

Bridging the Digital Divide

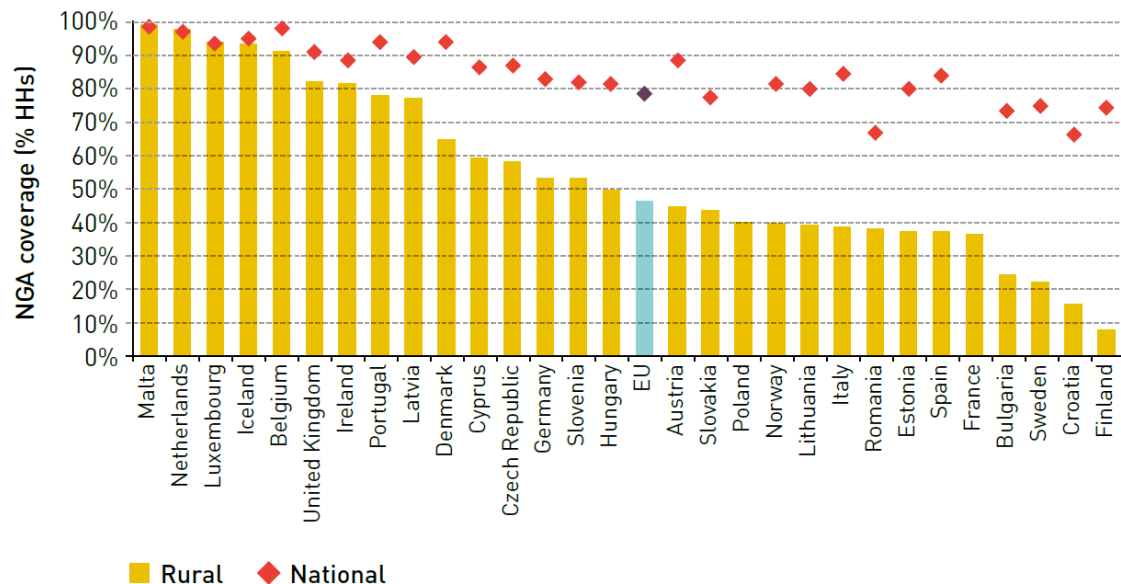
THE TOUGH TASK OF ROLLING OUT UNIVERSAL SUPERFAST BROADBAND



Many people now bracket broadband with electricity and running water as something they take for granted – or even expect as a right. But the coverage and quality of broadband services still varies enormously, leaving rural communities in particular on the wrong side of a “digital divide”. The imperative of bridging this divide is rising up the political agenda, but there is no cheap, easy solution. Governments and regulators may have to make a number of tricky trade-offs if connecting to high-speed broadband is going to be as simple as turning on a light for every household in the country.

The last decade has seen a sharp increase in the roll-out of “superfast” broadband (SFBB)¹ networks, which provide much higher speeds than the first broadband services introduced from 2000. But not everyone has benefited. The resulting digital divide is particularly glaring between town and country in many nations. For example, across the EU 80% of all households and businesses have access to superfast broadband, but in rural areas coverage drops to below 50%.

Figure 1 Coverage of superfast broadband services is much lower in rural areas



Source: EU Digital Scorecard
 Notes: Superfast coverage includes FttC, FttH, Cable (DOCSIS 3.0, DOCSIS3.1) and all other technologies providing download speeds of at least 30Mbps.

¹ “Superfast” broadband (SFBB) is defined as providing download speeds of at least 30 Mbps. “Ultrafast” broadband is generally (though not universally) defined as download speeds of at least 100 Mbps

Extending coverage of superfast broadband is a priority for policymakers in the EU and elsewhere. For example, the European Commission's Europe 2020 strategy has defined strict targets for achieving superfast broadband coverage, requiring all households to have access to download speeds of at least 30Mbps by 2020, and 100Mbps by 2025.² However, meeting such goals raises a number of important policy issues:

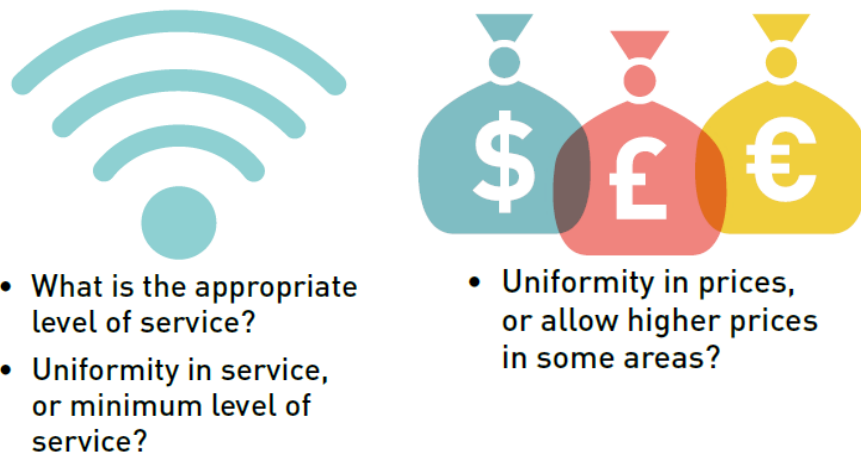
- What should the end objectives be?
- How can the benefits of competition be leveraged to meet these objectives?
- How can comprehensive coverage be funded at minimum cost to the public purse?

The rest of this bulletin explores how these questions may be approached in markets where superfast broadband has not yet been rolled out universally. Initiatives to date show that there are no easy answers. Policymakers may therefore face tricky trade-offs in crafting their strategies.

What should be the objectives?

Bridging the digital divide calls for decisions on both the level of service in different areas and the price of these services. The level of service boils down to either promoting uniformity across areas currently with and without SFBB coverage or ensuring a minimum level of service.

Figure 2 Policymakers need to decide on service and prices levels across different areas



At this stage there is no clear consensus among policymakers on which course to take. The EC's Europe 2020 strategy defined minimum download speeds for all premises across the EU by 2020. Similarly, Ireland's National Broadband Plan (NBP) requires minimum download speeds for all premises.³ However, in the UK the long-term strategy is to provide full Fibre-to-the-Home (FTTH) coverage, which should provide - in principle at least - a uniform service for every household. This was also the initial objective when the Australian government set out the requirements for its National Broadband Network (NBN). It is a goal that Singapore - admittedly a small city-state - has already achieved.

² The targets also require 50% of households to have access to download speeds of at least 100Mbps by 2020, and all "main socio-economic drivers" to have minimum speeds of 1,000 Mbps by 2025.

³ All households covered by the plan must have download speeds of at least 30 Mbps, with certain "Strategic Community Points" such as schools to get higher speeds.

Ideally, when deciding on the appropriate service quality policymakers would conduct a cost-benefit analysis of different options, or at least develop an understanding of the degree to which incremental improvements for currently underserved customers would benefit society as a whole – and at what cost. In the absence of robust cost information, setting strict service level targets could require excessive public investment - either directly through the cost of building the network required, or indirectly through modifying the incentives needed to encourage potential operators to bid for the job. A case in point is Australia, where the government watered down the requirement for universal FTTH coverage.⁴

As for pricing, there is a choice between attempting to achieve uniformity, which would ensure that all customers pay the same tariff nationally for the same level of service, or allowing prices to vary. Under the latter approach, operators could be allowed to charge more in currently underserved, more rural areas to reflect higher roll-out costs. An intermediate option would be to seek to achieve a nationally uniform price for a 'basic' SFBB service which provides a defined minimum quality/speed to end-customers, while allowing geographic variations for higher speed services.

No option is without its difficulties. Take uniform prices. First, policymakers may find it hard to ensure undifferentiated pricing for end-customers if some aspects of the service are delivered through competition. If governments choose to bridge the divide through funding the construction of a wholesale network to cover areas currently without SFBB, they would typically be expected to set prices at the wholesale level only.⁵ Uniformity would require setting wholesale prices for services on the network at the same national level, either by imposing a price that would apply nationwide or by benchmarking wholesale tariffs on the new SFBB network in currently unserved areas to equivalent tariffs in existing coverage areas. Retailers may then choose to set prices for end-customers in a geographically uniform way, but there are no guarantees that they will.

Second, ensuring uniformity in prices may require a trade-off with the level of service that can be achieved in areas currently without SFBB, or have implications for prices charged in existing coverage areas. If wholesale prices were to reflect cost, you would expect prices in existing coverage areas, which are typically more urban, to be lower than those in more rural parts. As such, if policymakers choose to benchmark wholesale prices in areas currently without SFBB to those in areas that have it, this would, all else equal, increase the public investment required to fund the network. The result is that in attempting to achieve uniform prices, policymakers may need to settle for cheaper, lower quality solutions in rural areas to limit the cost to the public purse. If policymakers were instead to pursue uniformity by imposing geographically averaged nationwide wholesale prices, the prices would end up being higher than those achievable/offered in existing coverage areas. This in essence would push up wholesale prices in lower cost areas, which, at a minimum, may place upward pressure on the prices faced by end-customers.

On the other hand, the alternative policy choice of allowing higher wholesale prices in currently unserved areas may restrict choice for consumers living there, if they resist paying more for the same service offered in towns and cities.⁶ Under these circumstances, it may be unprofitable for retail broadband providers to offer services in at least some of the areas currently without SFBB coverage. The result is that some companies may simply choose not to do business in those areas.

The above issues can be partly mitigated by seeking to restrict the requirement for a nationally uniform tariff to "basic" SFBB. However, this in itself is not a simple endeavour, requiring as it does the consideration of the quality/speed of basic SFBB and how it would evolve over time.

These trade-offs will need to be managed when considering speed and price objectives.

⁴ The NBN network will now have a "multi technology mix", consisting of a range of technologies including FTTH, cable, FTTC, fixed wireless and satellite services (see [here](#)).

⁵ This is the case in Australia, Ireland, New Zealand and Singapore among others.

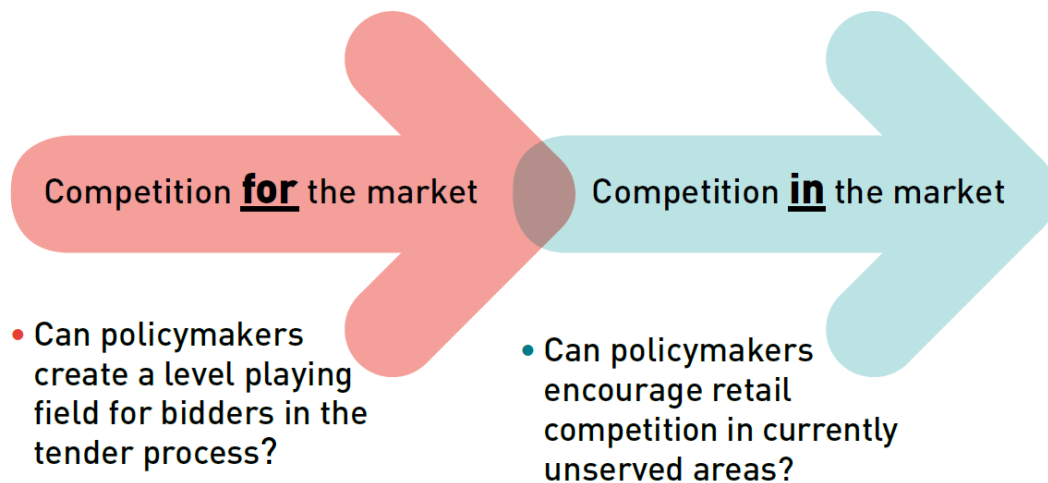
⁶ In practice, existing and new coverage areas could also be adjacent to each other, so in extreme cases differentiated retail prices could result in charging different prices to customers in the same neighbourhood.

Harnessing competition to hit the chosen target

Competition in the telecoms industry has driven the development of innovative services and has lowered prices. But consumers on the wrong side of the digital divide may not be benefiting fully, either because it's unprofitable to go after their business or because there is more limited competition.

In bridging the digital divide, one way that competition can be harnessed is to set up a tender process to choose an operator to deploy and maintain a wholesale network to cover the areas currently without SFBB. These networks are also made "open access", such that any operator is allowed to provide retail services to end-customers.⁷ The creation of a tender process effectively creates "competition for the market", which in principle can help minimise the public investment needed: if bidders are required to specify the funding/subsidy required as part of the award process, they have an incentive to reveal their true financing needs if they want to win. Making the network open access then facilitates "competition in the market" by encouraging retail competition in currently unserved areas. Such competition should give consumers greater choice and help to drive down their bills.

Figure 3 There are questions over how policymakers can leverage competition



However, once again this policy option is not without challenges.

In designing the tender process, consideration should be given to any advantages enjoyed by incumbent operators. Incumbents control infrastructure, such as poles and underground ducts, that they can use to roll out new networks in unserved areas. This may allow them to bid more aggressively (i.e. demand a lower subsidy) than potential rivals. Failure to take account of any such "private value" could undermine the competitive nature of the tender process.

One option to redress this would be to ring-fence the subsidised wholesale network and ensure that all bidders have access to the incumbent's infrastructure at the same price and on the same terms and conditions. However, this would require the prospective standalone network of the incumbent to be separated from the infrastructure, which could be a difficult and time-consuming endeavour.

Given the difficulties, policymakers may have to settle for a reasonable degree of competitiveness in the tender process rather than trying to create a perfectly level playing field for all bidders.

⁷ This approach has been used in a number of jurisdictions including Australia, Ireland, New Zealand and Singapore.

In addition, making the wholesale network in the currently unserved areas “open access” will not necessarily guarantee the same choice that retail customers in towns and cities enjoy. In particular, if these areas are sparsely populated, some retail operators may decide that their expected margins do not justify the extra fixed costs.

This has been the experience in the UK, where some retail operators have withdrawn from rural markets which are not viable to be served using local loop bundling, even though the terms offered by BT Wholesale for “bitstream” access are regulated.⁸ Despite this, having a smaller number of retailers on the new network doesn’t necessarily mean that consumers will face worse outcomes than those in towns and cities, if the retailers that do operate on the network choose to offer the same SFBB deals nationwide.

Minimising the bill for the taxpayer

While policymakers, including those in the EU, have argued that public funding to bridge the digital divide is justified⁹, governments will wish to keep public outlays to the minimum necessary to incentivise the roll-out of SFBB. There are several ways that this could be done. Many involve risks and challenges.

One approach would be to extend the footprint of the wholesale network that will serve uncommercial areas to include profitable areas, thus generating an “internal cross funding”. However, this may not be possible in practice if most or all of the geographically profitable areas already enjoy SFBB coverage. Even if there did exist profitable areas without SFBB coverage, guaranteeing this internal cross funding would require a concession ensuring that the winning bidder in any tender process has exclusive rights to those areas. Including such a concession could delay the completion of the process. However, not having such a concession would risk alternative operators rolling out their services in the profitable areas, which could again result in delays to the process.¹⁰

A second approach would be to attempt to share the commercial risk faced by the builders of new rural networks. As a consequence, operators would require a lower return on investment, thus reducing expected public funding requirements. Governments can achieve this by providing additional money if circumstances turn out less favourable than expected, or by limiting funds they claw back if expectations are exceeded. However, the extent to which policymakers can provide extra funding can be limited by state aid guidelines.¹¹ Moreover, there is political pressure for tight clawback arrangements to prevent private operators making large profits on the back of public investments.

Given these difficulties, one possibility may be for policymakers to take a more dynamic approach: hold down the public investment required initially by stipulating a less ambitious level of service, at least for a time, with the option to review the level of service once more data becomes available. Timely, and likely significant, improvement in rural coverage and speeds may well be preferable in a number of cases to a delayed and more uncertain delivery of a higher quality service.

⁸ Local loop unbundling is a regulated product whereby companies pay for the use of the incumbent operator’s network from its telephone exchange (the “hub” of the network in a particular local area), to the customer’s premises. Bitstream access involves renting more of the network, specifically from the customer’s premises to either a single national location or a smaller number of regional locations.

⁹ For example, the European Commission’s policy framework encourages both private and public investments in fast and ultra-fast networks to achieve the connectivity targets. See [here](#).

¹⁰ This has been the case in Ireland, where the proposed geographical scope of the NBP network was reduced from the original 700,000 target, following eir’s decision to roll out FttH services commercially to 300,000 of its least rural premises.

¹¹ Most notably, additional funding cannot be provided to cover demand risk under state aid guidelines i.e. in the event that take-up on the network is lower than expected.

Conclusion

In attempting to bridge the digital divide, clarity about the outcomes to be achieved and the longer term policy/regulatory objectives is highly desirable. Decisions on each of these will typically involve trade-offs between quality of service/speed and cost and timing of delivery of SFBB services. There will probably also have to be an acceptance that competition both in any tender process and in the retail market in areas currently without SFBB coverage may not be perfect. Developing a strategy for universal SFBB availability that is consistent with these principles is also likely to support the objective of ensuring that the bill to the taxpayer is commensurate to the benefits achieved from bridging the digital divide.



Louis Turner

+353 1687 2119

louis.turner@frontier-economics.com



Martin Duckworth

+44 (0) 207 031 7180

martin.duckworth@frontier-economics.com