

# Increasingly mobile – telecom infrastructure essential to a connected future



TowerXchange tracks 282 telecom infrastructure companies who collectively are estimated to own approximately two thirds of the world's 4.4 million investible telecom towers and rooftops. Historically, telecom towers were built to serve the needs of one mobile network operator (MNO), however over the past 20 years telecom infrastructure ownership has followed the United States model and transformed into a specialist standalone industry.

The evolution of independent telecom infrastructure companies has facilitated the sharing of tower assets among multiple tenants. The logic – more value can be created from the efficient use of these assets. This also means that the independent tower companies have the flexibility to deploy capital expenditure to further improve efficiency, plus push operational excellence and standardizisation programmes. In addition, they have increased asset rollouts, or supply, which will be increasingly vital to meet increased data consumption.

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In a nutshell, they have created the conditions to place more tenants on the telecom infrastructure assets, creating immense value and efficiencies. This is highlighted nicely by a key metric for tower companies. On average, an independent telecom infrastructure company will boast a tenancy ratio<sup>1</sup> of approximately 2x, compared against 1x for MNO-owned tower assets.

#### **Tower rollout and ownership**

Table 1. shows the largest independent telecom infrastructure companies who account for approximately 2.6 million towers. Listed companies are heavily represented in the table. The GLIO coverage of telecom infrastructure companies includes US-listed American Tower, Crown Castle and SBA Communications holding ranks two, four and six respectively in absolute number of towers terms. These three companies are by far the largest globally in investible size terms. All three tower specialists qualify under US REIT legislation, SBA Communications being the latest to convert in 2017. The US market is very well established, with independent tower companies owning close to 85% of collocatable towers in the country according to EY.

Recently listed China Tower is the largest owner (in absolute tower numbers) with 1.9 million towers in China. This is a joint venture between network operators China Mobile, China Unicorn and China Telecom, of which 25% (\$7bn) was floated in August 2018. Full market capitalizsation as at the end of December 2018 was \$32bn.

The UK market has a handful of independent players, – Arqiva (whose IPO was scrapped in 2017), Wireless Infrastructure Group and Cellnex, own approximately 15,000 towers between them, or that's 38% of UK towers. The balance is held by two separate joint ventures, CTIL and MBNL. There could be a potential reshaping of the market over the next few years if market rumors materialize. >

1. Tenancy Ratio = number of tenants in a tower portfolio divided by the number of towers



As operators deploy communication networks that both support current applications and enable new uses cases in the future, a combination of both macro towers and small cells will be required to provide the critical foundation.

Dan Schlanger, CFO at Crown Castle

TowerXchange reported in October 2018, that Vodafone's new CEO, Nick Read, was mulling over its plans for 58,000 European towers, which are currently held in CTIL-like JVs. He is reported to say that selling tower assets could be an option, if the right deal could be struck. There's no doubt that various packages of these towers would appeal to both independent tower companies and investors in the space. If a deal(s) went ahead it would shift the tower landscape in UK and Europe fundamentally.

In Continental Europe, the sector is slowly forming, with the IPOs of Cellnex, INWIT and Raiway in recent years. EI Towers which was one of the oldest independent tower companies in Europe taken private in 2018 by 2i Towers. Independently-owned towers still only account for less than 20% of the European total according to EY. Looking forward, it seems reasonable to envisage that the percentage of independent tower companies will grow both in the listed and unlisted markets along similar lines as we've seen in the USA over the past 15-20 years.

Michele Vitale, Head of Investor Relations at INWIT gives a sense of the market, "sharing infrastructure has been a solution for the telecom industry, enabling them to reduce cost and speed-up the network deployment. In fact, the data monetization dilemma pushed MNOs to share network investments, and now, with their focus on 5G services, infrastructure can be considered a commodity."

Vitale believes that future developments in the European Market will further develop from a simple passive infrastructure model, based on hosting space on a mast, to a "service driven" approach, "Tower companies will be offering to its customers technical solutions in order to cover an entire area and fully service their customers, using all available technologies such as Macro-sites, Small Cells, DAS, Fiber backhauling, etc."

#### Table 1: Top independent global telecom tower companies (sorted by number of towers)

Rank	Company/ Towerco	Towers Q318	Full Mkt Cap Size (US\$ bbn)	Countries	Listed / Private
1	China Tower Corporation	1,920,000	(MC: \$32bn)	China, Laos	25% Listed (75%: China Mobile, China Unicorn, China Telecom & China Reform)
2	American Tower	168,457	(MC: \$72bn)	Argentina, Brazil, Chile, Colombia, Costa Rica, France, Germany, Ghana, India, Kenya, Mexico, Nigeria, Para- guay, Peru, South Africa, Uganda, USA	Listed
3	Indus Towers	124,230		India	Private (Bharti, Vodafone & Aditya Birla)
4	Reliance Jio	43,000		India	Private (Jio)
5	Crown Castle	40,027	(MC: \$46bn)	USA	Listed
6	Bharti Infratel	39,946	(MC: \$7bn)	India	Listed
7	SBA Communications	29,357	(MC: \$19bn)	Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Nicaragua, Panama, Peru, USA	Listed
8	edotco	28,490		Bangladesh, Cambodia, Malaysia, Myanmar, Pakistan, Sri Lanka	Private (Axiata, INCJ, Khazanah & KWAP)
9	Deutsche Funkturm	28,000		Germany	Private (Deutsche Telekom)
10	GTL Infrastructure	27,707	(MC: \$13bn)	India	Listed
11	IHS Towers	23,276		Cameroon, Ivory Coast, Nigeria, Rwanda, Zambia	Private (MTN, Wendel & IFC)
12	Cellnex	22,035	(MC: \$6bn)	France, Italy, Netherlands, Spain, UK	Listed
13	Guodong	20,000		China	Private
14	Protelindo	17,234	(MC: \$1.6bn)	Indonesia	Listed
15	Telxius	16,319		Brazil, Chile, Germany, Peru, Spain, Argentina	Private (Telefonica)
16	CTIL	16,000		UK	Private (Vodafone & Telefonica)
17	Telesites	15,849		(MC: \$2bn) Costa Rica, Mexico	Listed
18	First Tower Company	15,000		Russia	Private
19	MBNL	14,500		UK	Private (EE & Three)
20	Tower Bersama	13,765	(MC: \$1.1bn)	Indonesia	Listed
21	INWIT	10,945	(MC: \$4.4bn)	Italy	Listed

Source: TowerXchange 2018



Moreover, he sees that commercial success from an expanding customer base, "from long-established customers like MNOs to a variety of newer users. Today we are already serving Fixed Wireless Access, IoT, but in a developing 5G world the number of different players will dramatically increase."

Vitale also sees a tremendous opportunity to follow USA, "it could be the time to introduce a European a Tower REIT, or more specially an Infrastructure Investment Trust (IIT). As happened in the USA, it could speed up the industry evolution." The new addition in 2018 to the GLIO Coverage, Telesites (Mexico), is ranked 16 in Table 1. The company began life in 2015 as a result of the spin-off of just under 12,000 towers from Telcel. It has added a further 4,000 since IPO.

# What will drive future telecom infrastructure growth, in the future and why invest?

Telecom infrastructure companies are an important investment opportunity as they are essential to everyday communications throughout the world. As consumer demand for data grows unabated, the tower companies continue to take advantage and meet demand. Developments in the 5G (fifth generation of cellular technology) is an example of this. As a background, 5G offers a number of advantages over 4G including increased throughput speeds, reduced latency and reduced energy requirements which mean reduced costs. The applications of 5G fall into two broad categories:

- The Internet of Things (IOT) for large populations of objects as well as lowlatency usages (connected cars).
- Massive broadband in specific areas (fixed to mobile substitution).

In the major markets, 5G rollouts are starting to take place this year and will continue going forward. In 2018, the first 5G auctions took place in the UK, South Korea, Spain, Italy, Sweden and Australia. Auctions will continue over the next couple of years. What's clear is that denser networks of tower infrastructure (macro sites) and small cells will be necessary to meet increasing data consumption (see Table 2).

Dan Schlanger, CFO at Crown Castle explains, "It's an exciting time to own

shared communications infrastructure in the USA. The substantial growth in mobile data demand is driving the need for significant ongoing investment by carriers in their 4G networks, while 5G deployments are just getting started. As operators deploy communication networks that both support current applications and enable new uses cases in the future, a combination of both macro towers and small cells will be required to provide the critical foundation. With these positive long-term growth trends driving demand for our infrastructure, we are excited about the opportunity to continue to deliver compelling total returns for our shareholders "

Graphic 1. shows in simple terms how the telecom infrastructure companies will ensure we stay connected. For example, wireless congestion occurs when too many people try to use the same cell site at the same time. Coupled with increased data usage, all that extra demand can guickly overload a cell site's capacity. Naturally, the best way to relieve congestion is to add new telecom infrastructure. This can be in the form of macro cell sites like towers, plus additional small cells which add more capacity in high traffic areas, like a busy market in a city. In rural and suburban areas, as well as along roadways, operators can handle increased traffic simply by densifying existing macro site networks.

Looking to the mid-term, it is forecast that 5G devices and connections will be over 3% of global mobile devices and connections by 2022. The number of mo-

Nearly 12% of global mobile traffic will be on 5G cellular connectivity, and on average a 5G connection will generate 21GB of traffic per month by 2022.

bile devices will hit 12.3 billion by 2022 (up from 8.6 billion in 2017) – with over 422 million being 5G capable. Moreover, nearly 12% of global mobile traffic will be on 5G cellular connectivity by 2022, and on average a 5G connection will generate 21GB of traffic per month by 2022. Smartphones will account for 44% of total IP traffic by 2022, up from 18% in 2017. Traffic from wireless and mobile devices will account for 71% of total IP traffic by 2022. This compares to 48% in 2017.

In number terms, it is forecast<sup>3</sup> that 51,500 new towers would need to be built in Europe to cope with the densification for 5G by 2023. In Latin America, the current new build of 5,000 towers per year would need to treble for 5G.

While 5G is grabbing most of the headlines, there are regions in the world where 3G and 4G networks are currently be >

Graphic 1: Data consumption is driving the need for denser networks of towers & small cells



Source: Crown Castle, November 2018



#### Chart 1: Asset class performance - December 31, 2001 to December 31, 2018



Dec01 Dec02 Dec03 Dec04 Dec05 Dec06 Dec07 Dec08 Dec09 Dec10 Dec11 Dec12 Dec13 Dec14 Dec15 Dec16 Dec17 Dec1

#### Table 2: Mobile user estimates 2022

Region	Per Capita con- nected device	Ave Mobile connect speed growth	Video Mobile Data Traffic	Mobile Traffic per end-user (pm)
North America	2.9	1.8x or 13% CAGR (25.2 Mbps)	64% to 77%	3.4GB to 12.7GB (30% CAGR)
LATAM	1.4	3.3x or 27% CAGR (12.4 Mbps)	60% to 79%	641MB to 3.7GB (42% CAGR)
West Europe	2.7	2.5x or 20% CAGR (28.5 Mbps)	61% to 80%	1.3GB to 6.6GB (38% CAGR)
CEE	1.8	2.9x or 24% (18.4 Mbps)	60% to 79%	1.5GB to 8.1GB (39% CAGR)
MEA	1.1	2.9x or 23% CAGR (10.8 Mbps)	52% to 76%	472MB to 4.6GB (57% CAGR)
Asia-Pacific	1.4	2.1x or 16% CAGR (20.4 Mbps)	60% to 78%	810MB to 5.2GB (45% CAGR)
Total	1.5 or 12 billion total people	3x 24% CAGR (6.8 to 20.4 Mbps)	60% to 78%	977MB to 5.7MB (42% CAGR)

Source: CISCO VNI Global Mobile Data Traffic Forecast, 2017 to 2022 (published February 2017, https://goo.gl/rPc6Uf)

#### Chart 2:. Consistent Y-O-Y AFFO growth - 11 Years



Source: AMT, CCI & SBA

deployed. The secular drivers of wireless data demand in developing economies are following a similar path that was created in more advanced economies over the past ten years. The attractive opportunity to participate in this long runway of growth is one of the factors that attracted SBA Communications to the Latin American tower market.

"After the tremendous success we've experienced in the USA due to the significant growth in mobile wireless data consumption and the transition from 2G to 3G to 4G, we saw the same opportunity profile developing in Central and South America," commented Brendan Cavanagh, Chief Financial Officer of SBA. "Our markets throughout Latin America are quickly following the development cycles we've seen in the USA, and we expect them to be material drivers of growth for our company and industry for years to come."

## Listed telecom towers investment case

The listed telecom tower companies offer investors liquid exposure to this communications infrastructure evolution. Typically, mobile operators pay the tower companies rents under long-term, typically non-cancellable, contracts with annual escalators. Owning the infrastructure which underpins our increasingly connected lives has become an increasingly ever more attractive investment for private and public investors keen to put capital to work in infrastructure-based assets with consistently compounding cash flows.

Telecom infrastructure represents the fourth largest sector in the GLIO infrastructure coverage and are fundamental to any broad infrastructure allocation. Jeremy Anagnos, Portfolio Manager at CBRE Clarion Securities indicates the importance of the sector in his infrastructure strategy, "We believe communications infrastructure, including telecom towers and fiber networks, play a primary role in a diversified global infrastructure strategy. Storing, processing, translating and transmitting data, all provided by communications infrastructure, have developed into an essential part of the global economy. Moreover, this will become even more vital going forward as future technologies emerge and the listed communications

Source: GLIO & Reuters



Company	Country	MC \$Mn	FF MC \$Mn	FF Wght	Yield	Beta	3 Yrs	5 Yrs	7.5 Yrs	10 Yrs	12.5 Yrs	15 Yrs	17.5 Yrs
American Tower	USA	69,681	69,681	49.6%	2.1%	0.69	20.2%	16.9%	17.9%	19.9%	15.1%	20.6%	13.2%
Crown Castle Intl	USA	45,065	42,812	30.5%	4.1%	0.55	12.2%	12.2%	16.8%	22.2%	11.2%	17.9%	13.2%
SBA Comms	USA	18,346	17,428	12.4%	0.0%	0.78	15.5%	12.5%	21.2%	25.8%	15.7%	28.5%	11.3%
Cellnex Telecom	Spain	5,930	3,854	2.7%	2.2%	0.61	9.6%						
Uniti Group	USA	2,787	2,564	1.8%	15.4%	0.70	5.5%						
Telesites SAB	Mexico	1,967	1,967	1.4%	0.0%	-	1.3%						
INWIT	Italy	4,091	1,636	1.2%	3.2%	0.70	8.6%						
RAI Way	Italy	1,348	472	0.3%	4.7%	0.85	1.0%						
Grand Total		149,214	140,414	100.0%	2.7%	0.69							

#### Table 3: Annualized total returns of global listed tower companies

Source: GLIO & Reuters

companies are ideally placed to take advantage of future investments."

When building a diversified allocation to the sector, investors will also look for a proven track-record in terms of total return performance, track-record and management expertise. The access to the size, expertise, diversification and global network exposure offered by the listed telecom infrastructure companies is unparalleled. In simple terms, it would take decades and \$100s billions to replicate the network that they currently offer investors. Transparency, liquidity, attractive yield and cost efficiency simply bolster the case.

The long-term track-record of the large US-based tower companies has been more than impressive, as seen in Chart 1. and Table 3. Even 12.5-year annualized total returns of the large caps, which in-

clude the time periods around the global financial crisis, range between 11%-16% pa. The periods around the GFC are truly phenomenal, as tower companies tended to materially outperform most other sectors as seen in Chart 1. Moreover, underpinning the growth of share prices are the underlying performance metrics of Adjusted EBITDA and Adjusted Funds from Operations (AFFO). Charts 2. and 3. show a consistent, stable and steady growth across these two metrics for the three major US tower companies. In Europe, the three-year annualized returns of Cellnex and INWIT are an impressive 10% and 9% respectively.

#### **Dialling in**

Telecom Infrastructure is a fundamental part of any global infrastructure allocation. It offers exposure to essential economic infrastructure assets and serLast year, the first 5G auctions took place in the UK, South Korea, Spain, Italy, Sweden and Australia.

vices, and it leverages the exponential secular growth in global wireless usage as a key driver of demand. The performance of listed telecom infrastructure, as the vehicle to get exposure to the sector, has provided sustainable, long-term growth fundamentals which that have subsequently generated impressive total shareholder returns for an extended period-of-time.





Smartphones will account for 44% of total IP traffic by 2022, up from 18% in 2017. Traffic from wireless and mobile devices will account for 71% of total IP traffic by 2022. This compares to 48% in 2017. Staggering growth.

Source: AMT, CCI & SBA



#### GLIO Coverage by Infrastructure Sector as at December 31, 2018

Sector	MC \$Mn	MC Wght	FF MC \$Mn	FF Wght	Yield	Beta
Electric Utilities	714,060	33.7%	645,183	35.7%	4.0%	0.46
Ground Freight	289,891	13.7%	280,796	15.5%	2.0%	1.06
Oil & Gas Distribution	254,768	12.0%	234,907	13.0%	6.0%	0.97
Telecom Infrastructure	149,214	7.0%	140,414	7.8%	2.7%	0.69
Multiutilities	153,555	7.3%	130,560	7.2%	5.3%	0.60
Ground Transportation Services	123,209	5.8%	99,304	5.5%	1.3%	0.83
Gas Utilities	105,455	5.0%	74,110	4.1%	2.4%	0.67
Water Utilities	73,313	3.5%	54,652	3.0%	3.3%	0.73
Airports	111,624	5.3%	53,591	3.0%	3.7%	0.84
Highways & Railways	76,438	3.6%	51,447	2.8%	4.1%	0.83
Marine Ports	27,623	1.3%	13,684	0.8%	4.1%	0.89
Diversified	18,068	0.9%	13,139	0.7%	5.6%	0.83
Satellites	14,920	0.7%	12,932	0.7%	4.5%	0.93
Construction & Engineering	5,210	0.2%	3,931	0.2%	1.1%	0.61
Grand Total	2,117,348	100.0%	1,808,652	100.0%	3.7%	0.74

Source: GLIO & Reuters

### Advantages of independent Tower companies

#### • Mission-critical

Telecom tower companies are mission-critical as a high percentage of mobile traffic goes through their masts. Network quality is a major factor driving customer churn for wireless carriers and consequently, it remains a key factor in carrier marketing and will continue to be extremely important in an environment where delivering bandwidth-intensive content is a necessity to attract and retain customers.

#### • Shared infrastructure

Owning towers is not strategic for the carriers as they are non-performing, cost-center assets with a carrier, that can be readily monetized and turned into significant cash-generating assets in the hands of an independent tower company with no change in functionality for the carrier selling the towers. In addition, the present value economics of owning versus leasing favors leasing. Plus, zoning laws make it impractical for carriers to each have separate towers for every one of their sites. Shared infrastructure remains as the clear-cut most efficient way to deploy today's networks, from both a cost and technological perspective.

#### • Importance of scale:

- Negotiating with customers who are large, sophisticated multinationals with a history of putting pressure on their vendors. Scale enables tower operators to offer nationwide portfolios to facilitate the density requirements of modern wireless networks.
- It is a relatively capital-intensive business initially, so having significant financial assets is important as portfolios are constructed, developed and acquired.
- Basic selling, general and administrative (SG&A) is not insignificant, however it is scalable with revenue growth and the costs associated with adding towers is incrementally small.

#### • ESG & sustainability

Simply put, fewer towers equals less visual pollution. Tower sharing is inherently green, more efficient and reduces the environmental impact of having redundant infrastructure. This is clearly shown while looking a tenancy ratio: independent tower companies (2x) versus approximately 1.1 for MNO-owned towers. They effectively halve the pollution! Further, tower companies in emerging markets, where off-grid power is often necessary, are developing innovative, green technologies to progressively move off diesel-based generators.





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