

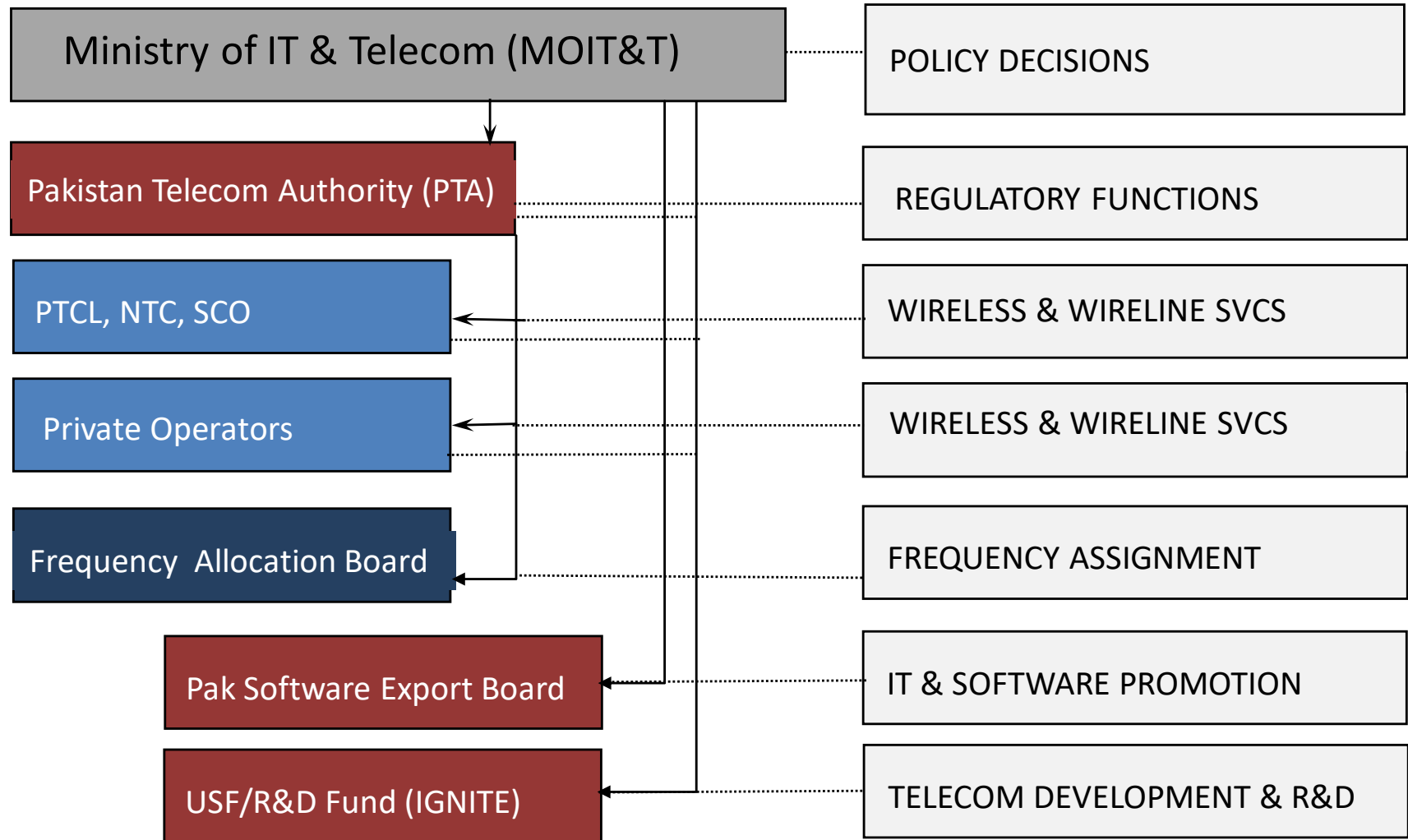


Digital Landscape of Pakistan

Pakistan Telecommunication Authority

August 2020

Policy, Regulatory and Industry Structure



PTA Authority & Divisions

The Authority is composed of :

Chairman (PTA)
Member (Finance)
Member (Compliance & Enforcement)



Tele-density & Penetration



* Figures are updated as on June 2020

Source: PTA

Telecom De-Regulation Policy 2003

Licenses

- Open and Technology Neutral
- License Term - 20 Years

1. Local Loop (LL)

- Initial License Fees (ILF) US\$ 10,000 / Telecom Region (14 Regions)
- Wireless Local Loop Option (Spectrum Auctioned)

2. Long Distance & International (LDI)

- Initial License Fees (ILF) US\$ 500,000
 - Security Bond US\$ 10 Million
-
- Deregulated incumbent operator PTCL.



List of LDI Operators in Pakistan

S. No.	Company Name	License Category
1	National Telecommunication Corporation (NTC)	Integrated
2	Pakistan Telecommunication Company Ltd. (PTCL)	Integrated
3	LINKdotNET Telecom Ltd.	LDI
4	Wateen Telecom (Pvt.) Ltd.	LDI
5	Telenor LDI Communications (Pvt.) Ltd.	LDI
6	Multinet Pakistan (Pvt.) Ltd.	LDI
7	REDtone Telecommunication Pakistan (Pvt.) Ltd.	LDI
8	Telecard Ltd.	LDI
9	ADG LDI (Pvt.) Ltd.	LDI
10	Wise Communication Systems (Pvt.) Ltd.	LDI
11	Dancom Pakistan (Pvt.) Ltd.	LDI
12	Wi-Tribe Pakistan Ltd.	LDI
13	Circle Net Communications (Pakistan) (Pvt.) Ltd.	LDI
14	4B Gentel International (Pvt.) Ltd.	LDI
15	Worldcall Telecom Ltd.	LDI
16	CMPak LDI Ltd.	LDI

Major LDIs who have deployed Long haul and Metro Fiber are



Other LDIs that are leasing infrastructure from available network of LDI's include 4B Gentle, Circlenet, Wise Com,



Enabling Technologies (OFC)



International Connectivity (SCO & PTCL)

Pakistan International Hub for the cables - Connectivity with India, Afghanistan, Central States Iran on the way

CPEC Fiber Optic Project (Khunjrab - Rawalpindi)

Federal Capital

• 18.204 Km — 2.22%

Gilgit Baltistan

• 466.584 Km — 56.7%

Khyber Pakhtunkhwa

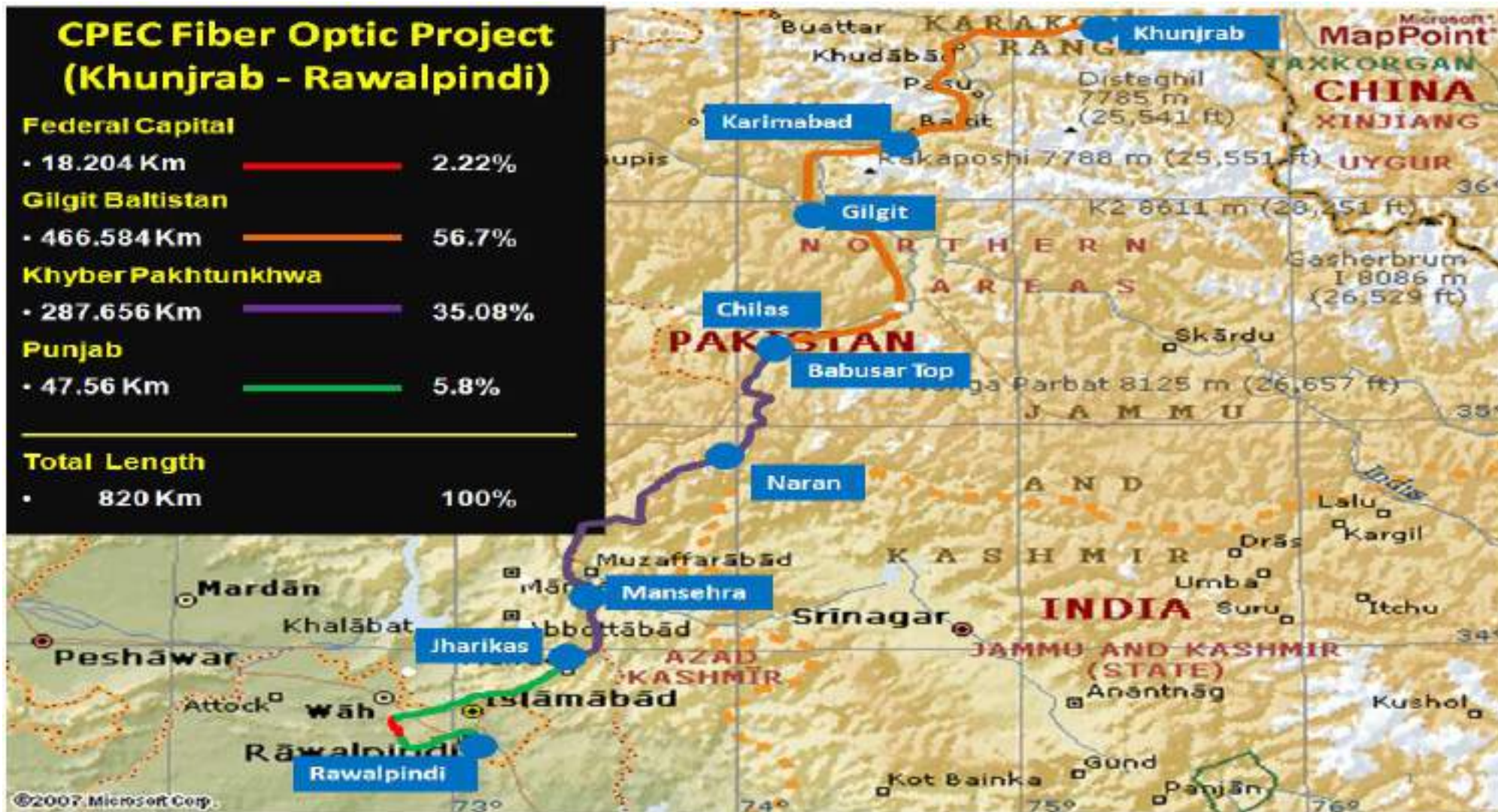
• 287.656 Km — 35.08%

Punjab

• 47.56 Km — 5.8%

Total Length

• 820 Km — 100%



Submarine Cables in Pakistan

Currently there are (6) submarine cables connecting (4) landing stations in Pakistan

Submarine Cable	Owner	Landing Station
South East Asia–Middle East–Western Europe-3 (SMW3)	PTCL	PTCL MRD Exchange
South East Asia–Middle East–Western Europe-4 (SMW4)	PTCL	PTCL H/Bay Exchange
India-Middle East-Western Europe (IMEWE)	PTCL	PTCL H/Bay Exchange
Asia-Africa-Europe (AAE-1)	PTCL	PTCL Misri Shah Exchange
Trans World (TW1)	TWA	TWA CLS Hawksbay
South East Asia - Middle East - Western Europe (SMW5)	TWA	TWA CLS Hawksbay

Cables in Pipeline: **SMW6 (TWA)**, **Africa 1 (PTCL)**, **PEACE (Cybernet)** & **Orient Express (previously WiTribe)**

Submarine Cables – Loading Status

PTCL*

S. No.	Cable	Design BW	Alloc BW (Gbps)	Utilized BW (Gbps)	IP BW (Gbps)	IPLC/ Voice BW (Gbps)	Utilization Percentage
1	SMW-3	4.6 Tbps	40	24.32	21	3	61%
2	SMW-4	16 Tbps	903	825	343	63	91%
3	IMEWE	24 Tbps	1,013	571	333	40	56%
4	AAE-1	40 Tbps	1,200	660	620	40	55%

**Sept 2019*

Transworld Associates (TWA)*

TW1 Cable System:

- 36x 100G on each fiber
- Equipped Capacity: 48x10G

SMW5 Cable System:

- Designed with the latest upgradable 100Gbps technology enabling initial system capacity of 24 Tbps. Upgraded to 36 Tbps in August 19.
- TWA share is 9x100G towards East and 9x100G towards West

**Oct 2019*

Submarine Cable Layout (PTCL & TWA)

Pakistan International Hub for the cables - Connectivity with India, Afghanistan, Central States Iran on the way



Submarine Cable Layout (PTCL & TWA)

Pakistan International Hub for the cables - Connectivity with India, Afghanistan, Central States Iran on the way

SEA-ME-WE 5



AAE -1



Future Submarine Cable layout

Pakistan International Hub for the cables - Connectivity with India, Afghanistan, Central Asian States- Iran on the way

PEACE

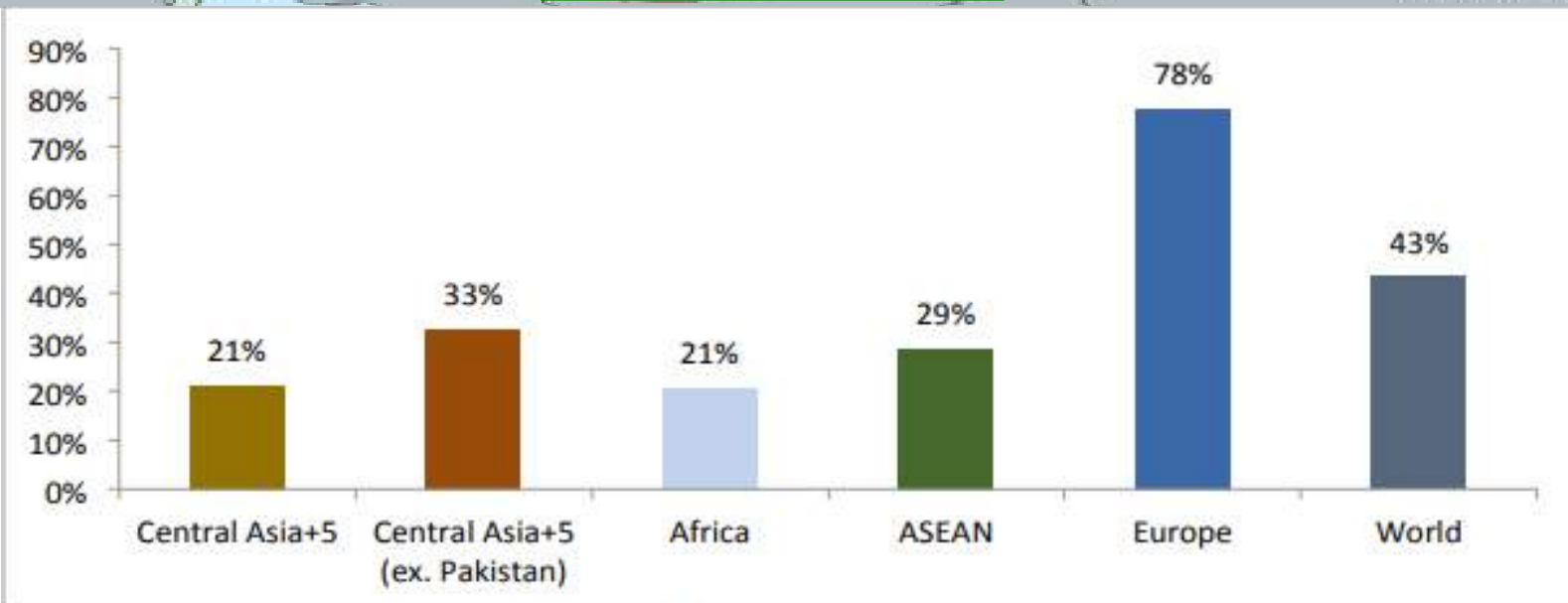


Pakistan (Gwadar and Karachi),
Djibouti, Somalia and Kenya

PEACE submarine cable system

Landing Stations & Transit Traffic Opportunity

ESCAP2015. Economic and Social Commission for Asia and the Pacific



Country	Landing Stations
USA	72
France	18
Singapore	5
India	10
Iran	5
Indonesia	4
Oman /UAE	3

Source: TRPC analysis using data from the ITU (2015), "World Telecommunication/ICT Indicators database"

Cable Landing Station (CLS) Framework

A new Framework for CLS has been prepared for issuance of Policy Directive by MoIT to transit from older regime.

As the demand of BW is increasing exponentially, therefore it is proposed that:

Existing

Only PTCL and TWA can lend BW.

- **Closed Cable System**
(Consortium Based)
- **Less Competitive**
- **Monopolistic Approach**

Vs

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Proposed (New)

Any LDI can connect to any Cable System

- **Open Cable System**
(Private cable investors, capacity open for all)
- **More Competitive**
- **Competitive Approach**

Satellite Framework

- A Satellite Framework has been laid down for licensing and promoting the satellite services.
- The framework upon approval shall allow the industry to use the satellite services on ground, in aircrafts and in the vessels.

Existing

The existing Licenses including LDI, LL and TIP could provide the Satellite Services under their license.

Vs

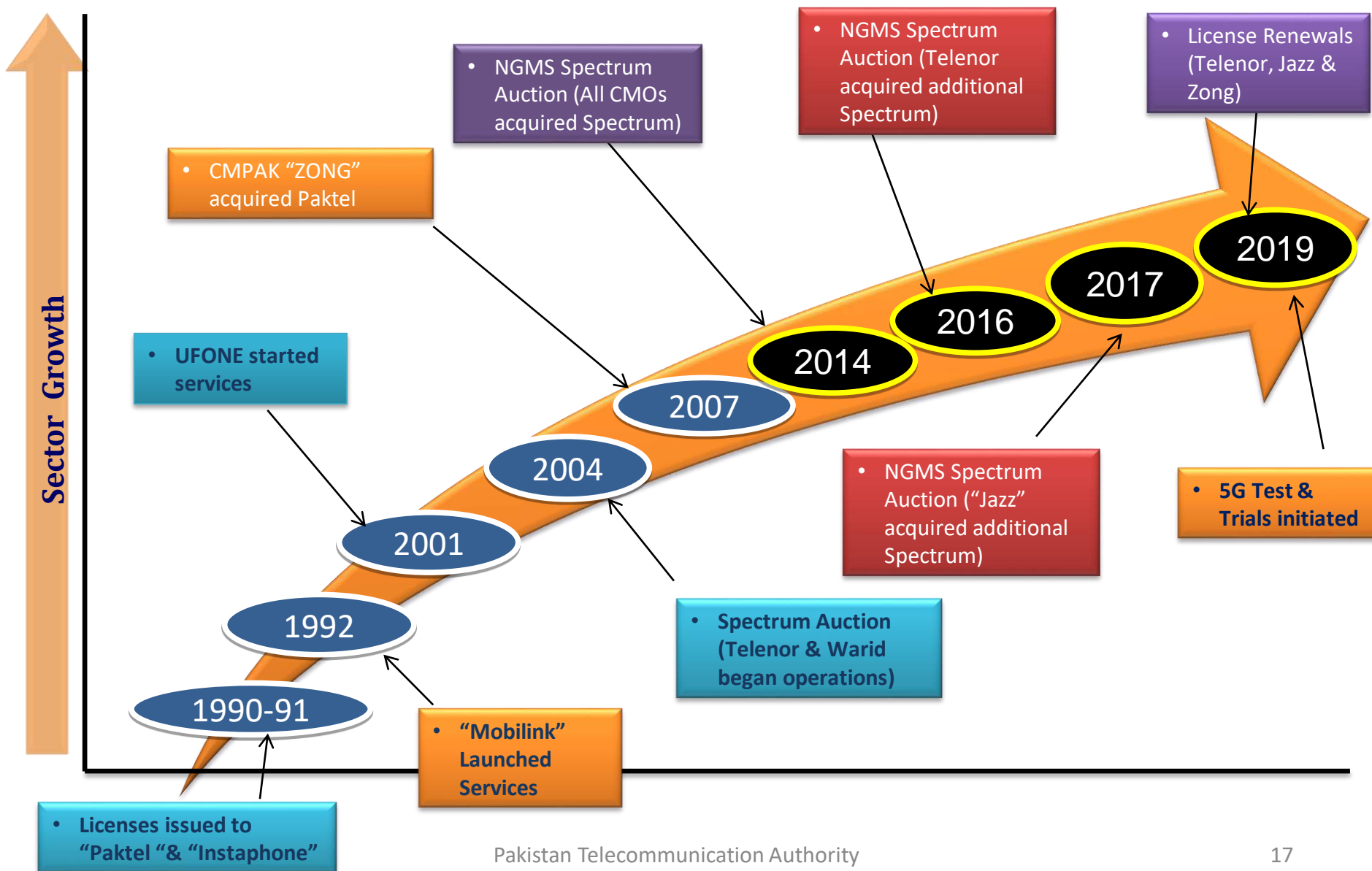
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Proposed (New)

A separate category of licenses have been created for provision of

- Fixed Satellite Services
- Mobile Satellite Services
- On-Board Internet Connectivity Services (Aircrafts / Vessels)

Various Milestones of Cellular Industry

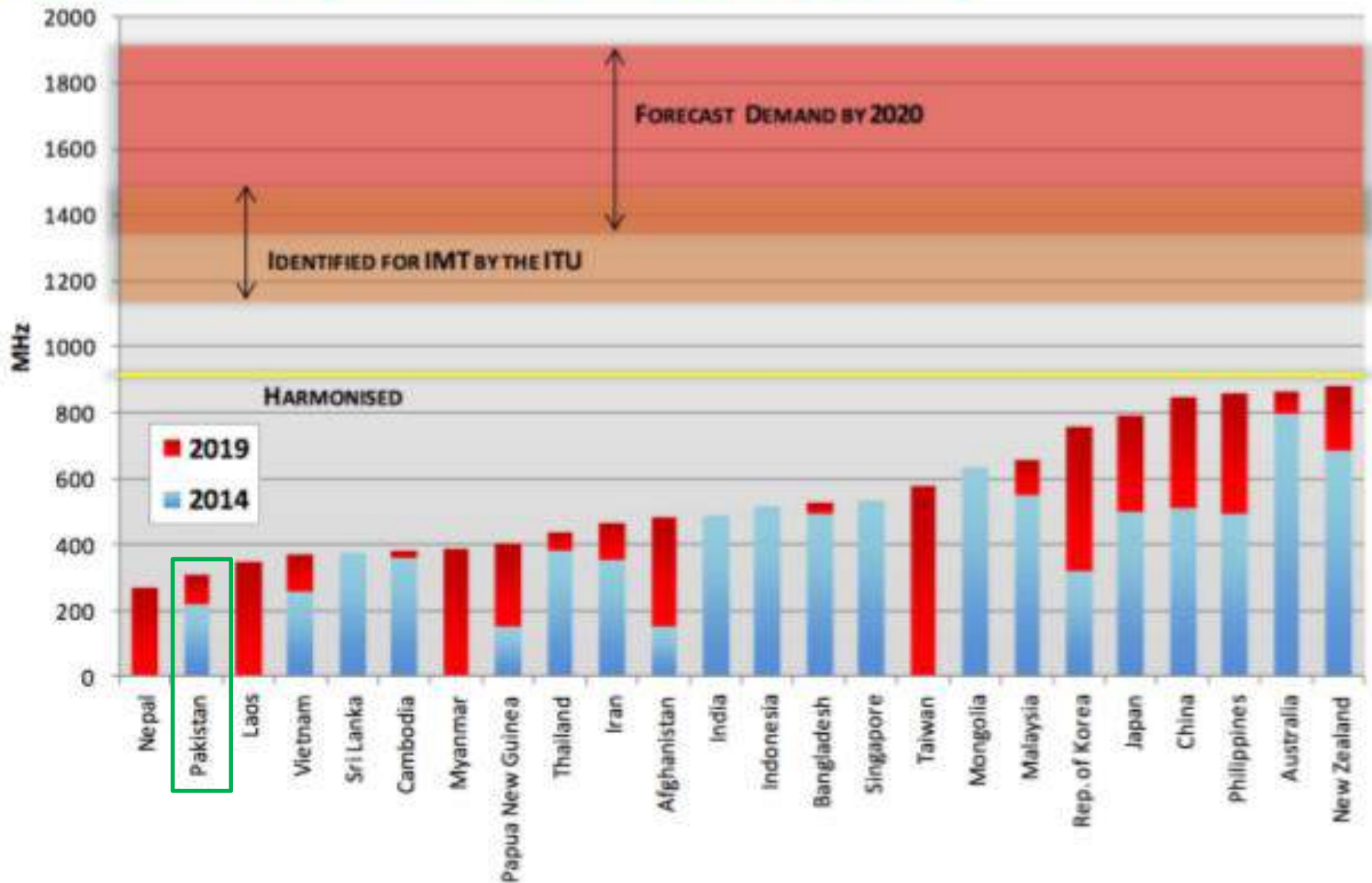


Spectrum Allocation in Pakistan

Spectrum Band	Spectrum Assigned
824 – 849 MHz / 869 – 894 MHz	Assigned to Telenor (10 x 2 MHz))
880 – 915 MHz / 925 – 960 MHz	Partly assigned to Zong, Jazz Ufone and Telenor under a 15-year licence (32.5 x 2 MHz)
1710 – 1785 MHz / 1805 – 1880 MHz	Assigned to Jazz, Ufone, Telenor and Zong (62.2 x 2 MHz)
1920 - 1980 MHz / 2110 – 2170 MHz	Assigned to Zong, Telenor, Ufone and Jazz. (30 x 2MHz)
Total	134.7 x 2 MHz

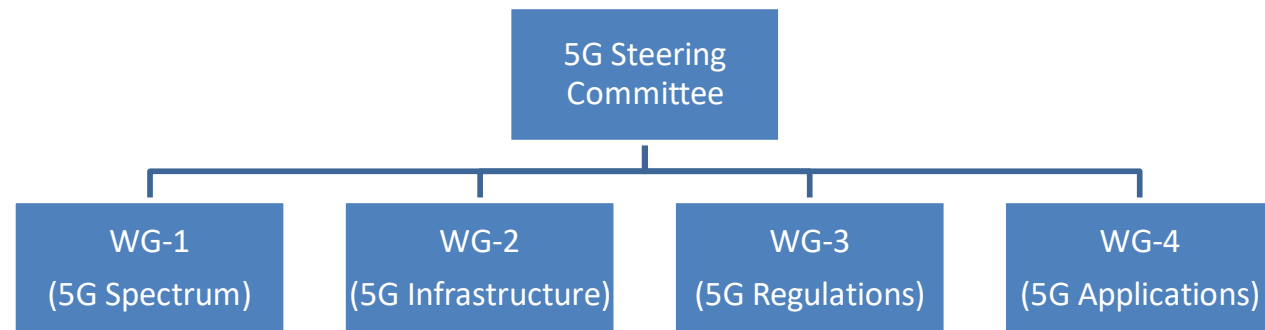
Spectrum Allocation in Asia Pacific

Spectrum licensed for IMT services in selected ITU Region 3 markets



5G Strategy

- Government Policy for Test and Trials for future Networks in place since Oct 2017.
- The Cellular Mobile Operators have conducted successful 5G trials in FY 19-20.
- Pakistan is finalizing the roadmap for early launch of 5G Commercial Services in Pakistan.



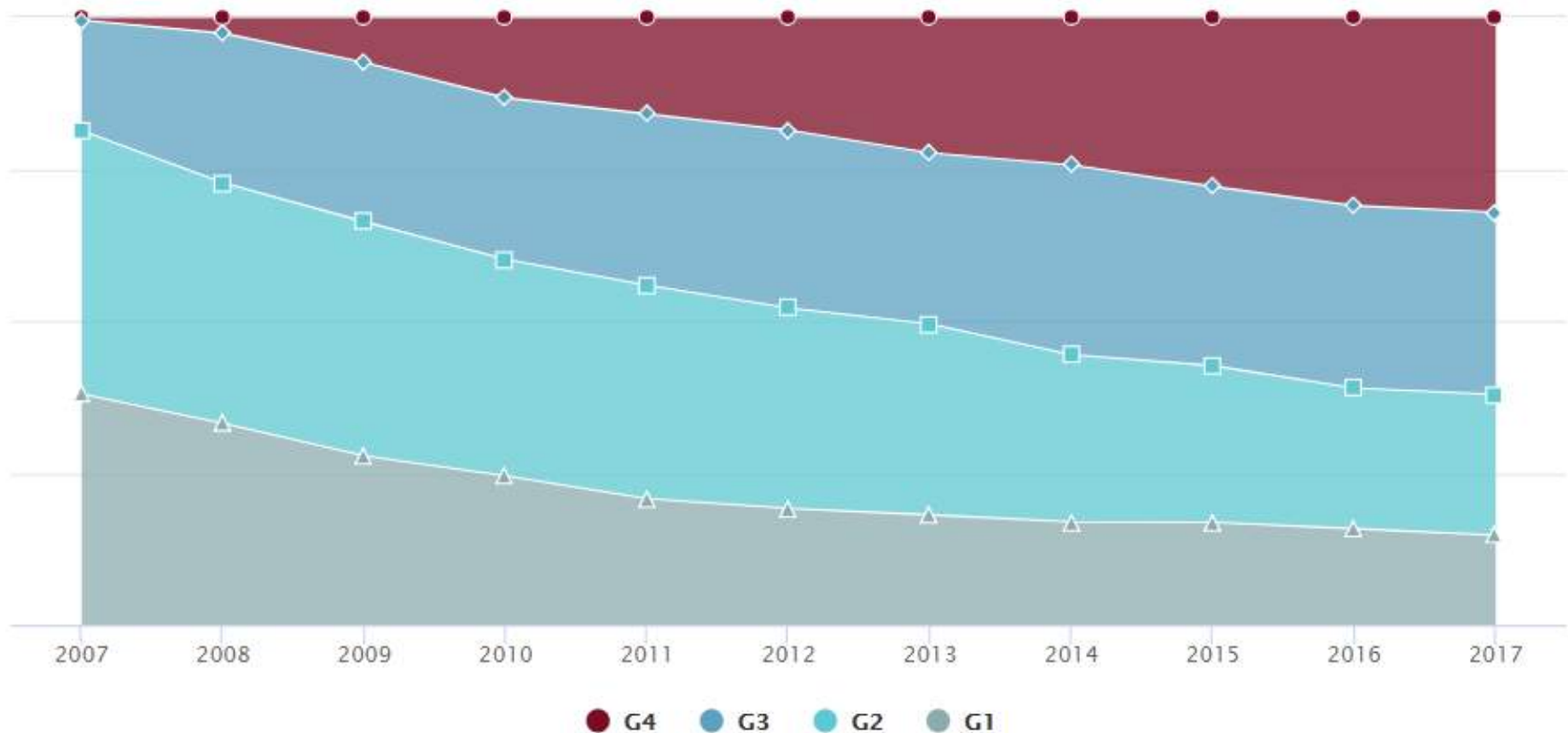
Generations of Regulators by ITU

G1: Regulated public monopolies– command and control approach

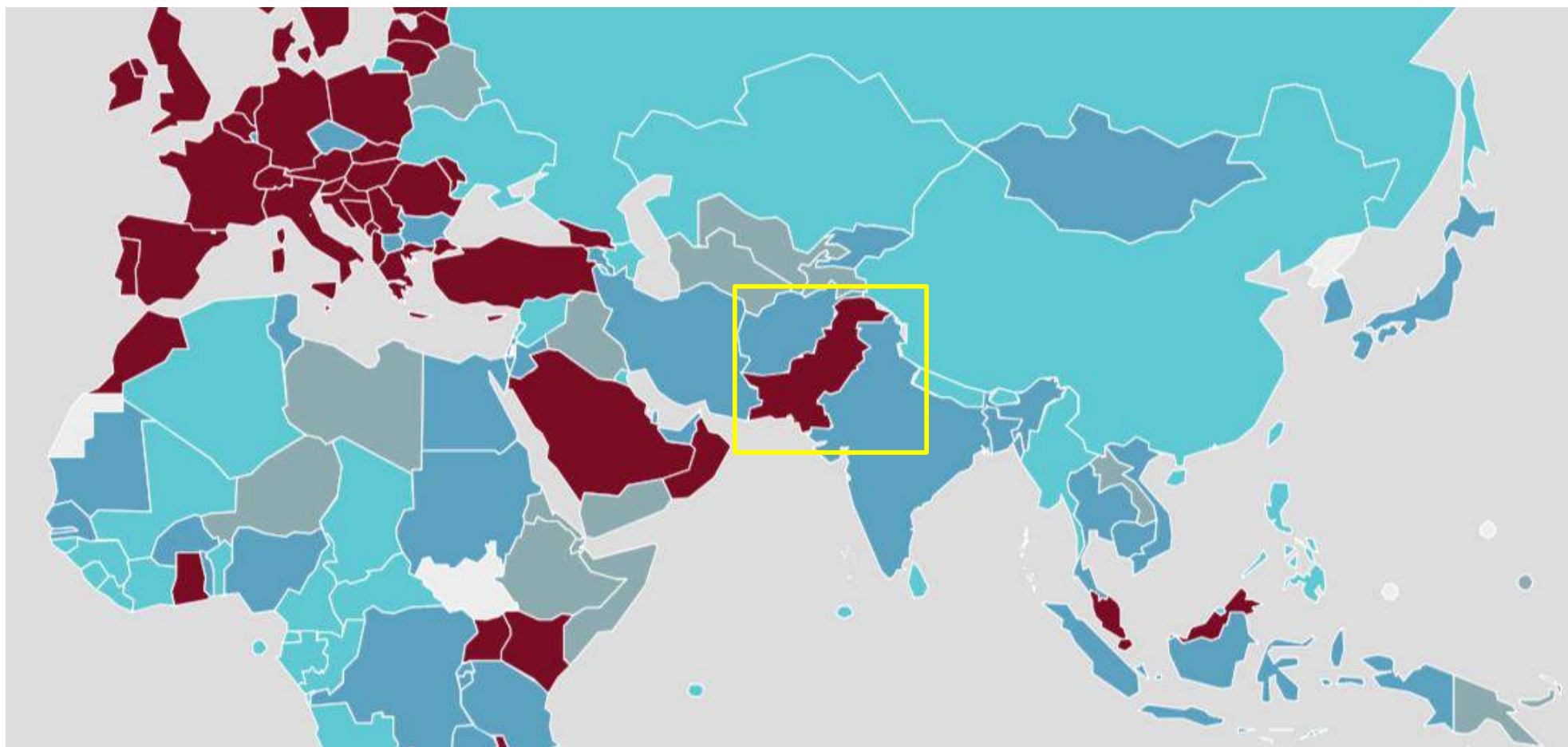
G2: Basic reform – partial liberalization and privatization across the layers

G3: Enabling investment, innovation and access – dual focus on stimulating competition in service and content delivery, and consumer protection

G4: Integrated regulation – led by economic and social policy goals



ITU – World Map



Pakistan is the only 4th Generation Regulator in South Asia

Generations of ICT Regulation

- 1st generation: Tracker score 0 - 40
- 2nd generation: 40 - 70
- 3rd generation: 70 - 85
- 4th generation: 85 - 100

The 5th Generation of Regulation

G5: Collaborative regulation, with the need to define the foundation, platforms and mechanisms for working with other sector regulators to help achieve the Sustainable Development Goals



Ongoing Tasks in PTA (S&D Division)

Policy & Research:

- Licensing Framework Review
- Gen-5 Collaborative Regulations
- Active sharing / Spectrum sharing Framework
- Guidelines for Neutral Host Networks
- MVNO Framework Review
- Wholesale Fiber plan, Copper to Fiber migration plan & incentives
- Test & Trial Framework
- Regulations for 5G
- Developing Outside Plant Code, In-building Code, Utility Infrastructure Code
- Environmental Guidelines
- QoS Regulations
- Repeater Regulations
- Review of RF Emissions Guidelines.

Spectrum Planning:

- Short Range Devices / Ultra Wideband and IoT Framework
- Administrative Incentive Pricing (AIP) Regime for back-haul spectrum
- Spectrum Re-farming
- Spectrum Strategy & Road map
- Collaboration with APT, ITU and other global and national bodies on Spectrum related matters
- Future of Wireless Local Loop regime

THANKS