

Bridging the regulatory gap

How modern licensing and spectrum policy enable connectivity

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The regulatory gap: technology is ready, frameworks are not

The barrier to universal connectivity is no longer technical. It is regulatory.

2.6 billion people unconnected: NGSO can reach them

LEO constellations already deliver broadband at 20–40 ms latency to remote and rural areas. The technology works. In most of these markets, national licensing hasn't caught up.

In many markets, regulation is still the binding constraint

Satellites are overhead. Operators still can't offer services because national licensing frameworks haven't been updated to accommodate satellite broadband.

D2D: the next frontier, already stalled

Standard smartphones can now connect directly to LEO satellites. Regulatory frameworks do not yet exist in most jurisdictions.

~10,000 LEO satellites

The largest expansion of satellite capacity in history is underway, much of it orbiting over populations that cannot yet legally receive it. The bottleneck: outdated regulatory frameworks.

What modern licensing unlocks — NGSO and D2D capabilities

When regulatory frameworks work, these are the connectivity outcomes that become possible for underserved populations.

Coverage without infrastructure	Direct-to-Device (D2D)	Resilience and emergency response
Where licensing allows it, NGSOs serve polar regions, remote islands, maritime zones, and rural areas with no terrestrial alternative, turning universal coverage from an aspiration into an operational reality.	Where NTN spectrum-sharing frameworks exist, D2D allows any standard smartphone to connect directly to a LEO satellite, reaching the unconnected without terminals, towers, or ground infrastructure.	Where ESIM frameworks permit cross-border operation, NGSO networks maintain connectivity when terrestrial networks fail, providing the only communication link in disasters, conflicts, and climate emergencies.

Regulatory barriers limiting NGSO and D2D deployment

Structural barriers across market access and spectrum — each a product of frameworks designed for a different technology era.

Foreign ownership and local presence requirements

Local ownership thresholds and mandatory incorporation prevent NGSO operators from establishing the legal presence needed to offer services, particularly in developing markets with limited regulatory capacity.

Absence of class or blanket licensing

Individual frequency licenses remain the norm. Getting approval takes 6 to 18 months per market, pricing operators out of smaller and lower-income countries and leaving populations unserved.

Local Gateway

Localisation requirements undermine NGSO network economics. Implementation of local lawful interception capabilities comes with a cost.

Earth Stations in Motion (ESIM)

ESIM terminals on aircraft, vessels, and vehicles cross jurisdictions continuously. Most national frameworks still require static, location-specific licenses, making lawful cross-border ESIM operation legally uncertain.

EPFD limits — a national regulatory lever

Decades-old power limits shape how much NGSO capacity a market can use — some administrations prefer modernising them nationally, without weakening GSO protection.

What the limits do

Article 22 of the ITU Radio Regulations caps NGSO emissions (EPFD) to protect GSO networks. To comply, satellites lower power and switch off near the GSO arc, reducing the broadband capacity usable over a market.

Set for a different era

The limits were fixed at WRC-2000 around a few assumed constellations, before beam-steering and adaptive coding existed. ITU-R Working Party 4A is now studying them, reporting to WRC-27.

A national lever exists

Countries don't have to wait for global agreement. They can update EPFD rules nationally, switching from rigid limits to a more flexible, protection-based approach, maintaining GSO protection while unlocking more usable capacity.

Overcoming the barriers — licensing, ESIM and D2D

Two reforms address market entry; two address cross-border operation. Together they create a complete enabling environment.

Class and blanket licensing

Replace individual landing licences with general authorisations aligned with ITU Radio Regulations.

Reduces time-to-market from years to weeks. Creates a predictable, investable environment.

This model has been successfully implemented in multiple major regulatory jurisdictions.

ESIM and D2D frameworks

ESIM Licensing:

The baseline for ESIM licensing to enable lawful, cross-border terminal operations.

Direct-to-Device:

Establish NTN spectrum-sharing and roaming frameworks aligned with 3GPP Release 17 standards.

A regulatory roadmap for universal NGSO and D2D access

Five targeted reforms, each addressing a distinct barrier.

01 Reform foreign ownership rules

02 Adopt class or blanket licensing

03 Replace gateway mandates with risk-based rules

04 Modernise terminal and ESIM approval

05 Modernise EPFD limits nationally