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REPORT

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STATE AID FOR BROADBAND INFRASTRUCTURE IN EUROPE

ASSESSMENT AND POLICY RECOMMENDATIONS

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Executive summary

This study examines how public funds, or State Aid, have been used to support the deployment of broadband infrastructure in Europe since 2003 and considers the lessons that should be drawn from that experience. It is the first study to undertake a systematic analysis of all of the 157 broadband measures which have been notified to the European Commission by Member States between 2003 and August 2018.

Our main conclusions and recommendations are as follows:

- ***Collection and publication of data*:** We recommend that the European Commission's Directorate-General for Competition (DG COMP) produce a detailed reporting template which Member States should be required to complete when they first notify a broadband State Aid measure. This should be supplemented with further data about implementation at bi-annual intervals after the project has been approved, with a more detailed report after 5 years.[1] This data should be published by the Commission in a format which would allow third parties to evaluate it and thereby subject the use of public funds to greater scrutiny than has been the case to date, and to better identify examples of best practice.
- ***Measuring performance:*** Related to this, we propose that the Commission's performance should be assessed not by the time taken to approve State Aid notifications but by reference to the volume and rate at which public funds are actually deployed at the local level (or the total number of households or businesses that obtain access to broadband services as a result of the approved measures) and the efficiency with which these measures achieve their goals. This should shift the focus of the

[1] These reports should include data on:

- total State Aid expenditure in the relevant reporting period,
- aid intensity in the relevant reporting period,
- sources of the State Aid funds spent,
- the number of households and businesses passed by the infrastructure in the relevant reporting period,
- the total cost and average cost per household or business passed in the relevant reporting period,
- the adoption rate in the relevant period and minimum and average speeds of services provided,
- the nature and extent of existing broadband infrastructure in the relevant intervention area,
- the nature of wholesale access arrangements and the number of firms taking advantage of such arrangements in the relevant reporting period.

Commission away from the approvals process and towards working with Member States to improve the returns on the funds that are spent.[2]

- ***Stimulating demand for State Aid:*** We are concerned that there is insufficient grassroots or local interest in broadband State Aid. To address this, we recommend that a small part of the European budget is used by the European Commission to support a competitive tender for broadband State Aid. The primary aim of this exercise would not be to fund extensive broadband deployment but to stimulate greater interest in broadband projects amongst municipal authorities and local communities across Europe. Local communities who bid for funds and win will be immediate beneficiaries, but those who bid and lose may then approach their own Governments seeking other sources of public funding. If they do, this will contribute to the overall objective of increasing grassroots demand for State Aid funding of broadband.

- ***Increasing the share of European funds allocated to broadband:*** We are concerned that broadband infrastructure, although one of a small number of strategic priorities for the Commission, obtains a very small share (less than 5% in all Member States) of available European structural funds. Alongside other sources of public funds such as lending by the European Investment Bank, the European Strategic Investment Fund (ESIF) and the Connected Europe Broadband Fund, we estimate that only €7 billion of public expenditure will be available annually to support broadband deployment in the period to 2020 and likely beyond. This is insufficient to achieve the Gigabit Society targets which both the Commission and Council have adopted and which envisage cumulative public expenditure in the region of €150 billion by 2025.

- To address this 'misalignment' between Europe's broadband ambitions and its current public funding commitments, **the Commission should consider whether and how the current Digital Agenda and Gigabit Society targets might be formalised** so that Member States have stronger incentives to ensure that they are met.

[2] We recognise that current arrangements provide the Commission with limited influence over how Member States deploy State Aid after the measure has been approved. Our proposal that Member States be required to provide bi-annual reports to the Commission, detailing how the State Aid is subsequently being applied, will provide the Commission with the data necessary to extend its oversight function and promote the sharing of best practices.

- However, we also recognise that **there may be non-financial constraints on the amount of new broadband infrastructure that might be deployed**, including the availability of skilled labour and environmental considerations. We think more research is required to better understand and quantify these constraints and to understand their implications for broadband deployment targets.

- We would also encourage private investors to recognise that **the telecommunications sector will be competing against many other demands for public resources** and that it needs to do so more effectively if it is to gain a greater share. Given the size of the funds that could potentially be mobilised – almost €300 billion of Regional Development Funds, €300 billion which the Commission expects the European Fund for Strategic Investment to mobilise in the 2014-20 period, and the €50-60 billion the EIB lends every year – even a small reorientation towards broadband would yield large sums for the sector as a whole.

- ***A more holistic view to financing:*** At present, some forms of public funding fall within the State Aid rules but others, which are administered by the European Investment Bank rather than Member States, do not. There are few obvious benefits from this arrangement. We consider that, at the very least, better mechanisms for co-ordination and consultation between the EIB and DG COMP on the one hand, and those bodies and the European Commission's Directorate-General for Communications Networks, Content and Technology (DG CONNECT) on the other, should be established in order to ensure that public funds are being allocated coherently and in the pursuit of a common set of objectives. The EIB's own internal governance procedures for EFSI funding should also be reviewed. Alternatively, the administration of the EFSI funds (and the Connected Europe Broadband Fund) by the EIB should be subject to the same notification requirements as State Aid measures.

- ***Clarifying the scope of the State Aid rules and balancing the 'supply side/demand side' equation:*** We found evidence that whilst the scope for public subsidy under the Broadband State Aid Guidelines has significantly expanded, both in 2009 (relative to earlier periods) and again in 2013, the measures being notified by Member States do not reflect this. This means that public funds are playing a more limited role in promoting

Europe's broadband objectives than they might, given the scope of the current Guidelines. It is not clear whether this inhibition arises from a lack of understanding on the part of Member States, or from a lack of funds.

- We think there ought to be **clear limits on when and how public funds should be used**. For example, it is not clear to us what 'exceptional circumstances', as described under current Broadband State Aid Guidelines, would justify the use of public funds to accelerate very high capacity infrastructure deployment in 'black areas' where competing networks already exist in that area. This should be clarified through revision of the Guidelines.

- Our research also suggests that **State Aid has often been used to extend broadband networks when the majority of households in urban areas** – up to 80% – **do not use the broadband services already available to them**. We consider that social inclusion and economic cohesion objectives are likely to be better met if the application of the State Aid regime for broadband were more balanced, with consideration being given to adoption or demand side alongside coverage or supply side objectives. **We suggest that the Commission consider requiring that State Aid can only be used to extend network coverage for new technologies once adoption rates in those areas where those technologies are already available have achieved certain thresholds (perhaps 30%)**. This would be similar to the requirement that universal service obligations apply to services that have first been adopted by the majority of users in a Member State.[3] It would reduce the risk that public funds are biased towards 'supply side' activities and the risk that State Aid is used prematurely, before the private sector has an adequate opportunity to address user demand.

- ***Clarifying the approach to pricing:*** Related to this, the current Broadband State Aid Guidelines suggest that the social inclusion objectives underlying the use of State Aid will only be achieved if broadband services provided over publicly subsidised broadband networks are offered at the same prices as are paid by households in 'competitive' areas where such services are offered on a commercial basis. In this way, State Aid is being used to address both 'coverage' and 'affordability' objectives in the same measure. The

[3] Art 79(2) of the EECC.

expectation that prices will be no higher (and may even be lower) in high cost areas which attract State Aid will significantly increase the cost of these measures for the taxpayer.

- **We are not persuaded that requiring the taxpayer to subsidise the prices which households and businesses pay for broadband services in higher cost areas is necessarily the only or best approach.** For example, it may be that the objectives could still be achieved, and subsidies reduced, if State Aid were used to narrow, but not to eliminate, the differences in the prices paid by consumers of broadband services in different parts of the country. If lower public subsidies can be used to achieve the same level of coverage as a result, then more coverage can be achieved with the same level of subsidy.
- **We recommend that these trade-offs are examined by the Commission and that the Guidelines are revised** so as to explain when the same prices at both retail and wholesale levels across the entire geography of a Member State are required, and when (and to what extent, if any) prices should differ so as to reflect legitimate differences in costs.
- ***Interaction with the new universal service regime:*** Using State Aid to support lower retail prices for all households in higher cost areas to meet 'affordability' objectives may be a very inefficient use of funds. It may be better to target public subsidies only at those households who face budget constraints and who would not otherwise be able to benefit from the infrastructure which the State Aid will enable. This would require that the implementation of State Aid projects are closely co-ordinated with measures which can be taken under the 'universal service' regime, which is the mechanism by which national regulatory authorities can mobilise subsidies to support 'affordability' objectives. This interaction is complicated by the fact that subsidies under the State Aid regime are funded by the taxpayer, whereas subsidies under the universal regime will generally be funded by transfers within the telecommunications industry itself.
- **We recommend that the Commission consider carefully how the 'availability' objectives of the State Aid** rules will in the future interact with the 'affordability'

objectives under the universal service provisions of the new EECC and that guidance is provided in revised Guidelines.

- ***Consistency with the access obligations resulting from symmetric or SMP regulation:***[4] There is a genuine tension between the objectives of a national regulatory authority that imposes wholesale access obligations to constrain the exercise of significant market power whilst also seeking to promote entry and investment, and the objectives of DG COMP considering similar obligations when the prospect of entry has already been excluded and network investment is being funded by the State. This has occasionally led to concerns of wholesale access obligations under the State Aid regime being more onerous than those which apply under the SMP regulatory regime. It may have led to delays in the approval and implementation of some State Aid measures and deterred some operators from participating in others. The current lack of clarity on this point is unhelpful.

- We consider that, in general, the wholesale access obligations under the State Aid regime should be expected to align with the relevant obligations that are applicable under the SMP regulatory regime in the Member State in question. The competitive benefits that might arise from imposing more onerous wholesale access obligations under the State Aid regime are, in our view, likely to be very modest. On the other hand, the additional costs of having such obligations, both in terms of the recipient implementing new processes to comply and in terms of the risk that other potential recipients are deterred from participating altogether, could be significant.

- We recommend that the Commission revise the Guidelines so as to make it clear that the default wholesale access obligations for recipients of State Aid should be those prevailing under the regulatory framework for equivalent competitive conditions in that Member State. The Commission ought to adopt a pragmatic approach. There may be circumstances under which the Commission will need to go further than the national regulatory authority in order to prevent a distortion of competition, but these should be exceptional.

[4] See also footnote 179.

- ***Effective enforcement:*** Whatever wholesale access obligations are adopted, they need to be effectively enforced, likely by the national telecommunications regulatory authority. The State Aid rules allow the Commission to initiate action against Member States who fail to comply with the rules, generally by way of seeking recovery of the aid from the intended beneficiaries. However, these powers seem ill-suited to cases involving a failure to comply with wholesale access obligations.[5] Moreover, the Commission's powers over national regulatory authorities under the EECC do not extend to the administration of the State Aid regime. It is therefore unclear how the Commission would intervene to remedy a failure on the part of a Member State to enforce wholesale access conditions. We recommend that this issue is also addressed when the Guidelines are revised.

[5] Although we are advised that the Commission has yet to receive any formal complaints.

01

AIM OF THE STUDY

1. Aim of the study

This study examines how public funds, or State Aid, have been used to support the deployment of broadband infrastructure in Europe since the early 2000s and considers the lessons that might be drawn from that experience.[6]

The dominant theme of the late 1990s and early 2000s were the efforts of the European Commission and Member States to privatise formerly State-owned telecommunications operators and to use competition and private capital markets to improve the quality of services, lower prices and finance investments in new broadband infrastructure. These policies have already been extensively studied.[7] However, less attention has been given to the fact that for much of this period, and particularly since 2010, there has also been a growing tendency by both the European Commission ('the Commission') and Member States to use public funds to extend or accelerate the deployment of broadband infrastructure.[8]

The use of State Aid to extend or accelerate broadband deployment started modestly in the mid-2000s but has grown consistently since then as Europe's ambitions for broadband infrastructure have expanded. This prompted Commission officials responsible for administering the broadband State Aid rules to suggest that broadband State Aid has been transformed 'from mouse to elephant'.[9] We think the better image would be of State Aid growing 'from a mouse to a cat'. We estimate the public funds being allocated to broadband infrastructure today by both European and national sources, to be in the region of €7 billion per year. This in a sector which incurs private expenditure in fixed broadband infrastructure of around €25 billion annually.[10]

Funding at this level will be insufficient to fulfil the ambitious targets for a Gigabit Society which the Commission and Member States have adopted, as a recent report by the Court of Auditors

[6] Our primary focus in this study relates to fixed 'broadband infrastructure' that is provided by means of fibre and copper cables that are deployed inside trenches and ducts and which accounts for the vast majority of State Aid expenditure since 2003.
[7] See, for example, Cave M and Feasey R, 'Policy towards competition in high speed broadband in Europe, in an age of vertical and horizontal integration and oligopolies', CERRE, February 2017, at http://www.cerre.eu/sites/cerre/files/170220_CERRE_BroadbandReport_Final.pdf
[8] For a theoretical contribution, see Jullien, Pouyet and Sand-Zantman (2010).
[9] Chirico F and Gaal N (2014), p.30.
[10] https://etno.eu/datas/publications/economic-reports/ETNO%20Annual%20Economic%20Report%202017%20(final%20version%20web).pdf, p.23.

confirms.[11] Even if more funds are available, it will be very important that the arrangements which govern broadband State Aid yield the highest possible returns from the investments that are made. With this goal in mind, we offer recommendations on how the broadband State Aid rules and associated processes might be improved in Section 6 of this report.

Despite its growing financial significance, the use of State Aid to support broadband deployment has received relatively little academic attention to date. Some interesting appraisals have been offered by Commission officials responsible for assessing notifications of broadband State Aid measures.[12] But these tend to focus on the legal and qualitative aspects of broadband State Aid, with an emphasis on whether the conditions which accompany State Aid approvals are sufficient to safeguard competition in the provision of broadband services. The Commission undertakes its own ex post investigations of individual broadband State Aid cases from time to time[13] but the results are not published and seem intended to assess compliance with the conditions of approval rather than assessing efficiency or outcomes. Very little quantitative analysis has been undertaken to assess the effectiveness of regime as a whole or how and whether particular State Aid schemes or broadband schemes in general, once approved, achieve their objectives. One of the reasons for this may relate to the challenges in doing so. For example:

- Data about how much State Aid expenditure is allocated to specific purposes, including for broadband infrastructure, is difficult to extract from European Commission data sources. State Aid which might be used for these purposes is often included under very broad categorisations (such as 'infrastructure', 'digital' or 'ICT') of which broadband infrastructure is only a portion.

- Some public funds which are used to support broadband do not constitute State Aid (e.g. because they are provided on normal commercial terms or because the scheme fulfils 'general social and economic interest' (SEGI) criteria) or, as with the European Fund for Strategic Investments or measures which fall under the General Block Exemption, are exempted from the notification requirements which State Aid measures must fulfil. Funds that are provided by Member States themselves, including by

[11] Court of Auditors (2018).
[12] Notably Filomena Chirico, Lambros Papadias, Norbert Gaal and Oliver Stehmann, all whom are or were officials at the European Commission's Directorate-General for Competition (DG COMP) with responsibilities for broadband State Aid. See 'References' at page 120.
[13] Stehmann, (2016) p.53.

municipal authorities, are also difficult to identify and there is no consolidated record of them (although we have attempted to derive estimates in this report). Loans provided by the European Investment Bank also generally do not represent State Aid, despite serving a very similar purpose.

- Despite State Aid being used for broadband for at least 15 years, there have been very few ex post assessments to determine whether that Aid has been effective in extending or accelerating broadband deployment (and not crowding out private investment), and none which relate to the most recent period when State Aid expenditure has increased significantly and the focus has turned to extending fibre to the premises. The European Commission undertook its first study of broadband only in 2017, relating to basic broadband in Germany, although it appears inclined to do more in the future.[14] It has also, since 2013, required Member States to undertake their own assessments and to report back to the Commission on implementation, although few of these are publicly available.[15] The Commission's 2017 study noted the challenges both in assessing how broadband infrastructure might have developed in the absence of State Aid and in obtaining detailed data about the rate and extent of broadband deployment (and its performance) at the local level at which State Aid is often deployed:

  > *"This is an important area for policy research, as there is limited empirical evidence on the effect of state aid in such an important sector as broadband, especially at the level of aggregation and detail that we provide. Moreover, there is little or no empirical evidence on the effect of state aid on competition. As such, this chapter*

[14] The European Commission has commissioned:

(a) A study 'Economic impact on competition policy enforcement on the functioning of telecoms markets in the EU' by Lear, DIW Berlin and Analysys Mason in 2017 which included a case study of state aid schemes to bring basic broadband to rural areas in Germany.

(b) A study, by Oxera, 'Ex post assessment of the impact of state aid on competition', November 2017, which assesses whether the aid resulted in a distortion of competition (relative to a counterfactual) in four State Aid cases, none relating to broadband. The report noted the difficulties in undertaking ex post assessments in the absence of robust and detailed data. It also proposes a methodology for future ex post assessments of State Aid cases.

[15] The UK Government commissioned Oxera: 'The UK's National broadband scheme – an independent ex post evaluation of the UK's broadband state aid measure' was published by the UK Government in March 2015. This provides an audit report on whether the implementation of the scheme complied with the conditions required by the Commission rather than, for example, enquiring critically about whether objectives might have been more effectively achieved by other means, or whether the objectives were the appropriate ones.

offers probably the first complete ex-post evaluation of state aid control, not only on basic broadband markets but also overall." [16]

This study takes a different approach, drawing upon an exhaustive analysis of all 157 broadband measures notified to the European Commission under the State Aid rules since 2003. We test our hypotheses against the 'top down' data on how funds have been allocated which we derive from other European Commission publications and from other sources. Our analysis of the notifications appears in Section 5 and our conclusions and recommendations in Section 6. Prior to that, in Sections 2, 3 and 4, we examine the basic concepts, the sources of funds, and the rules relating to the use of State Aid to promote the deployment of broadband infrastructure in Europe.

[16] Lear et al (2017), p.123.

02

WHAT IS ‘STATE AID’?

2. What is ‘State Aid’?

The economy of the European Union has long been a ‘mixed’ economy in which many publicly financed activities co-exist alongside privately financed activities. An important function of the European Commission has been, and continues to be, to reallocate billions of euros of public funds (being funds which are provided by Member States or which are collected by the European Commission itself) between Member States in the pursuit of certain collective goals, including greater economic and social cohesion across the region. In addition, Member States, at both national and municipal level, can and do use their own financial resources to promote various economic and other policy objectives of their own.

The State Aid rules perform a critical role in ensuring that when Member States use public funds to support certain economic activities, they do not give particular private companies an unfair competitive advantage over others, whether other companies within the same Member State or companies from other Member States with whom the recipients of State Aid might compete. Some distortion of competition is always likely to occur when a particular company receives the benefit of State Aid and others do not, so the State Aid rules require the application of a ‘balancing test’ under which any harmful effects are kept to an absolute minimum in order to achieve the intended outcomes. Proposed State Aid measures which fail to meet these conditions – either because the harmful effects have not been minimised or because the benefits of the measure are unclear – will be unlawful. Any unlawful State Aid which has already been disbursed will be required to be recovered.

State Aid to support broadband deployment conforms to these general principles. To date, the vast majority of broadband deployment in Europe has been undertaken by private companies without the benefit of State Aid, and most of the efforts of European policymakers have been devoted to removing former monopoly rights and promoting competition between private firms in broadband markets. The introduction of public funds carries the risk of undermining these efforts and distorting competition between existing market participants and/or ‘crowding’ out investments which they might otherwise make. The results of the efforts made by the private sector differ significantly between Member States, with Member States such as the Netherlands achieving very extensive deployment of very high capacity broadband infrastructure without

public funds, Member States such as the UK achieving very extensive deployment of 'next generation' broadband but only very limited deployment of 'very high capacity' infrastructure, and Member States such as Italy or the Czech Republic today having a broadband infrastructure which is neither very extensive nor very high capacity. A small number of Member States – Malta, Belgium and Luxembourg – have achieved extensive and high capacity broadband deployment without relying on any form of State Aid whatsoever. However, as we explain further in Section 5, most Member States have used State Aid to supplement broadband deployment by the private sector, albeit to differing degrees and in various different ways.

The case for using State Aid to support broadband deployment rests upon two key assumptions. The first is that access to high capacity broadband infrastructure is an important enabler of economic activity and social inclusion and that it generates significant 'positive externalities' (i.e. benefits beyond those released directly by those using the infrastructure) for the country and for Europe as whole. We do not, in this study, examine the empirical basis for this assumption.[17] However, it underpins both the use of State Aid and the adoption, by both the European Commission and almost every Member State, of ambitious 'national broadband plans' which specify targets for achieving the extensive deployment and improvement of broadband infrastructure across the country. The assumptions are not unique to Europe and today almost every country in the world seeks to promote the deployment broadband infrastructure in the belief that it will contribute to economic growth and social development.[18]

The assumption that broadband infrastructure will yield 'positive externalities' also suggests a role for public funds. This is because private companies, operating under market conditions, find it difficult to capture the economic value of 'externalities', which are benefits which their own customers do not recognise and so are unwilling to pay for. The consequence is that investments in broadband infrastructure will fall short of those that would be made if the value of the externalities were properly accounted for. Public funds are often used to fill the gap arising from this form of 'market failure'. In the case of broadband infrastructure, 'market failure' (and hence the rationale for State Aid) can take three principal forms:

[17] A recent study by Ipsos MORI, for the UK Government, contains interesting empirical evidence of the economic and social benefits arising from the public subsidy of broadband infrastructure, see Ipsos MORI (2018).
[18] For a discussion of the use of public funds outside of Europe, see Cave M and Martin I, http://www.cerre.eu/sites/cerre/files/Public_investment_in_nationwide_next_generation_networks_-_Why_where_and_how.pdf

- First, the geographic scope of broadband deployment by private companies may be limited, meaning that they may be unable to deploy broadband infrastructure in some parts of the country. Geography plays an important role in broadband infrastructure due to the high fixed costs that are involved in digging trenches and installing ducts. These costs vary between geographic areas (digging trenches may be more expensive in urban areas than in areas where soft verges can be used), but the more significant factor is that the number of households and businesses from which these costs can be recovered will also vary. The economics of broadband deployment are therefore much less attractive in geographic areas of low population density. Private investors will generally not deploy infrastructure in areas where the expected revenues from the households and businesses are insufficient to meet their fixed costs and so State Aid is often required to extend the geographic scope of broadband infrastructure to areas which would not otherwise be served.

- Second, private companies may be slow to introduce broadband infrastructure or to upgrade the capacity of their existing broadband infrastructure. This may be particularly the case if the operator concerned enjoys a monopoly over the provision of infrastructure in an area, and so faces limited or no competitive pressure to upgrade it. In this case, the private sector monopolist may eventually upgrade their infrastructure, but benefits arising from higher capacity networks will be forgone until they do. In recent years, both the Commission and many Member States have become increasingly concerned not only to ensure that basic broadband infrastructure is widely available in Europe, but that this infrastructure is upgraded, first to 'next generation' (NGA) capabilities of 30-100 Mb/s and, now, to very high capacity capabilities of 1Gb/s or more. State Aid is increasingly being used to accelerate the process of upgrading infrastructure in areas where there is otherwise little competitive pressure on private companies to do so.

- Third, even if there is competitive pressure, private firms may be unable to meet the costs of upgrading infrastructure if householders are unable to properly value the benefits which they would obtain if they did. This mismatch between the benefits which might be derived from better broadband and the willingness of households to pay for it

can arise either because some of the benefits are 'positive externalities', discussed above, or because households cannot easily value improvements in quality for services which are 'experience goods' (meaning that they might be prepared to pay more for better broadband once they use it, but may be reluctant to do so beforehand).[19] Public intervention may be required to overcome this 'hold up' problem.

The State Aid rules which have been developed for broadband reflect these assumptions by seeking to restrict interventions to geographic areas where the private sector is not expected to invest within the foreseeable future, or to areas where competition is insufficient to ensure that existing infrastructure will be rapidly upgraded. These characteristics also mean that most State Aid for broadband is used to reduce the high fixed costs which private operators face in first deploying the infrastructure, rather than to support the ongoing operating costs of maintaining the infrastructure which are generally covered by the annual subscriptions paid by users of the network. This contrasts with the role of State Aid in other sectors, such as the postal sector, or railways, where ongoing public subsidy of operating costs is often required to maintain services.[20] It is also important to recognise that national telecommunications regulatory authorities in Europe also have other measures available to them to address shortfalls in operating costs or to tackle 'affordability' issues, most notably through the use of 'universal service' funding arrangements. We discuss the interaction between the policy objectives of State Aid and these other policy instruments in Section 6.

2.1. Forms of State Aid

There are various forms of financial and non-financial support that public authorities might provide to support broadband deployment. These will be in addition to the large range of regulatory measures and policy instruments which have been employed by the European

[19] See Bourreau, Feasey and Hoernig (2017) for a discussion of ultrafast broadband as an experience good, p. 40: http://www.cerre.eu/sites/cerre/files/171212_CERRE_BroadbandDemand_FinalReport.pdf

[20] Oxera (2017) note 'Granting aid on a rolling basis in markets that are characterised by a degree of entry and exit is more likely to confer a competitive advantage to companies relative to potential entrants. In these cases, it is expected that the aid will have a greater impact on competition than in cases where the aid is provided only at one point in time. In the energy and R&D&I case studies, aid is provided only at one point in time in markets where demand and supply are likely to adjust to developments over the long term. Our analysis suggests that aid that is provided only over a short period of time is less likely to affect competition, particularly in those markets where supply and demand are not able to adjust quickly in response to developments.', p.iv.

Commission and by national regulatory authorities to promote private investment.[21] They include:

- The provision of equity or quasi-equity on non-commercial terms (e.g. without the expectation of a commercial return on the investment). Equity that is provided on conventional commercial terms (including by the Connecting Europe Broadband Fund) would not constitute State Aid.
- The provision of loans on non-commercial terms (sometimes called 'soft loans') or guarantees which provide security to other lenders – which generally constitute State Aid when undertaken by Member States, but not when provided by the European Investment Bank (EIB).
- The provision of direct grants for which there is no expectation of payback (other than in relation to 'clawback' provisions). This is by far the most common form of State Aid for broadband when using European structural funds.
- The provision of assets in kind to the venture, as when public authorities allow a private firm access to publicly owned civil engineering infrastructure on non-commercial terms.[22]
- Commitments by public authorities to purchase services from the beneficiary, for example by serving as an 'anchor tenant' for broadband services.

Where possible, we have identified the type of funding instrument employed in our review of State Aid notifications in Section 5. The vast majority (over 90%) take the form of 'direct grants'. The form of funding will, of course, also depend upon the type of 'commissioning model' which is used to deploy the infrastructure. Again, there are a variety of options, and our analysis of notification letters in Section 5 suggests that a wide variety of models have been employed in practice:[23]

[21] These efforts are a key focus of the Commission's proposed European Electronic Communications Code, which was agreed in June and is expected to be adopted in December 2018.
[22] See, for example, the German ducts programme, N53/2010, under which the German authorities installed ducts for use by broadband providers at public expense.
[23] Detailed case studies for each are presented in the EIB PPP expertise centre study at http://www.eib.org/attachments/epec/epec_broadband_en.pdf

- Co-operative activities by householders and businesses themselves, within the local area where they live or operate. These are likely to be small scale schemes (some of which may fall below the *'de minimis'* threshold for State Aid notification and so would not be included within our sample). Examples include Onsnet Neuen in the Netherlands, B4RN in the UK.

- Private design, build and operate models, in which the public authorities commission a private firm to undertake the deployment of the broadband network, with the role of the public authority limited to the provision of 'gap funding' to meet the difference between the costs incurred by the private investor and the required returns in order for them to invest and participate in the project. This model has been favoured by a large number of Member States, including Austria, the Czech Republic, Germany, Denmark, Spain, Finland, France, Hungary, Italy, the Netherlands, Poland, Portugal, Romania, Sweden and the UK.[24]

- Public outsourcing, in which the broadband infrastructure remains owned by the public authority and may be wholly financed by them. The network may be built and operated by a private firm, but the public authority, as owner, will retain control over how it is managed and run. The public authority will obtain revenues from the sales made to these retailers. Examples include the MAN project in Ireland, under which eNet, a private firm, was awarded a 15 year concession contract to deploy and run fibre networks in 94 regional cities and towns. This model has been adopted in Austria, Bulgaria, Germany, France (where ownership reverts to the public after a period of 20-30 years), Hungary, Italy, Romania and the UK.

- Public design, build and operate model, in which the finance, ownership, deployment and management functions are all undertaken by the public authority. This model was employed in the Asturias region in Spain, where a special purpose company (GIT) was established by the municipal authority (using Regional Development Fund and national Government AVANZA funds) to build and operate a wholesale only broadband network. It has also been adopted in Austria, France, Spain, Hungary, Latvia and Lithuania.[25]

[24] See BEREC, p.9.
[25] Ibid.

- Joint venture arrangements, in which the ownership of the infrastructure is shared between the public authority and private investors, with the deployment and management functions then being undertaken by one or other of the parties. In many cases, the infrastructure is initially financed by the public authorities but ownership is then transferred to private investors over time and the business becomes self-financing once the initial deployment costs have been overcome. This model has been favoured in Italy. For example, Progetto Lombardia involves spending €2 billion to provide FTTH to 60% of households in Lombardy through the deployment of a passive only network. A special purpose vehicle is to be established to operate a passive infrastructure, with this company being 80% owned by equipment vendors and 20% by a joint venture between the Lombardy municipal authority and other telecoms operators.

In addition, models will differ in terms of the assets which they own and operate:

- Some models restrict themselves to the deployment and operation of 'passive assets' such as ducts and sometimes fibre, partly on the basis that these represent the most significant proportion of the fixed costs and hence the main source of 'market failure'. We find that commissioning models which involve the public authorities retaining ownership of the assets tend to favour owning 'passive' assets rather than engaging in the ownership of 'active' electronics, the provision of wholesale services or the retailing of services to households and businesses. In contrast, commissioning models which involve private ownership of the assets tend to follow the model that is employed by the private sector in other areas of the country (and so generally involves provision of all assets by a vertically integrated operator).
- Related, but distinct, is the issue of whether or not the commissioning model precludes the recipient of State Aid from participating in the downstream retail market. We show in Section 5 that public authorities tend to restrict their participation in the market to the provision of wholesale services, whether passive or active. 'Wholesale only' models have been adopted in Estonia, Greece, Latvia, Lithuania, the Netherlands, Bulgaria, Portugal, Sweden and Slovenia.[26]

[26] Ibid. p.8.

- Public authorities will often choose to fund the provision of direct broadband connections to households (the 'access network'), since the high costs of these connections are often assumed to be the source of the 'market failure'. However, State Aid has also been approved to support the provision of 'backhaul' connections which allow local broadband access networks to connect to national and international networks. Although less common, Italy, France, Spain, Ireland, Lithuania and Estonia have adopted this approach.[27]

We provide our empirical analysis of which models have been adopted in Section 5.

[27] See N183/2009.

03

SOURCES OF STATE AID

3. Sources of State Aid

There are a number of sources of State Aid for broadband. One involves funds that are provided by national Governments or by municipal authorities within individual Member States. These are funds allocated in national budgets (either for provision by national Government or for allocation to municipal authorities) or in regional or municipal budgets where those bodies have independent revenue-raising powers. There is no central database which would allow us to determine the total value of funds that are allocated to broadband across Europe and so we derive estimates of mean Member State contributions from our analysis of notification letters in Section 5.

3.1. European Strategic Investment Fund

At the European level, the most significant source of State Aid for broadband is the Regional Development Fund (ERDF). This is one of five 'structural funds' which together form the European Strategic Investment Fund (ESIF). These funds are expected to disperse a total of over €450 billion over the period 2014-2020 (the 7 year period for which the European Commission's multi-annual budget is agreed by Member States and European Parliament). As the name suggests, these funds are intended to be used by the Commission and by Member States to support investments in 'strategically important' sectors of the European economy, where there is otherwise a risk of underinvestment and market failure. Priorities under the Juncker Commission include, inter alia, research and development (and 'innovation'), renewable energy and infrastructure to support the migration to a low carbon economy, support for SMEs, and the 'digital agenda', of which broadband infrastructure is one component. The Regional Development Fund has a budget of €290 billion over the 2014-2020 period, and so represents a significant proportion of the ESIF.

Funds from the ERDF are allocated between Member States in agreed proportions. Since an explicit objective of this fund is to reduce regional inequalities and improve social cohesion, a significant proportion of Fund is allocated to less economically developed Member States. Poland is the largest recipient, receiving over €40 billion under the current budgetary arrangements. Spain and Italy each receive over €20 billion. Germany receives about €11 billion,

a similar level to Portugal, Hungary and Romania. France receives about €8 billion and the UK €6 billion.[28]

The ERDF requires all Member States to allocate funds to four priority areas: 'research and innovation', 'SMEs', 'the digital agenda' and the low carbon economy. 'Developed' Member States (who typically receive a lower proportion of funds) are required to allocate 80% of their Regional Development funds to at least two of these priorities, whilst 'transitional' and 'less developed' Member States must allocate 60% and 50% respectively. This means that the Regional Development Fund also supports a wide range of other activities including support of cultural activities, rescuing and restructuring national airlines, construction of highways or support of railways, export promotion activities, agricultural support and recapitalising banks. [29]

In addition, the Agricultural Fund for Rural Development (EAFRD) has funds of €100 billion in the period 2014-2020, some of which have also been applied to broadband.[30] It is much smaller than the ERDF and has a wider set of funding objectives.[31] France and Italy are the largest recipients under this fund (each receiving over €10 billion), with Denmark, Spain, Romania, Germany and Poland receiving over €8 billion. Fourteen Member States have allocated funds totalling €910 million from this Fund to broadband infrastructure over the period 2014-2020. This represents less than 1% of the total funds available.

The European Commission publishes an annual review of State Aid expenditure by Member States.[32] During 2016, the latest reported period, Member States reported spending a total of €106 billion on State Aid schemes. A little over half of all State Aid was devoted to renewable energy and other environmental schemes and a significant proportion was devoted to R&D. The Commission scoreboard refers to 'broadband' under the 'other' category of objectives. Twenty two Member States have allocated a total of €6.1 billion of their ERDF and €900 million of EAFRD funds to broadband infrastructure projects for the funding period 2014-2020.[33] This

[28] https://cohesiondata.ec.europa.eu/dataset/Untitled-Visualization-Based-on-ESIF-2014-2020-FIN/n6pb-g38m?referrer=embed
[29] European Commission, State Aid scorecard, November 2017, p.7.
[30] We understand that in the 2014-2020 funding period, Member States were able to include broadband projects within the EAFRD on an exceptional basis, and that some did. The presumption, however, is that the majority of funding comes from the ERDF.
[31] https://ec.europa.eu/agriculture/rural-development-2014-2020_en
[32] European Commission, State Aid scorecard, November 2017.
[33] 'European Funding for Broadband 2014-2020', p.4. The table in this document misrepresents total funding as being €6.1 million and excludes the EAFRD. The Court of Auditors also states the €6.1 billion figure, see p.15.

represents just 1.7% of the ESIF despite requirements that Member States prioritise 'digital agenda' objectives during the current budget period.[34] This is significantly more than the €2.7 billion which was allocated to broadband under the 2007-2013 budget.[35]

Member States make different decisions about the proportion of ERDF and EAFRD funds which they allocate to broadband infrastructure. The table below provides an indication of the proportion of funds allocated to broadband in the 2014-20 period for selected Member States:[36]

	ERDF (€ billions)	EAFRD (€ billions)	BB State Aid (€ billions)	BB as % of ERDF+EAFRD	BB as % of ERDF
CZ	12	2.3	0.52	3.6%	4.3%
DE	12	9.4	0.37	1.7%	3.1%
FR	8	11.3	0.67	3.5%	8.4%
ES	21	8.2	0.46	1.6%	2.2%
HU	11	3.4	0.39	2.7%	3.5%
IT	22	10.4	1.16	3.6%	5.3%
PL	42	8.6	1.02	2.0%	2.4%
RO	11	8.1	0.01	0.1%	0.1%
UK	6	5.2	0.21	1.8%	3.5%

The data shows that:

- No Member State has allocated more than 3.6% of their European funds (ERDF and EAFRD) to broadband infrastructure in the period 2014-2020. The Czech Republic,

[34] Belgium, Denmark and the Netherlands have generally not needed to rely upon State Aid to deploy advanced infrastructure given their geography and presence of cable operators, and Finland has used State Aid in a very limited manner, Stehmann (2016), p.28. It is difficult to determine how or whether these plans meet the requirement of the Regional Development Fund (which account for €6.1 billion of the €7 billion allocated to broadband infrastructure under ESIF) that at least 50-80% of the Fund be allocated to four areas, one of which includes the 'digital agenda'.
[35] IP 11/54 at http://europa.eu/rapid/press-release_IP-11-54_en.htm
[36] Data sources as cited in footnotes 10, 12 and 14 above.

France and Italy allocate a relatively higher proportion of their funds to broadband (relative to relevant peers), each for different reasons.[37]

- Spain, Germany and the UK each allocate a relatively low proportion of both their overall funds and their ERDF to broadband. Spain receives similar levels of structural funds to Italy but allocates much less to broadband. Germany receives less funding than either Spain or Italy, but significantly more than the UK.
- Poland proposes to allocate over €1 billion to broadband but is also by some margin the largest recipient of funds from the ERDF and so the proportion of total funds allocated to broadband remains unexceptional compared to Hungary or the Czech Republic.
- Romania's allocation of only €100 million State Aid to broadband, despite being a significant recipient of both ERDF and EAFRD funds, is exceptionally small.[38] More generally, there is little evidence to suggest that 'less developed' Member States, or those acceding to the Union after 2004, are allocating proportionately more State Aid to broadband infrastructure (with the possible exception of the Czech Republic) than the large, more economically developed Member States. This is a point we return to in Section 5.

We might expect the proportion of structural funds being allocated to broadband to reflect the relative performance of a Member State (or its privately funded operators) in meeting its own broadband targets, or those of the Commission. Below we show the proportion of structural funds allocated to broadband in the 2014-2020 period, alongside data on broadband coverage for each Member State at the end of 2014. The broadband coverage that a Member States had

[37] The Czech Republic is a significant recipient of Regional Development aid, but receives little Rural Development support, and has relatively high absolute levels of broadband State Aid. France is the opposite case, receiving high levels of Rural Development Aid, less Regional Development, but with relatively high levels of broadband State Aid compared to other large Member States. Italy has high levels of broadband State Aid expenditure, but also high levels of structural funds.

[38] We note, however, that Romania also has a well developed competitive FTTH and cable market which has seen privately funded operators extending coverage beyond urban areas in recent years and which has meant that Romania is the first market in Europe in which no operator holds Significant Market Power in the broadband market, see https://circabc.europa.eu/sd/a/4687615b-123f-44e0-bf24-a112eec9eb62/RO-2015-1804-1805%20Adopted_publication_EN.pdf

already achieved in 2014 might have been expected to influence how much expenditure it considers necessary to allocate to improving its broadband infrastructure in subsequent years:[39]

	BB as % of ERDF+EAFRD	DSL coverage in rural areas 2014 (% households)	NGA coverage in rural areas 2014 (% households)
CZ	0.036	80.7	4.5
DE	0.017	84.7	33.1
FR	0.035	97.6	20
ES	0.016	80.5	23.6
HU	0.027	73.4	19.4
IT	0.036	85.7	0
PL	0.02	75.3	31.1
RO	0.001	63.3	27.4
UK	0.018	99.7	45.9

The table shows that it is difficult to generalise about how different Member States approach State Aid allocation decisions, at least in relation to European funds. France has allocated a relatively high proportion of structural funds to broadband until 2020, but was already performing comparatively well in terms of rural DSL broadband coverage. France's State Aid measures are primarily concerned to extend NGA coverage (as envisaged by the *Plan Très Haut Débit* which was approved by the Commission in 2016 and which envisages a further €13 billion of expenditure by 2020).[40] Similarly, both Italy and the Czech Republic had reasonable levels of rural DSL coverage in 2014 relative to their respective peers of Spain and Hungary, but very poor rural NGA coverage.

[39] In this context we compare broadband coverage already achieved with forward looking funding allocations, on the basis that Member States who are performing poorly might be expected to allocate more public funds ex ante. We could also compare broadband coverage subsequently achieved with funds allocated in order to assess whether public intervention was effective in improving rural coverage ex post. Data is available at http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=17845

[40] http://europa.eu/rapid/press-release_IP-16-3610_en.htm

Romania's low level of funds allocated to broadband, relative to Poland, cannot be explained by its existing broadband coverage. We think it more likely that Romania's market structure means that policymakers place greater reliance on competition between privately funded operators to improve rural coverage.

Germany, Spain and the UK all allocated a relatively low proportion of European structural funds to broadband. In the UK's case, this may be because almost the entire rural population could already obtain access to DSL broadband by 2014, whilst rural NGA coverage was also better than in most other Member States. The case in Germany and Spain is more difficult to explain, since in both cases rural DSL coverage was only around 80% in 2014, suggesting that a significant number of households could not obtain anything other than the most basic broadband services. Although NGA rural coverage was better in Germany and Spain than in many other Member States, it is difficult to see how this would compensate for the continued lack of DSL connections for 15-20% of the rural population.

We consider the relationship between the timing of State Aid interventions by Member States and the existing performance of the private sector in terms of providing broadband coverage and ensuring broadband adoption in more detail in Section 5.

3.2. European Fund for Strategic Investments

An important feature of State Aid, particularly under the Juncker Commission, has been its use of public funds as a co-financing instrument alongside private sector finance. This arises from an assumption that there exist a large number of otherwise financeable private sector projects which do not proceed because the risk profile is judged to be too high. This is a concern which has been particularly acute since the financial crisis of 2007, since when private sector investment in Europe has fallen sharply despite the ready availability of low cost capital. In these circumstances, public funds can be used to provide certain forms of finance or financial commitments which reduce the risk faced by private sector investors. Significant attention has been given to the structuring of such public/private financing arrangements, including the use of guarantees for losses, subordinated debt and other forms of 'quasi equity' and equity finance arrangements, under which public authorities assume a much larger share of the financial risk

than their private co-investors. This, in turn, allows the Commission and Member States to claim a 'multiplier effect' on State Aid through the addition of private finance to the project.

This is the aim of the Juncker Commission's European Fund for Strategic Investments (EFSI), which was established in 2015 for an initial 3 year period with a guarantee of €16 billion from the Commission's budget and €5 billion from the European Investment Bank (EIB). The fund has now been extended to 2020, and the Commission guarantee increased to €26 billion (and the EIB contribution to €7.5 billion).[41] Like the ESIF, the EFSI focusses on key sectors of the economy (SMEs, renewable energy, broadband infrastructure, R&D and transport), but is expected to take greater risks on loans than the EIB would do in the ordinary course of its business. The use of public funds to reduce risk and thereby facilitate private investment is referred to as 'additionality' and is defined as follows:

> *"The support by the EFSI of operations which address market failures or sub-optimal investment situations and which could not have been carried out in the period during which the EU guarantee can be used, or not to the same extent, by the EIB, the EIF or under existing Union financial instruments without EFSI support. Projects supported by the EFSI shall typically have a higher risk profile than projects supported by EIB normal operations and the EFSI portfolio shall have overall a higher risk profile than the portfolio of investments supported by the EIB under its normal investment policies before the entry into force of this Regulation."* [42]

The Commission claimed that the EFSI could achieve a multiplier effect of 1 to 15 (i.e. that €1 of public subsidy could be expected to attract €15 of private capital), giving it the potential to unlock over €315 billion of additional investment over the period between 2015 and 2018. The EFSI consists of two funds: one for SMEs and another for 'infrastructure and innovation' which originally accounted for the majority (€15 billion) of the €21 billion available (but which now accounts for 60% of funds under the arrangements from 2018 to 2020).

The Commission asked E&Y to audit the EFSI in 2016.[43] E&Y found that 17% of EFSI funds had been applied to 'ICT' – less than were applied to R&D or to 'energy'. The UK (29%), Italy (24%) and Spain (10%) were the largest recipients of funds from the 'infrastructure and innovation'

[41] See https://www.consilium.europa.eu/en/press/press-releases/2017/12/12/investment-plan-for-europe-efsi-extended-until-2020/
[42] Article 1(3) at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32017R2396&from=EN
[43] https://ec.europa.eu/commission/sites/beta-political/files/ey-report-on-efsi_en.pdf

fund. By June 2016, €1.8 billion of the €4.7 billion approved under that fund had actually been disbursed[44] and only €500 million of the €4.7 billion had been allocated to 'ICT'. When private sector funding was added, this represented a total investment of €1.7 billion in 'ICT'. A further €1.7 billion (of a total of €10.5 billion) was allocated under the SME fund for 'ICT' but we would not expect any of this to relate to broadband infrastructure.

These figures suggest that EFSI funds for broadband infrastructure (as opposed to ICT) as of June 2016 were likely less than €1 billion. Data from other sources confirms that around €1 billion of funds had been approved by April 2017 for 'broadband related projects', with a multiplier of around 3.2x producing total EFSI investment in broadband infrastructure of €3.2 billion.[45] The multiplier for broadband infrastructure is substantially lower than that claimed for ICT as a whole (where E&Y found a multiplier of over 6 in 2016) or for the EFSI as a whole (where the Commission claims a multiplier of 15).

In August 2018, the Commission published further data on the EFSI. This states that €6.2 billion of EFSI funds had been allocated to 'digital' between 2015 and mid-2018, representing 11% of total EFSI funds (about half the levels spent on energy infrastructure or R&D).[46] A large proportion of this *'digital'* expenditure appears to have been allocated to SMEs rather than to those deploying broadband infrastructure. The Commission claims a multiplier of 5.9 to produce a total investment of €37 billion in the *'digital'* sector. We would expect this figure to include both the 'infrastructure and innovation' and the SME funds, and we expect the multiplier for broadband infrastructure to be substantially lower than that for other digital investments.

The Commission does not break down how much of the €6.2 billion had been invested in broadband infrastructure but does claim that EFSI investments since 2015 have allowed an *'additional 15 million households'* to obtain access to very high speed broadband services. This is difficult for us to validate. If we assume that the same ratios apply to expenditure in the period after June 2016 as before, then €6.2/3.4 or €1.8 billion of EFSI funds will have been allocated to broadband infrastructure by mid-2018. If we further assume that the multiplier for broadband

[44] Ibid p.25.
[45] European Funding for Broadband, p.6.
[46] https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan-europe-juncker-plan/investment-plan-results_en#sectors and https://ec.europa.eu/commission/sites/beta-political/files/digital-sector-factsheet-297x210-july18_en.pdf

infrastructure of 3.2 remains unchanged, then €5.8 billion has been invested to pass 15 million households, which would equate to a cost of €386 per household passed.[47]

We might expect EFSI funding for broadband infrastructure to remain at around €500 million p.a. throughout the period to 2014-2020 or €3.5 billion in total,[48] with a multiplier of 3 yielding total investment of the order of €10 billion. Funds provided under the EFSI programme – which is administered by the EIB rather than by Member States – do not represent State Aid and so are not subject to notification to the European Commission's Directorate-General for Competition (DG COMP). They do not, therefore, appear in our analysis of the notification letters in Section 5.

3.3. European Investment Bank

In addition to administering the EFSI, the EIB has lent to private operators on commercial terms to support broadband infrastructure deployment for many years. A primary role of the EIB is to obtain low cost funds on the capital markets using its AAA credit rating (since the EIB's shareholders are the Member States themselves) and to lend on to private sector actors (including private financial institutions) that are pursuing policy objectives which the EIB supports. One such objective is extending and accelerating the deployment of broadband infrastructure in Europe. The EIB often seeks to act when other commercial lenders are reluctant to lend, either because of the risk profile, the proposed terms of the arrangement (including extended repayment terms which might be more appropriate for infrastructure projects) or because commercial lenders lack expertise in a particular sector. The EIB has acquired significant expertise in broadband infrastructure projects as a result of its involvement over the years. EIB lending on broadband infrastructure totalled between €1 billion and €2 billion p.a. between 2007 and 2012, rising to €2 to 3 billion p.a. in 2013 and 2014.[49] Lending for broadband since then has remained at €2-3 billion p.a.[50] This represents 4-5% of the EIB's total

[47] Costs vary significantly by geography and by Member State. Ipso MORI report that the UK NGA State Aid project involved subsidies for the initial deployment of around €330 per homes passed, p.33.
[48] The Court of Auditors uses a lower figure of €2.032 billion, but this appears to be funds spent to date. That would be consistent with our €500 million p.a. estimate, see Court of Auditors p.15.
[49] H. Gruber, EIB Strategy in Broadband and Digital, 17 November 2015, p.6. The European Court of Auditors reported in June 2018 that the EIB had lent €5.6 billion in the 2014-2020 period, p.6. This is lower than our estimates and the figures we derive from the EIB database referred to below.
[50] The EIB produces an excellent database at http://www.eib.org/projects/loan/list/index?from=2013&region=&sector=2020&to=2018&country=http://www.eib.org/projects/loan/list/index?from=2013&region=&sector=2020&to=2018&country=. Figures for lending to broadband

annual lending of €50-60 billion p.a.[51] and is a modest increase in lending levels since the 2006-2010 period when lending for communications infrastructure represented 3-4% of total loan value.[52]

The European Commission has agreed with the EIB that conventional lending does not constitute State Aid.[53] This is because the EIB itself is not a 'State' and the EIB lends directly (provided the loan exceeds €20 million in value) and no Member States are involved. The risk that a Member State may seek to use EIB funds to favour its own companies over those in other Member States is therefore avoided, and the EIB is presumed to ensure that it conducts itself in a way which is consistent with the overall European interest. The EIB may also co-invest its own funds alongside those of Member States, or administer funds on behalf of Member States, in which case these activities would constitute State Aid. We return to the question of whether the EIB's activities should be subject to closer oversight by, or co-ordination with, DG COMP in Section 6.

3.4. The Connecting Europe Facility

The Connecting Europe Facility was originally envisaged by the then Commissioner for the Digital Agenda, Neelie Kroes, as a €9 billion fund to support broadband deployment (being itself part of a €50 billion fund which would also fund new transport and energy infrastructure).[54] These plans were rejected by the European Council and a much smaller fund, of around €1 billion, was instead adopted for the 2014-2020 period, of which €170 million is available to support broadband infrastructure and 'reduce the need for dependence on direct grant funding' (of the kind provided by the ERDF). Of this, around €100 million is available as equity and €17 million as debt, with the remainder being allocated to fund a Commission commitment to promote public Wi-Fi deployment via a voucher scheme ('WiFi4EU'). In 2017 the Commission announced the establishment of the Connecting Europe Broadband Fund, which represents an attempt to leverage €240 million of public finance (€100 million from the Connecting Europe

differ from (are slightly higher than) those presented by Gruber, possibly as a result of the database including projects which are approved but not yet signed.

[51] http://www.eib.org/attachments/general/reports/st2010en.pdf

[52] http://www.eib.org/attachments/general/reports/st2010en.pdf, p.50 Table E.

[53] Joint statement by Joaquín Almunia, European Union Commissioner for Competition, and Werner Hoyer, President of the European Investment Bank (EIB), on State aid matters in relation to the activities of the EIB Group at http://ec.europa.eu/competition/state_aid/modernisation/joint_statement_en.pdf

[54] http://europa.eu/rapid/press-release_SPEECH-11-689_en.htm

Fund and €140 million from the EFSI/EIB) alongside €250 million of equity finance from other public and private investors. The model is similar to that used for the EFSI but is focussed specifically on broadband infrastructure and upon early stage equity finance rather than debt. The founding partners of the fund (alongside the Commission) are the *KfW Bankengruppe* of Germany, *Cassa Depositi e Prestiti* of Italy and *Caisse des dépôts et consignations* of France, all of which are publicly owned or controlled banks or fund managers. The fund aims to invest in 7-12 broadband projects a year, at levels of €1-30 million per project, and will be managed by Cube Infrastructure Managers S.A., a French commercial fund manager. We understand that, as with the ESIF, any investments made by the Connecting Europe Broadband Fund will not constitute State Aid.

3.5. Conclusions on funding for broadband

The conclusion we draw from this section is that broadband infrastructure has received a very small proportion of the structural funds which are available under the European budget, increasing from only €2.7 billion in the 2007-2013 period to only €7 billion in the 2014-2020 budget.[55] The European Commission has identified the 'digital agenda' as one of a handful of strategic priorities against which public funds should be deployed. Yet, despite this, less than 2% of the ESIF is actually allocated, on average, by Member States to broadband infrastructure. Those Member States allocating the highest proportion for the 2014-2020 period never exceed 5%.

This might be understandable if other funding instruments such as the EFSI, lending by the EIB or the Connecting Europe Broadband Fund were between them to provide significant additional sources of funds. However, we find that the EFSI provides only around €500 million p.a., the EIB lends only €2-3 billion a year to broadband projects, and the Connecting Europe Broadband Fund plans to offer only €100 million a year to very small broadband infrastructure projects. Together, they represent additional funds of the order of €3-4 billion a year, alongside the €1 billion provided by ESIF structural funds.

The other potential source of State Aid funds are Member States themselves. We have not aggregated or consolidated data on the national or local sources of State Aid for broadband that

[55] Court of Auditors, p.15. This includes the WiFI4EU budget, which we ignore in our assessment.

are provided by Member States. However, in Section 5, we present results from our analysis of a selection of notification letters which, if representative, indicate that around 65% of all State Aid funds are provided by Member States and 35% by European funds (i.e. those European funds which are subject to the State Aid notification rules). If past trends are indicative of future behaviour, then we might expect Member States to themselves provide around €2.3 billion of State Aid funding each year in the period to 2020. Our estimate of total annual State Aid funding for broadband is therefore as follows:

	€ millions
European Regional Development Fund contribution	870
European Agricultural Fund for Regional Development	130
European Fund for Strategic Investments (with multiplier)	1,500
Connecting Europe Broadband Fund (with co-funding)	100
EIB lending	2,500
Member State contributions (assuming 35/65)	1,857

Total annual 'public funding' (both notified and un-notified) for broadband infrastructure in period 2018-2020	€ 6,957 million

The situation looks likely to persist in light of the Juncker Commission's proposals for the next budgetary period between 2020 and 2027.[56] The Commission has proposed that the existing EFSI Fund be replaced by an 'InvestEU' Fund, with €38 billion (compared to EFSI's €21 billion) of funds. Of this, €11.5 billion will be available for *'sustainable infrastructure'*, although it is unclear much of this might be allocated to broadband.[57]

The Commission also proposes to retain the Connecting Europe Facility but to expand its capacity to €42 billion. Of this, €3 billion will be allocated to 'digital' (i.e. broadband) infrastructure, compared to €8 billion for energy and €30 billion for transport infrastructure. In addition, the Commission proposes a €9 billion Digital Europe Programme to promote digital skills (and presumably thereby improve demand for broadband services and infrastructure).

[56] http://europa.eu/rapid/press-release_IP-18-3570_en.htm
[57] https://ec.europa.eu/commission/sites/beta-political/files/communication-modern-budget-may_2018_en.pdf, p.7.

The latest Commission proposals contain little detail about how the ERDF, which is proposed to have a total budget of €227 billion, might support broadband deployment. The reduction in the Fund (from €290 billion in the current period) reflects some reallocation of funds away from general funds which are allocated by Member States between sectors and activities and towards funds which are directly administered by the Commission itself (or the EIB). Whether this results in more funds being targeted to fulfil broadband infrastructure objectives is unclear at this stage, but it seems unlikely that significant changes are envisaged.

04

THE BROADBAND STATE AID RULES

4. The Broadband State Aid rules

In this section we examine the rules which are used by the European Commission to determine whether the benefits of using public funds exceed the potential risks to competition and whether, therefore, the *'balancing test'* will be met.

The general State Aid framework that is administered by the European Commission reflects the enormous range of uses to which public funds may be put. The criteria which determine whether a measure represents State Aid are established by Article 107(1) of the Treaty of Lisbon. To be a State Aid, a measure must:

- Use Member State resources
- Grant an economic advantage to certain undertakings or economic activities;
- Distort competition
- Affect trade between Member States

Article 108 of the Treaty requires Member States to notify proposed State Aid measures to the European Commission for review. The European Council adopted a regulation in 1999 which introduced procedures for the conduct of such reviews and which were subsequently revised in 2015 as part of a broader programme of 'modernisation' of the State Aid rules. The aim of the modernisation process was to streamline and simplify the approval process (thereby allowing public funds to be deployed and the benefits realised more rapidly), whilst at the same time allowing the Commission to focus its attention and resources on those areas where public subsidies might be most problematic.[58] The Commission has powers to seek information from relevant parties when undertaking its review of a notified State Aid measure, as well as powers to apply injunctions or apply fines (and seek the recovery of funds) in cases where it believes unlawful aid has already been granted. The Regulation highlights the role of complaints by third parties, who may be adversely affected in trying to compete with a recipient of unlawful State Aid.

[58] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32015R1589&from=en. This process is ongoing – for example, Commissioner Vestager has recently (in July 2018) issued an updated 'Best Practices Code for State aid control', which is intended to 'streamline and speed up State aid control', see http://europa.eu/rapid/press-release_IP-18-4544_en.pdf

Public subsidies of a *'de minimis'* level (less than €200,000 over a three year period) are exempt from notification requirements. More significantly, the 2014 General Block Exemption Regulation[59] contains provisions (in Section 10) to exempt broadband State Aid projects provided the following conditions are met:

- The total funds of the project do not exceed €70 million.
- The area is defined as a 'white area'.
- The recipient is subject to 'the widest possible passive and active wholesale access', including physical unbundling of NGA services and access to ducts.
- The funds are allocated by means of competitive tender and subject to clawback provisions.

Each of these requirements is discussed in more detail later in this Section. Aid for broadband infrastructure under the General Block Exemption Regulation (GBER) almost doubled in 2016 but still remains significantly below €1 billion p.a.[60] according the Commission sources. Since such measures are not notified, they do not form part of our analysis in Section 5.

Some other forms of public funding may also fall outside of the regime:

- In the early 2000s, a number of Member States argued that broadband infrastructure was serving a 'general public purpose' which was required to be met by the State, in just the same way that public funding of motorways, bridges and ports falls outside of the State Aid regime. This view was advanced by Ireland in an early notification of a project in which the broadband infrastructure in question was to be wholly funded from public resources.[61] However, the European Commission has generally resisted this argument on the grounds that broadband infrastructure is provided by the private sector and is subject to competitive provision throughout Europe, with the result that the use of public funds (even if the infrastructure remains under public ownership) is likely to have a distortive effect on competition and to risk crowding out private investment.

[59] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02014R0651-20170710&from=EN
[60] EC, 2017 Scorecard, p. 15. This noted, we understand that the Spanish Government has established a large number of broadband projects, all falling within the GBER.
[61] See N284/2005 and Papadias et al 2006, p.15. The Swedish Government also appears to have relied upon this view.

- Public funds may also be exempted from the notification requirements if they relate to activities of a 'general social and economic interest' or SEGI, within the meaning of Article 117(2) of the Treaty of Lisbon. The conditions which are required to be met for a project to be a SEGI were established by the European Court of Justice (ECJ) in the Altmark case, and their application to broadband infrastructure by two early French cases (one of which was appealed to the ECJ) in which it was held that the SEGI conditions were met.[62] In short, the Commission considers that the SEGI conditions apply only in relation to the funding (following an open tender) of a 'passive' broadband network within a geographic area in which there is no existing (basic or NGA) broadband infrastructure and where the network is expected to serve all households within that area.[63] These are relatively restrictive conditions, and it seems unlikely that many broadband projects would fulfil them today (although they are still used in France). The Commission's current guide for potential applicants states that 'it needs to be underscored from the outset that getting an approval of an SEGI for your broadband project is one of the most complicated ways to proceed.'[64]

- Public funds are not State Aid if they are provided on commercial terms, and so no economic advantage is conferred to the recipient (this is referred to as the 'market economy investor' principle). This was the case when municipal authorities in Amsterdam acquired an equity interest in a fibre broadband company alongside private investors.[65] This issue also arose in the Trento case, where a regional authority in Italy argued that its participation in a joint venture with Telecom Italia was undertaken on commercial terms and so did not constitute State Aid. It subsequently withdrew the notification.[66]

- In the early 2000s, some Member States, including the United Kingdom, also sought to argue that by conducting an 'open tender' they ensured that no 'selective economic advantage' would accrue to any company and/or that the distortion of competition

[62] NN381 and 382/2004.
[63] Hencsey et al, p.12. These issues were clarified in the 2013 Guidelines, see paras 20, 23 and 24.
[64] WIK, The broadband State Aid rules explained, p.6.
[65] See "Citynet Amsterdam: an application of the Market Economy Investor Principle in the electronic communications sector" by Norbert Gaál, Lambros Papadias and Alexander Riedl Competition Policy Newsletter, number 2008/1, p. 82-85. http://ec.europa.eu/comm/competition/publications/cpn/cpn2008_1.pdf
[66] Stehmann, p.45.

would be minimised.[67] The Commission took the view that even if the winning bidder gained no economic advantage, those who used the infrastructure (whether those retailing services using wholesale services which the bidder provided or those purchasing services from those retailers) would themselves gain an advantage over companies in other parts of the country, or in other Member States, who did not have access to the infrastructure.[68] Since then, open tenders have been regarded as important elements of the 'balancing test', but not grounds for failing to notify a measure as State Aid.

- There was a further question of whether the State Aid arose when a tender was undertaken for the construction of a broadband network or whether it only arose when the facilities of the completed network were then made available (under wholesale access terms) so as to allow firms to sell services over it. The Commission's view on this point was altered by a judgement by the General Court in 2011, which concluded that both activities would constitute State Aid.[69]

- Aid that is directed at deploying broadband infrastructure in 'assisted areas' (being areas which are defined as being exceptionally socially and economically deprived)[70] may be regarded as regional state aid and so fall to be considered under the Regional State Aid Guidelines rather than the Broadband State Aid Guidelines. However, the Commission note that the level of aid intensity (which is restricted under the Regional State Aid rules) and the geographic scope of broadband networks generally means that aid for

[67] The UK Government being 'of the opinion that no aid is involved because a tender procedure is followed', para 3.1. http://ec.europa.eu/competition/state_aid/cases/133982/133982_477578_33_2.pdf. See also Stehmann, p.45. Back in 2000 the Swedish Government had allocated SEK 5-6 billion of public funds to support regional broadband networks linking small towns and villages, to support broadband access networks and to provide tax relief to households wishing to connect to those networks. The Government did not notify the European Commission (the first Swedish notification does not appear until 2010) on the basis that, in the words of the Government's principal adviser: ' In spite of what has been said, the EU policy also permits exceptions from the main principle – the support introduced by the Swedish Government is thus completely compatible with the EU regulations. The solution is that if government support is given, a public procurement must be carried out, offering this support in an open way to the market.', OECD, p. 12 at https://www.oecd.org/sti/ieconomy/2736714.pdf

[68] This point is discussed further by Oliver Stehmann (2016) p.41-2, noting that 'selective advantage' can arise in open tenders if the number of participants is limited, the selection criteria are complex and/or when the assets are retained by the beneficiary after the contract has expired.

[69] Stehmann (2016), p.55.

[70] There are criteria to define 'assisted areas', including that the population has an average GDP per capita of less than 75% of the European average and/or population density is below 8 per km^2 and/or unemployment rates are above 115% of the national average' see https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52006XC0304(02)&from=EN

broadband infrastructure will not constitute regional state aid (irrespective of whether funds are derived from the ERDF or from other sources). We expect only a small proportion of funds allocated to broadband infrastructure to have been notified under the Regional State Aid arrangements.

Overall, it appears that the vast majority of projects involving State Aid for broadband infrastructure are likely to have been notified to the Commission and so feature in the 153 notifications which we analyse in Section 5. In the early 2000s, there was initially some uncertainty about how the State Aid rules might apply to broadband infrastructure, and perhaps some attempts on the part of Member States to bypass the notification process. Over time, however, the Commission has clarified the scope of the rules (chiefly by issuing 'broadband guidelines' which we discuss below) and has attempted to streamline the process, reducing incentives for Member States to avoid them. In addition, the nature of the schemes for which public funds are used has changed, with fewer *'white areas'* remaining and more emphasis given to the upgrading of existing networks to provide very high capacity facilities.

4.1. The evolution of State Aid for broadband

The first broadband State Aid notification to appear on the list that is retained and published by the European Commission relates to a broadband network in the north west of England, for which approval was sought in July 2003.[71] State Aid has therefore played at least some role in broadband deployment from the earliest days and certainly long before the opportunities for private sector deployment of broadband infrastructure had been exhausted. Broadband penetration in the EU15 was below 5% of households in 2003.[72]

As Papidias et al note, most of the early broadband State Aid schemes were very localised in scope, small in size and aimed at extending basic broadband infrastructure to areas which did not have it.[73] The 2005 eEurope Action Plan had included the proposal that:

> *"Member States, in co-operation with the Commission should support, where necessary, deployment in less favoured areas, and where possible may use structural funds and/or*

[71] Seven out of the first ten schemes on the Commission's list, and which relate to the period between December 2003 and September 2005 were notified by the United Kingdom (with two being notified by France and one by Spain).
[72] http://aei.pitt.edu/45467/1/SEC_(2004)_1535.pdf, p.50.
[73] Papidias et al 2006.

financial incentives (without prejudice to competition rules). Particular attention should be paid to outermost regions." [74]

This was given further impetus as Member States were encouraged to adopt national broadband strategies, which included (now familiar) measures such as setting targets, mapping underserved areas and using Regional Development Funds to extend the availability of broadband. The Commission produced a document, 'Guidelines on the Implementation and Modalities of Structural Funds in support of Electronic Communications', in 2003,[75] which anticipated many of the issues to be addressed later by the 2009 and 2013 Broadband State Aid Guidelines. By May 2004, the Commission reported that all fifteen Member States had produced some form of national broadband strategy, noting that:

"This is in line with the invitation to Member States from the Telecom Council of March 2004 "to prepare and implement national broadband strategies, with a view to, inter alia, connecting all public administrations to broadband by 2005 and proposing, where appropriate, digital-divide quick-start projects, using, where appropriate, existing financial instruments such as structural funds, so as to increase broadband coverage of under-served areas." [76]

The number of broadband State Aid measures to be notified to the Commission grew significantly over the 2003-2010 period, as we show in Section 5. Aside from the 2003 guidelines for the Regional Development Funds,[77] the Commission initially developed its guidance via individual broadband State Aid decisions, which it published on its website. The aggregate level of State Aid funding remained very modest: funds approved never exceeded €600 million in any year until 2010[78] and according to the Commission only €368 million in State Aid was actually dispersed between 2004 and 2009.[79] This should be viewed in the context of sector which was

[74] COM 2002/263 at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52002DC0263&from=EN, p.17.
[75] http://ec.europa.eu/regional_policy/sources/docoffic/working/doc/telecom_en.pdf
[76] http://www.vus.sk/broadband/nbbs/com2004_369.pdf. We note later that the Court of Auditors (2018) has recently been more critical of Member States' attempts to produce broadband plans after 2010. The Commission undertook its own review in 2014, and found that the picture was rather mixed, European Commission (2014).
[77] Since this point, State Aid for broadband may fall to be assessed under either the Broadband State Aid Guidelines or the Regional State Aid Guidelines (e.g. when the funds for broadband infrastructure form part of a much broader regional development programme), but there is little material difference between the two.
[78] Norbert Gaal, 'Revision of the state aid broadband guidelines', June 2012, slide 7, at https://www.slideshare.net/gaalnorb/revision-of-the-state-aid-broadband-guidelines
[79] http://ec.europa.eu/transparency/regdoc/rep/1/2011/EN/1-2011-356-EN-F1-1.Pdf, p.6. This may reflect the fact that some notifications represent multi-annual schemes or framework schemes which are then implemented over a

spending (and continues to spend) between €15 and €20 billion of private capital on fixed broadband infrastructure every year.[80] But it should also be viewed in light of a global financial crisis in 2007 which consumed the attention of policymakers both in Brussels and in Member States and which placed acute pressure on the public finances of most Member States in the period 2007-2010.

4.2. Post 2007 initiatives to promote broadband deployment

We might expect that the financial crisis of 2007 would prompt a stimulus programme and an increase in State Aid expenditure, including for broadband infrastructure. Our analysis suggests that this took a number of years to happen and that the changes which did occur remained relatively modest. In the short term, €1 billion was allocated to the Agricultural and Rural Development Fund in 2009 to support broadband deployment, as part of the European Recovery Plan. The March 2009 Presidency conclusions also included an agreement amongst Heads of State to accelerate investment in broadband.[81]

One part of the effort to promote broadband investment after 2007 involved the publication, in 2010, of a new Recommendation from the European Commission concerning the regulation of 'next generation access' broadband networks.[82] Its aim was to ensure that 'next generation' broadband networks were unbundled but also regulated in a way which recognised the higher risks assumed by private investors in these new technologies (being primarily the Fibre to the Cabinet or VDSL technology then being deployed by many 'incumbent' owners of copper networks).[83] It was an attempt to promote higher levels of private sector investment in upgrading existing broadband infrastructure to 'next generation' technologies which were capable of delivering speeds of more than 30 Mb/s. The 2010 Recommendation had limited success and was substantially revised in 2013.

number of subsequent years. These have become more prevalent in recent years, with the result that the gap between funds approved and funds spent is likely to widen).

[80] https://etno.eu/datas/publications/economic-reports/ETNO%20Annual%20Economic%20Report%202017%20(final%20version%20web).pdf, p.23.

[81] Papadias et al (2009).

[82] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32010H0572

[83] The Recommendation did not consider how this risk profile might be affected if those investors participated alongside public authorities.

A more significant development was the adoption, for the first time in 2010, of a set of targets for broadband infrastructure deployment across Europe. This was part of a wider 'Digital Agenda' initiative which was intended to underpin the Europe 2020 plan.[84] All European households were expected to have access to basic broadband services by 2013, and to services requiring capacity of at least 30 Mb/s ('NGA') by 2020, with half of all European households actually subscribing to infrastructure capable of delivering more than 100 Mb/s by that date. Adopting explicit targets also allowed the Commission to model the likely costs of achieving particular outcomes. The cost of providing all European households with access to 'next generation' broadband infrastructure was estimated at €60 billion, whilst the cost of allowing at least half of households to access networks capable of 100 Mb/s was €270 billion.[85] The EIB undertook similar modelling exercises, and estimated the costs of €200 billion.[86] All Member States were expected, by 2012, to produce national broadband plans which included these or similar targets.

The third initiative was the publication, in September 2009, of the first set of Broadband State Aid Guidelines.[87] These were intended to support the wider Economic Recovery Plan and the realisation of the Digital Agenda targets by making it easier for Member States to obtain approval of State Aid measures for broadband. Similar efforts were being made in other areas, as part of a wider State Aid reform package to streamline the process of allocating public funds in the European economy, an effort which the Commission had started in 2005.[88] Commission officials claim that the increase in State Aid for broadband infrastructure in 2010 – when the value of notifications made to the Commission increased from around €600 million in previous years to €1.8 billion in 2010 and the number of notifications peaked at 20 – can be in part attributed to the Guidelines and to the Commission's determination to provide a better designed and faster process for Member States.[89]

[84] COM 2010/245 at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC0245&from=EN
[85] Chiroco and Gaal (2011), p.50.
[86] Gruber, p.10.
[87] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XC0930(02)&from=EN
[88] The Commission had already published a 'roadmap for State Aid reform' in 2005, but took 4 years to implement the reforms, see http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52005DC0107&from=EN
[89] Chiroco and Gaal (2011), p.51.

4.3. The 2009 Broadband State Aid Guidelines

The 2009 Guidelines first explain why the public funding of broadband infrastructure is likely to constitute State Aid and address many of the points we discussed earlier.[90] They explain that the European Commission will apply a 'balancing test' in which it will compare the expected benefits of the scheme (in terms of addressing a clearly specified market failure which is normally defined in terms of the inability of private investors to support broadband infrastructure in low density areas and the assumed presence of positive externalities and wider benefits of social and economic inclusion which arise from extending broadband coverage) against the expected risks to competition. Much of the focus of the assessment will be on the measures that are taken to minimise any distortion to competition, by ensuring:

- That the scope of the aid is limited to areas where there is no foreseeable prospect of private sector investment.
- That the level of aid is kept to the minimum necessary to achieve the deployment objectives (through the re-use of existing infrastructure such as ducts and trenches and the conduct of a competitive tendering process to maximise commitment from the private sector and minimise costs to the public sector).[91]
- That competition in retail markets is sustained through the provision of *'open access'* to third parties.

As regards the geographic scope of aid, the Commission reiterates the distinction – which it had employed since at least 2005[92] – between *'white areas'*, where there is no foreseeable prospect of deployment of any form of infrastructure by the private sector; *'grey areas'*, where only one privately funded network is present or expected to be present, and *'black areas'* where competitive provision by several privately funded broadband networks is anticipated. This categorisation is straightforward in theory, creating a presumption against any form of broadband State Aid in *'black areas'*, in favour of broadband State Aid in *'white areas'* and requiring *'further assessment'* in *'grey areas'*.

[90] NN24/2007.
[91] Para 45(b), (c) and (e).
[92] Hencsey et al, Competition Policy, Spring 2005 p.9.

4.4. NGA networks

Although we have noted that one of the reasons for developing the 2009 Guidelines was an attempt to accelerate State Aid funding of broadband and thereby contribute to the European Recovery Plan, another important consideration was that fixed broadband technology was itself at the beginning of a transition from basic broadband provided by means of ADSL technology over existing copper infrastructure (the availability of which was expected to be universal by 2013) to *'next generation'* (NGA) broadband, which offered higher capacities and speeds of over 30 Mb/s but which also required a significant upgrading of the existing infrastructure, with the provision of fibre to and the installation of VDSL equipment inside many thousands of street cabinets. As we noted above, the costs of upgrading to an NGA infrastructure – at around €60 billion – were significantly greater than the costs that had been involved in providing basic broadband to all. The demands upon public resources to contribute to this effort were, therefore, likely to be correspondingly higher. When the Guidelines were published, the Commission had at that time only dealt with two cases which sought approval for State Aid for NGA access networks serving business premises.[93]

The Guidelines envisage that the scope for State Aid for NGA networks may be more extensive than for basic broadband infrastructure because State Aid might be used to accelerate the rate of deployment of NGA in areas where private sector provision might eventuate at a later date.[94] The Guidelines apply the same distinction between 'white', 'grey' and 'black' areas which the Commission had adopted for the purposes of assessing State Aid for basic broadband. Thus, an area where there was already an existing network provider of basic broadband services but no prospect of NGA provision within the next 3 years[95] would be deemed a *'white NGA area'*, areas where there was a single existing NGA network provider would be a *'grey NGA area'* and areas

[93] In the UK, N157/.2006 and Ireland N284/2005.

[94] Interestingly, the extent to which State Aid for NGA in rural areas can be justified on grounds of social and economic inclusion may increase if public authorities also support the earlier deployment of NGA in urban areas, since this has the effect of again widening the 'digital divide' (which may otherwise be closing if all areas were to continue to be served by basic broadband).

[95] The choice of 3 years is interesting: earlier drafts included a figure of 5 years, based on assumptions that the aided infrastructure would require 5 years to be deployed. This appears to have been reduced in the final text, perhaps because the deployment was assumed to be more rapid (in fact many broadband State Aid schemes have taken far longer than 3 years to implement) or perhaps because it was concluded that private firms would be unable to provide forecasts beyond a 3 year period.

where there were several NGA networks, or the prospect of several networks, would represent *'black NGA areas'*.[96]

Importantly, the thresholds for State Aid for NGA are higher than those for basic broadband:

- The provision of aid in a *'white NGA area'* will not only require evidence that private sector provision is not foreseeable within the next 3 years (which was the requirement for State Aid for basic broadband) but also evidence that there is demand from the local population for services provided over NGA as opposed to basic broadband networks.[97]
- The Commission states that it would not expect to approve State Aid in areas where there is competition between basic broadband networks (i.e. 'black areas' for basic broadband) but no deployment of NGA (i.e. 'NGA white area'). This is because it would normally expect competition between those firms to prompt them to upgrade to NGA technologies within the relevant 3 year period without the need for public support[98] (i.e. there would be no 'market failure' which State Aid would be required to remedy). In 2009, *'black areas'* were generally those served by the existing 'incumbent' copper network and a cable operator. These represented about 40% of households in the European Union.[99]

The consequence of this framework is that Member States could intervene in areas where an existing 'incumbent' operator already provided basic broadband services but faced no competitive impetus to upgrade rapidly to NGA technologies. These would be 'white areas' for NGA and 'grey' areas for basic broadband. As noted earlier, it might be reasonably expected that, in the longer term, the monopoly network owner would upgrade its infrastructure as consumer demand and willingness to pay for higher capacity infrastructure increased. But the 2009 Guidelines allowed Member States to use State Aid to accelerate this process. Since about

[96] Competition in this context is assessed by reference to network providers rather than retailers, since it is competition between networks which determines whether infrastructure is extended or upgraded.
[97] Para 68. It is not clear in the Guidelines how 'demand' is to be assessed (e.g. by reference to the prices for NGA services which prevail in other 'competitive' areas in the country, or by reference to some other price).
[98] This is a rebuttable presumption which Member States can overcome with evidence, para 73. If State Aid were given in basic broadband 'black areas' it would be limited to the fibre backhaul and cabinets and could not be applied to improving the final connection. Moreover, access obligations in this case would extend to a minimum of 10 years, rather than the 7 years applicable in other cases.
[99] http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3647, p.9.

60% of all European households were located in 'grey areas' for basic broadband, the potential to use State Aid to accelerate NGA deployment in Europe was therefore very considerable.

4.5. Conditions to be met for Commission approval

In addition to addressing how State Aid for NGA might be expected to operate, the 2009 Guidelines list the features which they would expect to see in compliant broadband State Aid measures. These include:

- The use of public funds to address a clearly defined instance of 'market failure' which cannot be addressed by other instruments. This issue is relatively straightforward in relation to interventions in 'white areas', but it could be argued that efforts to promote competition in 'grey areas' might be better directed at seeking to lower the barriers to entry for private investors (including improving the wholesale access arrangements then prevailing), rather than using public funds to sponsor entry. In general, the Commission officials who review State Aid notifications have not sought to judge the effectiveness of existing regulatory arrangements in Member States, nor to suggest that they be improved.
- The use of a detailed mapping exercise, including consultation with potential investors, to determine boundaries between 'white', 'grey' and 'black' areas based on the prospects of deployment over a 3 year period.
- The use of an 'open tender' in which all parties can participate on non-discriminatory terms and where the criteria for award are known to all in advance. This addresses two aspects of State Aid to which we referred earlier: it reduces the 'selective advantage' which is conferred to any particular party since all have an opportunity to participate, and it is generally used to minimise the amount of public funds which are required to achieve the objective (e.g. through the use of 'reverse auctions' under which participants in the tender bid for funds, with the lowest bid winning).
- The requirement for 'technology neutrality', both to ensure that all parties can participate in the tender and to conform with the Commission's wider commitment to this concept in the regulatory framework. The Commission recognises that this does not mean that any technology can meet the objectives of the measure, and we noted above

that they were careful to specify quite precisely the technologies which would represent 'NGA' technologies for the purposes of the rules. We also note below that the Commission favoured some technologies over others on the grounds that they were more likely to enable downstream competition: for example, they favoured multi-fibre or point to point fibre to the premises technologies over GPON technologies, in respect of which wholesaling options were more limited.

- The requirement to re-use existing infrastructure where possible, on the basis that this will reduce the demands on public funds (as well as likely accelerate the rate of deployment compared to the provision of new trenches and ducts).

4.6. Wholesale access obligations

The Guidelines also refer to the requirement that the beneficiary of State Aid provide wholesale access to its infrastructure for a period of 7 years in order to ensure competition in the provision of services over the network and to some extent to reduce the 'selective advantage' which a vertically integrated operator might otherwise gain by refusing to allow its rivals to share in the use of the infrastructure.

The Commission took the opportunity to clarify and extend the wholesale access obligations which beneficiaries of State Aid for NGA deployment would be expected to meet. Providers of basic broadband services (normally by means of ADSL technologies) had been required to offer wholesale services (bit stream and unbundling) in the same way that operators deemed to hold Significant Market Power (SMP) were required to offer access to their networks under the regulatory framework (and on essentially the same terms, including prices). However, under the 2009 Guidelines, NGA network providers were also required to offer access to their *'passive infrastructure'*, including ducts and street cabinets (to facilitate sub-loop unbundling for VDSL provision), irrespective of whether privately funded operators with SMP were required to do the same. In fact, not many Member States had obliged SMP operators to offer such sub-loop unbundling capabilities at this time, meaning that the State Aid Guidelines represented an extension of the existing regulatory arrangements in those geographic areas where the network

owner was a recipient of public funds.[100] Similarly, the Guidelines sought to promote the adoption of *'multi-fibre'* and point to point fibre to the home technologies (in a departure from the strict principle of technological neutrality), on the grounds that these could be more readily unbundled than the GPON technologies that were favoured by most incumbent operators at the time. Both sub-loop unbundling and *'multi-fibre'* deployment had also been promoted by the 2010 NGA Recommendation.[101]

An important principle – that recipients of State Aid could be subject to divergent and potentially more onerous access obligations than those prevailing for firms which enjoyed Significant Market Power (SMP) but which were privately financed – was thereby established.[102] Those receiving public funds were expected to share the benefits of the infrastructure with other parties, even if private shareholders enjoying market power were not, or not to the same extent. This was also significant because the European Commission had greater leverage over Member States when prescribing conditions under the State Aid rules (where it could withhold approval and prevent the Member State from proceeding) than it did under the regulatory framework (where it could raise objections to particular access remedies proposed by a national regulatory authority, but could not oblige Member States to adopt its preferred model).

We also note that the Guidelines invoke a set of access obligations that are to be applied to all recipients of State Aid irrespective of any differences in market conditions between Member States. In contrast, the European regulatory framework has, at least until recently, sought to offer Member States a menu of measures from which each can choose in accordance with their own local conditions, with the Commission confined to offering recommendations (e.g. in relation to NGA in 2010 and to ultrafast networks in 2013). We discuss further the interaction between the State Aid rules and the SMP framework later in Section 6.

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[100] Sub-loop unbundling had been required in the original 'Unbundled Access to the Local Loop Regulation' of 2009, which preceded the SMP regime (https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32000R2887&from=EN). Sub-loop unbundling subsequently proved to be technically difficult and economically unviable, even in 'black' areas where competitive deployment of NGA by private investors proved possible.

[101] http://europa.eu/rapid/press-release_MEMO-10-424_en.htm and http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32010H0572&from=EN

[102] Para 74. Perhaps recognising this, the guidelines also required that the authority responsible for allocating State Aid co-ordinate with the national regulatory authority responsible for implementing obligations under the SMP framework. This appears to reflect cases where the body awarding State Aid had failed to consult with the telecoms regulator. As noted below, new measures in the the European Electronic Communications Code are intended to further improve alignment between the State Aid and regulatory regimes.

4.7. The 2013 Broadband State Aid Guidelines

The 2009 Guidelines were required to be reviewed after 3 years. The intervening period saw the pipeline of State Aid notifications for broadband expand significantly and this led to a number of challenges, many of which the 2013 revisions sought to address.

The review which led to the adoption of the 2013 Guidelines was informed by a study that had been undertaken for the Commission by the consulting firm, WIK.[103] WIK undertook ten case studies and provided a series of observations and recommendations. Chief amongst these were:

- The risk of misalignment of wholesale access obligations as applied to the State Aid funded infrastructure and the infrastructure operated elsewhere in the country under the SMP regulatory framework. This misalignment could arise if the recipient of State Aid were not also the SMP operator, or if the obligations were devised by different national authorities who were pursuing different objectives. This was a particular concern as the wholesale access obligations under the broadband State Aid guidelines apply only for a period of 7 years, after which any obligations that remain would be imposed under the SMP rules. Any difference between the two would therefore produce a discontinuity. WIK suggested this be addressed by involving national regulatory authorities in the setting of wholesale access prices and avoiding the risk of prices in different geographic areas within the same Member State differing simply because they are being set by different public authorities.
- The difficulties which national authorities had experienced in obtaining accurate responses from operators in the 'mapping' exercise which is required to define 'white', 'grey' and 'black' areas (and in administering the process generally). The 2013 Guidelines proposed that privately funded operators who expressed an intention to deploy infrastructure within an area (thereby likely removing it from the scope of the proposed intervention area) should be required to adhere to contractual commitments to ensure that they actually did so. This was an attempt to avoid strategic conduct by firms which were seeking to block State Aid schemes but which had no intention of deploying their own network in the meantime. This did not fully resolve the issues, and

[103] WIK, 'Study on the Implementation of the existing broadband guidelines', pp94-104.

we discuss the latest proposals to do so in the new European Electronic Communications Code (EECC) later in this Section.

- Difficulties which some Member States had encountered in attracting sufficient participants in the competitive tender process if the area to be served is very small (and the economic opportunity correspondingly limited). WIK also identified issues in detecting the best bidder when public authorities lack expertise about the capabilities of different technological solutions (including the extent to which different technologies may support different forms of downstream competition), particularly when the Guidelines require 'technology neutrality'.
- Difficulties which Member States had encountered in applying the 'clawback' mechanism, both in terms of assessing when excessive returns may have been earned and in terms of then determining what to do with them (e.g. to allow or require the beneficiary to reinvest them in extending the scope of the network or returning them to the public authority). These difficulties appear to have meant that little clawback occurred before 2013.
- The risk that the subsequent implementation of schemes by local authorities under national framework programmes which had already been approved might thereby escape scrutiny.

Many of these issues, and the subsequent recommendations made by WIK (e.g. that wholesale access obligations should align with the SMP framework, that further measures were required to improve the mapping process, that national regulatory authorities be accorded greater responsibilities in the process) were incorporated into the 2013 Guidelines.[104]

4.8. 'National schemes'

The key points of interest for us in the 2013 Guidelines are, first, that they encouraged the adoption of nationwide 'umbrella' or 'framework' schemes, within which local authorities can then implement local projects without the requirement for further notification or approval.[105] Since at least 2010, the European Commission had sought to encourage Member States to

[104] WIK, op cit pp.197-204.
[105] Para 41.

undertake broadband State Aid projects on a more co-ordinated basis, rather than as small scale, ad hoc local initiatives (which might result in fragmented and incompatible infrastructures), as had often been the case in the pre-2010 period.[106] This aligned with the development of 'national broadband plans' (NBPs) and the increasing role of central Government in seeking to accelerate the upgrading of much of the country's existing broadband infrastructure (rather than municipal authorities seeking to obtain basic broadband infrastructure within their own locality).

The Commission has encouraged Member States to seek approval for 'framework arrangements' under which national or federal authorities first establish an overall administrative framework (and funding envelope) for State Aid for broadband and subsequently allow regional or municipal authorities to implement individual projects within it.[107] This recognises both that the initiative and political impetus for broadband infrastructure deployment may often come from local communities and bodies (rather than from central Government)[108] and that arrangements in many Member States mean that such projects are often at least partially funded from local rather than central or federal budgets (as we show in Section 5). A pre-approved 'framework arrangement' means that individual projects do not then require further approval from the European Commission, reducing delay and complexity.[109] The Commission has also encouraged those operating small schemes to collaborate wherever possible so as to realise economies of scale in both the administrative and construction processes, and to avoid fragmentation and ensure inter-operability.[110]

This approach was a further attempt to streamline the State Aid process. Under national schemes, municipal and regional authorities effectively enjoy a 'block exemption' provided they

[106] Examples of such framework schemes include: Broadband in rural areas of Baden-Wuerttemberg State aid (N 570/2007), National broadband plan for rural areas in Italy (N 646/2009), Federal framework programme on duct support for the creation of universal broadband coverage in Germany (N53/2010), Broadband Delivery UK (BDUK) (N/2012).

[107] The WIK guide for potential applicants emphasises that the national Government is expected to lead the engagement with DG Competition: 'As a rule, it is the Member States at central level which contact the European Commission's Competition Directorate General, so typically you will get first information whether your region or city will fall under such measures on a national level, and if need be the national ministry will contact the European Commission for further information', p.14.

[108] Much depends on institutional and cultural traditions in individual Member States – some have a greater tradition of 'localism' or community action than others. In Sweden, for example, much of the early broadband infrastructure deployment was initiated not by central Government, but by local communities and authorities.

[109] Although, as noted above, WIK were concerned that they might thereby escape scrutiny.

[110] WIK, p.45.

adhere to the conditions of the framework scheme which has previously been agreed between the Member State and the Commission. The volume of notified State Aid schemes has reduced since 2010 as a result. However, we explain below that one unintended risk of this approach may be that local authorities become less engaged in the overall process and/or that national schemes may direct resources to less challenging projects and 'crowd out' those that are administered by local authorities.

4.9. 'Step change' technologies

The other significant revision in the 2013 Guidelines refers to the requirement that State Aid can only be applied to investments in broadband infrastructure which represent a *'step change'* in performance over that which is already in place.[111] This was introduced in order to address the question of whether network operators who proposed to make relatively small investments in their existing broadband infrastructure in order to achieve relatively modest improvements in performance (e.g. owners of copper networks who were introducing *'vectoring'* technology to enhance the performance of existing ADSL or VDSL infrastructure without making any additional investments in fibre) should benefit from State Aid, or whether State Aid should instead be restricted to more ambitious (and hence more risky) types of investment in fundamentally new network technologies (e.g. replacing fibre to the cabinet infrastructure with fibre to the home). By 2013, the European Commission had become convinced that *'full fibre to the premises'* (FTTH) infrastructure would be required throughout Europe, at least over the longer term, and was keen to see State Aid used to support this objective. It appeared concerned that State Aid might otherwise be awarded to the incumbent owners of existing copper networks to make incremental, low risk, investments in that infrastructure.[112]

A 'step change' was defined as requiring significant incremental network investments leading to significant new capabilities in terms of availability, speed, capacity and competition, but without

[111] Para 51.

[112] This was the key issue during the revision of the 2010 NGA Guidelines and their replacement with the 2013 Recommendation on Costing Methodology. The Commission was initially persuaded that incumbent owners of existing copper networks were deterred from upgrading to fibre infrastructure because of the high returns they earned from their existing networks. Later (prior to the publication of 2013 Recommendation), the Commission altered its position and proposed that copper wholesale prices should rise in many Member States in the expectation that this would promote investment in fibre. The interaction between returns on copper assets and the investment case for fibre was therefore a central issue, both for the review of the Recommendation and the State Aid Guidelines.

the Commission defining what *'significant'* might mean in any of these cases. It was obvious that the Commission had 'fibre to the premises' infrastructure in mind, but its commitment to 'technological neutrality' prevented it from saying so explicitly. Instead, it defined *'NGA networks'* as being (a) FTTX networks (b) cable networks upgraded to at least DOCSIS 3.0 standard and (c) some advanced fixed wireless broadband infrastructure,[113] with the implication that any infrastructure providing a *'step change'* relative to such networks would have to deploy fibre all the way to the premises. The 2013 Guidelines also refer to 'ultrafast' networks, which they define as networks capable of providing speeds well in excess of 100 Mb/s.[114]

Again, the 2013 Guidelines appear to envisage a further expansion in the scope of State Aid. Recall that the 2009 Guidelines anticipated intervention to promote NGA deployment in areas where there already existed a monopoly basic broadband network (i.e. a 'grey' area for basic broadband and 'white' for NGA) on the grounds that the network monopolist would not face sufficient competitive pressure to upgrade to NGA within a reasonable timescale. The 2009 Guidelines did not anticipate that State Aid would be approved to upgrade infrastructure to NGA capabilities in 'black' areas for basic broadband, since it was assumed that competition between the existing basic broadband networks would be sufficient to ensure that this occurred within a reasonable timescale.

In contrast, in 2013, the Commission was contemplating intervention to support the deployment of 'ultrafast' networks not only in 'grey NGA areas' but in 'black NGA areas' on an 'exceptional basis' and provided that such networks were vertically separated wholesale only networks. This represented a further and potentially significant expansion of the scope of State Aid for ultrafast broadband infrastructure into areas which may already have competing broadband providers (i.e. both the incumbent copper network and a cable operator).On this basis, no part of Europe would be excluded, at least in principle, from benefiting from State Aid under these conditions, even if the Commission considers that approval would only be given on an 'exceptional basis'. State Aid could, in principle, be used to fund the deployment of ultrafast infrastructure (if and only if it were provided by a structurally separated wholesale only provider) across almost the entirety of the European Union territory – with corresponding implications for funding – as the table below shows:

[113] Para 58.
[114] Para 81.

Period and focus	Approximate % of European households who might qualify for State Aid	Potential cost of serving all qualifying households	Approximate funds spent #
Pre-2010 **Extension of basic broadband infrastructure to 'white' areas**	5-10%	~ €5 bn*	~€1-2 billion**
2009 Guidelines **Extension of NGA infrastructure in 'white NGA' areas/'grey' basic broadband areas**	~50%	~€ 40 bn***	Less than €15 billion to date (mid 2018)
2013 Guidelines **Extension of 'ultra fast' infrastructure in NGA 'grey' and 'white' areas, and exceptionally in NGA 'black' areas**	>60%	> €150 billion****	Less than €15 billion by 2020

State Aid only, so ignores EFSI and EIB lending
*Assumes provision of ADSL NPV cost of €250 per household to 20 million households (see WIK, p.9 at https://wik.org/uploads/media/ECTA_NGA_masterfile_2008_09_15_V1.pdf)
** Given known expenditure of €2.7 billion in period 2007-13
*** Based on EC forecasts of a total €60 billion funding requirement, of which we assume two thirds requires public subsidy
**** Based on EC forecasts of €170 billion public funding and €249 billion total funding requirement.

A recent report from the Court of Auditors suggests that this expansion of the scope of the rules may not be well understood by the Member States themselves, noting:

> *"The Commission's position is that, while these guidelines refer to the Digital Agenda which mentions specifically to 30 Mbps, they are also relevant for the 100 Mbps and the Gigabit Society targets. However, some Member States interpret the State aid guidelines differently: they take the view that public funding is prohibited when the intervention increases the speed beyond 30 Mbps in black and grey areas. This difference of interpretation has led to Member States choosing not to use public investment to support operators in black and grey areas."* [115]

[115] Court of Auditors(2018), p.40.

The Court recommends that 'The Commission should clarify for Member States the application of the State aid guidelines with regard to the 100 Mbps and the Gigabit society targets' by December 2018. We agree that the existing Guidelines need to be clarified and make a number of additional recommendations in relation to the current 2013 Guidelines in Section 6.

4.10. 'Wholesale only' infrastructure

By 2013, the Commission had adjusted its position on multi-fibre and point to point fibre networks, likely in the face of evidence that most European operators intended to deploy GPON technology irrespective of the State Aid rules and that excluding such networks from consideration might restrict competition for funds. The 2013 Guidelines instead proposed that greater weight be accorded to network architectures which can be 'unbundled' in the qualitative assessment which is expected to be performed as part of the tendering process.[116] More importantly, they proposed that greater weight be accorded to 'wholesale only' networks without retail operations, and/or networks which provided only passive facilities.[117]

As we noted in Section 2, 'wholesale only' broadband networks, generally owned by public authorities themselves, have been a feature of State Aid provision for many years. This seems appropriate, since the 'market failure' which the State Aid seeks to address does not generally derive from the difficulties encountered by the private sector in the retailing of broadband services, but in the difficulties they encounter in financing the network infrastructure itself.

4.11. Latest developments in European State Aid and broadband policy

The Juncker Commission, which replaced the second Barroso Commission in November 2014, has largely ensured a continuation of Commission policy in relation to State Aid for broadband. No further revisions to 2013 Broadband Guidelines have been made and in a recent speech, Commissioner Vestager emphasised that investors require stability in State Aid regulation when making long term commitments:

[116] Para 78(d).
[117] Para 80(b).

"We need rules that are clear – and also stable. Because investment needs certainty. Certainty about how the rules will apply to aids which are too big or risky to fall under the block exemption.

That's why state aid guidelines are important - in areas from research and energy to aviation and broadband.

And it's also why we should not change those guidelines too often or too radically. So we don't plan to review most of our guidelines right now.

But of course, we should act if change is really needed. To keep our rules fit for purpose."[118]

At the same time, significant changes to the broader telecommunications regulatory framework – in the form of the EECC – are due to be implemented by 2020. It would be surprising if consequential revisions to the Broadband State Aid Guidelines were not required in order to maintain (or introduce) consistency between the State Aid regime and the new regulatory framework. The Commission will also need to respond formally to the recent findings of the Court of Auditors, which also included some recommendations for revisions to the Guidelines. We consider these matters further in Section 6.

The Juncker Commission has also adopted further ambitious targets for broadband infrastructure deployment under its 'Gigabit Society' initiative, in which fibre to support 'very high capacity data connectivity' is expected to be deployed to every significant social and economic institution (i.e. most public buildings, including schools and libraries) by 2025, and every household should have access to broadband infrastructure that is capable of delivering at least 100 Mb/s in 2025 and of being upgraded to *'gigabit speeds'*.[119] Previously, changes to the Commission's broadband targets have also resulted in changes to the Broadband State Aid Guidelines.

The Gigabit Society Communication was accompanied by the publication of a study by Analysys Mason which sought to estimate the likely costs of meeting the Commission's new targets.[120] Meeting the household target was assumed to require the deployment of fibre to every household in Europe, at least in the long term. The cost of deploying fibre to every large social

[118] https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/state-aid-rules-fair-competition_en
[119] Towards a European Gigabit Society Communication, COM (2016) 587.
[120] 'Costing the new potential connectivity needs', Analysys Mason, 2016.

and economic institution in Europe was estimated to be €64 billion, of which €23 billion was expected to be met by private funds, with the remaining €40 billion likely to require State Aid. If every social and economic institution, large and small, were to be connected by fibre, then the cost was projected by Analysys to be €197 billion, of which €57 billion would be met by private funds and the remaining €140 billion by public means. The cost of deploying fibre to every European household was estimated to be €249 billion, of which €77 billion was expected to be funded by the private sector, leaving €172 billion for public subsidy.[121]

The new EECC includes measures which are intended to expand private sector investment in broadband infrastructure through the encouragement of new financing and governance models ('co-investment' and greater sharing of existing 'passive' infrastructure such as ducts and poles) and new regulatory initiatives (such as the use of tenders to obtain enforceable commitments from operators to deploy very high capacity infrastructure, measures designed to facilitate the decommissioning of existing copper networks and changes to the implementation of universal service arrangements).[122] The Commission therefore anticipates that, if these measures are implemented, a greater proportion of the total financing requirement for the Gigabit Society will be met by the private sector than might otherwise be the case today.[123]

The EECC also includes some measures which are intended to address concerns which have arisen with the implementation of the 2013 Broadband State Aid Guidelines. Chief amongst these is a new Article 22 which requires every national regulatory authority to undertake a 'mapping' of broadband infrastructure within their respective territories every three years. It is envisaged that this will support a variety of purposes, including 'the application of State Aid rules'. The mapping exercise is to include both an assessment of existing deployment and a forecast of planned deployments by both private firms and public authorities, particularly in relation to 'very high capacity' (i.e. fibre) networks and upgrades to speeds of at least 100 Mb/s (with the time horizon for the forecast to be determined by the national regulatory authority

[121] Ibid, p. 9, figure 1.7. The Juncker Commission also adopted ambitious targets for 5G mobile deployment, some of which will also require investments in fibre infrastructures (as well as in towers), some of which is also expected to require public subsidy. Note also that the figures quoted above relate to a stand alone investment to meet each individual target, and ignore complementarities between the targets (i.e. if public subsidy is provided to meet one target, the likely additional subsidy required to fulfil others would be reduced).

[122] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_10692_2018_INIT&from=EN

[123] It is not clear to us what assumptions Analysys Mason made about the efficiency of other measures to promote private sector investment in broadband when making estimates about the proportion of costs that would be met by the public and private sectors respectively.

itself). In addition, the Commission is developing a common methodology for the mapping of broadband infrastructure, with the ultimate aim of producing a pan-European map.[124] BEREC is required to produce guidelines on the implementation of Article 22 within 18 months of its adoption.

The new Article allows (but does not oblige) the national regulatory authority to designate areas where no deployment of 'very high capacity' infrastructure is envisaged in the relevant planning period. The national regulatory authority can then undertake a 'tender' process in which it invites expressions of interest from firms or public authorities who may be interested in deploying very high capacity networks in designated areas in which no existing provider has declared plans to do so. We assume that, if no such expressions of interest are received, the areas would then be designated as a 'white area' (for ultrafast broadband) for the purposes of the 2013 Guidelines. If an expression of interest is received at this stage, then the applicant will be expected to implement its plans and deploy its network and will, under Article 29, face the prospect of financial penalties if they fail to do so. Similarly, any operator which subsequently attempts to deploy infrastructure in an area where it did not earlier indicate an interest in doing so also faces the risk of financial penalties unless it can provide objective reasons for changing its mind. These provisions are intended to ensure that firms provide a full disclosure of their intentions during the *'mapping'* or subsequent consultation exercise and that they honour those commitments.[125]

It is difficult at this stage to predict what impact these provisions may have on the realisation of the Commission's broadband infrastructure objectives or the demands for State Aid. Most national regulatory authorities already undertake 'mapping' exercises of the kind envisaged by Article 22, although operators do not currently face the prospect of financial penalties for knowingly or negligently providing inaccurate or incomplete forecasts. The intention of the new provisions is to expand and accelerate investment by private operators and public authorities, particularly in areas which are capable of supporting a single privately funded network, but

[124] https://www.broadbandmapping.eu/. This follows an earlier Commission study, undertaken by TUV Reinland and WIK, on the subject, at https://www.broadbandmapping.eu/wp-content/uploads/2015/07/Study-on-Broadband-and-Infrastructure-Mapping_final-report_2014.pdf

[125] For a discussion about how these arrangements might (or might not) work in practice, see Feasey R., 'Carrot Soup: Initial Reactions to the new European Electronic Communications Code', at https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxmZWFzZXl3YWxlc3xneDoyZDUxNGI1MjBlZmUwZjA0

where competing broadband networks would render both unviable. The new provision may also reduce uncertainty about which geographic areas these are, thereby clarifying the nature and extent of other areas where State Aid will be required if very high capacity infrastructure is ever to be deployed. This could have the effect of accelerating and expanding the use of State Aid for ultrafast broadband, particularly in Member States where policymakers may previously have adopted a *'wait and see'* approach.

The Commission has also recently sought to establish a network of National Broadband Competence Offices, launched in November 2017.[126] Each Member State is encouraged, but not obliged, to establish their own Competence Office. In some cases, the relevant Competence Office is the national Ministry which would otherwise be expected to be responsible for oversight of public funding arrangements or broadband policy. In others, a new organisation, such as the UK's 'Broadband Delivery UK' unit (BDUK), has been established specifically to administer or to oversee the allocation of public funds. These offices are intended to provide technical support to national and local authorities in relation to issues such as the design of tenders and financing models and to ensure that measures that are notified to the Commission are more likely to be compliant. But they could also provide a conduit between local authorities and the European Commission, and a network of advocates for extending broadband deployment in Europe. The Support Facility (which is administered by an agent for the Commission) facilitates meetings of Competence Office representatives in Brussels, the sharing of 'case studies' and best practices and 'broadband awards' for projects which the Commission considers to merit recognition.[127]

The Competence Offices are part of a broader initiative which includes the production of a range of materials which are intended to assist local authorities in developing their own broadband State Aid schemes[128] and the undertaking of 'broadband missions' in which Commission officials

[126] https://ec.europa.eu/digital-single-market/en/broadband-competence-offices
[127] The FTTH Council, a non-profit trade body which promotes FTTH deployment, performs similar functions.
[128] A guide to EC funds: 'European funding for broadband, 2014-2020', a 'Broadband Investment Guide' (https://ec.europa.eu/digital-single-market/en/news/broadband-investment-guide) and a guide to the broadband State Aid guidelines 'The Broadband State Aid rules explained', study by WIK for the European Commission, 2013.

are despatched to Member States and regions with low broadband coverage in order to discuss how obstacles to deployment might be removed.[129]

It is too early to assess whether these initiatives will be effective. However, in Section 6, we propose further measures to stimulate grassroots interest in broadband State Aid.

[129] https://ec.europa.eu/digital-single-market/en/news/european-commission-joins-forces-help-bringing-more-broadband-rural-areas

05

ANALYSIS OF NOTIFICATIONS OF STATE AID FOR BROADBAND, 2003-2018 AND OTHER DATA

5. Analysis of notifications of State Aid for broadband, 2003-2018 and other data

This section presents, in the form of a series of tables and charts, the results of our detailed analysis of all of the 157 State Aid cases for broadband that have been notified to the European Commission between 2003 and August 2018. This allows us to identify trends over time, differences between Member States, and relationships between different variables. We have derived data from three sources: the European Commission's website,[130] the Official Journal of the European Union and an exhaustive analysis of the data contained within individual decision letters which the Commission issues for each notification.[131] We consider the implications of our analysis for policymaking in the next Section 6.

5.1. Share of notifications by Member States

We first provide some general analysis of the notifications. For example, the first table shows the share of broadband State Aid projects notified by each Member State over the period 2003 to 2018 (without regard to the size of the State Aid represented by each notification).

	Freq.	Percent
Germany	33	21.02
United Kingdom	27	17.2
Italy	22	14.01
Poland	12	7.64
Spain	9	5.73
Finland	6	3.82
France	6	3.82
Austria	5	3.18
Greece	5	3.18
Lithuania	5	3.18
Netherlands	5	3.18
Ireland	4	2.55
Sweden	4	2.55
Croatia	2	1.27

[130] http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35027. The Commission's website provides summary information for all cases, including: The Member State involved, and the region when relevant; The dates of notification and decision; The Case type (e.g., scheme or individual case); The financial instrument (e.g., direct grant, loan, etc.) and the "primary objective" of the Aid.

[131] Of the 157 notifications made as of 27 August 2018, 2 were excluded as they repeated prior notifications. The remaining 155 consist of 123 original notifications, 27 modifications to existing notifications, 3 individual notifications within existing schemes that had already been approved, and 2 notifications of evaluation plans (which are excluded from our analysis).

Latvia	2	1.27
Portugal	2	1.27
Bulgaria	1	0.64
Cyprus	1	0.64
Czech Republic	1	0.64
Estonia	1	0.64
Hungary	1	0.64
Romania	1	0.64
Slovakia	1	0.64
Slovenia	1	0.64
Total	157	100

We find:

- Notifications are unevenly distributed amongst Member States. More than half of the cases originate from large, heavily populated Member States – Germany, the UK, and Italy – but France and Spain have made relatively fewer notifications. There is no clear relationship between the proportion of European structural funds that a Member State has allocated to broadband infrastructure and the number of State Aid notifications they have subsequently made: we found in Section 3 that Germany and the UK have allocated a relatively small proportion of their structural funds to broadband in the 2014-2020 funding period, whilst France and Italy have allocated relatively more.
- Nor is there any strong relationship between population density and the number of notifications made by a Member State. The large Member States referred to above all have population densities in excess of 200 persons per km^2.[132] In contrast, Sweden (24 persons per km^2),[133] Latvia (31), Estonia (30) and Finland (18) have all made relatively few notifications. That said, the very high population density of Netherlands (498), Malta (1450) and Belgium (372) would seem to explain their relatively low use of State Aid.
- Given our analysis of the sources of funding for broadband State Aid and the aims of the ERDF in reducing economic inequality in Europe, we might expect the 'less developed' post 2004 accession Member States (who are amongst the largest recipients of Regional

[132] http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00003&plugin=1
[133] All data for 2016 at http://www.ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00003&plugin=1

Development aid) to be over-represented in the data. In fact, of this group only Poland has made a relatively high number of notifications.

One possible reason for the under-representation of post 2004 accession Member States may be that there will tend to be a greater role for State Aid in Member States where the prospect of commercial provision of broadband infrastructure by the private sector is weaker. In other words, we might expect State Aid would increase as coverage approaches 100% and as extending coverage becomes ever less commercially viable. Whilst rural coverage is below 50% – as it has been in many post 2004 accession Member States – we might expect there opportunities for further expansion of coverage by privately financed operators and for policymakers to be reluctant to intervene.[134]

The Commission's 2014 study of National Broadband Plans makes a similar point:

> *"It is however striking that those countries with favourable conditions for market-driven roll-out (e.g. high population density, high demand, high degree of urbanization, extensive cable networks) are often less concrete regarding the measures described in their respective NBPs. They usually rely on strategic approaches that define the overall framework under which competition shall take place. These countries often consequently trust in market forces for further NGA coverage. In these cases, an NBP is mainly designed to provide for a level playing field, meaning that fair competition can take place. Contrarily, those countries with more difficult starting positions are often advanced concerning the definiteness of the measures described. According to their respective economic capabilities, they try to increase supply, demand or transparency regarding existing infrastructures."* [135]

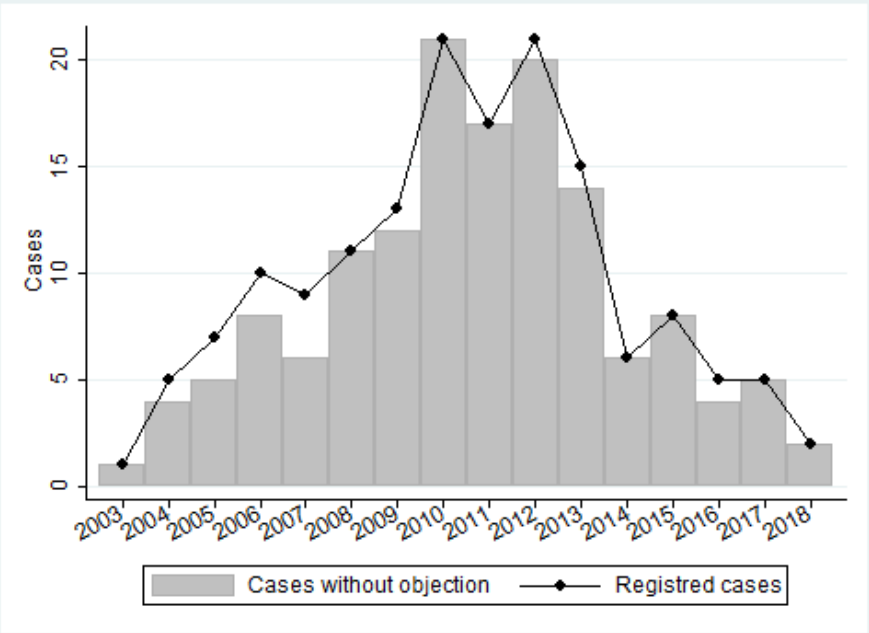
We return to this issue later in this Section.

[134] Technological considerations may also play a role. Those Member States submitting significant volumes of notifications tend to use State Aid to support the upgrade of DSL infrastructure that is generally controlled by the existing former State monopolist. Post 2004 accession countries tend to have less developed copper infrastructure, particularly in rural areas, and so may rely more heavily on other technologies such as FTTH, cable or WiMax. These may be less susceptible to support with State Aid (although given the 'technological neutrality' requirements of the rules, there is no intrinsic reason why this should be the case). Sweden and Finland, with challenging rural geographies, may also have placed greater reliance upon mobile communications to meet their rural broadband needs and may have been less likely to resort to State Aid as a result.

[135] European Commission (2014), p.13.

5.2. Number of cases over time

The next figure shows the number of cases notified to the European Commission by year: [136]



The number of notified cases increased up to a peak of 20 per year in 2010 but has been decreasing since (particularly since 2012), despite the expanding scope of the State Aid rules which we discussed in Section 4. We think this can be explained, at least in part, by:

- The increasing use of State Aid to meet broadband coverage objectives after 2003 in terms of extending 'basic' broadband (generally provided using ADSL technologies) to households in rural areas which would not otherwise be served by privately funded operators. Many of these measures were completed by 2010.
- The increasing use of national framework programmes, or "umbrella schemes" after 2010, often to extend or accelerate NGA coverage, which replace the need for numerous smaller municipal projects to be notified. As we show in Section 5.4 below, the total value of State Aid expenditure notified has continued to grow, even as the number of notified cases has fallen since 2012.

[136] The figure shows both cases notified or registered and those adopted without objection. This shows that a very small number of cases have been rejected by the Commission, with the majority of these arising in the period prior to 2010. It excludes expenditure under the GBER, since these are not notified.

5.3. Aim of State Aid measures

We explained in Section 2 that public subsidy of broadband infrastructure could be undertaken to achieve one of two purposes – to extend network coverage to areas where private sector deployment was never expected to be viable without subsidy, or to accelerate the rate of deployment of new broadband technologies in areas where existing operators may otherwise face weak incentives to upgrade their infrastructure.

Our analysis of the notification letters suggests that the scope of State Aid has, at least to date, remained largely confined to extending broadband coverage in areas which Member States have identified as 'white', rather than introducing additional competition or accelerating technology upgrades in 'grey' areas. The table below shows that 87% of notifications relate only to 'white areas', which we assume to be geographic areas in which no private sector provision of the technology in question was anticipated.[137] This would appear to support the Court of Auditors' finding that Member States may not fully understand the scope for intervention which is provided for by the current broadband State Aid Guidelines, or that they have otherwise chosen to interpret the rules in a relatively cautious manner.

	Freq.	Percent
White	107	86.99
Grey	8	6.50
White and Grey	5	4.07
Black	1	0.81
N/A	2	1.63
Total	123	100

Missing information for 2 cases.

'White areas' are geographic areas which Member States consider as having a low population density and/or high costs of infrastructure provision, both of which will tend to deter private investors. We explain in Section 5 that the State Aid Guidelines also contemplate that public funds are used to ensure that households in rural areas obtain access to broadband services on terms and at prices which are broadly comparable with (and potentially below) those available to those living in 'competitive' areas. However, the concern that households in 'white areas' will tend to have low incomes and that State Aid is required to ensure that the prices are affordable

[137] 'White' in this context generally refers to the status of the area in relation to the technology which the Member State intends to support. It does not mean that no broadband infrastructure has been deployed in the area, since many areas in Europe will be 'white' for NGA purposes but 'grey' for basic broadband purposes. See below.

does not seem to have been a significant feature of Member States' thinking, at least when justifying the State Aid measure in the notification to the Commission, as the table below shows:

	Obs	Mean
Low density	123	76.4%
High cost area	123	66.7%
Low income	123	9.7%

No missing information

In order to address the gap between private sector costs of provision and the willingness to pay, State Aid could be used to support the provision of subsidies (in the form of vouchers) to households and businesses (rather than to the owner of the infrastructure), which reduce the costs which they face in connecting to the network.[138] Our analysis of the notification letters suggests that this has not been a priority for Member States, and that extending 'coverage' has been the primary objective:

	Freq.	Percent
Coverage	117	95.12
Coverage and Take-up	5	4.07
Take-up	1	0.81
Total	123	100

In terms of the expected beneficiaries of the intervention, analysis of the notification letters suggests that most of the broadband infrastructure that is deployed is intended to serve both residential households and businesses in the area (and public institutions, where appropriate) and that coverage is therefore likely to be universal. However, there is a small but significant number of measures which appear targeted at delivering broadband to businesses in rural areas (likely to be small business parks or MANs).

	Obs	Percent
Residentials and Businesses	61	50.4
Residentials only	24	19.8
Residentials, Businesses and Public Sector	21	17.4
Businesses only	10	8.3
Public sector only	4	3.3
Residentials and Public Sector	1	0.8
Total	121	100

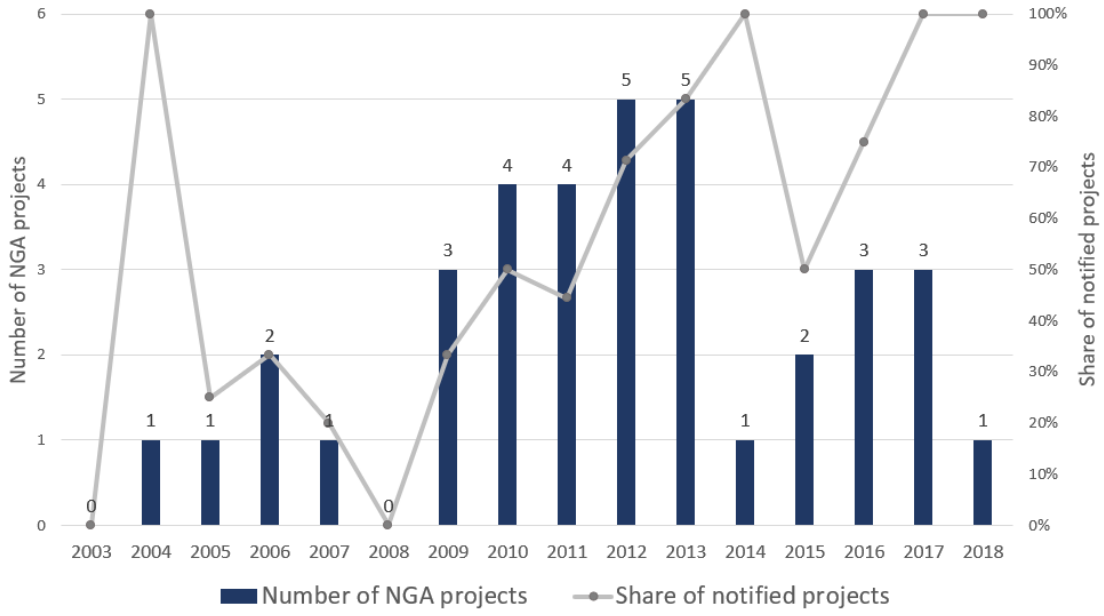
[138] Since 'demand side' measures have not featured significantly in State Aid measures to date, we do not discuss them in detail in this report. We refer the reader instead to our CERRE report 'Demand Side Policies to Accelerate the Transition to Ultrafast Broadband', at http://www.cerre.eu/publications/demand-side-policies-accelerate-transition-ultrafast-broadband

Having found that the number of broadband State Aid measures notified peaked in 2010 and that the vast majority relates to 'white' areas, it is not surprising to find that, when the speed is indicated, the majority of notifications – over 60% – refer to 'basic broadband' rather than to NGA or to ultrafast broadband. Our analysis of the broadband speed requirements which are specified in the notifications results in an average speed of 22.8 Mb/s, and a range between 254 kb/s (i.e. broadband in 2003) to 100 MB/s (but not above).

	Freq.	Percent
Basic Broadband	40	61.5
Fast Broadband	18	27.7
Superfast Broadband	7	10.8
Total	65	100

Missing information for 58 cases

We have also analysed how the technologies referred to in the 73 notifications for which we have relevant data (either in terms of a description of the technology or an expected speed) change over time. This shows basic broadband dominating until 2011, after which the Commission's attempts to re-orientate State Aid measures towards the promotion of 'NGA' becomes apparent:



5.4. Budget and aid intensity

The volume of State Aid notifications made by a Member States provides, at best, a very imperfect explanation of observed changes in broadband coverage performance over time. A better indication is likely to be provided by considering the size of the overall budget, the annual budget (since many notified State Aid projects envisage expenditure being incurred over a number of years rather than all falling within the year in which the measure is approved), or the aid intensity (i.e. the share of public funds as a proportion of the total projected expenditure). We have this data for a subset of the 157 cases that we have analysed. We are also aware of two studies which have sought to empirically test the correlation between State Aid and broadband deployment:

- The first, by Lear et al for the Commission, relates to the extension of basic broadband infrastructure in Germany in the period after 2008. In this study, the authors compare performance in local areas that received State Aid with other areas in Germany which did not. They found that, after 5 years, DSL coverage was 12-20% higher in areas receiving State Aid than in areas which did not.[139] This suggests – unsurprisingly in our view – that State Aid is likely to accelerate and perhaps extend broadband coverage relative to that which might otherwise have been achieved with private finance in the same period.
- The second, by Ipsos MORI et al for the UK Government, relates to the extension of NGA infrastructure in the UK in the period 2012-2016, with the authors comparing performance in local areas that received State Aid with other areas in the UK which did not. They found that 2.5 million households obtained access to NGA infrastructure when they would not otherwise have done so, and that 1 million households obtained access to NGA up to 2 years earlier than they would otherwise have done.[140]

Our analysis of budgets reported on the Commission's website is presented below. This shows that the average notified broadband State Aid measure in our sample had an overall budget of €357 million, an annual budget of €225 million, and an aid intensity of 74% (i.e. three quarters of the total funding requirement is met by public funds). However, we would not attach much

[139] Lear et al, p. 147.
[140] Ipsos MORI, p.31.

weight to these statistical results, since the standard deviations for these statistics are very high and we show below that the results are significantly distorted by a single notification from France:

Variable	Obs	Mean	Std. Dev.	Min	Max
Overall budget (€millions)	108	357.6	1367.8	0.137	13000
Annual budget (€millions)	10	225.3	625.1	1	2000
Intensity (%)	78	74.0	26.9	0	100

The table below shows that budgets vary significantly by Member State (as well as between different notifications made by the same Member State) and that a single notification (of a budget of €13 billion) explains why France far exceeds any other Member State and that little weight should be attached to aggregated results.

State	Mean	Min € millions	Max
France	2318.6	2.2	13000
Italy	430.5	3.8	4000
Germany	396.8	0.1	3000
Austria	352	26	1000
United Kingdom	233.4	0.9	1800
Spain	195.2	6.5	400
Croatia	176.7	101.4	252
Greece	161.7	75	250
Slovakia	113.2	113.2	113.2
Portugal	106.2	106.2	106.2
Slovenia	92.5	92.5	92.5
Ireland	90	10.1	170
Romania	84	84	84
Poland	67.5	4.3	352.3
Latvia	63.6	8.2	119.0
Finland	54.1	10.4	132
Sweden	33.1	28.1	38
Lithuania	22.5	1.7	60.5
Estonia	22.4	22.4	22.4
Bulgaria	20	20	20
Netherlands	12.5	6.9	18
Czech Republic	12.2	12.2	12.2
Cyprus	7.5	7.5	7.5

Hungary[141]	N/A	N/A	N/A
Total	357.6	0.1	13000

The next chart shows total expenditure on State Aid by Member State, based on our analysis of the notifications:

State	Total budget for State Aid (2003-2018) in € millions
France	13911.5
Italy	8610.4
Germany	7142.4
United Kingdom	3734.8
Spain	1561.5
Austria	1056.0
Poland	674.5
Greece	485.0
Croatia	353.4
Ireland	180.1
Finland	162.4
Latvia	127.2
Slovakia	113.2
Portugal	106.2
Slovenia	92.5
Romania	84.0
Lithuania	67.6
Sweden	66.1
Netherlands	24.9
Estonia	22.4
Bulgaria	20.0
Czech Republic	12.2
Cyprus	7.5
Hungary[142]	N/A

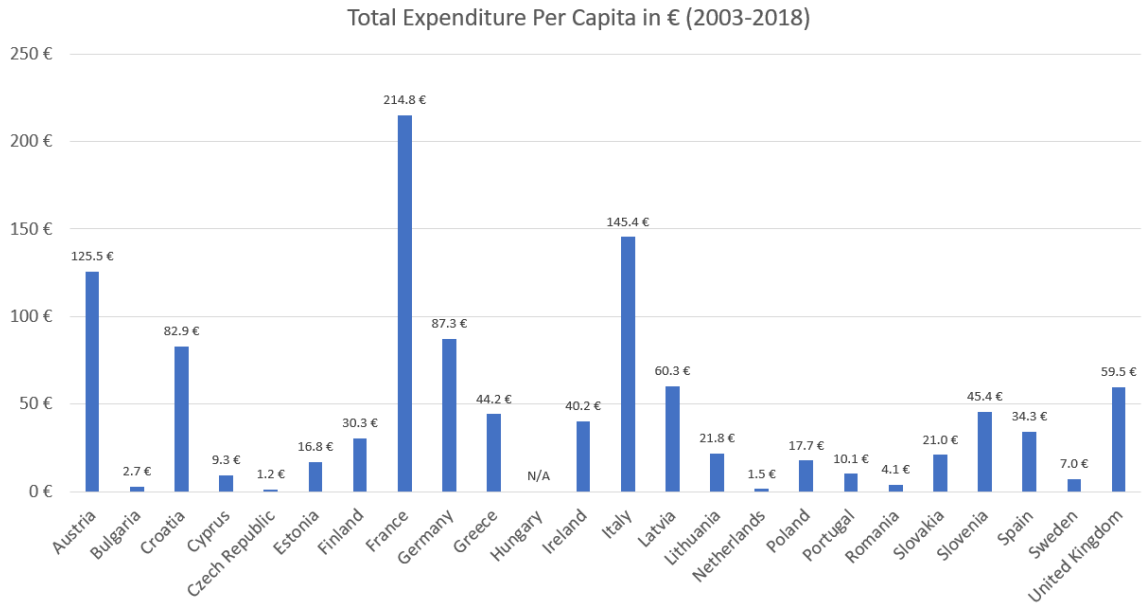
We note:

- The results appear broadly consistent with the analysis of EFRD and EAFRD funding allocations which we presented in Section 3, in which we found Italy and France to allocate a significantly higher proportion of their European structural fund budgets to broadband than Germany, the UK or Spain.

[141] No Hungarian notifications provided details of budget.
[142] No Hungarian notifications provided details of budget.

- If our sample is representative of total expenditures, then State Aid allocated to broadband by Italy and France (€22.5 billion) is almost 1.5 times greater than the sum of State Aid allocated by all the other Member States combined (€16 billion).

Differences in absolute levels of State Aid expenditure may of course reflect differences in the size of Member States, both in terms of geography and population. Below we show broadband State Aid expenditure per capita for each Member State:



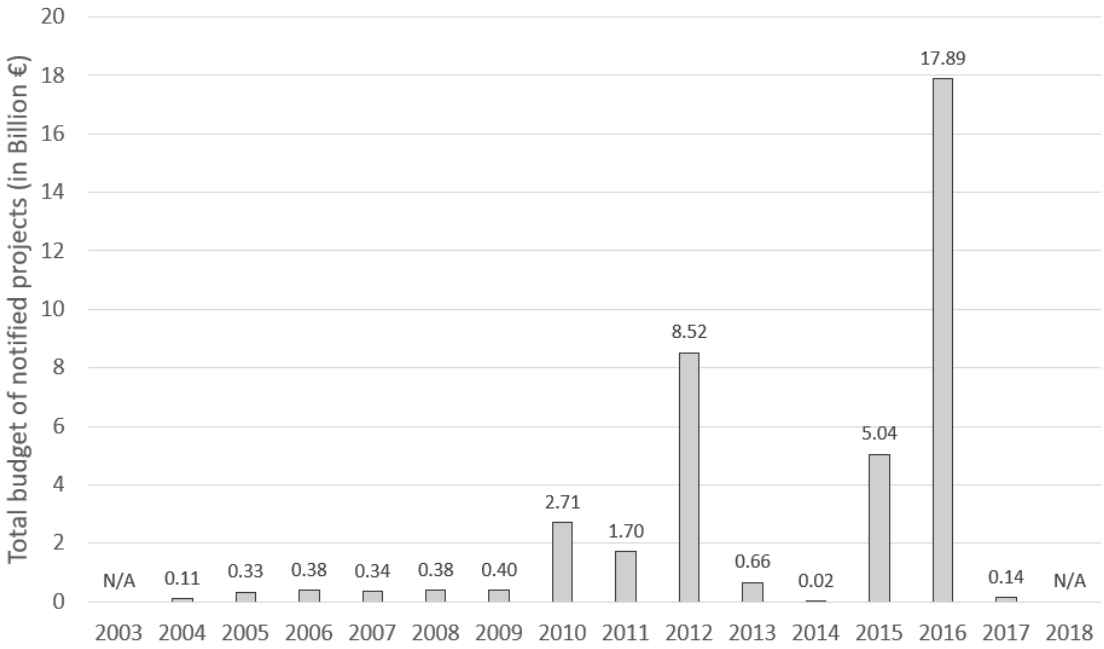
This confirms:

- France has notified the largest expenditure of State Aid on a per capita basis by a significant margin, with Italy also a significant user of public subsidy for broadband.
- Germany and the UK have notified significant expenditures, but far lower on a per capita basis than France or Italy. This shows that the total number of notifications made by a Member State is a poor indicator of its commitment to broadband State Aid on a per capita basis.
- None of the post-2004 'less developed' Member States have notified significant State Aid expenditure on a per capita basis, with the exception of Croatia (and to a lesser extent Latvia and Slovenia). Expenditure in Member States such as the Czech Republic

(€1.2 per capita), Bulgaria (€2.7 per capita) and Romania (€4.1 per capita) is very low, suggesting a much greater reliance on commercial provision in these countries.

- Some 'developed' Member States also have very low State Aid expenditure per capita, including the Netherlands (€1.5 per capita) and, more surprisingly, Sweden (€7 per capita).

We also find that the number of notified State Aid cases, which we examined in Section 5.1, is a poor indicator of total expenditure in Europe. 2016 had amongst the lowest number of notifications to the Commission, but a €13 billion measure from France ensures that 2016 had by far the largest total State Aid budget, of over €17 billion:



5.5. Sources of funds

In Section 3, we discussed the sources of funds for broadband State Aid and provided an analysis of the funds allocated to broadband by Member States in their European structural fund allocations under the EAFRD and ERDF. These represent a significant proportion of the State Aid funds allocated to broadband infrastructure for many Member States, but we noted that there were many other potential sources. Some, such as the EFSI, the Connected Europe Broadband Fund and EIB lending, are not required to be notified as State Aid and so will not fall within our analysis of the notifications. However, the notifications do provide useful information on the

composition of the State Aid funds that are being mobilised. The table below provides the results of our analysis of a sample of 97 notifications (no details were provided in the other 26 cases):

Variable	Obs	Mean	Std. Dev.	Min	Max
Funds from Structural Funds	97	0.54	0.50	0	1
Funds from Region	97	0.50	0.50	0	1
Funds from State	97	0.48	0.50	0	1
Funds from Municipality	97	0.22	0.41	0	1
Funds from European Funds	97	0.04	0.20	0	1

This shows that European Structural Funds such as the ERDF and EAFRD contributed to at least some part of the funding arrangements in 54% of the notified cases. Member States contributed, either at national or regional level, in around 50% of cases.

For a sub-set of this sample (42 out of the 98 notifications assessed above), it has been possible to determine the actual composition of funds in the measure. This is shown below:

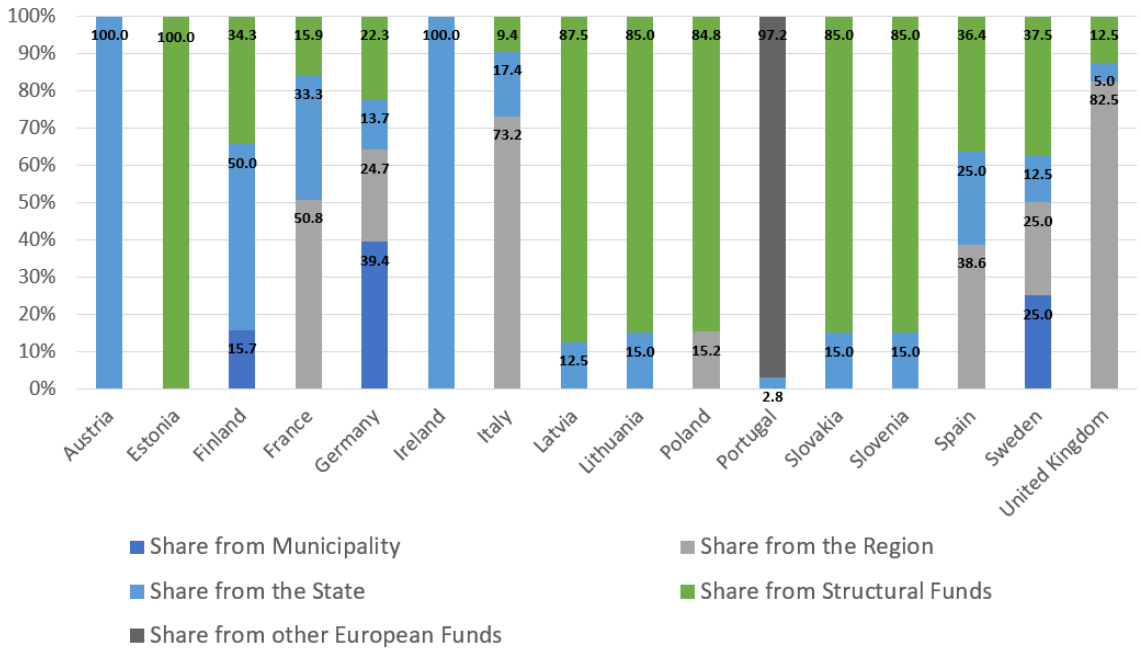
Variable	Obs	Mean	Std. Dev.	Min	Max
Share from Region	42	34.1	40.4	0	100
Share from Structural Funds	42	32.1	38.2	0	100
Share from State	42	21.1	31.7	0	100
Share from Municipalities	42	10.4	22.4	0	100
Share from European Funds	42	2.3	15.0	0	97.2

This shows that, for a limited sample of State Aid notifications, the largest proportion of funds is actually represented by public funds which are provided by regional authorities. European funds represent around 35% of funding commitments whilst funds from the Member State (national, regional and municipal) account for around 65% of the total funding. The following table shows that, of the notifications that were capable of being analysed, the size of funds contributed by national Member State authorities ('the State') are, on average, the largest at around €140 million per measure and over €1 billion in some individual cases. This is followed by contributions from the European structural funds, which are of a similar magnitude. Contributions by regional authorities tend to be smaller in size (averaging around €45 million, although some can be much larger), and contributions by municipal authorities are much smaller still (at below €17 million per measure and never more than €57 million):

Variable	Obs	Mean	Std. Dev.	Min	Max
Amount funded by the State	27	137	441.4	0	2200
Amount funded by Structural Funds	26	117	347.6	0.4	1800
Amount funded by European Funds	3	79.3	70.5	0	134.8
Amount funded by the Region	29	46	89.8	0.2	354
Amount funded by Municipalities	14	16.9	17.3	0	56.4

Although the limited sample means that we view our results with some caution, we have used them to inform our estimates of the likely total volume of public funds which have been committed to support broadband infrastructure, the results of which we presented in Section 3. This may not be representative of any individual Member State.

We have also been able to decompose the sources of funds for those Member States which appear in our sample of 42 measures (recognising that these measures may not themselves be representative of all measures notified by any individual Member State), and the results are shown below:



This reveals a very large variation in the use of different Member State measures of different sources of funding, and should be viewed in light of our analysis in Section 3. Many of the post 2004 accession or less developed Member States, such as Poland or the Baltic States, appear to rely primarily or wholly on European structural funds for broadband State Aid measures. In

contrast, Germany, France, Italy, Spain and the United Kingdom have a greater proportion of funds contributed by the Member States themselves. Italy and France's relatively low proportion of European structural funds is somewhat at odds with our finding in Section 3 that these Member States allocate higher proportions of their European structural funds to broadband than do Germany, the UK or Spain. However, we also found above that Italy and France have outspent the rest of Europe combined by a factor of almost three in terms of total State Aid expenditure on broadband, so their relatively low proportion of European structural funds likely reflects a very large contribution from other national and municipal sources of funds.

5.6. Form of aid

The next table shows the type of financial instrument or form of State Aid that is proposed in the notified cases. Direct grants represent by far the most common form of financial support. Other instruments, such as interest rate subsidies, guarantees, or loans, are much less widely adopted. This may be because forms of debt other than State Aid are available from the EIB to support broadband deployment, whilst the Juncker Plan's EFSI and Connecting Europe Funds also provide other financial instruments to reduce risk for private lenders and/or to provide quasi-equity.

	Freq.	Percent
Grants only	117	95.12
Soft loans only	3	2.44
Grants and Soft loans	2	1.63
Reduction of corporate taxes	1	0.81
Total	123	100

It appears that the vast majority – over 90% – of the tenders for State Aid funds employ an open tender, consistent with the requirements of the State Aid Guidelines discussed in Section 4. In over 70% of cases notified to the Commission, it is stated that the tender or tenders will be awarded to the 'most economically advantageous offer', and in a similar proportion the principle of 'technological neutrality' is explicitly endorsed (although this is no more than a restatement of the Guidelines). The use of an open tender process is now firmly established and does not appear to be controversial, even if the outcomes of individual procedures are sometimes the subject of complaints:

	Freq.	Percent
Open Tender	112	93.33
Negotiated Procedure	4	3.33
Application System	2	1.67
One selected firm or institution	2	1.67
Total	120	100

Missing information for 3 cases

The contracts which have been tendered for the deployment of broadband infrastructure are varied in many respects. Below, we first show the duration of the contracts that are anticipated in a relatively small sample of the notification letters, although we recognise that 'duration' may refer to different things in different contexts (e.g. duration of ownership of assets before they revert to the public authorities or duration of funding). 10 or 20 years are the most common periods, with 7 years (being the minimum period during which wholesale access obligations must be applied under the Guidelines) also popular:

Duration in years	Freq.	Percent
3	2	4.55
5	3	6.82
6	1	2.27
7	9	20.45
10	12	27.27
13	1	2.27
15	2	4.55
20	10	22.73
25	3	6.82
30	1	2.27
Total	44	100

Missing information or not applicable for 79 cases.

Similarly, it appears that the ownership models used by Member States differ significantly. The table below, which reflects a limited sample and should be treated with some caution, suggests that a relatively high proportion of notified measures have involved the provision of State Aid for the deployment of infrastructure which would then remain under public ownership, with only a minority of cases clearly involving the provision of grants to privately owned operators to deploy assets over which they would then retain ownership. Given that we have found relatively high levels of average aid intensity amongst the notified measures, with public authorities contributing around 75% of the total funds on average, it is perhaps not surprising that public authorities will wish to benefit from the ownership of the assets they are financing:

	Obs	Percent
Public: no detail	**25**	**45.45**
Private: operator	12	21.82
Different possibilities	6	10.91
Public: Region	6	10.91
Non-profit organisation	2	3.64
Private: no detail	1	1.82
Public/Private: Joint Venture	1	1.82
Public: State	1	1.82
Public: municipality	1	1.82
Total	55	100

Missing information for 68 cases.

We would also expect some correlation between the ownership model and the nature of assets that are subsidised, as explained in Section 2. However, the data presented in the notification letters is often insufficiently precise to allow us to determine whether funds are to be used for local access infrastructure or for 'backhaul facilities.[143] We find that the provision of 'passive only' infrastructure appears to account for only around 5% of notifications, which suggests that public authorities are prepared to assume ownership of active as well as passive broadband infrastructure, and that the Commission has been prepared to approve such arrangements. The table below presents the categories that can be derived from the notification letters:

	Obs	Percent
Passive, active infrastructure and last mile	63	51.22
Passive and active infrastructure	43	34.96
Passive infrastructure	6	4.88
Several possibilities	5	4.07
MAN, passive and active infrastructure	4	3.25
Active infrastructure and last mile	1	0.81
MAN	1	0.81
Total	123	100

No missing information.

It also appears that most measures, whilst focusing on the deployment of the entire broadband network infrastructure into new geographic areas, also use conventional, vertically integrated ownership models to do so. Again, the terms used in the notification letters may sometimes be difficult to interpret or inconsistent, but it is clear that the majority of operators or other entities

[143] Note also that our sample for asset type is larger than the more limited sample used to assess ownership of assets, so there is no simple relationship between the two.

that are expected to win the tenders and to deploy the infrastructure will be participating in both the network and retail activities of the market (i.e. will be vertically integrated in the manner of most existing European telecoms operators). However, a significant minority, or around 15%, will be required to be 'wholesale only' providers with no participation in the retail market:

	Freq.	Percent
Full integration	60	48.78
Partial integration	29	23.58
Fully disintegration	18	14.63
Various possibilities	7	5.69
Partial integration or full integration	3	2.44
Partial integration or disintegration	2	2.06
N/A	4	3.25
Total	123	100

A very small proportion of these 'wholesale only' networks are privately owned and operated but the vast majority – at least 86% – of 'wholesale only' measures relate to publicly owned or operated infrastructure:

	Wholesale only		Integrated	
	Freq.	Percent	Freq.	Percent
Public: no detail	21	67.74	4	16.67
Public: Region	5	16.13	1	4.17
Non-profit organization	2	6.45	0	0.00
Different possibilities	1	3.23	5	20.83
Private: operator	1	3.23	11	45.83
Public: State	1	3.23	0	0.00
Private: no detail	0	0.00	1	4.17
Public/Private: Joint Venture	0	0.00	1	4.17
Public: municipality	0	0.00	1	4.17
Total	31	100	24	100

5.7. Form of wholesale regulation

We explained in Section 4 that the State Aid rules require recipients of public funds to share access to their infrastructure with third parties and are thereby subject to wholesale access obligations. The notification letters provide some details of the basis on which such access is to be provided. Our analysis finds, first, that wholesale obligations are imposed in 95% of notified cases. The table below shows that, in around 65% of these cases, the prices for wholesale access

are to be benchmarked to those which are set by national regulatory authorities when imposing obligations on operators with SMP, or (in exceptional cases) which otherwise arise under competitive conditions. In 18% of cases, no wholesale price regulation is envisaged at all.[144]

	Freq.	Percent
Benchmarks	76	63.87
No price regulation	21	17.65
Cost oriented	7	5.88
Retail minus	6	5.04
Must follow national regulation	2	1.68
To be defined during the tender	2	1.68
Cost Plus + Benchmark	1	0.84
Cost oriented + Must be equal in all geographical areas	1	0.84
Negotiated	1	0.84
Price caps	1	0.84
Must be equal in all geographical areas	1	0.84
Total	119	100

Missing information for 4 cases.

We have also analysed the duration of the wholesale access obligations in the sample of notified cases for which we have such data. Most introduce obligations for a period of 7 years, as required by the State Aid Guidelines, but some Member States have imposed longer durations (including 8% for the lifetime of the network), and some shorter:

	Freq.	Percent
7 years	45	63.38
10 years	12	16.9
Lifetime of the network	6	8.45
20 years	2	2.82
5 years	2	2.82
25 years	1	1.41
3 years	1	1.41
6 years	1	1.41
8 years	1	1.41
Total	71	100

Missing information for 52 cases.

[144] We have examined these 6 cases to understand why. 4 related to measures involving the provision of broadband services only to the public sector and were not regarded as State Aid by the Commission. 1 was withdrawn, leaving 1 (in Germany) remaining to be explained.

Some form of retail price regulation is also envisaged in 27% of notified cases, although in the majority of these this is limited to benchmarking of retail prices against those prevailing elsewhere in 'competitive' areas. Retail price regulation has receded in Europe during the period in which the notifications to the Commission have been made. Nonetheless, it is interesting to find that a significant number of Member States do not appear to have regarded wholesale price regulation and access obligations as being sufficient, in themselves, to safeguard consumer interests or to ensure that prices of broadband services in the downstream market would address the social inclusion objectives of the measures.

	Freq.	Percent
Benchmarks	26	78.79
Price caps	3	9.09
Benchmarks and price caps	1	3.03
Depends on the size of businesses ser..	1	3.03
Must follow national regulation	1	3.03
Must be equal in all geographical areas	1	3.03
Total	33	100

Finally, we undertook an analysis of the clawback mechanisms that are proposed, and to which we referred in Section 4. The results are shown below. A significant number – 27% – of notifications make no reference to a clawback mechanism, notwithstanding the requirements of the State Aid Guidelines. The majority that do require 'excess profits' to be returned to the public authorities if revenues turn out to be higher than envisaged in computing the initial grant and/or if costs of deployment turn out to be lower:

	Freq.	Percent
Clawback on Demand	7	5.69
Clawback on Demand and Profit	12	9.76
Clawback on Profit	71	57.72
No clawback	33	26.8
Total	123	100

5.8. The approvals process itself

In Section 4, we discussed the State Aid approval process. The table below presents results from our analysis of the notifications letters, and reveals that around 40% of notified State Aid cases have been subject to pre-notifications consultations between the Commission and the Member State concerned, something which the Commission has sought to encourage. Despite this, the Commission sought additional information in over 70% of cases. Interestingly, most broadband

State Aid measures appear uncontroversial and only a small minority (6.5%) have prompted complaints to the Commission.[145] Given concerns, which underpin the State Aid rules, that public funds might unfairly favour particular competitors or otherwise distort competition, and given the propensity for litigation within the European telecoms sector more generally, it is perhaps surprising that this figure is not higher. Whether a significant expansion in the scope and scale of State Aid for broadband would attract more complaints from industry participants is unclear to us.

	Number of cases	Percent
Pre-notification	49	39.84%
Simplified procedure	7	5.69%
Commission requested additional information	90	73.17%
Complaint(s)	8	6.5%

The table below shows the outcome of all 123 notifications in the period 2003 to 2018. This data can be derived from either the Commission's website or an analysis of the notification letters, with the results being consistent between the two.

	Freq.	Percent
No objection	113	91.87
Not Aid	8	6.50
Procedure and Stand still obligation	1	0.81
Procedure and Withdrawal of notification	1	0.81
Total	123	100

No missing information

It shows that the vast majority – over 90% – of measures were approved by the Commission, allowing Member States to release the funds and proceed with their projects. About 6% of all cases, or 8 notifications, were found not to constitute State Aid at all and only two notifications were rejected. In one case (Netherlands), the Member State was prevented from proceeding to implement the project and in the other (Italy), the notification was withdrawn.

We have also analysed the 27 modified notifications which, together with the 123 original notifications, 3 individual modifications and 2 evaluation plans, compose the sample of 157 cases which had been notified to the Commission by August 2018. The reasons why original

[145] Of these 8, 3 relate to the UK, 2 to Italy, 2 to the Netherlands and 1 to the Czech Republic.

notifications were subsequently modified are presented in the table below, with modifications to the financing arrangements being the most common explanation:

	Obs	Mean	Std. Dev.	Min	Max
Modification of budget	27	0.48	0.51	0	1
Modification of duration	27	0.41	0.50	0	1
Modification of aid amount	27	0.22	0.42	0	1
Modification of intensity	27	0.11	0.32	0	1
Modification of geographical scope	27	0.11	0.32	0	1
Modification of procedure	27	0.07	0.27	0	1
Modification of clawback mechanism	27	0.07	0.27	0	1

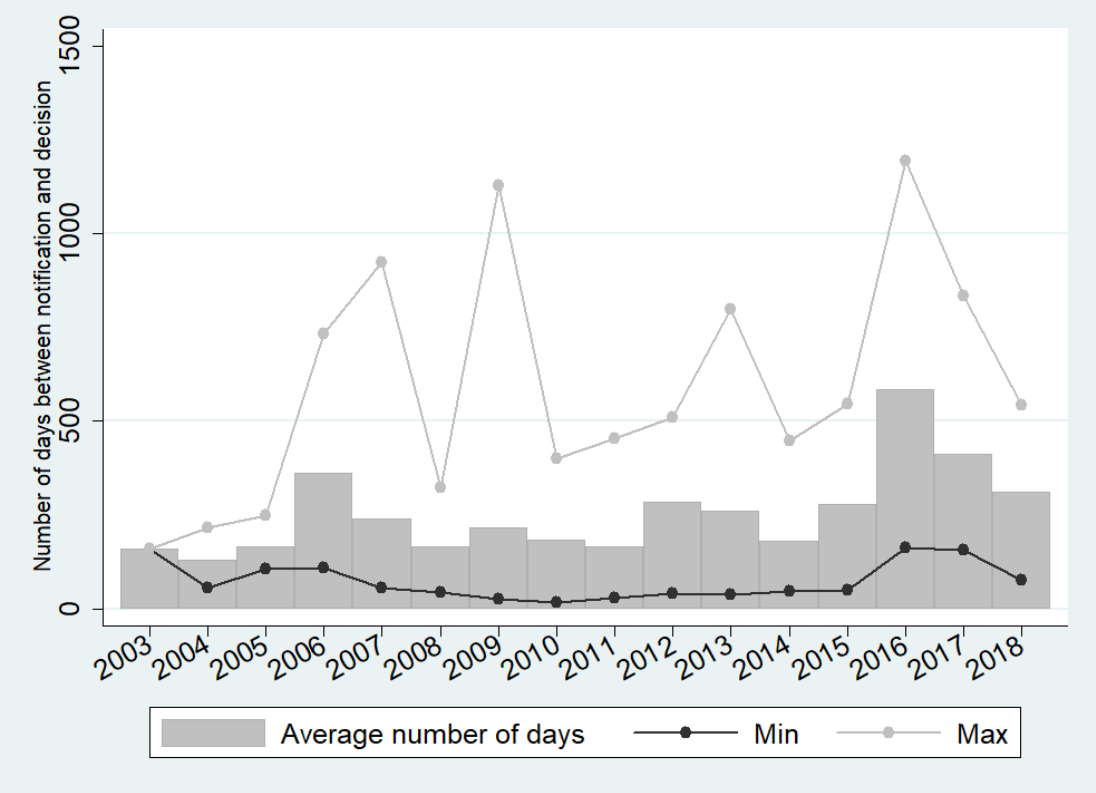
One case may include several modifications.

Our analysis also suggests that Germany accounts for 37% of all modified notifications, a far higher proportion than its share of original notifications (which is 20%):

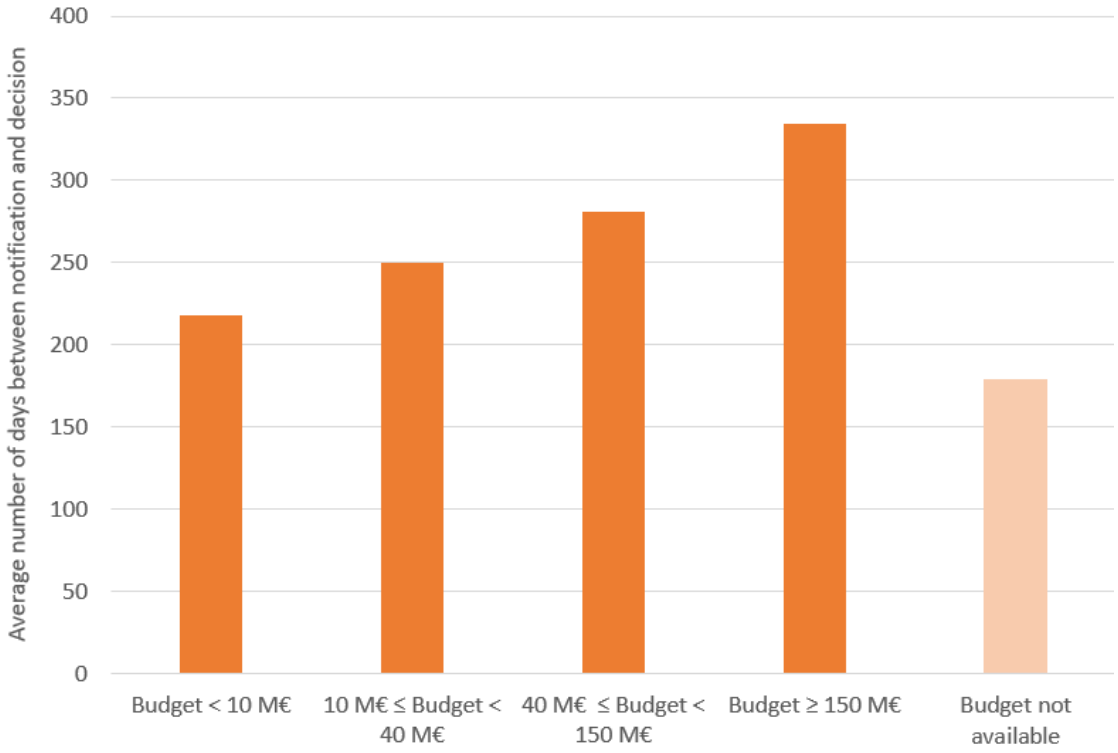
	Freq.	Percent
Germany	10	37.04
Finland	3	11.11
United Kingdom	3	11.11
Greece	2	7.41
Italy	2	7.41
Lithuania	2	7.41
Sweden	2	7.41
Austria	1	3.7
Poland	1	3.7
Portugal	1	3.7
Total	27	100

As noted above, the high approval rate does not mean that the Commission does not have influence over the design of broadband State Aid projects or that the notification and approvals process is otherwise superfluous. Commission staff consider that the high proportion of approvals indicates that Member States anticipate and seek to remove potential objections from the Commission before they notify. This is done either by the Member State first self-assessing the project against the Guidelines and/or by informal pre-notification discussions.

Even if notifications are eventually approved, the use of public funds could be frustrated if the approvals process resulted in long delays in the start of the project. The next figure, derived from data on the Commission's website, shows the average number of days between the formal notification of a case and the final decision, by year.

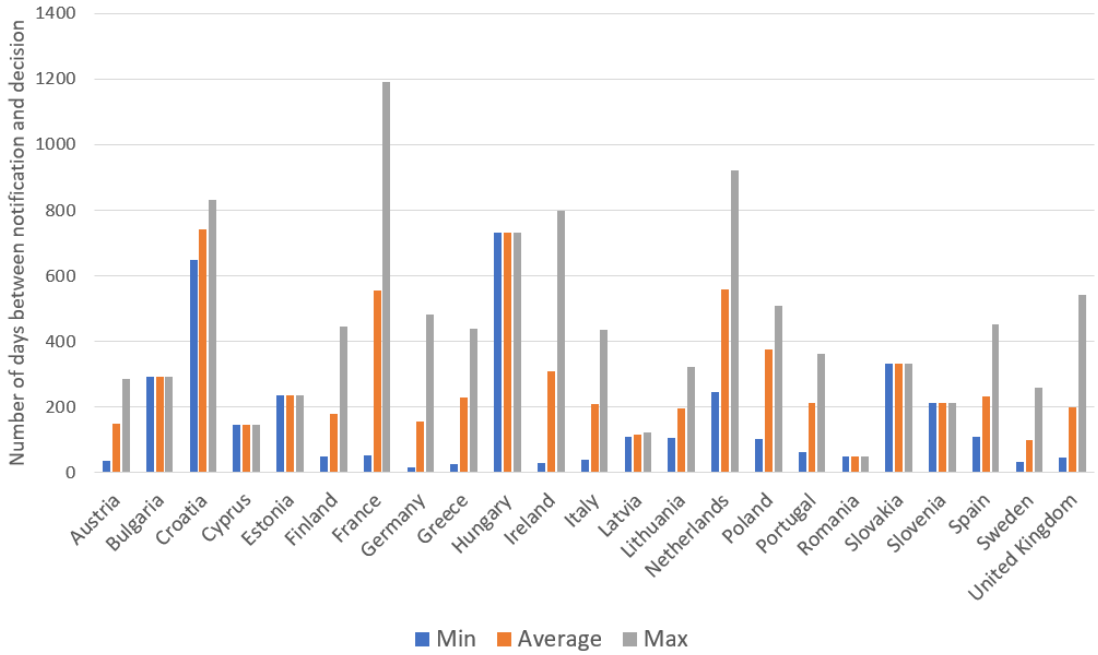


This suggests that the average time taken to process a notification has been increasing between 2011 and 2016, but has been reducing again in the past two years. This may be because the Commission has encountered (a relatively small number of) more complex cases since 2011, perhaps reflecting the shift away from the relatively straightforward task of extending basic broadband towards the more complex task of accelerating upgrades to NGA in 'grey' as well as 'white' areas. It may also reflect the greater average size of the budget involved since 2012 – although we note that the Commission seems to have been able to reduce the time taken to approve projects since 2016 despite average budgets remaining much higher than before. The next figure presents data which supports the hypothesis that notifications of measures with larger budgets tend to require more time to process:



The next figure shows that there is also a large degree of variation in the time between notification and decision across Member States. This may reflect differences in the complexity of the measures that are notified and/or may reflect differences in the capabilities of the Member States concerned (e.g. in responding to requests for further information from the Commission). It may also reflect the varying political priorities of Member States, who are invited twice a year by the Commission to prioritise their State Aid requests so as to ensure that more urgent cases (such as bank rescues) are addressed ahead of others.[146]

[146] This process is referred to in the 2018 Best Practices Code, but the results of these discussions are not publicised. We do not know, therefore, which Member States may prioritise or deprioritise broadband State Aid notifications over State Aid notifications relating to other sectors.



5.9. Relationship between timing of State Aid and private sector broadband provision

We referred earlier in this Section to the relationship between State Aid measures and the performance of the private sector in terms of delivering the coverage of different broadband technologies over time. We suggested that policymakers may be reluctant to intervene with public subsidies if broadband coverage is still comparatively low and the opportunities for further private sector investment seem comparatively high.

In this sub-section, we seek to explore this issue further, combining our analysis of the notifications to the European Commission with data on both broadband coverage and broadband adoption or penetration which the Commission has published under its 'Digital Scoreboard' initiative since 2008.[147]

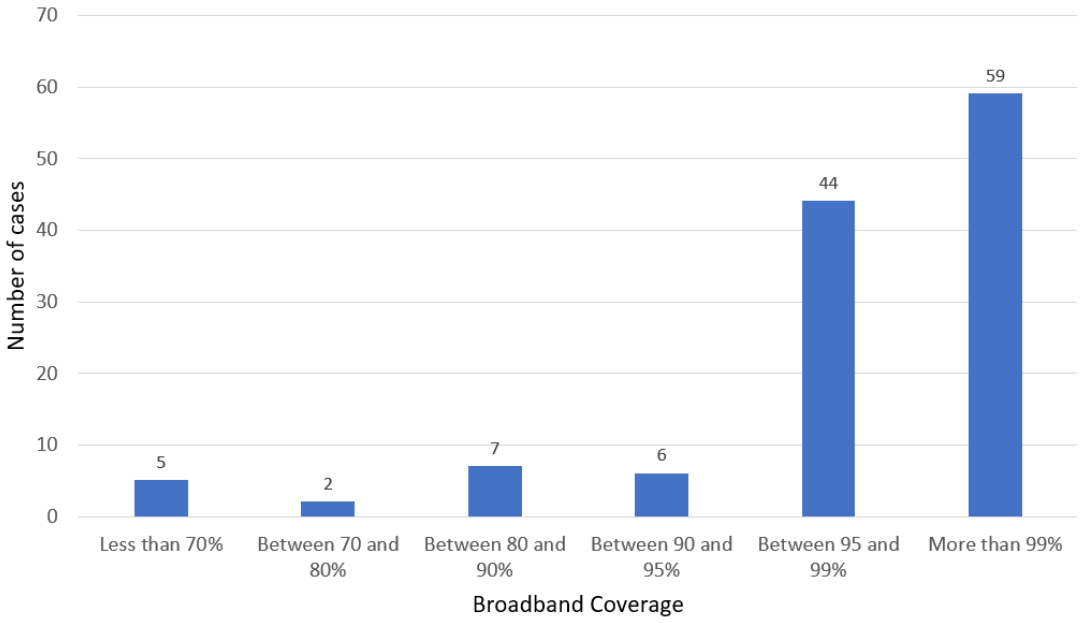
The Commission's dataset includes, for every Member State:

- Standard fixed broadband coverage (as % of households) from 2011 to 2017.
- Rural standard fixed broadband coverage (as % of households) from 2011 to 2017.[148]
- Fixed broadband take-up (subscriptions/100 people) from 2004 to 2018.

[147] https://digital-agenda-data.eu/datasets/digital_agenda_scoreboard_key_indicators
[148] Rural defined as areas with a population density below 100/km^2.

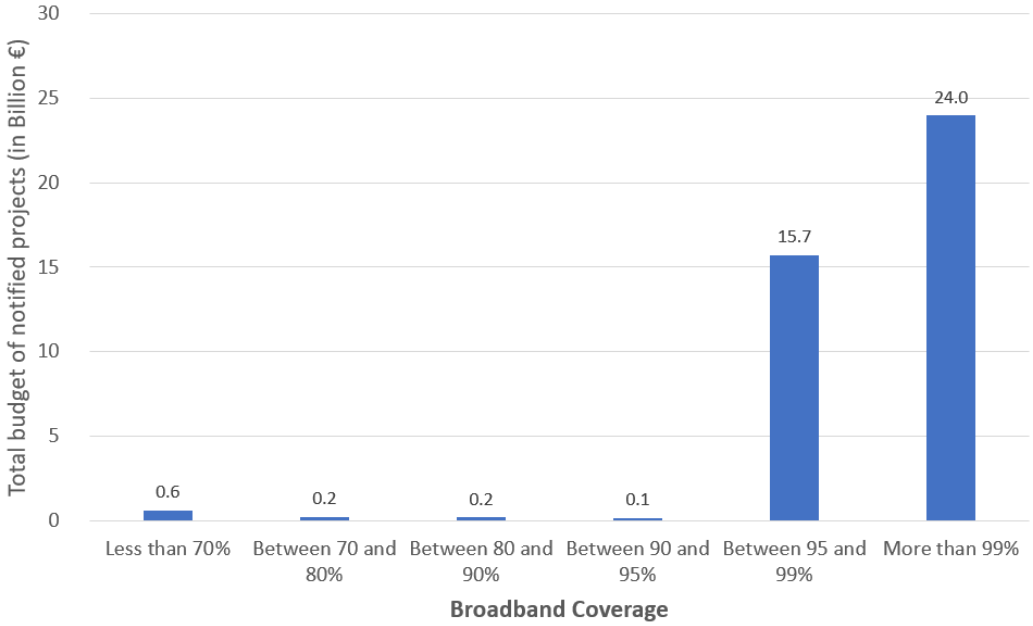
Data on coverage is missing from 2008 to 2010, so we have relied upon information from IDATE reports for 2009[149] and 2010[150] and from an OECD report for 2008.[151]

The figure below shows the number of notified cases against the level of standard broadband coverage in the relevant Member State at the time of notification to the Commission:



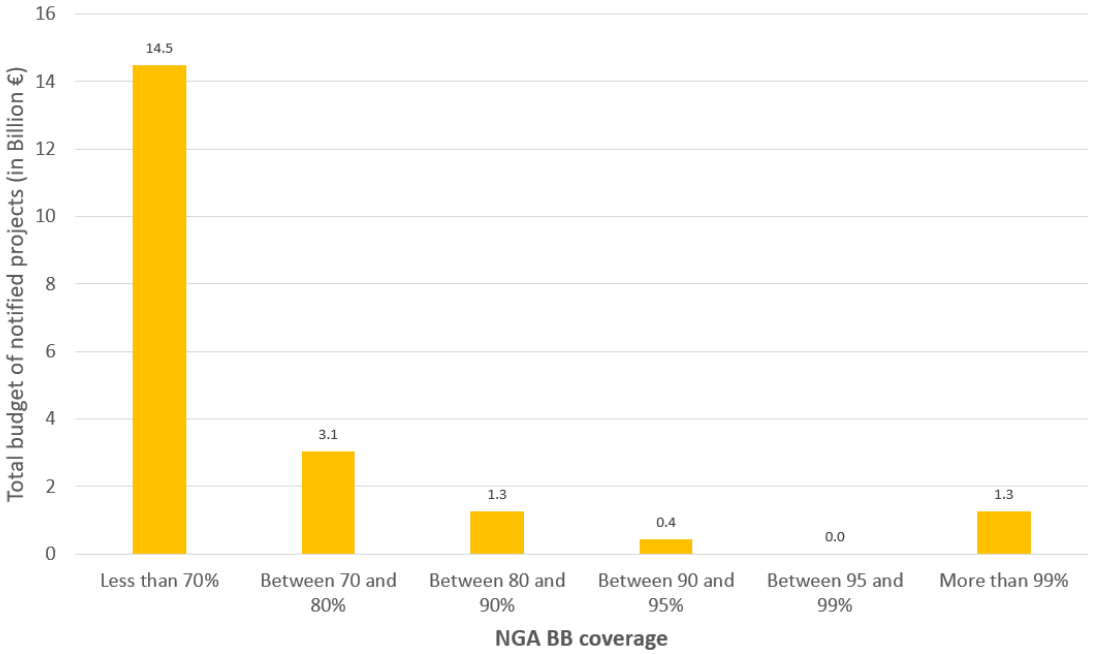
This shows that the vast majority of notifications occur once a Member State has already achieved basic national broadband coverage of at least 95% of households. This is consistent with our finding that the majority of notifications relate to the objective of extending coverage to 'white areas' in which there is no pre-existing broadband infrastructure and no prospect of private sector deployment. The same conclusion arises if we compare total State Aid expenditure (rather than number of notifications) against national broadband coverage:

[149] https://ec.europa.eu/digital-single-market/en/news/broadband-coverage-europe
[150] https://ec.europa.eu/digital-single-market/en/news/broadband-coverage-eu-272-phase-iii-smart-20100037
[151] http://www.oecd.org/internet/broadband/44381795.pdf

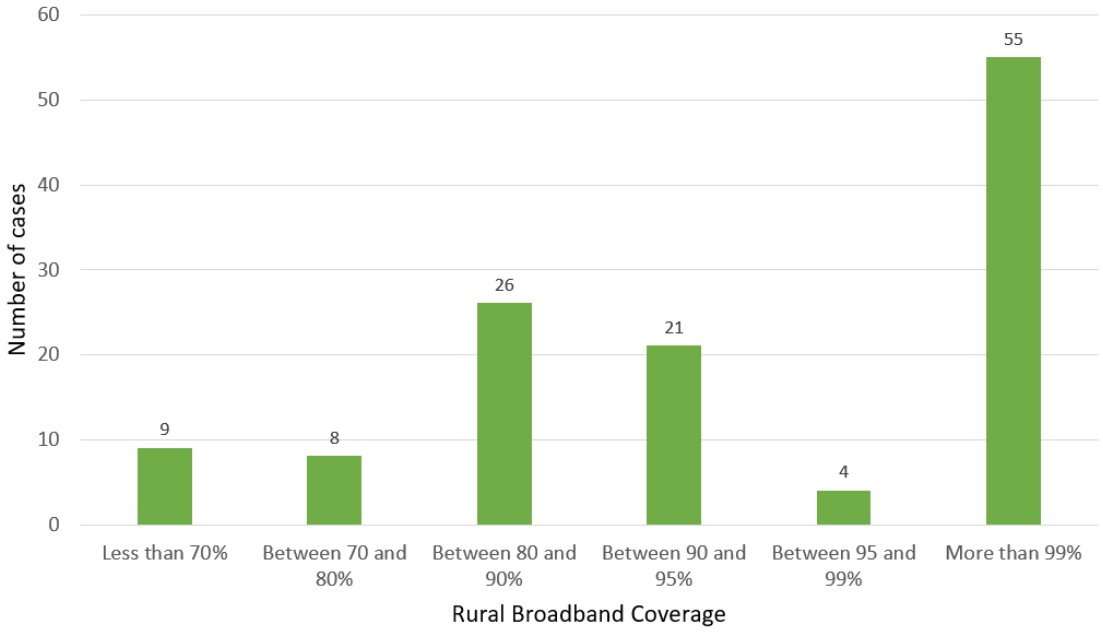


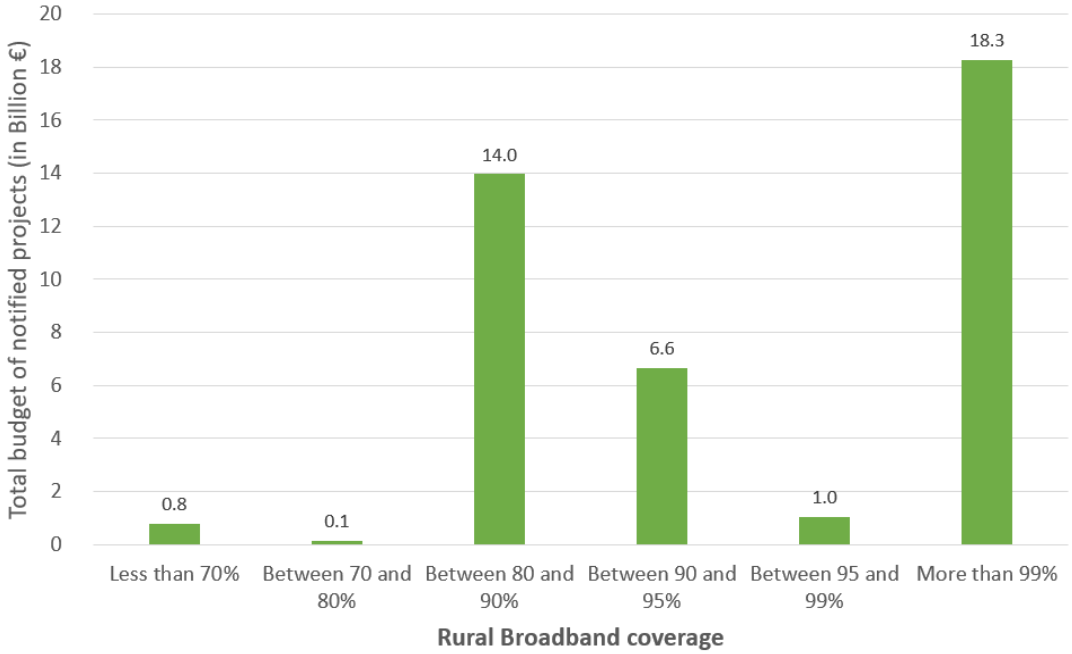
We have also considered State Aid expenditure on NGA against NGA coverage, as shown below. This reveals that State Aid has generally been used to accelerate NGA deployment at a much earlier stage than was the case for basic broadband coverage. We noted above that European policymakers have generally waited until the private sector has delivered standard broadband coverage of over 95% before turning to State Aid to extend coverage beyond that. They have been much more willing to intervene to promote NGA deployment whilst NGA coverage remains at below 70%. Almost €15 billion of the €21 billion allocated to extending NGA deployment was spent whilst national NGA coverage was still below 70%. This may reflect a view that private sector provision of NGA will always be more limited, relative to standard broadband, or it may reflect a greater impatience on the part of policymakers to wait until the private sector has exhausted the investment opportunities available to them. Either way, the finding has interesting implications for the use of State Aid as we move from NGA to ultrafast broadband and the opportunities for private sector deployment of ultrafast broadband infrastructure may be more limited still, and the time required to do so even longer:[152]

[152] We discussed Commission studies identifying a much larger (€150 billion) public funding requirement for FTTH in Section 4.



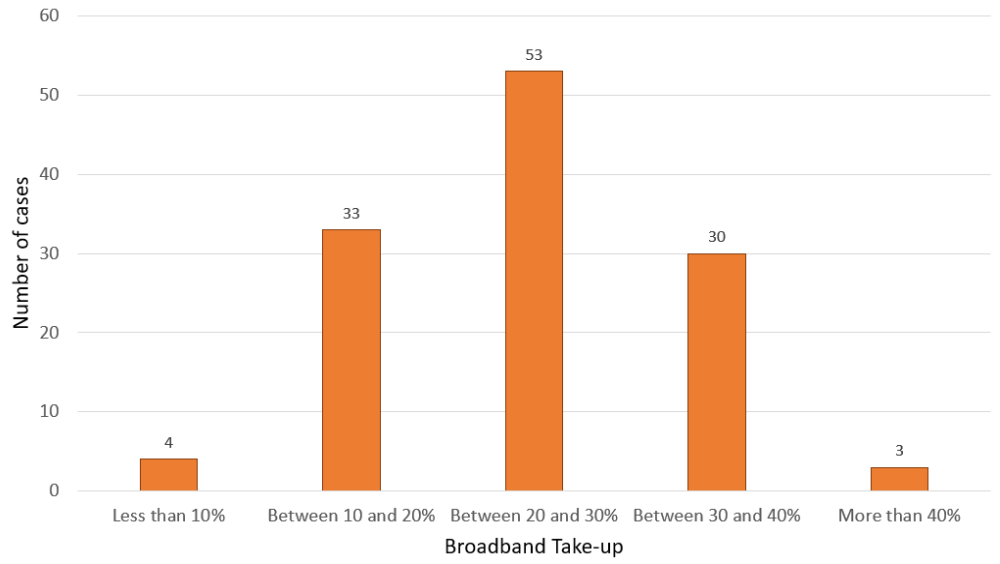
The relationship with rural broadband coverage, both in relation to cases notified and the corresponding levels of expenditure, is less stark than in relation to national broadband coverage, as discussed above. However, virtually no State Aid has been notified until rural broadband coverage has achieved at least 80% (the equivalent figure for national coverage being 95%):

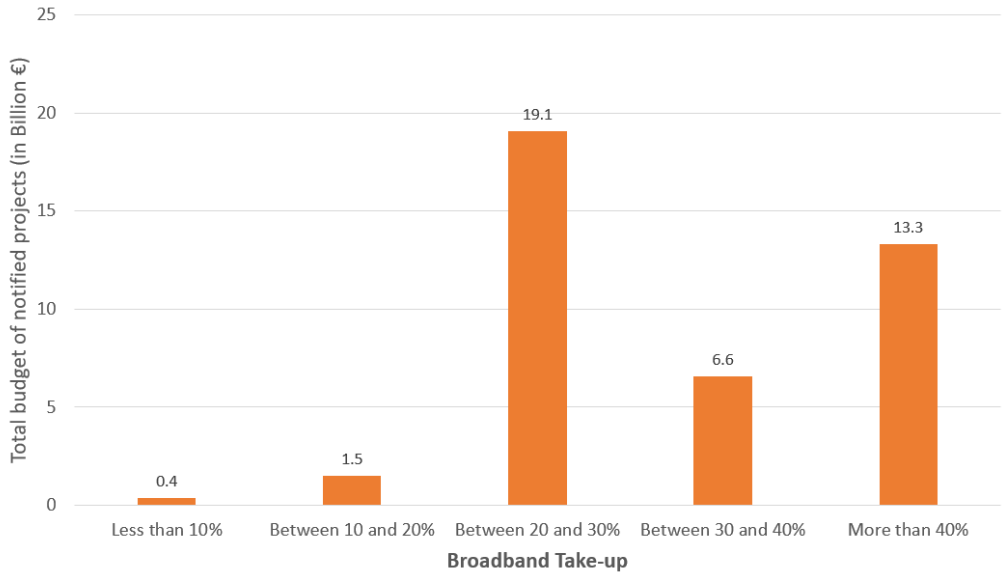




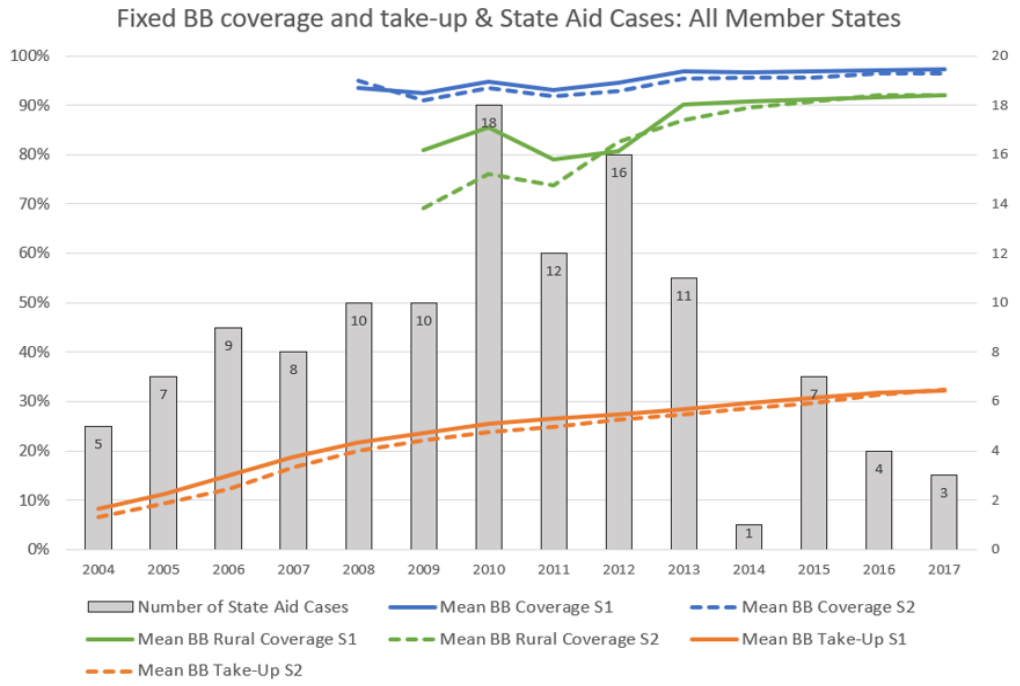
The relationship between State Aid notifications or expenditure and levels of adoption or 'take up' of broadband services is also of interest. The charts below show that State Aid is generally being used to extend broadband coverage whilst take up of broadband by households within areas already served by the private sector remains at less than 40%. Moreover, a significant number of measures is notified and an even greater proportion of expenditure has been

committed whilst mean adoption rates (across our sample) stand at less than 20%. This would suggest that the State Aid framework has tended, deliberately or otherwise, to allocate funds to measures which favour extending coverage of networks over those which promote higher levels of adoption of services. Social inclusion objectives appear to be framed in terms of ensuring that households in rural areas have access to the same broadband services as their urban counterparts, but disregard the fact that the majority of those urban households may not actually be subscribing to such services. We return to this issue in Section 6.





Finally, having noted the lack of robust empirical research on the relationship between State Aid and broadband coverage performance, we show below data on national and rural broadband coverage and broadband adoption alongside the volume of State Aid notifications over time:



Note: S1 includes the 15 Member States which notified at least two cases over the period 2004-2017. S2 includes the 13 Member States which notified 0 or 1 case over the same period.

The blue and orange lines indicate that mean standard broadband coverage and mean broadband take up[153] across Member States has grown steadily over the period 2004 to 2017. Take up has grown from under 10% to over 30% in the period. Mean standard broadband coverage in Europe has been at high levels (above 90%) since data was first available in 2008. Casual observation does not suggest any obvious causal relationship between these variables and the volume of State Aid notifications being submitted to the Commission.

On the other hand, mean rural broadband coverage, as shown by the green line, has expanded from 80% to over 90% in the period after 2012. 'Rural broadband coverage' refers to infrastructure deployed in areas with a population density of less than 100/km^2 and so is likely to refer to infrastructure that is less attractive for private sector investors to support. Changes in

[153] The chart shows a discontinuity in the data to 2013, with mean coverage sometimes falling between one year and the next. We understand that this arises because some Member States have had to revise their coverage reports in light of data inaccuracies.

rural coverage are more likely to be attributable to the impact of State Aid and the gains after 2012 to be attributable to the large volume of State Aid notifications that were made in the period between 2010 and 2012.

06

ISSUES ARISING FROM THE USE OF STATE AID FOR BROADBAND AND RECOMMENDATIONS

6. Issues arising from the use of State Aid for broadband and recommendations

In this Section, we consider the issues which have arisen from our review of the development and application of State Aid policy for broadband since the early 2000s and from our review of the notifications in Section 5. We also provide recommendations for policymakers which we highlight in bold and present in the Executive Summary of this report.

6.1. Data and research

We have found that there are serious deficiencies in the data which might allow policymakers and researchers to assess the performance of the broadband State Aid activities. In Section 1, we introduced some of the difficulties researchers face in determining exactly how much of the various European sources of funding has been, or will be, allocated to broadband infrastructure. It is even more difficult to determine how much has subsequently been spent, and how much has been contributed by Member States themselves. Our analysis of notification letters in Section 5 is, we think, the first and most comprehensive analysis yet undertaken of this source, but our results are still qualified by inconsistencies in definitions and the use of terms, and by omissions in some cases. Part of this difficulty arises from the fact that State Aid funding of broadband arises from a number of different sources, but also that State Aid funding may also be accompanied by other public funds, such as EIB debt or ESIF instruments (which may also unlock additional private sector investment), all of which we think ought to form part of the overall assessment of the returns from and efficiency of public expenditure on broadband.

These deficiencies concern us for several reasons:

- First, it is difficult for either the Commission or Member States to obtain a complete overview of the many publicly-funded activities to promote broadband deployment which are being undertaken, which means that knowledge and best practices sharing is very difficult. There is no means by which to benchmark individual broadband State Aid projects against others, which tends to mean that assessments simply compare the outcomes of particular broadband State Aid measures with the objectives that were specified in the notification. This is likely to be less informative and less useful than an

assessment which compares the outcomes of a particular broadband State Aid measure with what has been achieved by other measures in other Member States. No such studies exist, so far as we are aware. Without comprehensive data about how much has been spent and what has been achieved, it will be difficult to identify examples of best practices or improve efficiency.

- Second, the sums of public money involved in supporting broadband infrastructure are material and if some of our other recommendations were to be adopted, then these sums could further increase significantly. We have also found the 'aid intensity' of our sample to be over 70%, which means that the taxpayer is financing the majority of the expenditure that is incurred in these projects, with the private sector assuming relatively little risk. This means there is a need for strong governance and accountability. The Commission has recognised this by requiring Member States since 2014 to undertake their own ex post evaluations of projects and by initiating some research of its own, but there remains a shortage of data which might allow third parties, such as the European Parliament, interest groups, the media or researchers, to properly scrutinise these activities and hold decision makers to account. We have referred in this report to the recent Court of Auditors' report, which is the first of its kind after 15 years of public expenditure on broadband. Some Member States have conducted parliamentary enquiries when broadband State Aid programmes have become a source of political controversy.[154] But in most cases, public expenditure on broadband infrastructure remains unscrutinised and the results remain uncertain and undocumented.

- Third, evidence as to the effectiveness of broadband State Aid is very limited, in part because we have often been asking the wrong questions. We think it is reasonable to suppose that State Aid contracts between Member States and operators are enforced and that the coverage objectives of the notifications are generally delivered (although we would like to see more data to validate this). But the more important and interesting

[154] UK Parliamentary Accounts Committee undertook two such inquiries (see https://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/inquiries/parliament-2010/rural-broadbank-progress-update-inquiry/), and the UK scheme was reviewed by the National Audit Commission (https://www.nao.org.uk/wp-content/uploads/2015/01/The-Superfast-Rural-Broadband-Programme-update.pdf) and by the Government itself (Oxera 2015). The French Cours des Comptes has also undertaken a critical study, see https://www.ccomptes.fr/en/publications/fixed-broadband-networks

questions, in our view, are not whether a particular project has delivered against its original coverage objectives, but whether those objectives could have been achieved in a better or otherwise more efficient manner: with a lower budget or by using a different funding instrument or by intervening at a later stage in the market's development. If intervention is undertaken too early, then there is risk of crowding out private investment and using public funds inefficiently. If undertaken too late, there is a risk of significant consumer and public benefits being foregone. Similar questions arise about the use of EFSI funds by the EIB. Only by having data which enables comparisons between different instruments and different projects could we begin to address these (and other) questions.

- We understand why DG COMP is concerned to assess whether competition has been safeguarded by the State Aid approvals process, and whether the wholesale obligations prove to be sufficient for this purpose. However, in our view, the relationship between competition in downstream markets and the pursuit of other objectives is more nuanced than this. Unless the other objectives – including the efficient use of public funds – also form part of the Commission's assessment, then the conclusions that are drawn are likely to be partial and may be misleading.

To address our concerns about data, we recommend that DG COMP produce a detailed standardised reporting template which Member States should be required to complete when they notify the measure, and which should then be supplemented with regular reports (perhaps bi-annually) after the project has been approved, with a more detailed report at the end of 5 years.[155] This data should be published by the Commission in a format which would allow third parties to evaluate it. Much of this data is likely to be already provided by Member States but it often does not appear in the decision letters which the Commission publishes on its website or in the notices of the Official Journal.

This recommendation should be implemented alongside our recommendation that other non-State Aid sources of public funds for broadband, such as EIB lending, EFSI and Connecting

[155] Member States with measures that have already been approved could be required to complete the form retroactively.

Europe Broadband funding should also be assessed and reported on in the same way, as discussed below.

6.2. Misalignment between broadband objectives and public resources

Perhaps the most striking aspect of State Aid policy for broadband is the misalignment between the increasingly ambitious broadband policy objectives of the European Commission since 2010 and the size of the financial resources which have so far been deployed to meet them.

In Section 3, we explained that broadband infrastructure has claimed only a very small proportion – less than 4% in a given year – of the resources available under the ERDF and EAFRD, despite digital infrastructure being one of the four top priorities for State Aid. We recognised that this disregarded additional funding that is available from the EIB but noted that this represents only 3-4% of the €50-60 billion of lending which it undertakes every year. We also noted that there are other, comparatively small, funding initiatives under the Connecting Europe Facility and the EFSI which may support some additional private finance, but both our own calculations and those of the Court of Auditors (2018) suggest that Europe is currently and forecasts to commit only €3-4 billion annually of public finance to support its broadband infrastructure objectives.

We also considered the contribution that Member States had made to funding broadband infrastructure, which the Court of Auditors did not consider in their report. We conclude that total public expenditure on broadband infrastructure was likely to be around €7 billion p.a. in the period to 2020 and that the Juncker Commission's proposals for the 2020-2027 period was unlikely to significantly change these estimate. We noted that two Member States – Italy and France – do appear to be allocating very significant public funds to broadband, such that these two Member States committed to spend almost three times more than all other Member States combined, based on the sample of notifications we have analysed. Italy and France may therefore be aligned with the Commission's ambitious objectives, but it does not appear that other Member States are similarly aligned.

The €7 billion figure should be viewed in light of Commission targets which currently envisage State Aid or other forms of public investment of over €150 billion to support the deployment of

very high capacity fibre infrastructure in Europe to 2025. We explained in Section 4 how the scope for intervention under the Broadband State Aid Guidelines and the Commission's targets for broadband deployment have both expanded significantly over time, whilst Member State commitments to fund these objectives have lagged behind. We estimate that the projected public funding requirement to match the expanded scope for State Aid intervention has increased by approximately 30X[156] over the period 2005-2018, whilst annual State Aid expenditure has increased by only around 10X over the same period.[157]

It is hardly surprising that the Court of Auditors has recently concluded:

> *"In terms of the three [Digital Agenda/Gigabit Society] targets, while nearly all Member States achieved the basic broadband coverage target by 2013, this will most likely not be the case for the 2020 target for fast broadband. Rural areas remain problematic in most Member States: by mid-2017 14 had coverage in rural areas of less than 50 %. For the third target, take-up of ultra-fast broadband, only 15 % of households had subscribed to internet connections at this speed by mid-2017, against a target of 50 % by 2020."*[158]

This echoes an earlier study undertaken for the Commission itself in 2014, which came to the conclusion that 'only a few' Member States would be likely to meet the Commission's Digital Agenda broadband targets and that *'we are not convinced that any EU Member State will meet its own target'*.[159]

6.3. Lack of demand for State Aid?

There are several potential reasons for this misalignment between the financial resources required and what has been committed by Member States to date. The first is that there may be a shortfall in demand for public funds, either on the part of Member States who would prefer to use European structural funds for other purposes, on the part of municipal authorities who might wish to support broadband deployment but who are unable to do so, or on the part of the telecommunications industry, which may be reluctant to engage in activities involving State Aid, or on the part of taxpayers and consumers who are unwilling to meet the costs of public subsidy.

[156] From around €5 billion to over €150 billion.
[157] From around €300 million p.a. to €3 billion p.a.
[158] Court of Auditors (2018). Note, however, that this report only examines the position in a selection of (five) Member States.
[159] European Commission (2014), p.8.

Our analysis does not allow us to determine the source or extent of any shortfall. We noted in Section 4 how the Commission appears to have sought to address concerns about demand for broadband State Aid projects both through 'top down' engagement with national or federal institutions to create broader 'framework' arrangements (to reduce administrative delays and complexity) and, more recently, various 'grassroots' initiatives through the Broadband Competence Office network. The importance of local activism was one of the key conclusions of the Commission's own 2014 study:

> *"Most important concerning the actual implementation, however, seems to be that responsible actors (usually at local level) are attached to the strategic targets and feel involved. Generally speaking, the involvement of local actors is especially important when countries of usually larger size have significantly lower rural coverage and need demand aggregation and bottom up initiatives."*[160]

We think there are other mechanisms which might also be used to stimulate demand for public subsidy of broadband infrastructure, particularly if we were to rethink the role of tendering in the State Aid process. At present, 'open tenders' are regarded by the Commission and by Member States as being a means of ensuring the efficient use of public funds and minimising distortions to competition (i.e. to ensure compliance with the rules). This is one important function. But competitive mechanisms could also be used to stimulate 'grassroots' interest in broadband and could be used to further encourage both municipal authorities and the private sector to engage in the State Aid process.[161] At present, the Commission (or its agents) use a tendering process to allocate funds on a pan-European basis under the Connecting Europe Broadband Fund, but these involve very small sums.

An example of what we have in mind is the Google Fiber initiative in the United States. In this case, cities across the United States were invited by Google to compete against each other for the opportunity to participate in the fibre network investments which Google intended to make. If this initiative is assessed against the objective of deploying fibre, then Google has deployed in only 13 cities before halting further investment in 2016. However, if the initiative is assessed in terms of its capacity to mobilise grassroots interest in fibre deployment, then the results are

[160] Ibid., p.13.
[161] Similar mechanisms have recently been used by Amazon when deciding where to locate its new headquarters in the United States.

much more significant.[162] Over a thousand cities bid to be included in the programme, with many proposing to make fundamental changes to their existing planning and permitting rules and/or to offer tax breaks and other public subsidies of their own in an attempt to attract the Google investment. In contrast, previous requests from other network operators to make changes to the planning regime had often been refused. Many of the more established operators subsequently took advantage of these changes when deploying their networks after Google had announced its intention to cease its own investments. The impact of the Google Fiber initiative, in other words, went far beyond the actual deployment of fibre by Google in 13 cities.

We recommend that European policymakers ensure that some proportion of the European budget is administered by the Commission and allocated to municipal authorities rather than national administrations by means of a competitive tender. The aim of this process is not to replace the existing funding arrangements that are administered by national Governments, since the size of the fund is likely to remain modest in comparison with other sources of funds. Rather, the aim is to use the competitive process to mobilise interest in and enthusiasm for, broadband deployment at a grassroots level across the European Union (as Google's Fiber initiative did in the United States). Local communities who bid for funds and win will be immediate beneficiaries, but those who bid and lose may then approach their own Governments seeking other sources of public funding. If they do, this will contribute to the overall objective of increasing grassroots demand for State Aid funding of broadband.

It is also possible that a lack of engagement with broadband State Aid may arise from the lack of robust evidence about the benefits of more extensive and more rapid broadband deployment or the efficiency of State Aid in achieving these goals, which we noted in Section 1. To the extent that the Commission and Member States undertake a more systematic assessment of the outcomes achieved by broadband State Aid measures – or publish data which allows others to do so (as we propose above) – then this may also stimulate greater demand.

[162] See, for example, https://techcrunch.com/2010/03/27/the-final-tally-more-than-1100-cities-apply-for-googles-fiber-network/. Google has subsequently reassessed its commitments in broadband infrastructure, but not because of lack of demand for its services. Google's networks were generally deployed without public subsidy, although it has a partnership with the Administration's ConnectHome programme, see https://www.brookings.edu/blog/techtank/2016/03/22/google-fiber-competition-and-affordable-broadband-for-all/

6.4. Supply side constraints

The second possible explanation is that there is a shortfall in the supply or availability of State Aid for broadband. This could be the case whether or not there is sufficient demand. We have explained in Section 3 that the current European budgeting process seems to result in a misalignment between the level of public funds that are allocated to broadband deployment and the targets which have been set. This is in contrast with some other key European policy areas, such as low carbon energy and transport infrastructure, where the funds allocated in the European structural funds far exceed those allocated to broadband.

We can only speculate as to why this might be the case. It may be, for example that some Member States consider that the private sector is already meeting the broadband needs for most citizens, or that they are likely to do so in the near future, and that large scale public subsidy of broadband infrastructure is unnecessary or premature. Romania is an example where this may be the case. We explained in Section 4 how the new Article 22 process in the EECC is intended to oblige private investors to reveal to public authorities which areas will be built in the next period and which will not. However, we also noted in Section 5 that many Member States appear to be willing to use State Aid for NGA broadband when coverage levels are relatively low (below 70%) and when adoption rates are below 40%.

Alternatively, the allocation of funds between sectors may reflect a genuine conviction that investments in renewable energy and other infrastructure should be accorded a higher priority than investments in broadband infrastructure. If this is so, it is unclear to us whether the higher priority given by Member States to other sectors arises from a considered and evidenced political judgment, or because the failure of a Member State to meet its individual binding greenhouse emission targets (performance against which is audited annually by the European Commission) mean that national Governments may then face enforcement proceedings before national or European Courts.[163] In contrast, so far as we are aware, failure to meet the Digital Agenda or Gigabit Society broadband targets, or to meet those appearing in individual national broadband plans, would carry no legal consequences for Member States themselves. It may be,

[163] These greenhouse emission targets comprise a European target to reduce emissions by 43% by 2030 (relative to 2005), but also individual targets for each Member State. These are implemented by means of a Regulation (which therefore has direct legal effect), see https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0842&from=EN

in other words, that State Aid will gravitate to those areas with legally binding targets and away from those where the targets are more 'aspirational' in nature.

If broadband infrastructure deployment is to remain a strategic priority for Europe, we think the Commission might explore whether and how the current Digital Agenda and Gigabit Society targets might become more formal and potentially more enforceable (as against Member States). This might ensure that more focus is given to their achievement. We do not offer specific proposals as to what form such targets might take, but the aim would be to ensure that there is better alignment between the targets and the public resources being allocated to achieve them.

We also think that the telecommunications industry has tended to take a rather ambivalent attitude to the role of State Aid, with few private sector investors actively championing the case for increasing the level of State Aid in the sector (although we noted in Section 5 that the number of complaints brought to the Commission in broadband State Aid cases has actually been relatively low). This may be because many companies were privatised relatively recently in the belief that it was desirable to exclude public authorities from the telecommunication sector, making the possibility of renewed State involvement an unappealing prospect for same investors and managers. It may also be because individual operators fear that they will be disadvantaged if State Aid is allocated to their rivals, notwithstanding the existence of rules which are intended to prevent any distortion of competition.

We would encourage investors in the telecommunications sector to recognise both that it must become a 'mixed economy' if Europe's targets for broadband deployment are to be achieved and that the telecommunications sector as a whole is competing against many other demands for scarce public resources. Whilst recognising that individual corporate interests may be threatened by the use of State Aid in the short term, we think the sector as a whole and its investors would benefit if a greater share of public resources were to be directed towards extending broadband infrastructure. Given the size of the funds that could potentially be mobilised – almost €300 billion of ERDF funds, the €300 billion which the Commission expects the EFSI to mobilise in the 2014-20 period, and the €50-60 billion the EIB lends every year – even a small reorientation towards broadband measures would yield large sums for the sector.

We also recognise that there may be other non-monetary forms of supply side constraint in relation to broadband deployment. **There are limits, for example, on the level of disruption which can be imposed on local communities (including closure of roads, etc.) when new broadband infrastructure is being deployed. There may also be limits on the number of qualified (and unqualified) personnel who can be recruited or trained for such projects, particularly since employment is likely to end once the network has been built. We are not aware of any research which has sought to quantify or assess the implications of such constraints for broadband deployment in Europe and recommend that the Commission undertake such research.**

6.5. 'Transactions costs' arising from the application of the State Aid rules

Thirdly, we might find that there was both an adequate supply of public funds for broadband deployment and strong demand for those funds, but that the existing State Aid rules impose 'transactions costs' or represent a bottleneck which has inhibited or delayed the allocation of resources to those who were seeking to use them.

Although there are some aspects of the existing State Aid rules which we think should be revisited and which we discuss below, we have found little evidence to suggest that the State Aid rules themselves account for the misalignment between expenditure and objectives in broadband which we have identified. We explained in Section 4 how the broadband State Aid rules have in fact evolved to significantly expand the potential scope for intervention and the volume of public funds which could potentially be applied under the rules to promote broadband deployment.

Several points arose from our analysis in Section 5. Only two notifications made since 2003 have been rejected by the Commission and only one has been withdrawn. Appeals of Commission decisions are also rare.[164] We find that a significant proportion of State Aid notifications have been subject to pre-notification discussions between Member State representatives and the Commission, and that this has generally resulted in their being approved more rapidly once they

[164] We are aware of Cornwall (N461/2009), Birmingham (2012/N) and Haut-de-Seine.

are subsequently notified. There is no evidence that these pre-notification discussions have led the Member State to abandon the proposed measure.[165]

In Section 5, we also presented our analysis of the time taken by the Commission to approve State Aid broadband applications. We explained that we need to take account of the trend, after 2010, to move from smaller scale projects to much larger, and sometimes more complex, national framework agreements. This has led the average time for approval by project to increase, but not by much.

6.6. Scope of 'State Aid'

The European Court of Auditors' recent report is critical of the EIB's role in the EFSI fund and the Connecting Europe Broadband Fund:

> *"We found three major weaknesses in relation to this project. First, the project did not focus on under-served areas, but increased high-speed broadband coverage mainly in areas that are already commercially viable, such as cities. Secondly, we did not find evidence that the EFSI was the best financing tool. Indeed, this project could have been financed with an EIB loan because of its size and because of the areas where it deployed broadband. Thirdly, for certain areas, the project had already received close to 400 million euro of grants from the ERDF, reducing the risk for the EIB."*[166]

The first of these criticisms relates to the use of EFSI funds in areas which would be deemed 'black' had they fallen under the State Aid rules. We noted earlier that the 2014 Guidelines do contemplate the use of State Aid to accelerate the upgrading of existing infrastructure in both 'grey areas' and, exceptionally, 'black areas' where the existing broadband infrastructure may have been deployed on a commercial basis. Without further details of the measure in question (which the report does not provide), it is difficult to know whether this is evidence of misapplication of the Guidelines or evidence of a misunderstanding on the part of the authors of the report.

The second and third criticisms of the Court relate not to the Guidelines, but to the choice of financing instrument. The EIB currently lends €2-3 billion a year to support broadband

[165] The tone of the Guide to the State Aid guidelines, revised by WIK in 2013, is not always particularly encouraging to applicants in this regard. For example, on page 4 it says 'Prohibition decisions for broadband State aid are extremely rare. Yet, there might be an exception for your concrete project'!

[166] Court of Auditors (2018), p.37. The report does not disclose who the recipient of these funds was, but it represented a loan of €500 million, about one quarter of the €2 billion lent to date under the EFSI fund.

infrastructure deployment, either by administering the EFSI or by lending of its own. These funds are not subject to scrutiny from DG COMP under the broadband State Aid rules but instead rely upon the EIB's own governance process. The EIB's lending is undertaken on 'non-commercial' terms insofar as it is intended to support projects which would not otherwise be fully funded by the private markets. This means, as the Court of Auditors suggests, that EIB lending and other forms of finance which are administered under the State Aid rules are likely to be at least partial substitutes for each other, at least in some circumstances.

We consider that the ESIF, EFSI, Connecting Europe Broadband Fund and EIB lending are all both partial substitutes and potential complements to each other, even if they are subject to different allocation rules and administered by different bodies. There is an obvious risk of a lack of co-ordination between these bodies, and some anecdotal evidence that this has arisen in the past. In addition, we are concerned that the EIB's own governance arrangements may be insufficient to ensure that the EFSI funds are allocated in a manner which is consistent with State Aid rules. The Juncker Plan and the EFSI are important political projects of the Commission, and there is significant pressure to ensure that the funds are spent quickly and are seen to be yielding benefits for European citizens. Without adequate oversight, there is a risk that funds are invested in areas which allow the EIB and Commission to claim large benefits in terms of broadband deployment, but with consequent risks of 'crowding out' commercial activities.[167] Including the EFSI under the broadband State Aid rules would guard against this.

We think it is important that all sources of public financing of broadband infrastructure are reviewed and assessed in a coherent manner by a single body. **At the very least, there is a strong case for establishing better mechanisms to co-ordination and consultation between the EIB and DG COMP on the one hand, and those bodies and DG CONNECT on the other, in order to ensure that public funds are being allocated coherently and in the pursuit of a common set of objectives, as well as to address potential overlaps and conflicts when several financial instruments are involved. Alternatively, the administration of the EFSI funds by the EIB (and the administration of the Connected Europe Broadband Fund) should be subject to notification requirements to DG COMP as other broadband State Aid measures.**

[167] Although our cost per home passed calculations on the ESIF data published to date does not suggest that costs under the ESIF are substantially out of line with costs reported under State Aid measures.

We also explained in Section 4 how the 2009 and 2013 Guidelines have expanded the scope for State Aid intervention in broadband, both in terms of its use in promoting more costly technologies such as NGA and, now, 'very high capacity' infrastructure and in terms of extending the geographical area over which public interventions can be contemplated. Our analysis of the notifications to the Commission suggests that, so far, Member States have limited the vast majority of their State Aid notifications to 'white areas' and to 'basic broadband' or 'NGA'. However, the 2013 Guidelines contemplate extending interventions to 'NGA black' areas in 'exceptional circumstances' in order to promote upgrading to ultrafast broadband. This would represent a significant step beyond measures which are intended to address conventional forms of market failure, which arise from an insufficiency of network competition. **Given the likely focus of State Aid on very high capacity infrastructure in the future, we think the Commission should use the revision of the Guidelines to clarify under precisely what 'exceptional circumstances' State Aid might be used to accelerate very high capacity infrastructure deployment in 'black areas' where network competition already exists.**

Our analysis has also suggested that the current State Aid regime for broadband has been applied in a way which suggests that social inclusion and economic cohesion objectives are fulfilled if rural communities have access to the same broadband infrastructure as their urban counterparts. Our findings in Section 4 show that this objective has been pursued in circumstances when the majority of households in urban areas – up to 80% of them – do not in fact use the broadband services which State Aid is seeking to extend to rural communities. We consider that social inclusion and economic cohesion objectives are likely to be better met if the State Aid regime for broadband were more balanced, with more consideration being given to adoption or demand side objectives. It is not clear to us that social inclusion is best served by using public funds to extend broadband coverage so as to provide services which the majority of households do not adopt in areas where they are already available. **We therefore suggest that the Commission consider requiring that State Aid can only be used to extend network coverage for new technologies once adoption rates in those ('grey' or 'black') areas where services are already available have achieved certain thresholds (perhaps 30%). This would be similar to the requirement that universal service obligations apply to services that have first**

been adopted by the majority of users in a Member State.[168] Such a requirement would reduce the risk that public expenditure is biased towards 'supply side' activities and the risk that State Aid is used prematurely, before the private sector has an adequate opportunity to address user demand.

6.7. Pricing of broadband services over subsidised networks

The current Guidelines state that State Aid may be justified in 'grey areas' if it results in the greater competitive provision of services and greater accessibility (i.e. lower retail prices) than would be otherwise be achieved from reliance upon a privately funded monopoly provider. This reflects concerns that:

> *"Certain categories of users may still not be adequately served in the sense that either some broadband services requested by the users were not available to them or their prices were not affordable compared to the same services offered in other more competitive areas or regions of the country"*.[169]

The underlying assumption here is that State Aid would be justified if retail prices for broadband were otherwise to differ between monopoly and 'competitive' areas of the country, since this would represent a form of 'market failure' which would lead to social and economic exclusion and which ought to be remedied. The current Guidelines envisage that it will be remedied by imposing a further requirement that the wholesale prices that are to be levied by the recipient of the State Aid should then be benchmarked against those that are charged in 'competitive' or 'black' areas. If wholesale prices are the same then, with adequate retail competition, we would expect the retail prices charged in areas where State Aid has been employed to be the same or very similar to those charged in areas where it has not. We found, in Section 5, that the majority of wholesale access products were subject to just such price benchmarking but also found that, in a significant minority of cases, wholesale price regulation appeared to have been supplemented with retail price regulation which also required retail prices to be benchmarked against those prevailing elsewhere in the country.

[168] Art 79(2) of the EECC.
[169] Para 67, 2013 Guidelines.

The first step in the reasoning in the Guidelines is clear: households in 'grey' areas,[170] and retailers buying wholesale services from the network operator (if unregulated), run the risk of paying higher prices than their counterparts who benefit from competitive pricing elsewhere in the country. This represents a form of 'market failure' which arises from an absence of effective network competition. However, we think that differences between prices in 'grey' and 'black' areas might also arise for other reasons. For example, they might arise because of differences in the underlying costs of provision of broadband infrastructure. Since these differences in cost are likely to be at least part of the explanation as to why public funds are required to deploy infrastructure in some areas but not in others (differences in competitive conditions being the other), it seems likely that such cost differences will be material. If there are, it would be reasonable to expect that the hypothetical 'competitive' price in a higher cost 'grey' area could be substantially higher than the observed 'competitive' price in a 'black' area.

The current Guidelines ignore this possibility and effectively require (as implied by paragraph 67 which is quoted above) that public authorities ensure that households and retailers in 'grey' areas can obtain prices which disregard differences in the underlying costs of deployment in the different areas. In such a case, State Aid is being used not (only) to achieve a 'competitive' price for its beneficiaries, but to support a price which may be significantly below the cost of provision in that area.

Such an approach may be justified on the basis that the objectives of 'economic and social cohesion' require that all households and businesses in a given Member State are able to pay the same retail prices for broadband services, irrespective of their geographical location. In fact, the 2013 Guidelines go further than this by adding a footnote which states that the 'benchmark price' (being the wholesale price levied in other 'competitive' areas of the country) would be expected to represent an 'upper limit' and that wholesale prices (and therefore retail prices) in 'grey' areas with State Aid could be lower than those for privately funded infrastructure in 'black' areas.[171] This might be justified on the basis that households in 'grey areas' are poorer than those in 'black areas' and so lower prices are required to ensure that they can benefit from the State Aid measure.

[170] The issue does not arise in the same way in 'white areas', as here the 'market failure' is not the risk of higher prices but the lack of provision at any price. However, the expectation that the prices payable for access to the State Aid network will be the same as those payable in competitive areas is the same.
[171] Footnote 111 of the 2013 Broadband State Aid Guidelines.

We are not persuaded that 'affordability' objectives will always be best met by using State Aid in this way. Subsidies for lower retail prices of services provided to all households over a new network infrastructure are likely to be less efficient (i.e. more costly) than subsidies which are instead targeted directly at those households which face budget constraints so that they can obtain services from an existing network. Using State Aid funds to subsidise lower prices and thereby achieve 'affordability' objectives in some areas prevents these funds from being used to achieve coverage objectives in other areas. Less broadband infrastructure will be deployed or taxpayers will pay more as a result, whilst many households may end up paying less than they would be prepared to pay or could otherwise afford.

It may be that social and economic inclusion goals could be better achieved by using State Aid to narrow, but not to eliminate, the differences in the prices paid by consumers of broadband services in 'grey' (or 'white') and 'black' areas. The question then becomes one of under what circumstances the differences should be eliminated and under what circumstances they should be narrowed and, in the case of the latter, by how much. We recommend that these issues are addressed by the Commission and that the Guidelines are amended accordingly.

A better way to address the 'affordability' aspect of social inclusion, in our view, may involve targeting subsidies at particular groups of households or businesses that can be served by monopoly network providers. This could either be done by using public subsidies to support certain 'demand side' measures (such as voucher schemes)[172] or through the implementation of the 'universal service' schemes that are envisaged by the new regulatory framework for telecommunications – the EECC – which will be implemented by 2020.[173] The EECC explicitly seeks to re-orientate Europe's existing 'universal service' regulations so that they address the issue of 'affordability' for low income broadband users.[174] **We do not make specific proposals here but recommend that the Commission also consider how the 'availability' or 'coverage' objectives of the State Aid rules will in the future interact with the 'affordability' objectives**

[172] Considered in more detail in Feasey, Borreau and Hoenig.
[173] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_10692_2018_INIT&from=EN. We also referred in Section 4 to the impact of the new Article 22 and 29 of the EECC on the State Aid regime, and suggest the Guidelines contain appropriate cross-references to these provisions – e.g. that if the result of an Article 22 tender is that no operator commits to deploy very high capacity infrastructure in the next relevant forecast period, then the area in question will be deemed a 'white area' for State Aid purposes irrespective of whether there is existing NGA or DSL infrastructure.
[174] Article 20 et seq.

under the 'universal service' provisions of the EECC. It will be very important that these complement each other effectively and the State Aid Guidelines should also be revised to achieve this.[175] This interaction is complex, particularly as the funds used to subsidise activities under the State Aid regime are derived from taxpayers, whereas the funds used to subsidise activities under the universal service regime are generally derived from transfers between telecommunications operators themselves.

6.8. Wholesale access obligations for subsidised networks

We noted in Section 4 that the 2009 Guidelines had indicated that State Aid for NGA deployment would require wholesale open access obligations which would extend to the provision of sub-loop unbundling and the adoption of multi-fibre or point to point fibre. We said that these represented conditions which went beyond those being adopted by many national regulatory authorities to address competition concerns arising when privately funded network providers had been found to hold SMP under the European regulatory framework. It might be argued that the Commission regarded the 2009 Guidelines as a means, alongside the NGA Recommendation which was published the following year, of promoting these types of access obligations, often in the face of scepticism on the part of national regulatory authorities at the time.[176]

The misalignment between the approach to wholesale access obligations under State Aid rules and that taken by individual national regulatory authorities when applying the SMP provisions under the regulatory framework was noted by WIK in their 2011 review and has occasionally been a source of tension and delay in the approval of projects.[177] The differences tend to have

[175] We have also noted that the new Article 22 and 29 of the EECC are likely to be used by Member States to reveal and then designate geographic areas in which no operator indicates an intention to deploy such technologies within a time period which is to be determined by the national regulatory authority. We recommend that the Guidelines be updated to reflect these new provisions and to explain to Member States how the processes outlined in the EECC – Article 22 in particular – are to interact with the requirements of the Guidelines.

[176] In this case the skepticism appeared justified, since neither sub-loop unbundling or multi-fibre networks proved to be particularly effective remedies in relation to competition concerns and NGA networks.

[177] N147/2016, p.1. The UK has a history of arguing with the Commission about the wholesale access obligations, having earlier complained that there was no demand for sub-loop unbundling in remote rural areas. The capacity to disapply access obligations which were clearly 'disproportionate' was included in the 2013 Guidelines as a result. Germany has also been engaged in lengthy arguments with the Commission about access obligations relating to VDSL and vectored infrastructure.

related to wholesale products which the network operator is required to offer, rather than to the prices. The difference is intentional, and the 2013 Guidelines state:

> *"In principle, subsidised companies should provide a wider range of wholesale access products than those mandated by NRAs under sectoral regulation to the operators who have significant market power since the aid beneficiary is using not just its own resources but taxpayers' money to deploy its own infrastructure."*[178]

In our view, the more fundamental distinction arises not from the source of funds but from differences between the aims of wholesale access obligations under State Aid rules and those under the SMP regulatory framework.[179] The latter is concerned both with promoting competition in downstream retail markets in the presence of a monopoly network, but also with promoting investment in competitive network infrastructure and achieving 'dynamic' benefits over the longer term. The *'ladder of investment'* theory, under which wholesale access regulation would be adjusted over time as competitors 'climbed the ladder' and deployed their own infrastructure, was referred to by many national regulatory authorities when trying to reconcile these objectives. In other cases, as in Spain, the national regulatory authority has not imposed wholesale access obligations, or has imposed less onerous obligations, in order to encourage potential access seekers to invest in their own network facilities instead.

The position in relation to wholesale access under State Aid rules is quite different. An enduring monopoly has already presupposed in 'white areas' and no further entry, beyond that facilitated by the State Aid, is assumed in 'grey areas' either. On these assumptions, the wholesale access arrangements for State Aid do not need to have regard to the promotion of further network investment, as those under the SMP regime do.[180] Some documents go further than this and suggest that the purpose of wholesale access obligations under the State Aid rules is actively to deter private investment. For example, the European PPP Expertise Centre states:

> *"The network must be open and flexible to enable innovation by service providers at price levels that are competitive and fair, and that discourage the establishment of alternative infrastructure. This will encourage potential competing providers to become*

[178] Para 78(g).
[179] We use the term 'SMP framework', since the majority of access obligations that are applied in the majority of Member States will derive from this part of the EECC. However, this could also refer to 'symmetric' wholesale access obligations which do not require a finding of SMP (such as Article 44 and 59 in the EECC and similar provisions in the Broadband Cost Reduction Directive).
[180] This distinction is recognised by Stehmann, p.38.

wholesale customers of the PPP-developed network rather than setting up a separate network."[181] [our emphasis]

When a national regulatory authority undertakes a market review under the regulatory framework, it does not generally exclude areas in which State Aid has been employed from the relevant geographic market. In other words, any access obligations which arise from the market review process are deemed to apply to networks irrespective of the sources of the funds used to finance them and so 'overlay' the obligations already arising under the State Aid regime. Since it is very unlikely that wholesale access obligations under the SMP regime would be more onerous than those required by the Commission for State Aid purposes, this overlap is generally of no practical consequence. However, the wholesale obligations under the State Aid regime apply for a period of at least 7 years, whereas obligations imposed under the SMP regime will, under the EECC, generally apply for a period of 5 years or until the next market review. The justification for periodic review of wholesale access obligations under the SMP framework is that competitive conditions may change over time. In contrast, the expectation under the State Aid regime is that no additional entry is viable without public subsidy.

It might be argued that the State Aid wholesale access obligations are redundant in the presence of the effective implementation of the SMP regulatory framework by national regulatory authorities. We would not go that far. It is important to recall that the purpose of the State Aid rules is to ensure that Member States do not misuse public resources to favour some competitors over others. Only the Commission itself can supervise Member States. National regulatory authorities who oversee telecommunications market are required, under the EECC and its predecessor framework, to enjoy a significant degree of institutional independence from Member State Governments and are also subject to a significant degree of oversight by the Commission itself. But there remains a risk that some national regulatory authorities may not always apply the SMP framework as it was intended and/or that this may be a particular risk of distortion when a Member State Government is itself directly involved in the provision of broadband infrastructure as part of a State Aid measure. Given this, we think it necessary and appropriate that the Commission retain powers to prescribe wholesale access obligations under the State Aid regime which go beyond those required by the national regulatory authority in some circumstances.

[181] EPC, Delivering next generation access through PPP, p. 10.

At the same time, we see considerable merit in the presumption that existing SMP wholesale access obligations (for equivalent competitive circumstances) ought to satisfy the Commission in the vast majority of cases. There might be a theoretical basis for divergence, reflecting the different objectives of the State Aid and regulatory regimes. There may also be some competitive benefits which arise from insisting that wholesale obligations under the State Aid rules exceed those which the national regulatory authority has already determined as necessary to address SMP. The only study that we are aware of to consider the impact of State Aid on retail competition in broadband market[182] found that the areas benefiting from State Aid had an average of 0.29 more DSL entrants (and 0.19 more mobile entrants) after 5 years, than areas which did not.[183] This suggests that access obligations under the broadband State Aid rules safeguard, and may even promote, competition in downstream markets (relative to competition over networks that are privately funded),[184] but not to any great extent.

It may also be argued that more onerous regulation of 'active' wholesale products is required under the State Aid regime, since purchasers of these products have no ability to escape unfair terms by deploying their own network infrastructure instead (as they might in areas where no public subsidy is involved). On this view, recipients of State Aid are subject to fewer competitive or potential competitive constraints than SMP operators in other areas, and so ought to be subject to more onerous wholesale regulation as a result.

Although we think each of these points has some merit, we consider that they are likely to be outweighed by the practical benefits of alignment with the SMP regime. These benefits include:

- Avoided additional costs for a network operator which is already required to meet a particular set of wholesale access obligations under the SMP regime. These costs may involve the costs of developing and supporting additional wholesale products, for which there may be very limited or no demand.[185]

[182] (Lear et al) study of German broadband schemes (N115/2008 (and N237/2008 and 266/2008) and later N368/2009 and N299/2010) in which they compare performance in areas receiving State Aid with other areas in Germany which did not.
[183] Ibid, p. 142.
[184] No attempt is made to measure outputs of competition such as price, choice or quality.
[185] Lack of demand is already recognised in the 2013 Guidelines as being a legitimate reason for a Member State not to require certain wholesale access obligations. Some obligations which are appropriate in more densely populated areas where network competition is viable in the long run may not be appropriate, and may not be demanded, in areas where State Aid is being applied.

- Avoided additional costs for the national regulatory authority, which is then able to enforce and monitor compliance with the State Aid rules using processes already developed for the SMP regime. We discuss the issue of enforcement further below.
- Less risk of disagreement between the Commission and relevant Member State about wholesale obligations, and so less risk of delay in the approval of State Aid projects.
- Less risk of a significant discontinuity in the wholesale access arrangements at the end of the 7 year period during which the State Aid rules would apply and after which the SMP regime will apply.
- Less risk that onerous wholesale access obligations deter demand and so reduce competition for State Aid funds. This has two aspects. First, operators who are already subject to SMP-based obligations may perceive a risk that accepting more onerous State Aid-related obligations will create a precedent for the regulation of their existing assets under the SMP framework or otherwise lead to 'regulatory creep'. Second, the obligations may simply be too onerous for other operators who are not themselves already subject to any SMP obligations to consider State Aid projects at all.

Although we have found no evidence that existing State Aid wholesale access obligations have deterred participation by either SMP or non-SMP network operators in past tenders, the significance of this risk would depend upon (a) the degree of divergence between the SMP obligations and those contemplated under the State Aid rules and (b) the size of funds available under the State Aid regime. If the divergence were substantial and the size of the subsidy relatively modest, then the risk of deterring participation could be significant. On the other hand, if the State Aid subsidy were very large then operators might be prepared to accept the costs of assuming more onerous wholesale access obligations in order to benefit from the subsidy. Our view is that the levels of State Aid funding for broadband are likely to have to be significantly higher than current or historic levels in order for this to be the case.

We conclude that divergence between the wholesale access obligations under the State Aid rules and those which are applied under the SMP framework of the EECC ought to be avoided, and it should be presumed that SMP wholesale access obligations arising from the prevailing regulatory framework are sufficient to satisfy the 'balancing test', save in exceptional

circumstances. These obligations should apply for a minimum period of 7 years rather than being subject to periodic review. The Guidelines should be revised to reflect this.

A further question relates to the enforcement of obligations under the State Aid regime. We might expect the national regulatory authority to oversee the enforcement of obligations applying to networks benefiting from public subsidy in the same way as they enforce obligations under the SMP framework. It is the only national body likely to have the capability to do so. On the other hand, the Commission has extensive powers under the State Aid rules to recover unlawful State Aid.[186] In most cases, these powers are exercised when public subsidies have been employed by a Member State without notifying the Commission, and on terms which would have been deemed unlawful had they been notified. In such circumstances, the Commission will direct the Member State to recover the unlawful aid from the recipient as, for example, the Irish Government has been required to do in the recent Apple tax case.[187] If the Member State fails to do so (as in the Irish case until September 2018), the Commission can seek a direction from the Court of Justice.

In the case of broadband State Aid, the measure itself may be lawful, provided the conditions – including the wholesale access obligations – are complied with. Non-compliance will, we assume, render the measure unlawful. We assume it is, in theory, open to affected parties to complain to the Commission and for the Commission to then initiate an enquiry which could, ultimately, result in a direction to the Member State to recover the aid. However, this is an unsatisfactory result, not least because the recovery mechanisms are intended to be used when a Member State has committed an unlawful act rather than when an independent agency has failed to enforce an obligation. Seeking recovery of the aid is likely to be a very difficult and costly process when the better remedy is simply to require the national regulatory authority to enforce compliance with the wholesale access obligations. However, we assume that the Commission would have no powers over the national regulatory authority under the EECC in relation to matters concerning State Aid.

There therefore appears to be a risk of a lacuna regarding the enforcement of wholesale access obligations under the broadband State Aid regime. The 2013 Guidelines contain no

[186] See https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52007XC1115(01)&from=EN
[187] https://uk.reuters.com/article/us-eu-apple-taxavoidance/ireland-collects-disputed-apple-taxes-in-full-ahead-of-appeal-idUKKCN1LY1Y5 and http://europa.eu/rapid/press-release_IP-17-3702_en.htm

reference to enforcement at all. We recommend that the Guidelines be revised to address this issue and explain how the Commission will ensure that national regulatory authorities enforce the wholesale access obligations effectively.

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