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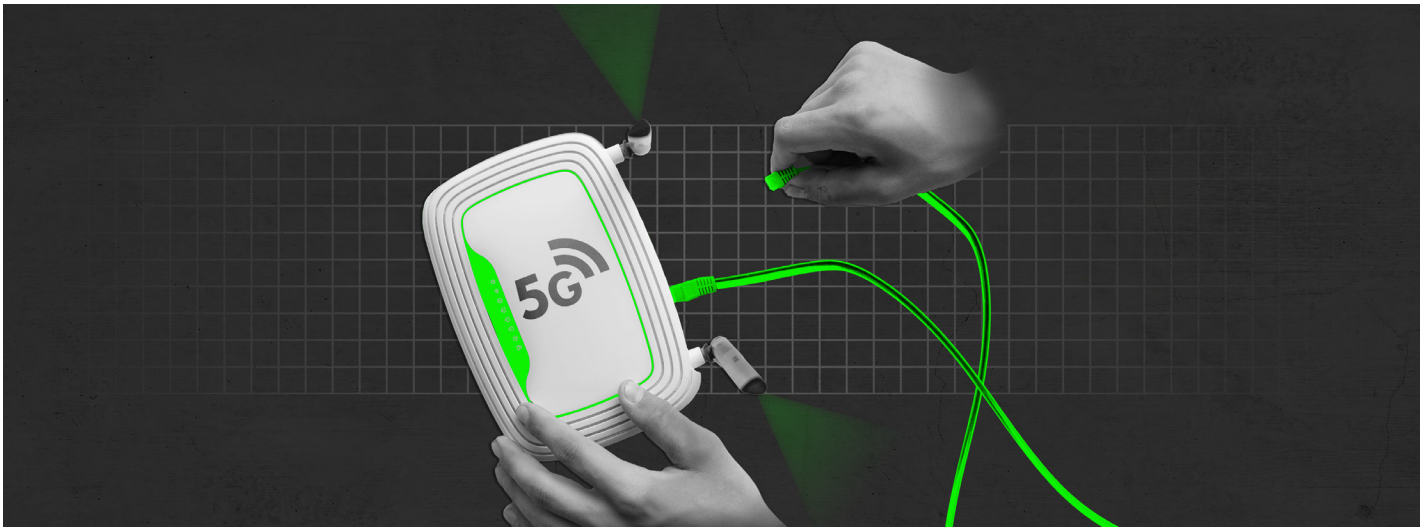


Fixed wireless access: Gaining ground on wired broadband

The FWA market is growing strongly, with 5G powering enhanced performance. Will it be key to closing the digital divide?

Naima Hoque Essing, Duncan Stewart, Kevin Westcott, and Ariane Bucaille

THE ECONOMICS AND data rate performance of fixed wireless access (FWA),[1] which uses radio waves to deliver internet service between two stationary locations such as a mobile tower and a customer's home or office, are finally becoming competitive with that of wired internet services. Deloitte Global predicts that the number of FWA connections will grow from about 60 million in 2020 to roughly 88 million in 2022, with 5G FWA representing almost 7% of the total (figure 1). While our analysis reveals a 19% 2020–2026 CAGR in total FWA connections, 5G FWA connections will grow even faster, at a CAGR of almost 88%, over the same period.[2]

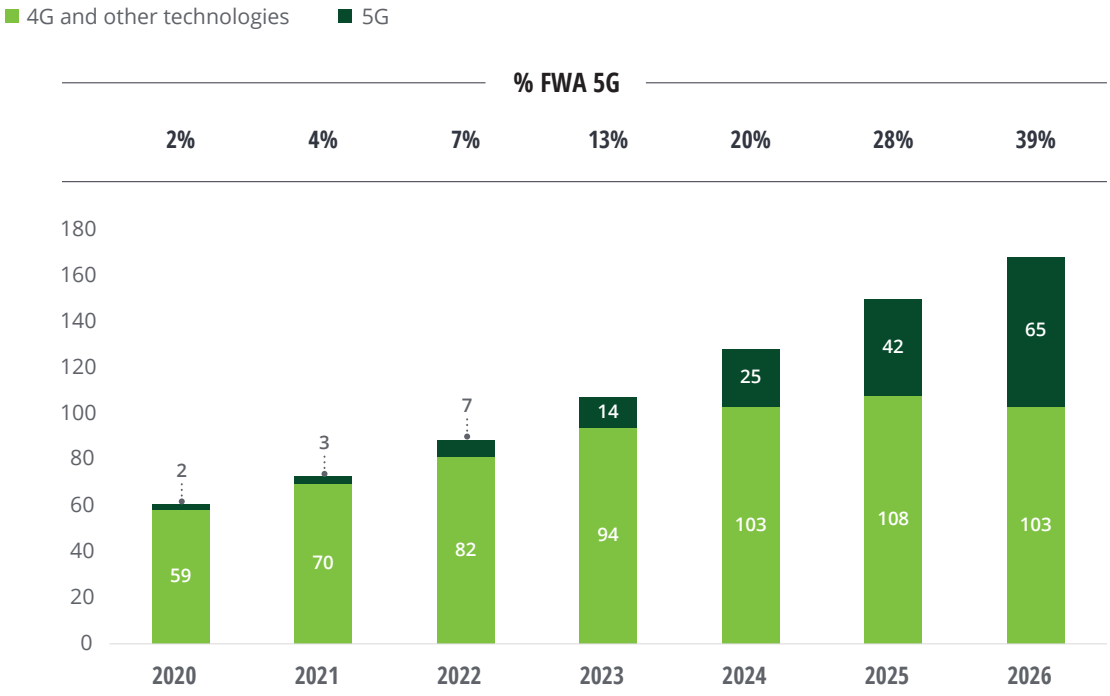
A confluence of factors is driving FWA growth

Many operators have deployed FWA selectively for decades to offer customers internet service, typically in underserved areas where wired internet connections are unavailable. But to date, FWA has not achieved widespread operator adoption outside of a few countries such as Austria or Finland. However, with more governments providing broadband funding and more regulators viewing wireless as an acceptable alternative to wireline connections, more operators are considering FWA,

FIGURE 1

The number of global FWA connections is growing rapidly, with 5G expected to make up an increasing share

FWA connections by year (millions)



Source: Deloitte analysis based on data from Ericsson, Statista, and ABI Research.

especially the enhanced 5G version, for delivering broadband internet services.

5G should further accelerate FWA's expected growth. Coupled with greater spectrum availability, 5G's deeper network infrastructure and greater spectral efficiency significantly improve the economics and technical feasibility of FWA deployments and can thus support new deployment and revenue opportunities. These traits make it far more achievable for operators to implement FWA in underserved markets, as well as more attractive to offer it in competitive markets as a replacement or alternative to existing wired internet connections (such as xDSL or cable).

FWA's most important impact may be to help narrow the digital divide by improving internet availability in underserved markets. It can be challenging to justify broadband investments in sparsely populated areas with few paying subscribers or inaccessible terrains such as mountains or islands, or even in cities where local ordinances and permitting make it challenging and expensive to connect to customer premises. FWA can provide an economical solution.[3] Being wireless, it can reduce the massive upfront cost and time needed to secure permissions, dig trenches, lay last-mile fiber, and deploy technician-installed equipment at households and businesses. Moreover, operators can often roll out FWA using their existing mobile wireless networks and fiber backhaul infrastructure, further reducing costs.

These factors have opened up markets for broadband services in places where it was previously unavailable, as we have seen in the Philippines, South Africa, Sri Lanka, and Turkey.

Recognizing high-speed internet's importance to economic development,[4] many governments across the globe are implementing sizable programs to fund or subsidize building broadband networks in underserved areas. Although these programs typically favor wired solutions, they are increasingly technology-agnostic as long as the service can meet minimum performance thresholds. In the United States, for example, the FCC's Rural Digital Opportunity Fund (RDOF) awarded US$9 billion to a broad range of wired, fixed wireless, and satellite providers.[5] The United Kingdom's £1.2 billion Project Gigabit, which aims to equip at least 85% of UK premises with gigabit-capable broadband by 2025, is being lobbied to consider wireless options.[6] And the European Union is studying FWA as a means to achieve national broadband goals.[7]

In addition to addressing households with no broadband access, network operators are also increasingly viewing FWA as a competitive alternative to existing wired internet services, especially DSL, which in some markets is no longer considered "broadband."[8] Operators in the United States, Italy, and Switzerland have explicit plans to use 5G FWA along with fiber to upgrade and replace existing DSL connections, which reduces costs by decommissioning legacy copper networks.[9]

With regard to FWA's 5G version specifically, many network operators worldwide view 5G FWA as a way to expand revenue opportunities and help monetize investments in 5G and wireless spectrum. For many, FWA is emerging as one of the leading use cases for 5G. Almost 90% of providers that have launched 5G also have an FWA offering, compared to 62% among those that haven't yet launched 5G.[10] Countries with operators early out of the gate include Australia, Austria, Canada, Finland, Norway, Switzerland, the United Kingdom, and the United States, and we expect the list to expand.[11]

Operators have multiple deployment options depending on their service area demographics, spectrum availability, and technology portfolios. For example, in dense city locations, 5G FWA can be used to augment existing fixed or mobile phone networks to offer pop-up wide area networks (such as for small or medium businesses' networks, live events, or construction sites); it also can enhance redundancy and surge capacity. As the pandemic has shown, using wireless connections as a gap filler and backup for fiber to provide uninterrupted internet access is growing in importance. FWA can also be offered more broadly as a competitive alternative to existing home internet, such as in a suburban area with no or few other options. In most cases, operators will selectively roll out 5G FWA in those areas where they have suitable spectrum, excess wireless network capacity, and adequate supporting infrastructure, but also where fixed wireline is otherwise uneconomical or slow to deploy.

THE BOTTOM LINE

The growth in FWA has ramifications for several industry players. Most obviously, network operators have an opportunity to use FWA as a source of incremental revenue. Even though mobile is currently a more profitable use of spectrum than FWA, most wireless networks, except in the densest urban areas, are underutilized. Filling this unused capacity with FWA service can thus be accretive to earnings. That said, spectrum is a scarce resource, and operators should prioritize its use to where it can generate its highest value. In addition, operators have new methods and technologies (such as small cell and site densification) that can help them address scenarios should demand exceed supply.

5G FWA specifically also has implications for network equipment providers. Unlike previous versions, 5G FWA complies with industry standards such as 3GPP; this means that it can drive greater consistency in the equipment needed to support it, since more network operators can adhere to the same standards. This, in turn, can allow the equipment vendor ecosystem to collectively develop and commercialize common, interoperable equipment and devices at scale, lowering costs and simplifying both operator and user installation.[12] By providing a larger base upon which to commercialize inventions, common standards can also support greater innovation. Small cells, beamforming, and massive MIMO (multiple-in, multiple-out) capabilities are examples of new radiofrequency (RF) technologies[13] that operators can deploy to increase their 5G networks' spectral efficiency and traffic density, particularly in areas where network capacity becomes an issue.

Finally, cable companies should be alert for increased competition from mobile network operators seeking to attract new customers and improve stickiness by bundling 5G FWA with mobile subscriptions. While 5G FWA doesn't yet pose an existential threat to cable—wired connections, when available, almost always offer a more reliable connection than wireless options—that could change as its economics and ease of use continue to improve.

FWA's commercial viability is fast increasing. Besides its growing appeal as a replacement for wired connections, its favorable cost and quality profile can make it the most sensible and economical option for bringing broadband to both underserved areas and competitive markets. Because of this, FWA may well play a key role in making the internet more widely accessible while offering telecom industry players new revenue, growth, and innovation opportunities—a potential win-win for all.

Endnotes

1. FWA is defined as a wireless internet connection between two fixed locations such as a mobile tower and customer home or office. It does not include portable battery-based Wi-Fi routers or dongles.
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3. Samsung reports that FWA can cost up to 40% less than laying fiber in a typical urban setting. Samsung Business Global, "Fixed wireless access network solutions," accessed May 2021.
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10. Ibid: Ericsson, *Ericsson mobility report*.
11. OECD, "Chapter 3: Access and connectivity," *OECD Digital Economy Outlook 2020* (Paris: OECD Publishing, 2020).
12. ABI Research suggests that the 5G FWA CPE market will experience a 48% compound annual growth rate (CAGR) between now and 2025, with approximately 41 million units being shipped annually by that stage. Mark Patrick, "FWA: A truly tangible 5G use case that's already gaining traction," Electronics Media, June 20, 2021.
13. Massive MIMO integrates antennas, transmitters, and receivers to achieve better throughput and spectrum efficiency. Beamforming directs radio waves to avoid interference.

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