



Infrastructure Sharing “Opportunities and Challenges”

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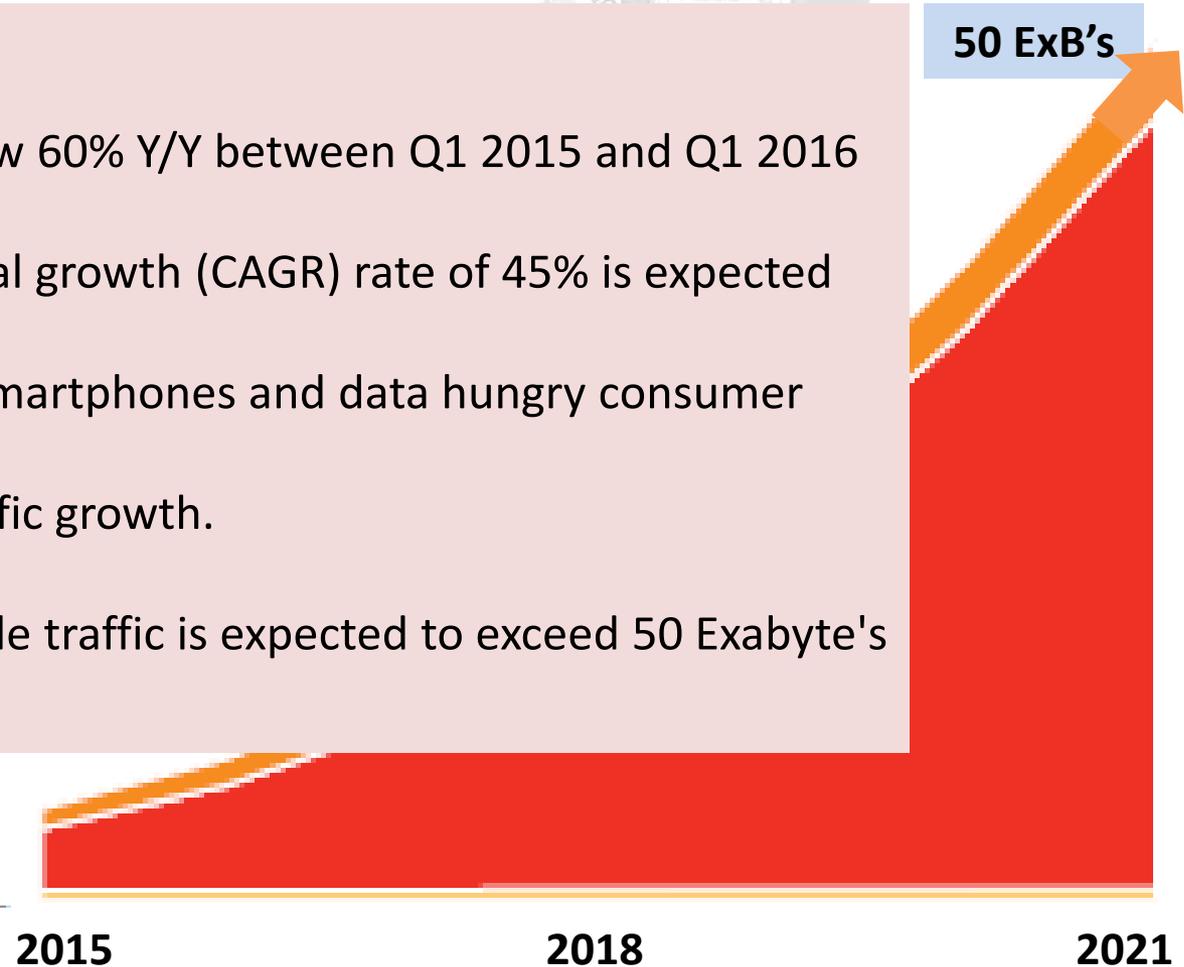


Introduction

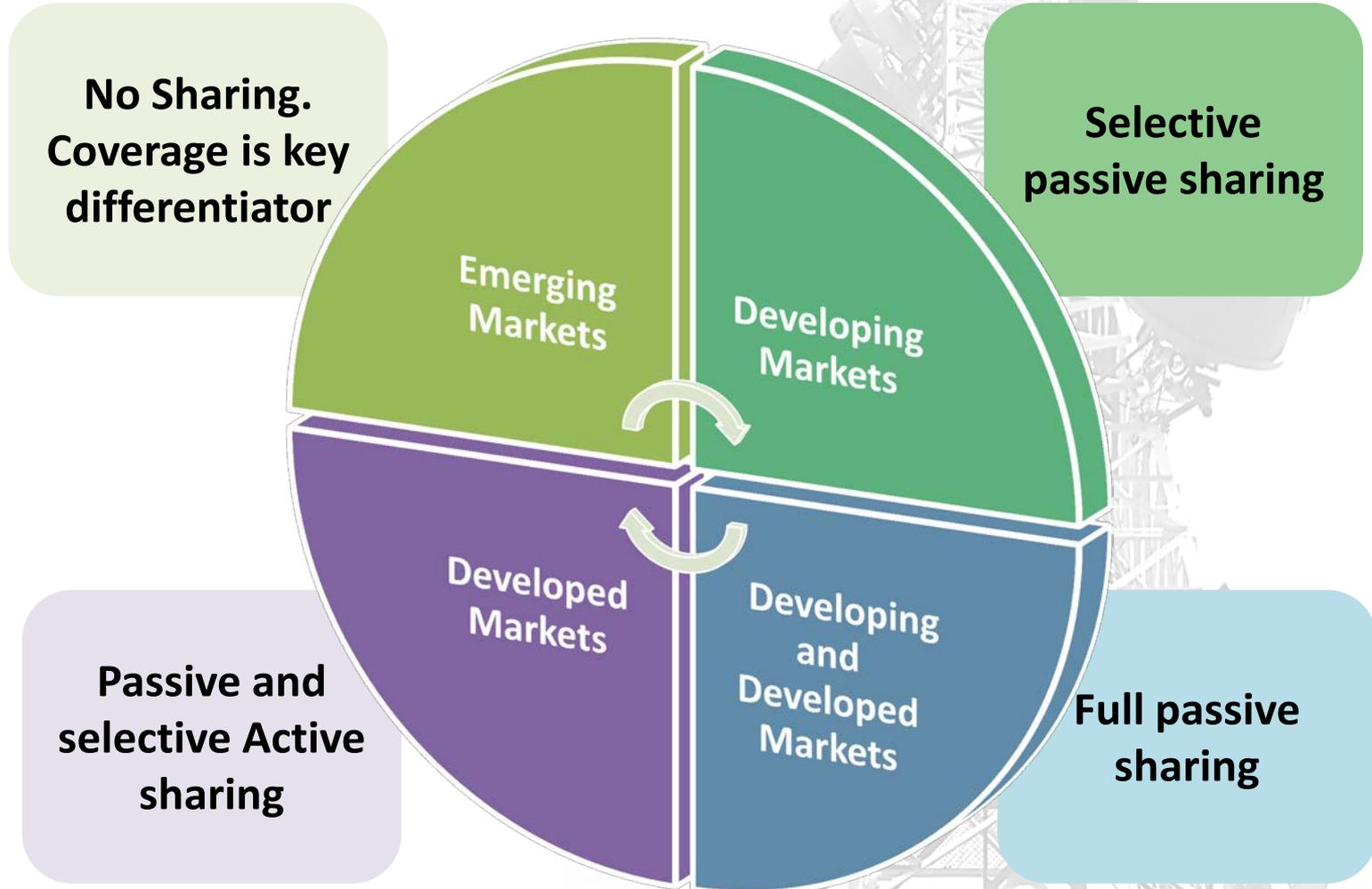
- The transformation of the telecoms infrastructure ecosystem began in the U.S. in the mid nineteen nineties where independent Towercos started acquiring passive infrastructure from MNO's
- The independent Towerco model promotes infrastructure sharing on an open access commercial basis
- MNO's tower divestment strategies have been partly driven by the competitive telecoms environment and the need for external funding to further invest in their networks
- Worldwide there are approximately 3,4m telecom towers of which an estimated 65% comprise shared infrastructure
- Towercos provide MNO's and other operators with specialized value added cost-sharing infrastructure solutions allowing them to focus on their core business

Global Industry Market Drivers

- Mobile data traffic grew 60% Y/Y between Q1 2015 and Q1 2016
- An compounded annual growth (CAGR) rate of 45% is expected
- The increased use of smartphones and data hungry consumer drives mobile data traffic growth.
- By 2021 monthly mobile traffic is expected to exceed 50 Exabyte's

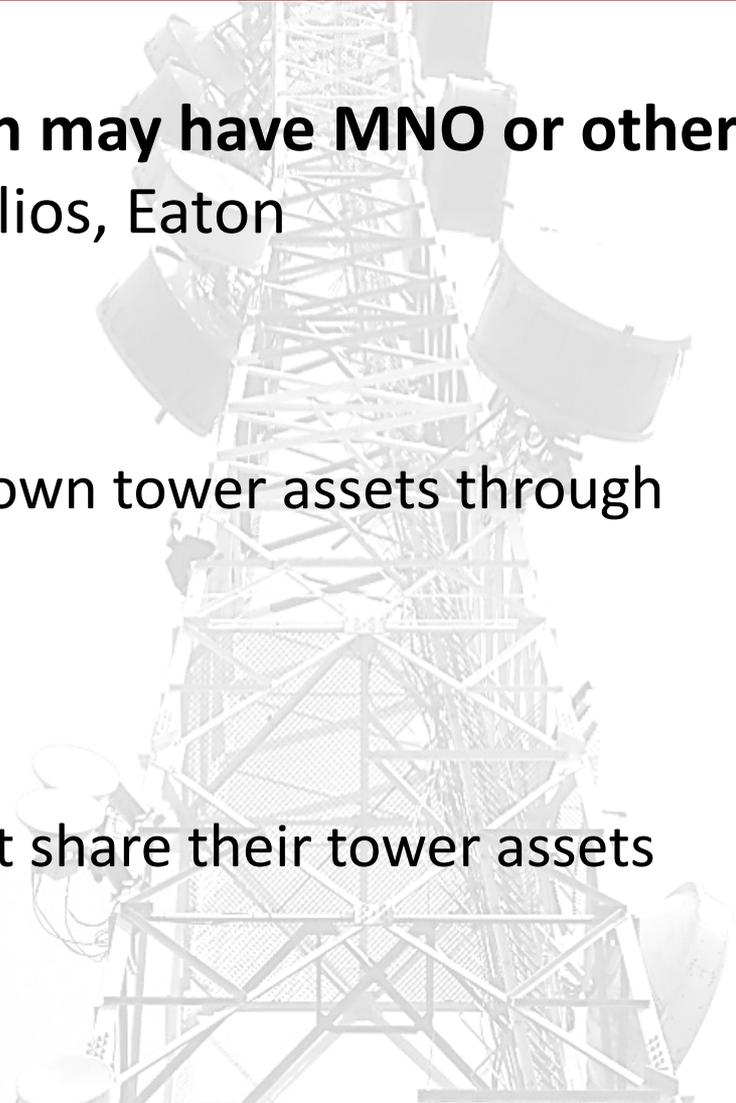


Sharing market overview

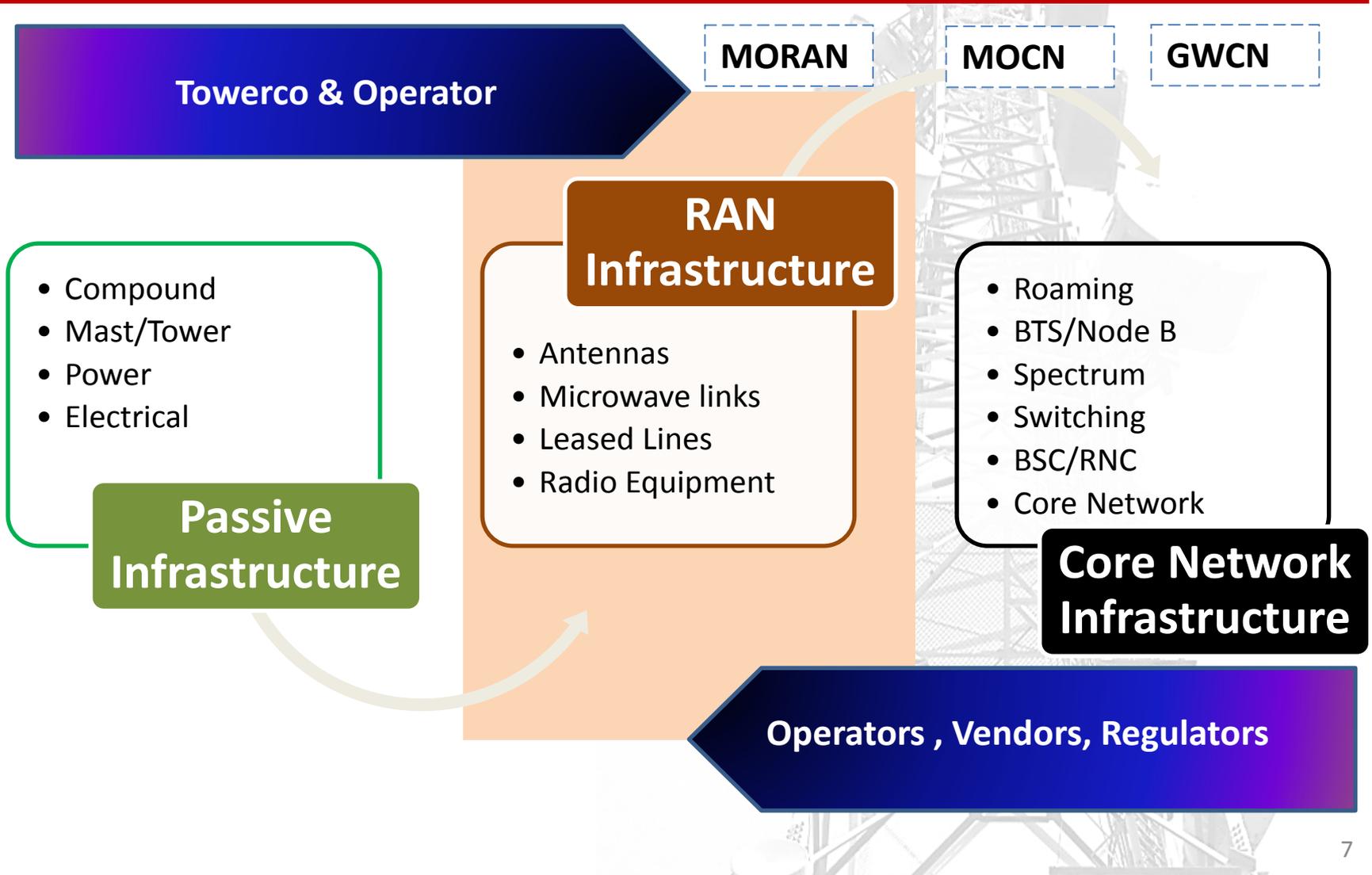


Different tower owners

- **Independent Towercos which may have MNO or other JV partners, e.g. ATC, IHS, Helios, Eaton**
- **Mobile Network Towercos**
MNOs that manage and lease own tower assets through wholly owned subsidiaries
- **Mobile Network Operators**
MNOs that own and but do not share their tower assets

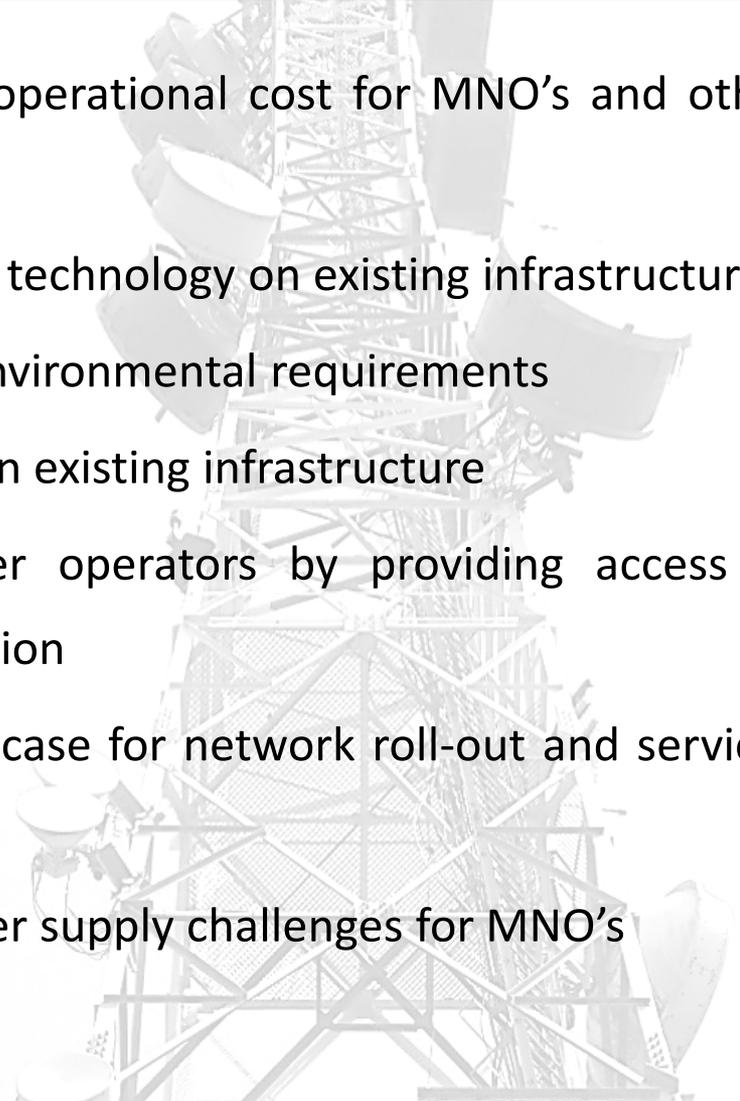


Passive and Active Sharing Classification



Benefits of Passive Infrastructure Sharing

- Reduction of capital expenditure and operational cost for MNO's and other operators
- Quick adoption and deployment of new technology on existing infrastructure
- Protects the "city skyline" and meets environmental requirements
- Rapid deployment of network roll-out on existing infrastructure
- Reduces barriers to entry for smaller operators by providing access to infrastructure thus stimulating competition
- Promotes a more sustainable business case for network roll-out and services to rural or underserved communities
- Minimizes exposure to energy and power supply challenges for MNO's



Market Opportunities: Passive Infrastructure Sharing

- **Mature networks**

MNO's focus on quality of service, adding new technology layers and capacity rather than coverage. Access to available infrastructure offer capacity sites solutions.
- **Growing telecoms industry**

Subscriber growth drives network expansion. Towerco's have build to suit capabilities that support network expansion
- **Under developed regions (rural areas)**

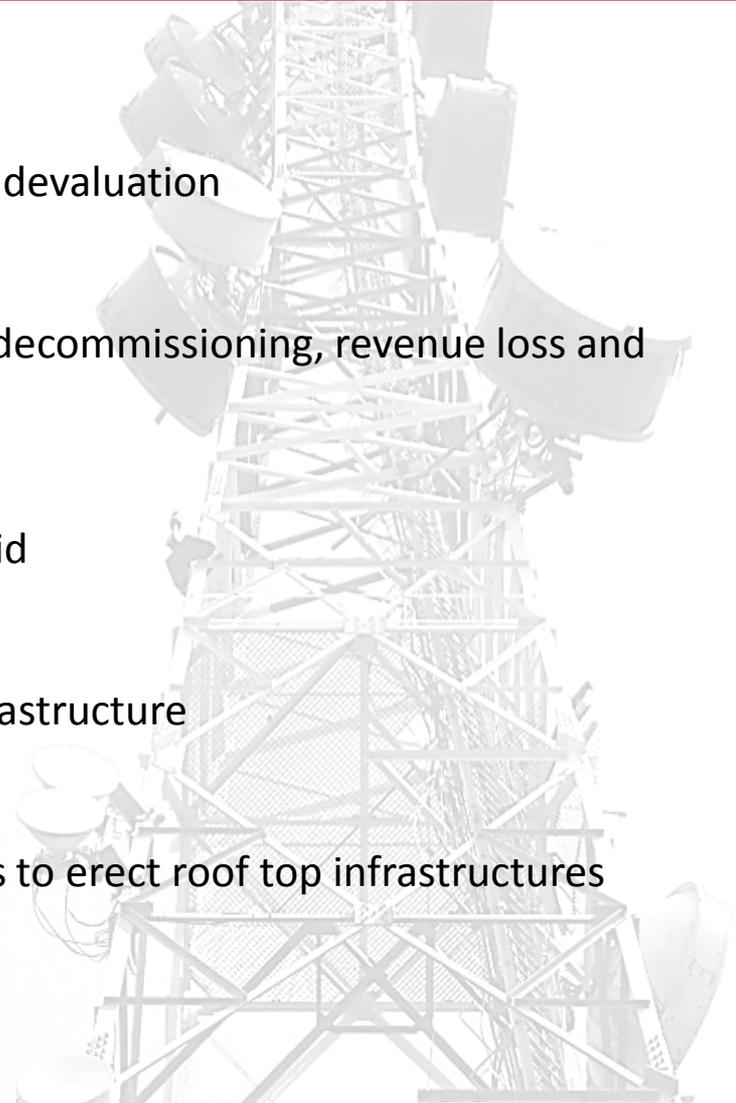
Low usage areas generally lead to unprofitable investments for MNO's. Shared infrastructure can introduce cost savings, allowing viable network expansions to these areas
- **New entrants building scale**

Towers take time to build, new entrants can increase speed to the market making use of existing available infrastructure
- **Permitting policies**

Permit and environmental policies prevent or delay the build of new towers stimulating collocation applications as network planners plan around utilising existing infrastructure

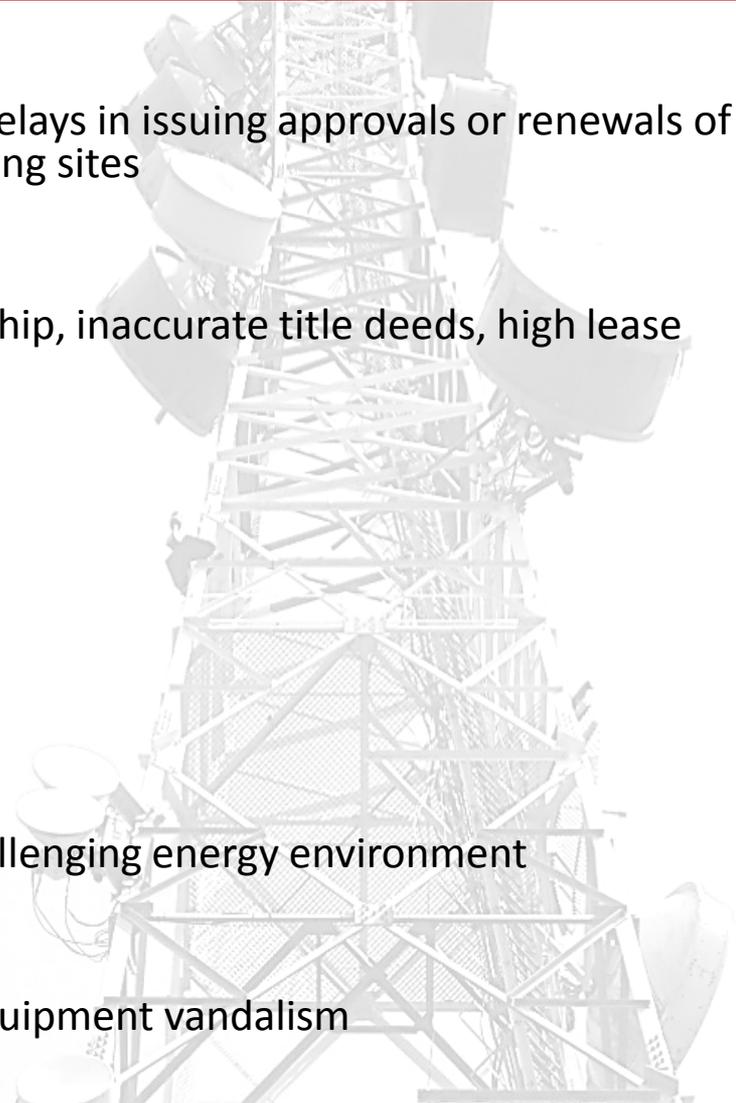
Market Challenges: Passive Infrastructure Sharing

- **Funding and Investments**
Foreign investment erosion due to currency devaluation
- **Regulatory**
Changes to regulations could lead to tower decommissioning, revenue loss and negatively impact on the consumer
- **Energy**
Quality and availability of national power grid
- **Structures**
Capacity and available space on existing infrastructure
- **Buildings & Infrastructure**
Lack of engineering data related to buildings to erect roof top infrastructures



Market Challenges: Passive Infrastructure Sharing

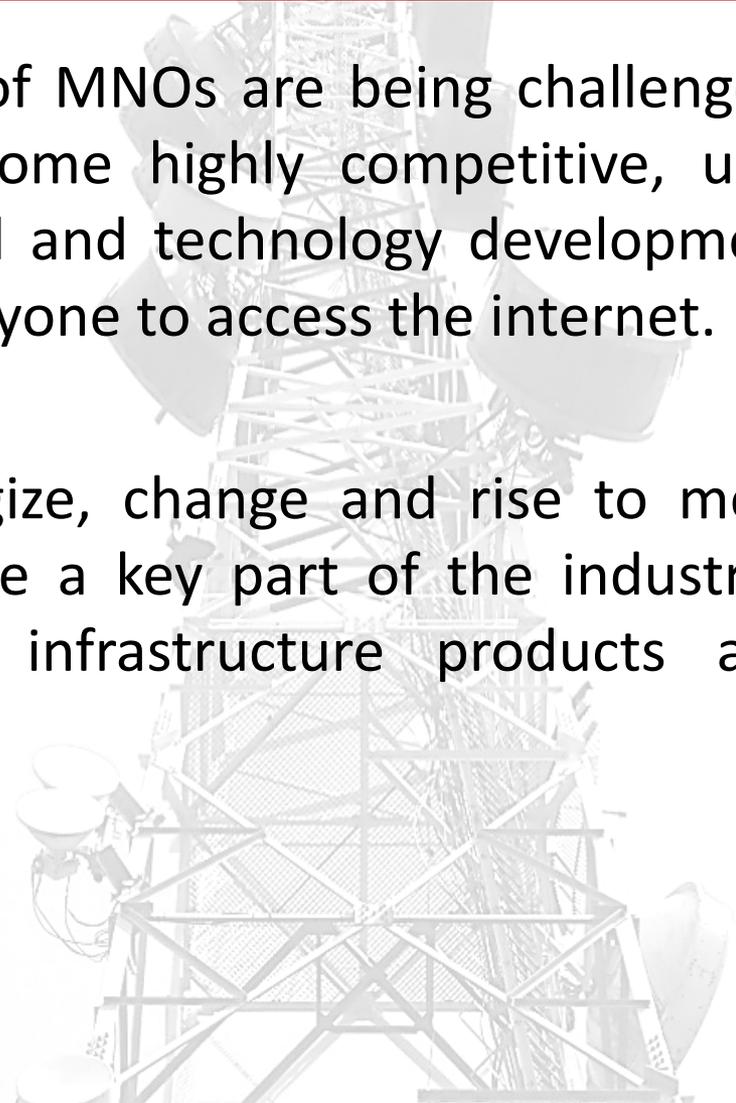
- **Permitting**
Number of approvals, long lead times and delays in issuing approvals or renewals of permits for new sites and upgrades on existing sites
- **Real Estate**
Property challenges associated with ownership, inaccurate title deeds, high lease renewal costs and community demands
- **High Operational Cost (brought on by..)**
 - Poor or lack of grid power
 - Currency devaluation
 - High country inflation
 - Increased permitting fees
- **Service Level Agreement**
Achieving service level agreements in a challenging energy environment
- **Security**
Site security, vandalism, theft of fuel and equipment vandalism



To conclude

The traditional business models of MNOs are being challenged. Markets have matured and become highly competitive, user behaviour patterns have changed and technology development has created opportunities for everyone to access the internet.

As MNO's and regulators strategize, change and rise to meet these challenges Towercos will be a key part of the industry's value chain offering specialist infrastructure products and services.



Thank You

Presentation source data: America Tower Corporation, GSMA, TowerX Issues 15&16, UTI, MISTO, Ericsson 2016, Analysis Mason, Orange, NCA and various publicized papers.