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THOUGHT LEADERSHIP:
ALL ABOARD THE DIGITAL INFRASTRUCTURE
AUTOBAHN



CONVERGING TOWARDS GIGABIT-READY NETWORKS

We are all becoming more data hungry – with growing data usage in our houses, at work and on the move. As a result, the call for improved digital communication infrastructure is being felt by nations globally. What's more, policymakers and digital visionaries know that the societal value of having reliable, ubiquitous and fast digital communication infrastructure, so-called 'converged gigabit-ready networks', is more fundamental than just the satisfaction of consumer appetite. Rather, these networks are becoming ever more important to the economic and social success of societies.

Such networks will:

- underpin future economic growth, even for industrialised economies, providing the backbone to develop data intensive industries such as self-driving vehicles and virtual reality;
- ease the path for a smarter and more efficient urbanisation by providing the connectivity backbone, such as 5G, which enables the implementation of Smart Cities and the Internet of Things (IoT) applications; and
- counter the risk of rural areas being 'left behind'.

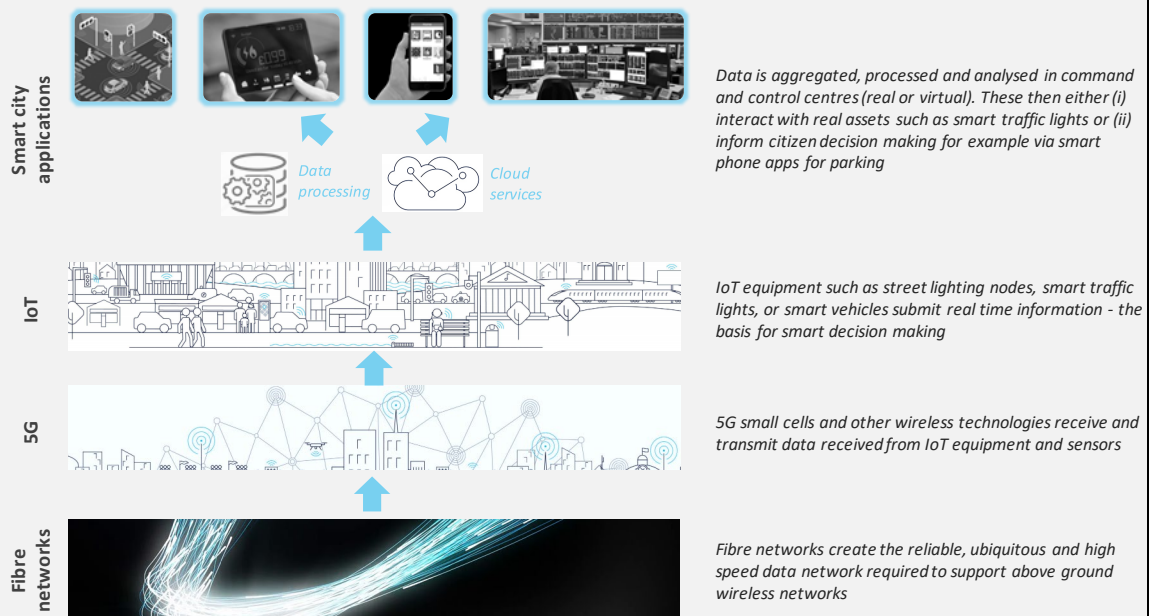
The need for governments to support ubiquitous fibre coverage, together with the significant capital required, is creating investment opportunities for private investors.

This month's feature article provides an overview of the general characteristics of investing in fibre networks, looks at the rollout of fibre generally across Europe, and takes a deep dive into the German market as a more detailed example of how the fibre investment landscape is changing.

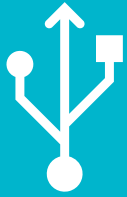


Primer: The Layers of Digital Communication Infrastructure

Whilst fibre, 5G and IoT are referred to as separate 'new' digital infrastructure asset classes they will in practice be heavily integrated to create the smart cities of tomorrow



Source: Whitehelm Capital.



FIBRE AS AN INVESTMENT OPPORTUNITY

Telecommunications in general, and fibre in particular, has become an increasingly accepted infrastructure sub-sector over recent years. This reflects fibre's importance as the global communications backbone, a position that will only become more important as the rollout of 5G mobile networks gathers pace, and the realisation that fibre investments, when structured appropriately, can provide a number of attractive characteristics, including those described below.

Quasi-monopolistic position

Unless a competitor rolls-out a competing fibre network (which is costly and has a long payback), the first mover will likely remain the only provider of high-speed internet services in most of its coverage area.

Essential infrastructure

High speed internet services no longer represent discretionary consumer expenditure – many consumers, industries, and municipalities regard such high-speed, high reliability networks as critical infrastructure. High speed internet has

leapfrogged many traditional utilities in terms of what consumers consider to be their most important priority, with a recent study showing that 'ultra-slow' speeds could knock 24%, on average, off the value of a property.¹

Predictable revenue with downside protection

Wholesale models backed by well-structured, long-term Internet Service Provider (ISP) or business-to-business (BTB) contracts provide strong visibility over revenue. Renewal risk is low given the lack of viable alternative networks.

High EBITDA margins

Fibre-only investments may have a traditional 'infrastructure-style' profile, with owners responsible mainly for providing assets with high availability but limited operating or commercial risk. EBITDA margins of 70-85% are typical.

¹ Housesimple survey 2019, based on UK house prices



This is not to say that all fibre investments are attractive. Whitehelm Capital is seeing a wide range of opportunities in the market, a number of which do not stack up when measured against the above characteristics.

The most common risks that investors need to be cognisant of are associated with speculative rollouts, greenfield developments and market dynamics, as described below.

Speculative Rollout

A key risk in fibre investments is reliance in business plans on speculative build, where returns are dependent on an assumed level of take-up of fibre by consumer or business customers, without any contractual underpinning. An investment that is underpinned by a high level of assumed penetration will struggle if take-up rates do not meet expectations. While the continued take-up of fibre often forms part of an investment case, Whitehelm considers it prudent to ensure that returns are underpinned by an appropriate level of contracted revenues through cornerstone contracts, anchor tenants or with minimum guarantees from ISPs.

Greenfield Development

Given the current shortage of fibre, most investment opportunities are of a greenfield nature, or at least combine greenfield elements with an existing brownfield network. This brings with it all of the concomitant greenfield risks, such as the capacity to navigate appropriate permitting and deliver the infrastructure on time and on budget.

Market Dynamics

An understanding of market dynamics and future technological trends is critical for fibre investments. For instance, the rollout of fibre is often driven by city or municipal level decision making, meaning a detailed understanding of local regulatory and approval regimes in place is critical. A broader view on technology is equally important. While 5G networks are expected to underpin a significant increase in overall demand for fibre, at the same time they may be able to substitute fibre in some situations.

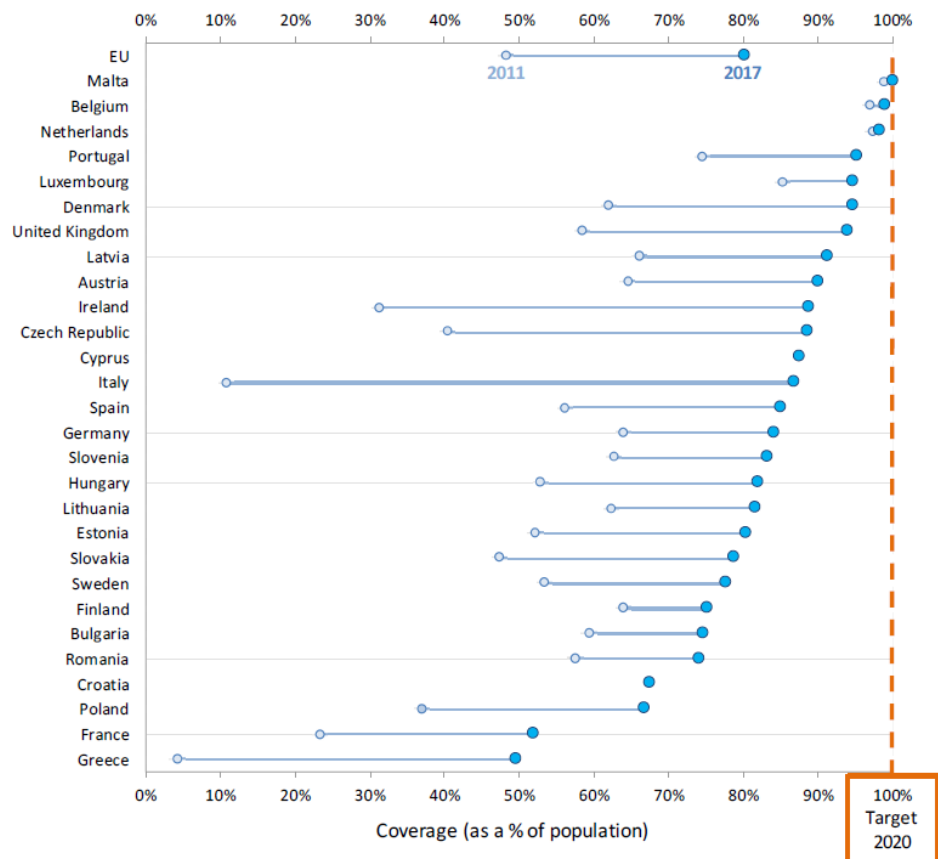


SPEED BUMPS: EUROPE'S LAGGARDS

Surprisingly, a number of traditional European powerhouses trail well behind the leaders in the great race for world-class digital communications infrastructure.

For instance, in rankings of 30Mbps coverage in 2017 amongst EU member states, Germany ranks 15th, while Sweden is 21st and France at a paltry 27th, is trailed only by Greece.

Chart 1: 30Mbps Coverage in All EU Member States, 2011 versus 2017



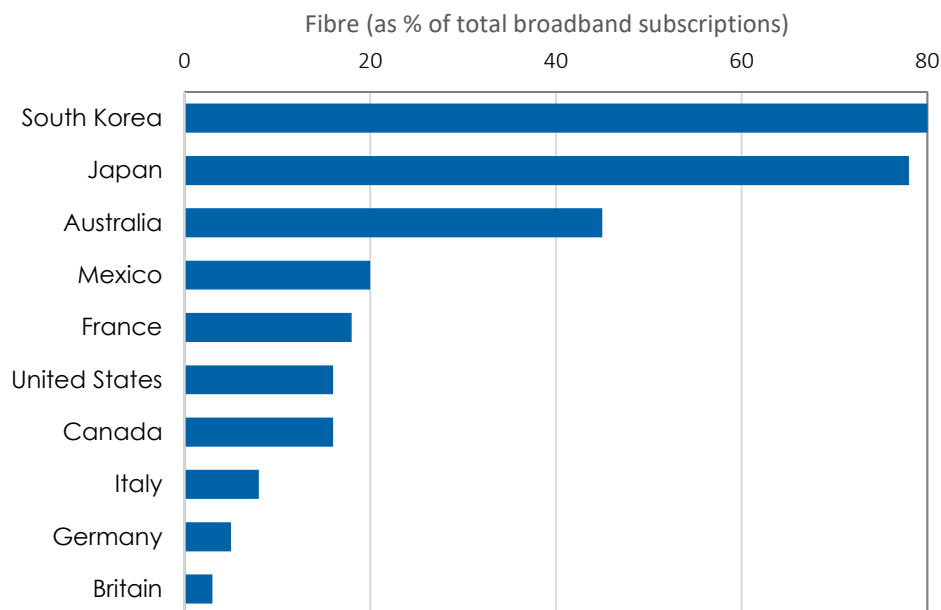
Source: European Commission (2018)



Governments are becoming increasingly concerned by the need to be seen to be taking positive actions on the rollout of fibre. An example of this being the election announcement by Britain's Labour Party that it wants to re-nationalise part of British Telecom, the former state-owned monopoly, and use it to comprehensively upgrade the core copper network to fibre. While the ambition is noble, such approaches run counter to the increasing success of those countries that have been able

to engage the private sector in a sophisticated manner. They also run counter to previous attempts by other like-minded governments. For instance, whilst Australia's state-run National Broadband Network has been successful in increasing fibre penetration, as highlighted in the chart below, its rollout is late and its costs have risen from A\$30bn in 2013 (1.9% of GDP) to A\$51bn today (2.6% of GDP). These costs will inevitably end up with either the end-users or taxpayers, or both!

Chart 2: Low-fibre Diet: Fibre as a Percentage of Total Broadband Subscriptions, December 2018



Source: OECD, Whitehelm Capital



CASE STUDY: GERMANY

Germany is one of the world's most advanced industrial economies, renowned as an export powerhouse, but its digital infrastructure is creaking at the seams. As with other areas of Germany's economic infrastructure, the root cause can be traced to a lack of investment in replacing the existing asset base. Most of the so-called 'last mile' of connections between Germany's network and households has been in the ground for several decades.

Who will be responsible for the investments required? The usual suspects have been long since identified and interrogated: the federal government, local and regional government, telecom incumbent(s) and new private sector entrants. Several culprits have been found.

Whilst the public sector is emerging as a huge advocate of investment, with a high budget surplus and low levels of sovereign debt, state financing has not materialised as political leadership remains overly cautious. It has been suggested that the federal government should do more to proactively incentivise (or penalise) Deutsche Telekom, which was privatised in 1995 and remains one-third state owned, into doing more. Some want it out of the way, concerned it will continue to *'undercut local municipalities through carrying out copper vectoring and then offering low-price deals'* like Marcel Fratzscher, director of the DIW think-tank as reported in the Financial Times. Deutsche Telekom has itself said it makes no sense to lay fibre-optic cables throughout the countryside.

Nevertheless, in the last few years the landscape has changed. Whether the federal government is behind the change or simply a follower is up for debate, but what is clear is that aspirations are high as outlined in roadmaps such as 'Gigabit Germany 2025' published in 2017. This roadmap envisages laying the foundations for nationwide 5G rollout by the end of 2020 and establishing converged gigabit-ready infrastructure in Germany by the end of 2025. As a sign of shifting priorities, in March 2018, the country appointed its first minister for digital affairs to support the development of the country's digital infrastructure.

A fibre-optic network for the whole of Germany will require significant capital. The action of the federal government has mainly been in the form of regulatory and legal reform such as requirements for:

- municipalities to put in place passive fibre infrastructure for all new build real estate;
- utility owners to make networks available for broadband deployment for a co-use charge;
- utilities to provide information regarding existing networks and construction works; and
- relevant authorities to have a maximum three-month authorisation period for construction permits.



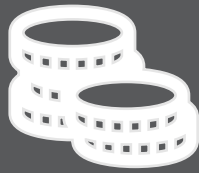
In the fibre sector, a key private sector participation model that has emerged is the structuring and granting of competitively tendered local and regional concessions, which are supported by the federal government, where necessary. Whilst the majority of German fibre optics schemes are relatively small – between €15m and €30m – larger schemes are now being mooted replicating projects such as the West Pomerania / Rugen concession, targeting 40,000 subscribers which was awarded in 2018 according to Telekom.

As a result, financing for new fibre build rollouts has gained in popularity: established incumbents are being joined by new players, often backed by infrastructure funds or private equity money.

Recent transactions include:

- the establishment of a joint venture, Glasfaser Nordwest, by Telekom and EWE targeting investment of up to €2bn;
- KKR owned Deutsche Glasfaser launching a refinance of €650m of existing debt and raising of a new capex facility; and
- acquisitions of fibre companies GVG Glasfaser, Inexio, CCNST, Blatzheim Networks Telecom and SOCO Networks Solutions by various infrastructure investors.

Such interest, in part, validates the German example. Governments that support their grand digital visions with supportive legislation and well-structured concessions can create attractive environments for private sector capital. Despite the absence of an ‘open-access’ model, whereby fibre-owners can reduce end-user risk by leasing their networks to ISPs, the German model is attractive to investors who are able to achieve scale and diversify take-up risk across different regions.



EUROPE'S FIBRE INVESTMENT OPPORTUNITY

For equity investors, the German fibre opportunity is reflective of a broader appetite for investment in European telecommunication platforms. In recent transactions, these businesses have attracted mid-to-high teen EV-to-EBITDA multiples, particularly for businesses which have well-structured underlying projects and can articulate growth opportunities. For debt investors, increased interest and a greater appreciation for the high-quality nature of these assets has pushed down margins to some extent. However, attractive opportunities to provide corporate-style financing for rollouts by large-scale platforms as well as project finance type packages for robustly structured larger concessions remain.

Whitehelm's own experience is to try to find the best of both worlds - projects that give the investor exposure to potential upside from high utilisation of networks as a result of 5G, IoT and increasing sophisticated business demand whilst limiting demand risk by backing open-access wholesale models where minimum revenues are guaranteed by creditworthy internet service providers (ISPs) under long-term contracts.

Regardless of where you are in the capital structure, the fundamental business case for investors is clear: European internet data traffic continues to surge. Increasing data consumption in the consumer sector, together with strong demand for fast internet by business customers and the need to link up mobile and small cell infrastructure, mean investment cases for converged gigabit ready networks are beginning to come together.

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