

Connecting Rural New Zealand

Evidence-Based Approaches to
Broadband Policy



Disclaimer

This report was prepared in March 2026 and is based on information available at that time.

This report has been prepared by Flint Global for One New Zealand Group Ltd, Spark New Zealand Ltd, 2degrees Mobile Ltd, Fortysouth Group LP and Connexa Ltd (“the commissioning parties”). All information in this report is derived or estimated by Flint Global analysis using publicly available information.

The commissioning parties have not supplied any additional data. Information sources are referenced in footnotes throughout the report. This report has been prepared solely for information purposes based on source references and Flint Global economic modelling. Projections, scenarios, analyses, and conclusions contained in this report should not be construed as definitive forecasts or guarantees of future performance or results.

The commissioning parties, Flint Global and their respective affiliates, or any other third party involved make no representation or warranty as to the accuracy or completeness of the information in the report and, to the extent permitted by law, shall not be liable for any loss arising from the use of this report.



Contents

| | |
|---|-----------|
| 1. Executive Summary | 4 |
| 2. Context and New Zealand connectivity infrastructure | 7 |
| 2.1. Context and objectives | 7 |
| 2.2. New Zealand connectivity infrastructure | 7 |
| 3. Economic analysis of the net benefits of supporting connectivity in rural New Zealand | 9 |
| 3.1. Introduction and context | 9 |
| 3.2. Scenarios and counterfactuals | 9 |
| 3.3. Costs of expanding connectivity | 12 |
| 3.4. Benefits of further connectivity..... | 15 |
| 3.5. Conclusion | 18 |
| 4. International case studies on rural connectivity | 19 |
| 4.1. Summary findings and best practice..... | 19 |
| 4.2. United Kingdom..... | 19 |
| 4.3. Sweden | 25 |
| 5. Policy framework for rural connectivity in New Zealand | 30 |
| 5.1. User needs assessment..... | 30 |
| 5.2. Mixed-technology approach | 32 |
| 5.3. Integration of mobile investment..... | 32 |
| 5.4. Intervention design | 33 |
| 5.5. Monitoring and evaluation | 34 |
| Annex: Policy Intervention Options | 35 |



1. Executive Summary

Context and objectives

1. New Zealand has achieved high levels of broadband coverage through a combination of fibre, fixed wireless, mobile, and satellite technologies. Fibre is available to around 87% of households and businesses, reflecting the success of the Ultra-Fast Broadband programme.
2. The remaining premises are predominantly in rural and hard-to-reach areas, characterised by low population density, challenging terrain and dispersed demand. Extending fibre to these locations would involve significantly higher costs per premises and is unlikely to be commercially viable without public subsidy.
3. At the same time, most rural households already have access to alternative forms of connectivity, including 4G fixed wireless access, emerging 5G services and satellite solutions. Coverage and performance of these technologies continue to improve, and adoption trends indicate increasing use of non-fibre solutions in rural areas.
4. The central policy question is therefore not whether connectivity should improve, but how best to deliver further improvements in a way that is economically efficient, future-proof and proportionate. This requires assessing the role of fibre alongside alternative technologies, and determining whether additional public investment in fibre deployment represents the most effective use of resources.
5. This report addresses that question through three components: a review of economic evidence on connectivity, international case studies, and a principles-based policy framework to support decision-making.

Robust economic assessment framework

6. A robust economic assessment of rural connectivity investment must be grounded in a realistic counterfactual, a comprehensive assessment of costs, and a careful interpretation of incremental benefits.
7. First, analysis should be undertaken relative to a realistic and dynamic baseline. Connectivity levels in rural New Zealand are mixed in terms of underlying technology and service performance, and are constantly improving through ongoing investment in mobile, fixed wireless and satellite technologies. Assessments that compare future fibre deployment against a static or unrealistic view of current connectivity risk overstating incremental benefits.
8. Second, economic assessments must consider the full range of costs. These include not only upfront capital expenditure, but also ongoing operating costs, capacity upgrades, and resilience requirements. Existing studies place limited weight on these factors, focusing primarily on gross benefits rather than net outcomes.
9. Third, analysis should distinguish clearly between the benefits of connectivity in general, and the incremental benefits of fibre as a specific means of delivering improved connectivity. The largest economic gains arise when households and businesses gain access to reliable broadband for the first time, regardless of technology. By contrast, upgrading from already adequate connectivity (for example, from fixed wireless or satellite to fibre) will deliver only incremental benefits.



10. Against this framework, existing assessments of connectivity in New Zealand appear to provide a limited guide to the incremental net benefits of fibre expansion. This reflects three principal limitations:
 - Benefits are likely inflated due to assumptions that treat rural users as digitally excluded, despite widespread existing connectivity;
 - Costs of deployment and operation are omitted or understated; and
 - Analysis is conducted relative to an unrealistic, static counterfactual rather than expected technological evolution.
11. Although conducting a robust economic analysis is difficult, failing to address these limitations would risk biasing conclusions towards fibre-only outcomes and understating the potential role of alternative technologies. A more balanced assessment supports a diversified technology mix, where fibre plays a significant role, but differences in cost, performance and resilience across geographies are considered.

Insights from international case studies

12. International experience reinforces the importance of flexible, technology-neutral approaches to rural connectivity. Evidence from the UK and Sweden highlight several consistent themes.
13. First, policy objectives are defined in terms of service outcomes rather than specific technologies. Both countries set performance-based targets (for example, gigabit-capable connectivity) while allowing different technologies to meet these requirements where appropriate.
14. Second, policy frameworks are forward-looking and recognise economic constraints. Targets explicitly account for the high cost of connecting the most remote premises, with acceptance that a small proportion of locations may be served by alternative solutions where fibre is not cost-effective.
15. Third, a pragmatic, mixed-technology approach is adopted for hard-to-reach areas. Fibre is typically prioritised where it is economically justified based on cost-benefit analysis, while fixed wireless and satellite technologies play a role in extending coverage to remote locations.
16. Fourth, fixed and mobile connectivity objectives are integrated. Both case studies emphasise the complementary role of mobile networks in delivering coverage, supporting mobility, and enhancing resilience.
17. Fifth, public funding frameworks are designed to ensure value for money. Key features include targeting subsidies to non-commercial areas only, using competitive allocation mechanisms, requiring wholesale access to supported infrastructure, and incorporating monitoring and clawback provisions.
18. Overall, these approaches demonstrate how governments can balance ambition with affordability, using flexible frameworks to deliver high-quality connectivity outcomes without prescribing a single technological solution.

Both inform a principles-based policy framework

19. Drawing on the economic assessment and international evidence, this report proposes a principles-based framework that could inform discussion of rural connectivity policy in New Zealand. The framework is structured around five core components.
20. First, policy is grounded in a robust assessment of user needs. This includes current and future requirements across households, businesses and public services, and considers multiple dimensions of service quality, including speed, latency, reliability and capacity. This enables policy objectives to be defined in terms of outcomes rather than technologies.



21. Second, the framework adopts a mixed-technology approach. Different technologies are suited to different geographies and use cases. Fibre, fixed wireless and satellite solutions should be deployed in combination to achieve cost-effective and comprehensive coverage, with fibre prioritised where economically justified.
22. Third, mobile connectivity is fully integrated into policy design. Mobile networks play an increasingly important role in supporting fixed broadband use cases, connectivity on the move and wider emerging applications, and can provide cost-effective solutions, synergistic benefits and strengthen resilience in rural areas.
23. Fourth, any interventions are targeted and proportionate under the framework. Public support should address clearly identified market failures, including commercial viability gaps, demand-side barriers and coordination challenges. Mechanisms such as competitive grants, vouchers and local delivery models can improve effectiveness and minimise market distortion.
24. Fifth, the framework includes robust monitoring and evaluation. Performance is assessed against outcomes such as coverage, adoption and service quality, with regular reviews to ensure interventions remain aligned with evolving needs and technological developments.
25. Taken together, this framework supports a shift from technology-led policy to a more flexible, evidence-based approach centred on user outcomes, economic efficiency and long-term resilience.



2. Context and New Zealand connectivity infrastructure

2.1. Context and objectives

26. New Zealand has achieved near-universal broadband coverage through a mix of fibre, copper (now being retired), mobile and fixed wireless access (FWA) networks, and emerging low earth orbit (LEO) satellite services.¹ Chorus, the main fibre wholesaler in New Zealand, has proposed expanding fibre coverage from 87% to 95% of households and businesses.² As the remaining households without fibre access are increasingly rural and hard to reach, the cost of fibre deployment per premises is expected to rise significantly.
27. Higher costs associated with an expanded fibre rollout would likely require increased public subsidy. It is therefore important that policymakers can comprehensively evaluate all future options for delivering last-mile connectivity, including alternatives to fibre. This report provides an independent perspective on the key questions and trade-offs facing decision-makers.
28. This report:
 - reviews best practice in assessing the economic benefits of connectivity and relevant existing studies;
 - provides insights from international approaches in countries that have faced similar deployment challenges to New Zealand, in particular the UK and Sweden; and
 - develops a principles-based policy framework, informed by the economic assessment and case studies, to support policymakers.

2.2. New Zealand connectivity infrastructure

29. New Zealand's connectivity infrastructure is well developed with approximately 87% of New Zealand's households and businesses having access to fibre.³ Those not already covered by fibre are predominantly rural households. 95% of rural households are within the coverage area of at least one mobile operator's 4G FWA network, while around 12% are able to access 5G.⁴ Both geostationary and LEO satellite services (e.g. Starlink) are also available in New Zealand today.
30. New Zealand has a low population density (around 20 people per km²) and a highly uneven population distribution, with approximately 16% of the population living in rural areas. These areas are typically sparsely populated, geographically dispersed, and often located in mountainous or remote terrain.⁵ As a result, the build cost of extending fibre to the remaining rural premises is expected to increase significantly on a per-premises basis. A key policy question is therefore whether subsidising fibre deployment in high-cost rural areas is economically justified given the availability of alternative technologies which may also meet user needs (even if service capability is not directly comparable to fibre).
31. New Zealand's fibre deployment is led by wholesale-only network providers operating in defined geographic regions, originally established under the New Zealand government's Ultra-Fast Broadband

¹ For the purposes of this report, fibre refers to a full fibre-to-the-premises connection (FTTP)

² Chorus, <https://company.chorus.co.nz/media/releases/fibre-for-95-of-kiwis-chorus-proposal-endorsed-as-national-priority>, date accessed 18 March 2026. There are also three Local Fibre Companies: Enable, Tuatahi and Northpower.

³ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p.117.

https://www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

⁴ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p.111.

https://www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

⁵ World Bank, <https://data.worldbank.org/indicator/EN.POP.DNST?locations=NZ>, date accessed 18 March 2026



(UFB) programme.⁶ These providers do not offer retail services. Fibre access pricing is regulated by the Commerce Commission, with Chorus subject to a Regulated Asset Base model, while other local fibre companies are subject to a mix of regulatory and contractual pricing arrangements.⁷ Chorus, which also operates the copper network in New Zealand, is the leading incumbent with its fibre network covering the majority of the population.

32. New Zealand introduced the Rural Broadband Initiative (RBI) and Mobile Black Spot Fund (MBSF) to provide faster internet services where it was not cost-effective to include in the UFB programme. The RBI provided grants to upgrade cellular towers and cabinets funded by an industry levy, and initially provided broadband services using 3G mobile and VDSL (copper-based) technologies.⁸ Cellular operators have now upgraded to 4G. The MBSF provided funding to provide coverage on 1,400km of New Zealand's rural state highways and 168 tourist sites. This was expected to increase mobile coverage by 20-30%.⁹
33. New Zealand's mobile telecoms services are primarily provided by three operators, One New Zealand, Spark and 2degrees, which also offer FWA broadband services. Starlink, a non-domestic provider, is currently the only LEO operator offering fixed broadband services in New Zealand with Amazon Leo a potential future market entrant.¹⁰

⁶ Richard Feasey, Recommendations for telecommunications regulation in New Zealand: A report for the Commerce Commission (2025), p.3

⁷ www.comcom.govt.nz/regulated-industries/fibre/fibre-price-quality-paths/, date accessed 18 March 2026

⁸ VDSL: Very-high-bit-rate Digital Subscriber Line

⁹ New Zealand Ministry of Business, Innovation and Employment, www.mbie.govt.nz/science-and-technology/it-communications-and-broadband/digital-connectivity-programmes/broadband-and-mobile-programmes, date accessed 23 March 2026

¹⁰ Richard Feasey, Recommendations for telecommunications regulation in New Zealand: A report for the Commerce Commission (2025), p.59 & 75



3. Economic analysis of the net benefits of supporting connectivity in rural New Zealand

3.1. Introduction and context

34. Improvements in connectivity can have substantial economic benefits. For example, looking at the last 30 years, the internet has collapsed search and coordination costs, with wide-reaching effects on the way goods and services are produced and consumed. This has contributed to wide-ranging changes in the structure of markets and speed of innovation. Partly reflecting this shift, the world's five most valuable public companies are now NVIDIA, Apple, Alphabet, Microsoft and Amazon – firms built on the economics of data, networks and digital connectivity.
35. The way households and businesses connect to and use broadband services informs the scale of benefits realised in a given region. By supporting the rollout of fibre in urban areas and broadband and mobile connectivity elsewhere, policymakers have supported the productivity of New Zealand's businesses and the wellbeing of its citizens. This includes initiatives such as the UFB programme, alongside the RBI and MBSF, which have expanded high-speed connectivity and mobile coverage across much of the country.
36. This chapter analyses the most important factors policymakers need to consider in any economic analysis of whether and how to address the remaining connectivity gaps in New Zealand. In doing so, it considers three important questions for policymakers:
- How connected are rural households today irrespective of technology, and how will connectivity improve without further intervention?;
 - Which is the most cost-effective way to deliver improved connectivity across different geographies, taking into account all costs, including network resilience costs?; and
 - What would a realistic assessment of the incremental benefits of improved connectivity look like, and to what extent are these benefits technology-specific?
37. In doing so, we draw on two pieces of policy analysis produced on behalf of Chorus by Deloitte and NZIER.¹¹ These studies diagnose current and/or potential future connectivity gaps as largely stemming from the incomplete availability of fibre and have been interpreted as showing the potential benefits of a fibre-led solution. Our conclusion discusses the resulting care needed when interpreting their analyses.

3.2. Scenarios and counterfactuals

Multiple technologies could increase the use of broadband in rural New Zealand

38. Any analysis of whether and how to address connectivity gaps in New Zealand should start with an assessment of the current levels of provision. Not all households currently benefit from connectivity equally. The Telecommunications Monitoring Report 2024 estimates that 90% of households (approximately 1,530,000 homes) have a fixed broadband connection, leaving around 10% of homes without one (170,000).¹² Fibre is used by 66% of households and businesses today (approximately

¹¹ NZIER, Rural connectivity: Economic benefits of closing the rural digital divide: A report for Chorus Limited by NZIER, 2022.

www.nzier.org.nz/hubfs/Public%20Publications/Client%20reports/Rural%20connectivity%20FINAL.pdf

Deloitte, Unleashing Fibre: The Future of Digital Fibre Infrastructure in New Zealand, 2024.

www.deloitte.com/nz/en/services/consulting-financial/research/unleashing-fibre.html

¹² Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p. 264.

www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf



1.35 million homes and businesses), and is popular due to its fast available speeds, high reliability, low latency and weather resistance.¹³ When considering whether the Government should support further rollout of fibre in rural New Zealand, a key question is whether subsidising fibre in high-cost rural areas would deliver additional benefits beyond those likely to arise from ongoing improvements in availability and take-up that would occur across all types of technology without Government support.

39. Fibre is one of a number of candidate technologies to increase the availability of high-quality broadband. It is already available to approximately 87% of New Zealand's population (over 1.8 million homes and businesses), leaving roughly 270,000 premises (both households and businesses) without fibre availability.¹⁴ These are largely rural premises, which in many cases have the ability to get online already via other means. As of June 2024, 95% of households without fibre are within the coverage area of at least one Mobile Network Operator (MNO) 4G cellular FWA network, with around 12% able to access 5G.¹⁵ And 69% of households without fibre are within the coverage area of at least one non-cellular FWA network.¹⁶ Both geostationary and LEO satellite services (e.g. Starlink) are available nationwide and can provide service to properties capable of receiving a satellite signal. More broadly, only 1.1% of households (20,000) reported having no access to telecoms at all.¹⁷
40. Existing take-up shows that availability does not ensure adoption. Fibre coverage in New Zealand reached approximately 87% in 2022, yet take-up where fibre is available remains around 76%.¹⁸ This implies that roughly 24% of households with access to fibre have chosen not to adopt it. This may be explained by several factors, including adoption lagging availability, satisfaction with existing non-fibre connectivity, affordability, and choosing not to be connected to the internet.

Connectivity will continue to improve absent government support

41. The stacked area chart on the next page (left) presents OECD data on the total number of fixed broadband connections in New Zealand by technology between 2019 and 2024. It shows steady growth in overall connections over time, partly reflecting a decline in copper broadband over the period. At the start of the decade, overall growth was more than explained by growth in the availability and take-up of fibre. However, the contribution to growth from FWA and satellite has steadily increased, with double the FWA and satellite connections in 2024 compared to 2019. Around 13% of urban households use FWA, indicating a significant role alongside fibre.¹⁹
42. Focusing on rural households, where recent growth has been unaffected by changes in the availability of fibre, satellite is the fastest-growing broadband technology, with connections rising by 60% over the past year (from 37,000 to 58,000). Approximately 50,000 of these connections are in rural areas, accounting for around 19% of rural residential connections. Cellular FWA has also grown in popularity for properties unable to access fibre. In the absence of further fibre expansion, these switching trends are likely to continue. The Commerce Commission states that “at current rates, satellite connections will overtake copper connections in rural areas within the next year”.²⁰

¹³ This 66% usage figure is the product of the availability and take-up figures reported on Commerce Commission, 2024 Telecommunications Monitoring Report, 2025. 66% usage is the product of availability and take-up. (87%*76%). “Fibre connectivity [is available] to 87% of households and businesses nationwide” (p.117 and p.31).

¹⁴ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

¹⁵ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p. 22. 1.8 million is 87% of 2.07 million, leaving 13% (270,000) of households and businesses unconnected.

¹⁶ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

¹⁷ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p.111.

¹⁸ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

¹⁹ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p.115.

²⁰ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

²¹ Stats NZ, Housing in Aotearoa New Zealand, 2025. www.stats.govt.nz/assets/2023-Census/Housing-in-Aotearoa-New-Zealand-2025/Housing-in-Aotearoa-New-Zealand-infographic-v2.pdf

²² Commerce Commission, 2022 Telecommunications Monitoring Report, 2023, p.22 and p.31.

²³ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

²⁴ Commerce Commission, 2024 Telecommunications Monitoring Report, 2025, p.9.

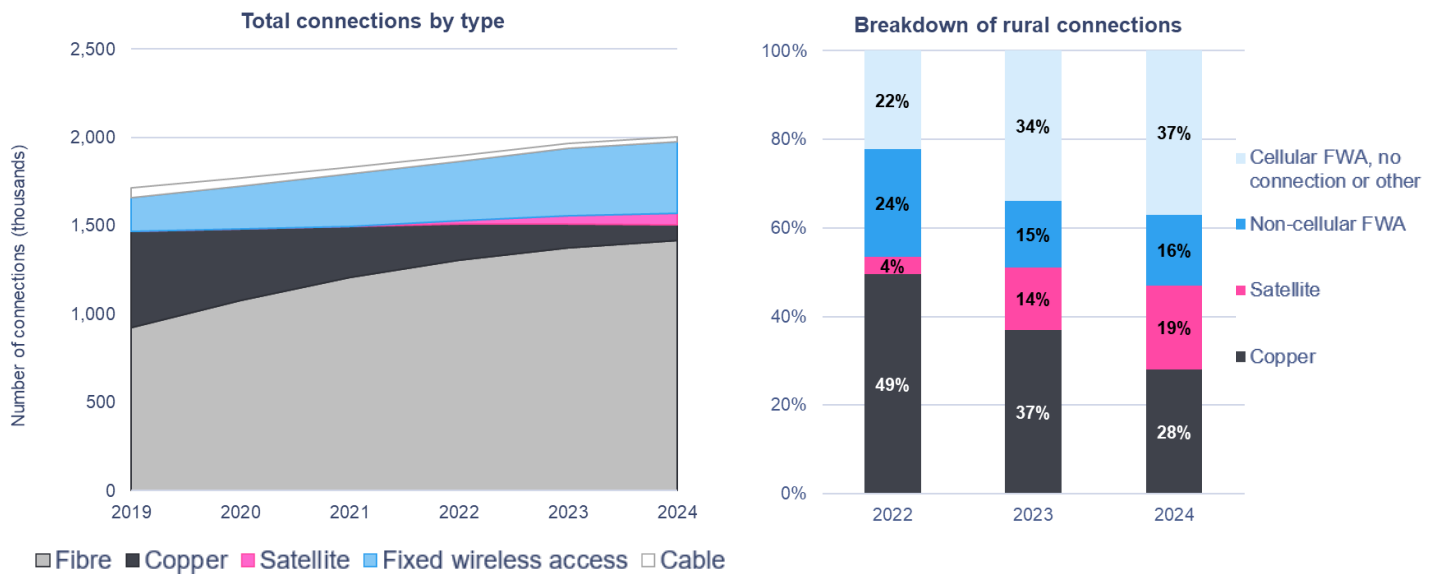
²⁵ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

²⁶ Commerce Commission, Telecommunications Monitoring Report 2024, 2025, p.136.

²⁷ www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf



Figure 1: Estimated rural broadband connections in New Zealand by technology type



Source: OECD Broadband statistics, <https://goingdigital.oecd.org/datakitchen/#/cover/1/toolkit/indicator/explore/en>; Commerce Commission, Telecommunications Monitoring Reports 2022- 2024 <https://www.comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/annual-monitoring-report/>

43. Some of these trends are likely to continue, further improving coverage, speed, and availability.²¹ With satellite widely available already, continued improvements in satellite capacity, pricing, and performance are likely to continue to increase take-up, strengthening its role in rural connectivity. Similarly, FWA technologies may improve as network equipment is upgraded, including through ongoing upgrades to 4G and the expansion of 5G networks, with MNOs required to extend coverage beyond urban areas and into smaller towns and rural regions over time.²² But fibre coverage is unlikely to expand significantly absent government intervention that either provides funds to cover costs directly or enables Chorus to recover them from customers via higher bills (FWA is also likely to require some support to meet the costs of further expansion, so any assessment must consider the costs and benefits of both). The UFB programme extended fibre connectivity to 87% of households by 2022. The New Zealand Infrastructure Commission’s 2020 Sector State of Play: Telecommunications report concluded that, without further government intervention, the most remote areas were unlikely to attract private investment into fibre because of the often prohibitively high marginal cost.²³

Does existing economic analysis of broadband in New Zealand account for these baseline trends?

44. When considering the incremental benefit of measures to subsidise rural fibre, it is clear that the appropriate counterfactual is a dynamic one, as broadband coverage and performance in rural areas will improve, relative to current levels, through commercial investment and technological progress in any plausible ‘no subsidy’ counterfactual. By contrast, the large benefits projected by existing analyses of broadband in New Zealand do not appropriately account for this dynamic baseline. They will therefore produce larger figures than would be produced by an analysis of the incremental benefits that additional subsidised fibre would actually deliver:

²¹ This is suggested by Figure 50 of the New Zealand Infrastructure Commission’s latest National Infrastructure Plan, which estimates future investment demand in the telecoms sector, under the assumption that historical capital spending grows in line with GDP. New Zealand Infrastructure Commission, National Infrastructure Plan, 2026 p. 160. www.tewaihang.govt.nz/national-infrastructure-plan

²² Government spectrum allocation agreements require MNOs to expand mobile coverage into rural areas and are expected to accelerate the rollout of 5G beyond urban centres. New Zealand Commerce Commission, 2023 Telecommunications Monitoring Report, 2024, p.151. www.comcom.govt.nz/data/assets/pdf_file/0033/361959/2023-Telecommunications-Monitoring-Report-15-August-2024.pdf

²³ New Zealand Infrastructure Commission, State of Play: Telecommunications, 2020, p.33. <https://tewaihang.govt.nz/our-work/research-insights/sector-state-of-play-telecommunications>



- NZIER models an annual \$1.8 billion benefit for households and \$0.35 billion for businesses.²⁴ These estimates are derived by applying per-household and per-business benefits across all 280,000 rural households and 140,000 rural businesses. This is explained as capturing impacts relative to a counterfactual in which users rely on technologies with “limited capacity and reliability”. However, assuming that no rural New Zealanders currently benefit from an appropriate level of digital connectivity is inconsistent both with the wide availability of non-fibre technologies set out above, and with rural New Zealanders’ self-reported experiences of broadband.²⁵ The analysis also assumes an improvement to 100% availability and take-up. A low counterfactual level of connectivity, combined with an implausibly high degree of take-up in the modelled scenario, means the analysis should be considered an upper bound on the potential incremental impacts.
- The Deloitte report also finds that fibre infrastructure will generate very large economic benefits, projecting that fibre investment could add \$33.2 billion to New Zealand’s annual GDP by 2033.²⁶ Deloitte’s modelling takes as inputs broadband speed, fixed connections, and internet penetration relative to today’s levels. But as with NZIER’s analysis, without calculating the baseline increases in these metrics using plausible projections of alternative technology paths that reflect current trends in availability and take-up, the approach produces larger figures than would be found in an analysis of the potential incremental benefits of policy measures that might support investment in greater fibre-based connectivity.

3.3. Costs of expanding connectivity

The relatively lower average cost of urban fibre explains its success to date

45. As well as considering the incremental benefit taking account of current trends, economic analysis of measures to increase connectivity in New Zealand should take account of relevant costs. Figure 2 shows the relative monthly pricing of different broadband contracts, for both urban and rural households. These prices are likely to provide some guide to the underlying capital and operating costs of provision, as well as reflecting a margin that covers other costs including marketing and a return to investors.
46. Figure 2 shows that ‘Fibre 300’ appears broadly price-competitive in urban areas where it is available. Rural consumers relying on 4G fixed wireless face notably higher prices, with plans averaging around \$115 per month, roughly 40% more than the \$69 average in urban areas, and are also more likely to experience data caps. By contrast, satellite pricing is relatively uniform nationwide, with standard and ‘lite’ plans priced at approximately \$159 and \$79 per month, although take-up in urban markets remains limited.²⁷ However, both pricing and consumption patterns are evolving rapidly. The Commerce Commission’s assessment of the sector in 2024 focuses its price comparisons on ‘Fibre 300’ as a standard reporting category, but higher-speed fibre plans (500 Mbps and above) are now the most popular choice among urban households, where prices are around \$96 per month for a typical 521 Mbps plan.²⁸ This means simple price comparisons may not fully reflect what people now expect from broadband or the changing market.

²⁴ All dollar monetary amounts presented in this report are expressed in New Zealand Dollars (NZD).

NZIER, Rural connectivity: Economic benefits of closing the rural digital divide, 2022, p. 14.

www.nzier.org.nz/hubfs/Public%20Publications/Client%20reports/Rural%20connectivity%20FINAL.pdf

²⁵ See for instance, Broadband-usage-for-rural-communities-in-the-North-Island-of-Aotearoa-New-Zealand.pdf

²⁶ Deloitte, Unleashing Fibre: The Future of Digital Fibre Infrastructure in New Zealand, 2024, p. 5.

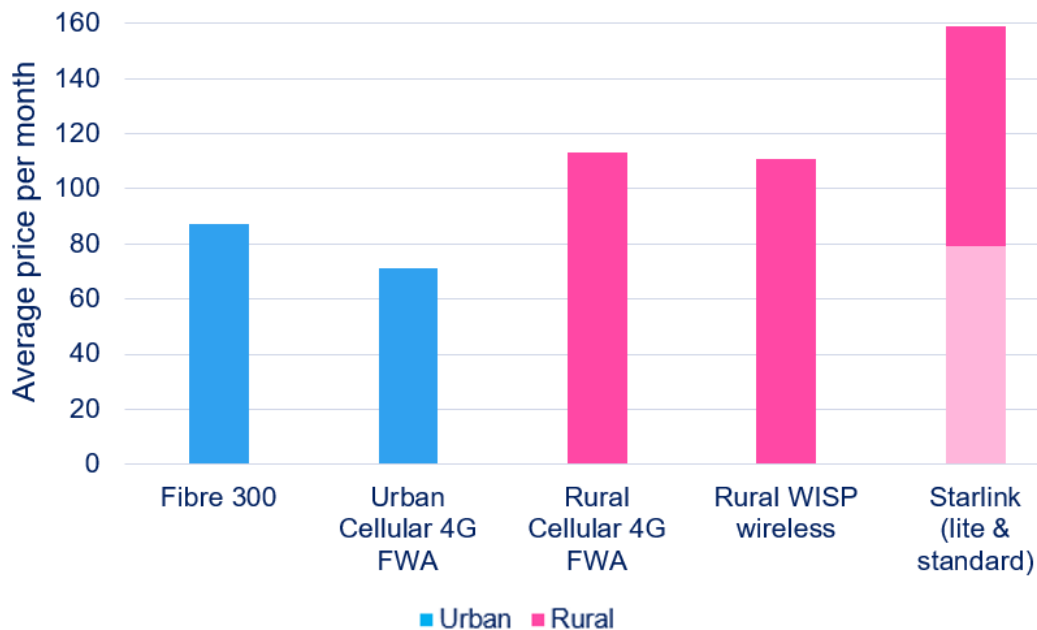
www.deloitte.com/nz/en/services/consulting-financial/research/unleashing-fibre.html

²⁷ Because of this, we have displayed Starlink as rural in Figure 2. Commerce Commission, Telecommunications Monitoring Report 2024, 2025, p.38, p.166. www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

²⁸ The Commerce Commission reports on Fibre 300 for its average price of fibre but plans of 500Mbps+ are now most popular for households. One publicly available source of commercial fibre plans shows \$96/month for the most popular 521 Mbps plan. One NZ, Broadband Internet Plans, 2026. one.nz/broadband/internet-plans/, date accessed 22 March 2026



Figure 2: Average monthly prices of broadband by technology and urban vs. rural



Source: Commerce Commission, Telecommunications Monitoring Report 2024, 2025, p.15, p.38, p.78, p.166.

www.comcom.govt.nz/assets/pdf_file/0025/367054/2024-Telecommunications-Monitoring-Report-30-June-2025.pdf

Note: WISP refers to Wireless Internet Service Providers.

47. The initial investment associated with fibre networks is significant, but passive optical networks (with relatively little powered equipment between the exchange and the customer) have lower ongoing energy and maintenance costs in comparison to some other technologies such as copper broadband. In contrast, satellite and FWA rely on wireless transmission which generally consumes more power and requires greater capacity upgrades than fibre. These cost structures and the observable pricing outcomes for consumers suggest that fibre may be most cost-effective in high- and medium-density areas, where fixed costs can be spread across many users. In lower-density rural areas, FWA often provides a more economical solution, while satellite may be best suited to the most remote locations, where the cost of extending terrestrial networks becomes prohibitive.

Rising costs of expanding fibre to rural areas means current costs are not a good guide for further expansion

48. Fibre already covers around 87% of New Zealand’s population and has been deployed in urban areas where high user density keeps connection costs affordable. However, these areas represent only about 1-2% of the country’s land area, meaning the remaining households are dispersed across more remote regions.²⁹ Extending fibre into these areas requires longer network builds to connect fewer premises, and Chorus noted in 2022 that this would “come at a higher cost per premises passed,” estimating that reaching 95% of the population (an additional 8% of premises) could cost \$2-2.5 billion.³⁰
49. These Chorus estimates reflect cost per premises passed rising dramatically from \$2,525 per premises passed (at 87% coverage) to \$27,000 per premises (at 95% coverage).³¹

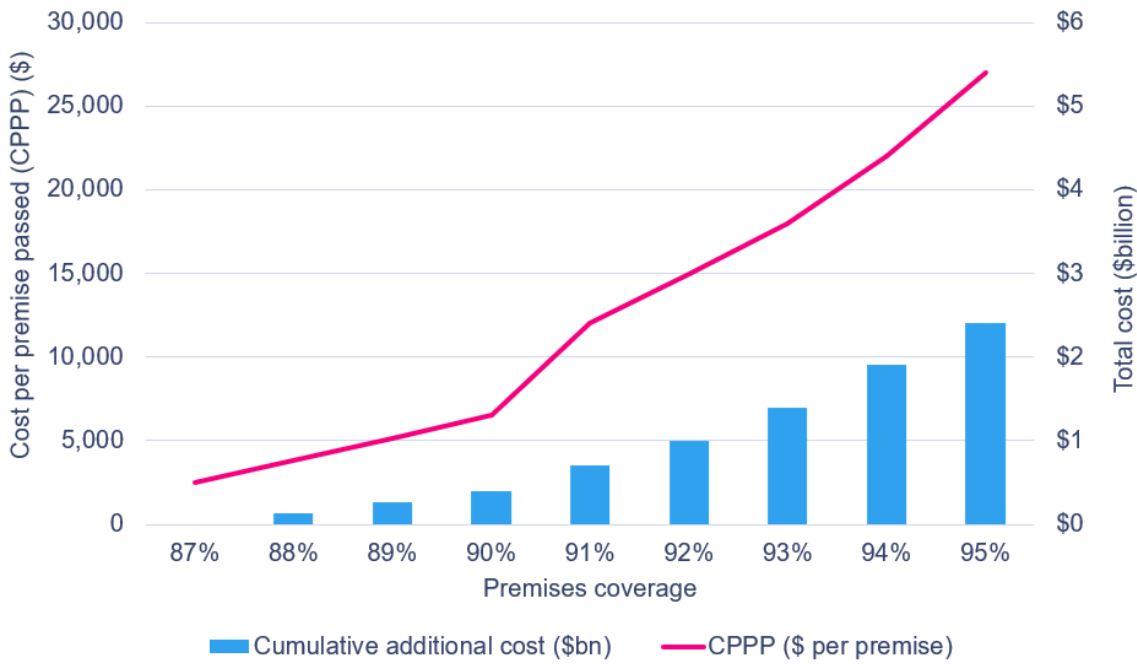
²⁹ Statistics New Zealand, Urban land cover data to 2023, 2025. www.stats.govt.nz/indicators/urban-land-cover-data-to-2023/

³⁰ Commerce Commission, Fibre Input Methodologies Review, Tranche 1, 2026, p. 55. www.comcom.govt.nz/assets/Documents/fibre-input-methodologies-review-2027/Fibre-input-methodologies-review-2027-Tranche-1-Draft-decision-reasons-paper-17-March-2026.pdf

³¹ Assuming that capital costs are amortised over a 25-year average asset life and a historically-based take-up rate suggests a monthly contribution to prices from capital spending ranging between \$25 (90% coverage), and \$103 (95% coverage) per premises per month.



Figure 3: Indicative costs of fibre extension



Source: Commerce Commission, *Fibre Input Methodologies Review, Tranche 1, 2026*, p. 55.

<http://www.comcom.govt.nz/assets/Documents/fibre-input-methodologies-review-2027/Fibre-input-methodologies-review-2027-Tranche-1-Draft-decision-reasons-paper-17-March-2026.pdf>.

Note: We have assumed costs grow linearly between the published 87% and 90% figures, although a slight upward curve might be expected in reality.

50. This pattern reflects a common feature of network deployment: the lowest-cost areas, which tend to have the highest network utilisation and population density, are typically served first, while the remaining households are progressively more costly to reach. Evidence from the UK and the US also reinforces the steep increase in fibre deployment costs as rollout extends into rural areas.³² As discussed in chapter 4, the UK Government’s National Infrastructure Commission cost modelling found that connecting the “final third” of premises, which are predominantly rural and semi-rural properties, could cost almost as much as deploying fibre to the “first two thirds” of largely urban premises combined.³³
51. FWA and LEO satellite are fundamentally different from fibre in how their costs scale. FWA relies on shared wireless capacity that must be spread across users in each area. As more customers connect or data demand increases, networks need ongoing investment and utilisation must be carefully managed to maintain customer experience and quality of service.³⁴ The costs of LEO constellations also scale with required capacity, although at a global, not a local, level. These upgrades are costly and can face capacity constraints, meaning that expanding the network becomes increasingly expensive over time. Fibre involves high upfront deployment costs, but once installed, the final connection is dedicated to the customer rather than being shared. Capacity can then be increased

³² In the UK, one study suggests costs rising from around £500–£1,000 per premise in dense urban areas to £2,000–£5,000 or more in rural areas. Infrastructure Transitions Research Consortium (ITRC), *Studying the costs of fibre deployment in fixed broadband access infrastructure: Evidence from the UK’s National Needs Assessment*, 2021. www.itrc.org.uk/itrcpublications/studying-the-costs-of-fibre-deployment-in-fixed-broadband-access-infrastructure-evidence-from-the-uks-national-needs-assessment/. One US example finds rural fibre deployment costs starting at around \$2,600 per premise and reaching up to \$42,000 in the most remote locations. Benton Institute for Broadband & Society, *The High Cost of Connectivity 2023*, 2023. www.benton.org/publications/cost-of-connectivity-2023. Another US example suggests that aerial deployment costs are approximately \$700–\$1,500 per home passed in urban and suburban areas, increasing to around \$1,300–\$2,700 in rural areas. Fiber Broadband Association, ‘2023 Fiber Deployment Cost Study’ (2023) <https://fiberbroadband.org>.

³³ Infrastructure Transitions Research Consortium (ITRC), *Studying the costs of fibre deployment in fixed broadband access infrastructure: Evidence from the UK’s National Needs Assessment*, 2021. www.itrc.org.uk/itrcpublications/studying-the-costs-of-fibre-deployment-in-fixed-broadband-access-infrastructure-evidence-from-the-uks-national-needs-assessment/

³⁴ For FWA, this means adding more cell sites, spectrum, and backhaul capacity; for LEO satellite, it requires launching additional satellites and expanding ground infrastructure.



relatively cheaply over time by upgrading equipment, rather than needing to build additional network infrastructure.

Different broadband technologies have different levels of resilience

52. Remote fibre and FWA broadband networks are exposed to physical damage in sparsely populated areas, where replacement costs may be high. Long line lengths, overhead infrastructure, difficult terrain, reliance on other infrastructure networks and limited redundancy increase vulnerability to natural hazards such as storms, floods, bushfires and earthquakes. In addition, remote locations make repairs slower and more expensive, forcing providers to invest more in resilience and face higher expected maintenance and outage costs. The future cost and speed of repairing technology after physical shocks is uncertain and depends on multiple factors, including the nature of the event, the technology damaged, and the location for repair or replacement, with higher repair costs and longer restoration times in remote areas.
53. In this context, it may be possible for New Zealand to partly insure itself against the risk of these shocks crystallising by maintaining a mix of technologies. For example, during natural hazards, mobile networks can provide connectivity on the move for people unable to access fixed connections, while satellite networks are less exposed to damage because most of the infrastructure is space-based. Satellite networks are however subject to different risks including reliance on complex space infrastructure and national security or digital sovereignty considerations. Overall, the whole-of-life costs of technology includes considering capital costs, ongoing costs, and materially different risk and resilience profiles.

Economic assessment needs to consider all potential costs

54. Any economic analysis of measures that might improve connectivity in New Zealand should take into account the initial capital and subsequent operating costs of doing so, as well as the costs of managing the risks and resilience requirements of providing reliable services.
 - The NZIER report makes no attempt to quantify the costs of deploying high-capacity broadband infrastructure. The analysis focuses solely on estimating the gross benefits. The only mention of costs is disbenefits, including the cost of online scams, social media harm and misinformation.
 - Similarly, the Deloitte report displays gross economic benefits rather than net benefits. The costs of building or maintaining fibre infrastructure are not included in the analysis.

3.4. Benefits of further connectivity

55. It is important to distinguish between the benefits of connectivity and the incremental benefits of fibre. Fibre generally provides higher-quality services for most users, because of its speed, reliability, and consistency of performance. However, fibre is unlikely to reach 100% of households because of its cost.
56. There are diminishing economic returns to connectivity once broadband performance reaches a sufficient standard. Some households that switch from FWA and satellite broadband technology to fibre are likely to benefit by incremental amounts, where these technologies already adequately support everyday online activities. For other households, such as those that switch to fibre from low-speed copper-based connections, the benefits may be more significant. The benefit of connecting to fibre for a particular household or business also depends on the specific use case and associated performance requirements, as those using applications requiring high bandwidth and low latency will benefit more from fibre than those with less demanding requirements.
57. In contrast, the Deloitte and NZIER reports both estimate very large economic benefits from improved connectivity in New Zealand. The magnitude of these estimates calls for closer review:



- NZIER estimates that the further rollout of fibre broadband would generate annual benefits of around \$6,500 per household and \$2,500 per business, based on aggregating a wide range of assumed benefits across eight channels, as defined by CEBR.³⁵
- Deloitte, using a macroeconomic growth framework, estimates that broadband improvements contribute \$33.2 billion to GDP by 2033 through a model that relates a composite “broadband index” (including penetration, connections and speed) to economic output.³⁶

These modelled benefits are difficult to reconcile with historical trends

58. While investment in connectivity clearly has the potential to raise growth and wellbeing, these estimates appear very large relative to the size of key economic benchmarks:

- NZIER’s household estimate of \$6,500 in annual benefits is equivalent to roughly 9-10% of the median annual salary in New Zealand.³⁷
- Deloitte’s GDP impact of \$33.2 billion in 2033 represents around 7.5% of today’s total national output.³⁸

59. Estimates of the impact of connectivity of this magnitude are difficult to reconcile with observed economic outcomes over the period of fibre rollout, during which no comparable step-change in growth occurred relative to countries that adopted fibre more gradually. This raises further doubts about whether the results should be interpreted as representing the incremental effect of fibre specifically, as opposed to capturing broader connectivity effects. There may be a risk that results double count overlapping benefit categories, or reflect correlation rather than causation – for example, if higher productivity leads to higher incomes and therefore stronger demand for broadband.³⁹ Although there is no perfect approach for quantifying the benefits of fibre, we explore several methodological issues that could be driving these surprisingly large benefits.

Because NZIER’s analysis underestimates baseline connectivity, it overestimates benefits

60. As discussed above, many rural households are not unconnected or digitally excluded, but simply outside the urban fibre boundary. This rural population is better understood as a mix of already-connected, partly connected, and genuinely constrained users. NZIER assumes in its counterfactual that no rural households currently benefit from a level of connectivity sufficient to unlock any of the benefits associated with “digital connectivity with unconstrained capacity”, and assumes an implausibly high degree of take-up in the modelled scenario. These assumptions not only raise the number of households that are assumed to benefit from higher take-up of broadband (as discussed in paragraph 44) but also the average extent to which each household benefits (as discussed in the following paragraph).

61. In the NZIER analysis, benefits already realised through pre-existing internet connections are implicitly counted again, overstating the additional impact of upgrades. This is reinforced by NZIER’s reliance on CEBR’s ‘economic impact of digital inclusion’ framework, which measures the shift from ‘digital

³⁵ NZIER, Rural connectivity: Economic benefits of closing the rural digital divide: A report for Chorus Limited by NZIER (2022). p.14. CEBR, 2018. “The Economic Impact of Digital Inclusion in the UK.” A report for Good Things Foundation.

https://www.goodthingsfoundation.org/dam/jcr:66b39e6e-fb15-42e4-a706-214115da5717/GoodThings_EconomicImpactOfDigitalInclusion_2022.pdf

³⁶ Deloitte, Unleashing Fibre: The Future of Digital Fibre Infrastructure in New Zealand, 2024, p. 5. www.deloitte.com/nz/en/services/consulting-financial/research/unleashing-fibre.html

³⁷ Not all benefits included by NZIER show up in wages so this comparison is not like-for-like, although they are reported in dollars. The median salary in New Zealand is \$69,800 based on recent income statistics. MoneyHub. 2025. Average Salary in New Zealand. Available at: www.moneyhub.co.nz/average-salary-new-zealand.html

³⁸ GDP was \$440 billion for the year to September 2025. Stats NZ, Gross domestic product (GDP), December 2025. www.stats.govt.nz/indicators/gross-domestic-product-gdp/

³⁹ For instance, the Deloitte model finds a negative relationship between R&D expenditure and productivity growth. This is in contrast to the strong, positive causal relationship generally found in empirical work. See, e.g., Bronwyn Hall, Jacques Mairesse, and Pierre Mohnen, “Measuring the Returns to R&D”. Handbook of the Economics of Innovation, 2010.



exclusion' to 'digital inclusion', rather than improvements to already existing services. To take two examples:

- Reduction in loneliness (\$2,180 per household per year): This figure, which makes up a third of the total effect, is calculated using a Treasury framework for assessing changes in living standards, via a reduction in loneliness assumed to be achievable through internet use.⁴⁰ But many households are already connected to the internet, and there is limited evidence that faster speeds or higher-capacity connections meaningfully improve social connectedness, as much online communication (e.g. messaging, social media, video calls) can be supported by more modest connections. In this sense, the assumption that upgrading to fibre delivers large additional gains through reduced loneliness is not well supported.
 - Savings from online shopping (\$952 per household per year). The references given for this figure appear to be a 2021 industry survey of online UK consumers' behaviour during the pandemic and the value consumers place on access to e-commerce.⁴¹ While online shopping is clearly valuable to consumers and can reduce transaction costs, most rural households can access these benefits with current connectivity.
62. As these two examples highlight, NZIER's estimate of benefits is constructed by combining the outputs of a range of overseas studies, including UK-based research on digital inclusion, as well as other inputs such as time savings, reduced travel, and estimated earnings gains. This is a further reason to interpret the results with caution, as they reflect an assumption-based scenario rather than a robust estimate from a consistent modelling framework.

Deloitte's modelling approach appears to overweight the benefits associated with increases in broadband speed

63. As discussed above, Deloitte calculates changes in connectivity relative to today's levels rather than relative to a plausible counterfactual that takes current trends into account. As a result, it should not be interpreted as incremental benefits attributable to fibre rollout.
64. In addition, the modelling places a disproportionate emphasis on speed. In the broadband index that is an input to the Deloitte modelling, speed carries a 60% weight (for unspecified reasons), compared to 20% each for connections and penetration. As discussed above, empirical research generally finds that the largest economic gains arise from households and businesses accessing broadband for the first time, enabling participation in a wide range of online services and everyday activities that were previously unavailable to them (including online banking, telehealth, and digital communication). By contrast, once broadband is already sufficient for everyday uses, the economic gains from further increases in speed are likely to diminish, because the time it takes to complete online tasks depends on a range of factors, including human decision-making time, the design of the application or website being used, and the quality of the connection more broadly, rather than network speed alone. As a result, placing such a large weight on speed is likely to overstate the economic impact of faster broadband connections relative to the benefits associated with initial connectivity.

Neither NZIER nor Deloitte fully takes the characteristics of rural New Zealanders into account

65. Rural households and businesses that have historically remained unconnected may, on average, have less scope to benefit from intensive internet use than other groups. This may reflect a range of factors, such as differences in how digital tools are used, more limited demand for online services, or alternative ways of working. In addition, users who derive the greatest productivity gains from high-speed broadband may also be more likely to currently choose to live in areas where such infrastructure is already available. For instance, digitally intensive industries, such as technology, media, finance, and

⁴⁰ The Treasury, Our Living Standards Framework, 2021. www.treasury.govt.nz/publications/tp/living-standards-framework-2021

⁴¹ Lloyds Bank, UK Consumer Digital Index, 2021. www.lloydsbankinggroup.com/assets/pdfs/media/consumer-digital-index/2021-consumer-digital-index-report.pdf and Dolfen, Einav, Klenow, Klopock, Levin, Levin, and Best, Assessing the Gains from E-Commerce, 2019. <https://doi.org/10.3386/w25610>



professional services tend to cluster in urban areas, where high-capacity connectivity has already been deployed. Of course, rural households and businesses can also benefit from next-generation connectivity technologies, given the scope for mobile connectivity to generate significant productivity gains, for example through internet of things (IoT) sensors and developments in agritech. But nonetheless, these ‘selection effects’ may mean that the extent to which rural users utilise high-capacity broadband services may initially be more limited than for existing, more digitally engaged users.

3.5. Conclusion

66. The first conclusion of this chapter is that the scope for continued improvements in connectivity to raise both productivity and living standards is significant. Exactly how these improvements should be delivered is more complex, and requires not only taking into account the average economic costs and benefits that this chapter has focused on, but also considering distributional and other concerns, as we discuss in further detail in chapter 5. While the exact scale of the benefits of supporting connectivity is by no means certain, the benefits are likely to outweigh the costs.
67. A second conclusion is that it is important to separate analysis of the benefits of better connectivity from analysis of the relative benefits of fibre as a means to deliver better connectivity. The two Chorus-funded reports identify very large potential benefits from fibre-driven increases in connectivity and, in effect, seem to imply a fibre “corner solution” in which one access technology should come to dominate the market, rather than coexist with a balanced mix of alternatives. As shown above, this appears to result from an overstatement of net benefits, driven by inflated benefit assumptions and the exclusion or understatement of important costs. The analysis is also undertaken relative to a static picture of today’s market, rather than a dynamic counterfactual that reflects likely improvements in other technologies and underlying connectivity over time.
68. A third conclusion is that a diversified mix of access technologies is likely to better promote resilience, by avoiding excessive dependence on a single network and allowing different technologies to complement one another under varying conditions and use cases.
69. One way to operationalise all three of these conclusions would be to analyse different technology mixes using cost-benefit or value-for-money analysis (for example, the latter might suggest that public funding is only provided up to a defined cost threshold per premises). This would sit naturally alongside New Zealand’s RAB model, where additional investment can be recovered through higher regulated prices, ultimately borne by all consumers, and the existing requirement that Chorus maintain consistent geographic pricing.⁴²

⁴² Commerce Commission, 2022 Telecommunications Monitoring Report, 2023. [2022-Annual-Telecommunications-Monitoring-Report-15-June-2023.pdf](#)



4. International case studies on rural connectivity

4.1. Summary findings and best practice

70. Across the case studies outlined below, both the UK and Sweden frame rural connectivity in terms of service outcomes rather than a fibre-only infrastructure objective, by defining performance targets and recognising the role of different technologies, particularly where fibre deployment costs become prohibitive. Public funding is targeted where an exclusively market-delivered solution is not viable, using competitive allocation to minimise subsidy while maintaining incentives for private investment.
71. We have selected the UK and Sweden as case studies to inform our analysis because both face comparable rural connectivity challenges to New Zealand and have programmes underway which can offer relevant policy insights. Sweden has been selected due to its similar geography and population distribution to New Zealand, while the UK reflects comparable institutional structures and policy design settings.⁴³ The UK also faces geographic barriers in remote areas (e.g. some parts of Scotland).
72. The core lessons for broadband policy from these case studies are:
- National targets should account for economic realities of hard-to-reach remote areas.
 - Policy objectives should be defined by service outcomes rather than prescribing technology solutions.
 - A technology-neutral approach should be adopted for hard-to-reach areas.
 - Policy frameworks should be forward-looking and flexible to changes in technology.
 - Integration of fixed and mobile connectivity should be considered to achieve broad coverage objectives.
 - Public funding design should target non-commercially viable investments and programme design should ensure value for money for public funds.

4.2. United Kingdom

Introduction and context

73. The UK's approach to broadband expansion has been broadly market-led, where commercial investment is the primary driver of network rollout. Policy has focused on creating the conditions for competition and large-scale private investment, rather than relying on centrally planned deployment.
74. Ofcom, the telecoms regulator, has played a central role in enabling this through its regulatory framework, with measures including duct and pole access and the legal separation of the incumbent network operator, Openreach, to reduce barriers to entry and support competition. As a result, a significant proportion of gigabit-capable coverage has been delivered commercially to date, with public intervention used selectively to address gaps where market delivery is not viable.
75. The UK has made substantial progress in expanding high-capacity broadband infrastructure, with gigabit-capable networks available to 87% of premises nationally in 2025, up from 27% in 2020. However rural coverage (62%) remains significantly lower than urban coverage (91%), as outlined in

⁴³ Sweden's population density is 26 people per km², compared to New Zealand's 20 people per km², World Bank, <https://data.worldbank.org/indicator/EN.POP.DNST>, accessed 19 March 2026



Table 1. 4G and 5G mobile broadband coverage complements fixed broadband, providing outdoor coverage to 99% (or above) of populated areas in the UK and up to 90% of the geographic landmass. Several MNOs also provide FWA services on their networks and take-up of LEO satellite broadband has been rising (up 26% in the year to 2025, with most of the growth observed in rural areas).⁴⁴

76. Connectivity outcomes vary across the UK’s nations (England, Scotland, Wales and Northern Ireland), most starkly in rural coverage due to differences in population density and differing geographies. Scottish rural connectivity faces the greatest challenge due to lower population density and mountainous terrain.
77. Telecoms policy is reserved to the UK Government, but local delivery is enabled by devolved administrations (and local authorities in England) who play an operational role in rollout through planning systems, procurement partnerships and regional programmes. While programmes are typically managed by the UK Government, devolved administrations can also lead and co-fund delivery programmes, for example Scotland’s R100 programme procures infrastructure to reach the hardest-to-reach premises, coordinating contracts, funding and delivery alongside UK-wide initiatives.⁴⁵

Table 1: Summary of UK network coverages, by nation

| | | England | Northern Ireland | Scotland | Wales | UK Total |
|---|--------------------------|---------|------------------|----------|--------|----------------|
| Gigabit capable network coverage | Total | 88% | 96% | 81% | 81% | 87% |
| | Urban | 92% | 98% | 89% | 87% | 91% |
| | Rural | 61% | 91% | 51% | 59% | 62% |
| MNO FWA coverage | Total | 96% | 85% | 95% | 94% | 96% |
| Voice and Data coverage (Range from MNOs) | 5G (outside premises) | 67-91% | 38-95% | 59-84% | 23-89% | 64-89% |
| | 4G (outside premises) | 99%+ | 98-99% | 99-99%+ | 99% | 99-99%+ |
| | 4G (geographic coverage) | 95-96% | 90-96% | 79-81% | 84-90% | 89-90% |
| Population Density (people per km²) | | 450 | 140 | 71 | 154 | 285 |

Source: Ofcom, Connected Nations UK Report 2025, 2025, p.9, p. 17, p.28, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2025/connected-nations-uk-report-2025.pdf?v=407947> and Office for National Statistics, <https://www.ons.gov.uk/explore-local-statistics/indicators/population-density>, date accessed 17 March 2026

Policy objectives

78. The UK Government has set a primary connectivity policy objective of gigabit-capable broadband to be available ‘nationwide’ (defined as ‘at least 99%’ of premises) by 2032.⁴⁶ Rather than 100%, the UK aims for ‘at least 99%’ coverage of premises in recognition of the economic challenge of the most hard-to-reach premises.
- Gigabit-capable broadband is defined as networks capable of delivering download speeds of at least 1 Gbps.

⁴⁴ Ofcom, Connected Nations UK Report 2025, 2025 p.8, 18, 28, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2025/connected-nations-uk-report-2025.pdf?v=407947> and Ofcom, Connected Nations 2020: UK report, 2020, p.8, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2020/connected-nations-2020.pdf?v=321728>

⁴⁵ Scottish Government, <https://digitalconnectivity.campaign.gov.scot/about-r100>, date accessed 17 March 2026

⁴⁶ UK Government, <https://www.gov.uk/guidance/project-gigabit-uk-gigabit-programme>, 2025, date accessed 17 March 2026



- In 2025 the timeline for nationwide gigabit coverage under Project Gigabit was extended from 2030 to 2032 as a part of the UK Government’s 2025 Spending Review.⁴⁷
79. The UK adopts a flexible approach to achieving gigabit-capable outcomes, prioritising fibre where practical and affordable while maintaining a technology-neutral framework that allows alternative technologies to meet performance requirements.
- Fibre remains the primary technology for accessing gigabit-capable broadband, but other technologies play a role. In 2025, 78% of premises have full-fibre access, with a further 9% within coverage of gigabit-capable broadband via other technologies.⁴⁸ This flexibility enables the programme to incorporate new technologies as they emerge, provided they deliver the required outcomes.
80. The UK Government acknowledges that in some areas the cost of delivering gigabit-capable broadband coverage rises dramatically and requires consideration of alternative options to connect premises deemed ‘very hard to reach’, initially estimated to be less than 100,000 in total.⁴⁹
81. Project Gigabit was developed alongside the Shared Rural Network (2020-2025), a £1 billion partnership between the UK Government and the four MNOs in 2020 to extend 4G mobile coverage to rural “not-spots”, to achieve coverage from at least one operator across 95% of the UK landmass by 2025. This target was met in 2025 as a result of all MNOs delivering new infrastructure.⁵⁰
82. Alongside the gigabit ambition, the UK maintains a baseline consumer safeguard through the Broadband Universal Service Obligation (USO).⁵¹
- Introduced in 2020, the USO provides households and businesses with a right to request a broadband service delivering at least 10 Mbps download and 1 Mbps upload, subject to cost thresholds and technical feasibility. This obligation is explicitly technology neutral. The UK Government has previously consulted on updating the minimum speed and other parameters (latency, data caps, affordability) to reflect evolving consumer expectations and requirements – however this has not materialised into policy change to date.⁵²
 - The broadband USO is funded by the telecoms industry and is subject to a cost threshold of £3,400 (approximately NZD 7,800) per premises. Consumers are required to pay the excess costs of connection above this threshold.
83. Together, these policies set high-capacity connectivity as the national objective, while maintaining a backstop of a universal minimum service guarantee and mobile broadband connectivity to ensure basic access even where gigabit deployment is uneconomic.

Funding framework and delivery

84. Project Gigabit is a £5 billion (approximately NZD 11.5 billion) programme to support the rollout of gigabit-capable broadband to hard-to-reach areas which would not otherwise be served commercially. It is delivered by Building Digital UK (BDUK), an executive agency within the Department for Science, Innovation and Technology.⁵³ Project Gigabit builds upon a previous government programme, the

⁴⁷ The Comms Council, <https://commscouncil.uk/press/government-publishes-spending-review/>, 2025, date accessed 17 March 2026

⁴⁸ Ofcom, Connected Nations UK Report 2025, 2025 p.8, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2025/connected-nations-uk-report-2025.pdf?v=407947>

⁴⁹ Department for Digital, Culture, Media and Sport, Government response to the Call for Evidence: Improving broadband for Very Hard to Reach Premises, 2022, p.4,

https://assets.publishing.service.gov.uk/media/6202929a8fa8f510a66d362d/VHTR_Government_Response_compressed.pdf

⁵⁰ UK Government, <https://www.gov.uk/guidance/update-on-shared-rural-network-total-not-spots-project>, 2025, date accessed 17 March 2026

⁵¹ UK House of Commons Library, The Universal Service Obligation (USO) for Broadband, 2022, p.4

<https://researchbriefings.files.parliament.uk/documents/CBP-8146/CBP-8146.pdf>

⁵² UK Government (2023), Digital Connectivity: Consultation on reviewing the broadband Universal Service Obligation, 2023, p.41-42,

https://assets.publishing.service.gov.uk/media/651d79f7e4e658000d59d96b/reviewing_the_broadband_universal_service_obligation.pdf

⁵³ UK Government, <https://www.gov.uk/guidance/project-gigabit-uk-gigabit-programme>, 2025, date accessed 17 March 2026



Superfast Broadband programme (2010-2020), which focused on the rollout of broadband with download speeds of at least 30 Mbps.⁵⁴

85. Project Gigabit primarily operates contracts awarded to network operators to subsidise the large-scale deployment of gigabit-capable broadband in a defined area. These subsidies are reserved for areas that would not otherwise receive commercial investment. There are three types of contracts: local (Type A), regional (Type B) and UK-wide framework (Type C).
- **Review processes:** To reduce the risk of overbuild and of subsidising commercially viable investment, suppliers' bids for contracts to build go through an Open Market Review, through which BDUK identifies areas where commercial rollout is planned so that subsidy is targeted only to locations unlikely to receive private investment. Proposals then go out for consultation via a Public Review.⁵⁵
 - **Milestone payments:** Contracted service providers determine how premises are prioritised for connections, although they must set and meet milestones to receive payments. BDUK can engage in the project planning stage to encourage providers to prioritise early delivery to premises that cannot access superfast broadband.⁵⁶
 - **Clawback provisions:** Contracts include monitoring and clawback mechanisms to ensure subsidies only cover the true investment gap and to recover a share of excess profits if supplier take-up or network revenues exceed forecasts.⁵⁷
86. Beyond the Open Market Review process to mitigate crowding out of private investment, the programme design also embeds safeguards to mitigate risks of distorting competition in the sector. To prevent the contract winner from exploiting a monopolistic position, all contracted suppliers must offer open access to the subsidised network under fair and non-discriminatory conditions to all operators who request it for any reasonable purpose.⁵⁸ Contracted suppliers include the incumbent network operator Openreach as well as a mix of alternative network providers, reflecting the programme's emphasis on competitive delivery.
- In practice, this means that the operator should allow Internet Service Providers (ISPs) to offer broadband services over its subsidised network on fair and transparent terms, allow other network operators to access their passive infrastructure (such as telegraph poles and underground ducts), and build in spare capacity when constructing new infrastructure.
87. Project Gigabit also includes a voucher scheme of up to £4,500 (approximately NZD 10,400) per residential or commercial (small business) premises to subsidise the costs of installing a gigabit-capable broadband connection.⁵⁹
- The voucher scheme operates in areas where there is no Project Gigabit procurement or contract, or existing or planned commercial coverage.

⁵⁴ UK House of Commons Library, Superfast broadband in the UK, 2021, p.6, <https://researchbriefings.files.parliament.uk/documents/SN06643/SN06643.pdf>; Superfast broadband is defined as able to provide download speeds of at least 30 Mbps. Superfast broadband provides sufficient speed for one person streaming 4K/UHD video.

⁵⁵ UK Government, <https://www.gov.uk/government/collections/uk-gigabit-programme-public-reviews>, 2023, date accessed 17 March 2026 and UK Government, <https://www.gov.uk/government/collections/project-gigabit-programme-open-market-reviews>, 2026, date accessed 17 March 2026

⁵⁶ UK Government (2024), <https://www.gov.uk/government/publications/project-gigabit-uk-subsidy-advice/gigabit-infrastructure-detailed-overview-v06>, 2024, date accessed 17 March 2026

⁵⁷ UK Government, <https://www.gov.uk/government/publications/project-gigabit-uk-subsidy-advice/gigabit-infrastructure-subsidy-scheme-gis-guidance-clawback>, 2024, date accessed 17 March 2026

⁵⁸ UK Government, <https://www.gov.uk/government/publications/project-gigabit-uk-subsidy-advice/gigabit-infrastructure-subsidy-guidance-wholesale-open-access-network-requirements>, 2024, date accessed 17 March 2026

⁵⁹ UK Government, <https://www.gov.uk/government/publications/gigabit-broadband-voucher-scheme-information/gigabit-broadband-voucher-scheme-information>, 2026, date accessed 17 March 2026



- As it is demand-led, the voucher scheme is comparatively quick to operationalise and flexible in application as a component of the Project Gigabit programme. In 2024-25, 37% of premises connected through Project Gigabit were delivered through the voucher scheme.
- Voucher funding is available for residents and businesses through registered broadband suppliers who apply for the voucher funding on behalf of the recipient.
- BDUK completes compliance audits to ensure that a supplier’s services to beneficiaries have been delivered in line with the scheme’s conditions.

Devolved Nations

Telecoms policy is a reserved power for the UK Government. However, devolved administrations run their own delivery programmes, with Project Gigabit funding coordinated alongside these initiatives. These include R100 in Scotland, Project Stratum in Northern Ireland, and a program in Wales (formerly Superfast Cymru, a new programme is now under consideration).⁶⁰ This approach leverages the practical delivery levers which sit within devolved or local powers (e.g. planning approvals, regional growth infrastructure, programme delivery).



Technology mix and rationale

88. The UK approach identifies full-fibre networks as the preferred solution where economically viable but recognises that the marginal cost of full-fibre deployment rises sharply in remote areas (see Figure 4), and wireless and satellite connectivity (FWA, LEO) can play a crucial role in delivering fixed broadband to the hardest-to-reach areas of the country.⁶¹ This approach has retained flexibility in deployment while maintaining a target of high-capacity connectivity.
- The choice to allow flexibility in the technology used to meet broadband targets in hard-to-reach premises reflects the UK Government and the regulator’s desire to allow for cost-effective technology solutions today, but also to remain flexible as new technologies enter the market and become more cost-effective.⁶²

“We expect wireless technologies to play an increasingly important role in delivering higher speed connectivity to consumers in hard-to-reach areas. Fixed wireless access and new satellite services are likely to be especially important in delivering higher speed services to consumers in the most difficult to reach locations at lower cost.”

- UK Telecoms Regulator, Ofcom⁶³

⁶⁰ Scottish Government, <https://digitalconnectivity.campaign.gov.scot/about-r100>, date accessed 16 March 2026 and The Northern Ireland Executive, <https://www.economy-ni.gov.uk/topics/project-gigabit>, date accessed 16 March 2026 and Welsh Government, <https://www.gov.wales/written-statement-extending-high-speed-broadband-project>, 2025, date accessed 16 March 2026

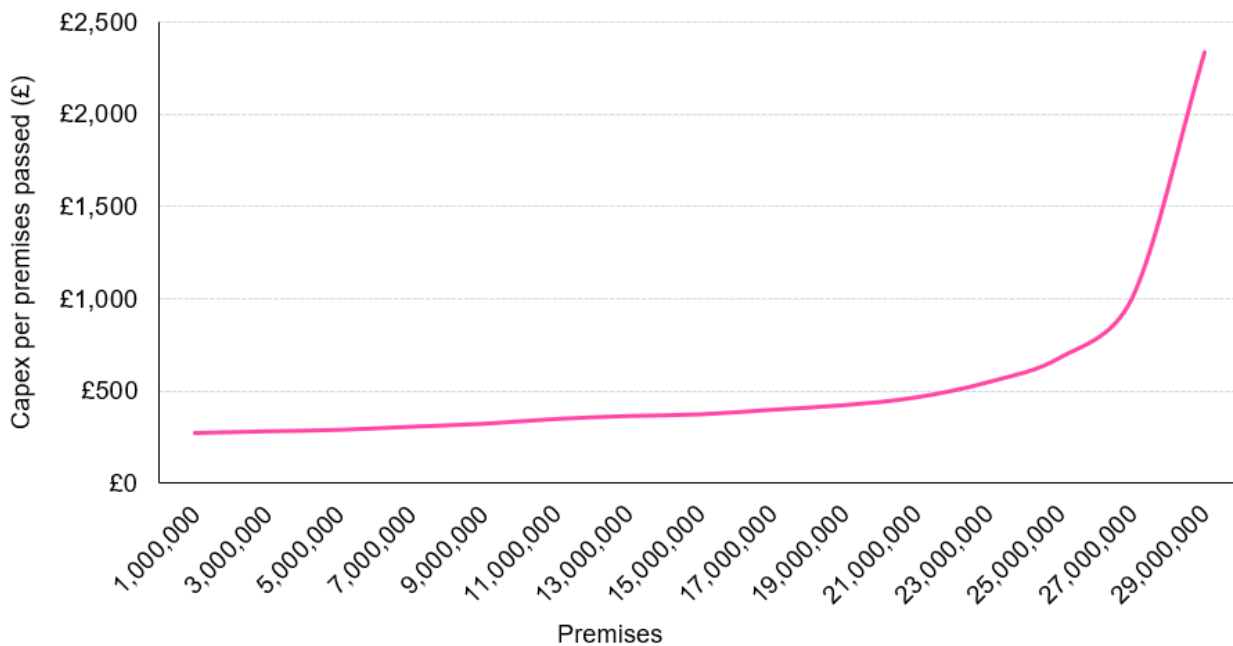
⁶¹ UK Government, <https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy/uk-wireless-infrastructure-strategy>, 2023, date accessed 16 March 2026

⁶² UK Government, <https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy/uk-wireless-infrastructure-strategy>, 2023, date accessed 16 March 2026

⁶³ Ofcom, Telecoms Access Review 2026-31, 2026, p.5, <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/statement-promoting-competition-and-investment-in-fibre-networks-telecoms-access-review-2026-31/main-documents/volume-1-overview-summary-and-structure.pdf?v=413672>



Figure 4: Capex per premises passed for a fibre to the premises deployment, sequenced from lowest to highest cost to reach (£ per premises passed)



Source: Ofcom, *Promoting competition and investment in fibre networks*, 2019, p.10, <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-2-6-weeks/152543-ftp-modelling/associated-documents/consultation-modelling-fibre-network.pdf?v=324007>

Outcomes

89. Since Project Gigabit commenced in 2020, gigabit-capable broadband network availability has grown to 87% of UK residential premises, up from 27% in 2020.⁶⁴
90. To date, BDUK has signed over 30 Project Gigabit contracts with broadband providers across the UK and 1,373,800 premises have received gigabit-capable coverage through these programmes.⁶⁵
91. Over the same period the mobile broadband coverage of the UK has also improved, with the proportion of geographic landmass not serviced by at least 4G (4G 'not spots') declining from 9% to 4%.

Policy considerations for New Zealand

92. The UK experience suggests merits in preserving flexibility in rollout while striving to ensure quality of service outcomes. Lessons to consider from the UK approach include:
 - Targets should account for the economic reality and be flexible to allow hardest-to-reach premises to be served by different broadband solutions.
 - Objectives should be defined in terms of service performance (such as reliability and speed) rather than being prescriptive of a specific technology, allowing fibre, wireless and satellite solutions to be deployed where appropriate.

⁶⁴ Ofcom, *Connected Nations UK Report 2025*, 2025, p.8, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2025/connected-nations-uk-report-2025.pdf?v=407947> and Ofcom, *Connected Nations 2020: UK report*, 2020, p.8, <https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/multi-sector/infrastructure-research/connected-nations-2020/connected-nations-2020.pdf?v=321728>, 2020, p.8

⁶⁵ Building Digital UK, <https://www.gov.uk/government/statistics/bduk-delivery-performance-quarterly-october-2025-to-dec-2025/bulletin-bduk-delivery-performance-quarterly-october-2025-to-dec-2025>, 2025, date accessed 16 March 2026 and Building Digital UK, <https://www.gov.uk/guidance/project-gigabit-uk-gigabit-programme>, 2025, date accessed 16 March 2026



- Policy frameworks should be forward-looking and open to other technologies, as seen in the UK’s gigabit-capable approach, allowing multiple technologies and future upgrades to meet evolving demand.
- Fixed and mobile broadband should be considered as complementary technologies and policymakers should seek to address connectivity needs for consumers, both at a fixed location and on the move, to pursue the best pragmatic outcomes for hard-to-reach premises.
- Delivery should be focused on ensuring public funding is only spent on non-commercially viable investments and avoiding distortions to private sector investment. For example, the UK’s Open Market Review process helps identify where intervention is needed to avoid crowding out private investment, and mandated open access to subsidised networks mitigates the risks of creating competitive advantages for contracted suppliers.
- Delivery should also ensure value for money; for example, clawback mechanisms minimise the cost to the taxpayer.
- Policy setting can be coordinated and delivered centrally (nationally) while remaining open to the role of local or regional authorities to support place-based rollout through planning, procurement and local connectivity programmes.

4.3. Sweden

Introduction and context

93. Sweden has already achieved extensive broadband rollout, with 98.45% of households and businesses having access to, or having been passed by, gigabit-capable connectivity in 2024.⁶⁶ Coverage is lower in sparsely populated areas, where only 89.97% of households have access to, or have been passed by, gigabit-capable infrastructure, compared with 99.59% in densely populated areas.⁶⁷
94. Sweden’s early success in fibre was driven in part by the deployment of municipal fibre networks. The rollout also benefited from a high share of the urban population living in multi-dwelling units and from significant public subsidy. Together, these factors enabled Sweden to become an early global leader in fibre deployment. Fibre subscriptions reached 8.5 per 100 inhabitants in 2010, compared with an OECD average of 3.0, and increased to 33.9 per 100 inhabitants by 2024, compared with an OECD average of 17.1.⁶⁸ Sweden has areas of low population density and challenging topography, which limit the commercial viability of network deployment. Sweden has operated the broadband support fund since 2020 to facilitate roll out of fixed broadband to these locations by providing grant funding.⁶⁹ The scheme is currently scheduled to run until 2027.
95. Sweden also designs its strategy in line with EU objectives and connectivity targets. The EU has set a target that by 2030 all European households should be served by a gigabit-capable network.⁷⁰

⁶⁶ PTS, Mobiltäcknings- och bredbandskartläggningen 2024, 2025, p.10.

<https://statistik.pts.se/media/xh4n0x0c/pts-mobilt%C3%A4ckning-och-bredbandskartl%C3%A4ggning-2024.pdf>

⁶⁷ PTS, Mobiltäckning och bredbandskartläggning 2024, 2025
<https://statistik.pts.se/media/ahnbtjnf/tabellbilaga-hastighet-1-1.xlsx>

⁶⁸ OCED, Broadband statistics, <https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html#downloads>, date accessed 27 March 2026

⁶⁹ European Commission, Study on National Broadband Plans in the EU-27, 2024, p. 190.

<https://digital-strategy.ec.europa.eu/en/library/updated-study-national-broadband-plans-eu27>

⁷⁰ EU, Decision (eu) 2022/2481 of the European Parliament and of the Council, 2022



Policy objectives

“One premise of the Government’s strategy is that broadband expansion must reach ever further and ever more people throughout the country, including in rural and sparsely populated areas.”⁷¹

96. Sweden set out a national broadband strategy titled “A Completely Connected Sweden by 2025”, which established a short-term target for 95% of households and businesses to have access to broadband speeds of at least 100 Mbps by 2020. The strategy also introduced tiered long-term connectivity targets, with gigabit-capable broadband for the large majority of premises and lower speed thresholds for a minority, implicitly reflecting an emphasis on cost-efficient deployment and the use of different technologies where fibre rollout may be less viable in sparsely populated areas. While gigabit-capable networks exceed current consumer broadband user needs in most cases, setting such targets helps ensure that infrastructure can meet significantly higher connectivity needs in the future.

Table 2: Swedish target performance

| Broadband targets 2025 (% of premises) | Target download speed available | Performance against targets in 2024 |
|--|-----------------------------------|-------------------------------------|
| 98% | 1 Gbps | Achieved |
| +1.9% | 100 Mbps | Remaining 0.4% |
| +0.1% | 30 Mbps | Remaining 0.1% |
| =100% | Total premises fulfilling targets | 99.5% |

Source: Regeringskansliet, *Mobiltäcknings- och bredbandskartläggningen 2024, 2025*, p.5.

<https://statistik.pts.se/media/xh4n0x0c/pts-mobilt%C3%A4ckning-och-bredbandskartl%C3%A4ggning-2024.pdf>

97. In 2025, Sweden replaced these targets in Sweden’s Digitisation Strategy 2025-2030 with an overarching goal that “all households and business locations shall have access to infrastructure that enables at least 1 Gbps by 2030, where this is socio-economically justified”.
98. At the time of writing, the Swedish Post and Telecom Authority (PTS) had not yet finalised its definition of what constitutes “socio-economically justified”. However, by explicitly recognising socio-economic justification, the target acknowledges that costs and benefits need to be taken into account; a consideration that is generally more acute in sparsely populated and hard-to-reach areas where costs of fibre deployment are typically much higher, and in some cases alternative technologies may be more appropriate.

“Sweden will proactively meet the needs of mobile connectivity within present and future sectors.”⁷²

99. The 2025 strategy introduced objectives for mobile coverage alongside gigabit-capable broadband at fixed locations, reflecting the central role of mobile services in comprehensively addressing connectivity needs across both consumer and industrial use cases. These objectives set out tiered minimum requirements depending on the type of location (e.g. 50 Mbps download for public roads). It also states that households and businesses should, where possible, have access to redundant connectivity, including through mobile services.⁷³

⁷¹ Regeringskansliet, *Sverige helt uppkopplat 2025 – en bredbandsstrate*, 2016, p.26

<https://bredbandsforum.se/media/1377/sverige-helt-uppkopplat-2025-slutlig.pdf>

⁷² Regeringskansliet Finansdepartementet, *Sveriges digitaliseringsstrategi 2025–2030*, 2025, p.44

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>

⁷³ Regeringskansliet Finansdepartementet, *Sveriges digitaliseringsstrategi 2025–2030*, 2025, p.49

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>



Table 3: Swedish tiered broadband objectives

| Location | Download speed | Upload speed | Latency |
|---------------------------|----------------|--------------|---------|
| Populated areas | 50 Mbps | 1 Mbps | 50ms |
| Public roads and railways | 50 Mbps | 1 Mbps | 50ms |
| All other areas | 2 Mbps | 128 kbps | 100ms |

Source: Regeringskansliet Finansdepartementet, Sveriges digitaliseringsstrategi 2025–2030, 2025, p.45.

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>

100. Sweden also maintains a universal service requirement for functional internet access, currently set at 10 Mbps download speed. PTS has assessed that, in the short term, commercial mobile and satellite services are likely to enable universal access at 30 Mbps, exceeding the current requirement. However, the Government has indicated that the required level of functional access should be reviewed annually to ensure it remains appropriate, reflecting that future needs are likely to change.⁷⁴
101. The Government has commissioned and instructed the Swedish Transport Administration to assess and implement measures to support the expansion, management and operation of mobile infrastructure in areas where existing networks do not provide sufficient coverage or capacity and where commercial incentives are lacking. This includes initiatives to improve mobile coverage for train passengers, particularly in locations where coverage cannot be delivered through standard trackside infrastructure, such as in tunnels and deep rock cuttings.⁷⁵

Funding framework and delivery

102. Sweden's rollout is market-driven but supplemented by public funds where rollout is considered commercially unviable. The principal public support framework in Sweden is the broadband support scheme administered by PTS. Key features of the scheme include:
- **Funding model and background:** Provides grant-based funding to commercial entities to fill project viability gaps. Funds support infrastructure to the plot boundary line and do not cover the final connection to the home. Fibre associations, operators and city networks (local fibre networks often owned by municipalities) may apply for funds. The 2016 strategy set out an intent to deliberately avoid the crowding out of private funds.
 - **Role of municipalities:** Sweden has 290 municipalities which are local government units. These municipalities play a central operational role in network deployment by providing access to municipal land and issuing permits. Municipalities directly build, own and operate infrastructure on a voluntary basis, forming around 50% of fibre connections across households and companies.⁷⁶
 - **Target areas:** The funding is targeted at areas where there is no network capable of reliably providing download speeds of at least 100 Mbps and there are no credible plans in the next three years to build such a network. Target areas are divided into three areas with distinct associated funding pots.
 - **Conditions of support:** Operators must provide wholesale access to the built network infrastructure which encourages retail competition. In addition, customers must be given access to the network at a reasonable connection fee. Funds may only be used for specified purposes.

⁷⁴ Regeringskansliet Finansdepartementet, Sveriges digitaliseringsstrategi 2025–2030, 2025, p.43

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>

⁷⁵ Regeringskansliet Finansdepartementet, Sveriges digitaliseringsstrategi 2025–2030, 2025, p.46

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>

⁷⁶ Regeringskansliet, Sverige helt uppkopplat 2025 – en bredbandsstrate, 2019, p. 38,

<https://bredbandsforum.se/media/1377/sverige-helt-uppkopplat-2025-slutlig.pdf>

SSNF, https://www.ssnf.org/globalassets/in-english/facts-and-statistics/ssnf_thestory_hres.pdf, date accessed 18 March 2026



- **Project selection:** Projects are selected based upon a competitive tendering process. Projects that meet basic requirements are ranked according to the lowest support per building. Funds are distributed until a particular area’s funding pot is used up. PTS notes that as the broadband expansion reaches further out into Sweden’s sparsely populated areas, more costly projects will have a greater chance of being awarded funds compared to previous years.⁷⁷
- **Disbursements:** From 2024 onwards, grants are paid out in instalments once a year subject to conditions that check that projects are proceeding to plan. This approach mitigates the risk that funds do not result in delivery.

Technology mix and rationale

“Due to Sweden’s geography and how Sweden is populated, a fully connected Sweden must be achieved through a combination of different technologies – fixed and wireless”⁷⁸

103. Sweden’s broadband targets are technology-neutral, and public broadband support is also allocated on a technology-neutral basis. By referring to “socio-economic justification”, the target allows for the use of sub-gigabit-capable solutions in sparsely populated and hard-to-reach areas. However, eligibility for public funding is subject to minimum technical criteria requiring gigabit-capable networks. In practice, this currently limits qualifying technologies primarily to fibre and cable networks using DOCSIS 3.0 or later.

Outcomes

104. In 2017 around 86% of Swedish households and businesses had access to, or were passed by, gigabit-capable connectivity. Coverage has since expanded significantly, reaching 98.45% by 2024. The European commission notes that “Sweden has one of Europe’s most advanced fibre infrastructure with high end access for the majority of its population”.⁷⁹

105. Sweden has allocated SEK 5 billion (approximately NZD 900 million) in public subsidies through its broadband support scheme, including funding committed to projects still under construction. To date, infrastructure deployed under the programme has benefitted more than 45,000 buildings.

106. Fibre rollout is near-universal in densely populated areas, where 98.70% of households have access, but sparsely populated areas lag substantially (89.97%). 96.74% of households in sparsely populated areas have access to broadband by wireless technology.

Table 4: Swedish roll out by technology for households

| | Access via fibre | Access or building passed by fibre | Access via cable TV (DOCSIS 3.0 or 3.1) | Access via wired access technology | Access via wireless access |
|-------------------------|------------------|------------------------------------|---|------------------------------------|----------------------------|
| Sparsely populated area | 69.38% | 89.97% | 0.09% | 89.97% | 96.74% |
| Densely built | 87.27% | 98.80% | 27.55% | 99.59% | 99.76% |
| Total | 85.62% | 97.98% | 25.02% | 98.70% | 99.48% |

Source: PTS, *Mobiltäckning och bredbandskartläggning 2024*, <https://statistik.pts.se/media/b2rhdc1g/tabellbilaga-teknik-1-1.xlsx>, 2025

⁷⁷ PTS Broadband Support 2026, <https://pts.se/internet-och-telefoni/bredband/bredbandsstod/bredbandsstod-2026/>, 17 February 2026, date accessed 11 March 2026

⁷⁸ Regeringskansliet, *Sverige helt uppkopplat 2025– en bredbandsstrate*, 2019, p.11 <https://bredbandsforum.se/media/1377/sverige-helt-uppkopplat-2025-slutlig.pdf>

⁷⁹ European Commission, *Study on National Broadband Plans in the EU-27, 2023*, p.191 <https://digital-strategy.ec.europa.eu/en/library/updated-study-national-broadband-plans-eu27>



107. As the roll-out progresses, the required government support to close the viability gap is expected to continue to rise, as remaining buildings are harder and more costly to connect. The Swedish Ministry of Finance stated that the average support allocated per building in 2024 was double that of 2022.⁸⁰

Policy considerations for New Zealand

108. As with all international case studies, there are differences in circumstances which limit the degree of direct read-across. For example, there are structural differences in types of housing between Sweden and New Zealand, with 48.4% of Sweden's population living in multi-dwelling units (flats) which facilitated Sweden's early fibre rollout, compared with less than 18% in New Zealand.⁸¹ However, the Swedish case study highlights several lessons that remain relevant for broadband policy in New Zealand, particularly in relation to rollout in remaining, more rural areas.

- Policy objectives should incorporate economic considerations and recognise that the cost of deploying different technologies varies significantly, particularly in remote or sparsely populated areas. This will mitigate risks of supporting network investment at excessive cost with limited incremental benefits.
- Some technologies are better suited to providing cost-effective connectivity in hard-to-reach areas. A technology-neutral policy framework helps ensure that the most appropriate solutions can be deployed while delivering an effective consumer experience at reasonable cost.
- Policy objectives should reflect both current consumer requirements and likely future demand for connectivity. This helps future-proof network infrastructure and reduces the risk that newly deployed infrastructure will require early replacement.
- Infrastructure receiving public support should be subject to wholesale access requirements on reasonable terms, in order to promote competition in areas where consumer choice is inherently limited.
- Value for money can be supported through mechanisms such as linking public funding to clear delivery milestones.

⁸⁰ Regeringskansliet Finansdepartementet, Sveriges digitaliseringsstrategi 2025–2030, 2025, p.42

<https://www.regeringen.se/contentassets/fe3e296228fb474f803a986ae3842b4c/sveriges-digitaliseringsstrategi-20252030.pdf>

⁸¹ OECD, <https://www.oecd.org/content/oecd/en/data/datasets/oecd-affordable-housing-database.html>, date accessed March 2026



5. Policy framework for rural connectivity in New Zealand

109. This chapter sets out a principles-based framework to inform discussion on how policymakers could deliver improved rural connectivity. It does not prescribe a specific approach for New Zealand: rather, it outlines one possible framework, grounded in a set of principles, to support more structured and evidence-based policymaking.
110. The framework is designed to support policymaking over a long-term horizon and across political cycles, consistent with the investment profile of telecoms infrastructure. Stable and predictable policymaking gives investors the confidence to commit long-term capital, increases the scope for private investment, and reduces reliance on public subsidy, thereby improving value for money.
111. The framework takes account of New Zealand's specific circumstances (identified in chapter 2), reflecting the findings of the economic assessment (chapter 3), and incorporates lessons from international case studies (chapter 4). The outcomes that a principles-based framework would help deliver are described in *italics* below. We set out our framework in five dimensions:
- **A user needs assessment,**
 - **A mixed-technology approach,**
 - **The integration of mobile investment,**
 - **Appropriate intervention design, and**
 - **Monitoring and evaluation.**

5.1. User needs assessment

112. Policy objectives reflect not only political aspirations, such as rural inclusion and equality, but are also grounded in an evidence-based assessment of user needs across rural areas. This ensures that the policy framework maximises economic welfare, reflects the requirements of households, businesses and public services, and appropriately balances economic costs with expected benefits.
- *A clear understanding of how connectivity is used in practice enables policymakers to prioritise interventions that deliver the greatest value, while avoiding over-specification or misallocation of resources. It also provides a consistent basis for evaluating trade-offs between coverage, performance and cost.*
113. The assessment considers both current and future connectivity requirements of rural users, with particular emphasis on how demand is likely to evolve over time. This goes beyond preference for specific technologies and includes expected changes in user needs, service adoption and data usage, informed where possible by evidence from leading user cohorts. These demand-side dynamics should underpin the assessment, alongside consideration of how technology developments may support evolving requirements.
- *A forward-looking approach helps ensure that infrastructure investments remain fit for purpose over time, reducing the risk of premature asset replacement and avoiding the emergence of constraints as demand evolves.*
114. The user needs assessment evaluates a range of service characteristics, rather than focusing solely on download speeds. Different applications depend on different aspects of network performance, and policy objectives reflect the characteristics that deliver the greatest benefits for users. For example:



- **Upstream bandwidth (upload speeds):** Upstream capacity determines how quickly users can send data to the network. Higher upstream bandwidth supports activities such as video conferencing, uploading large files to cloud services, remote data backup and the use of connected devices that transmit data continuously. This is particularly important for remote working, digital businesses, precision agriculture applications and cloud-based collaboration tools, for example.
 - **Latency (network responsiveness):** Latency measures the time it takes for data to travel between the user and the network. Lower latency improves the responsiveness of digital services and enables real-time interactions. This is most important for use cases such as video calls, online collaboration, interactive applications, remote control of equipment, telehealth services and online gaming, where delays can significantly degrade the user experience.
 - **Reliability and network stability:** Reliability refers to the consistency and availability of the connection, including low fault rates and minimal service interruptions. High reliability is critical for business operations, public services, emergency communications, remote working and digital service delivery, where outages or unstable connections can disrupt essential activities.
 - **Capacity and overall network performance:** Network capacity determines how well a network performs when multiple users or devices are connected simultaneously. Adequate capacity ensures that speeds remain stable during periods of peak demand. In addition, this should be forward looking to ensure there is sufficient capacity to support future users and use cases without a degradation in service.
115. The minimum service characteristics identified in the user needs assessment then translate into clear policy objectives, expressed as service-based performance requirements (e.g. download and upload bandwidth, latency, reliability and capacity), rather than specific technology mandates.
- *A technology-neutral approach enables the most cost-effective solutions across different geographies and population densities, while ensuring that all users receive connectivity that meets baseline service requirements.*
116. It may be efficient to prioritise solutions that meet core user needs at lower cost and facilitate adoption, even where this implies lower absolute speeds or other service parameters.
- *A user needs assessment also helps policymakers understand trade-offs between technologies in constrained environments. Once baseline connectivity needs are met, further increases in peak speeds typically deliver diminishing economic and social returns.*
117. Tiered policy objectives can be used to operationalise this trade-off, by setting differentiated minimum service thresholds according to geographic and economic conditions. Under this approach, commercially viable areas and those where deployment is economically justified with subsidy may be targeted for gigabit-capable infrastructure where it is not already in place. More remote and hard-to-reach areas are supported to achieve lower, but still robust and future-proof, service requirements (for example, 100-300 Mbps download speeds, alongside appropriate latency and reliability). This enables policymakers to balance ambition with deliverability, ensuring that public intervention remains proportionate to cost while still advancing broader connectivity and inclusion objectives.
118. Ultimately, this trade-off is a political decision. While policymakers may look to minimise differences between rural and urban areas, a single-technology approach to achieve parity is unlikely to be economically justifiable. Achieving greater alignment is likely to require a mixed technology approach.



5.2. Mixed-technology approach

119. A single-technology approach is unlikely to be efficient. Instead, the framework supports a choice of technology based on local conditions, balancing performance requirements with cost and deployment feasibility. Use of competitive tendering also enables market forces to determine the optimal technical solution.
- *A mixed-technology approach enables policymakers to extend coverage more efficiently by deploying a combination of fibre, wireless, and satellite solutions. Technologies such as FWA, 4G/5G-based solutions, and LEO satellite services can often be deployed more rapidly and at lower cost in hard-to-reach areas, particularly where full-fibre deployment would require disproportionate investment.*
 - *While these technologies may not always match the peak performance or long-term scalability of fibre, they may deliver sufficient levels of speed, latency, and reliability to meet user requirements when assessed against defined service requirements and where the costs of fibre deployment are prohibitive.*
 - *By enabling different technologies to play distinct roles within the overall network architecture, a mixed technology strategy supports a more efficient allocation of public funding. It allows high-cost areas to be served in a proportionate manner, while reserving full-fibre deployment for locations where it is economically viable. This approach maximises overall coverage, promotes inclusion, and aligns delivery with the policy objectives established through the user needs assessment.*
 - *In addition to improving cost-efficiency and coverage, a mixed-technology approach can strengthen the overall resilience of connectivity networks. Reliance on a single technology or network architecture may increase vulnerability to service disruption, particularly in rural areas where infrastructure is sparse and fault repair times may be longer. Deploying a mix of technologies can provide alternative delivery paths and reduce the risk of widespread outages.*

5.3. Integration of mobile investment

120. Mobile connectivity is explicitly incorporated into the connectivity policy framework. It can be delivered through both traditional cellular technologies and, for certain applications, direct-to-device satellite services, which are likely to play an increasingly important role as the technology matures, particularly in the most remote areas.⁸² Policy objectives can be tiered to reflect differences in population density, use cases and efficient infrastructure deployment. For example, a baseline level of service may be sufficient in the most remote areas to support messaging and emergency communications, while higher service levels should be targeted along transport corridors and in more densely populated areas to support navigation, streaming, and other data-intensive applications.
- *Mobile connectivity is likely to become increasingly important as technology evolves and use cases expand. Beyond traditional voice and data services, mobile networks will likely underpin emerging applications such as autonomous vehicles, drones, precision agriculture, and real-time monitoring. They also play a critical role in enabling access to emergency services and supporting public safety. As economic and social activity becomes more mobile and data-intensive, reliable mobile coverage will be essential to ensure rural areas can fully participate in digital and economic developments.*
121. Fixed and mobile connectivity requirements are assessed jointly. A joint assessment allows policymakers to capture the full range of use cases, including both location-specific and mobile applications, to enable synergistic deployment benefits and to identify opportunities to meet consumer needs more efficiently.

⁸² One New Zealand, Spark and 2degrees offer, or plan to offer, direct-to-device satellite services.



- *This approach can reveal synergies between networks and reduce the risk of duplicative investment, particularly in areas where a single technology can meet multiple needs. For example, improvements in mobile connectivity may, in some cases, also meet broadband needs at a fixed location at limited incremental cost.*
- *Mobile investment can also enhance resilience by providing redundancy within the overall connectivity ecosystem. This is particularly important in rural areas, where fixed infrastructure may be sparse or vulnerable to disruption.*

5.4. Intervention design

122. Any intervention should be proportionate, economically justifiable, and directly targeted at addressing a clearly identified market failure.

- *This helps ensure that public resources are used efficiently, minimises the risk of market distortion, and avoids crowding out existing or potential commercial investment.*

123. Policy responses are guided by a clear diagnosis of the underlying market failure or political objective. For the purposes of this framework, a market failure arises where the market does not deliver connectivity services that meet the baseline service requirements defined in the framework. These failures may take several forms:

- **Commercial viability failure:** Deployment costs are sufficiently high that providers do not expect to earn an adequate commercial return on investment. This is most common in rural or low-density areas, where high capital expenditure cannot be recovered through user demand.
- **Demand-side failure (adoption failure):** Take-up remains low due to factors such as limited awareness of benefits or low levels of trust, resulting in demand that remains below efficient levels at prevailing price points.
- **Supply-side failure:** Connectivity is not provided due to structural barriers, such as difficulties obtaining wayleaves, complex permitting processes, insufficient local government support, or information gaps (for example, incomplete mapping that obscures areas without service).
- **Coordination failure:** Investment is delayed or does not occur because of uncertainty about the actions of other parties. For example, providers may postpone deployment if they expect competing infrastructure to be built, or if infrastructure sharing, planning processes or other forms of coordination between stakeholders are unclear.

124. Once the specific market failure has been identified, policymakers select targeted and proportionate interventions that are aligned with the nature of the failure. Different types of market failure will typically require different policy responses such as:

- **Public grant funding** to address commercial viability gaps (such as the New Zealand RBI and MBSF);
- **Broadband vouchers, alongside awareness campaigns,** to increase take-up (such as the New Zealand Remote User Scheme); and
- **Local-led delivery** to support the management of permitting and wayleaves.

125. Further detail on these interventions is provided in the annex.



126. In practice, multiple market failures may coexist within the same geography, requiring a coordinated package of interventions. A structured, diagnosis-led approach ensures that policy measures remain targeted, effective, and proportionate to the scale of the problem.
127. Interventions can also create unintended distortions on both the supply side and demand side, with adverse consequences for consumers. For example, on the supply side, the prospect of a subsidised entrant may lead infrastructure operators to defer otherwise commercially viable investment, delaying network deployment. On the demand side, levies used to fund support schemes may increase prices for end users and reduce service take-up. Interventions should therefore be designed with these risks in mind and include appropriate mitigation measures.

5.5. Monitoring and evaluation

128. The framework is subject to regular review to assess whether interventions are delivering the intended outcomes and to identify where adjustments are required. Reviews are proportionate and structured, with findings used to inform future funding decisions and programme design.
129. Performance metrics focus on outputs, such as access to, and quality of, services, rather than inputs such as levels of grant expenditure. This ensures that assessment focuses on outcomes that are directly relevant to users and policymakers.
130. Metrics could be defined across three core themes:
- **Coverage:** the proportion of premises able to access services meeting defined performance thresholds, including minimum service levels, geographic variation, and availability by technology type;
 - **Adoption and usage:** take-up rates, usage patterns, and distributional differences across regions and user groups; and
 - **Service quality:** performance in practice, including latency, reliability, fault rates, consistency, and user experience.
131. Metrics that are clearly defined, consistently measured and, where possible, benchmarked against international comparators enable robust assessment of policy effectiveness and support value-for-money judgements.
132. Monitoring could be structured across three tiers to facilitate proportionality: annual performance reviews against key indicators; strategic reviews every three to five years; and event-driven reviews in response to material changes.
133. Where objectives are not being met, policymakers implement targeted adjustments, supported by granular monitoring to diagnose underlying issues.
- *A well-performing monitoring and evaluation approach provides assurance to policymakers that interventions are delivering as intended. It also enables a dynamic framework that supports the optimal delivery of intended outcomes.*



Annex: Policy Intervention Options

| Intervention 1: Public grant funding | |
|--|---|
| Description | <ul style="list-style-type: none"> • Operators bid for grant-based funding through competitive auctions to contribute to costs of infrastructure deployment. • Public funding is used to bridge the gap between deployment costs and expected commercial returns, enabling projects that would not otherwise proceed to become financially viable. |
| Market failure or political objective addressed | <ul style="list-style-type: none"> • Lack of commercial viability where provision is deemed socially desirable |
| Design considerations | <ul style="list-style-type: none"> • Funding should target areas with no existing infrastructure or credible near-term plans for commercial deployment. This will maximise the effectiveness of public funding and avoid crowding out private investment. • Funding should be awarded through competitive auctions to ensure value for money. • Minimum technical standards (e.g. bandwidth, latency, reliability) should align with policy objectives. This ensures funded solutions meet required service outcomes. • Competitive auctions should adopt a technology-neutral approach to ensure the most effective solutions are deployed. • Public funding should bridge the “viability gap” only, rather than fully funding deployment. This approach improves efficiency and increases the number of premises that can be connected for a given amount of public funding. • Where public support is provided and take-up materially exceeds expectations, leading to higher than anticipated commercial returns, clawback mechanisms should apply. This reduces the risk of over-subsidisation. • As a condition of funding, wholesale access to network infrastructure should be provided on reasonable terms. This supports downstream competition where service provision could otherwise be monopolistic. • Funding should be linked to clearly defined milestones and delivery obligations, with penalties for non-performance. This reduces delivery risk and protects public funds. |



Intervention 2: Broadband vouchers in conjunction with an awareness campaigns

| | |
|--|--|
| Description | <ul style="list-style-type: none"> • Fixed-value vouchers applied towards the cost of broadband installation. By reducing or removing upfront costs, the vouchers increase user adoption. These schemes can be complemented by targeted awareness campaigns to improve understanding and build trust. |
| Market failure or political objective addressed | <ul style="list-style-type: none"> • Primary: Demand-side failure (adoption failure) • Secondary: Lack of commercial viability where this is deemed socially desirable, and coordination failure |
| Design considerations | <ul style="list-style-type: none"> • Vouchers and associated awareness campaigns should target areas with low take-up. Targeting ensures the efficient use of public funds. • Voucher values should be calibrated to reflect the “viability gap”. Vouchers that are too small may limit take-up, while excessively large vouchers risk inefficient use of public funds. • Voucher payments should be contingent on successful connection and service activation. This ensures public funding is linked directly to delivery and reduces the risk of non-performance. • Although this intervention targets low take-up, it can also improve commercial viability. Higher adoption increases expected returns, which may stimulate further commercial rollout in previously unviable areas. • Vouchers should be restricted to solutions that meet technical requirements aligned with policy objectives. • Vouchers should be technology-neutral, preserving user choice and enabling informed trade-offs between cost and service quality. • Competition is maintained, as suppliers compete to serve demand, supported by vouchers. • Vouchers can be aggregated at the community level. By pooling vouchers, communities can reduce per-premises deployment costs and make rollout commercially viable. Aggregation also reduces coordination barriers, as operators can engage with organised local demand. |



Intervention 3: Local-led delivery

| | |
|--|--|
| Description | <ul style="list-style-type: none">• Local actors (e.g. local authorities or community groups) play a central role in planning, coordinating, and facilitating broadband deployment. This includes identifying local demand, streamlining wayleaves and permits, coordinating civil works, and acting as a liaison between communities and network providers. This can reduce deployment delays and costs, particularly in hard-to-reach areas. |
| Market failure or political objective addressed | <ul style="list-style-type: none">• Supply-side failure• Coordination failure |
| Design Considerations | <ul style="list-style-type: none">• Local processes (e.g. permitting, wayleaves, street works) should be streamlined to reduce deployment delays and costs.• Local actors should facilitate coordination across stakeholders (e.g. landowners, contractors, and network providers) to reduce delivery friction.• Planning activities should be aligned with national standards and infrastructure strategies to ensure consistency.• Local demand should be clearly identified and communicated to providers to reduce demand uncertainty.• Appropriate governance and oversight should be in place to ensure transparency and effective delivery. |



Contact Us



Met Building, 22 Percy Street, London, W1T 2BU, UK



+44 (0) 207 362 9733



london@flint-global.com



www.flint-global.com



FLINT