



# Understanding carved-out Mobile TowerCo asset company related incentives for cost efficient 5G rollout and operation in the EU

HTE Radiotelecommunications Department  
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# Agenda

- Purpose (Research Question, Findings and Originality)
  - Introduction: fragmented market challenge, market cooperation resolutions, savings
  - TowerCo at a glance: Technology & Financial triggers
  - Research methodology and theoretical model framework
  - Discussion: drivers of emerging TowerCo market, regulatory approach
  - Discussion: TowerCO related incentives from MNO and TowerCo side
  - Finding & conclusion: market structure and network rollout stage dependent assessment
  - Recommendation: TowerCos may reassess active RAN scoping with open RAN approach
- 

**Disclaimer**

This study was written by Gábor Földes. Views are the author's own and do not necessarily represent the concluded position of VoIS (Vodafone Intelligent Solutions) on particular matters.

**Paper**

[Elsevier SSRN](#)

# Purpose: Research Question, Findings and Originality

## Research Question

- To what extent *TowerCo carve-out stimulates cost efficient 5G rollout & operation in EU?*
- understanding of TowerCo related incentives for efficiency improvement

## Findings & Novelty

- TowerCo divestiture under common market condition with *concentrated incumbent MNO* market and *limited virtual or new entrant operators* and mainly *operator-wing captive TowerCos* in case of *matured network rollout stage*, the TowerCos are less incentivized for efficiency driving site consolidation compared to a network sharing.
- On *competitive MNO* markets with *viable virtual operators*, who are incentivized to become full-scale operator and there are independent *neutral host TowerCos* and/or *growing network rollout stage*, TowerCos lower entry barriers in value-chain and rollout unit costs, therefore positively contribute to more efficient 5G rollout.

# Triggers: fragmented EU telco market: Digital Decade 2030 target in risk, due to lack of economies scale, asset utilization, cost efficiency

Problem

KPI Measure	EU	Peer Nations
Coverage by at least one 5G mobile operator,	80%	China: 89% US: 99%
Share of 5G among mobile connections	17%	Japan: 33% China: 83%
Capital intensity (CAPEX/Sales)	20%	China 20% Japan, US: 15%

Lacking

Source: Author's own summary based on ETNO/Analysys Mason

Economies of scale

Asset utilization

Cost efficiency

Request

- Market consolidation: horizontal merger
- Market cooperation: horizontal production agreement, eg. Mobile network sharing
- TowerCo carve out

# Mobile Network Operator ambitions to improve economies of scale

Source: Author's own summary

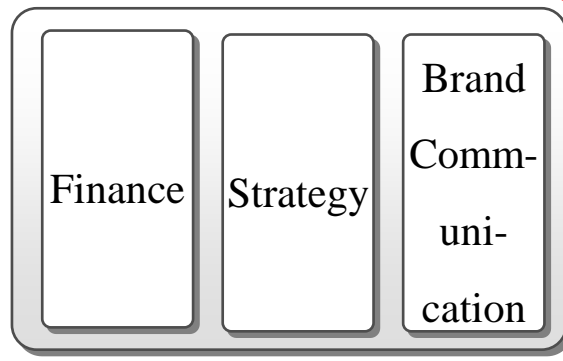
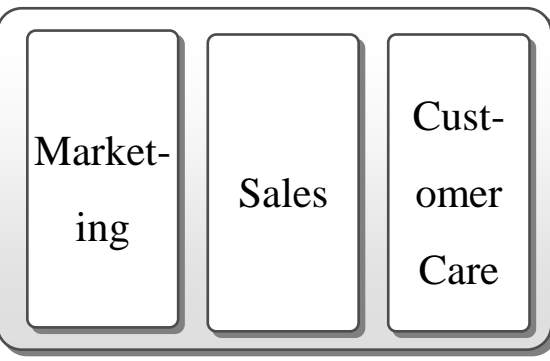
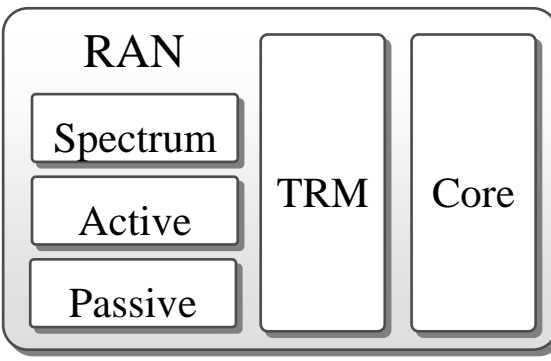
Telco value-chain

Network Functions

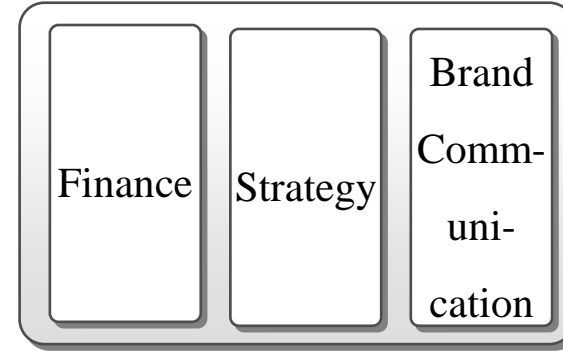
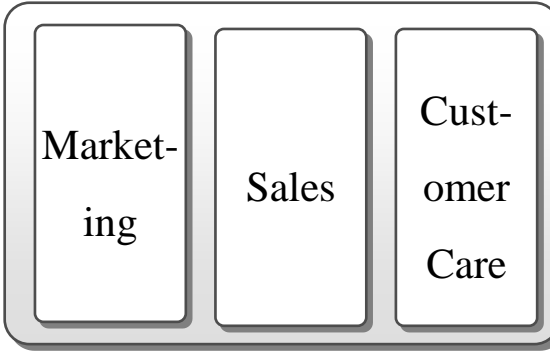
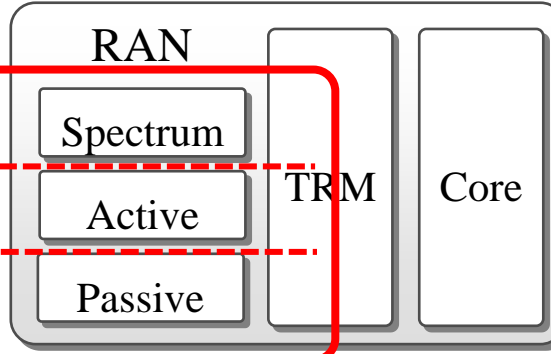
Business Functions

Overhead Functions

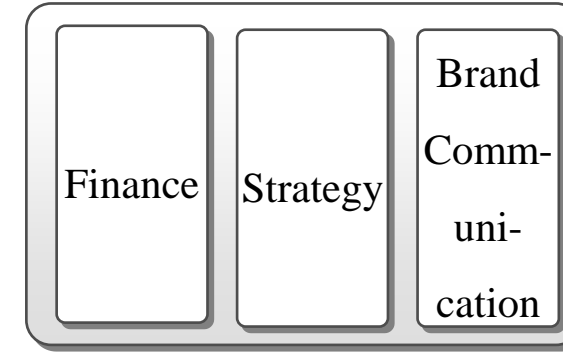
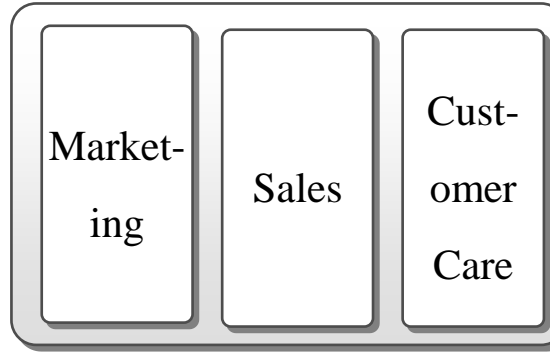
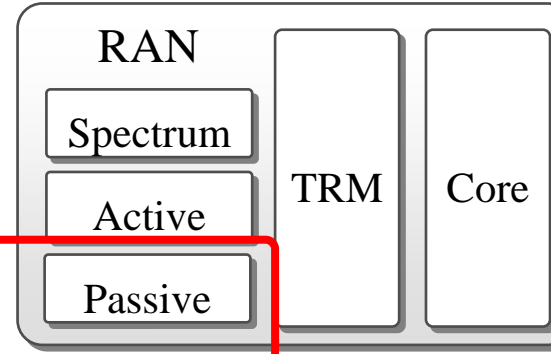
**Merger**



**Network Sharing**



**TowerCo**



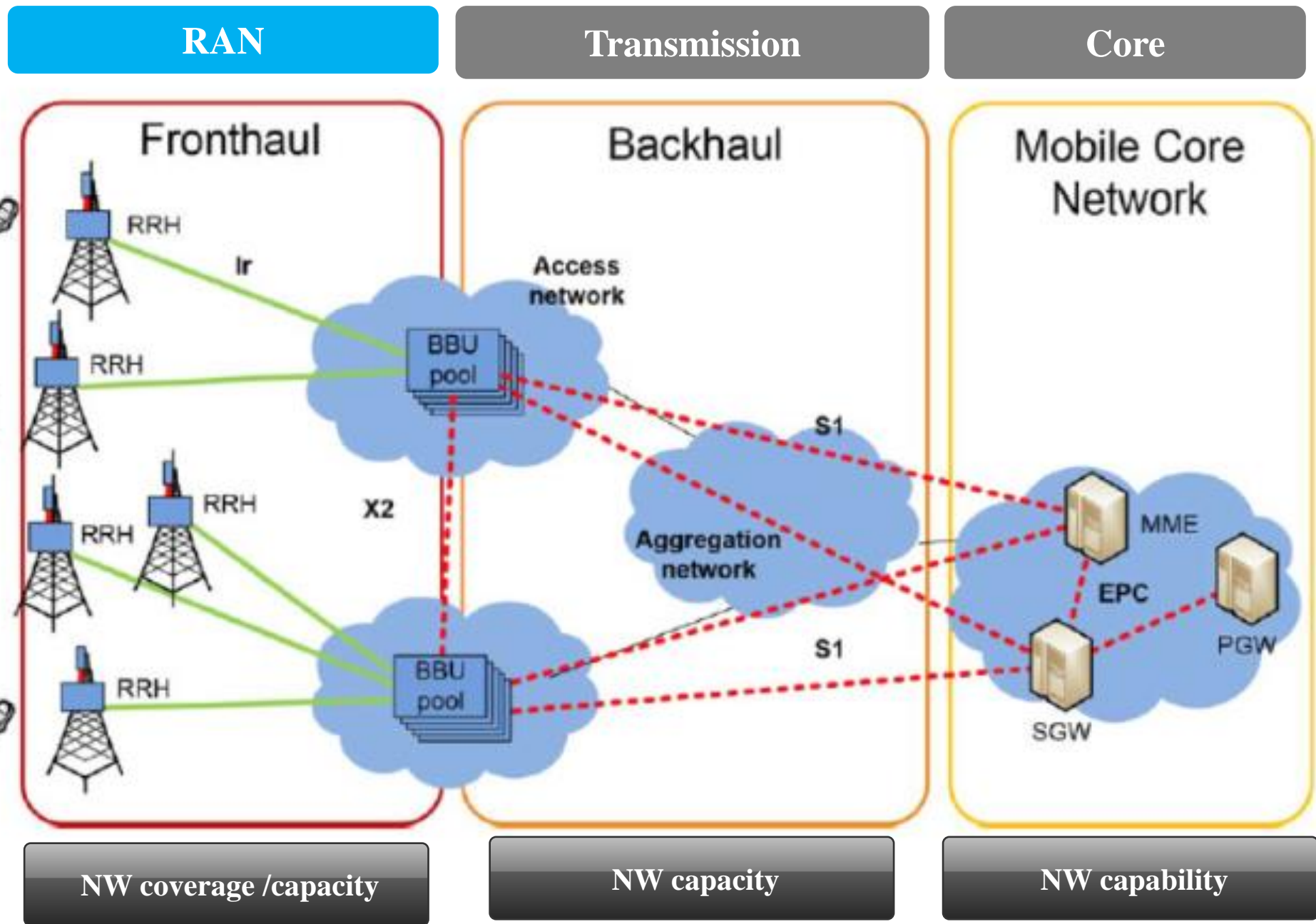
Non-NW: full competing,  
 NW: core competing,  
 NW RAN shared vertically  
 w Tenancy ratio 2.0

Horizontal sharing,  
 Tenancy ratio ~ 1.5

# Mobile Network Technology overview, RAN is the scope of TowerCo

TowerCO relevant

*RAN: Radio Access Network*



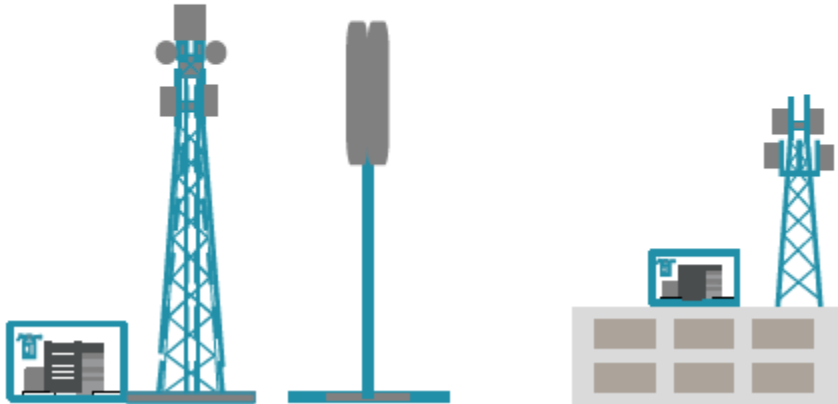
# RAN types overview, Macro site dominance

## Macro RAN

### Macro sites

Ground Based Towers<sup>1</sup>

Rooftop Towers



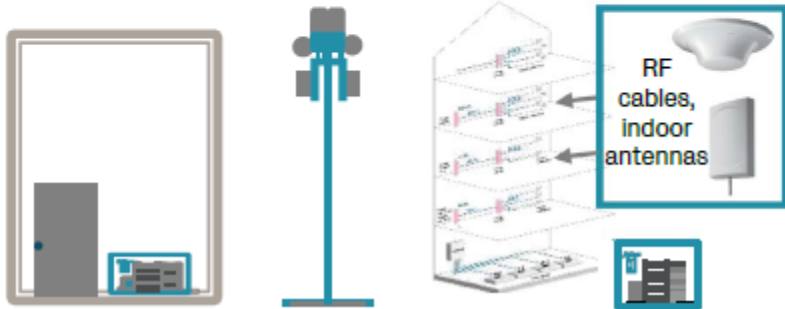
Source. Vantage Towers

## Micro RAN

### Small cells / Distributed antenna system

Indoor /outdoor small cells

Distributed antenna system



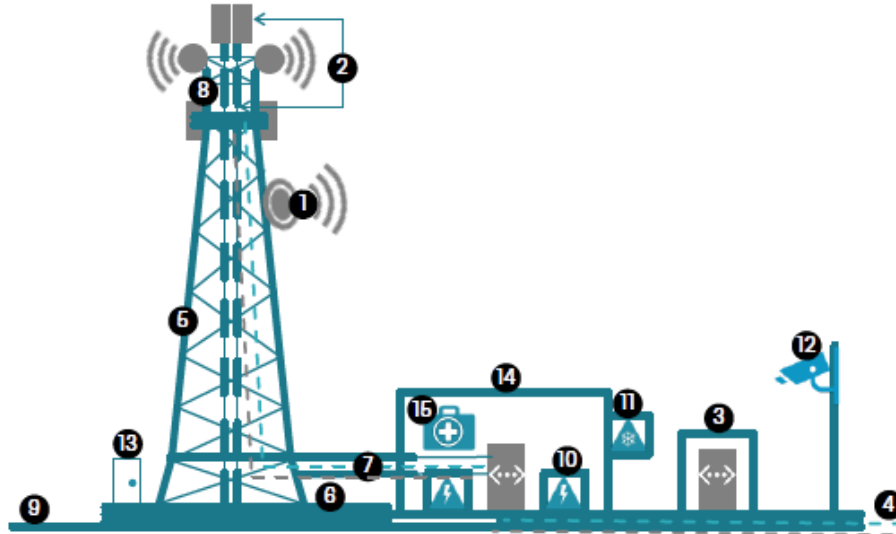
# Passive RAN elements dominance in TowerCo carve-out scope

VANTAGE TOWERS



## Our assets | Full passive infrastructure offering

Mission-critical, low complexity assets with limited capex requirements



**Own, manage and operate full passive infrastructure**

- Responsible for passive site build, upgrade and maintenance
- Own landlord relationship

**Responsible for energy on site for both passive and active components**

- Battery back-up, enhanced power supply (e.g. Diesel Generation)

	Ownership
<ul style="list-style-type: none"> <li>1 Active radio-transmission equipment</li> <li>2 Antennas &amp; cables (fibre, feeders etc.)</li> <li>3 Outdoor Cabinet</li> </ul>	Active equipment: Mobile Network Operators
<ul style="list-style-type: none"> <li>4 Fiber backhaul / Fiber to the site ("FTTS")<sup>1</sup></li> </ul>	Mobile Network Operators / Vantage Towers
<ul style="list-style-type: none"> <li>5 Physical tower, masts and pole</li> <li>6 Foundation &amp; fencing</li> <li>7 Cable routing (duct) and fibre ducts</li> <li>8 Mounting equipment</li> <li>9 Contractual right to occupy site area</li> <li>10 Power equipment<sup>2</sup></li> <li>11 Cooling system<sup>2</sup></li> <li>12 Surveillance systems</li> <li>13 Access facilities</li> <li>14 Shelter/ service rooms<sup>2</sup></li> <li>15 Emergency equipment</li> </ul>	Passive equipment: Vantage Towers

Active RAN

Passive RAN

TowerCO relevant

**Note**  
 1 Existing fiber to the site retained by Vodafone. If fiber to the site build undertaken by Vantage Towers in future it will be owned by Vantage Towers  
 2 Only where they have transferred to Vantage Towers, as there are some sites where VF retains ownership



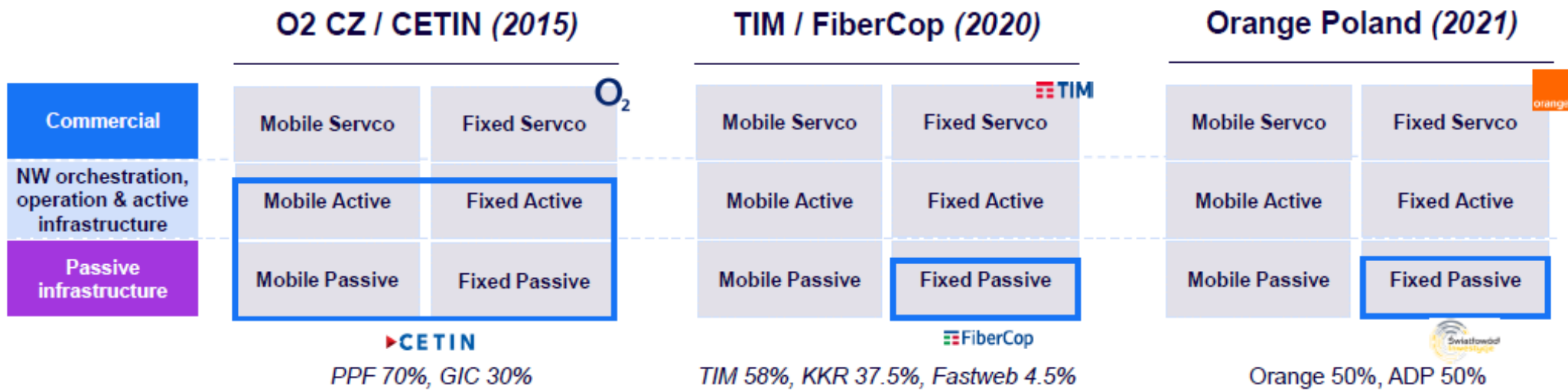
# TowerCo / InfraCo types: passive infrastructure is the common element, but more developed models cover active infrastructure also

1 TELCO INFRA RESHAPING IS WELL ADVANCED



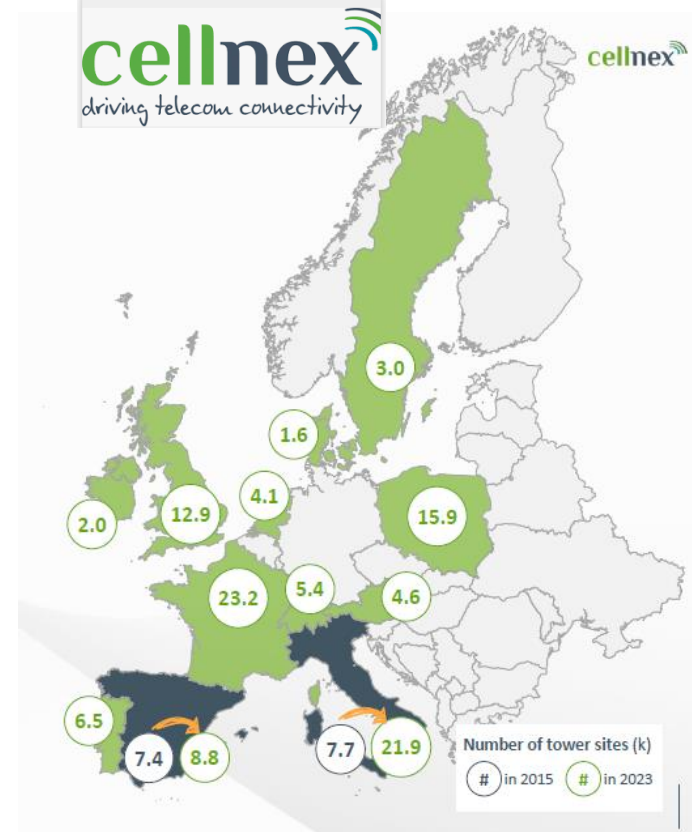
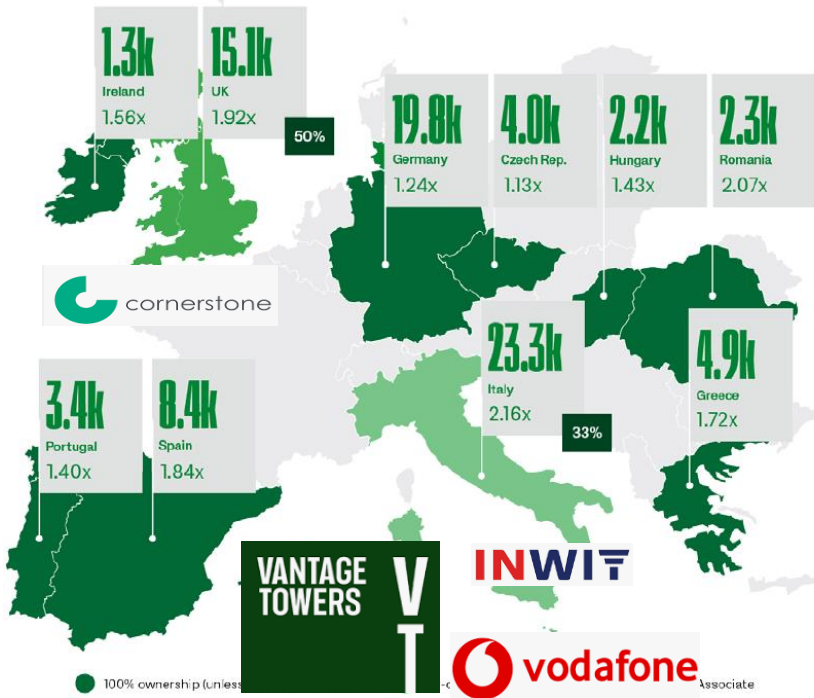
ILLUSTRATIVE

Local market structure will lead to a different end-game for each player...



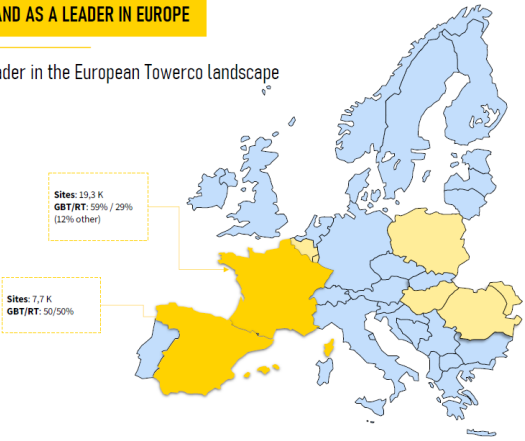
Source: Arthur D. Little

# Key TowerCo Groups in Europe



## 3. WE STAND AS A LEADER IN EUROPE

A new leader in the European Towerco landscape



Legend:  
 - TOTEM footprint (pink)  
 - Orange footprint (yellow)  
 - Off-footprint markets (light blue)

Legend:  
 - GBT: Ground-based towers  
 - RT: Rooftop-towers



**GD Towers**  
 Deutsche Telekom









## 5G-Gemeinden



## PPF Telecom Group



# TowerCos selected financial & non-financial KPIs, driving interest and market behaviour

TowerCO (data for 2022)	Ownership	Presence	Number of Basestation, thousands	Revenue, bn €	EV/ EBITDA, times	RoCE, %
<b>Cellnex</b> 	Spanish Stock Exchange	AT (sell), DEN, IRE (sell), IT, POL (active trial), PT, SP, SCH, SW, UK,	111	3.5	20.5	0.9
<b>Vantage Tower</b> (w/o INWIT Cornerstone) 	Vodafone 60%, (decreasing) GIP/KKR 40%	IRE, PT, SP, DE, CZ, HU RO, GR	46	1.1	26 (2022 sell)	6.1
<b>GD Tower</b> 	Deutsche Telekom 49%, Brookfield/ Databridge 51%	DE, AT	41	1.1	27 (2022 sell)	na
<b>American Tower</b> 	Real Instate Investment	FR, DE, SP (Telefonica O2 based)	224 (worldwide), 31 (EU)	10 (worldwide)	24	4.0
<b>TOTEM</b> 	Orange 100%	FR, SP	27	0.7	na	na
<b>INWIT</b> 	Vantage Towers: 33%/ Telecom Italy: 10%/ Ardian 30%	IT	23	0.9	20.0	4,7
<b>Cornerstone</b> 	Vantage Towers 50%, Liberty/ Telefonica 33%/GLIL 17%	UK	20	0.4	na	na
<b>CETIN</b> 	PPF, 70% (thereof e& 50%+1 will be), GIC 30%	CZ, SK, HU SRB, BG (active assets incorp.)	13	0.9 (incl. active)	na	na

Source: Author's own summary

# Overview on main TowerCo types that influence incentives and market conduct

<b>Dimension</b>	<b>Variant</b>	<b>Characteristics</b>
<b>Ownership</b>	Not carved out	MNO not yet decided to carve-out (eg. Magyar Telekom)
	captive MNO wing, w 50+% part	Carved-out, but majority stake still kept (eg. Vantage, Totem)
	captive MNO wing, w 50-% part	Carved-out and only minority stake kept (eg. GD Towers, DTelekom)
	Neutral Host owned after sold	carved -out and sold at that time (eg. Telefonica)
<b>Network scope</b>	Passive assets only	Only passive RAN carved-out (vast major of TowerCos)
	Passive + Active assets	Passive and active RAN assets carved-out (eg. CETIN)
<b>Network sharing relation</b>	Involved as JV	JV set-up was earlier than named as TowerCo (eg. INWIT, Cornerstone)
	Involved	Operating network sharing elements were moved to TowerCO (eg. CETIN HU)
	Not involved	Neither before, nor after carve-out involved in sharing (eg. Vantage HU)
<b>Tenancy ratio</b>	Closer to 1.0 (pure MNO like)	Many in Network sharing not involved TowerCos (eg. Vantage DE)
	Closer to 2.0 (JV like)	Many in Network sharing involved TowerCos (eg. Vantage RO)

# Drivers of emerging TowerCo markets in Europe: asset monetization short term aim was ahead efficiency improvement

## Corporate valuation improvement

- *Lowest corporate valuation*: EV/EBITDA multiplier: 4-6 times, lowest compared other industries
- Multiplier shows: how many years EBITDA profit willing the buyer pay in advance to own
- *Strategic asset reconfiguration*. TowerCo (passive RAN assets) carved-out into separate entities
- unlock real value, make visible long term revenue contracts, higher tenancy as MNOs had

## Decrease leverage ratio

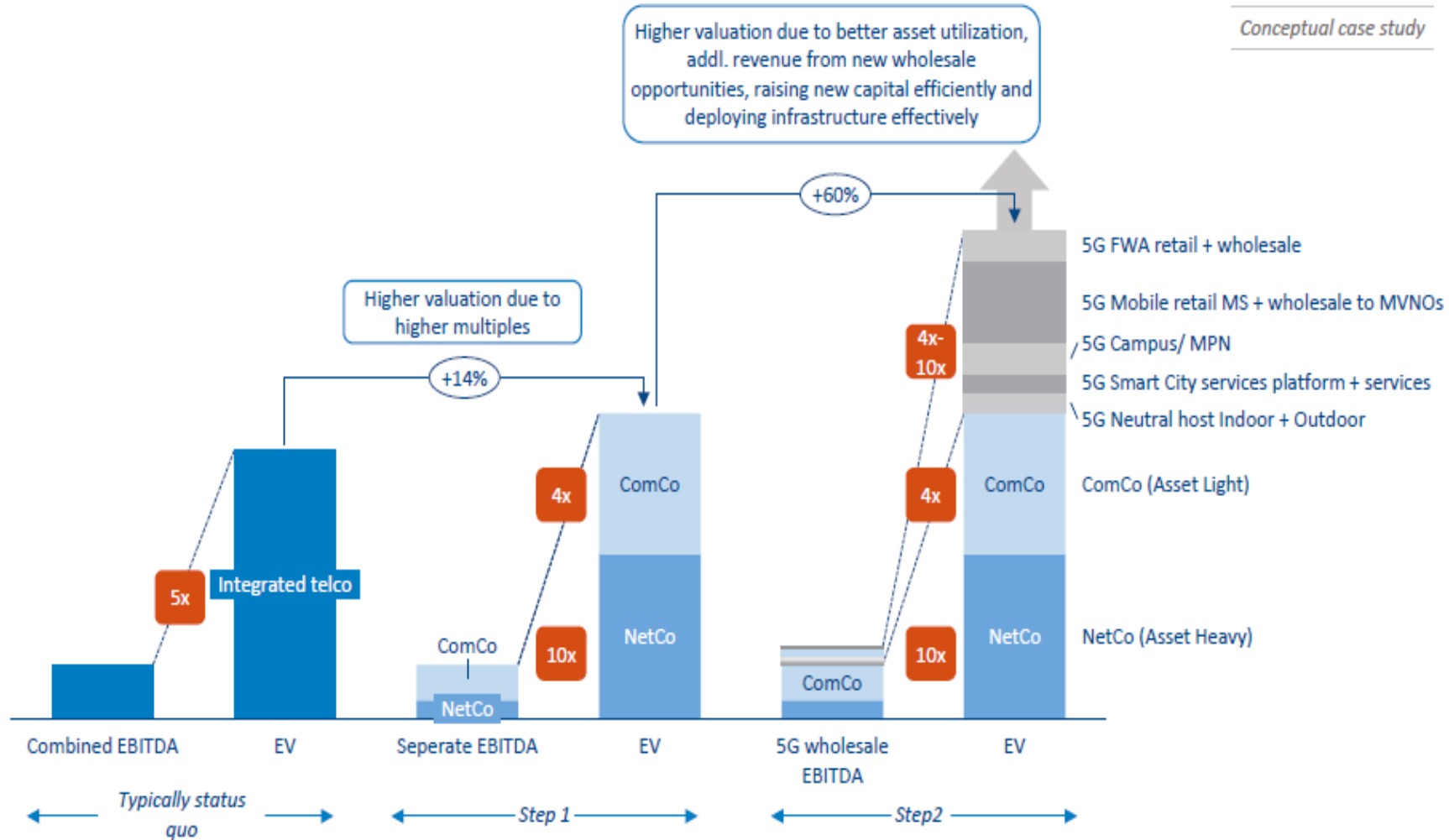
- *Debt/EBITDA ratio* is in high 2-4 range (debt value reached 2-4 years EBITDA profit level)
- recently higher inflation, higher interest rate, incentives to actively downsize debts
- *Asset monetization*: carve-out and monetize on good price, sale and lease back construction.

## Cost Efficiency

- *BAU (Business As Usual)*: Higher tenancy ratio, may result lower unit cost
- *Transform*: site consolidation, decrease number of physical basestations

# Asset strategic reconfiguration for TowerCo carve-out concept: NetCo (TowerCo) EV/EBITDA valuation more than doubled by carve-out

Figure 36: Potential enterprise value uplift of 60-75 percent due to separation and new wholesale businesses



Source: ADL

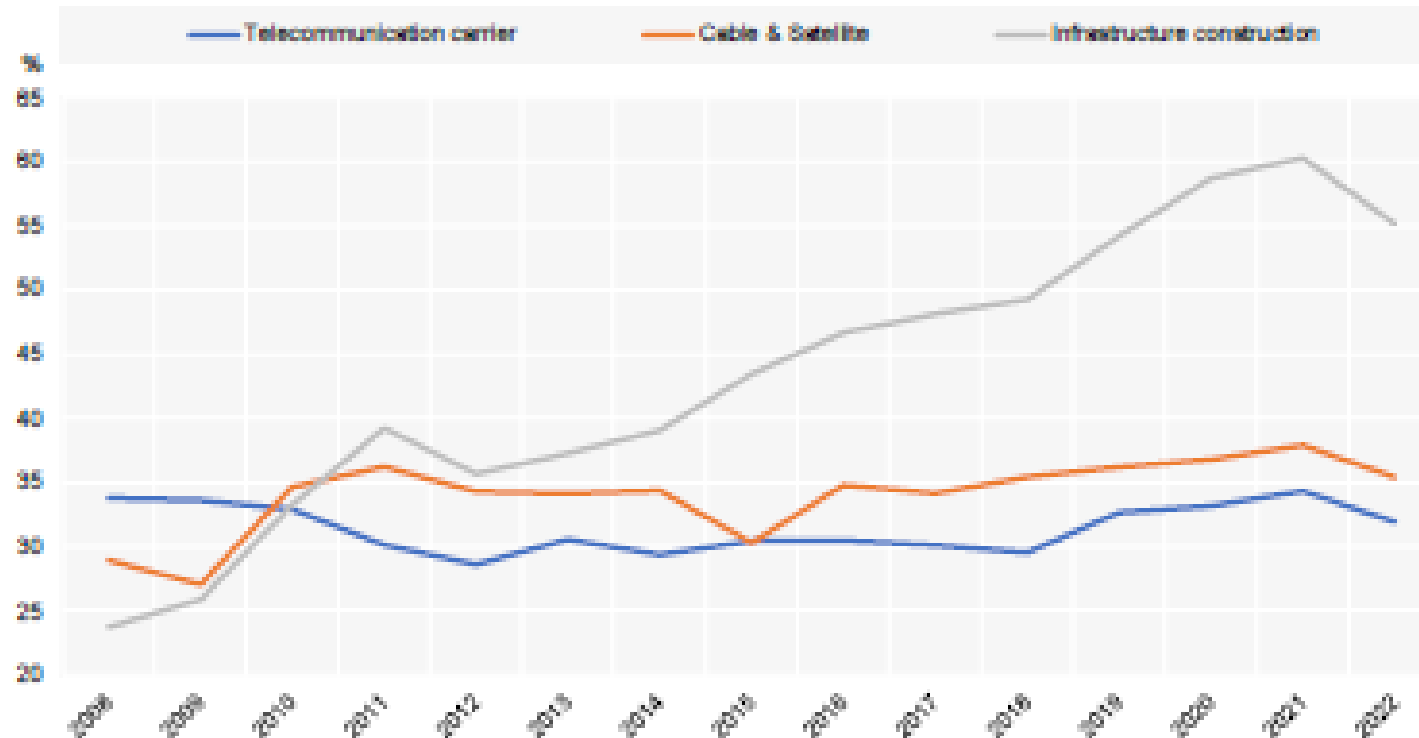
Source: Arthur D. Little analysis

Note: EV – economic value, i.e., the valuation of the company on the market

\*) Telecom infrastructure players typically have multiples of 10–12; whereas cloud infrastructure/data center providers typically trade as high as 13–15 times EBITDA

# Predictable stable & high EBITDAal margin at 50-60% range drives better valuation, compared to integrated telco (MNOs) 30-40% range

Earnings before interest, taxes, depreciations and amortisation (EBITDA) margins for telecommunication carriers, cable & satellite companies and infrastructure construction companies, 2008 – 2022



**TowerCO**  
EBITDAal: 50-60%

**Integrated operator**  
EBITDAal: 30-40%

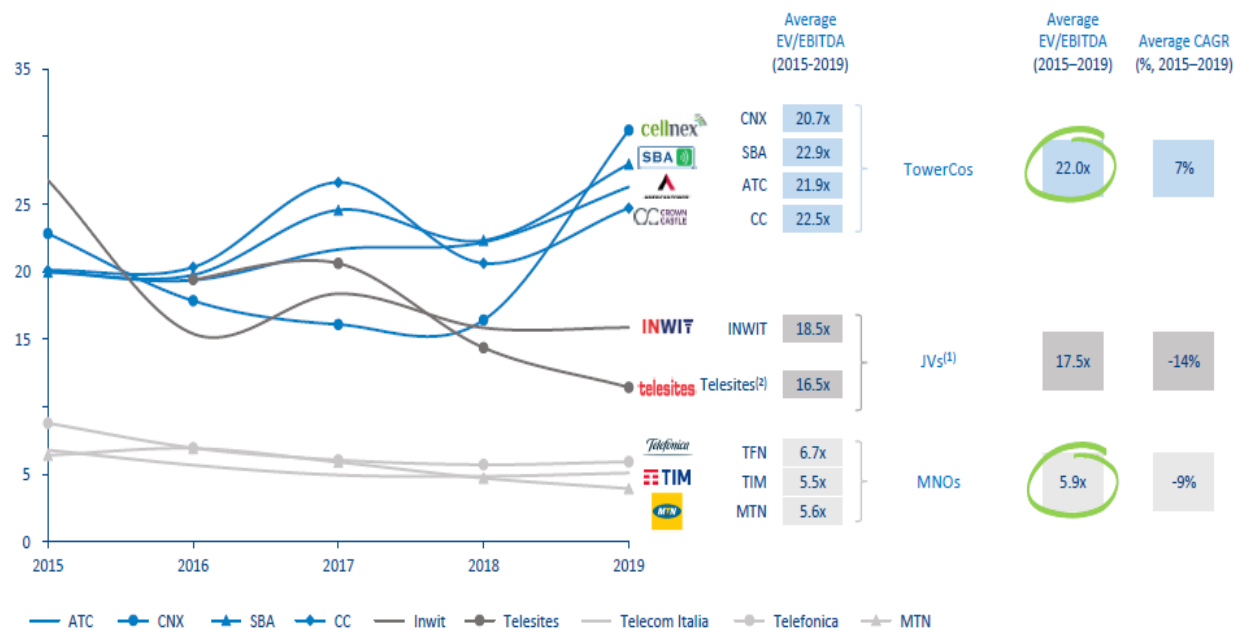
Source: Adapted from Bloomberg (2023), Bloomberg Terminal, <https://www.bloomberg.com/professional/products/bloomberg-terminal> (accessed 15 September 2023)

Source: OECD

# Valuation benefit (1): TowerCo has much higher EV/EBITDA value, than MNO: 20-26 times range compared to 5-8 times, so upto 5x

## EV/EBITDA (2020)

Figure 60: TowerCos vs MNOs EV/EBITDA evolution analysis (2015-2019)



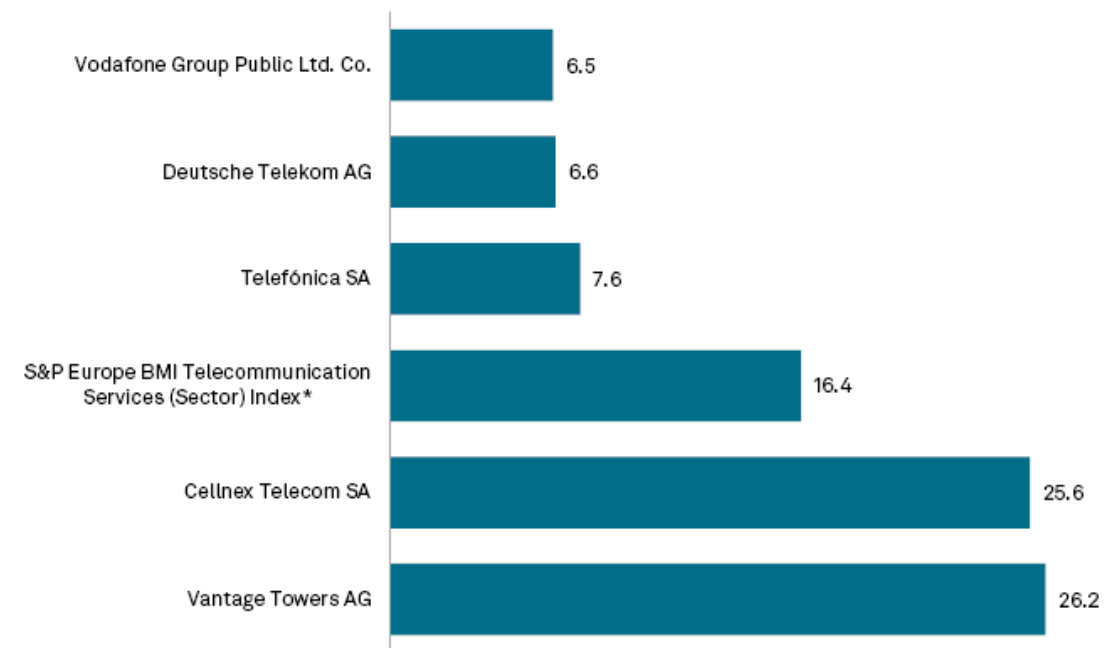
Source: Arthur D. Little analysis, Refinitive Eikon

(1): Joint ventures between operators that have carved out their assets and created a captive TowerCo. (2): Opsimex and Telcel

Source: ADL

## EV/EBITDA (2022)

European telecommunications companies' TEV/EBITDA (x)



Data as of March 31, 2022.

Data compiled May 30, 2022.

\* Analysis includes the average of 110 constituents of S&P Europe BMI Telecommunication Services (Sector) Index. Values of 12 companies are either not meaningful or not available.

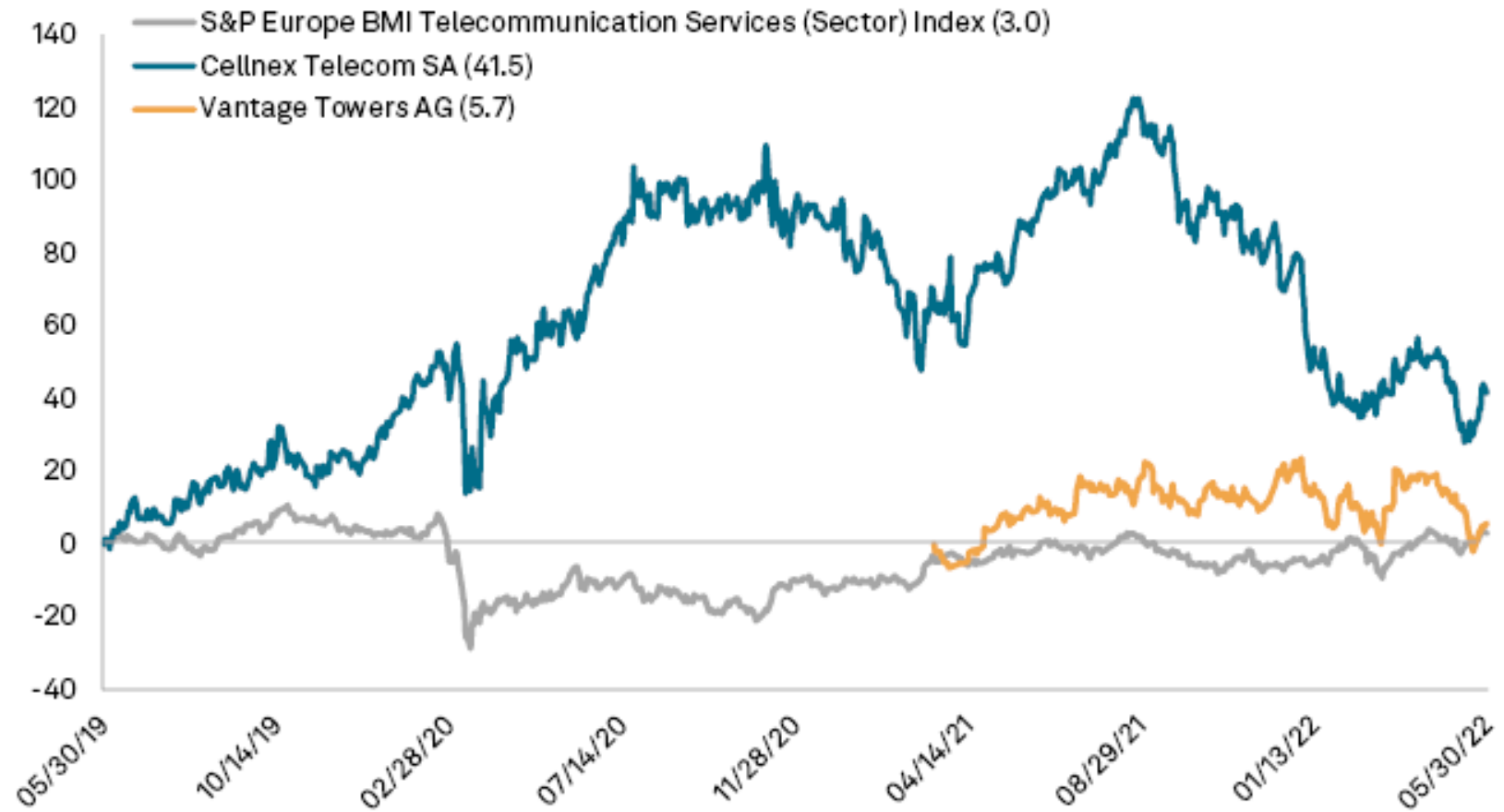
TEV/EBITDA = Total enterprise value as a multiple of last 12-months EBITDA.

Source: S&P Global Market Intelligence



# Valuation benefit (2): TowerCo (Cellnex, Vantage) stock price increase, compared to Telecom index

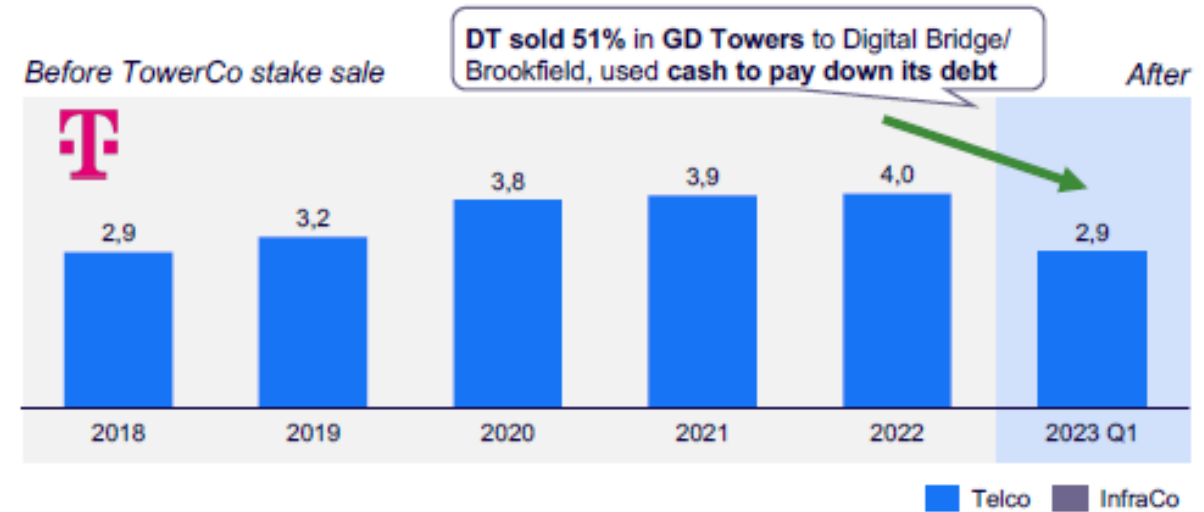
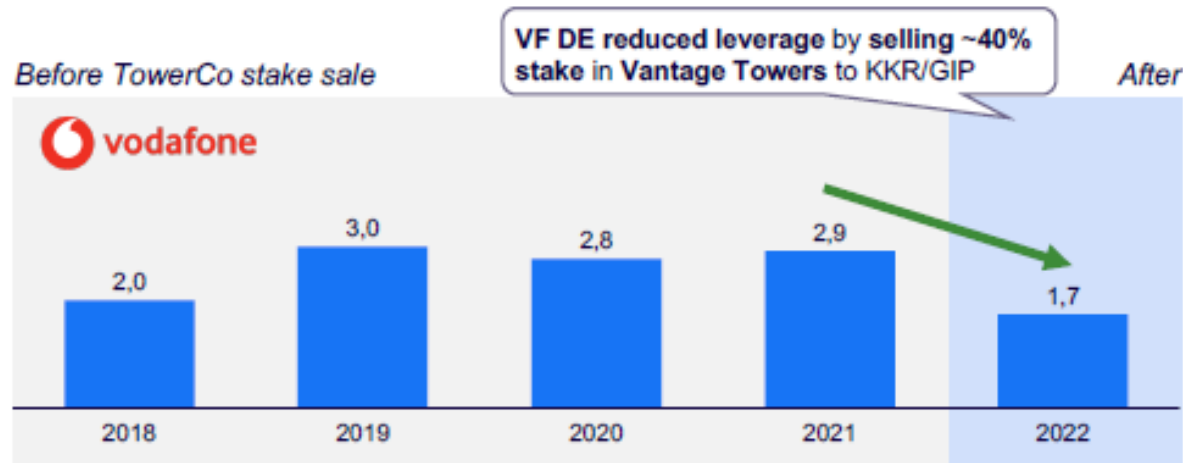
European telecommunications companies' 3-year stock performance (%)  
Stock price change from May 30, 2019, through May 30, 2022



Source: Vodafone

Data compiled May 30, 2022.  
Vantage Towers AG began trading on 18, March 2021.  
Source: S&P Global Market Intelligence

# Asset monetisation benefit: Carved-out TowerCo on higher EV monetized: revenue from sold stake spent for debt decrease (net Debt/EBITDA ratio)



Source: Refinitiv Eikon, DT Q1 2023 Report, Arthur D. Little

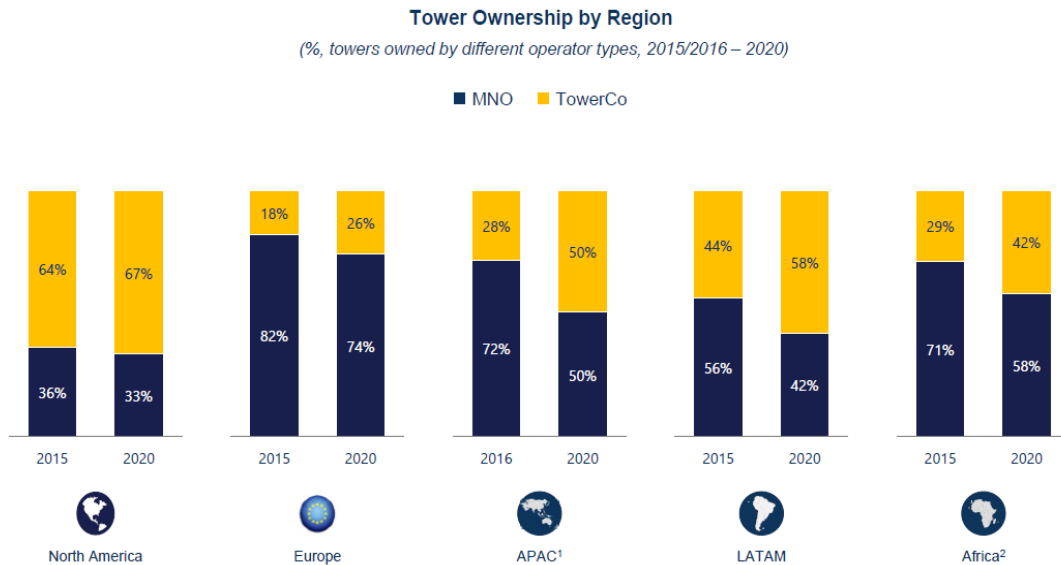
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Source: Arthur D. Little (ADL)

# Mobile site ownership (1: MNO versus TowerCo): increasing TowerCo dominance over integrated operators, but varies continents, countries

## World

### TowerCo Model Is Growing Across All Regions



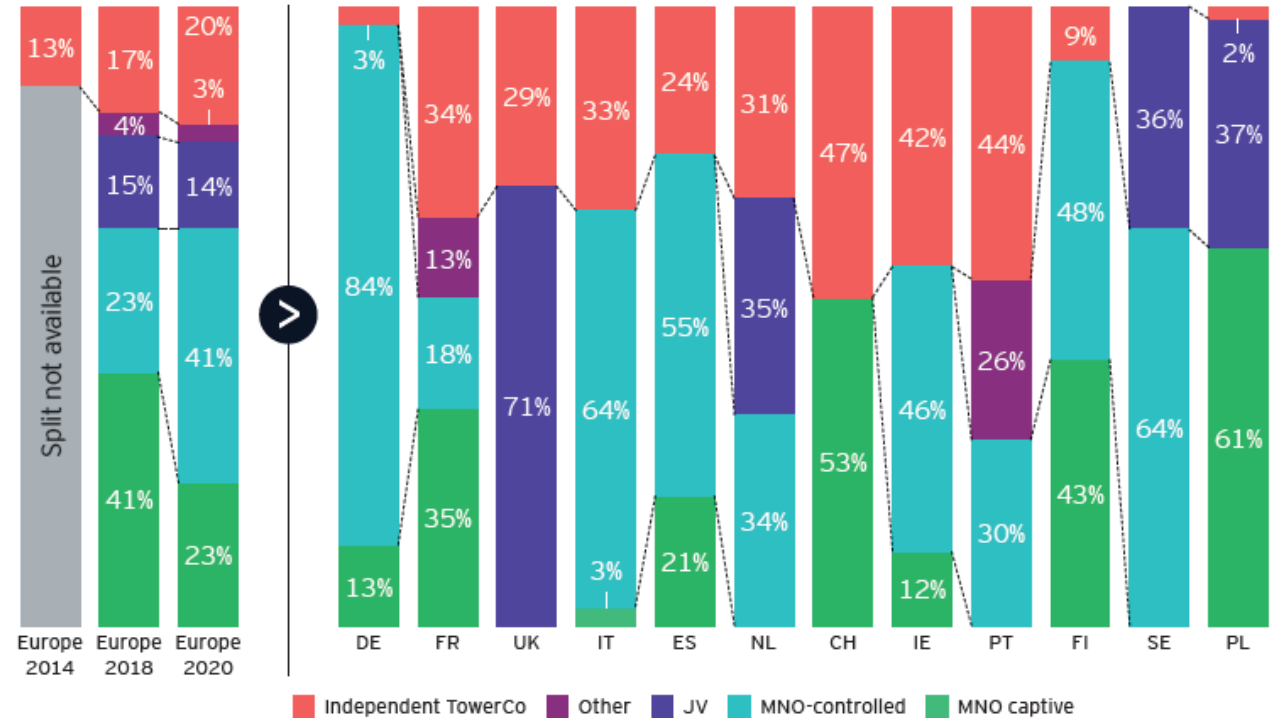
Notes:  
 (1) Data shown for APAC is a subset and excludes China; largest driver of mix shift is Brookfield's acquisition of Jio's towers  
 (2) Data shown for Africa is Sub-Saharan Africa  
 Sources: TowerXchange, Statista, Ovum, Altman Solon Research & Analysis



Source: EY, Towerexchange

## Europe

Figure 6: Share of towers help by TowerCos, by country/region, 2020 (%)

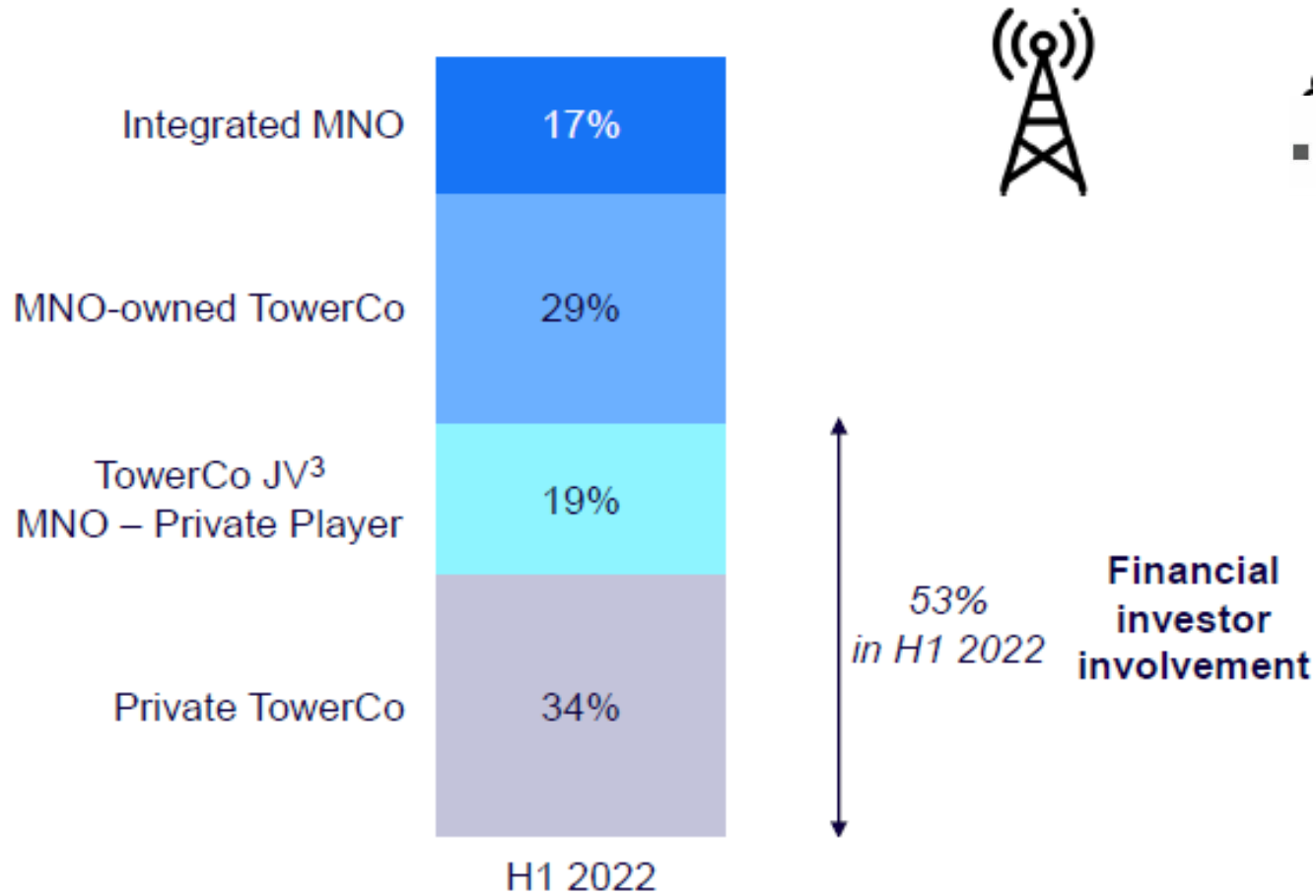


Note: "MNO captive" refers to towers owned by MNOs. "Other" refers to tower sites used for wireless networks, but not owned by MNOs, JVs or MNO-controlled or independent TowerCos (e.g., a water company with a portfolio of multiple water towers used for wireless networks); it excludes structures which are not (yet) used for wireless networks

Source: Towerxchange, EWIA members, broker reports, EY-Parthenon analysis, July 2020

# Mobile site ownership (2: Telecom vs Financial Investor): Private Equities dominance increase above 50%, compared to telecom operators

European<sup>1</sup> telecom sites split by ownership  
H1 2022, % of total sites



## Operating models in EU



Source: ADL

<sup>1</sup> Europe as per geographic definition i.e. including UK, European Union and European countries up to Russia <sup>2</sup>1

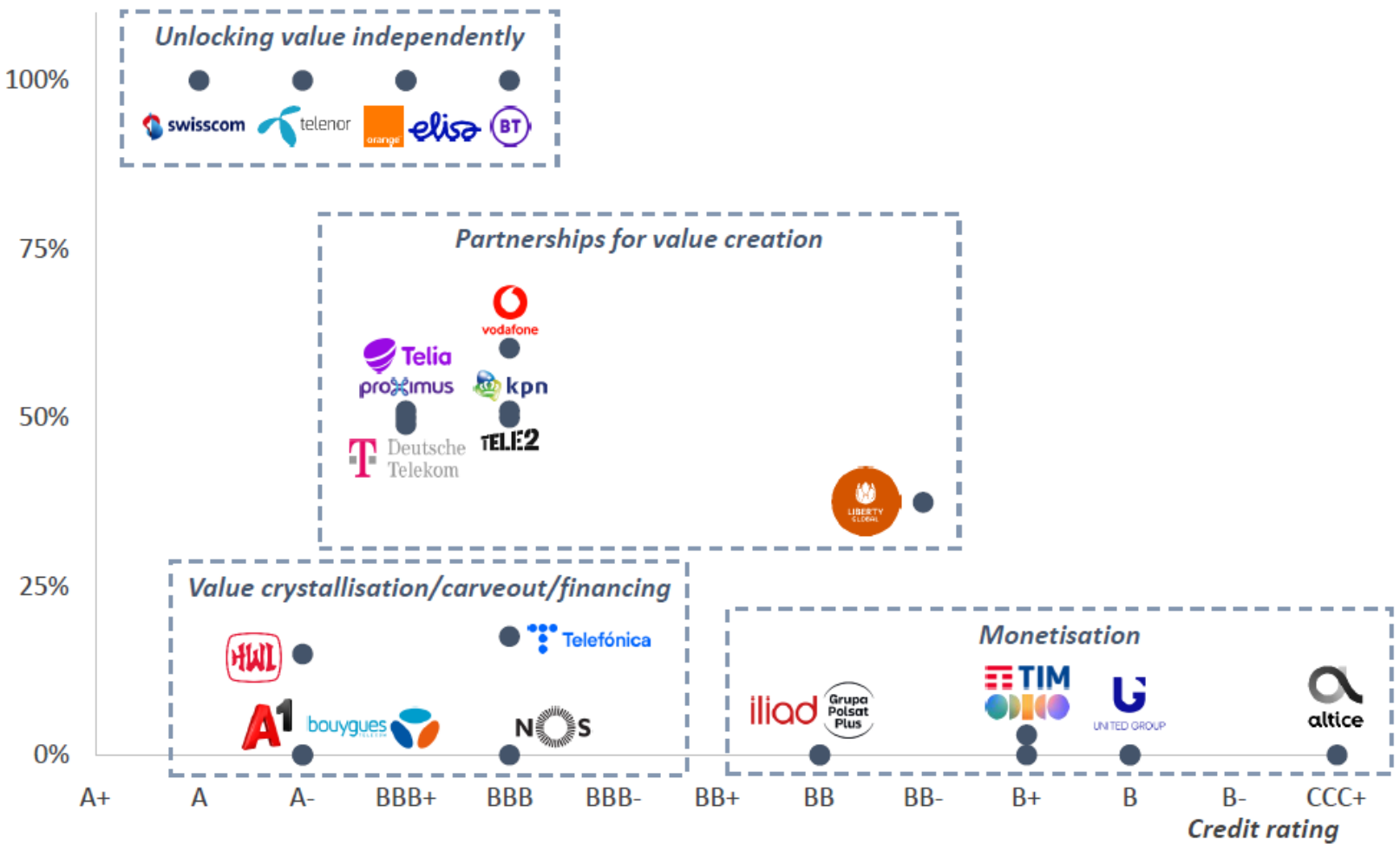
<sup>3</sup> includes DFMG (GD Towers) & Vantage Towers

Source: TowerXchange, company websites, Arthur D. Little

# TowerCos carve-out and PE partnership strategies are impacted by access to foreign capital (cost of debt)

European telcos' tower monetisation strategies have been shaped by both value creation and financing priorities

% weighted average ownership of telco's original tower portfolio



Source: Zadvorny, Alex

Sources: Company information, S&P, Fitch, Moody's, Scope ratings, press reports, A. Zadvorny estimates. Average ownership % is weighted by the estimated number of towers if ownership differs by market.

# Research methodology: theoretical model framework set to assess TowerCo carve-out contribution to efficient 5G rollout

TowerCo impact assessment framework			Mobile Network rollout stage	
			Matured Phase (Capacity, Brownfield),	Growing Phase (Coverage, Greenfield)
<b>Market Structure</b>	MNO	Concentrated		
		Competitive		
	MVNO	Limited/No		
		Competitive		
	TowerCo	Captive MNO		
		Neutral Host		

Source: Author's own summary

**Market structure and  
Network rollout stage (may very dynamically)  
influence the TowerCo value-add**

# MNO incentives related to TowerCo operation: efficiency from site consolidation and support active RAN (standalone, virtualization, open)

## Efficiency improvement

- *BAU level TowerCO* expected to *increase tenancy ratio*, which may lead to unit price decrease for the existing customer MNO
- *Transformation element* that relates to *network sharing led site consolidation*, where the decrease of number of physical location is the main driver - however this goal might be in contrast with TowerCO interest.
- If the passive asset level consolidation can not be performed, the *MNO side kept active asset optimisation* also can not be realized efficiently.

## Support growing activities

- Introduction of *standalone 5G network, virtualized network functions and open RAN architecture*.
- *Open RAN multivendor concept with disaggregation of hardware and software layers* might enable further hardware level consolidation in active element layer (if it has been not yet shared), on which different operators different software vendors can run parallel
- TowerCos scope mainly limited to passive assets, are *less incentivized to be a supportive partner in active network layer related initiatives or consolidation*.

# TowerCo incentives related to TowerCo operation: increase tenancy ratio, keep stable site numbers and simple operation w passive RAN

## TowerCo interest

- *grow or keep existing base station locations* with long term contracts including inflationary indexation
- improve asset utilization by *increasing tenancy ratio*
- keep simplicity in running business with focus on only long *useful lifetime passive assets*.
- Growing site number (coverage extension and increasing tenancy ratio): common MNO - TowerCo interest

## TowerCo interest limitations

- TowerCo partial interest to *avoid network sharing driven site consolidation* and
- keep out of scope more *complex active asset layers* with lower useful lifetime, despite of bring-in additional one third savings potential from active asset network
- *Cellnex Capital Market Day Strategy view: none of the MNOs' transform or grow initiatives* were on its agenda, like higher level network sharing involvement, go for active asset, assessment of standalone 5G rollout, network virtualization or open RAN



# Regulatory standpoints related TowerCo market development: no action required currently on these (dominantly) wholesale-only operators

## European Electronic Communication Code (EECC)

- BEREC latest *deregulation guidance* does not request mandatory mobile market definition and regulation
- Termination and roaming fees are set at a decreasing glide path at EU level, independently
- In a consequence, *no market defined, no official market analysis and no access obligations are imposed*, including any kind of asset divestiture.
- The MNOs based on pure business driven decision started *voluntary asset separations*

## National Regulatory Authority (BEREC)

- TowerCos generally supports investments and *do not pose a competition challenge*. (WIK-Consultant)
- In some cases, debates might be risen on *contracting terms* and condition for access to its infrastructure and the *ownership structure* might add concerns around potential discrimination.
- NRA might consider a market analysis process, *define separate market for towers* to examine context of concentrations or ex-ante market regulation (impose SMP, symmetric regulation geographic differentiations).

## National Competition Authority

- *Horizontal mergers: Cellnex* neutral host player wanted to merge Hutchinson 3K mobile operator's carved-out tower asset portfolio in Austria, Denmark, Ireland, Italy, Sweden, and the UK.
- *Defined relevant markets* for national hosting services on passive infrastructure (macro sites and micro sites) to assess potential competition impacts on prices, investments and quality.

# Research findings: TowerCos contribute only in growing network phase and competitive market structures, to efficiency improvement in 5G rollout

TowerCo impact assessment framework			Mobile Network rollout stage	
			Matured Phase (Capacity, Brownfield),	Growing Phase (Coverage, Greenfield)
Market Structure	MNO	Concentrated		
		Competitive		
	MVNO	Limited/No		
		Competitive		
	TowerCo	Captive MNO		
		Neutral Host		

Source: Author's own summary

## legend

The coloring shows the assessment of TowerCO operation's impact of efficiency improvement for 5G rollout.

- The darker color refers to higher impact,
- The lighter for slighter impact, and
- The light red represents a potential negative impact for cost efficient improvement in rollout.

# Conclusion: TowerCos with passive RAN-only focus, MNO-wing ownership in matured network phase has no positive value-add

## Matured Network stage, concentrated market

- TowerCo as a new element in the mobile service providing value chain *has neutral or even slightly negative impact* due to TowerCO and MNO interest might be disconnected,
- TowerCo not incentivized to enter into bigger scale efficiency transformation as *physical site consolidation*.
- Furthermore as TowerCos mainly only passive asset focused active asset consolidation benefits are also scoped-out from them.

## Growing Network stage, competitive market






- TowerCos are *incentivized in shared new rollout* as long as it increases its physical locations with higher tenancy ratio.
- TowerCo brings a new value-chain element, the *radio access network as a service* that creates additional value in case of competitive and active MVNO and Neutral Host TowerCos markets
- Additional value created for all stakeholders (TowerCO, MNO)

## Recommendation

- *Open RAN with hardware and software disaggregation, as well as multivendor concept* offers a window of opportunity to expand TowerCO operation for *active asset hardware segment at least* with COTS (Commercial of the Shelf) assets, where MNOs can run their own software.
- This might be beneficiary *both for TowerCos and MNOs,*

# TowerCo carve-out just finished, but in-land market consolidation might come-up in the horizon

Potential European towerco consolidation outlook: Top-5 market presence

	Sites, #k	Cellnex <sup>(1)</sup>	Vantage Towers <sup>(2)</sup>	GD Towers <sup>(3)</sup>	Totem <sup>(4)</sup>	ATC Europe	INWIT	CTIL	TDF <sup>(5)</sup>	BT <sup>(6)</sup>	Phoenix Tower <sup>(7)</sup>	WIG
 Ger			19.8	36.2		15.1					0.2	
 Fra		23.9			19.8	4.4			8.0		3.6	
 Esp		8.8	8.4		7.4	12.0						
 Ita		22.6					24.5				2.4	
 UK		13.3						15.1		[6-7] TBD		3.3
Other Europe		37.1	18.1	7.3							3.5	
<b>Total in Europe</b>		<b>105.6</b>	<b>46.3</b>	<b>43.4</b>	<b>27.2</b>	<b>31.5</b>	<b>24.5</b>	<b>15.1</b>	<b>8.0</b>	<b>[6-7]</b> <b>TBD</b>	<b>9.7</b>	<b>3.3</b>

Source:  
Zadvorny Alex

Sources: Company information, A. Zadvorny estimates.  
 1. Pro forma for the ongoing divestitures in Ireland and Austria, without assuming who acquires the Austrian business. 2. Excluding CTIL (50%) and INWIT (33.2%).  
 3. Estimate, pro-rated for the BTS committed in 2022. 4. Estimated split by market. 5. Active telecom sites. 6. Assumption based on MBNL and Three UK sites.  
 7. Pro forma for the pending acquisition of Cellnex Ireland.

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**Thank you for your attention!**

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