are obligated to move cables should a land owner decide to carry out ground works, such as digging foundations for a new building, building a swimming pool or landscaping on the site where cables have been previously laid.[133]	
20	***PL***	In Poland since 2010: - Building owners are obliged to provide access to their building, and in particular the wiring distribution point/room within the building. If there is a duct system within the private land that is suitable for the deployment of telecoms equipment, and no alternative duct network exists, the owner of that duct is obliged to provide access to the operator seeking access to the duct. These access agreements must be resolved within 30 days of an initial access request. - If an end user living in an unconnected building requests a connection, the building owner is obliged to allow an operator to carry out installation and maintenance works within the building. All works are paid for by the operator. A private property owner is obliged to allow operators or local self-governments to deploy telecoms infrastructure to buildings on or above its land, providing that this does not lead to a „significant decrease in value of the property. The property owner must also allow access to its land for any maintenance of installed infrastructure. This sort of access will require the infrastructure owner to pay the building owner a fee, except in cases where the infrastructure is being used to connect the building to the network. The fee is to be negotiated between the two parties. For rights of access to public utility infrastructure, the procedures are slightly different. The body in charge of the public utility infrastructure is obliged to engage in negotiations with telecoms operators wishing to access the infrastructure. The president of the Office of Electronic Communications may intervene in negotiations in case a dispute may arise, in order to resolve the negations within 90 days of the access request.	**GOOD**

[134] ibidem

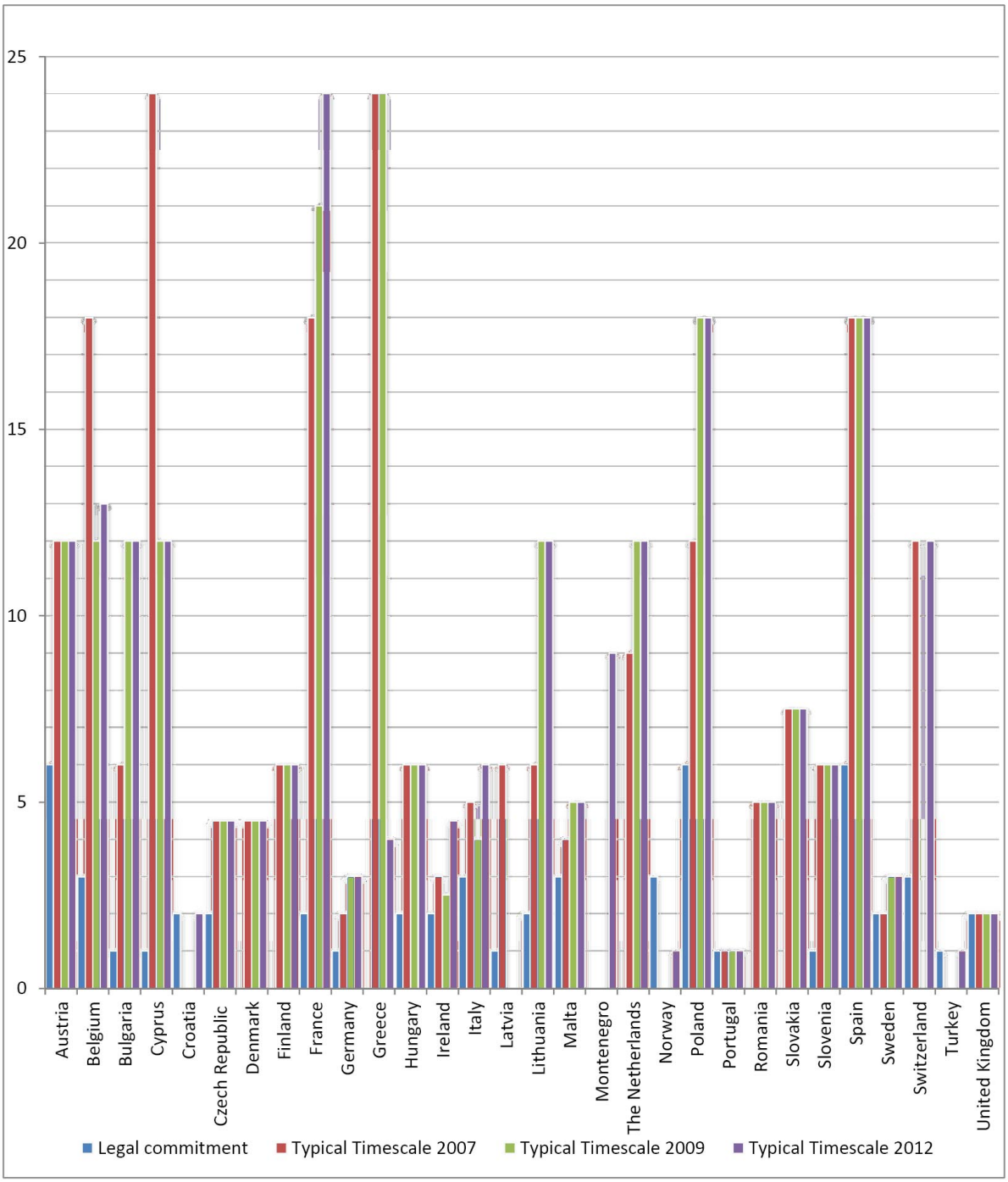
		However, the disadvantage of the scheme is that power is handed over to local self-governments to develop, use or acquire the rights to telecoms infrastructure and networks. In addition, the local self-governments must keep a record of infrastructure acquisition rights and must take responsibility for granting rights to the construction and maintenance of telecoms infrastructure, as well as supervising and regulating the works. This has made deployment relatively expensive as operators must pay an annual tax for deployments that are over public land, and additionally must pay an ongoing fee for any deployments along roads. As the self-governments are free to set these prices, there have been a number of complaints from smaller operators claiming that they struggle to compete with large ones. As a result, the NRA is looking to draft new legislation to ensure that operators are not overcharged for deployments. In addition to taking responsibility for co-ordinating access requests to third-party infrastructure, local self-governments must also respond to requests to access publically owned infrastructure, in which case the self-government is treated as a party with SMP and thus must respond to access requests within 30 days of receipt. Currently, there is no formal procedure in place for dealing with disputes between local self-governments and operators. Disputes are normally raised with UKE, but often resolving them requires drafting new legislation, which is a difficult, complex and time-consuming process.[134]	
21	***PT***	Decree-Law no. 123/2009 determines that the construction of infrastructure is subject to a procedure of prior notice given to the responsible local authorities, limiting cases where authorities may oppose intervention, narrowing the grounds for such opposition to typical situations. The costs incurred for access to and use of the public domain in the possession of local authorities is subject only to a municipal fee for rights of way, which has a very low value. The use of infrastructure which has already been constructed is subject to rules limiting the costs and period of time needed for the necessary authorisations to be granted for its use. The procedure to be followed for obtaining access to infrastructure may not extend beyond 20 days following presentation of the request by electronic communication companies. In terms of payment, and as mentioned above, the use of infrastructure which is encompassed by the public or private domain of local authorities is subject to the payment only of the municipal fee for rights of way (article 13, paragraph 4) or when such infrastructure belongs to or is managed by another entity, its use is subject to the payment of a remuneration which, necessarily, is to be cost oriented[135]. ANACOM has stated that the CIS should contain procedures and conditions governing the allocation of rights of way over infrastructure suitable for the accommodation of electronic communication networks[136].	**GOOD**
22	***RO***	The recently adopted Infrastructure Law introduced obligations regarding the transparency and the fairness of conditions (including fees) of rights of way.[137]	**LIMITED**
23	***SK***	No specific measures are known to have been adopted.[138]	**NOT-RELEVANT**

[135] Public consultations
[136] Analysys Mason study
[137] Deloitte study
[138] ibidem

24	***SI***	No specific measures are known to have been adopted.[139]	**NOT-RELEVANT**
25	***ES***	No specific measures are known to have been adopted.[140]	**NOT-RELEVANT**
26	***SE***	No specific measures are known to have been adopted.[141]	**NOT-RELEVANT**
27	***UK***	In the UK, operators must pay landowners either an annual or a one-off fee to bury cables in their ground. This has arguably been a roadblock to the deployment of broadband in rural areas, and recently the National Farmers' Union (NFU) and the Country Land and Business Association (CLA) have agreed to either charge lower wayleave prices or to provide free access to land in exchange for free broadband access[142]. The Electronic Communications Code ("Code"), a schedule to the 2003 Telecommunications Act, enables providers of electronic communications networks to construct infrastructure on public land (streets) & to take rights over private land[143].	**LIMITED**

[139] ibidem
[140] ibidem
[141] ibidem
[142] Analysys Mason study
[143] Deloitte study

Figure: Comparison between legal requirements and typical timescales for permission granting for Base Station deployment in months [144]



[144] Source: 'Base station planning permission in Europe' by GSMA, July 2012

6. ALIGNMENT MEASURES FOR IN-HOUSE EQUIPMENT FOR NEW BUILDING PROJECTS

BEST - Best practices
GOOD– Good practices of limited scope
LIMITED – Planned/Local/Basic measures
NOT-RELEVANT – No relevant measures reported
BASIC – Only asymmetric obligations to provide access to ducts
NA - No information available

	Country	Status	Measure
1	***AT***	CAT6 cabling is current practice in new office buildings in some states (eg. Tirol)[145]. The access to ducts can be subject to SMP regulation[146]	**GOOD**
2	***BE***	Fibre to the Home is an ambition of the Belgian digital initiative[147].	**NOT-RELEVANT**
3	***BG***	No information available[148] The access to ducts can be subject to SMP regulation[149]	**BASIC**
4	***CY***	Regulations relating to in-house wiring coordination are due to be published[150]. The access to ducts can be subject to SMP regulation[151]	**BASIC**
5	***CZ***	The legislation for construction permits (Act No. 183/2006 Coll., the Building Act) and its implementing regulations apply to all buildings regardless of their mode of financing, i.e. also to publicly financed constructions. The relevant building regulations lay down guidelines for the application of public interest. Construction of electronic communications is partially favoured, unlike other structures and facilities, they are only subject to simpler assessment and no authorization processes. In line with § 103 paragraph 1 point. b) Section 1 of the Building Act they do not require notification or building permit, and after completion they can be used immediately[152]	**LIMITED**
6	***DK***	No specific measures are known to have been adopted[153] The access to ducts can be subject to SMP regulation[154]	**BASIC**
7	***EE***	No specific measures are known to have been adopted[155] The access to ducts can be subject to SMP regulation[156]	**BASIC**
8	***FI***	New and renovated apartment blocks must implement CAT6 in house wiring. In addition each room has to have at least two telecom outlets. The same law also includes the old apartment houses which are being renovated. Operators install access equipment to the buildings, but internal networks and customer equipment are on building owner's or customer's responsibility[157].	**GOOD**

[145] Deloitte study
[146] Own sources/Cullen analysis
[147] Deloitte study
[148] ibidem
[149] Own sources/Cullen analysis
[150] Deloitte study
[151] Own sources/Cullen analysis
[152] Public consultations
[153] Deloitte study
[154] Own sources/Cullen analysis
[155] Deloitte study
[156] Own sources/Cullen analysis
[157] Public consultations

9	***FR***	In order to encourage operators to invest in NGA deployments, ARCEP has implemented three main measures since 2009. The first two relate to the shared point at which the MDU is connected to the operators' fibre networks (the shared connection point), and applies to all MDUs in densely populated areas. The third and most recent measure is concerning the installation of in-building wiring in all new buildings. The first measure is described in Resolution No. 2009–1106, which was passed in December 2009. At this time, FTTH deployments had already begun in Paris, although difficulties were encountered when attempting to connect the fibre network to buildings. The law originally dictated that fibre networks could be shared at the connection point to a building, in order to minimise disruption and damage to private property, and also to enable end users to select their preferred supplier. However, this second point was not economically favourable to the operators, and additionally there were found to be technical compatibility issues with the different FTTH technologies used. Following a consultation earlier in that year, ARCEP clarified these rules for very densely populated areas as defined by ARCEP. These are 148 areas in the 20 main French cities encompassing around 3.5 million households where the regulator deems it commercially viable for a number of FTTH providers to operate. ARCEP's 2009 decisions are as follows: - The equipment installed must be compatible with the different FTTH technologies, i.e. passive optical network (PON) and point-to-point (PtP). As well as ensuring competition, this measure also has the aim to encourage technology neutrality. - If an operator connects a building to its FTTH network, that operator is obliged to allow other operators to provide services through the equipment that the first operator has installed should an end user request services from another operator. -Access to shared connections must be granted in a non-discriminatory and transparent manner. Prices are not regulated as such by ARCEP; instead, each operator is required to submit a reference offer, detailing the technical and financial conditions of access. The three main operators' reference offers are fairly aligned in terms of pricing. Refusal of access is prohibited. -The first operator that connects the building to its FTTH network becomes the building operator and thus is responsible for managing the associated infrastructure. If there is no obvious building operator (for example on a newly built property), the owner of the building is able to designate a building operator. The building operator does not necessarily provide the end-user service, and may choose to be a neutral manager, providing passive access to the network Although the guidelines helped to clarify the rules of deployment, there were a number of disputes between operators regarding this regulation. As a result, a second measure was introduced, with clarifications made to the ruling in 2010. Article 2010–1312 was primarily used to create the rules of fibre deployment in less densely populated areas, encouraging collaboration between the main operators in places where the business case for deploying fixed NGA is less clear. However, the Article was also used to update Article 2009–1106, by stating that the preferred location of the building's access point was to be within the private premises of the building.	**BEST**

[158] Analysys Mason study
[159] Public consultations

		The third measure is slightly different and related to all areas of France. It was passed at the end of 2011 (Article R. 111-14, from the Ministry of Housing) and obliges all those applying for a construction permit from April 2012 to equip the associated building with vertical fibre, connecting all residential units to a central fibre access point. The measures are new, and the technical details have not been finalised as yet; this has been causing some compatibility concerns for operators and construction firms. In addition, it is unclear as to whether the measures are confined to new buildings or also include refurbishment projects, as the specific wording of the Article simply refers to the application for a building permit[158]. In addition there are many guidelines issued by professional organisations. For example, Union Technique de l'Electricité et de la Communication (http://www.ute-fr.com), a French national organisation for standardisation in the domain of electronics, member of the International Electrotechnical Commission (http://www.iec.ch) and the European Committee for Electrotechnical Standardisation (http://www.cenelec.eu), has edited three essential guides to help professionals in deploying in-building and in-house infrastructures. The Guide pour le raccordement des logements neufs à la Fibre optique is addressed to the construction market and explains the ways to update structured cabling into fibre, single and multifibre, with a cost reduction aim.[159]	
10	***DE***	In Germany, the Telecommunication Act states that the NRA may order proprietors or users of house wiring or ducts to give access to telecommunication operators. According to fire safety standards electronic communications operators have to use ducts of metal (instead of -maybe already existing - cheaper plastic ones) on the stairs for higher heat resistance. In most parts of Germany, the 2005/0738/D guideline on fire protection requirements for conduits, issued 17 November 2005, is the relevant framework. Deutsche Telekom follows this guideline and is, thus, required to have its equipment approved only once by the lower construction authority ("Untere Baubehörde") in order to use it in a mass roll-out. Additional individual approval procedures are only needed for non standard-equipment, which may be necessary in special cases. However, in some federal states, where this guideline does not apply, Deutsche Telekom is required to have its standard equipment approved again even if it follows the guideline applied elsewhere in Germany. This leads to additional costs but no additional safety for consumers[160]	**LIMITED**
11	***EL***	No specific measures are known to have been adopted[161]. The access to ducts can be subject to SMP regulation[162]	**BASIC**
12	***HU***	No specific measures are known to have been adopted[163]. The access to ducts can be subject to SMP regulation[164]	**BASIC**
13	***IE***	In 2011, the DCENR launched a public consultation regarding NGA-ready buildings in Ireland. The paper sets out proposed detailed technical regulations for an open-access interface for connecting new residential buildings to FTTH networks, along with recommended standards for in-building wiring. The recommendations are only for new buildings, as the	**LIMITED**

[160] Public consultations
[161] Deloitte study
[162] Own sources/Cullen analysis
[163] Deloitte study
[164] Own sources/Cullen analysis

		DCENR acknowledges that retrofitting buildings is often difficult and costly[165]. The access to ducts can be subject to SMP regulation[166]	
14	***IT***	The installation of ducts and spaces (the s.c. "multiservice" ducts) are included in the works of "primary urbanization" (power, sewage, water) for new buildings. As a consequence there is an obligation for the builder to make these infrastructures available inside the buildings; are now the non mandatory standards published by the Italian Electro Technical Conference (CEI). There is also a new law from **Lombardy** Region (Lombardy Regional Law 18/04/12 n. 7)[167]. The access to ducts can be subject to SMP regulation[168]	**LIMITED**
15	***LV***	Since 17.03.2011 there is a Government Act for electronic communications network construction; however, there are not too many statistics so it is too early to draw conclusions[169]	**LIMITED**
16	***LT***	Measures were introduced in 2009 following a consultation launched by the NRA, which resulted in telecoms operators being mandated to connect MDUs to their fibre network using ducts with a diameter greater than 90mm. This came about as operators had previously been directly burying cables, which resulted in the same ground being dug up numerous times as each operator would connect to the MDU separately. In addition, equipment installed by operators for the distribution of vertical and horizontal wiring must leave enough space to accommodate other operators[170].	**GOOD**
17	***LU***	Local authorities invited by government to implement regulation to ensure fibre in new builds from 2011. National strategy circular for high-speed networks of November 18th 2011 recommends the municipal authorities to introduce the obligation of installing in-house fibre cabling in newly constructed buildings in the municipal construction laws.[171]	**LIMITED**
18	***MT***	Minister has powers to draw up specifications to apply to new builds – including the provision of fibre. In November 2011, the Building Regulations Act came into force. This Act gives the power to the Minister to establish building control regulations in relation to a number of matters including electronic communication services installations. Work is currently underway to establish an adequate framework vis-à-vis in-house wiring so that we facilitate the deployment of fibre-to-the-home (FTTH) whilst ensuring competition and consumer choice[172] The access to ducts can be subject to symmetric regulation[173]	**LIMITED**
19	***NL***	No specific measures are known to have been adopted[174]. The access to ducts can be subject to symmetric regulation[175]	**BASIC**
20	***PL***	Work is currently underway to establish an adequate framework vis-à-vis in-house wiring so that to facilitate the deployment of fibre-to-the-home (FTTH) [176] In November an ordonance of the Minister of Transport was adopted defining the scope and character of the obligations related to deploying fibre	**GOOD**

[165] Analysys Mason study
[166] Own sources/Cullen analysis
[167] Public consultations
[168] Own sources/Cullen analysis
[169] Deloitte study
[170] Analysys Mason study
[171] Deloitte study, Public consultations
[172] Public consultations
[173] Own sources/Cullen analysis
[174] Deloitte study
[175] Own sources/Cullen analysis
[176] Own sources(contacts with the Ministry)

		in new buildings and ensuring access to existing infrastructure. The provisions will start binding as of February 2013.	
21	***PT***	It is obligatory for all new builds and renovations to incorporate fiber. The regimes governing telecommunications infrastructure in buildings (ITED) and telecommunications infrastructure in housing developments, urban settlements and concentrations of buildings (ITUR) were established by Decree-Law no. 123/2009. These are essential instruments which have proved useful in the regulation and definition of rules governing access by high-speed communication network operators with respect to buildings and housing developments and urban settlements. The final versions of the technical manuals known as the ITED Manual (technical prescriptions and specifications of telecommunication infrastructure in buildings – 2nd edition) and the ITUR Manual (technical prescriptions and specifications of telecommunication infrastructure in housing developments, urban settlements and concentrations of buildings – 1st edition) were considered by CENELEC as being the best and most consistent technical manuals, serving the interests of telecommunications operators and consumers by eliminating access barriers (ducts and cables)[177].	**BEST**
22	***RO***	No specific measures are known to have been adopted[178].	**NOT-RELEVANT**
23	***SK***	In accordance with the ECA new constructions of buildings intended for business or buildings with several apartments must be built in the manner to allow shared access of the in-house wiring for all operators to each customer separately[179].	**LIMITED**
24	***SI***	No specific measures are known to have been adopted[180]. The access to ducts can be subject to SMP regulation[181]	**BASIC**
25	***ES***	Spain has measures in place to enable building improvements which are part of general building review requirements (and which are tax deductible) in addition to Greenfield sharing provisions under Article 12 of the Framework Directive (Spain and Portugal for instance). Since 1998, there is a national regulation in force which passed in-building telecoms under exclusive competence of the central government regarding telecommunications. An obligation was introduced to equip all new buildings and buildings undergoing refurbishment with *common infrastructure* for telephone lines, TV connections (analogue and satellite) and broadband. At the time, these broadband measures consisted of installing either wiring or empty ducts that joined each apartment to a central in-building chamber (which was often located in the basement), which was designed for the location of equipment for broadband switching and distribution. The legislation included detailed technical regulations regarding the installation of the infrastructure, such as detailing the requirements for twisted copper pairs and TV coaxial cables. The infrastructure is owned and maintained by the building owner, not a particular operator; this was in response to disputes arising over the operator-owned telecoms equipment in pre-1998 buildings. In addition, a symmetric regulation was put in place that mandated any operator that installed NGA infrastructure within any building	**BEST**

[177] Public consultations
[178] Deloitte study
[179] ibidem
[180] ibidem
[181] Own sources/Cullen analysis
[182] Public consultations, Analysys Mason study

		to share it with other operators. A further update in 2003 added digital terrestrial television (DTT) distribution to the list of required common infrastructures. The legislation was significantly overhauled in March 2011, in light of DAE targets. Royal Decree 346/2011 (March 2011) approved the regulations governing common infrastructure for access to telecoms services inside new buildings. In addition, Order ITC 1644/2011 (June 2011)set out the regulations for installing the infrastructure. Constructors of new buildings (and buildings being refurbished) must now install passive NGA infrastructure such as fibre or coaxial cables that connect each apartment to the central distribution chamber. The regulations apply to all buildings that have „horizontal properties – that is, where there are multiple owners – and so includes office blocks and businesses as well as MDUs. Before new construction projects are approved, a consultation must take place between the construction firm and the broadband operators in the local area, and this is supervised by the Ministry of Industry, Trade and Tourism. The consultation must assess which NGA deployments are in the local region, and thus determine what type of infrastructure will be suitable for deployment within that building. If there is infrastructure competition in the area (e.g. both cable and FTTH), then more than one type of technology must be deployed in the building. Deploying multiple infrastructures is more expensive than just one, but the Ministry believes this is necessary from a competition perspective. However, a key aim of the consultation is to avoid that inappropriate in-building deployments will never be used, and thus would waste money. It is optional for telecoms operators to take part in the consultation process, and if they wish to must commit to exchanging information and responding to requests from network designers when requests are made. However, as one of the key objectives of the Decree is to increase the supply of NGA services to end users and to promote competition, it would appear to be within the operators' interest to take part in the scheme. Service competition is also encouraged by the requirement for fibre operators to share the in-building fibre network. With the exception of DTT, where amplifiers are installed, normally only passive infrastructure is installed. However, regulations also extend into individual dwellings, with a minimum number of sockets per apartment specified for new construction projects. There are also construction standards published by telecommunication Engineering College under which buildings constructed after 1995 should be apt to copper and cable. Any operator which reaches the building has the opportunity to provide services to any of its households. For buildings constructed after April 2011 this regulation has been updated to include fibre cables[182].	
26	***SE***	No specific measures are known to have been adopted[183]	**NOT-RELEVANT**
27	***UK***	The UK government has relied on a non regulatory approach, a policy of issuing guidance rather than intervention. The section 38 of the UK New roads and streets work act requires that a building developer has to have tendered to providers of broadband infrastructure to install network in the new build areas. The responsibility for making this provision available was given to the local authority, which in the event of completion without broadband infrastructure was legally prevented	**LIMITED**

[183] Deloitte study

		from taking ownership of the linked roads, drains and sewage services, effectively foregoing ownership of the new build construction[184].	

[184] Public consultations