

Regulatory Approaches to Providing Deep Rural Coverage

In a number of markets, the government is working with the regulator and mobile operators to address coverage “black spots” and deep rural coverage. This paper explores some of the approaches being adopted.

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Regulatory approaches to providing deep rural coverage

Introduction

This paper explores how regulators and operators are working together to extend rural coverage

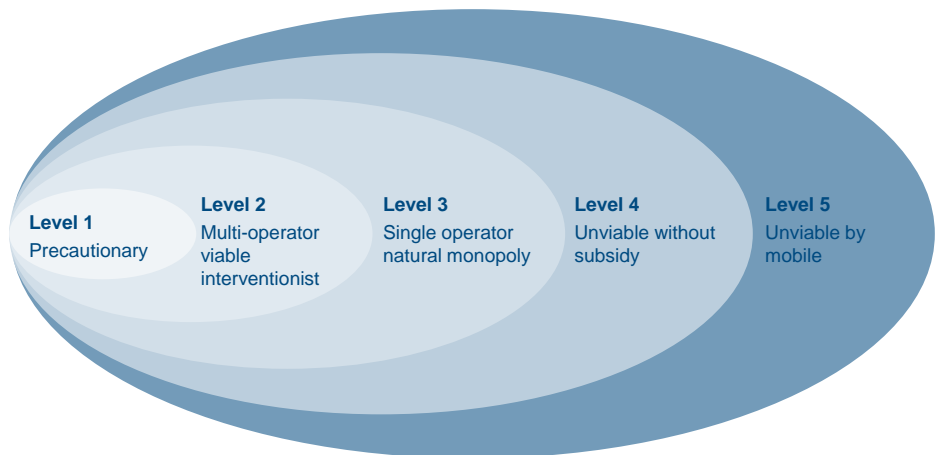
In Coleago's paper "Maximising coverage through spectrum awards", we explored the economics of coverage and how regulators can use the award of spectrum to increase mobile coverage. However, there is a limit beyond which operators will not be able to commercially justify further network expansion. In this paper we look at how a number of governments and regulators have worked together with the mobile industry to extend coverage into deeply rural areas. We begin by reviewing the economics of coverage.

Coverage levels and economics

Beyond a certain level, extending coverage becomes uneconomic for even a single operator

In our paper "Maximising coverage through spectrum awards", we identified five different levels of coverage and potential coverage obligations, which are shown in the Exhibit below.

Exhibit 1: Coverage levels and economics

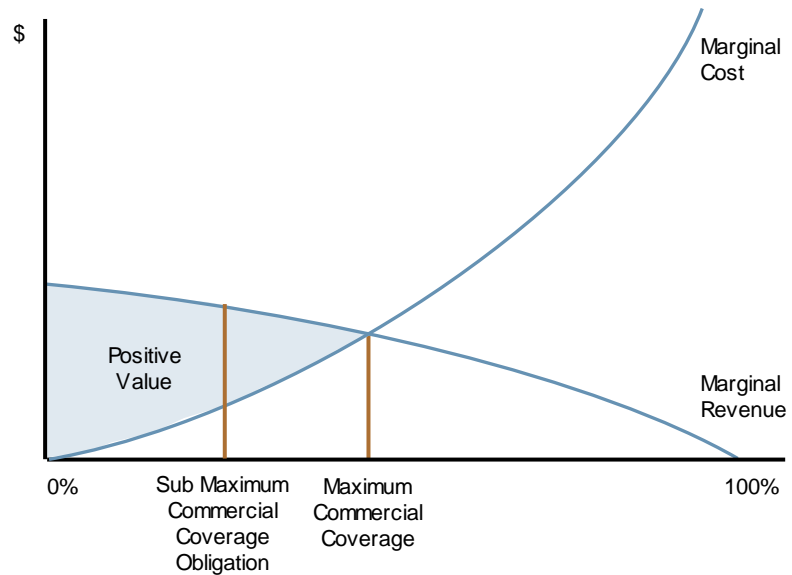


Source: Coleago Consulting Ltd.

Level 1 – multi-operator, precautionary coverage obligations

Mobile operators will continue to expand coverage until the marginal, incremental revenue they receive from increasing coverage is equal to the marginal, incremental cost of providing that coverage. This point is shown in the Exhibit below as the level of "Maximum Commercial Coverage." Any coverage obligation below this level can be thought of as precautionary because under normal competitive pressures, mobile operators would be driven to exceed this level.

Exhibit 2: Maximum commercial coverage



Source: Coleago Consulting Ltd.

Level 2 – multi-operator, commercially viable, interventionist obligation

A level 2 coverage obligation exceeds the maximum commercial level of coverage and so would not be provided unless the regulator intervenes and establishes a coverage obligation at this level. Such an obligation remains commercially viable for all mobile operators as the positive value generated exceeds the costs imposed by the coverage obligation.

Level 3 – single-operator, commercially viable, interventionist obligation

A Level 3 obligation remains commercially viable but is sufficiently demanding that it is only commercially justifiable for a single operator acting as a natural monopolist. An obligation imposed at this level must usually be accompanied by wholesale access provisions to preserve competition.

The focus of this paper is on coverage obligations that are imposed at the next level up: Level 4 coverage obligations, which are not commercially viable without subsidy.

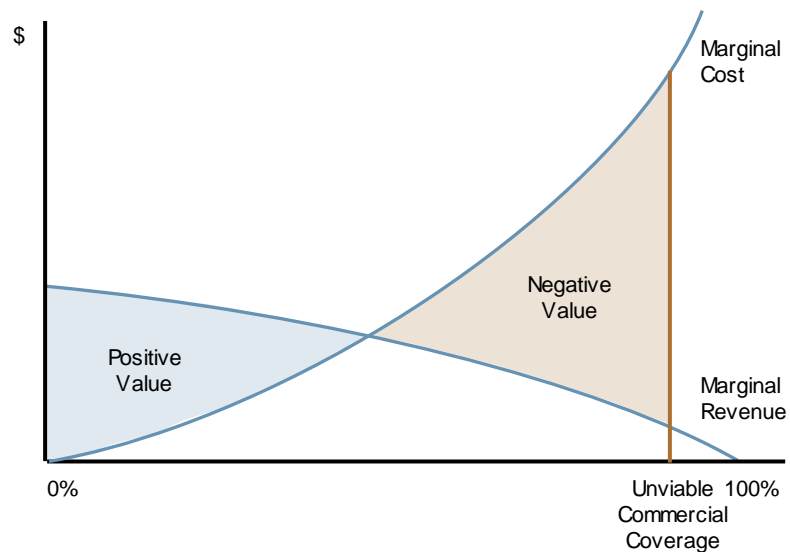
Level 4 - Unviable commercial coverage obligations

A Level 4 coverage obligation is illustrated in the Exhibit below. Such a coverage obligation would reflect extending coverage into deeply rural areas and, depending on the country, usually relates to extending coverage to the last 1 or 2% of the population or less.

Level 5 – Unviable by mobile

In Level 5 areas, the locations are so remote that a terrestrial mobile network no longer offers the most economical solution for connectivity and alternatives such as satellite or Alphabet's (Google) Project Loon will need to be considered.

Exhibit 3: Unviable commercial coverage



Source: Coleago Consulting Ltd.

A Level 4 coverage obligation is so demanding that the costs imposed exceed the value that can be generated even by a single operator acting in the capacity of a natural monopoly. No mobile operator would be prepared to accept such an obligation because to do so would result in the destruction of value for its shareholders. Any regulator seeking to implement a Level 4 coverage obligation will need to work closely with the mobile industry to find a workable solution. In the remainder of this paper, we explore the approaches that have been adopted in a number of different markets.

Regulatory approaches to deep rural coverage

In this paper, we review the approaches adopted in a number of developed markets such as France, Germany, the United Kingdom, the USA, Australia and Norway as well as developing markets including Zimbabwe, Mozambique, Kenya and Kazakhstan.

France

In France, licence renewal provided the basis for an agreement to extend coverage

In 2018, the French telecoms regulator, ARCEP, reached an agreement with the mobile industry for a €3 billion, mobile industry funded investment programme to extend coverage to areas where currently no mobile broadband service is provided. Each operator in France will be required to provide an additional 5,000 sites to expand coverage to 10,000 villages in white areas. The programme will increase coverage to approximately 1% of the French population but it corresponds to more than 7% of the land surface of France (an area almost as large as the Netherlands).

The commitment and funding from the industry was agreed as part of a settlement in relation to the renewal and re-allocation of frequencies in the 900, 1800 and 2100 MHz bands which will expire between 2021 and 2024. The regulator agreed to extend the existing licences to 2030 without charge to secure the support of the industry.

To improve the economics of the programme, network sharing arrangements will be put in place which will include both active and passive sharing. The plan is expected to be rolled out over 10 years but with 80 percent of the agreement completed by 2022. ARCEP will publish a quarterly mobile coverage scoreboard that primarily focuses on sparsely populated areas and will display any progress on coverage maps published on its website.

In the UK a Shared Rural Network has been co-funded by the industry and Government to extend coverage

United Kingdom

In 2019, the United Kingdom Government and the UK regulator, Ofcom, announced an agreement between the regulator and the mobile industry to address mobile coverage in deeply rural areas through the creation of a Shared Rural Network (SRN). Under the agreement, each individual operator would reach 92 per cent geographic coverage by 2025, with licence obligations taking effect in 2026. The collective effect of this will be to deliver coverage to 95% of the UK. The increase in coverage will establish access to 280,000 new homes and businesses as well as 16,000 km of roads that were previously not covered.

The mobile industry has agreed to commit funds of just under €500 million and the Government plans to broadly match the industry's commitment to deliver coverage to complete "not spots". The new masts established under the scheme will be shared between all operators. The network build will be delivered by a new entity comprising all the operators delivering the SRN. An overhaul of planning rules will also support the commitment to expanding the number of sites and facilitating the creation of the network.

Prior to the announcement, Ofcom had planned to auction licences for 5G spectrum for use in the 700 MHz and 3.6 to 3.8 GHz spectrum bands in 2020 with coverage obligations attached. The SRN was proposed by the mobile operators as a commitment to increasing coverage but on the basis that Ofcom would remove the coverage obligations from the auction. To ensure the SRN delivers, the operators would adopt new, legally-binding licence conditions in relation to the extended roll-out. There will be interim coverage updates every year up to 2025. Ofcom will report regularly on progress in their Connected Nations reports.

In Germany, the payment terms for 5G spectrum provided the basis for a coordinated rural network build

Germany

In November 2019, Deutsche Telekom, Telefonica Deutschland and Vodafone Germany unveiled a proposal to coordinate the construction, sharing and operation of 6,000 radio sites across Germany in order to meet demanding rural coverage targets which were attached to the 5G spectrum that was awarded earlier in the year. The new entrant to the German market, 1&1 Drillisch, was also invited to participate in the programme. The likely level of investment is €1 billion. In return, the German regulator has allowed the operators to pay for the cost of the 5G spectrum in the 3.5 GHz band in instalments until 2030.

The agreement amongst the operators was followed shortly afterwards by an announcement from Germany's Federal Ministry of Transport and Digital Infrastructure regarding its Mobile Communications Strategy. Under the strategy the Government will provide funding of €1.1 billion to create an additional 5,000 new sites designed to eliminate white spots in rural areas. A state-owned company will be established to build the rural network. Once complete, mobile coverage will be extended to 99.95% of households and 97.5% of the country's geographic area. Currently, 4G coverage extends to 98% of German households, but just 67% of the country's landmass.

In addition, the Government is addressing planning permission challenges which have hampered network roll-out. Plans including identifying public buildings that can be used to host mobile equipment and a pledge to work with federal states and municipalities to determine ways in which approvals for new mobile masts can be accelerated.

The merger of T-Mobile and Sprint created the opportunity for additional coverage commitments

United States

In April 2020, the Federal Communications Commission (FCC) of the United States provided details of a US\$ 9 billion investment plan, provided for by a universal service fund, to extend 5G coverage to rural and agricultural areas with a "special focus on deployments that support precision agriculture". The plans also complement coverage commitments that were conditions of its approval for the T-Mobile / Sprint merger.

The FCC plans to use a competitive reverse auction format which will establish the minimum level of subsidy bidders will accept in order to commit to meeting the obligations. The FCC is currently consulting on the target areas and timings for the programme.

Australia

Australia has used public and Commonwealth funding to extend coverage

In April 2020, the Australian government announced a fifth round of investment of US\$ 242 million as part of its 'Mobile Black Spot Programme'. A further 182 new base stations will be constructed, increasing the total under the programme to 1,229. The funding has come from the Australian government as well as Commonwealth funding. The government is currently consulting on the planned sixth round of investment.

Norway

Norway's National Communications Authority has announced that US\$ 14.6 million will be invested by the government to support the roll-out of mobile broadband services in those areas of the country not considered commercially profitable.

Kazakhstan

In May 2020, the three mobile operators, Beeline, Kcell and Tele2, signed an agreement to deploy a shared network to improve mobile broadband services in rural areas. The agreement covers settlements with a population of between 250 and 1,000 people along with national and regional highways and railways. Each operator will independently build and operate the mobile broadband network and will allow the other parties to use its network infrastructure within their coverage zone through national roaming.

Zimbabwe

Zimbabwe and a number of other African markets such as Botswana have funded rural roll-out

The Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) has launched a US\$ 6 million scheme to improve rural communications. The Passive Telecommunications Infrastructure Project, supported by the Universal Services Fund (USF), will deploy 20 shared base stations in a number of provinces to improve rural connectivity.

Mozambique

In May 2020, Vodacom announced it had partnered with Alphabet's Loon (Google) to provide network access to previously uncovered populations via stratospheric internet balloons. Coverage in remote locations will be provided by floating "tower" operating 20 kilometres above the Earth's service. The service will provide 4G mobile broadband connectivity and voice for any Vodacom customer with a 4G-VoLTE enabled handset. The affordability of 4G VoLTE enabled phones is likely to remain a barrier to access however but the improvement in network coverage will be welcomed. The implementation of the project required coordination and cooperation between the telecoms regulator, the Autoridade Reguladora das Comunicações de Moçambique (ARECOM) and the Institute for Civil Aviation of Mozambique (IACM).

Kenya

Kenya has also approved Google-led plans to bring increased connectivity to deeply rural areas.

Achieving deep rural coverage will require collaboration and partnership between the regulator and the mobile industry

Considerations for regulators

Extending mobile broadband coverage to deeply rural areas is a key goal for many governments and regulators. Extending coverage well beyond commercially justifiable levels will require a partnership between the regulator and operators. The renewal of existing licences or the award of new spectrum provides an opportunity for stakeholders to come together to engage and explore potential, mutually beneficial approaches for extending coverage. In many cases, some form of public funding will be required. The use of a reverse subsidy type auction format provides a potential mechanism for ensuring that deep rural coverage is achieved as economically efficiently as possible. The creation of a joint venture to build a shared rural network is another approach which also eases competition concerns and avoids the need for wholesale access agreements. Any approach should be accompanied by measures to ease constraints on the supply-side such as ensuring planning rules do not unnecessarily constrain progress on rural coverage.

In areas which are so remote that mobile is no longer a viable option, the regulator will need to explore alternative solutions such as satellite or Alphabet's Project Loon. Such initiatives will require the regulator to coordinate amongst a wider group of stakeholders, including the aviation authorities.

How Coleago can help

Coleago can help regulators achieve their public policy goals

Coleago has worked extensively with regulators and importantly, mobile operators, and so understands how they approach spectrum awards and coverage obligations. This understanding enables us to provide regulators with practical advice on how best to achieve their policy objectives. Coleago can support regulators in a number of ways:

- estimating the costs and benefits of achieving deep rural coverage;
- designing and implementing an award process to support the attainment of coverage goals;
- developing network sharing and joint venture structures to support a joint build; and
- designing and implementing mechanisms for the allocation of public funding to support rural deployments.

About Coleago Consulting Ltd

Graham Friend, M.A., M.Phil., (Cantal), ACA, is an economist and the Managing Director and Founder of Coleago Consulting. Coleago is a specialist telecoms strategy consulting firm and advises regulators and operators on issues relating to spectrum, regulation and network strategy. If you would like to discuss any of the issues raised in this paper, then please contact Graham.



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