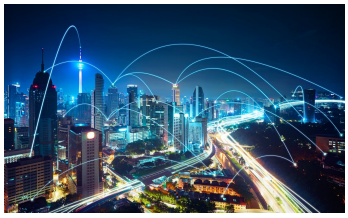
Bundles | 28 January 2022

Telecom Outlook 2022: innovation and M&A

In this series of articles, Jan Frederik Slijkerman and Ferdinand Nijboer explore key themes for the telecoms industry in 2022, including M&A developments in the mobile tower sector, better connectivity, cybersecurity risks, and the growth of mobile banking

In this bundle



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Expect further consolidation in the European telecom industry, but not the creation of a pan-European telecom operator

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Expect further consolidation in the European tower sector. It will be especially interesting to see what is going to happen this year with the tower...

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Telecom Outlook: 2022 could be the year mobile banking really takes off

The banking industry is undergoing massive digital disruption, with the mobile phone increasingly becoming the dominant method for banking

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We are likely to see broadband connectivity improve across Europe

What will 2022 bring to the telecom industry? Digital connectivity is frequently in the news nowadays. Because of strong developments in the industry, but also because it is a key policy area of the European Commission (EC). We believe the main themes of 2022 will be better connectivity as well as mergers and acquisitions (M&A). We, therefore, write in this outlook about the build-out of 5G and fibre networks and rural connectivity. We will also discuss M&A in the telecom sector and specifically about M&A developments in the mobile tower sector. Finally, in addition to the main trends, we will discuss cybersecurity risks, as well as developments in the mobile payments sector.

European agenda for digital and data strategies

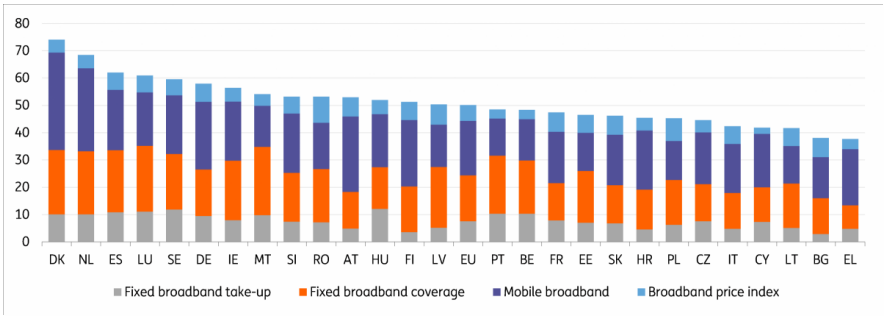
Let's first discuss the subjects that will be discussed by the European policy-making bodies this year. The European Commission will execute its agenda for digital and data strategies in Europe. The EC defines two targets for our Digital Decade: Gigabit broadband for all households and 5G in populated areas, which should be reached by 2030. It has also published proposals for the Digital Services Act (DSA), the Digital Markets Act (DMA), the Data Governance Act (DGA) and the

Regulation on a European approach for Artificial Intelligence (AIR). These proposals will likely be discussed this year with the European Council and European Parliament to become legislation. Many will welcome these proposals if they reduce the dominance of the large technology platforms and create a level playing field in Europe. Hopefully, the competitive position of telecom companies will improve on a relative basis. But more importantly, we hope consumers will benefit from better privacy regulation, as well as fairer competition on platforms that should benefit consumer choice.

This year will also see the likely start of substantial investments from the European Recovery Fund (ERF), aimed at accelerating the digital transition. The European Commission has measured digital competitiveness in EU member states through the DESI index since 2014. The DESI index tracks digital competitiveness with respect to human capital, broadband connectivity, the integration of digital technology and digital public services. In the figure below, the broadband connectivity ranking from the European Commission can be found. It is a sub-index from the DESI index. We can see that Denmark, the Netherlands and Spain are well-connected, while, when looking at the larger countries, Poland and Italy have some work to do. A description of the methodology can be found on their website here.

The European Resilience and Recovery Plan can help with improved broadband connectivity in these countries since 20% of expenditure is allocated to the digital transition. Plans have been presented already to invest €13bn in digital connectivity. Also, other European programmes and facilities will help the rollout of broadband networks in Europe. So, broadband connectivity will likely improve across Europe.

Broadband connectivity ranking European Commission



Source: EU Digital Economy and Society Index, ING

What do we expect to happen in 2022?

A couple of trends will likely continue. 5G is here to stay and we expect that 2022 will be the year when its uses will become more widespread, although there are likely still speed differences across Europe. Mobile operators will need to find good pricing policies for 5G services. The build-out of fibre networks is progressing according to plan, also with the help of EU funds. In this report, we pay special attention to alternative ways to connect in remote areas. The technologies that are discussed in this outlook are Fixed-Wireless Access (fixed broadband connectivity over mobile networks) as well as satellite connectivity. Expect, therefore, that investments in fibre broadband and 5G networks will continue.

The ownership of some telecom operators will likely change, either through M&A or LBOs (leveraged buyouts). The same holds true for the ownership of mobile tower operators. Countries

where M&A could take place are the UK, Spain, Italy and France, amongst others.

There are two other trends that are either going to benefit or possibly hurt consumers in 2022. To the possible benefit of consumers is the continuing innovation trend towards mobile banking. We expect financial services to become mobile-centric in 2022, leading to lower costs, more choice, and better ease of use of financial services, also in emerging markets. Better connectivity has the disadvantage that criminals could also profit from it. In 2022 the risk of the disruption of digital services remains high and could become higher, as will be explored in our article on cybersecurity. Nevertheless, providing security services could also provide a business opportunity for telecom operators.

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Telecom Outlook: 5G will evolve to offer more than just high download speeds

This will be the year when 5G really takes off. In this article, we will describe the availability of handsets, the speed differences among 5G networks, future benefits of 5G, and the need for a thorough pricing model

This will be the year that 5G really takes off

5G handsets are available

A limitation to the increasing use of 5G networks has been the availability of handsets. Last year, however, we did see many high-end models come to the market which enable 5G connections, such as the iPhone 12, iPhone 13 and Samsung Galaxy S21. Verizon mentioned in its 3Q21 results call that: “On the commercial front, we've got great momentum in the 5G adoption, with more than 25% of our consumer phone base using a 5G capable device”. The US is likely to be a frontrunner in this respect. Given that the average revenue per unit in the US is higher than in Europe, the cost of a new 5G enabled device is relatively low in the US compared to the annual subscription revenues that are paid by consumers. It is easier for operators in the US to make deals subsidising handset sales to customers because they make larger profits on the subscription contracts. It is therefore likely that the penetration of 5G-enabled devices will be higher in the US than in Europe. If customers own the handset, they'll also want a network – fortunately, network rollouts are going well.

Network rollout progressing

Across the world, operators are rolling out 5G networks. According to the Ookla® 5G Map™, there were 5G deployments in 112 countries as of 30 November 2021. That's up from 99 countries on the same date a year ago. However, not all 5G networks have nationwide coverage.

- In September 2021, Deutsche Telekom covered 87% of the population with 5G. This was up from 67% at the end of 2020. The target for the end of 2021 is >90% of the population.
- In Spain, the Telefonica 5G network covers 80% of the population.
- KPN and Orange have rolled out 5G in cities and are preparing their networks for a further rollout.
- In the US, T-Mobile reached 308m citizens in September 2021 with its extended range 5G (600Mhz band), which is a material increase from the 280m at the end of 2020. Coverage with its Ultra Capacity 5G (2.5Ghz band) is 190m citizens, which is up from 106m.
- The Verizon 5G Nationwide Network covers approximately 230m people (according to its 2020 annual report filing), while Verizon announced in January 2022 that it would cover 100m people with its 5G Ultra Wideband network in the month.

The differences between 5G networks will be further discussed below because there are huge differences among networks.

Network differences

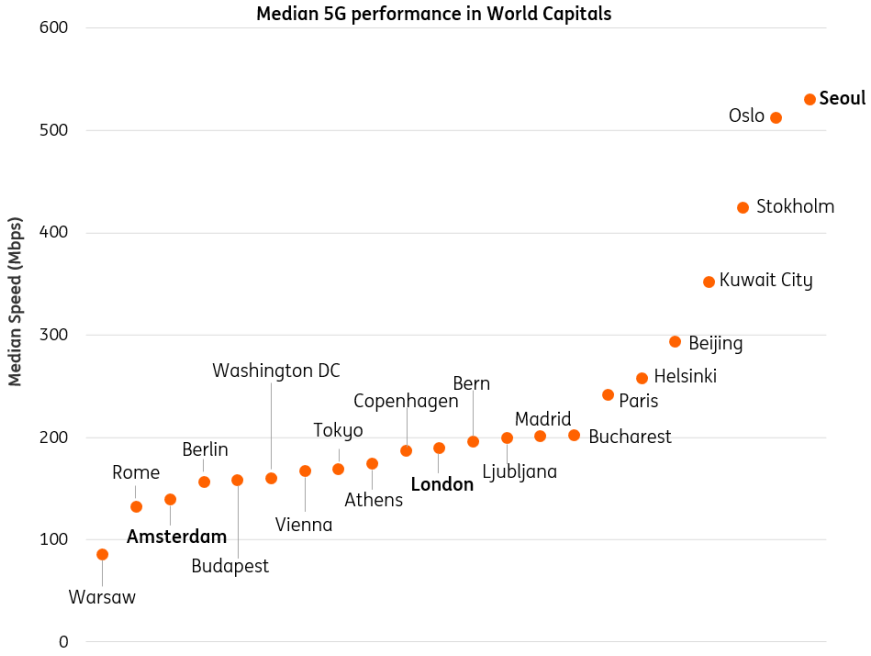
Fortunately for those of us who do not have a 5G-enabled device, 4G LTE solutions already bring a substantial improvement in speed versus earlier 4G technologies. An advantage of 5G is that it operates at higher frequencies than 4G technologies. These higher frequencies allow 5G equipment to provide higher speeds than 4G technologies. However, these higher frequencies also have a drawback. Firstly, they are not yet available everywhere. In the Netherlands, the government still has to auction these frequencies due to issues with existing users of the spectrum. Secondly, higher frequencies have a lower reach, which is especially true for the so-called millimetre-wave spectrum. The millimetre-wave spectrum has the added disadvantage that it has great difficulty penetrating walls and other objects. However, this is not as bad for other 5G specific spectrums.

Nonetheless, operators need many more antennas to provide nationwide geographic coverage. Some operators have therefore chosen to launch 5G services on a spectrum that is already available with 4G technologies. This has the advantage for operators that 5G is available quickly throughout many regions. That being said, the advantage for customers is limited since they have a similar user experience with 4G LTE. Vodafone's chief executive Nick Reed made a remark about this issue during the 3Q20 earnings call: "The question is how should we deploy? Some operators are taking dynamic spectrum sharing, so DSS (Dynamic Spectrum Sharing), which is effectively giving you a 5G symbol but 4G performance. And what we said as a company is no, we don't want to do that because it will be misleading to consumers and businesses. What we want to do is 5G built right so we want the real 5G performance". In the US, operators have found an interesting solution to this. They market 5G on the low spectrum and high spectrum in a different way, such that it is clear from the service name whether one has the high-speed option.

Apart from the technology angle, one could also look at 5G speed differences across the globe. Ookla provides an overview of median 5G speed performance in the world's capitals. Findings for a couple of capitals are summarised in the figure below. Speeds in Seoul and Oslo top 500Mbps and these capitals lead the ranking. Speeds in Rome and Amsterdam are around 135 Mbps, while

speeds are at 86 Mbps in Warsaw. Speeds in Paris are 242Mbps and in Berlin 156Mbps, while speeds in most other European capitals fall in between these figures. Other European capitals with relatively high speeds are Stockholm (425Mbps) and Sofia (338Mbps). Although these figures are not a scientific study, they show that 5G is not the same everywhere. Notably, in Amsterdam, one can get similar speeds at 4G compared to the 5G speeds as presented by Ookla. But speed is not the only new thing about 5G. 5G also brings new services.

Seoul and Oslo lead world capitals for 5G



Source: Ookla

5G will bring much more over time than just high download speeds

At the moment, the focus for customers is mostly on the increased speed that 5G enables. However, 5G will bring much more. To improve broadband coverage in rural areas, operators are exploring ways to offer broadband connections to homes using 5G technologies. This way households could get better connectivity than with outdated, fixed, digital subscriber line (DSL) technology. Higher speeds and improved response times also enable more innovative services. Such services are delivered through the network from intelligent servers. These servers can analyse data, perform calculations and send the output back quickly to the user through the 5G network. These solutions may be required to analyse the huge amount of data that a self-driving car collects, for example, or when users want to play complex electronic games against each other, where the game runs on a central server.

One could also think of examples where the reality as we perceive it is augmented with additional information that is projected on our glasses (augmented reality) or where we perceive a virtual world when we look into our glasses (virtual reality). These examples could be provided through so-called edge computing. New or transformed data will in these cases quickly be transferred to users. Besides investments in connectivity networks, operators probably need to find partners to provide many of these services. Investment in servers close to networks is therefore required. Expect more

on this in 2022.

Finally, 5G promises to unlock many new use cases where a high degree of network reliability is required. In industrial environments, the current Wi-Fi technology is not good enough to connect or track equipment. New 5G technologies promise to have higher reliability and are supposed to improve the connection between objects that move. This is something Wi-Fi is not particularly good at. Mobile network operators and equipment vendors expect a lot of solutions that could improve productivity in industrial environments under the umbrella name “Industry 4.0”. One key element that enables these solutions is the ability to slice the network into different segments. Each of these segments can get different priority levels, which guarantees high reliability for vital processes. This segmentation could potentially be monetised by operators.

New release of 5G standard: 5G Advanced

The 5G technology as we know it today will evolve further. The technology that users see as 5G has been built around different standards, with Release 17 expected to be finalised in 2022. Release 17 should enable better performance levels of antenna systems (MIMO antennas), user equipment power savings, spectrum sharing enhancements, coverage enhancements and positioning enhancements to address improved accuracy, and improving 5G use cases through a new standard for the reduced-capability user equipment, to give a few examples. There are also plans for another update on 5G standards, dubbed Release 18, or 5G Advanced which should be further discussed in 2022. This standard will likely incorporate artificial intelligence and machine learning elements, besides improved network energy savings. Release 18 should build on the Release 17 standards for the reduced-capability user equipment, it should further improve 5G radio systems (such as MIMO antenna technology) and enhance mobility such as through improved handover latency. Discussions on the 5G Advanced standard should end in 2024.

What will 5G bring to operators?

Of course, it's great that customers of mobile network operators experience better speeds and network quality. But what is in it for the operators? Looking back, the upgrade from 3G to 4G came with a lot of initial promises. Consumers expected higher speeds, while telecom companies expected to sell more data through which they could generate more revenues. However, tough competition in many markets implied that the benefits went largely to consumers. They got more data, better speeds and often paid less. Governments also got good proceeds from spectrum auctions.

Operators do not want to repeat these mistakes. It is therefore interesting to see that Verizon is applying speed tiering to their offering. In Europe, commercial 5G offers are still limited, especially when it concerns high-bandwidth 5G. Interestingly, Orange and SFR in France only provide 5G with their higher-tier plans on their websites. These plans come at relatively high price points. It will be interesting to see if these offers gain traction, especially since SFR does not yet seem to offer 5G on a fast 3.5Ghz frequency in many places outside large towns. In 2022, we are going to see if customers are willing to pay for 5G, and how competitors will act when 5G networks are rolled out. Operators should try to avoid past mistakes by giving away new technology for free.

This is not easy when there are many operators in a market, while net neutrality makes it difficult to differentiate products. Consultant Analysis Mason describes a couple of pricing strategies for 5G products. Operators could apply speed tiering, bundle content, apply a surcharge for 5G networks or try to develop new use cases which could be sold as different products. All pricing strategies

have advantages and disadvantages, as can be seen in the chart below.

Advantages and disadvantages of various (not mutually exclusive) 5G pricing approaches

Strategy	Advantages	Disadvantages
Speed tiering	• Takes advantage of the benefits of 5G • Potential for upselling • Latency tiering might be added in the future	• QoE, coverage and capacity challenges • Not always easy for consumers to appreciate speed differences • Diminishing returns
Content and VAS bundling	• Customers value content and VAS over connectivity • Clearer differentiation than for speeds (if the content is unique)	• Often not 5G-specific • Unproven willingness of customers to pay • Investment or partnerships are required • Often low-margin for operators
Price premium	• The 5G contribution to operators' revenue is clear	• Coverage and QoE are challenges • Competitive pressure will make it hard to sustain
Multi-device approach	• Growth opportunity • Multi-line and family offers are possible • 5G mobile and FWA offers • 5G mobile with car offers in the future	• Demand is uncertain • Device ecosystem is immature • e-SIM required for monetisation of some advanced devices

Source: Analysys Mason

Questions about 5G abound

Interestingly, 5G provides the opportunity for new revenue streams. So far, however, we have not seen many innovative products. This is partly because networks are not ready for, for example, network slicing, which is needed for some Industry 4.0 solutions. We do see a field trial with advanced online game playing, using edge computing. However, it's unclear when these trials will be transformed into products or what kind of revenue and profitability streams these could generate. It's also unclear at what point in time operators will be able to shut down legacy networks and technologies to reduce costs. To summarise, 5G is here. But there are still many questions about it, which we hope to find answers to in 2022.

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Telecom Outlook: Is satellite or 5G technology the answer to rural broadband woes?

With almost a quarter of US adults having no home broadband, new technologies are being scaled up

The technology behind broadband

The European Commission talks about the importance of broadband access everywhere in Europe. This is good since it is a technology-agnostic strategy. There is a need for rural broadband. According to the Pew Research Center, only 77% of US adults had access to broadband internet in February 2021. Fibre may be expensive, but, fortunately, there are other solutions. The first uses mobile technologies to provide homes with fixed broadband, the so-called Fixed Wireless Access (FWA). Basically, this technology facilitates the provision of fixed broadband services to households using wireless technologies. The second technology used to provide broadband services to remote areas is satellite.

Both existing technologies are being scaled up, but new products have also been launched using recent technologies involving low earth orbit (LEO) satellites. What both technologies have in common is that they reduce the need to roll out fibre everywhere, particularly in places where it is prohibitively expensive or impossible, for example in mountainous areas. Both technologies could also be sold as a backup technology and provide scope for increased revenues due to a larger addressable market. For consumers (and businesses), this would enhance the reliability of services, while it would also fulfil a need in remote areas. We expect, however, that the addressable market

is too small for multiple operators and solutions. We anticipate FWA to become the dominant technology to connect remote places, while there is probably an opportunity for one or two satellite solutions, possibly in combination with other services.

Fixed wireless access: what is it and who's using it?

Telecom operators have experimented with mobile technologies to provide homes with a fixed internet connection. FWA options have come out of the testing phase in the USA. In many cases, the technologies provide a good alternative to broadband services based on DSL (Digital Subscriber Line) technologies. Also, FWA is an opportunity to connect areas where previously no broadband was available. In some areas it is very expensive to roll out fibre and operators may choose to rely on mobile solutions to provide broadband coverage in these areas. For mobile operators that historically did not have a fixed network, the technology provides an interesting way to compete with traditional broadband operators, especially as the traditional fixed operators try to grow their mobile customer base.

Speeds on fixed wireless access connections vary between 40Mbit and 300Mbit, depending on the proximity of an antenna and the number of users. New 5G technologies enable superfast broadband connections especially if an operator has the right spectrum. Today, FWA Technology is used by many operators, such as T-Mobile, Verizon and AT&T in the USA, Telstra and TPG in Australia, Fastweb in Italy, while Deutsche Telecom is testing the technology in Germany. In Ireland, Imagine Communications Group is selling the technology.

The solutions are making inroads now. T-Mobile USA already had FWA available to 30m households in April 2021. They had an initial target of 500,000 customers by the end of 2021 and 7-8m customers by 2025. They are now ahead of the 2021 target with a reported 646,000 High-Speed Internet customers. Verizon had FWA access available to 11.6m households at the end of 3Q21, while it's targetting 15m households by the end of 2021, 30m households by the end of 2023, and 50m by the end of 2025. At the moment, Verizon has 150,000 FWA customers. AT&T has a relatively slow, legacy, FWA product, but does not disclose clear plans to upgrade to 5G-based FWA. Telstra in Australia has a product that it markets as a broadband alternative, although this offer is limited to a set number of households in a specific area. TPG has a (relatively slow) FWA product as well in Australia. Previously, Telstra talked about the technology as a backup solution, in case there are issues connecting to the wired internet connection of the national broadband operator. According to Telstra, this backup solution provides them with a competitive edge. Deutsche Telekom is testing a hybrid offering, complementing wirelines with a mobile connection. This way customers can benefit from higher speeds and better reliability.

FWA solutions are definitely making inroads. For mobile operators, they provide new avenues for growth. Also, they could close the digital divide between citizens with high-quality internet connections and the many households in rural areas, where internet connections are very slow or absent. However, there are also broadband solutions through satellite.

Out of this world: new satellite solutions to launch in 2022

Traditional geostationary-orbit satellite (GEO) constellations already provide broadband solutions at consumer prices, but the existing technologies have become too slow by today's standards, while the uplink capabilities have been dismal. New European broadband constellations from Eutelsat and SES (O3b), however, will be launched in 2022. They are based on very high throughput satellite technologies (VHTS), replacing high throughput satellite technologies. Eutelsat will launch

its Konnect VHTS satellite in 2022 and already has distribution agreements with Orange, Deutsche Telekom and Telecom Italia for the consumer market. SES will launch the first O3bmPower satellite in 2022 and will predominantly target high bandwidth solutions, such as cruise ships, governments and backhaul solutions for telecom operators.

When designing the commercial setup of the satellites, and the use of their total capacity, operators have to balance two factors: individual speeds and the number of subscribers. The total capacity of some new satellites is large and they are not likely to run into capacity issues in the near term. Very little is known, however, about the specific products being launched, the provided bandwidth and profitability. Press releases from Orange and Telecom Italia point to download speeds of 100-200 Mbit/second. We expect more clarity on commercial terms and technical capabilities throughout 2022. In the following paragraphs, we will compare the VHTS technologies with other innovative satellite solutions.

Elon Musk leads the way with innovative satellite solutions

Novel LEO satellites also promise to deliver broadband solutions to remote areas. LEO solutions will bring broadband connection with low latency. Elon Musk's Starlink venture is the most advanced and best-known company for this. Initial field trials with Starlink has shown performance rates of up to 200Mbit per second, although it is uncertain if Starlink can maintain these speeds with widespread use. Amazon has announced plans to roll out an LEO satellite network, dubbed Project Kuiper. This venture will team up with Verizon to provide a backhaul solution next to other services.

Also, OneWeb has plans for an LEO satellite constellation. At the moment it is backed by Bharti Enterprises, the UK government, Eutelsat and Softbank. The operations of OneWeb seem to be delayed by a shortage of customer equipment. Note that there are also a couple of smaller LEO initiatives by Inmarsat, Telesat and others. The Telesat network plans look particularly promising, given the company's long experience in the satellite industry, but also because the constellation requires fewer satellites than Starlink. Compared to geostationary satellites, LEO satellites have the advantage of lower latency as well as lower launch costs. An important advantage is also the robustness of the network, which is an advantage for the military. It is much easier for adversaries to disrupt one geostationary satellite than a network of LEO satellites that include backup systems.

There are also drawbacks to LEO satellite systems; they travel at high speeds through space and therefore many satellites are required to provide continuous coverage. Plus, the cost of launching a full network is high. Musk mentions that the Starlink network could cost up to $30bn. Given annual revenues per customer of $1,188 (12 months of $99), Starlink would need quite a few customers to recover its costs. If one assumes 25% operating costs and a ten-year depreciation of its network launch costs, Starlink needs 3.37m customers to break even ($3bn annual investment costs, divided by revenue, minus operating costs of $891). With annual subscriber numbers of 145,000, Starlink is not there yet. But this does not factor in potential income from government subsidies, revenues from wholesale contracts, revenues from IoT connections or revenue from contracts with departments of defence. Some question the physical ability to generate these additional revenues, since there is already some talk that initial high speeds drop if more users get added to the Starlink satellite network.

Will these satellite systems be a success?

This will be the year that provides us with much more clarity about the physical and commercial success of both LEO and MEO (medium Earth orbit) / GEO systems. Comparing the two systems,

MEO/GEO systems have the ability to better steer capacity, something that matches the needs of humans, who often flock together. Besides competition between the different satellite systems, there is also the launch of FWA solutions, which removes parts of the total addressable market. The success of mobile broadband solutions also has to be taken into account when evaluating the prospects of satellite systems. Given the many prospective operators in the satellite space, we deem it unlikely that all will succeed. Due to the difficult profitability prospects for Starlink and very high launch costs, it seems unlikely today that multiple LEO operators can succeed with their plans. We do acknowledge, however, that this is a quick, back-of-the-envelope calculation. MEO/GEO systems will target cruise ships and planes, which is a natural market opportunity for them. Could a GEO system also be complemented by an LEO constellation? And will we see mergers among satellite operators in 2022 to reach increasing scale benefits? Maybe the stake bought by Eutelsat in OneWeb is the beginning of a new business model. We will likely know more by the end of the year.

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Telecom Outlook: Fibre roll-out to reach 60% of European households in 2022

This year will see the accelerated rollout of fibre to the home in countries such as Germany, the UK and the Netherlands

More than 60% of households are forecast to have access to full-fibre internet by the end of the year

Fibre roll-out moves up a gear in 2022

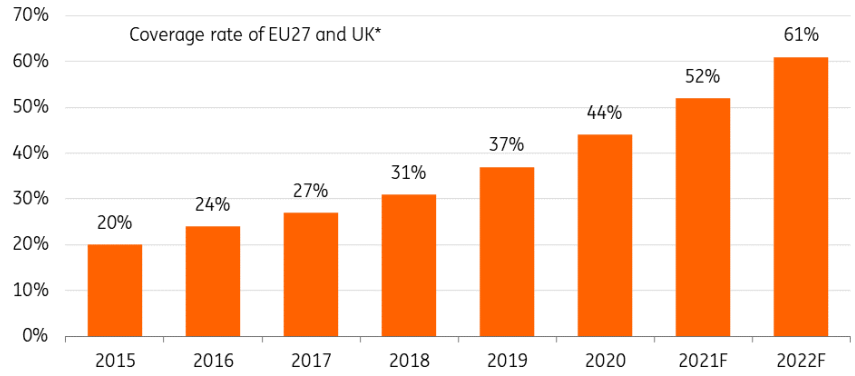
In countries where the deployment of full-fibre was slow in the past, there has been a significant increase in pace since 2020. In countries such as Belgium, Germany, the Netherlands and the UK, the number of homes passed will grow at an even greater pace in 2022. Multiple factors are driving this increase in pace. Incumbents are ready to deploy fibre to the home (FTTH) now that there is a bigger appetite for bandwidth at home for video calls, streaming and gaming. There is also more capital available, as many joint ventures with infrastructure investors and pension funds are in place. EU funds are also expected to become available in 2022.

Six in 10 European households will have access to full-fibre internet in 2022

Last year marked more than 100 million homes passed, and more than half of European households had access to full-fibre networks. With the roll-out pace expected to further pick up in 2022, more than 60% of households are forecast to have access to full-fibre internet by the end of

the year. As for subscriptions, there are about 60 million European households that subscribe to full-fibre broadband. This means more than half of households that have access actually subscribe to fibre. This take-up rate is also expected to increase.

Increasing number of households have access to full-fibre internet



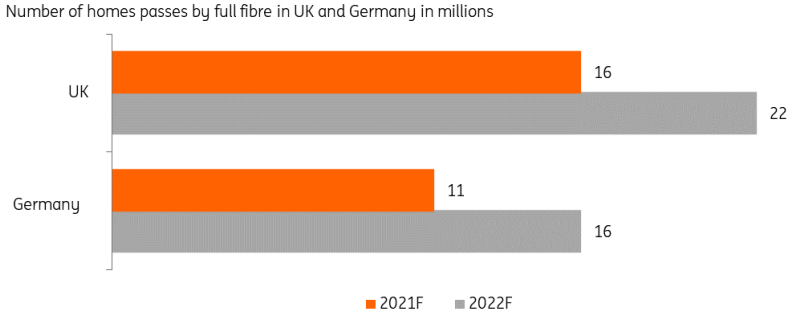
Source: FTTH Council Europe, ING Research

*homes passed as % of households per September

Incumbents drive growth in Germany and the UK

In Germany, homes passed by FTTH are expected to increase by four million in 2022. Deutsche Telekom plans to expand its fibre network by two million homes this year, with other companies contributing the other half. At year-end, some 16 million homes could have fibre to the home or fibre to the building (FTTB) access. In the UK more than 20 million homes could be connected to full-fibre by the end of the year. Openreach, Virgin Media O2 and Altnets all contribute to a footprint expansion of six million homes. Openreach is expected to connect more than two million premises in 2022. In these countries, and across Europe in general, the main downside risk to these expectations is limited construction capacity due to, among other things, a shortage of engineers.

Number of homes passed by fibre to rise significantly in 2022



Source: ING Research, Breko, INCA, company reports

Fibre roll-out to pick up pace across Europe

In the Netherlands, the pace of fibre roll-out has really picked up. Homes passed will increase by some one million in 2022. Telecoms company KPN expects to pass 0.6 million homes in 2022.

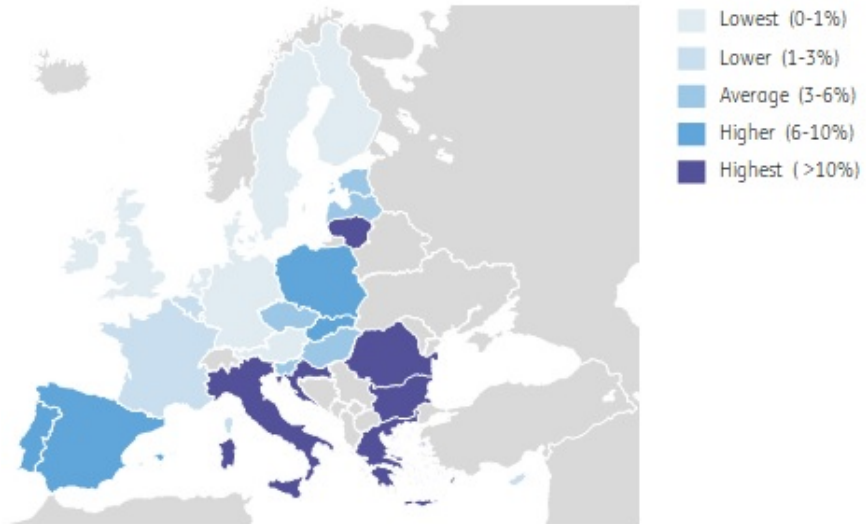
Altnets such as Open Dutch Fiber, Delta Fiber and E-Fiber contribute the remainder. In Belgium, Proximus is also ramping up deployment with more than 300,000 homes passed in 2021. In Italy, Open Fiber outlined investment plans, starting in 2022. This will mean both an acceleration of plans and increased expansion on already planned coverage.

EU funds can add extra dimension to rollout pace

A new dimension to the expansion of fibre deployment is the fact that EU funds are likely to become available in 2022. A fifth of the €723.8bn EU Recovery and Resilience Facility (RRF) plans to improve digital capabilities, with a prominent role for fibre deployment. Subsidies to bolster fibre network rollouts could support the telecom sector's capital spending. Allocation of the funds per country is based on real GDP loss due to Covid-19, population size and unemployment. This means Southern and Eastern European countries receive the largest share relative to their GDP.

Southern and Eastern European countries allocated most funding

Funding allocated under recovery and resilience plan as a share of GDP*



Source: ING Research, European Commission, Eurostat

*For countries without endorsed, RPP calculation is based on maximum allocation in grants.

Spain, Poland and Italy claim largest sums for roll out of rapid broadband

Within the RRF, one of the flagship areas defined by the European Commission is called “Connect”. Looking at the relative size of grants and loans requested specifically directed at this rollout of rapid broadband services (including 5G), a somewhat different picture emerges. Although Eastern and Southern European countries are again top of the list, different countries are within the top three. Spain, Poland and Italy have requested the largest sums dedicated to “Connect”, both absolute and relative to their GDP. Telcos in these countries may be best positioned in the coming years to benefit from the EU recovery fund, starting in 2022.

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Telecom Outlook: Rising cyber threats a cause for concern, as well as a source of success

Cybercrime is a double-edged sword for the telecoms industry, which benefits from the rising demand for cybersecurity services, but also faces pressure to secure client data

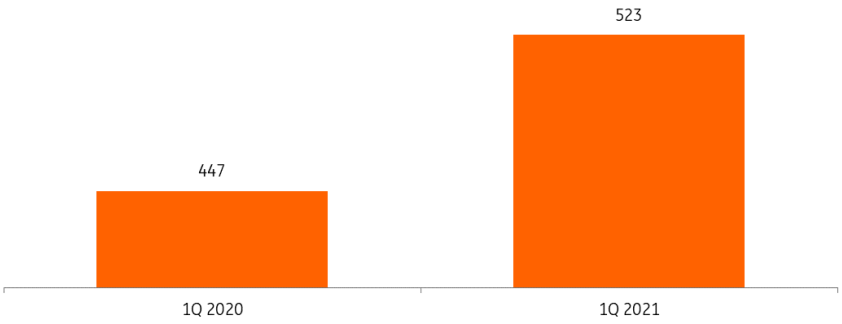
Over the past few years we have seen a rise in both the number and sophistication of cyber attacks

Cybercrime on the rise

The past few years have shown an almost continuous rise in both the number and sophistication of cyber attacks. The digitisation of business means a larger part of the economy is a potential target. This was accelerated by more people working from home during the Covid-19 pandemic. We're also seeing that the attack surface is on the increase as the number of connected devices grows and the cloud expands. The number of attacks, and the impact they're having, has grown because of the cybercriminals' increased professionalisation, automation, and the limited risk of being caught. As these trends are not at an end, we can expect the cyber threat to continue to rise in 2022.

Publicly disclosed cybersecurity incidents rise in 2021

Number of reported breaches worldwide, per quarter

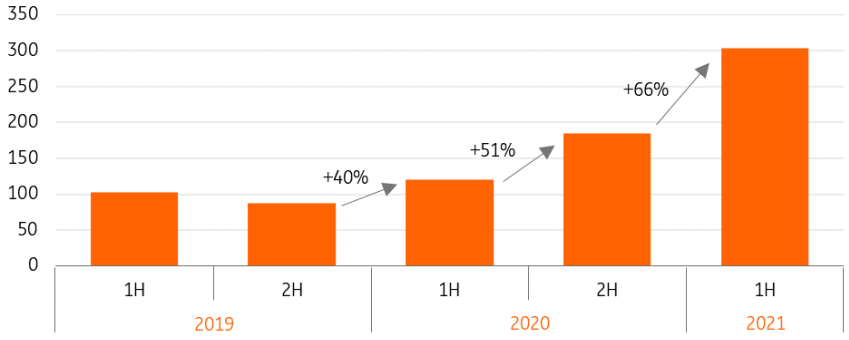


Source: McAfee Labs

Ransomware a major threat

From the second half of 2019 onwards, ransomware attacks have grown in number. It is mainly the professionalisation of the cybercriminals that drives this growth. Cybercriminals also benefit from the anonymity that cryptocurrencies offer, for example, and many now have the financial means to buy zero-day exploits (weak spots in software unknown to the software developer) increasing the chances of a successful attack. There is a whole chain of criminals with special expertise in every link, generating billions globally. For the victims, the damage is a lot bigger than the ransom that is paid.

Large rise in ransomware attacks



Source: SonicWall, ING Research

Growing reliance on mobile encourages attacks

Mobile devices and networks continue to be a target of cybercriminals as well. The number of mobile malware attacks is likely to increase as the use of mobile productivity apps, banking and payment platforms, and data storage solutions continue to grow. During 2020 and 2021, new security threats emerged trying to exploit the growing reliance on mobile devices. Mobile malware, and specifically banking Trojans, for instance, are targeted at intercepting text messages on devices, compromising the two-factor authentication security protocols.

Cyberthreat especially relevant for telecoms industry

Telecommunication companies are a major target for cybercriminals and nation-state actors because they build, control and operate critical infrastructure that is used to transmit and store large amounts of sensitive data. Securing client data is therefore a key component in protecting the operator brand. The surging complexity of networks increases the complexity of cybersecurity. Virtualisation means networks become more vulnerable to software-based attacks.

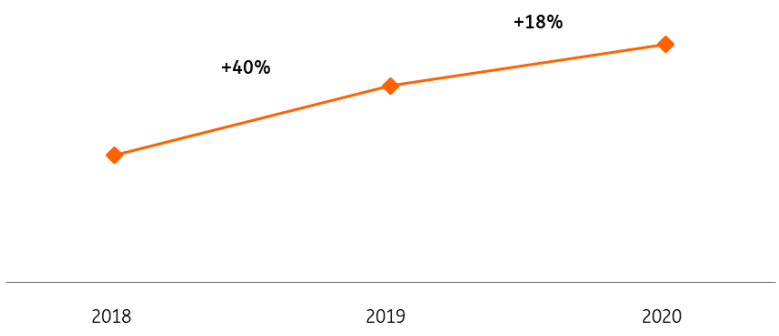
The integration of more and more technologies potentially creates further vulnerabilities, while increased network connectivity (e.g. to the cloud) also complicates security efforts. A recent cybersecurity incident shows that the threat is very much real. In August 2021, a hacker accessed 50 million customer records of US operator T-Mobile. Operators will therefore have to increase investments in cybersecurity while also keeping in mind the additional security efforts required by the Internet of Things (IoT) and the roll-out of 5G, and the increase in connected devices with it. Note that 5G technologies are said to be safer than older technologies.

Leveraging on cybersecurity capabilities

While the threat of cyberattacks poses a challenge for the sector, it is simultaneously a business opportunity. Besides being an integral part of network services, several telco's such as KPN, Telefonica, Orange and BT offer stand-alone security services. In defending against cyberattacks, telco's have developed capabilities they can sell, while they have the possibility to leverage on an existing customer base. Through acquisitions and organic growth, operators expand their security services. Recently, BT acquired Safe Security, while Orange bolstered its security business back in 2019 by adding SecureLink and Secure Data Group. Scale is an important factor in security services. Most small and medium-sized enterprises do not have in-house cybersecurity expertise and therefore rely on managed services. These services could also help increase customer retention rates.

Strong growth of telco global security services revenue

Revenue in EUR billions and percentage increase



Source: TM Forum

Small but growing revenues

Currently, security revenues make up a small part of overall telco revenues, with Telefonica and Orange, for example, generating 1-2% of total revenues in cybersecurity. Growth, however, is high;

for Orange, cybersecurity revenue grew by 14% in the first half of 2021.

Demand for managed security services in general is driven by the increasing value of digital services, a shortage of skilled cybersecurity personnel, and the growing complexity and risks due to the diversified IT landscape combining cloud, edge and operational technology. With many telcos viewing cybersecurity as a significant opportunity for services growth, we can expect the deployment of services such as 5G, cloud, IoT and edge to contribute to further growth in their cybersecurity business.

The cybersecurity market is very fragmented. Customer demand is driving offerings towards integrated security software and services, with companies offering security platforms, not single solutions. We can therefore also expect more mergers and acquisitions in the security area and partnerships with vendors.

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Telecom Outlook: Will we see more mergers and buyouts in 2022?

Expect further consolidation in the European telecom industry, but not the creation of a pan-European telecom operator

Telecom operators are often the target of leveraged buyouts

Europe's telecom operators focus on core markets

Using the telecom market in the US as an example, the possibility that the European market could converge to a few large pan-European operators has frequently been discussed in the past. However, over time, the market has moved in a different direction, as most telecom operators are focusing on their core markets today, where they have scale. Recently, Deutsche Telekom sold T-Mobile Netherlands to private equity, while KPN divested its operations in Germany and Belgium a while ago. Telefonica abandoned its stake in Telecom Italy many years ago, while Orange and DT sold their stakes in EE to BT. An exception to this story is Altice, which has two large telecom companies in France and Portugal and is building a stake in BT.

Two trends continue: operators will try to build scale in local markets, possibly through the integration of fixed and mobile networks, and there will likely be leveraged buyouts of either smaller operators or networks. There could also be some activity involving a tie-up with the number four operator in some markets, as these face a very difficult position. Owners could pitch to regulators that consumers will benefit from higher investment if they allow in-market consolidation among smaller operators.

Pan-European mergers are unlikely despite possible innovation benefits

To some extent, it is disappointing that pan-European mergers do not take place. Companies need scale to develop new products and services and European telecom operators are relatively small compared to the operators in North America, and especially compared to large technology platforms. However, the operational benefits of cross-country mergers in Europe are relatively small. Despite European regulations, which aim to create a common European marketplace, there are many differences among the different European telecom markets.

There are local competition authorities in the different countries (besides a European competition regulator). But there are also differences with respect to the infrastructure that is in place and differences in spectrum allocations. Most importantly, consumers in most markets differ and require different advertising campaigns. The list can be extended by differences in labour and tax regulations. Therefore, it is not easy to pull off a merger between two large telecom operators. Also, the public and governments do not like to see the headquarters of a telecom operator disappear.

Leveraged buyouts

Nevertheless, throughout the years, telecom operators have been the target of leveraged buyouts. The combination of relatively predictable cash flows, low-interest rates and, in some cases, perceived corporate inefficiencies make telecom operators an attractive target. The traditional playbook of private equity involves a corporate restructuring in combination with increased financial leverage. More recently, strategies have focused on the value of the assets owned by telecom operators, such as mobile towers and fixed networks. A case in point was the privatisation of TDC in Denmark, where the owners aimed to split the network from a consumer-focused business. The bid by KKR for Telecom Italia also seems to focus on strategies involving a separation of the fixed network. Market talk of private equity interest in KPN or BT was also linked to such strategies. Besides the private equity interest for incumbents, telecom tycoons have been acquiring companies with leverage. Notable examples are the three telco titans Drahi, Neil and Malone. Many telecom transactions in recent years, however, involved private equity for smaller companies, as can be seen in the chart below.

Another option for private equity would be the acquisition of cable networks. VodafoneZiggo, Virgin Media O2 and Telenet own a fixed network that was originally based on coax technology. We deem it a possibility that owners are going to evaluate cable network separation strategies. Note that Telenet has announced a non-binding agreement to create a network company in Flanders together with Fluvius, which will be jointly owned. Across Europe, there are multiple smaller fibre network companies, which obviously could also change ownership.

Recent Leveraged Buyouts

New owner	Orange Belgium	Xavier Neil	Private equity	Private equity	Patrick Drahi	Private equity
	↓	↓	↓	↓	↓	↓
Company	VOO	Iliad	T-Mobile NL	TalkTalk	Altice	Masmovil
Year (announced)	2021	2021	2021	2020	2020	2020

Source: Reuters, Company data

Ownership of joint ventures could change

The European market has witnessed a couple of fixed-mobile converged challengers to the incumbents. In the UK, the Netherlands, Belgium, Germany, Switzerland, Sweden, Spain and France, former cable operators joined their operations with a mobile operator, either through a merger or acquisition. The resulting companies are Vodafone in Spain and Germany, Virgin Media O2 in the UK, Tele2 in Sweden, UPC in Switzerland, Altice in France, Telenet in Belgium, and VodafoneZiggo in the Netherlands.

Interestingly, some of them have two industrial owners. We expect this to change over the coming years, with the market often moving quicker than initially expected. In the case of VodafoneZiggo, either Liberty Global could buy the shares of its partner, or Vodafone could do that. In the case of Virgin Media O2, either Liberty Global could end up as the owner, or Telefonica, although the latter faces difficulties getting leverage down, even without acquisitions. For both entities, an initial public offering (IPO) is also an option. To gain scale, it is also an option to merge VodafoneZiggo in the Netherlands with Telenet in Belgium, although strategies to enhance the value of their networks seem a priority.

In market consolidation

There are a couple of markets in Europe where price pressures are very high. Consolidation would be a possible way out. Italy is characterised by strong competition while the three largest operators face revenue pressures. Competition is also strong in France, the UK and Spain, where at least four operators are active. These markets are ripe for consolidation, despite the challenges involving competition authorities. However, companies could show that a merger also has benefits for consumers, if they are able to show that those cost opportunities could be used to fund network investment and better speeds for consumers.

An interesting acquisition was announced by Orange Belgium at the end of 2021. Orange (through Orange Belgium) announced the acquisition of a 75% stake in Nethys, the owner of a fixed cable network in Wallonia. This acquisition will allow Orange to complement its mobile network operator with its own fixed network capabilities in parts of Belgium. This would create a third fixed-mobile converged operator in Belgium, in addition to Proximus and Telenet.

The need for consolidation has been voiced by Vodafone chief Nick Reed, who pleaded for consolidation in Spain and possibly the UK. Vodafone has also been linked to consolidation in Italy. Ramon Fernandez, Orange's chief financial officer, thinks that at some point in time the French market will also see consolidation, which has become easier now that Iliad and Altice France are private companies.

Throwing in the towel?

Given the difficulty that smaller operators face in being profitable, it is also possible that the fourth biggest operators could consider throwing in the towel. They could consider taking a first step, as Masmovil in Spain did with its acquisition of Euskatel. Some operations of Hutchison Europe and Iliad are relatively small. Could it be attractive to sell them to private equity, or an industrial player? Will the network rollout of 1+1 Drillisch be a success? Or will the number four operator go into acquisition mode?

Other M&A candidates

In 2022 the owners of TDC could possibly sell their consumer-facing business while retaining the network company. Also, Bloomberg has reported that Altice International could sell Altice Portugal, although this probably requires a relatively high valuation. Finally, it is likely that Telefonica will try to sell an operation in Latin America or other assets.

The future is uncertain, but 2022 will likely bring more clarity.

Mobile Telecom Operators in European markets

Germany	· Deutsche Telekom · Vodafone · Telefónica Deutschland (O2) · 1&1 Drillisch
France	· Orange · SFR (Altice) · Bouygues Telecom · Free (Iliad)
Spain	· Telefónica · Vodafone · Orange · Masmovil
UK	· BT · Vodafone · Virgin Media O2 · Three UK (Hutchison)
Italy	· TIM · Vodafone · Wind Tre (Hutchison) · Iliad · Fastweb
Sweden	· Telia · Telenor · Tele2 · Three (Hutchison)
Norway	· Telenor · Telia · Ice
Denmark	· TDC · Telenor · Telia · Three (Hutchison)
Finland	· Elisa · Telia · DNA (Telenor)
The Netherlands	· KPN · VodafoneZiggo · T-Mobile
Belgium	· Proximus · Telenet · Orange Belgium

Source: ING Research

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Telecom Outlook: More consolidation expected among mobile towers companies

Expect further consolidation in the European tower sector. It will be especially interesting to see what is going to happen this year with the tower companies of Vodafone, Deutsche Telekom and Orange

Consolidation would clearly change the landscape of tower companies in Europe

Further consolidation expected

Over the last few years, we have witnessed the establishment of several large stand-alone mobile tower companies in Europe. Today, there are quite a few large operators: Cellnex, Inwit, Vantage Towers, TOTEM, American Towers, and GD Towers (Deutsche Funkturm). In 2022, we expect further consolidation and the emergence of a second large operator. We deem Spain and Germany the countries where consolidation is most likely.

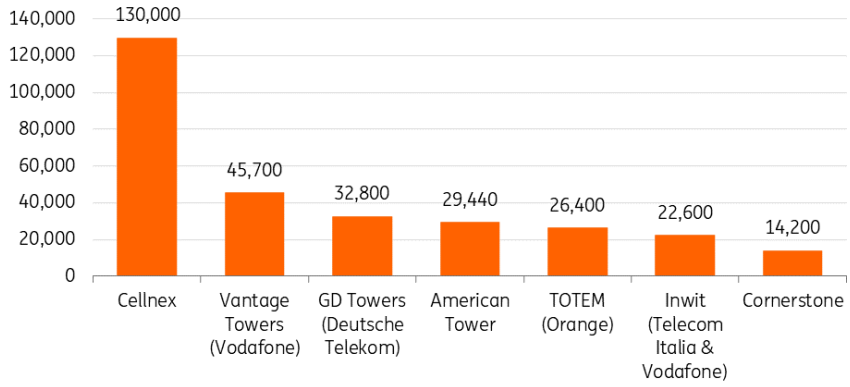
There are two catalysts for tower disposals by telecom operators. They need to find a cost-effective way to roll out their 5G network, which requires more towers than previous technologies. Also, most operators need capital to fund the fibre rollout or have shareholders clambering for larger payouts. The proceeds of tower disposals could help with these objectives. Also, most lease contracts today include targets to build new antenna sites. This can be done more easily if it is done for two network operators (or if two tower companies merge) since there is often some

natural overlap with respect to existing tower locations, but also regarding new build requirements. Mobile tower operators therefore could help to improve network coverage.

Recent developments

Cellnex has been the European front runner, building out a network of tower companies. It has established market positions in France, Spain, Portugal, Ireland, Poland, Switzerland, Austria, Italy, the Netherlands, Denmark and Sweden, and has announced an intended acquisition in the UK, which ran into regulatory difficulties. Another listed company is Inwit in Italy, the joint venture between Telecom Italia and Vodafone Italy. The listing of Inwit was followed by the listing of Vantage Towers, the former captive tower company of Vodafone. At the start of 2021, American Towers acquired the towers from Telefonica in Spain and Germany. Other large operators in Europe are GD Towers (Deutsche Funkturm) in Germany which is owned by Deutsche Telekom and TOTEM, which is owned by Orange and operates tower infrastructures in France and Spain.

Largest European tower companies



Source: Company data

Stand-alone tower operators

There are two main reasons to have stand-alone tower companies. The first is that they can operate more efficiently, especially when the objective is to increase the tenant rate. An example of this can be found in France, where Cellnex will run mobile towers for three telecom operators. This will facilitate the rollout of additional towers across France. More importantly, it will bring cost synergies, because towers could more easily be shared by multiple operators.

The second reason why telecom operators spin out their tower businesses is that financial valuations for telecom infrastructure are very high. Telecom operators could monetise the elevated value of these assets by (partially) selling their tower assets. Also, the tower companies have very easy access to capital. Therefore, a standalone tower operator could expand the tower network more easily. Such an expansion of the network is needed for new 5G services. Recently we have witnessed a lot of tower transactions since the financial argument is compelling, but also because of the aforementioned need for more towers because of the increasing network density.

This marks a difference from the past when many telecom companies were reluctant to share their infrastructure, as they considered their high-quality network to be a key competitive advantage.

Differentiating factors

Not all tower companies are alike. In Europe, there are two so-called independent tower companies, Cellnex and ATC. They provide their services to several telecom operators and are not controlled by telecom operators themselves. This is opposite to TOTEM and GD Towers, which are fully owned by Orange and Deutsche Telekom, respectively. Also, contractual arrangements with the first, anchor client determine the attractiveness to other customers, since the anchor tenant often negotiates the best spot on the mast, leaving a somewhat inferior position to others.

In the case of Inwit, Vodafone Italy and Telecom Italia have the best spots on the towers. This is to the annoyance of Iliad, which has difficulty finding good quality spots on towers to roll out its 5G network. The question of whether former owners retain control in partial tower disposal is a prominent one. If both former owners want to maintain control, two of them can't merge. One of them must be willing to relinquish control. They could possibly design a shareholder agreement with the aim of joint control. An example is the corporate structure of Inwit. About 37% of its shares are publicly listed, but the company is jointly controlled by Vodafone and Telecom Italia.

Regulation

Many markets in Europe still have four mobile operators. This is often the result of national and European competition policy, which favours four operators to keep mobile prices low. Having four operators may not be optimal from a cost perspective though. Operating one or two networks that could be used by all customers is more efficient than having four networks. European countries have one nationwide electricity grid, which is not duplicated by competitors. This example shows that it sometimes makes sense to share infrastructure.

Two types of mergers: in market consolidation and pan-European consolidation

Since there are still quite a few players left in Europe there are many consolidation scenarios possible. If two operators in the same market merge, this obviously provides for the largest cost-cutting opportunities. However, some operators may look to cross-border mergers. By doing so, they could become shareholders of a larger entity with growth prospects and bigger scale while maintaining some form of control of the entity, outside the rental contract. If such an entity is operated at arms-length, third party clients could see it as an independent operator.

Cellnex is the first pan-European tower operator. We anticipate that other tower companies will also try to gain scale in 2022. US competitor, American Towers, is already building a presence in Europe. Vodafone, Deutsche Telekom and Orange have all stated that they want to manage their tower portfolios as a separate business. If their tower companies merge, this would create another pan-European infrastructure leader.

Separation

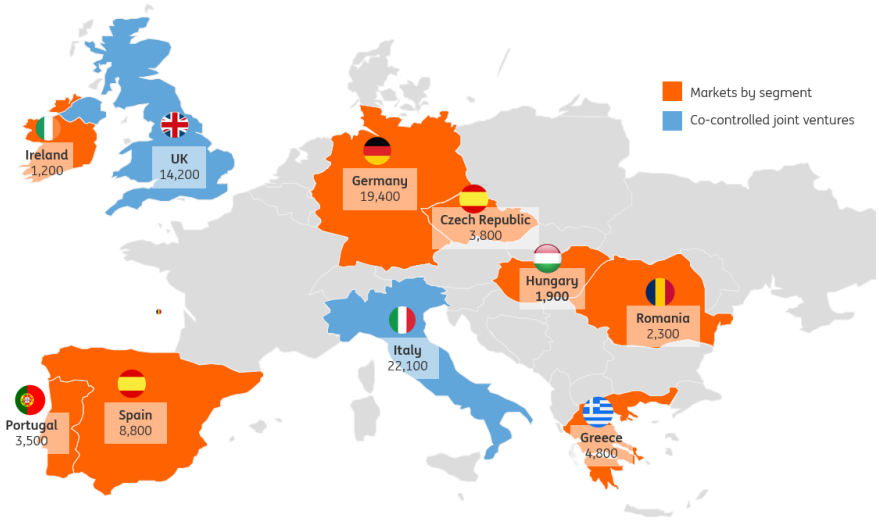
Large telecom operators such as Orange, Deutsche Telekom and Vodafone could unlock a lot of value through selling their assets. These assets should be very good collateral for bond financing. However, bondholders of the telecom operators may want to think twice about credit risk if the assets are sold. In evaluating the attractiveness of telecom operators that are likely to sell their towers, much depends on a credible leverage objective or rating objective.

Cellnex European portfolio (macro sites)

Source: Company data

1 Including transactions not yet closed, CKH UK

Vantage Towers European portfolio (macro sites)



Source: Company data

American Tower European portfolio (macro sites)

Source: Company data

Orange European portfolio (macro sites)

Source: Company data

GD Towers (Deutsche Telekom) European portfolio (macro sites)

Source: Company data

What we expect to happen in 2022

Consolidation would clearly change the landscape of tower companies in Europe. There is now one market leader, operating 130,000 towers, followed by two tower companies with more than 40,000 towers and three companies with more than 20,000 towers. While the companies mentioned here have only commented on this in general terms, what are the possible routes for consolidation? Cleary, a combination of DT Towers and Vodafone would have a lot of scope for cost-cutting since both operate in the German market. It would also establish the company as the second-largest operator in Europe. Spain is another market where consolidation is possible, as American Towers, Cellnex, Vantage Towers and TOTEM all operate towers. A merger between Vantage Towers and TOTEM would bring both cost synergies as well as establish an operator with sufficient size. If the former parent exerts less control, this raises the attractiveness for third-party tenants. Orange and Deutsche Telekom could also take their Polish tower joint venture as an example and combine TOTEM and GD Towers. This would establish a tower company in two core European markets, bringing scale, although cost synergies would be limited.

It is also unlikely that the current setup in the UK remains unchanged where both CTIL (Vodafone, Virgin Media O2) and MBNL (BT, H3G) are in flux. Virgin Media O2 is evaluating its ownership stake in CTIL and H3G has agreed to sell its towers to Cellnex. In the Netherlands, KPN and VodafoneZiggo both own their towers. This could also change over time. VodafoneZiggo may like the cash, although the joint ownership structure could complicate matters. Finally, Cellnex could take pride in buying masts in Germany to become the first tower operator with a presence in all major European markets. But would GD Towers or Vantage Towers be willing sellers?

A positive take from the above is that the establishment of tower companies will likely increase the quality of mobile networks throughout Europe because the trend contributes to the densification of mobile networks. Another take is that it becomes increasingly likely that Deutsche Telekom, Orange or Vodafone will sell (more) shares of their tower businesses. Expect cash to go to shareholders and investment, if (hopefully tightened) leverage requirements have been met.

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Telecom Outlook: 2022 could be the year mobile banking really takes off

The banking industry is undergoing massive digital disruption, with the mobile phone increasingly becoming the dominant method for banking

Is 2022 the year in which the mobile phone becomes the dominant means through which people use banking services?

The history of digital banking

This could be the year in which the mobile phone becomes the dominant means through which people use banking services in Europe. This is already the case in some countries and for some services. Mobile banking takes place in different modalities; there are apps that provide banking services, while others offer relatively new services, such as "buy now pay later" (Klarna), or traditional services such as facilitating money transfers with the help of QR codes or a text message. Mobile phones are increasingly replacing banking cards because the NFC chip within the devices enables contactless identification services.

The development of the financial sector is different in Africa (outside of the large cities) than in Europe, which is why the mobile phone is, for many people in Africa, an important means of payment. In Europe, digital banking is relatively old. In the 1980s, banks started to offer their first digital services over telephone lines through electronic banking. It was when wired internet connections were replaced by broadband and mobile broadband networks that e-commerce and

digital banking gained real significance. In Africa, developments were, to some extent, more phone-centric.

Many banking transactions are already performed on a mobile phone, and we expect that consumer behaviour in Europe will start to replicate practices in Africa with banking services becoming mobile-centric. We will also see, in both continents, an increasing number of transactions transition to smartphones.

There are two converging trends:

- Mobile operators step up their efforts to provide banking services, especially in emerging markets.

- New apps will take a larger share of the financial services market while traditional banks move to a digital-first model.

The two well-known providers of financial services on mobile in Africa are M-Pesa and Orange Money.

50 million people use M-PESA

Launched in 2007 by Vodafone's Kenyan associate Safaricom, M-PESA is a very large, mobile phone-based payments platform active in Africa. The service has 50m customers and processes more than 15bn transactions a year. M-PESA (the 'M' stands for mobile and 'Pesa' is the Swahili word for money) is active in the Democratic Republic of Congo (DRC), Egypt, Ghana, Kenya, Lesotho, Mozambique and Tanzania. Key services focus on: money transfers, loans, savings and insurance brokerage services. Customers can convert cash at one of 919,000 agents and pay in stores that are M-PESA merchants. They can also pay utility bills, taxes, transfer money and pay school fees or buy airtime to make calls and surf the internet.

In 2019, around 25% of all M-PESA customers had access to a smartphone – a figure that was growing at the time by 10% a year. M-PESA clearly shows that the lines between banks and mobile operators are blurred in some countries. In 2022, we expect it to further improve its offering, especially in a country like Egypt. Vodafone has transferred its ownership stake in Vodafone Egypt to Vodacom, also to enable faster growth of M-PESA.

Orange Bank hopes to expand across Europe

Orange, the French telecom operator, has a couple of mobile financial services initiatives under the business lines Orange Money and Orange Bank. With Orange Money, customers can make payments from their mobile phone, but also transfer money to, for example, France. The service is active in 17 countries in Africa and the Middle East, and there are 49m customers with about 45% using the service every month. The service can be used to pay taxes, school fees or public services. International money transfers are a growth driver.

The other service is Orange Bank, which had about 1.2m customers at the end of 2020 in France and Spain, where it is active (up from 248,000 in 2018). Orange acquired the French neo bank Anytime at the end of 2020. Orange also launched Orange Bank Africa in Côte d'Ivoire, with about

350,000 registered clients at the end of 2020.

There are plans to make Orange Bank active in all operating countries in Europe, where Orange operates, by 2025. The bank, however, is loss-making, although it is expected to significantly reduce losses in 2021.

Orange claims the convergence between telecoms and financial services is a success, as they said in an October 2021 press release: "... In France, the average spending per customer who has also subscribed to an Orange Bank payment facility has doubled... and... in Spain, the attrition rate of Orange customers who have subscribed to the Orange Bank offer has halved".

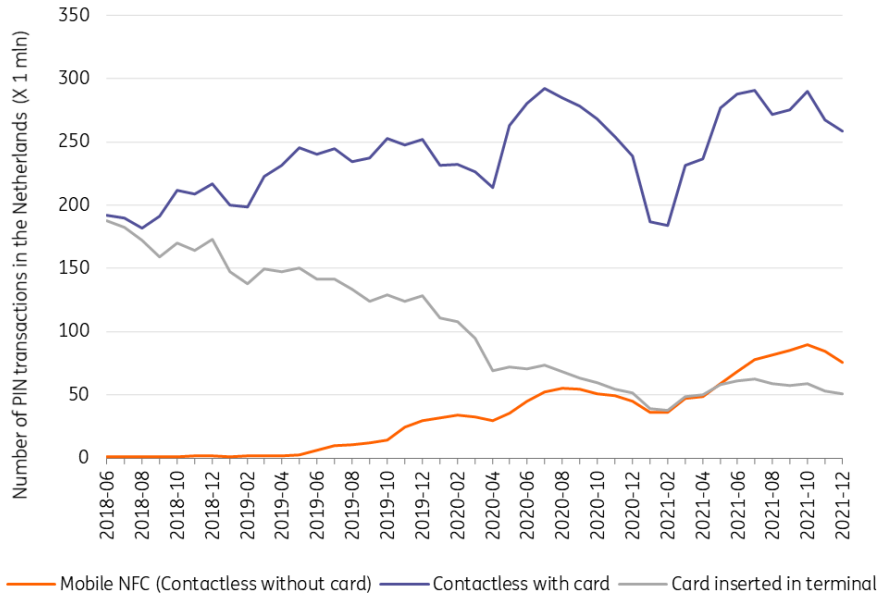
Mobile payment apps are booming

Mobile-centric innovation is taking place in the three core services of banks: payments, savings and lending. The following examples show how fast business models are changing and are becoming mobile-centric.

We have witnessed the rise of apps where you can store cash (PayPal, Apple Cash), invest (Robinhood), lend (Peerberry, Mintos), borrow to defer payments (Klarna) or pay (Apple Pay, Paypal, AliPay). To be fair, most payment apps and functionalities rely on traditional infrastructure. However, we have already witnessed the rise of electronics wallets since 1998, with PayPal. By making payments from one PayPal account to another at the other end of the globe, one bypasses the traditional banking system.

The availability of excellent, user-friendly, mobile devices, such as the iPhone, was a catalyst for banking services to become digitalised. The presence of a Near-Field Communication (NFC) chip in mobile phones is accelerating the trend of digital banking since people no longer need a physical card to make payments. This can be seen in the graph below which is created with data from the Betaalvereniging Nederland (Dutch Payments Association). Note that many of the examples given of app-based financial services are also offered by traditional banks these days.

Strong increase of mobile contactless payments in the Netherlands

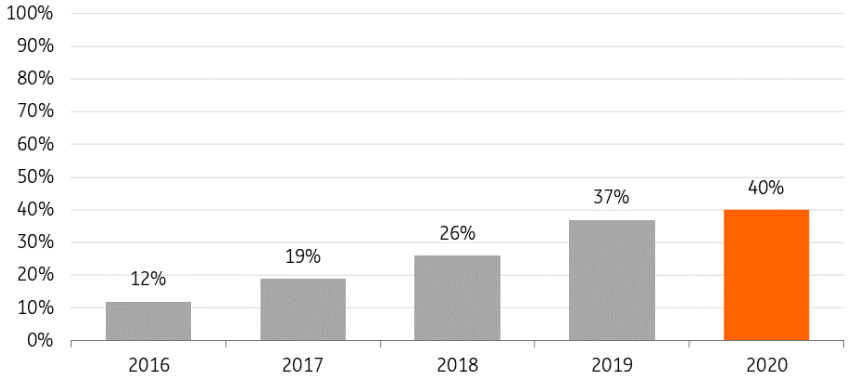


Source: Betaalvereniging Nederland

Today, most of the challenges faced by existing universal banks come from digital competitors. There is a threat from large digital platforms, often used on mobile phones, which can offer their users finanical services. Given their size and innovative capacity, this could become a real challenge for more traditional banks. Challenger banks such as N26 and Revolut benefit from a lower cost base because they don't have physical bank branches to pay for. The Dutch banking market, for example, is going through an interesting transformation.

Our company, ING, is closing physical stores, something ABN AMRO and Rabobank are also doing. ING has moved to a digital-first model to be able to compete with neo banks and other challengers. The percentage of mobile-only active customers for ING in the Netherlands is already 40%, as can be seen in the graph below. It is likely that the mobile customer's channel, therefore, will be the dominant way of doing business. More than that, it shows how important the mobile phone has become within our society.

% of mobile-only active customers at ING Bank*



Source: ING

*Definition: Retail customers who used the channel at least once in the last quarter

Will Deutsche Telekom team up with Revolut?

As a result of the merger between Sprint and T-Mobile USA, Softbank became a shareholder in Deutsche Telekom. When this was announced, the two companies presented a strategic alliance, also involving Revolut (the Softbank VisionFund 2 has a small stake in it).

It seems that Deutsche Telekom wants to provide its customers with the services of Revolut. Deutsche Telekom chief executive Tim Hoettges announced in a November 2021 media call that the company was "planning to integrate services of the Softbank portfolio into our app, prospectively, and offer that to our customers", adding: "We are working with Revolut, a financial service.... where we will give an advantage to our customers in the upcoming months. That is how we are going to start...", according to a Bloomberg report.

If this plan is to be executed it could potentially bring Revolut a lot of clients, as well as improve client retention rates at T-Mobile, as Orange indicated for its banking customers. For now, it seems a bit too early to predict what is going to happen and how successful a cooperation between Revolut and Deutsche Telekom could be. It is, however, another example of how telecom operators could find their way to also provide financial services.

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