



**TELE
INDUSTRIEN**
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Teleindustriens bidrag til:

The European Commission's Public Consultation on the Evaluation and Review of the BCRD

Introduction

This section includes some general questions on the benefits of widespread high quality connectivity, the joint deployment of networks, and the role of public authorities to facilitate this deployment.

1. In your opinion, to what extent can widespread high quality connectivity play a role in the response to the COVID-19 crisis and the economic recovery?

High-quality connectivity has to a large extent contributed to everyone's well-being, ableness of staying connected, possibilities of working from home, etc. during the COVID-19-crisis. Moreover, the telecom sector – and especially the MNOs have contributed with data insights on e.g. movements flows to ensure best possible crisis mitigation actions. In terms in economic recovery post the COVID-19-crisis, we argue that high-quality connectivity both in terms of fixed and mobile connectivity will play a pivotal role; this e.g. accounts for upscaling digitization in the SME-segment, opening possibilities for 5G-usage and industry 4.0 in several verticals and maintaining remote working options with digital infrastructure with enough capacity.

2. To what extent is it appropriate to apply measures at European Union level to facilitate and incentivise the roll-out of high-speed electronic communications networks?

We believe we have come a long way with the EECC by which we are still early in realizing its potential after the deadline for implementation in December 2020 was just met. However, we find some areas where provisions with some harmonization could further facilitate and incentivize the roll-out of high-speed electronic communications networks. These are amid others: 1) Uniform administrative procedures across sub-national levels, though flexibility to should apply for national standards, while different procedures at subnational levels should be avoided. 2) Coordination of civil works, hence terms and cost-sharing agreements with competing utilities (such as co-digging between fiber-fiber-companies). See more in subsequent sections. 3) Requirements for access to passive physical infrastructure (not in-building physical infrastructure) if sector-specific regulation or national law is not proven sufficient.

3. In your opinion, what benefits could be obtained from the coordination of civil works for the joint deployment of networks (telecommunications, electricity, gas, roads)?

Benefits: Today, the perception is that coordination/co-digging is always to the advantage of both/all actors involved. Most often, it is mostly to the advantage of citizens that the roads and pavements are not dug up several times in a row. This is not (always) the case for the infrastructure providers involved, as many additional burdens may entail, this e.g. involve coordination activities, rework of deployment plans and resources, etc. As telecom infrastructure often it the type of infrastructure with least requirements, most often it is other utilities that incur cost savings when coordinating civil works.. Indeed, there is a cost-saving benefit for coordination civil work between electric and telecom infrastructures due to similar requirement and locations. However, the Danish Electricity Supply Act No. 119/2020, including § 20 a, § 24 and § 84 a, in which the DSO-obligations in the Electricity Directive Article 35 are integrated. Together with executive order No. 933/2018 (compliance programme for DSO's, TSO's and Energinet) these legal acts define a number of obligations the DSOs have to fulfil to ensure that they will act unaffected by commercial interests of other vertically integrated associated companies. The DSOs are obliged to annually turn in a compliance pro-gram as well as a report describing the measures carried out to ensure their fulfilment of the compliance program.

Coordination with e.g. gas, water and sewage do not make much sense. There is an additional benefit of coordination in site development periods, where it makes much sense to coordinate all types of utilities. An additional benefit surrounds the minimized harms for end-users/citizens (dig once principle), so that pavements and roads are not opened many times, which additionally is to the benefit the road authorities.

Downsides: To a large extent – however a barrier to co-dig between similar network providers. Current rules are designed for coordination between similar actors. Future rules should take the coordination of competing actors into account, e.g. provisions on cost sharing, etc. Ideally, Ducts have not reached its high potential, but access hereto does not always work (e.g. due to weather and climate constraints). Ducts may be relevant in very trafficked roads/crossings, city squares and the like. We, as an industry organization, have agreed to a standard duct that we recommend public authorities, such as municipalities, to deploy for telecom networks if desired. Some municipalities have made city squared persevered areas without legal grounds, which we find too restrictive. Consequently, many city centers in Denmark is without access to fixed high-speed broadband. As a consequence of the coordination provisions, some municipalities request operators to perform extensive maintenance of e.g. cycling roads along with the deployment of infrastructure, which ultimately does not reduce costs. The municipalities demand high quality reestablishment, while operators often argue for full functionality of the cycling road.

Further, we foresee great potential for increased coordination amid cable owners regarding developmental residential/business areas. This could e.g. be well-founded in local planning/zoning acts where coordination and co-digging is prioritized higher, such that future public roads (possibly funded and established by private means) will be subject to same mandatory rules of coordination (in national sectorial law) as pre-existing public roads.

4. Besides public funding, what role should public administrations –at different levels- play to facilitate the deployment of electronic communications networks?

Public administrations, national as well as sub-national ones, play a vital role in facilitating smooth and efficient deployment. We believe six key elements as essential in this role. These are: 1) Access to a centralized overview of physical infrastructure, possibly a digital mapping, such ducts, cables, masts, etc., 2) Uniform and smooth procedures across all public administrative levels, 3) Low barriers for permit granting, hence both ROW and building permits, but also regarding considerations of landscape, environment and preservation, 4) Fair and appropriate site lease for mobile deployment if public areas are used (naturally, in line with EU State Aid rules), and 5) Assistance in finding the most appropriate locations for mobile sites and assist in the site acquisition process.

Evaluation of the overall functioning of the Broadband Cost Reduction Directive

This section includes some general questions on the overall evaluation of the functioning of the Broadband Cost Reduction Directive in relation to the key evaluation criteria established in the Commission's Better Regulation Guidelines (i.e. effectiveness, efficiency, coherence, relevance and EU added value).

5. To what extent has the Broadband Cost Reduction Directive been **effective to achieve its general objective** of reducing the cost for high-speed

electronic communications networks deployment?

Not effective at all - Not effective – Neutral – **Effective** - Very effective - No opinion

Please explain your response, including if there are factors other than the implementation of the Directive that have contributed to reducing the cost of high- speed broadband deployment.

In Denmark, we had/have a generally well-advanced permit regime, which - more or less - was fully digitized, or at least being developed in parallel to introduction of the BCRD. Coordinating of civil works and the implementation in Danish law has undergone some developments the past years and so has mapping exercises of existing infrastructure for transparency and sharing purposes. National and EU legislative frameworks have in this context shown some deficiencies in continuously ensuring smooth and cost-efficient deployment (more in later sections).

6. To what extent has the Broadband Cost Reduction Directive been **effective to achieve its operational objectives**?

Increased access to existing physical infrastructure suitable for high-speed	Not effective at all	Not effective	Neutral	Effective	Very effective	No opinion
Reinforced coordination of civil works	Not effective at all	Not effective	Neutral	Effective	Very effective	No opinion
Reduction of time and cost of permit	Not effective at all	Not effective	Neutral	Effective	Very effective	No opinion
Increased access to existing physical infrastructure suitable for high-speed broadband roll-out (utilities)	Not effective at all	Not effective	Neutral	Effective	Very effective	No opinion

Please explain your answer(s):

See answer 5.

7. As regards the **efficiency** of the Broadband Cost Reduction Directive and its implementing measures, if you compare the costs of implementation and of compliance borne by your organisation with the benefits accrued, how do you rate the cost-benefit ratio at scale 1 to 5 (1=costs significantly exceed benefits, 5= benefits significantly exceed costs)?

1 – 2 – 3 – 4 – 5 – No opinion

Please explain your answer:

We do not find that significant extra costs have followed specifically by the BCRD. However, several costs have followed by measures related to or implemented in parallel to BCRD-adaption in Denmark. This e.g. revolves coordination of civil works with other utilities, where digging often has become more expensive than just digging alone, which is contradictory to the purposes and scope of the BCRD.

8. Could you give an estimate of annual direct costs/savings for your organisation in applying the Broadband Cost Reduction Directive? Please indicate, if possible, the cause of these costs/savings.

N/A

9. As regards the **relevance** of the Broadband Cost Reduction Directive, to what extent has this legislation at EU level facilitated and incentivised the roll-out of electronic communications networks through the following means?

	Not relevant at all	Not relevant	Neutral	Relevant	Very relevant	No opinion
Access to existing physical infrastructure and related transparency measures				X		
Coordination of civil works and related transparency measures				X		
Permit-granting procedures				X		
In-building physical infrastructure and related		X				
Competent bodies and other				X		

Please explain your answer(s):

As described above, the well-advanced regime developed before the introduction of BCRD challenges to perception to what EU vis á vis national law have facilitated

and incentivized. Nonetheless, measures in the BCRD have underlined the importance of several elements that are prerequisite for smooth and efficient deployment. For instance, uniform and standardized administrative procedures across administrative levels.

That said, access to passive infrastructures is still very limited - and with reason - in Denmark. Public authorities deploying ducts, say in a city square paved with small granite stones, could make sense if ducts indeed are operational for operators. In Denmark, we have convened an industry agreement/encouragement to all public authorities on which ducts to deploy. This should maximize usage and minimize waste of public funds.

10. To what extent is the Broadband Cost Reduction Directive **coherent** with other EU policies?, in particular with:

	Not coherent at all	Not coherent	Neutral	Coherent	Very coherent	No opinion
The 2009 electronic communications regulatory framework , in particular its provisions on access (Significant Market Power and non- Significant Market Power), as well as on rights of way and rights to install facilities, dispute resolution, co-location and			X			
The European Electronic Communications Code , in particular its provisions on access (Significant Market Power and non- Significant Market Power), as well as on small-area wireless access points, rights of way and rights to install facilities, dispute		X				
Sector-specific EU Law on other network industries, in particular, in the energy and transport sectors		X				
Competition policy and state aid		X				
Other EU policies						X

Please explain your answers, and indicate if you have identified any areas for improvement of coherence.

We argue that the BCRD could be aligned to the EECC and the definition of VHCN as to ensure future-proof legislation. Further, as access to in-building

wiring has proven a superfluous element of the BCRD and now is part of the EECC symmetric regulation, this element should be disregarded. Finally, access to passive infrastructures are also part of sector specific law, e.g. in Denmark the Mast Act, which thus proves the provision to be insufficient as to bridge the connectivity/investment gap and may also be disregarded.

11. As regards the **EU added value** of the Broadband Cost Reduction Directive, to what extent is the harmonisation brought by the Directive beneficial compared to individual national measures?

	Not beneficial at all	Not beneficial	Neutral	Beneficial	Very beneficial	No opinion
Ease of doing business across the EU			X			
Economies of scale for companies with operations in multiple EU countries			X			
Regulatory stability and legal certainty				X		
Simple and efficient administrative procedures				X		
Other						X

Please explain your answer(s):

As described above, the well-advanced regime developed before the introduction of BCRD challenges to perception to what EU minimum harmonisation have facilitated and incentivized compared to national measures.

Thus, we argue that minimal effective/positive changes come as a direct result of the BCRD. Though, we cannot disregard that new, forthcoming EU-rules based on an updated BCRD could strengthen the regime, e.g. by learning from best practice and the forthcoming connectivity toolbox expected from the EU-Commission in first half of 2021.

Subject matter and scope

The Broadband Cost Reduction Directive aims to facilitate and incentivise the roll-out of high-speed electronic communications networks by promoting the joint use of existing physical infrastructure and by enabling a more efficient deployment of new physical infrastructure so that such networks can be deployed at lower cost. To this end, the Directive establishes minimum requirements relating to civil works and physical infrastructure, with a view to approximating certain aspects of the laws, regulations and administrative provisions of the Member States in those areas (Article1).

The terms used in this section, in particular 'network operator', 'physical infrastructure', 'civil works', 'permit', and 'high-speed electronic communications network' are understood as defined in Article 2 of the Broadband Cost Reduction Directive. In addition, the term 'physical infrastructure' also includes 'street furniture such as light poles, street signs, traffic lights, billboards, bus and tramway stops and metro stations' as set out in Article 57 of the European Electronic Communications Code.

12. In your experience, to what extent do the following aspects influence the timely and efficient deployment of electronic communications networks?

	Not significa ntly at	Less significantly	Moder ately	Signif icantl	Very signific	No opinion
Permit- granting procedures					X	
Permit- granting fees			X			
Information about on-going or planned civil works				X		
Coordination of civil works and other co- investment or joint roll-out			X			
Information about existing physical infrastructures				X		
Information about other elements and facilities suitable to install			X			
Access to existing physical infrastructures of electronic		X				
Access to existing physical infrastructures of electricity supply			X			
Access to existing physical infrastructures of other supply		X				

Information about other elements and facilities suitable to install		X				
Access to existing physical infrastructures of electronic		X				
Access to other elements and facilities suitable		X				
Access to in- building physical infrastructures	X					
Other	X					

Please explain your answers, including whether the factors negatively or positively affects network deployment, and any other factors that in your opinion may affect the timely and efficient deployment of electronic communications networks.

Smooth, effective and uniform permit granting procedures are essential in any broadband projects. In a regime where an investment gap persists, deployment costs including costs and resources employed in the stage of planning and accessing permits, should be kept at a minimum to keep every project of deployment effective.

Coordinating of civil works both entail positive and negative factors influencing timely and efficient deployment. First, co-digging may not always result in reduced costs of a project as various utilities and their respective infrastructures have different requirements and routings. This calls for even more clear-cut regimes e.g. on cost sharing. Secondly, destructive behavior by competing network operators (e.g. ECN-to-ECN) on co-digging scenarios may both delay delivery, increase costs of deployment, possibly delimit competition and worsen the experience for end-users. The latter mentioned e.g. relates to the cost-sharing regime, mirroring deployment as to transparency in competitors' digging plans, i.a. increased costs may influence the willingness to invest by that operator and thus, not bridge the otherwise intended connectivity/investment gap.

The past decade, access to in-building infrastructure has only been employed in very few numbers in Denmark, by which the regime could be disregarded from BCRD and left alone to the market.

For building permits (mobile), expenses borne by MNOs has risen as a consequence of the new Danish Building Regulation (BR18). Hence, MNOs has incurred new extra responsibilities, thus; additional personnel costs, and additional external costs to e.g. "certified static engineers". This new regulation accounts most of MNOs new mobile

sites and many of MNOs site upgrades.

13. Do any of the aspects referred to in the previous question particularly affect deployment of networks depending on the type of area* or the access technologies**?. If so, please explain how and why?

*Different types of areas where the network deployment is taking place can be identified based on the location of the users or connected objects as follows:

- Urban, suburban, rural areas: areas with different population densities in terms of human users and connected objects (e.g. sensors for IoT applications such as smart agriculture, water resources management, or critical communications)
- Business / industrial parks: areas with business users.
- Communication routes: areas along major terrestrial transport paths such as roads or railways, where e.g. Connected Automated Mobility or other logistics applications will be deployed.

**Access technologies can be classified according to the physical media of the access network with which they are associated:

- Fibre networks technologies: Passive/Active Optical Network technologies.
- Hybrid fibre-copper (twisted pair or coaxial) networks technologies: xDSL (G.Fast), DOCSIS technologies. Wireless networks with macro cells (range > 2,5 km) technologies: 4G, 5G, WiMax
- Wireless networks with small cells (femtocells, picocells, metrocels or microcells, range < 2,5 km) technologies: mainly 5G.

Issues of coordinating civil works with competing utilities, as described above, mainly regards to urban and suburban areas, where competition is fiercer.

14. Do you consider that any of the definitions in the current Directive should be reviewed and/or that additional definitions should be provided for to clarify concepts used in existing provisions? Please explain your response:

N/A

15. Do you consider that the current scope of the Broadband Cost Reduction Directive, – by reference to high-speed networks of above 30 Mbps- remains appropriate, in particular taking into account the 2025 Gigabit strategic connectivity objectives ([Towards a European Gigabit Society - COM\(2016\)587](#)) and the new objective of promoting connectivity and access to, and take-up of very high capacity networks in the European Electronic Communications Code? Please explain your response:

We do not perceive the reference to >30 Mbps to have any significant meaning. Thus, an increase in throughput would mainly be of political signaling. However, it would be a strong signal from EU Regulators if a forthcoming directive would be future proof – but still technologically neutral – by referring to EU targets (also when these are updated in due time).

Access and availability of physical infrastructure

Article 3 of the Broadband Cost Reduction Directive requires network operators (not only operators of electronic communications networks, but also operators of other types of networks, such as energy and transport), to meet reasonable requests for access to physical infrastructure for the purposes of deploying high-speed electronic communication networks, under fair and reasonable terms and conditions, including price. Refusals must be grounded on objective, transparent, and proportionate criteria. Where access has been refused or an agreement has not been reached within two months from the day of the request, access seekers can refer the issue to a dispute settlement body, which is empowered to resolve the dispute, including by setting fair and reasonable terms and conditions. The Directive also requires that all newly constructed and majorly renovated buildings be equipped with physical infrastructure, such as mini-ducts, capable of hosting high-speed networks, and an easily accessible access point in the case of multi-dwelling buildings (Article 8). Providers of public communications networks must have access to the access point and the in-building physical infrastructure under fair and non-discriminatory terms and conditions, if duplication is technically impossible or economically inefficient (Article 9).

16. Please provide an estimation of the percentage that costs linked to physical infrastructure represent in relation to the overall costs of deployment of fixed and mobile/wireless networks for your organisation.

Fixed networks: Up to 20% / 20%-40% / 40%-60% / **60%-80%** / More than 80%

Please explain your answer, including where relevant, for cases where new physical infrastructure is built and for cases where existing physical infrastructure is accessed.

Based on the input from the members of TI, deployment of infrastructure is mainly performed via new infrastructure, and thus does not make much use of existing infrastructures. As such, existing infrastructure, such as ducts that, may over time become inapplicable due the weather and climate effects (water and dirt in ducts e.g.) which provide some explanation to the above.

Mobile/wireless networks: Up to 20% / 20%-40% / **40%-60%** / 60%-80% / More than 80%

Please explain your answer, including where relevant, for cases where new physical infrastructure is built and for cases where existing physical infrastructure is accessed.

On mobile, our members often coordinate and share sites without much conflict. Around 65 pct. of all mobile masts (excl. rooftop, indoor sites) in Denmark is shared by minimum two mobile operators. Indeed, we have a well-functioning industry agreement and industry processes to handle co-existence on existing and new sites, also regarding cost sharing agreements which is well-founded on clear regulatory principles in the Danish Mast Act from 1999. Thus, we do not see any need for detailed EU-regulation in this regard.

17. With respect to access to existing physical infrastructure, to what extent have the following factors led to a more costly or lengthy network deployment?

	Not at all significantly	Less significantly	Moderately significantly	Significantly	Very significantly	No opinion
Lack of availability of suitable			X			
Lack of information on existing physical infrastructure				X		
Difficulty to agree on terms and conditions of access with		X				
Slow /ineffective dispute resolution		X				
Other (please specify)						X

Please explain your answer, identifying where relevant potential differences between fixed and mobile/wireless networks.

On availability, mainly “difficult areas” to deploy fixed networks, say highly trafficked or “expensive” surfaced, may prove efficient for deployment within existing physical infrastructure. Otherwise, there seems to be an appropriate availability on ducts, since usage is non-significant. On mobile however, availability and sharing are coordinated in the industry prior to deployment without much conflict (see answer to Q17).

Information on existing infrastructure, like mapping and data, could be further strengthen though. Single, digital information point is a way to start, but there may prove difficulties with legacy/older/already deployed networks.

18. Do you consider that the obligations to meet reasonable requests for access under fair and reasonable terms and conditions, including pricing (Article 3(2) of the Broadband Cost Reduction Directive), are appropriate to ensure effective and proportionate access to different types of existing physical infrastructure?

	Not at all appropriate	Not appropriate	Neutral	Appropriate	Very appropriate	No opinion
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Physical infrastructure owned by operators of electronic communications		X				
Physical infrastructure owned by operators of networks other than				X		

Please explain your answer, including, if relevant, how these access obligations should be modified.

In recent years, we have had difficulties on coordinating civil works with competing utilities (see answer to question 12) in Denmark. One way to ease these barriers could be to clarify the cost sharing terms in an updated BCRD. One way to deliver could be to learn from the experience on access and interconnection based on the EEC (not to obstruct other operators' digging projects e.g. by non-serious/reasonable requests).

If sector-specific competition rules are not fully sufficient, the BCRD could clearly outline a regime by which various utilities would share costs when coordinating a project. This could e.g. surround a regime where the individual actor(s) pay their respective share (based on volume in the routing of the road) in urban/suburban roads.

When coordinating with other than competing utilities, we do not see much conflict. However, there may be grounds of clarifying varying requirements to e.g. depth and the additional costs by co-digging herby (which does not contribute to a cost reduction).

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19. Has the principle of 'fair and reasonable terms and conditions' for access to physical infrastructure under Article 3 of the Broadband Cost Reduction Directive been applied effectively (with respect to the outcome) and efficiently (with respect to the time taken) by dispute resolution bodies?

Effectively (with respect to the outcome)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

Efficiently (with respect to the time taken)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

Please explain your answer, including, if relevant, the benefits and/or problems encountered in the application of this principle.

The measure has only been employed in Denmark to a very small extent; thus, neutral.

20. Do you consider that the criteria provided in Article 3 of the Broadband Cost Reduction Directive for refusing access to existing physical infrastructure are appropriate?

	Not at all appropriate	Not appropriate	Neutral	Appropriate	Very appropriate	No opinion
Technical suitability				X		
Availability of space					X	
Safety and public health			X			
Integrity and security					X	
Risk of serious interferences				X		
Availability of alternative means		X				

Please explain your answer based on your experience, indicating if other criteria could be relevant.

N/A

21. Based on your experience, how relevant have been the current provisions on high-speed-ready in-building physical infrastructure as provided in the Broadband Cost Reduction Directive in facilitating the deployment of electronic communications networks?

Not at all relevant / Less relevant / Moderately relevant / Very relevant / Mostly relevant / No opinion

Please explain your answer, indicating where relevant how the current provisions could be improved.

The provisions on high-speed-ready in-building physical infrastructure have not been employed in Denmark to a significant extent and could thus be disregarded.

22. To what extent would the availability and access to neutral host infrastructures* facilitate the deployment of electronic communications networks?. Please explain your response and whether neutral host infrastructures could particularly affect deployment of networks depending on the type of area (urban / suburban / rural, business parks, communication routes) or access technology (wired / wireless).

* A neutral host infrastructure comprises a single, shared network solution provided on an open access basis to all electronic communications

operators.

Neutral host infrastructure providers could become more important for mobile (wireless) networks. In our view, 'neutral host' as a term only has to do with wireless deployments/infrastructures. Regarding fixed networks, the reference should be made to 'wholesale-only providers' with the accompanying provisions in the EECC.

We do not see any impediments or market failure that require intervention for 'neutral host' providers/infrastructure to become more prevalent if that's what makes sense for the market. For now, the limiting factor has been the lack of a clear business model for a neutral host provider. Whether this will happen in the future should be mere as a response to market developments.

Coordination of civil works

Article 5 of the Directive provides for the right of every network operator (not only operators of electronic communications networks, but also operators of other types of networks, such as energy and transport) to negotiate agreements concerning the coordination of civil works for the purpose of deploying high-speed electronic communications networks. Moreover, it provides for the obligation of every network operator which is fully or partially financed by public means, to meet any reasonable request to co-ordinate civil works on transparent and non-discriminatory terms, provided that such request is submitted in a timely manner, it does not entail additional costs or delays and the network operator can retain control over the coordination. Member States may provide for exemptions from the obligation for works of minor significance, or related to critical infrastructure. Member States may also provide rules on the apportioning of the relevant costs. Where coordination has been refused or an agreement has not been reached within one month from the day of the request, access seekers can refer the issue to a dispute settlement body, which is empowered to resolve the dispute, including by setting fair and non-discriminatory terms, conditions and charges.

23. Please provide an estimation of the percentage that costs linked to physical infrastructure represent in relation to the overall costs of deployment of fixed and mobile/wireless networks for your organisation.

Fixed networks - cost savings

Up to 10% / 10%-20% / 30%-40% / 40%-50% / More than 50%

Please explain your answer:

Coordinating of civil works most often prove more costly than digging alone (more often when coordinating with competing utilities, see answer to Q12). In many cases, the public (road/digging) authority also imposes additional requirements which do not stand as a cost saving element. This could e.g. be requirements to reestablish a cycling road to an even better state than originally. Thus, most of these provisions essentially stand as a

positive gain for end-users that do not have pavements/roads dug up several times.

Mobile/wireless networks – cost savings

Up to 10% / 10%-20% / 30%-40% / 40%-50% / More than 50%

Please explain your answer:

On mobile, TI's members often coordinate and share sites without much conflict (see answer to Q 16). Around 65 pct. of all mobile masts (excl. rooftop, indoor sites) in Denmark is shared by minimum two mobile operators. As a rule of thumb, a mobile site incl. 1 operator costs approx. 150.000 EUR, while each additional operator (on the same site) would increase cost by approx 50.000 EUR. This example proves only guidance for masts and not roof top sites.

24. To what extent is it relevant for the deployment of electronic communications networks to coordinate civil works with the following types of networks?

	Not at all relevant	Less relevant	Moderately relevant	Very relevant	Mostly relevant	No opinion
Electronic communications networks				X		
Gas networks	X					
Electricity networks (including public lightning)			X			
Heating networks	X					
Water networks	X					
Transport networks (including railways, roads, ports and airports)		X				
Other						

Please explain your answer, identifying differences between fixed and mobile /wireless networks, if relevant.

There persists different requirements and placement of the various infrastructures. Electricity networks (while still another depth and protection requirement vis á vis telecom) have same location (pavement) and thus prove most relevant. Water, heating and gas utility are mostly often located in the middle of the road and the rationale for co-digging is thus severely scarce.

25. Which factors (for example, mismatch of timing –planning and/or execution-, work techniques, interest in an area), have made coordination of civil works for the deployment of electronic communications networks difficult?

Fierce competition in certain areas and varying deployment timing may prove grounds for destructive behavior among coordination between competing utilities (see answer to Q12).

26. To what extent has the obligation to meet requests for coordination of civil works financed by public means been appropriate? Please explain your answer, including whether improvements could be made in regard to the apportioning of costs.

We find it very much difficult to see any relevance in such provision. We do not have any experience on such matter in Denmark.

27. Do you consider that the obligation referred to in the previous question should be extended to civil works not financed by public means, or that new measures should be taken in regard to coordination of civil works, with a view to avoiding duplication (“dig once” principle), thereby increasing the efficiency of network deployment and reducing its environmental impact?

Please explain your answer:

No. Deployment plans evolve continuously, and it would be disproportionate and somewhat unfair – especially to end-users – if the “dig once”-principle would be extended further as this ultimately could delay the delivery of e.g. essential digital infrastructure.

Transparency measures

Pursuant to Article 4 of the Broadband Cost Reduction Directive, Member States shall ensure that every undertaking providing or authorised to provide public communications networks has the right to access, upon request to any network operator, minimum information concerning the existing physical infrastructure. Member States may also require every public sector body holding, in electronic format and by reason of its tasks, information concerning the physical infrastructure of a network operator, to make it available via the single information point, while Member States shall require such public sector bodies to make it available, upon request. Pursuant to Article 6 of the Broadband Cost Reduction Directive, Member States shall also require any network operator to make available, upon the specific written request of an undertaking providing or authorised to provide public communications networks, minimum information concerning on-going or planned civil works related to its physical infrastructure for which a permit has been granted, a permit granting procedure is pending or first submission to the competent authorities for permit granting is envisaged in the following six months.

28. In your opinion, to what extent would the availability, through the single information point, of constantly updated information concerning the elements listed in the table be relevant to facilitate network deployment?

	Not relevant at all	Not relevant	Neutral	Relevant	Very relevant	No Opinion
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Physical infrastructure from operators of electronic communications					X	
Physical infrastructure from operators of other networks		X				
Physical infrastructure from public bodies				X		
Other elements and facilities suitable to install network elements				X		
Private buildings or facilities other than residential and that are not part of a network (e.g. shopping centres, sports facilities, industrial plants)				X		
Public buildings or facilities that are not part of a network (e.g. administrative buildings, communal centres)				X		
Civil works in progress or planned by electronic communications operators					X	
Civil works in progress or planned by other network operators				X		
Civil works in progress or planned by public authorities, in the short, medium and long term (such as new or renovated industrial				X		
Acquisition and construction of sites for the deployment of mobile base stations, in progress or planned.				X		
Other						X

Please explain your response, and if relevant, whether and how the relevance of having this information depends on the deployment area (urban / suburban / rural, business parks, communication routes) or the access technologies (wired / wireless).

Clear information on private and public buildings could prove efficient for the deployment of small-area wireless access points (small cells). Such data should be easy accessible, digitized, uniform and interoperable.

Information on other operators' plans as well as forthcoming civil works hereon could also prove efficient bearing in mind the risks of destructive competitive behavior. See for reference this case from Germany:

<https://www.spiegel.de/wirtschaft/unternehmen/breitbandausbau-bundesregierung-plant-gesetz-gegen-glasfaser-piraten-a-1221166.html>

29. What minimum information concerning physical infrastructures should be available to operators seeking to deploy electronic communications networks, beyond that specified in Article 4(1) of the Broadband Cost Reduction Directive? You can select multiple answers.

None / Georeferenced location and/or route / Total and spare capacity to host network elements (e.g. nr. of ducts, m2 of available space) / Other

Please specify:

N/A

Please explain your answer, including the aspects related to cost efficiency.

Georeferenced location may prove useful for efficient planning and deployment, but a requirement on formerly deployed (old) networks seems indeed disproportionate.

We do not see the need for more regulation in this regard. Industry agreements as well as transparency requirements in national sectorial law on sharing information work well in Denmark.

30. What would be, in your opinion, the best mechanism for ensuring the most appropriate and efficient access to relevant information regarding existing physical infrastructure and planned civil works?

A unique information repository, to be populated by network operators and public bodies / Federation of existing information repositories, of different network operators and/or public bodies / Other

Please specify:

N/A

Please explain your answer, and give suggestions for implementation:

In Denmark, the national registry of cable owners (LER)' is a digitized system illuminating existing infrastructures across utilities. There is a requirement that any infrastructure owner has information available here. When applying for digging permits, coordinating of civil works happens in the system as well as investigating potential existing infrastructure to use or which may be an obstacle in digging site.

31. In your opinion, how could the different administrative levels in a Member State (national, regional, local) collaborate to maximise transparency as regards information on existing physical infrastructures and planned civil works (for example, providing a common platform, defining standards, collecting and validating information)?

Uniform procedures and information platforms are a significant part of reducing administrative burdens and thus reducing costs of deployment.

Permit-granting procedures

Pursuant to Article 7 of the Broadband Cost Reduction Directive, Member States need to ensure that all relevant information on the conditions and procedures for granting civil works permits with a view to deploying electronic communications networks is available from a single information point and that in principle decisions relating to permits have to be made within 4 months. Civil works, as provided in Article 2 (4) of Broadband Cost Reduction Directive 'means every outcome of building or civil engineering works taken as a whole which is sufficient of itself to fulfil an economic or technical function and entails one or more elements of a physical infrastructure'. Concerning the term "permit", the Directive refers to any permit 'concerning the deployment of electronic communications networks or new network elements (...) including building, town planning, environmental and other permits, in order to protect national and Union general interests' (Recital 26).

32. To what extent do the following factors affect the complexity and length of permit-granting procedures to deploy or upgrade electronic communications networks?

	Not at all significantly	Not Significantly	Neutral	Significantly	Very Significantly	No Opinion
Non-respect of the deadline to grant all electronic communications network deployment					X	
Lack of information concerning the conditions and procedures applicable				X		
Application for permits cannot be submitted by		X				
Multiplicity of permits needed for electronic		X				
Lack of coordination between the various				X		
Lack of explicit rules including on			X			
Other						X

Please explain your response, in particular, whether any of the above factors is more or less relevant depending on the network deployment area (urban, semi-urban or rural areas; business/industrial parks or communication routes, cross-border regions/areas).

The point on lack of coordination between the various authorities competent mainly deals with mobile, where, in Denmark, both sub-national and national authorities often has an authorial role in Denmark. This e.g. accounts in rural areas, where various permits should

be acquired, meaning e.g. a building permit (“byggetilladelse”) from the local municipality and a rural zone planning permit (“landzonetilladelse”) from the local municipality and if the permit is complained at, the case is forwarded to a national planning authority. Further extensible exemptions may be granted (preservation areas, such as forests, lakes, smaller rivers, etc.) by the local municipality, but if the exemption permit is complained at, the case is to be handled by a secondary national authority. These processes – especially regarding – complaints are very lengthy. Some cases go up towards 4-5 years.

The point on that application for permits cannot be submitted by electronic means as well as or multiplicity of permits is not a significant issue in Denmark whether considering mobile or fixed. An issue on ‘multiplicity’ could be on the cases of complaint on mobile as described just above.

The timelines and deadline for (ROW-)permits are in Denmark very effective. Most often down to 10-15 days processing time. Indeed, the administrative processes are increasingly important for timely and effective deployment. The effectiveness, though, is indeed higher for projects where the local authority grants the permit within an even shorter timeline (say 2-3) days).

In Denmark, the deadline for e.g. building permits and rural zone planning permits for mobile site deployment is indeed lengthier and more administrative burdensome. In many cases, administrative processing takes 5 - 8 months if all material is gathered and filed. If complained and forwarded to national overseeing bodies, the process is often stretched further 1,5 - 3 years.

33. To what extent would the following measures streamline the procedures to grant the necessary permits to roll-out electronic communications networks?

	Not significantly at all	Less significantly	Moderately significantly	Significantly	Very Significantly	No Opinion
Allow operators to submit applications by electronic means					X	
Single entry point (one stop shop), acting as an intermediary, routing permit					X	
Integrated permit granting				X		

Coordination and monitoring by a single body (or set of bodies) of all the			X			
Centralisation of the competence for all permits to one authority within the			X			
Harmonization of permit procedures at Member State level				X		
Harmonization of permit procedures at EU level		X				
Other						X

Please explain your response, and give suggestions for implementation:

Various authorities (sub-national and national) play different roles and have different responsibilities in Denmark (as outlined in previous questions). Increased harmonization and, especially, uniform procedures and processes at national level will catalyze effectiveness and cost reductions. However, increased EU-harmonization may prove a too high degree of uncertainty, e.g. due to varying situations as per Member State as well as varying situations and delegated authoritative tasks of competent authorities across Member States.

34. Would simplified permit procedures (such as no need to obtain a permit or permit exemption, tacit approval in the event that a certain deadline is exceeded, prior-communication accompanied by ex-post verifications only, etc) be appropriate to facilitate certain types of network deployment (e.g. technological upgrades, low impact installations, etc)?

Please explain your response, including which simplified procedures would be relevant for which type of network deployments:

Yes. 'Ex-post verification-only' methods would indeed ease the deployment regime. This accounts especially projects mainly concerning 'homes connect' or 'homes activate' (as contrast to 'homes past'-projects). In Denmark, this possibility for ex-post verification on 'smaller and shorter digging projects' persists in the Danish Digging Act Art. 6-7, where local municipalities may use the mechanism in their jurisdiction if desired. Thus, operators may, on the approval of the local road authority (the local municipality) employ ex-post-verification, however, only a very limited number of municipalities have taken this measure into use, which do not prove effective means for smooth and cost efficient deployment.

On mobile, the Danish Building Act ("BR18"), exempts several categories of site upgrades for additional permitting if the designated upgrade does not change to static construction as well as does not change visual outlook significantly. This is indeed very helpful as mobile networks are continuously upgraded.

35. In your view, are there specific obstacles to the joint roll-out of electronic

communications networks and to different forms of network sharing (e.g. sharing of passive or active elements of a network)?.

YES

If your answer is yes, what are these obstacles and should there be any measures taken to further facilitate these forms of cooperation?

There exist several considerations for joint-roll-out for ECNs – especially those regarding competition regulation that bears both risks and entails barriers of such deployment. If an operator would consider a deployment scenario or network sharing arrangement of active elements, you should consider if you fulfill the rules and regulations original in competition law. This accounts both for small cell deployment scenarios as well as co-investment scenarios based in EECC art. 76. See answer to question 12.

Environmental impact of electronic communications networks

In its Communication on a European Green Deal ([A European Green Deal- COM\(2019\) 640](#)), the European Commission has pointed out that digital technologies are a critical enabler for attaining its sustainability goals in many different sectors. At the same time, the digital sector itself needs to put sustainability at its heart and undergo its own green transformation, including in particular by reducing its greenhouse gas emissions to address climate change. To support this effort, the Commission is assessing the need for more stringent sustainability measures when deploying and operating electronic communications networks.

36. Do you consider that the deployment and/or operation of electronic communications networks can have a negative impact on the environment, in particular due to emissions of CO2 and other greenhouse gases?

	Not at all significant	Less significant	Moderately significant	Significant	Very significant	No opinion
Deployment of fixed networks				X		
Operation of fixed networks	X		X			
Deployment of mobile/wireless networks			X			
Operation of mobile /wireless networks		X				

Please explain your answer for each of the above categories:

The impact will depend on the energy source of course. However, a recent research report claimed that 'network energy consumption could jump 170 per cent by 2026, with 90 per cent of operators expressing their concern. The study projects that in 2030 information technology will consume one fifth of all global electricity.'

<https://www.raconteur.net/technology/5g/5g-environmental-impact/>

The operation of fixed networks depends on the fuel source powering the operation.

The impact of Operation of mobile/wireless networks will depend on the energy source of course.

37. What are the factors that determine the environmental impact resulting from the deployment of electronic communications networks?

	No contribution at all	No significant	Neutral	Some contribution	Significant contribution	No opinion
Deployment				x		
Type of networks, e.g. fixed or					x	
Manufacturing of the equipment, materials					x	
Other (please specify)					x	

Please explain your answer(s):

The type of energy used to run the equipment, end of life treatment and reuse / recycling of equipment from these networks (are they designed for reuse or refurbishment, can they be reused at all(?), the impact on the visual landscape.

38. What are the factors that most contribute to greenhouse gas emissions resulting from the operation of electronic communications networks (without considering end-user equipment)?

	No contribution at all	No significant contribution	Neutral	Some contribution	Significant contribution	No opinion
Energy efficiency (e.g. energy consumed per unit				x		
Carbon intensity of energy sources used for the generation of power					x	
Other (please specify)					x	

Please explain your answer(s):

Back up energy sources, over specification of equipment, running of unused capacity, cooling of technical sites, carbon intensity of energy sources used for the generation of power supplying the cooling, Over cooling of sites (maintaining too low an ambient temperature in technical sites), poor airflow.

39. What could be appropriate criteria to qualify network deployment projects as 'environmentally sustainable', already before such deployments have started?

	Not at all appropriate	Not appropriate	Neutral	Appropriate	Very appropriate	No opinion
Medium used (for fixed),						X
Technology generation used (for mobile) e.g. 4G/5G						X
Energy efficiency of network equipment used						X
Passively shared network						X
Actively shared network						X
Network deployed with coordinated civil works with other networks (electronic						X
Other (please specify)						x

Please explain your answer(s):

Based on a single variable in a project it would be impossible to determine ahead of time whether a deployment would be environmentally sustainable. Especially because the implication is that the deployment is *more* sustainable than either the existing infrastructure or another potential deployment infrastructure / equipment choice. There are too many external influences which can impact manufacturing, use phase and end of life that could amplify negative or positive impacts (e.g. Carbon intensity of energy source powering the network, end of life whether reuse/refurbishment/recycling of 100% of the assets is possible, etc.).

40. Which type of positive incentives can foster the deployment of electronic communications networks which have a reduced environmental footprint?

	No incentive	Weak incentive	Moderate incentive	Considerable incentive	Strong incentive

Expedited administrative treatment of all permits related to the deployment of the		X			
Permit requirements limited to prior communication only		X			
Reduction or abolishment of permit fees related to the deployment of the specific network		x			
Reduction or abolishment of access fees related to the deployment of the specific network for physical infrastructure that is		X			
Other (please specify)		x			

Please explain your answer(s):

The establishment of regulatory incentives for networks with a “reduced environmental footprint” would miss the fact that (1) operators already have strong commercial incentives to deploy and operate energy efficient networks, and (2) also networks with no reduced environment footprint are strong enablers and have overall a clearly positive environmental footprint (see our response to #36). We therefore support the removal of barriers for any network. The above listed “benefits” describe areas where reforms are necessary beyond networks with reduced environmental footprint.

Governance and enforcement: Competent bodies and other horizontal provisions (penalties, dispute resolution)

According to Articles 10 and 11 of the Broadband Cost Reduction Directive, Member States need to appoint one or more bodies to provide information on physical infrastructure, civil works and permits and one or more independent bodies to resolve disputes between network operators regarding access to infrastructure, access to information and requests to coordinate civil works. Moreover, Member States shall lay down appropriate, effective, proportionate and dissuasive penalties applicable to infringements of national measures adopted pursuant to the Broadband Cost Reduction Directive.

41. In your opinion, to what extent is the dispute settlement system provided in the Broadband Cost Reduction Directive appropriate, concerning:

	Not appropriate at all	Not appropriate	Neutral	Appropriate	Very appropriate	No opinion
Access to existing physical infrastructure			X			
Transparency concerning physical infrastructure			X			
Coordination of civil works (Art. 5)				X		
Transparency concerning planned civil works (Art. 5)			X			
Access to in- building physical infrastructure	X					

Please explain your answer(s):

With regards to coordination of civil works (especially concerning competing utilities), several issues as highlighted in the answer to Q12 could be eased by more stringent dispute settlement systems, e.g. on cost-sharing arrangements. It follows from the Danish Road Act that the road authority (most often the local municipality) may determine the cost-sharing terms if parties cannot agree.

As we believe that access to in-building physical infrastructure such be disregarded from the BCRD, a dispute settlement body and mechanism is also superfluous.

42. In case you consider it not appropriate at all or not appropriate, what are the main reasons?

	Not relevant at all	Not relevant	Neutral	Relevant	Very Relevant	No opinion
Non-compliance with Broadband Cost Reduction Directive deadlines to solve a	X					
Too long dispute resolution process	X					
Lack of rules on apportioning the cost (in case of coordination of civil works, Art. 5)	X					
Lack of clarity on "fair and reasonable terms" concept (Art. 3 and 5)	X					
The need for payment of fees when referring a case to the Dispute	X					
Other reasons					X	

Please explain your answer(s):

As we believe that access to in-building physical infrastructure such be disregarded from the BCRD, a dispute settlement body and mechanism is also superfluous.

43. In your view, how relevant are the following measures to guarantee a satisfactory dispute resolution process:

	Not relevant at all	Not relevant	Neutral	Relevant	Very relevant	No opinion
Imposing penalties on the dispute resolution body if resolution is not issued			X			
Setting rules on apportioning the cost (in case of coordination of civil works, Art. 5)				X		
Guaranteeing a free process.			X			
Other						X

Please explain your answer(s):

Setting rules on apportioning the cost (in case of coordination of civil works) in the dispute settlement process is one way forward. However, we prefer and recommend clear-cut ex-ante rules on cost sharing, where designated parties stand responsible for additional expenditures as a result of the coordination/co-digging based on various criteria, e.g. volume in boundary. See answer to question 12, 18 and 43 for elaboration.

44. In your view, how useful are the national rules on penalties applicable to infringement of the obligations provided in the Broadband Cost Reduction Directive

Not useful at all / Not useful / **Neutral** / useful / Very useful / No opinion

45. In case you reply that the national penalty mechanism is not useful at all or not useful, the reasons are:

	Yes	No	No opinion
The penalty mechanism has not been applied			X
The regulation providing infringements is broad and general			X
The penalties imposed are not dissuasive enough			X
Other			X

Please explain your answer(s):

N/A

Legal instrument

46. In your opinion, how appropriate has been the choice of a Directive as a legal instrument to regulate the measures to reduce the cost of deploying electronic communications networks?

Not appropriate at all / Not appropriate / Neutral / **Appropriate** / Very appropriate / No opinion

Please explain your answer:

The BCRD did by its' means pushed a clear direction for Member States and operators to pursue.

The most appropriate legal instrument when reviewing the BCRD depends on several elements – especially how the forthcoming piece of legislation would look like. In

Denmark, we have many good existing industry solutions that we foresee to be maintained. Increased harmonization could work, but stringent regulation may not be the best way forward. In Denmark, different authorities and pieces of legislation implementing the directive also prove a barrier for increased harmonization/regulation. As situations in Member States differs significantly e.g. regarding competent authorities and stages of deployment, we do not recommend going down this road.

We see it suitable to stick to Directive with minimum harmonization to preserve the virtues of many existing practices that work well and might be contrary to a strong maximum harmonizing text (Directive or Regulation).

In final reference to our answer to Q5 on the Danish well-advanced regime, we find that a directive with minimum-harmonization is an appropriate legal instrument for an updated BCRD.

We need indeed a speedier and more effective instrument. In this respect, we urge the Commission to shorten the transposition period to a minimum (e.g. 12 months). This can be justified by the (i) the urgency of the matter in view of meeting policy goals and (ii) the fact that it is merely a revision and not a full-blown new text. Most of the transposition has already been done following the 2014 Directive.

47. In your opinion, what would be the most appropriate legal instrument when reviewing the Broadband Cost Reduction Directive?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No opinion
Directive with minimum harmonization (similar to the Broadband Cost					X	
Directive with maximum harmonization	X					
Regulation	X					
Other instrument						X

Please explain your answer(s):

See answer to Q47.

Final comments

48. Final comments:

N/A