RESEARCH

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5G fixed–wireless access: the market opportunity for operators and vendors

Rupert Wood

About this report

This report assesses the size of the 5G fixed–wireless access (FWA) market opportunity by 2023: in other words, the limits of what can be addressed, rather than pure forecasts of what proportion of the broadband market FWA will actually take. It describes the various criteria that create or limit the opportunity for 5G FWA, and assesses their importance **at an individual country level**.

It gives an indication of the addressable market for 5G FWA, which will help operators and vendors to focus their efforts.

The report provides recommendations for vendors and some for operators.

It is based on several sources:

- Analysys Mason's internal research, specifically wireless and fixed network data traffic forecasts, FTTx coverage, capex and conversion forecasts and, country data including our *European Telecoms Market Matrix*[1]
- interviews with stakeholders in operators (of different kinds)
- interviews with equipment vendors.

KEY QUESTIONS ANSWERED IN THIS REPORT

- How many premises are addressable for 5G FWA?
- What are the commercial models for 5G FWA technologies – should it for example be complementary or substitutive – and which model will yield the best result?
- What will be the size of the addressable market for mid-band or millimetre wave (mmWave) variants?

WHO SHOULD READ THIS REPORT

- Vendors: assess the opportunity for FWA equipment and understand where the opportunities lie.
- Planners at mobile network operators (MNOs): assess the effect that 5G FWA will have on the fixed broadband market.
- Planners at fixed operators: assess the competitive threat from 5G variants and identify suitable use cases for 5G FWA.

[1] For more details, see Analysys Mason's *European Telecoms Market Matrix*. Available at www.analysysmason.com/tmm.

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Executive summary

5G FWA offers organic revenue growth to mobile operators at a time when the main services offer none. The opportunities will be patchy because 5G FWA has many substitutes, but multi-dimensional market segmentation shows a total addressable market of about 290 million premises worldwide.

There are essentially two commercial models for 5G FWA.

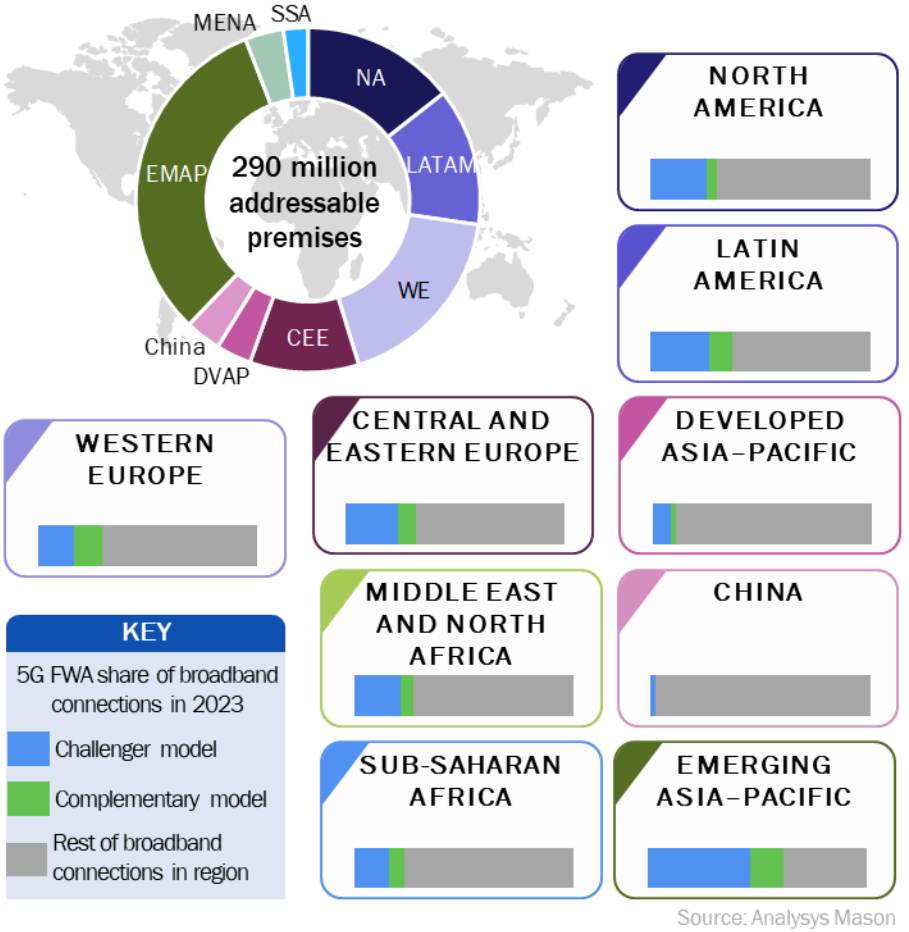
The addressable market for the **challenger model** depends on fixed market competitive dynamics and fixed wholesale pricing, and even where the opportunity is large, MNOs will have to be cautious about traffic levels, limiting the addressable market. The **complementary model** depends on the relative local cost of fibre and wireless. Many of the best opportunities are in some high-income or high-cost markets.

We forecast about 1.27 billion static broadband connections by 2023 (53% of premises) worldwide. The addressable market for 5G FWA is 23% of these by that date (290 million premises), equivalent to 12% of all premises worldwide.

KEY RECOMMENDATIONS

1. Vendors and operators should target their 5G FWA offerings carefully, often based on local factors.
2. Vendors should target mobile-centric operators in markets with poor levels of choice for wholesale fibre.
3. Vendors should target operators in countries with poor physical infrastructure availability in the last mile of the fixed network to maximise the fixed-complement opportunity.

Figure 1: Total addressable market for 5G FWA, worldwide, 2023



Source: Analysys Mason

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Challenge: the market opportunity for 5G fixed–wireless is hard to determine because it is patchy and depends on local factors

5G FWA has substitutes and the market opportunity will vary according to the technology variant, the commercial model and a set of local conditions.

There is no obvious substitute for 5G mobile insofar as it is used for mobility. It is 'better' than 4G, and assessing the market opportunity is a matter of understanding demand for a 'better' service than can be offered by 4G. 5G FWA on the other hand has several substitutes, and each has a variety of advantages and drawbacks. Most are wireline of some kind, but there are non-5G, non-3GPP FWA alternatives too.

Mid-band and mmWave 5G have very different cost and capability profiles. Mobile-centric and integrated operators will have different reasons to use either flavour of 5G FWA. They will have different commercial models, different ways of segmenting the market and different expectations.

Each country will have a different competitive dynamic, a different set of existing wireline and wireless infrastructure, and different physical and regulatory externalities that aid or impede deployment of wireless and wired networks.

Understanding the market opportunity makes no sense without reference to these technological, commercial differences **and** to these local externalities. This report aims to quantify the opportunity with reference to these parameters.

Figure 2: 5G FWA technology variants and commercial models

	Technology variants	
	Mid-band (3.5GHz + mMIMO)	mmWave
Complementary model (integrated, fixed operators)	▪ Alternative to FTTx in high-cost/suburban/rural areas	▪ Lower cost of gigabit roll-out where current physical infrastructure unsuitable ▪ Defray cost of mobile densification
Challenger model (mobile-centric challengers)	▪ **Where:** anywhere with macrocell capacity headroom	▪ **Where:** maximum addressable properties (urban)
	▪ **Aim:** capture fixed share of wallet	▪ **Aim:** compete on equal terms with FTTP/cable
	▪ **Target segment:** lower end, never-had-a-cord-to-cut	▪ **Target segment:** same as competitive FTTP: data-hungry cord-cutters

Solution: multi-dimensional market segmentation shows a total addressable market of about 290 million premises worldwide

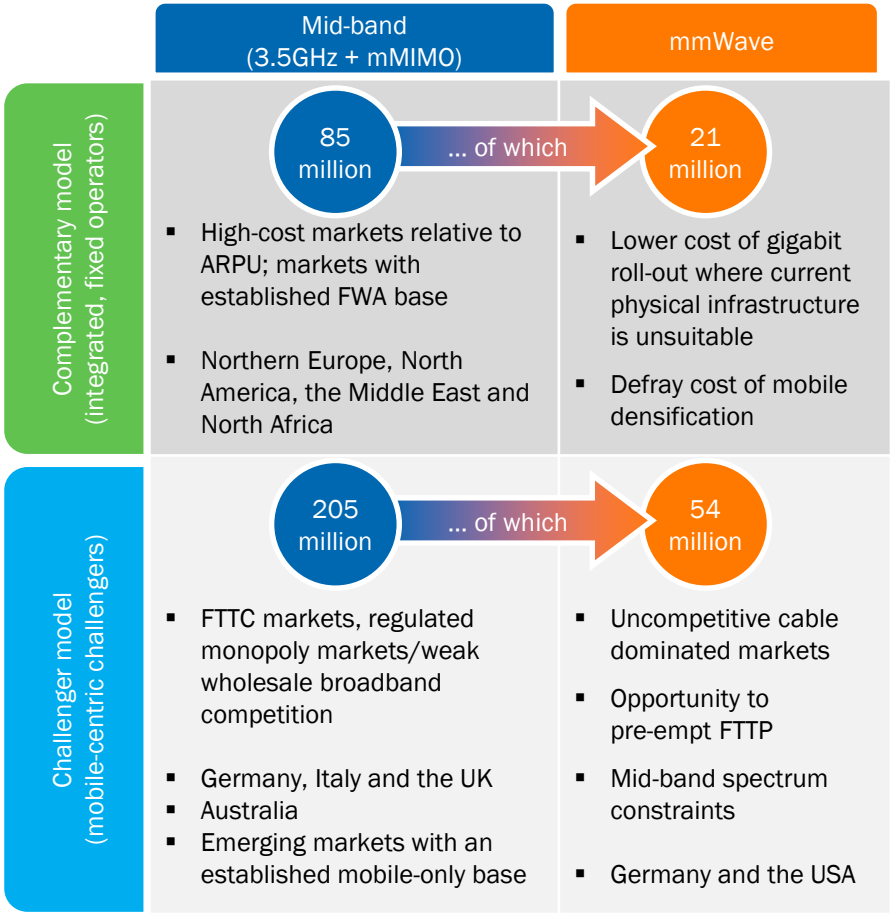
Roughly a quarter of the forecast fixed broadband market worldwide will be addressable by 5G FWA by 2023.

5G FWA offered by mobile challengers will be largely in urban areas because in practice most mobile operators will be cautious and will continue to treat 5G FWA as an opportunistic play on the back of 5G mobile. The size of the opportunity will be determined by: the competitive dynamic of consumer fixed–mobile convergence (FMC) (i.e. the importance of the mobile-only sector); pricing of fixed wholesale; and a 'try it and see' caution about the impact of additional traffic volume created by FWA.

The size of the opportunity with fixed operators will be determined not only by demography and topography, but also by the cost/availability of infrastructure for deploying fibre. mmWave will be deployed only where local competition or public goals demand it, or on occasions when congestion is a concern.

The overall 5G FWA addressable market is about 290 million premises by 2023, and the challenger model will account for about 205 million of these. The addressable market for mmWave is about 75 million premises, of which more than half are in Germany and the USA. The total addressable market opportunity is worth a maximum of USD57 billion per year for operators. These are **not** subscriber and revenue forecasts. How many subscribers 5G FWA gets and how much revenue it generates depend on the outcomes of inevitable price wars and service competition. In reality, it will be doing well to generate half of this sum.

Figure 3: Hot spots for 5G FWA and addressable number of premises by technology variant and commercial model



Source: Analysys Mason

Recommendations

1

Vendors and operators should target their 5G FWA offerings carefully, often based on local factors.

Vendors should not think of 5G simply as the best network for services like video and virtual reality etc, and should avoid hyping it as such. For FWA, 5G already has many, often technologically superior, substitutes (ITU standard PONs, IEEE standard PONs, DOCSIS3.1, Wi-Gig 802.11ay). 5G vendors and operators would be better to work out where the weaknesses in substitutes' coverage and offerings lie, and exploit those weaknesses. In doing so, they will tap into areas that could deliver to mobile-centric operators real organic revenue growth.

2

Vendors should target mobile-centric operators in markets with poor levels of choice for wholesale fibre.

Mid-band-based 5G will be a price play that should compete effectively against VDSL where that is the main option. The technology has sufficient headroom capacity that FWA could in some circumstances be seen as the primary driver of 5G roll-out, not as a short-term opportunistic play that 'piggybacks' on mobile. However, any operator or vendor should avoid targeting markets where FTTP/cable wholesale prices have fallen below USD25 per month.

3

Vendors should target operators in countries with poor physical infrastructure availability in the last mile of the fixed network to maximise the fixed-complement opportunity.

Integrated operators will be keener on qualitatively similar solutions to FTTP than mobile-centric operators, and will spend more per premises (much more) on the solution. If the cost per premises exceeds USD1200, and the ratio of capex per premises to ARPU per month exceeds 30 times, there are good opportunities. North America and parts of northern Europe offer good opportunities.

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About the author

Rupert Wood (Research Director) is the lead analyst for our *Operator Investment Strategies*, *Network Traffic* and *Spectrum* research programmes. His research covers the following areas: the evolution of operators' investment priorities; operator business structures; business models for FTTx and convergence; fixed broadband technology; the economic impact of digital transformation; capex forecasting; and network traffic forecasting. He has extensive experience of advising senior management on strategic issues. Rupert has a PhD from the University of Cambridge, where he was a Lecturer before joining Analysys Mason.

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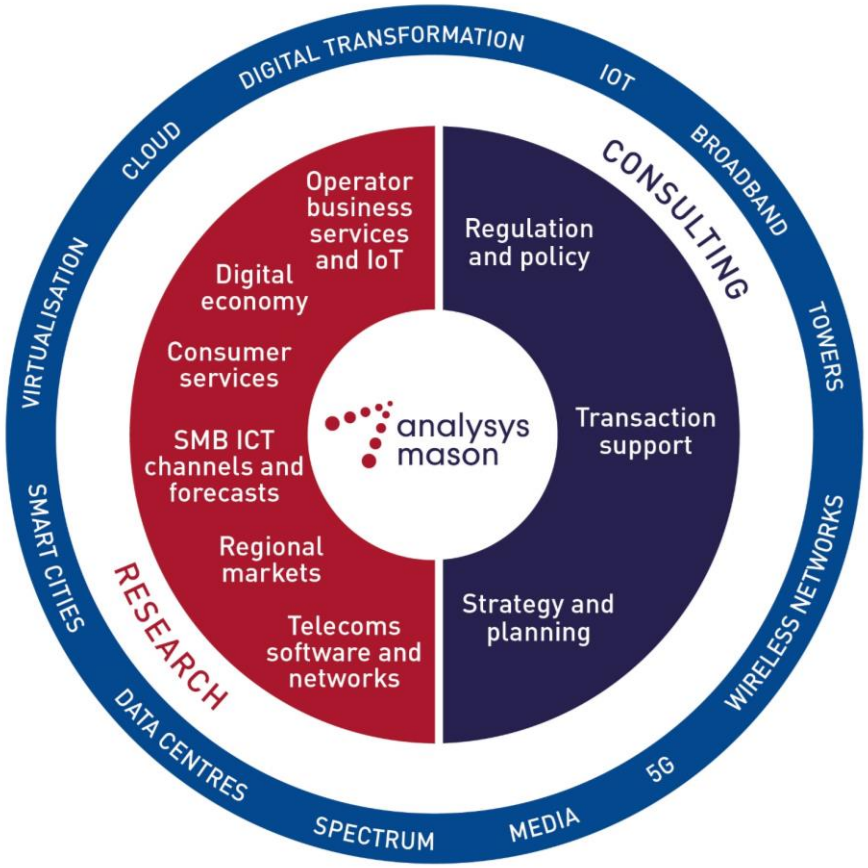

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