

The background is an abstract composition of overlapping, semi-transparent geometric shapes in various shades of blue and purple. The shapes create a sense of depth and movement, with some appearing as sharp planes and others as soft, blurred areas. The overall effect is a modern, digital aesthetic.

GSMA Ministerial Programme

GSMA
Ministerial
Programme

#MWC24MP

Spectrum Towards 2030: Capacity and Affordability

Welcome Remarks

Luciana Camargos
Head of Spectrum
GSMA

Moderator

Yishen Chan

Director, Spectrum, APAC

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WRC-23 and Beyond

Eng. Tariq Al Awadhi

Executive Director Spectrum Affairs

TDRA

UAE

TDRA

هيئة تنظيم الاتصالات والحكومة الرقمية
TELECOMMUNICATIONS AND DIGITAL
GOVERNMENT REGULATORY AUTHORITY

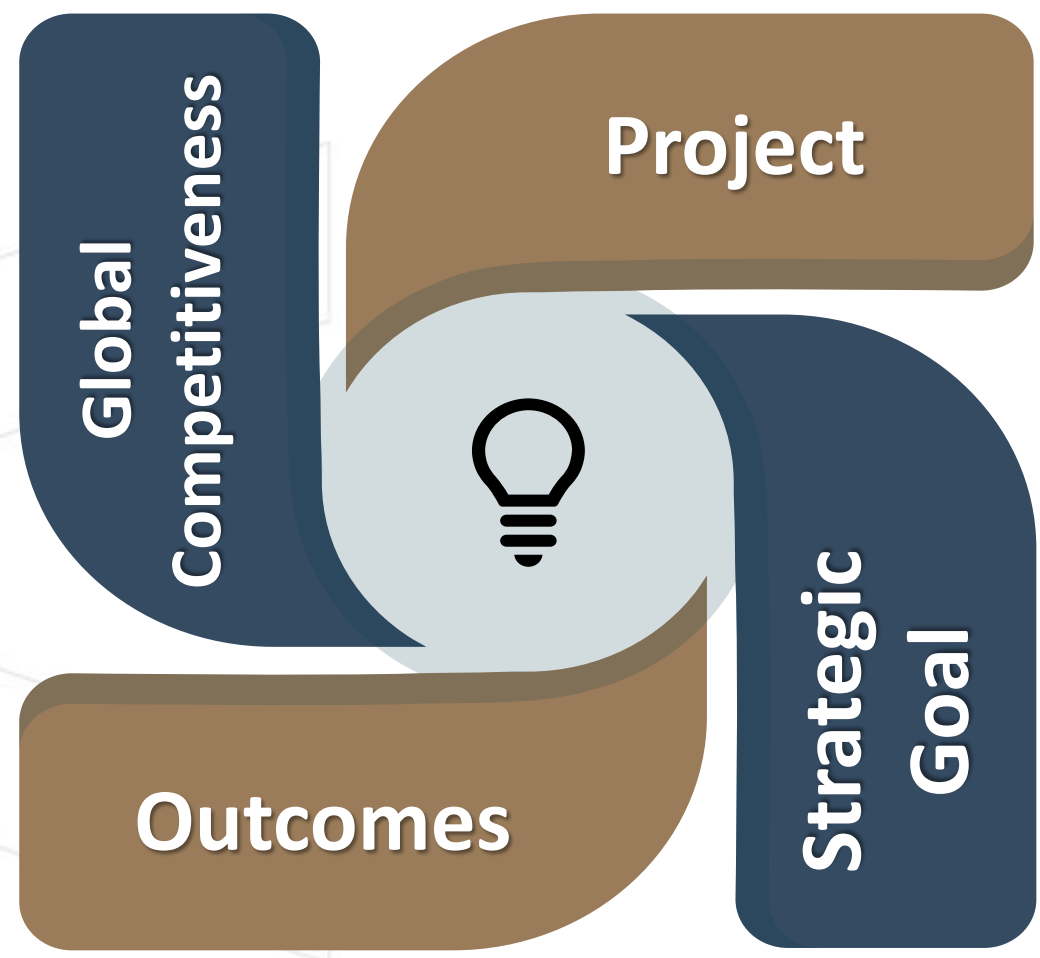


Spectrum Towards 2030: WRC-23 & Beyond: Capacity & Affordability

5G Deployment Index

Country	Rank
 Switzerland	1
 South Korea	2
 USA	3
 United Arab Emirates	4

IMT 2020 



1st Strategic Goal

Develop a fair regulatory environment for the ICT sector in the UAE, to enhance competitiveness and effective sustainability 

5G Strategic Plan

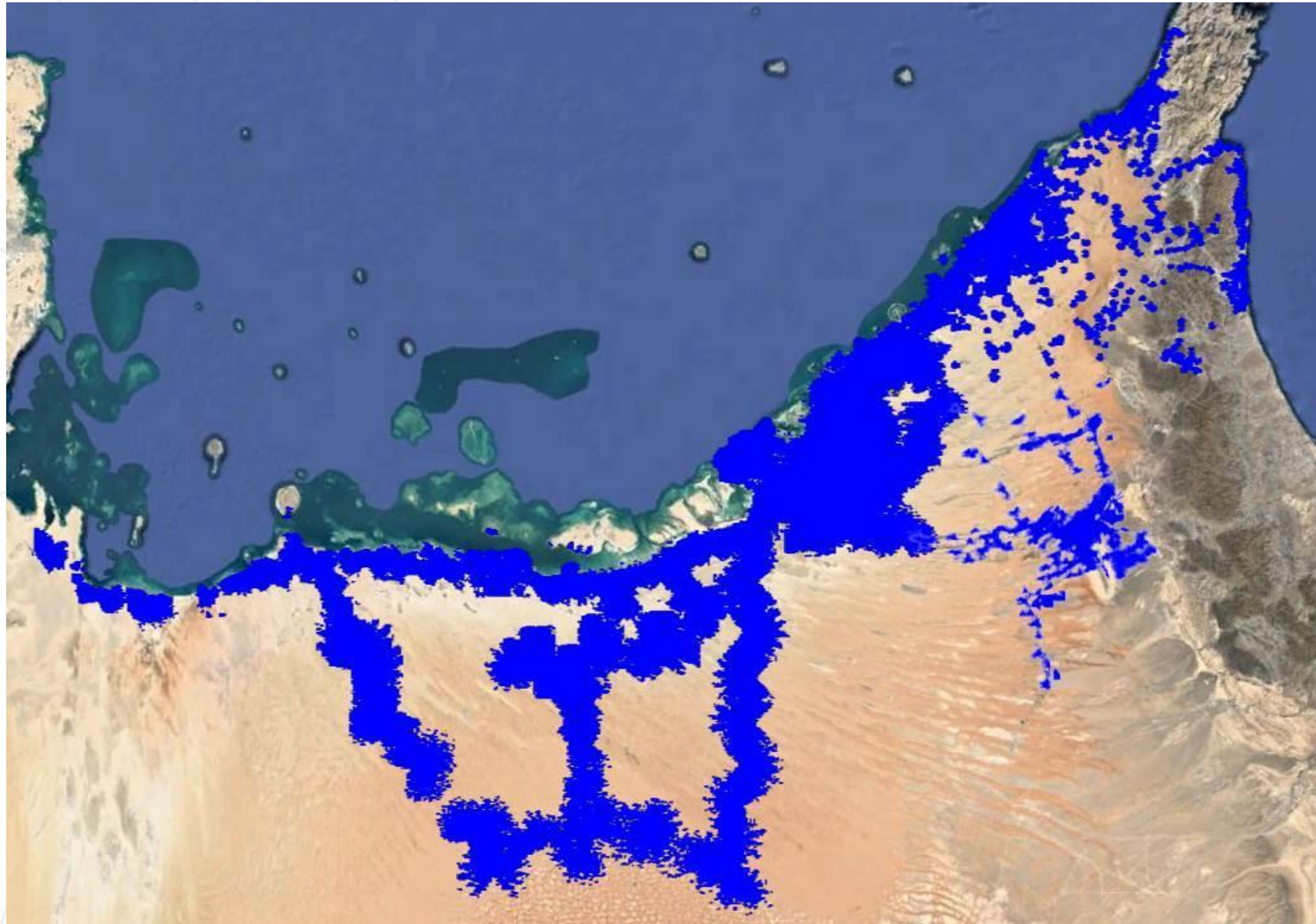


Impact

- First Arab country to launch the 5G in 2018
- First Arab country to allocate the mmWave (26 GHz) to the 5G
- First Arab country to launch the 5G for commercial use.

1. <https://www.carphonewarehouse.com/networks/connectivity-index.html#chart-section>

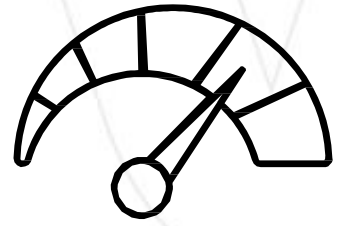
UAE 5G Coverage



Coverage as of **Dec 2023: 98.8%**
of UAE population who are in the range of 5G
coverage (whether or not they are 5G
subscribers)

Pop Coverage	
End of 2023	98.8%
End of 2024	99.98%

UAE 5G Metrics



Peak throughput

The following throughput was tested on live sites Q3 of 2023:

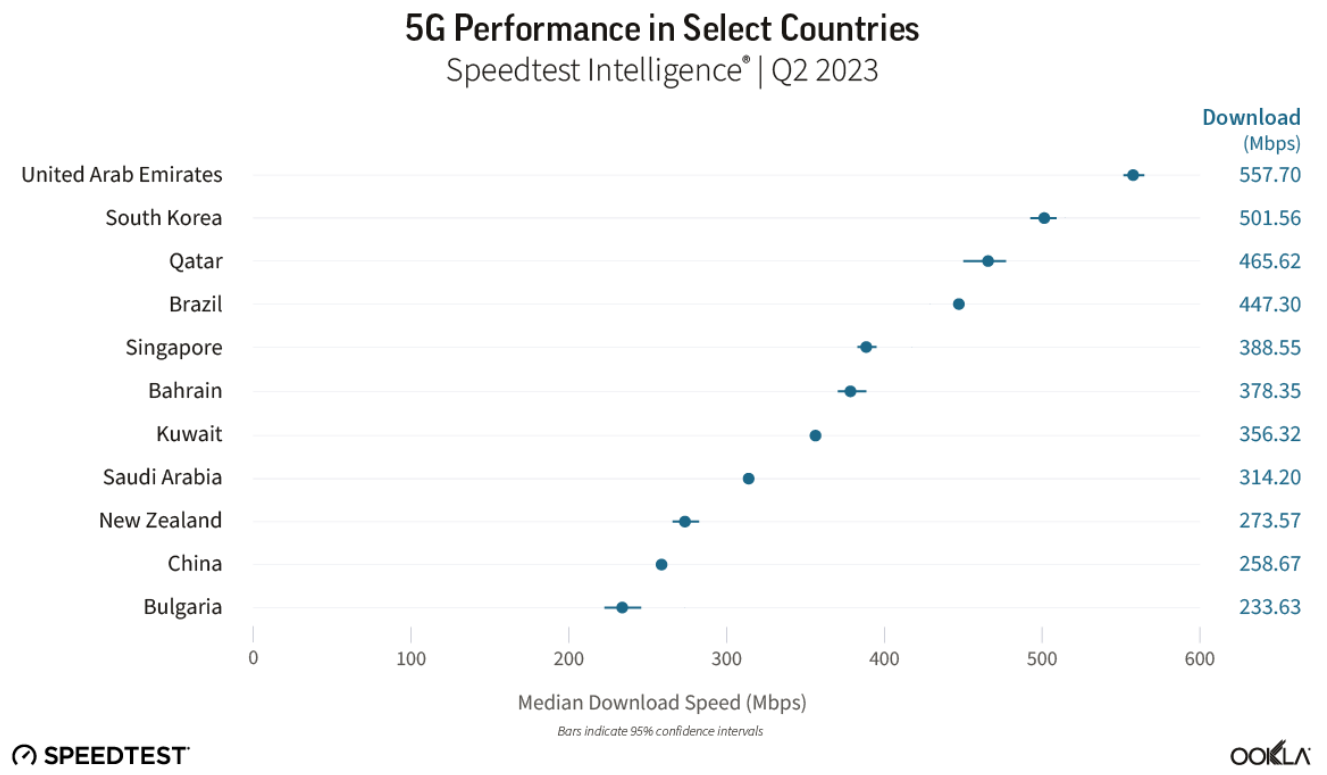
- 1.6Gbps DL (3.5GHz, 100MHz)
- 3.1Gbps DL 5G CA (3.5GHz, 200MHz)
- 4.8Gbps DL 5G CA (mmWave)
- 9.1Gbps DL 5G CA (mmWave, 3.5GHz, 2.6GHz)

Source: TDRA



Mark Giles | July 30, 2023

U.A.E. – World’s Fastest 5G Market Driving Consumer Experience Gains



Ref: www.ookla.com/articles/5g-uae-q2-2023

5G Performance in UAE Cities



	Video Experience	Games Experience	Voice App Experience	Download Speed Experience	Upload Speed Experience	5G Video Experience	5G Games Experience	5G Voice App Experience	5G Download Speed	5G Upload Speed	Availability	5G Availability	5G Reach	Excellent Consistent Quality	Core Consistent Quality
	Overall Experience					5G Experience					Coverage			Consistency	
du			WINNER				WINNER	JOINT WINNER			WINNER	WINNER	WINNER		
Etisalat	WINNER	WINNER		WINNER	WINNER	WINNER		JOINT WINNER	WINNER	WINNER				WINNER	WINNER

Mobile Network Experience Report | May 2023 | © Opensignal Limited

Agility in 5G

Regulatory instruments

Updated regulatory instruments

Spectrum Fees 4.0

New regulatory instruments

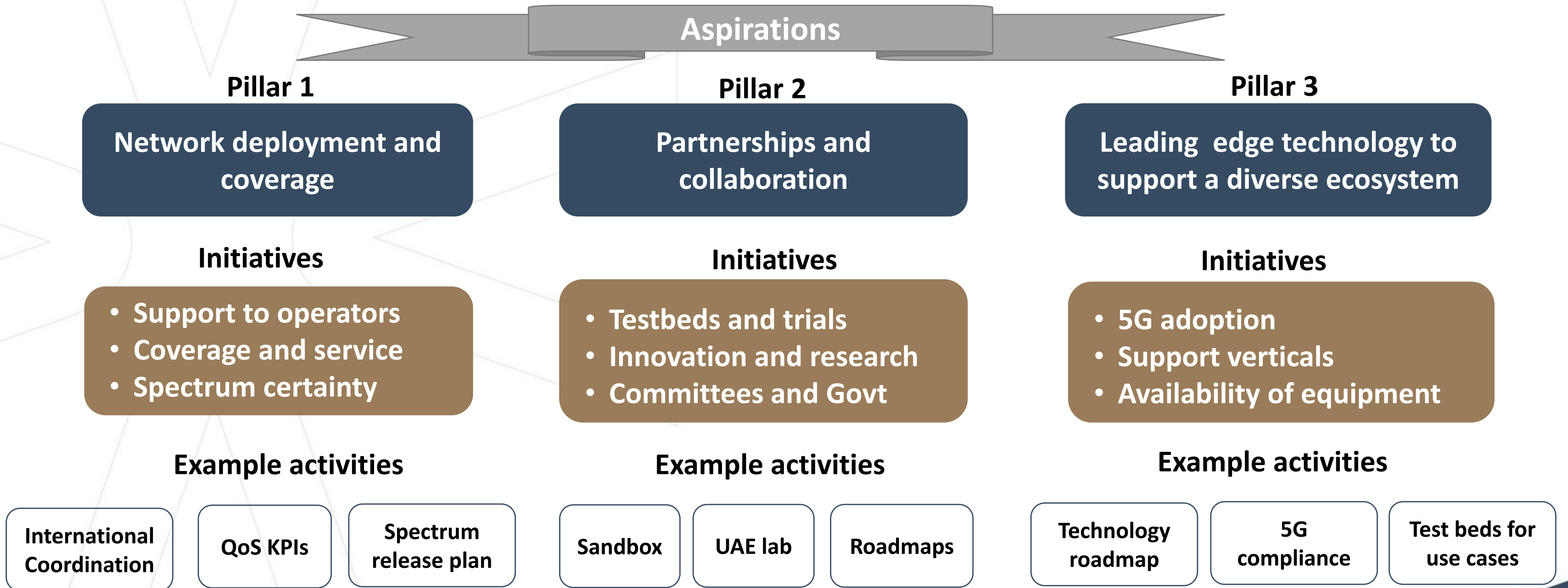
UAE strategy for 5G and beyond

Spectrum Allocation

Allocated Range	Allocated bandwidth
2496 – 2690 MHz	190 MHz
3400 – 3800 MHz	400 MHz
25.5 MHz – 27.5 MHz	2000 MHz
Total	2594 MHz

To support 5G Rollout aggressively, UAE waived the spectrum fees for 5G in C band and millimeter wave bands for 5 Years

UAE Strategy for 5G and Beyond



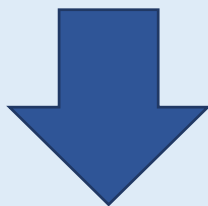
How many Air Interfaces to support in parallel?



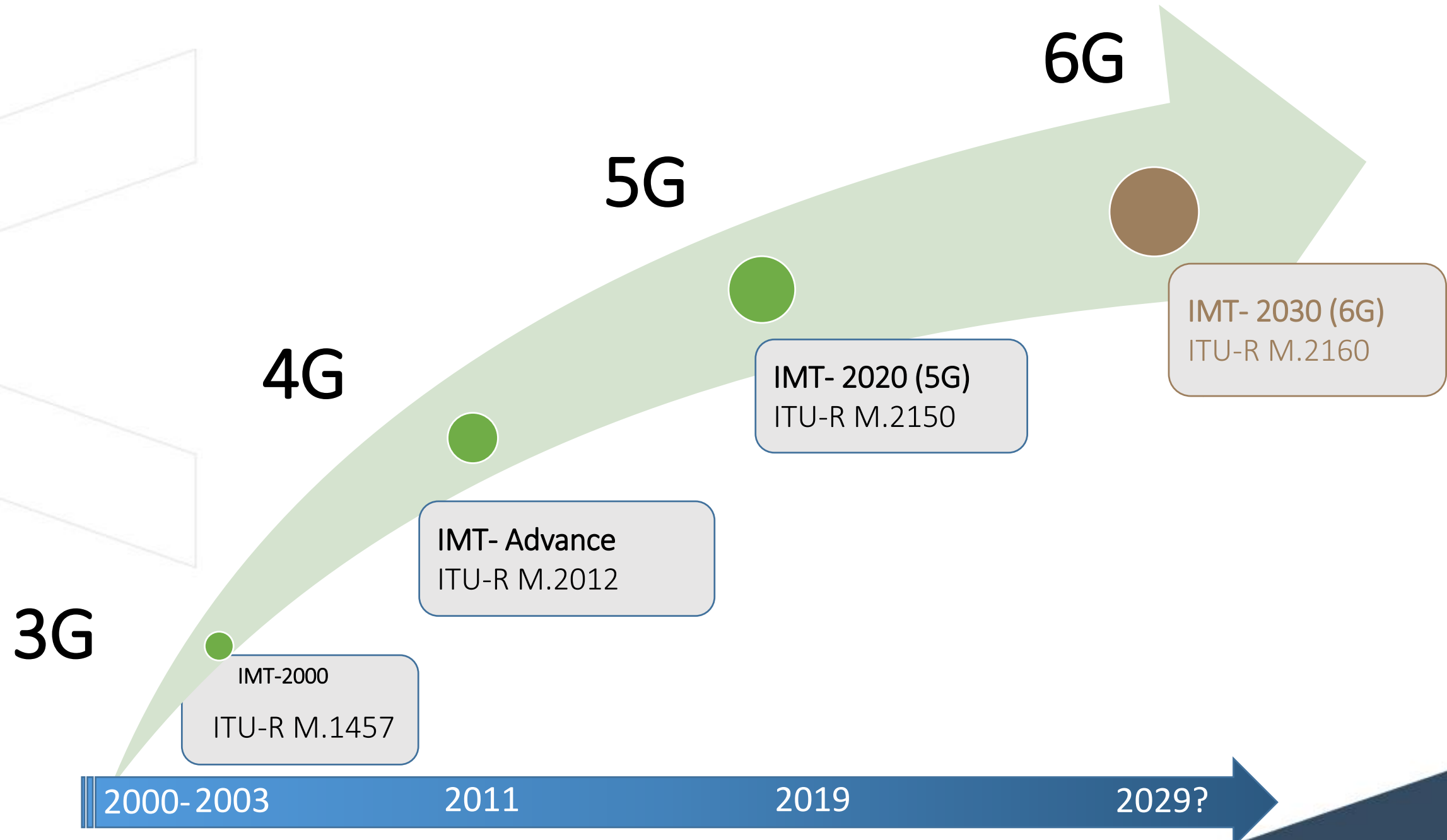
International
Telecommunication
Union

- IMT is the generic term used by the ITU to designate broadband mobile systems.
- 1st adopted in year 2000 and called IMT-2000.
- Detailed specifications of the radio interfaces.

Vision / Framework



Detailed technical specifications



Success at WRC-23

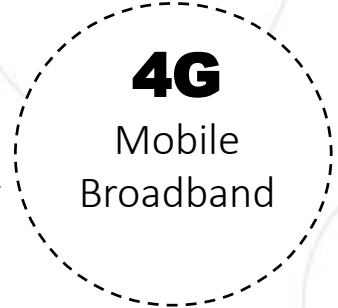
- Frequency bands: 600 MHz in Region 1, 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT) and new agenda item for WRC-27 in the mid band

Bands	470-960 MHz	3300-3400 MHz	3600-3800 MHz	4800-4990 MHz	6425-7025 MHz	7025-7125 MHz	10-10.5 GHz	IMT FS
Region 1	AI 1.5	AI 1.2	AI 1.3	AI 1.1	AI 1.2	AI 1.2	-	9.1C
Region 2	-	AI 1.2	AI 1.2	AI 1.1	-	AI 1.2	AI 1.2	9.1C
Region 3	-	-	-	AI 1.1	-	AI 1.2	-	9.1C

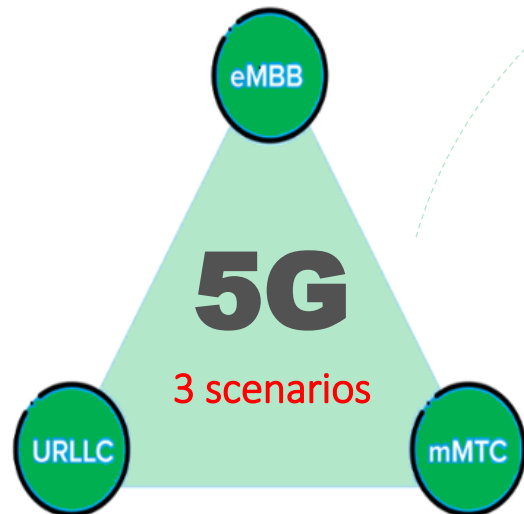
Usage scenario 5G to 6G



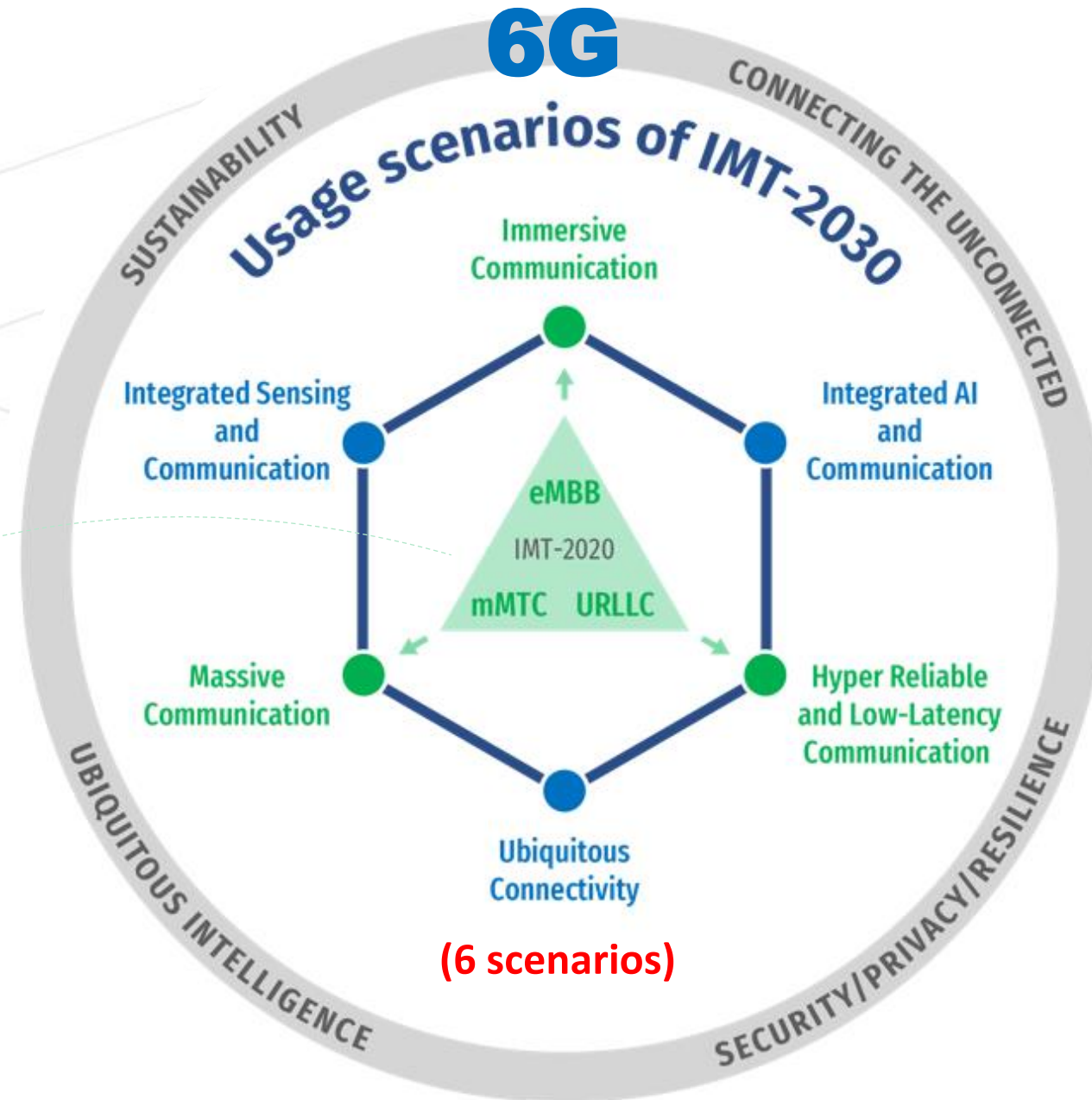
6G is a mixture of technology Evolution from 5G & Revolutionary of new technologies



Enhanced Mobile BroadBand



Ultra-Reliable Low Latency Communication massive Machine Type Communication

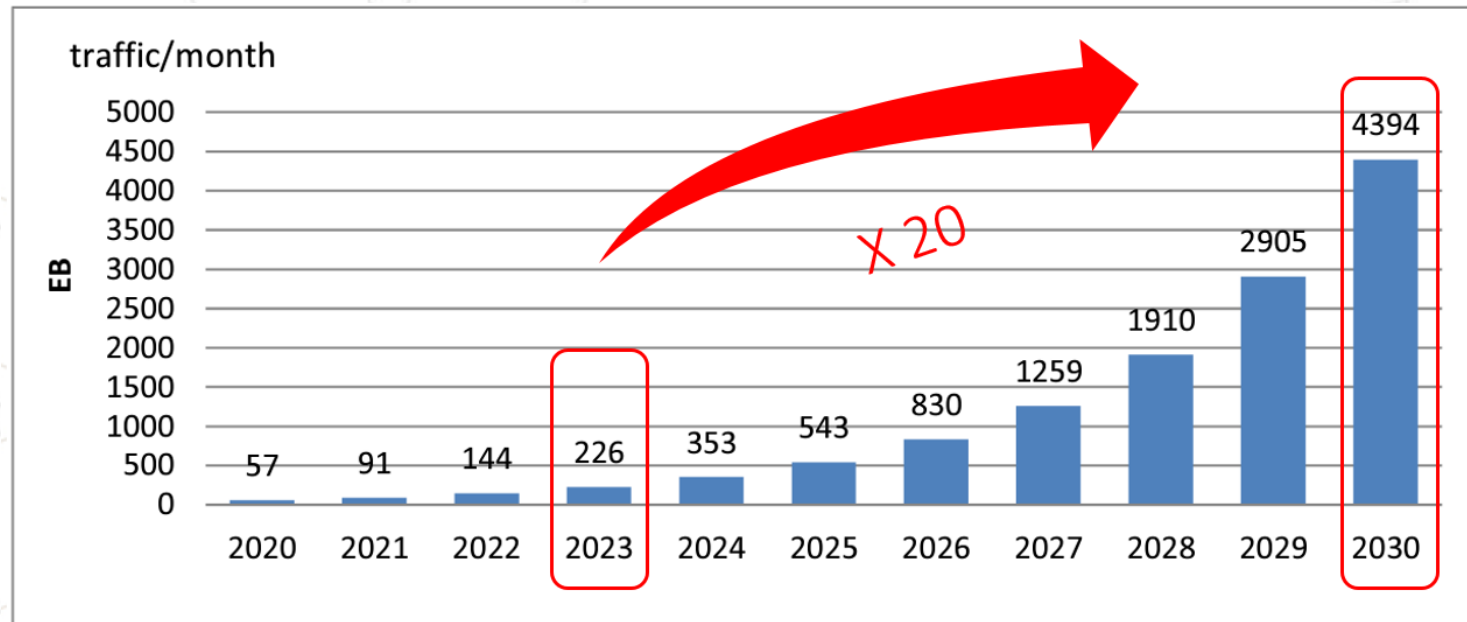


6G Capabilities

- Immersive Communication
- Hyper Reliable and Low-Latency Communication
- Massive Communication
- Integrated Artificial Intelligence and Communication
- Ubiquitous Connectivity
- Integrated Sensing and Communication

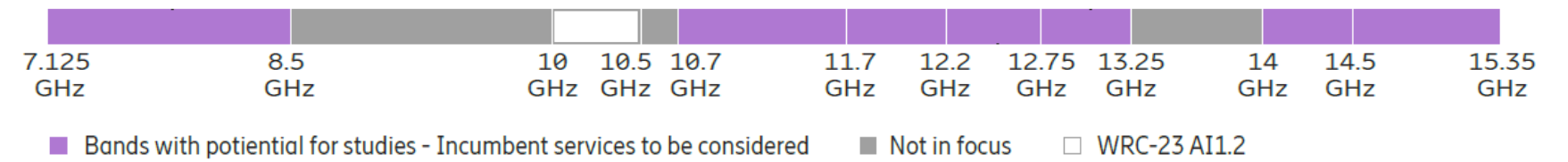
Why high data rate in 6G?

Global mobile traffic 2020 to 2030



6G new spectrum (WRC-27)

Centemetric wave



Sub THz wave



2D video communication

2022



3D augmented communication

2030



Sensory communication

>2030

High data rate requirement:

- High-resolution images.
- Captured from different angles.
- Low delays to facilitate a realistic viewing and to reduce motion sickness.
- Hologram needs: uplink and downlink, data rates of 100 Mbit/s and 1 Gbit/s, respectively.

The 6G use cases and their spectrum implications



2D video communication

2022



3D augmented communication

2030

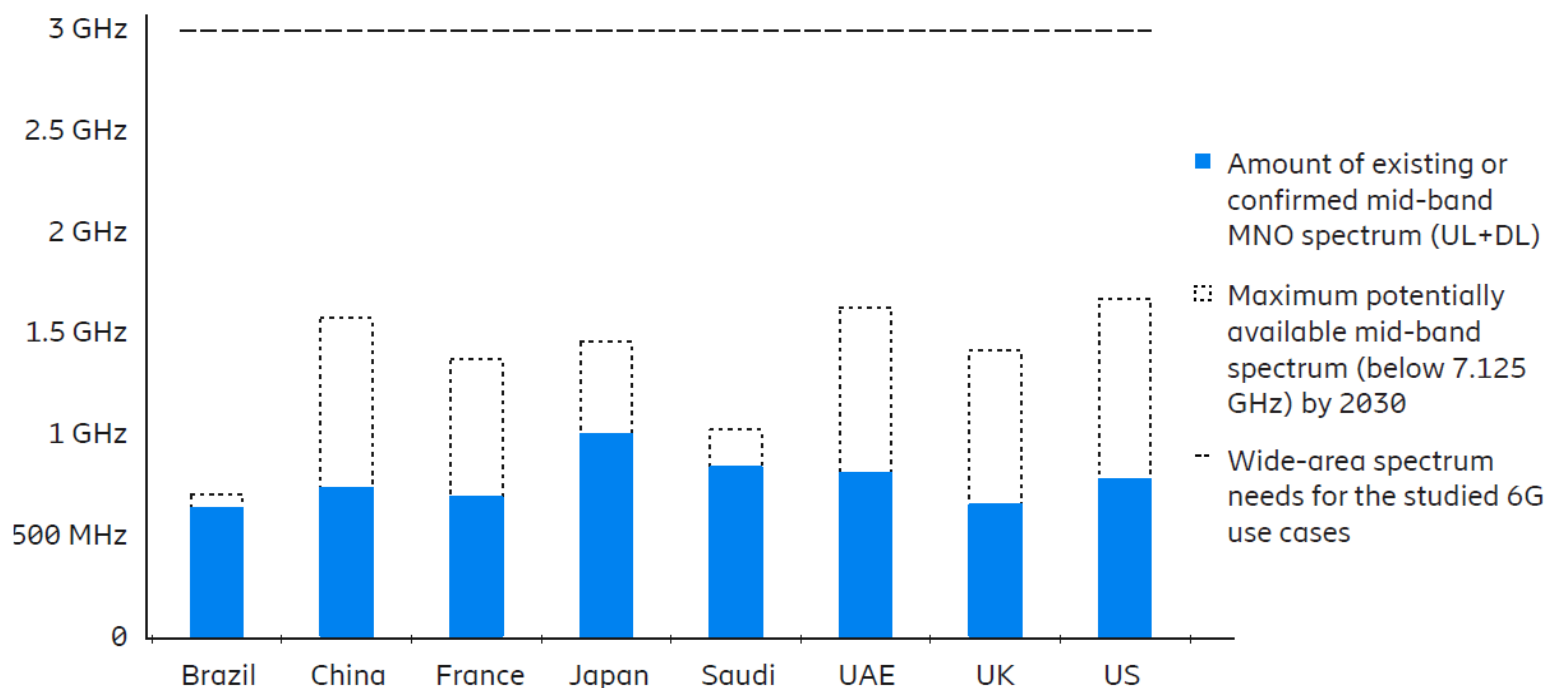


Sensory communication

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- 3 GHz of wide-area spectrum reflects the need for outdoor and indoor mobility, (Ex: holographic communication, the internet of senses, massive digital twins).
- Just a set of 6G use cases would require around **3 GHz** of wide-area spectrum.
- This is far from the amount of wide-area spectrum that will be made available by 2030 even in the optimal scenario.

Spectrum challenges of existing IMT & beyond

- Eco system availability across all bands e.g L band and millimeterwave
- Spectrum Re-farming (UAE project example)
- Support for multiple air interfaces
- Cross border coordination, interference

TDRA

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Thank you

Investment-friendly initiatives pay off

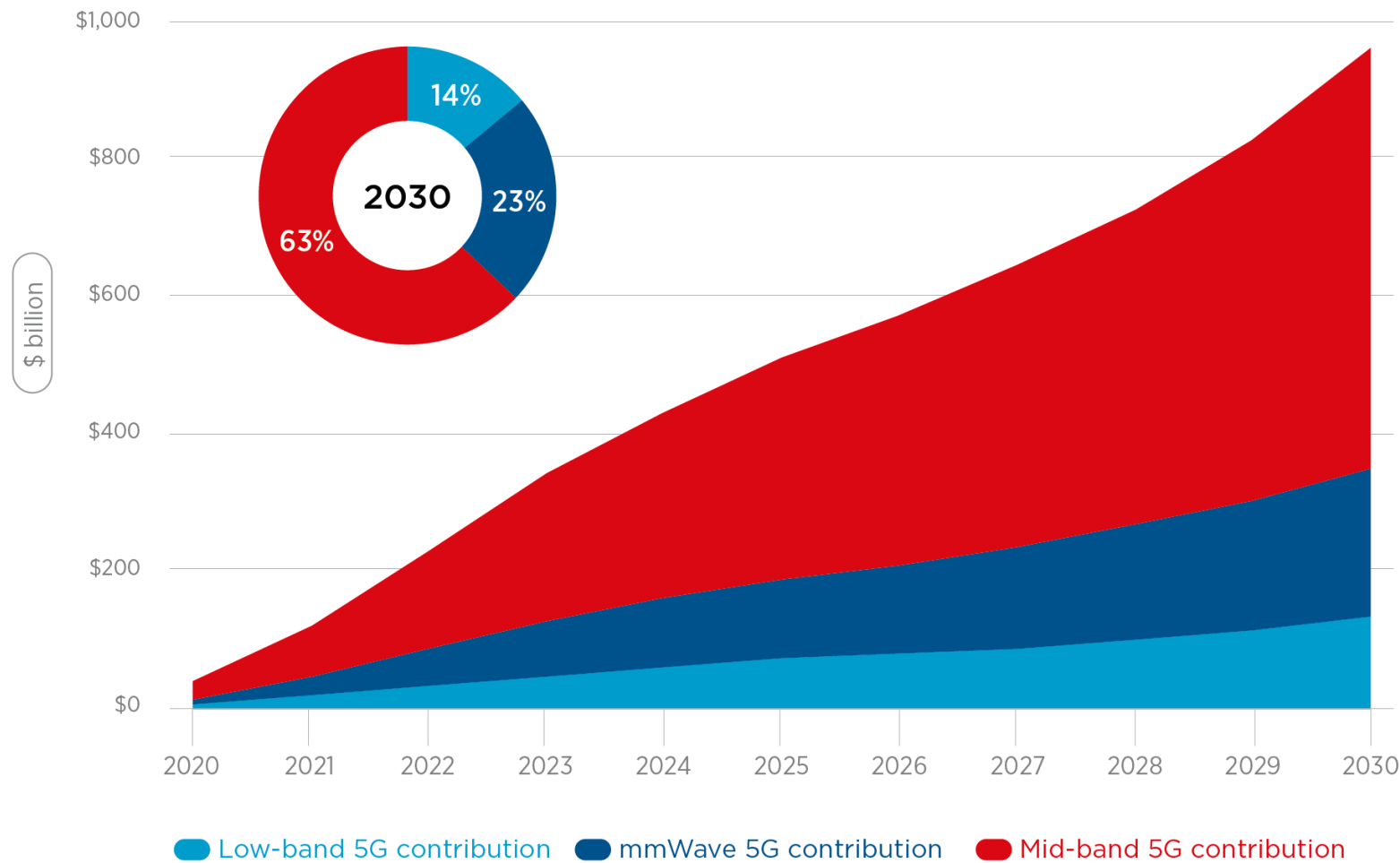
Luiz Felipe Zoghbi

Spectrum Engagement Director

GSMA

5G

\$961_{BN}...



... BUT SPECTRUM CONSTRAINTS
RESTRICT VALUE

Optimal Scenario

\$961bn

0.68% of GDP

Constrained Scenario

\$594bn

0.42% of GDP

The Socio-Economic Benefits of Mid-band 5G GSMA
Intelligence 2023

Spectrum Pricing Impact

Speeds



Coverage



Prices to
Consumers

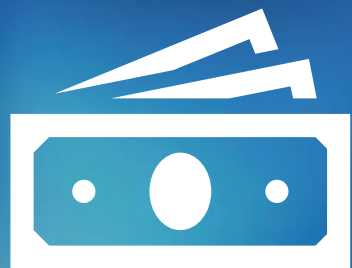


Adoption

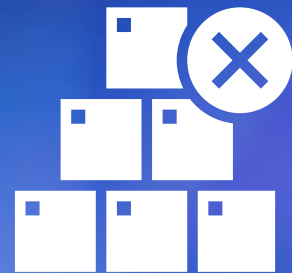


The high price drivers

Reserve Prices



Artificial Scarcity



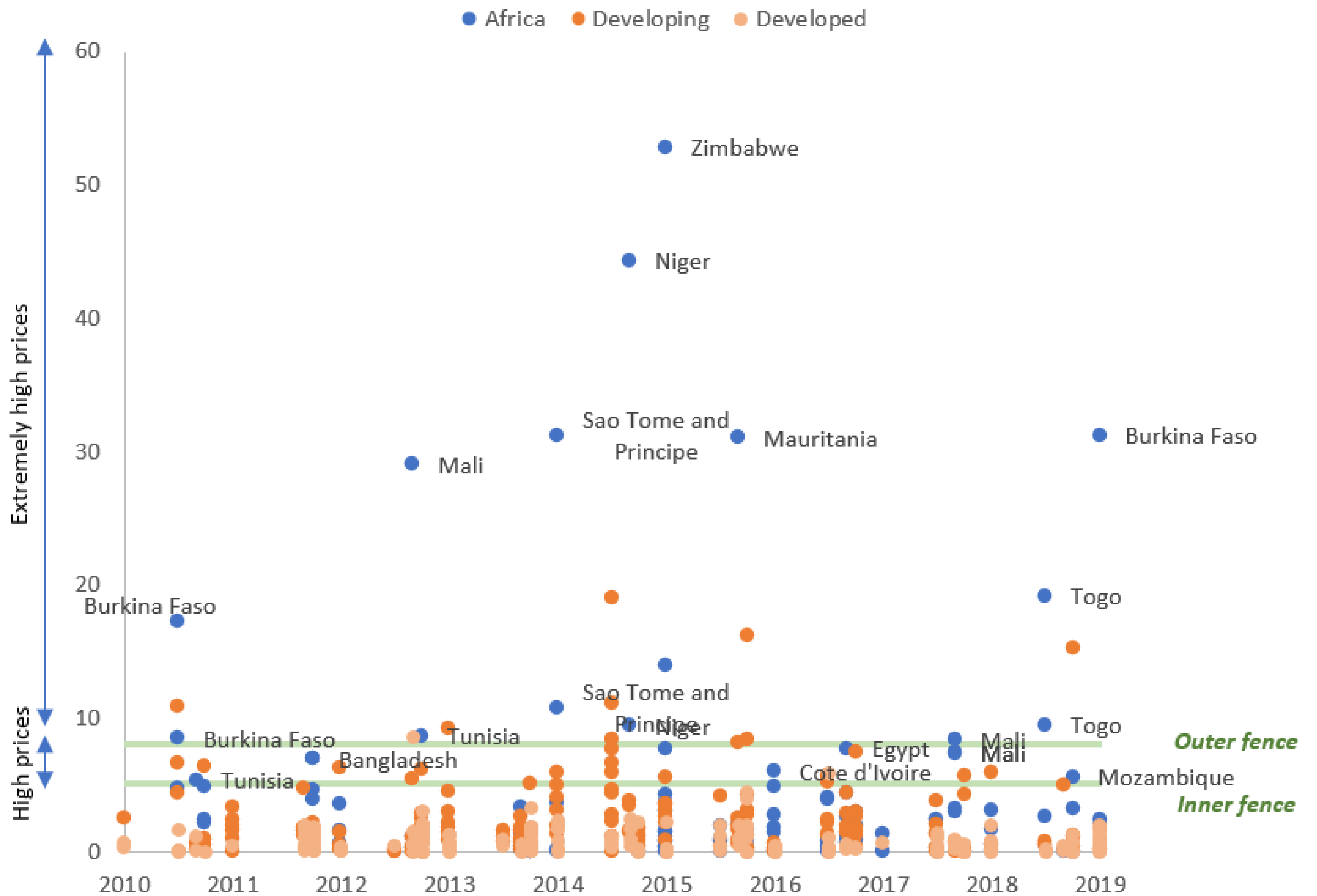
Lack of Roadmaps



Awards Rules

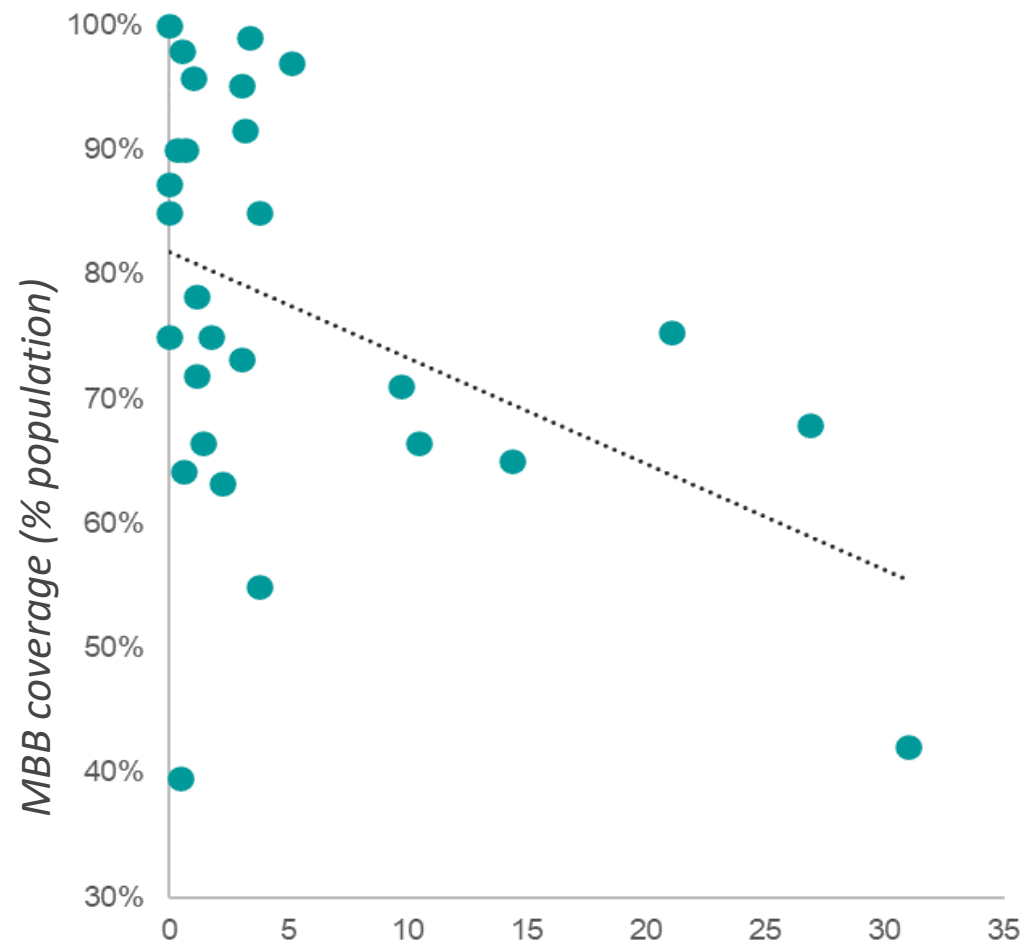


Prices differ globally

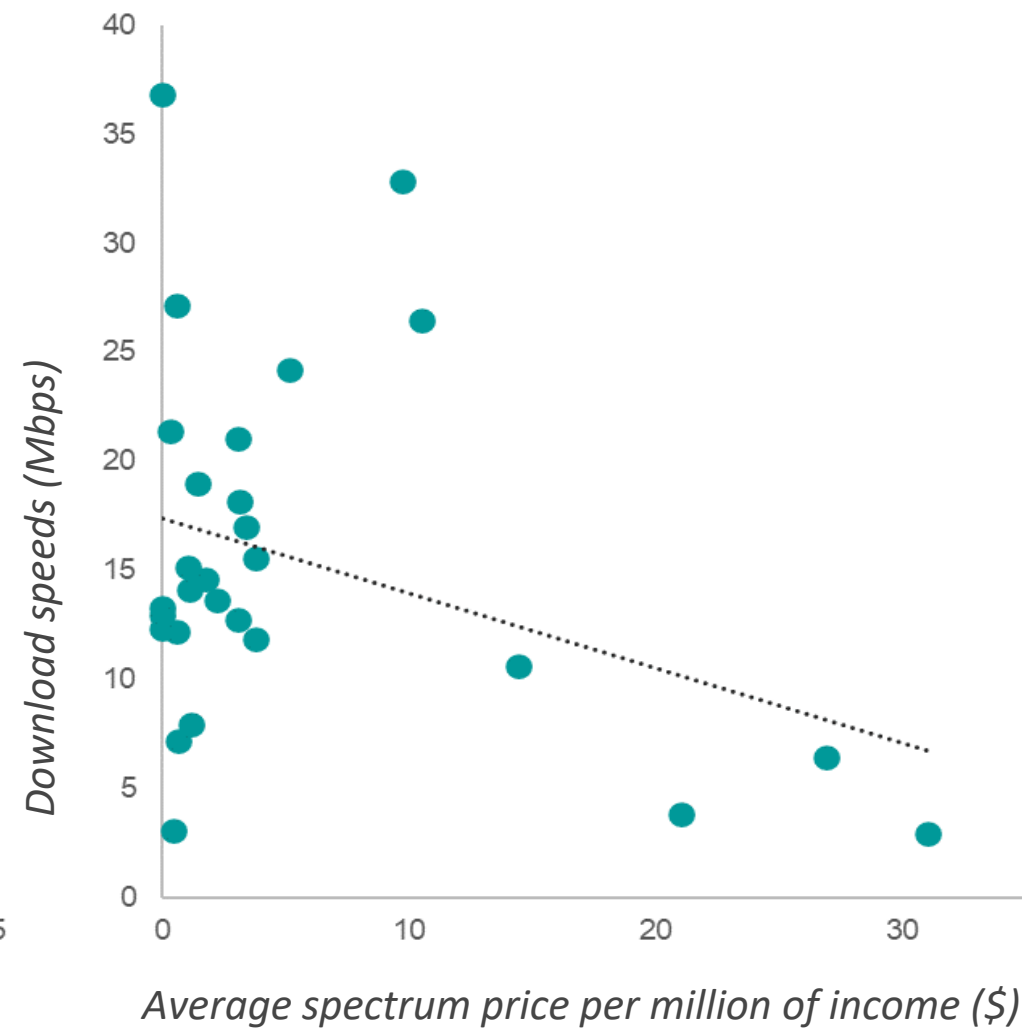


Africa example

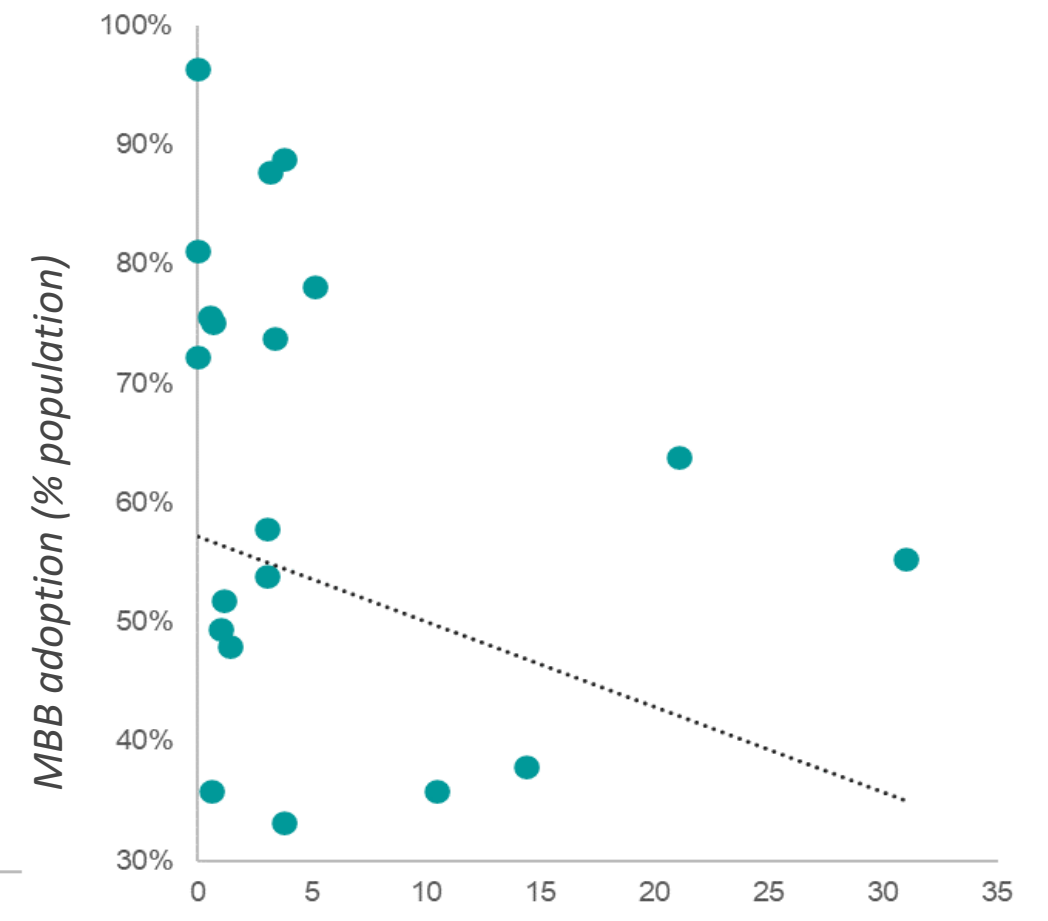
More expensive spectrum is linked to lower coverage



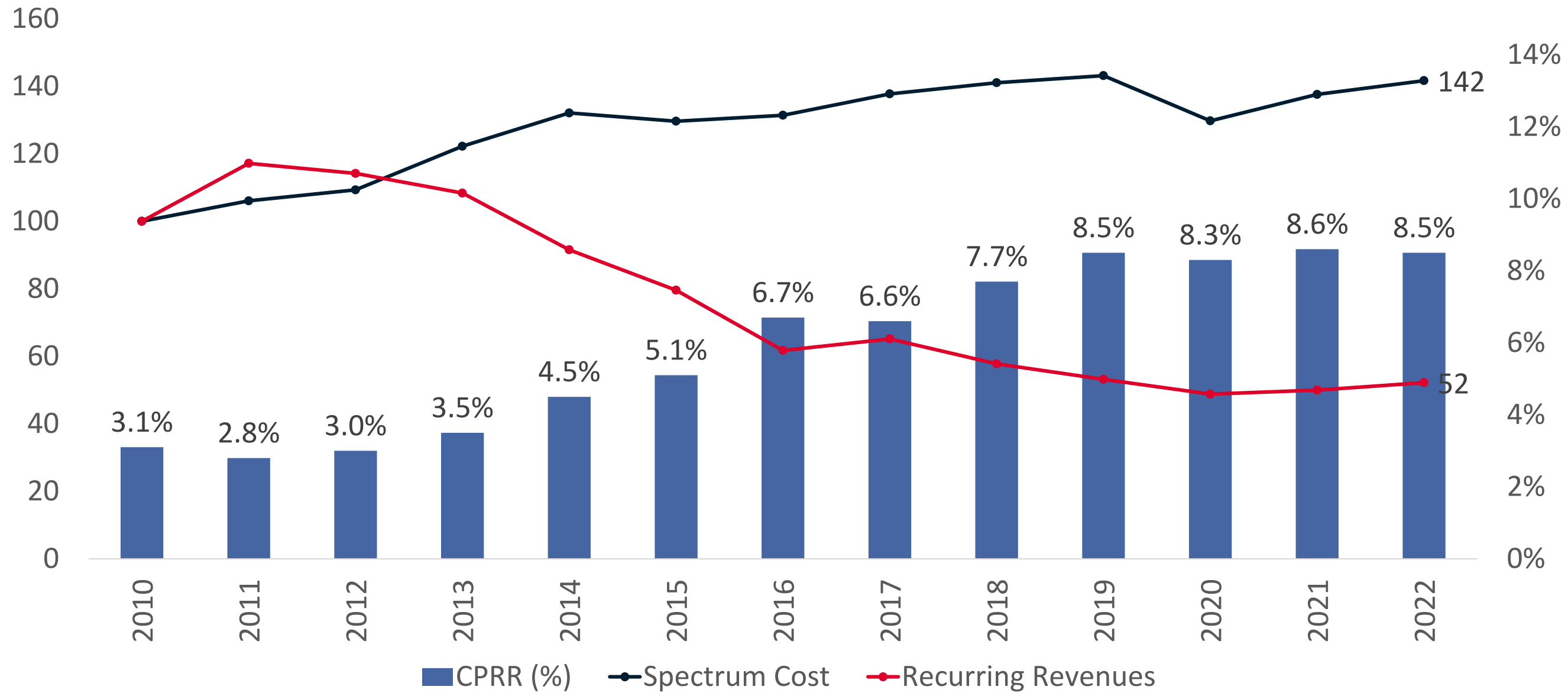
.... slower network download speeds



.... as well as lower adoption



LATAM example



Almost
3x

What would lower prices mean?

Argentina

+50% speeds

Mexico

+5mln in 4G
+30% speeds

Ecuador

+10mbps

Colombia

+2mln in 4G
+40% speeds

What do we see as trends?

Lower Prices

5G era prices
showing
reduction

Longer Licences

Average licence
length expanding

New T&Cs

Investments in
return for lower
prices

New assignment and pricing methodologies

Dr. Ir. Ismail

Director General

Frequency Spectrum Management

Ministry of ICT

Indonesia

Roundtable

Moderator: Yishen Chan
Director, Spectrum, APAC
GSMA

Closing Remarks