



Aproches for financing broadband expansión

ITU Policy and Economics Colloquium (IPEC 2020)

6 October 2020

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Investment gap and demand gap (Europe)

Gigabit society targets – by 2025

Fixed deployment

- Access to at least 100 Mbps downlink
- All European households, urban or rural
- Upgradable to Gigabit speed

5G deployment

- Uninterrupted coverage for all urban areas and all major terrestrial transport paths by 2025
- (by 2020 at least one major city in every member state to be 5G-enabled)

Annual investment gap estimated by European Commission

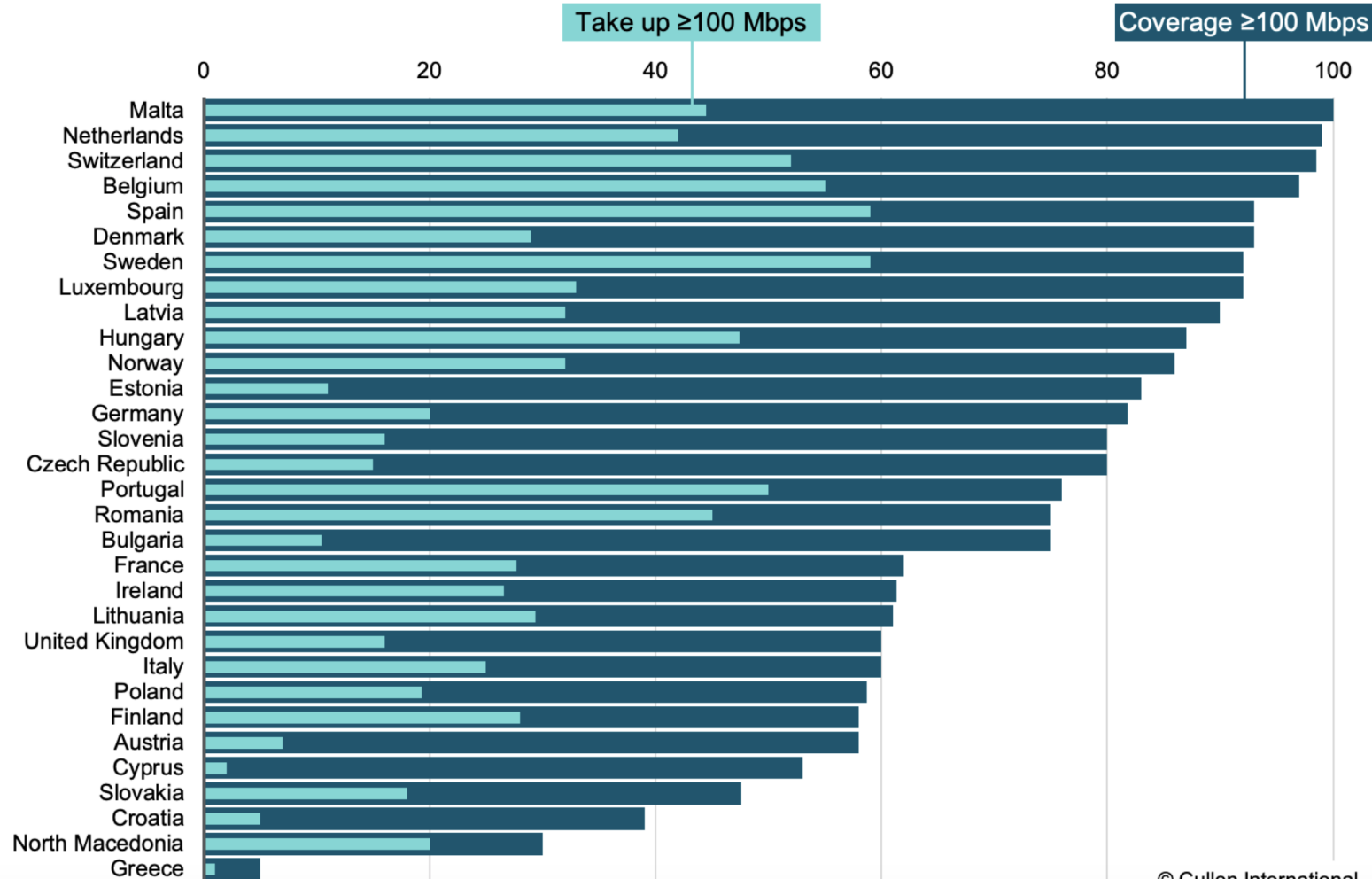


Source: [communication](#)
on a digital strategy for
2020-2025 of Feb 2020

NB. Annual capex of European telcos around €45bn/year

Or is it a demand gap?

Take up of high-speed broadband of at least 100 Mbps has significant potential for growth with today's network coverage, % households (Cullen International)

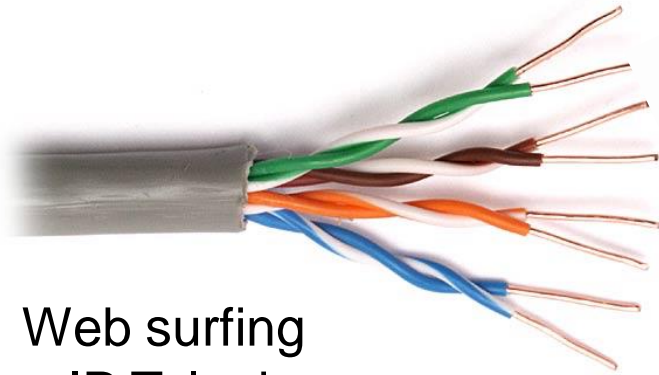


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Is it a demand gap?

Copper vs. fibre

Very high speed: Supply vs. Demand



Web surfing
+ IP Telephony
+ HD TV
+ email
+ cloud access
+ Netflix
+ Deezer
+ ...

Well below VDSL speed



8K TV (Ultra HDTV)
+ Football matches on VR
+ Holography
+ Self-created content
+ Millennials use of IT
+ Moore's law
+ ...

Higher speed needed

It's a problem of externality

Some telcos are reluctant to fully invest in FTTH today because they don't see a clear demand from users (imperfect risk sharing)



The role of regulation

Public authorities must take actions

- to reduce imperfect information
(e.g. road maps, demand stimulation)
- to share the risk more evenly

The love affair of financial markets for mobile towers

Divestment of passive elements

- Mobile operators are spinning off their towers
- *Sell and lease back*

European Telecom stocks

EURO STOXX® Telecommunications



Heading Sub-Zero

Global pile of bonds with yields below 0% is climbing steadily



Source: Bloomberg



la Charente
Maritime
DÉPARTEMENT GÉNÉRAL

RD 735
CREATION
DE VOIES

Cellnex stock price



Investment Gap and Demand Gap (Americas)

Where is the gap in the Americas?

Supply side
gap

Demand side gap

Investment

Coverage

Affordability

Digital skills

Local
content

The economic contribution of broadband, digitization and ICT regulation

- **Economic impact of fixed and mobile broadband:**
 - ↑ 1% Fixed BB penetration -> ↑ 0.08% in GDP
 - ↑ 1% Mobile BB penetration -> ↑ 0.15% in GDP
- **The economic impact of digitization:**
 - ↑ 1% in the digital ecosystem development index -> ↑ 0.13% in GDP
 - 0.14 in OECD countries and 0.10 non-OECD
 - the digital ecosystem has an economic impact on productivity
- **The impact of policy and regulatory framework on the growth of markets for digital services and applications:**
 - ↑ 1% in the ICT regulatory tracker -> ↑ 0.03% in the ecosystem development index
 - Regulatory regime has the greatest impact -> national plan with focus on broadband development

GSR's vectors for digital transformation



GSR-20 Best Practice Guidelines

The gold standard for digital regulation

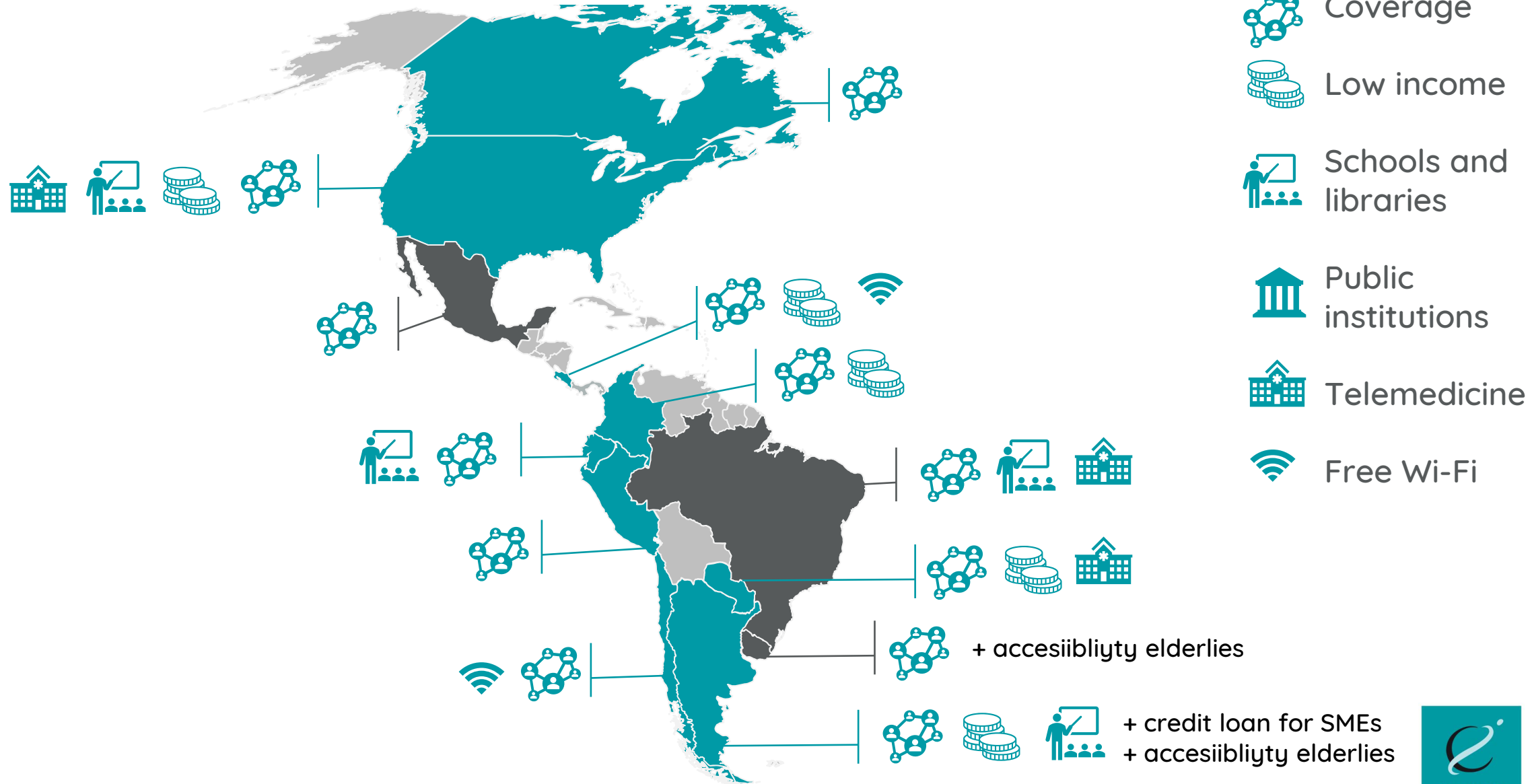


Connectivity: targeted and innovative strategies to increase universal broadband access and lower the costs of communication will narrow national market gaps

Public funding: USF and backbone network

Country	USF programmes	Backbone
Argentina	Demand and offer	State-owned operator, Arsat Refefo
Brazil	(not actively used)	State-owned operator, Telebras
Chile	Demand and offer	Fibra Óptica Nacional (FON), Wom
Colombia	Demand and offer	Proy. Nac. Fibra Optica (PNFO)
Costa Rica	Demand and offer	State-owned perator, ICE
Ecuador	Mostly demand side	State-owned operator, CNT
Mexico	No fund	State-owned operator, CFE
Paraguay	Mostly offer side	BB plan
Peru	Mostly offer side	RDNFO + regional
Uruguay	No fund	State-owned operator, Antel

Active USF and other connectivity programmes



Backbone networks



Refefo: +33,000 km +1,300 towns connected. Public funds + USF **ARSAT**



Telebras: +30,000km, to be privatised  **TELEBRAS**



FON: ~10,000 186 towns. Subsidies to private operator 



PNFO: ~20,000km 786 towns. Public funds



RDNFO: >13,000km, 180 provinces. Public funds



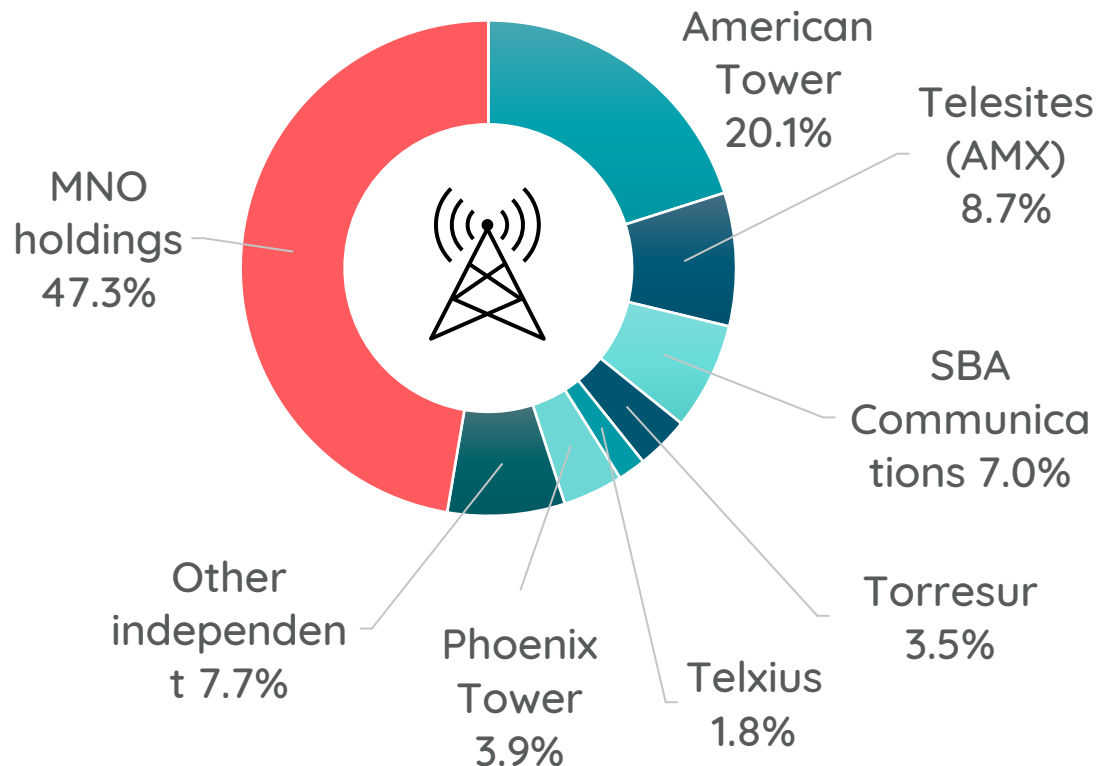
Antel: >11,770km, most homes connected 

Where is the private funding on connectivity?

Connectivity solutions/players	Local actors	Incumbents	New entrants	Investment banks
Fixed networks	Community networks	ISPs, Telcos		
Wholesale networks		Submarine cables, IpT (MNOs)	Submarine cables (Google, FB), Altan, TowerCos, IpT (FB)	IpT Peru (CAF, IADB invest)
Mobile networks	Community networks	MNOs	MVNOs	
Unlicensed/shared	Community networks, Local ISPs (white spaces)		Express WiFi	
HAPS			Loon, Haps Mobile	
Satellite LEO		Telesat	SpaceX	
Satellite GEO		Echostar, Intelsat		

TowerCos: a new dynamism in the infrastructure market

Latin America and Caribbean Tower Ownership Q1 2019



- American Tower and Phoenix acquiring telco assets from Telefonica and Entel
- Market valuation of the TowerCo spin-offs is **2 or 3 times higher** than the original telecom companies
 - America Movil/Telesites
 - Telefonica/Telxius

Internet para Todos Peru: joint venture to expand coverage



- A joint venture of an MNO, an OTT and two investment banks.
- Regulatory figure of "wholesale rural carrier" (OIMR in Spanish)
- General goal: deploy mobile broadband to cover 6 million people (or 18% of the population) without mobile coverage or covered with 2G service.

- **Achievements:** connected >10,000 communities covering 1.7 million people
- **2020 Goal:** 13,000 communities covering 2.3 million people to mobile internet.
- **New partnership:** with Satellite operator Gilat Networks Perú to cover 1,000 sites. Goal: provide 4G to 3,000 communities. Novelty: using also public investment from Pronatel.



- Approaches to eliminate the gaps:
 - funding model? Public, private and mixed
 - technology? All, technology Neutral
 - operator? Explore partnerships
 - Best regulatory model? One that promotes innovation
- Challenges: Sustainability and affordability of the solutions, efficient use of funds, coordinated effort
- PS: do not forget about digital skills and engagement with local communities



Thank you!

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