Fibre-optic cable country by country review

Network competition overview • Singapore. Although other access technologies were once popular in the Singapore market, today it is virtually a 100% FTTH country. As recently as 2016, 22% of broadband connections were provided by alternative technologies such as xDSL, cable modem, and FWA. As of December 2019, this percentage had reduced to just 1%, and all the major competitors have moved to purely FTTH. • South Korea. Other forms of access technology are still used by 17% of customers in South Korea, but this has dropped from 26% in 2019, and certainly the main service providers, SK Telecom, KT, and LG U+ are now heavily reliant on FTTH. • UAE. The UAE moved early to fiber-access technology, which even back in 2016 accounted for 88% of all connections. By 2019 this had increased to 91%. The largest competitive operator, du, is particularly reliant on FTTH, although it is now also investing in 5G FWA. The incumbent, Etisalat, has also invested heavily in FTTH, and its DSL network is now in decline. Like du, Etisalat is now also investing in 5G FWA to complement FTTH, and such connections are expected to grow over the next five years. However, by 2024 FTTH connections will still have grown by 15% and will represent 84% of broadband lines. • China. Thanks to government initiatives and heavy market competition between the three main players—China Telecom, China Unicom, and China Mobile—there has been a huge boost in FTTH connections in China over the past few years. As of 2019, 91% of all broadband connections are supplied over a FTTH network. Only China Unicom now has a significant portion of customers utilizing xDSL , and it is expected that FTTH will continue to gain strength over the next five years. • Qatar. Like the UAE, Qatar moved quickly to FTTH technology. The incumbent, Ooredoo, still dominates the market, and 99% of its customer base is served by FTTH technology. Vodafone is the next-biggest competitor and also operates a FTTH network, although is now starting to invest in 5G FWA. Its FWA operation is still small but is expected to grow to be 30% of its connections by 2024. Ooredoo is also investing in 5G FWA to increase its broadband footprint; however, its FTTH network will still supply 90% of all broadband lines by 2024.

US. Cable is the leading broadband technology with 64.5% of all broadband subscriptions in 2019 and is projected to remain stable. Comcast and Charter are the two leading cable providers with 24.7% and 22.9% market share respectively. Both operators have been focusing on DOCSIS 3.1 upgrades with only very limited FTTH rollouts in greenfield deployments. Verizon has been the leader in terms of FTTH deployment, deploying its FiOS network since 2005, primarily on the US East Coast. AT&T initially focused on VDSL upgrades but has been deploying FTTH networks in selected areas, particularly those where it faces competition from cable or alternative providers such as Google Fiber. Typical for the US broadband market is a lack of competition: certain areas have only one or two operators, either telco or cable, to choose from, leading to a lack of incentives for operators to invest in full-fiber rollouts. • Canada. More than half (54.2%) of all broadband subscriptions are based on cable technology; xDSL has been declining rapidly and accounted for 29.8% of all subscriptions in 2019. Most xDSL subscriptions are those of incumbent BCE, which is leading the broadband market with 24.8% market share. However, BCE has been investing heavily in FTTH since 2010, mainly in Ontario, Quebec, and the Atlantic provinces. Telus has been deploying FTTH networks in western Canada. • Australia. Despite significant declines, xDSL remains the most widespread access technology, accounting for 51.0% of all broadband subscriptions, followed by cable with 21.2%. As part of the NBN arrangement, operators are required to migrate their consumer and small and medium-sized enterprise (SME) customers to the NBN. Legacy copper- and cable-based services are deactivated 18 months after NBN becomes available in an area. • Germany. The dominant broadband access technology is xDSL with 71.6% of all broadband subscriptions, underlining incumbent Deutsche Telekom’s longstanding focus on its legacy coppernetwork upgrades. Cable provides broadband connectivity to 23.7% of subscriptions, and only 4.5% of broadband connections were based on FTTH at the end of 2019. Deutsche Telekom is the leading broadband provider with 39.5% market share. Following the 2019 acquisition of Liberty Global’s Unitymedia, Vodafone boosted its standing in the German market and reached 29.9% market share. Vodafone is now the only operator capable of competing with Deutsche Telekom at scale. Both operators have begun investing in full-fiber rollouts, but these remain limited to only selected (and most-profitable) areas. FTTH deployments are thus driven mainly by smaller local network operators. • UK. The vast majority of broadband subscriptions (77.4%) in the UK are provided via xDSL as a result of incumbent BT and its infrastructure arm Openreach giving a preference to VDSL upgrades. Only in the last 18 months, when faced with growing political pressure and increasing competition from smaller operators such as wholesale provider CityFiber and Hyperoptic, has BT Openreach stepped up its FTTH deployments as part of its Fiber First strategy. BT is the dominant player in the broadband market with 33.9% market share, followed by Sky with 23.0%. However, most of Sky’s broadband connections are provided over Openreach’s copper network, with the operator partnering with CityFiber and alternative provider TalkTalk on limited FTTH deployments in only a couple of cities. Virgin Media is the only cable broadband operator in the UK with 19.7% market share. Virgin Media’s cable network currently provides the only alternative to BT/Openreach’s legacy copper products, and with the operator deploying DOCSIS 3.1 across its network footprint reaching approximately half of UK households, it will be the only operator able to offer gigabit broadband services at scale.