



Spectrum Policies to Bridge the Broadband Divide

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Vision of PTA: Create a fair regulatory regime to promote investment, encourage competition, protect consumer interest and ensure high quality ICT services.

The Wireless Challenge

- Connecting all the people: 4 Billion still unconnected
- Connecting all the “things”: 50 Billion connected devices by 2020
- Both require good spectrum policies

Connecting the unconnected: Challenges

- Availability of Network
- Cost of ownership, including the price of handsets, services and charging
- Perceived lack of need
- Cultural barriers (e.g. women's ownership)
- Fear of technology, lack of basic literacy
- Lack of in-depth research on needs
- Need for vetted quality life-enhancing mobile content
- Competing corporate priorities

How to Bridge the Broadband Divide? (Availability point of view)

- Backhaul
 - Fiber
 - Satellite

- Access
 - Fixed
 - Wireless

How to Bridge the Broadband Divide? (Availability point of view)

- Spectrum
 - Licensed
 - Unlicensed
 - TV White Spaces, Licensed Shared Access

Spectrum Allocation Policies

1980s: The first commercial licences

First generation of analogue commercial mobile licences issued

- Eg USA 1978, Finland 1980, UK 1982, Australia 1987.

1990s: Move to 2G

Move to 2G GSM – Licences granted for 900 MHz & 1800 MHz

- GSM 900 MHz licences granted early 1990s, mainly through beauty contests
- In the late 1990s, a second set of GSM 900 MHz/1800 MHz licences granted through a mixture of beauty contests and auctions.

2000s: 3G licences

3G spectrum licences issued

- 2.1 GHz auctioned 2000–1 in Europe, Australia and Asia. Record fees paid
- Beauty contest and administrative processes also used, eg Finland, France, Ireland, Portugal, Spain and African nations apart from Nigeria and Egypt
- Auction subsequently became the common method, eg Brazil 2007, India 2010.

2010 + : Licence renewals and Digital Dividend for 4G

900/1800 MHz licence renewal/reauction

- At end of first licence period, some extended, eg Egypt, France, UK. Others extended licences but operators gave up some spectrum in return for 4G refarming eg Italy, Spain
- Some countries reaucted spectrum eg Netherlands, Ireland

Digital Dividend spectrum auctioned for 4G

- Germany 2010; Spain, Portugal, Italy, Greece 2011; Romania, Netherlands 2012; UK, Czech Republic 2013
- Under review in many other countries, eg Australia, South Africa, Kenya, India.

Spectrum Policy: Issues to consider

- Spectrum bands, Technology Neutrality and block size
- Long term impact versus upfront money
- Clear Renewal Policies and payment terms
- Other anticompetitive conditions (leaving certain players out)

Licensed Spectrum Bands

- The Coverage Band
 - 700, 850, 900 MHz
- Coverage and Capacity Band
 - 1400, 1800 MHz
- Capacity Bands
 - 2100, 2300, 2500/2600 MHz
- Super Bands
 - 3400 MHz and beyond for IMT2020 (5G)

Ecosystem

- The Coverage Band
 - 700 MHz(LTE)
 - 850 MHz (UMTS and LTE)
 - 900 MHz (UMTS and LTE)
- Coverage and Capacity Band
 - 1800 MHz(LTE)
- Capacity Bands
 - 2100 MHz(UMTS and LTE)

Using the APT 700 MHz Band to bridge the Digital Broadband Divide

- Similar lines as Germany and Colombia
- Stringent Coverage Obligations in the rural areas
 - Implementing USO by the operators: Fast deployment
 - Reduced upfront revenue and taxes
 - Long term Benefits outweighing the revenue apparent loss

Other Policies issues

- No restrictions on Unlicensed Band
- Wi-Fi
- TV White Spaces, Licensed Shared Access
- Spectrum Sharing and Trading

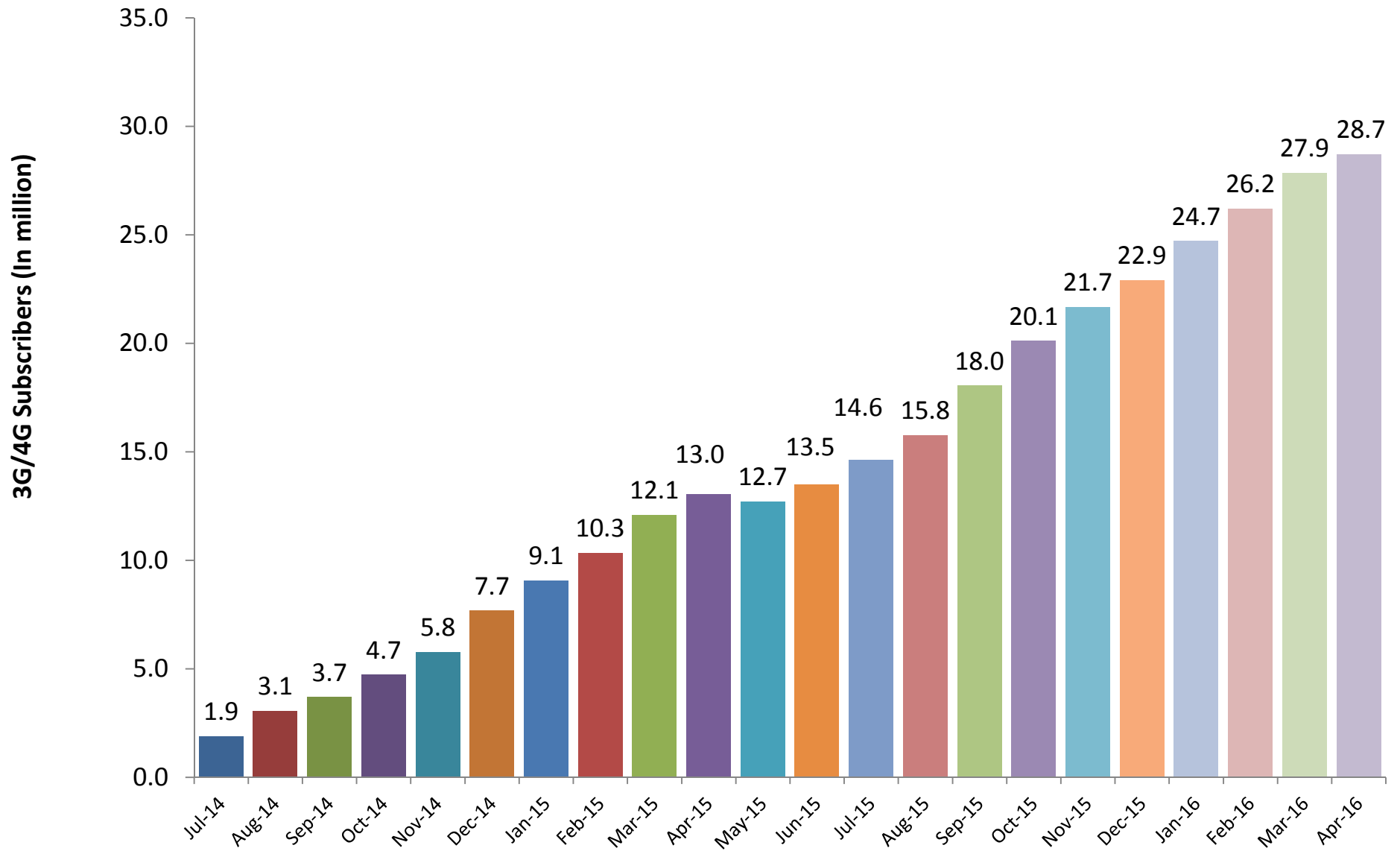
Benefit of Unlicensed Bands

- 57% of the total data traffic carried through Wi-Fi
- Most devices have Wi-Fi capabilities
- Development like LTE-U can result in increased data rates

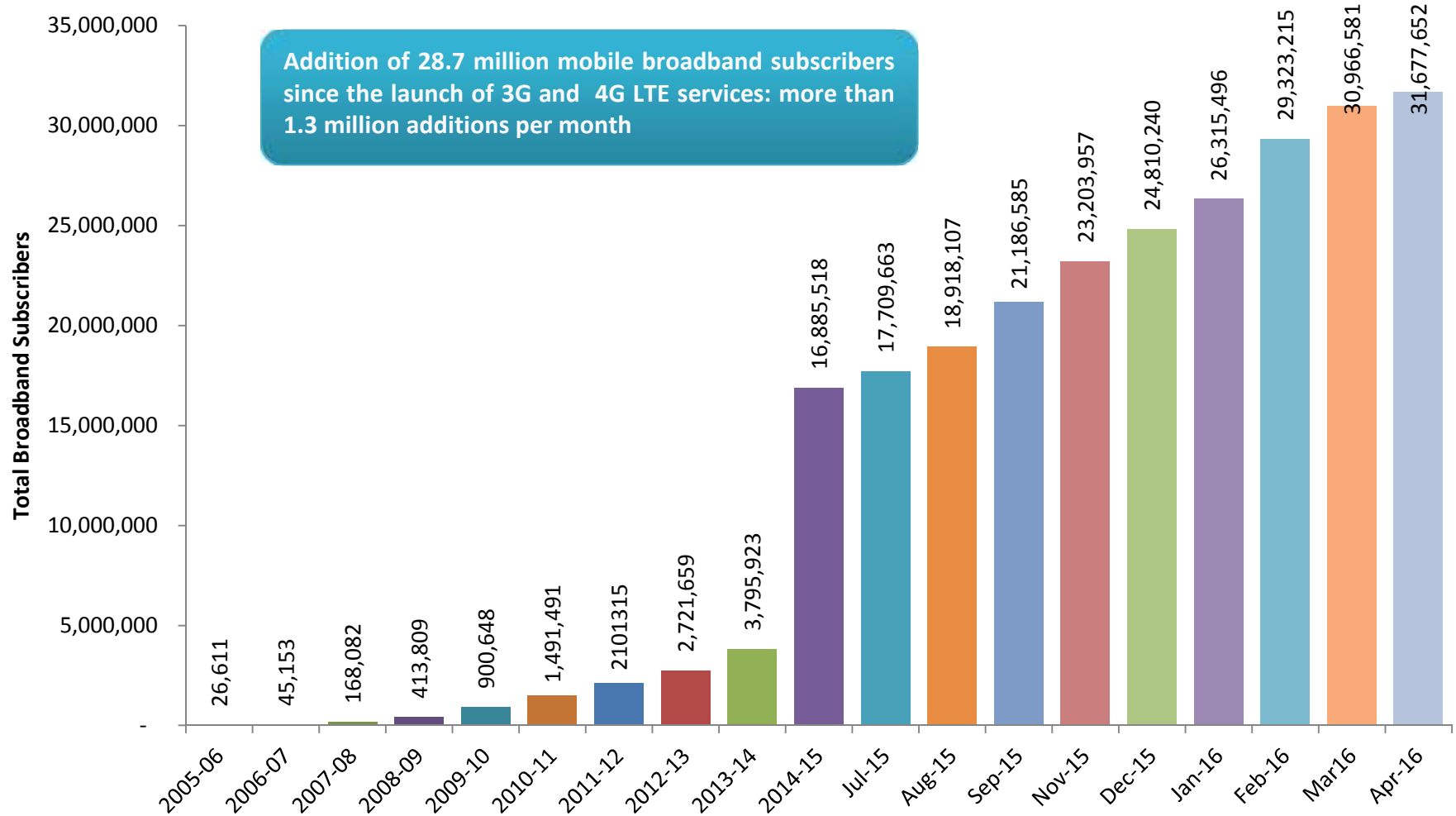
Example from Pakistan

- Choice of technology**
- Other Conditions**

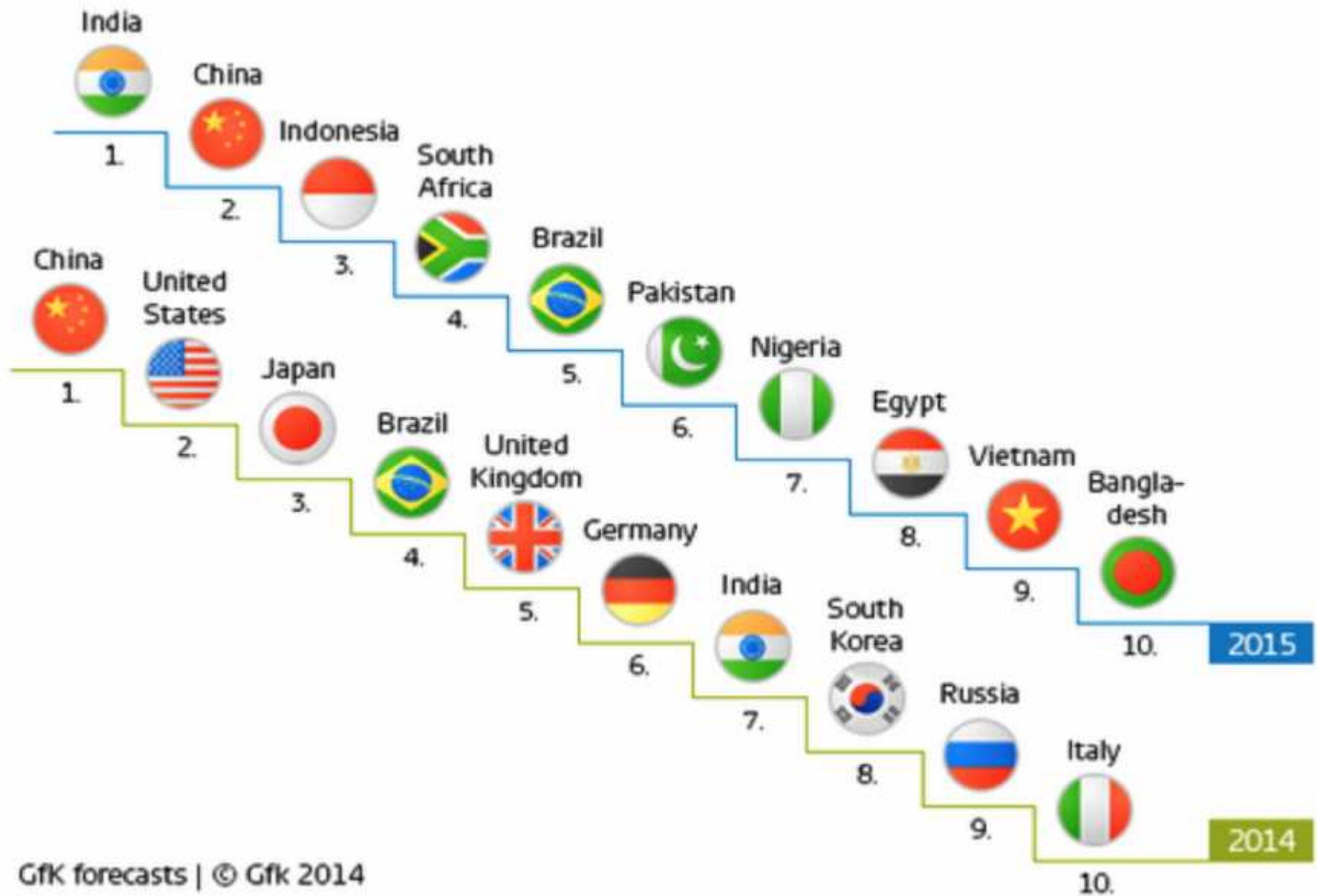
Growth in Mobile Broadband



Growth in Broadband



Top 10 smartphone markets for growth by value, 2015 compared with 2014



Conclusions

- Spectrum Policies play a very important role in bridging the broadband divide
- Clear road map and technology neutrality
- Innovative Approaches like using APT700 with coverage obligations and competition

Thank you

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