



Spectrum for IMT

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MOBILE CONNECTIONS
WORLDWIDE



Introduction

- Mobile services have transformed the world since their launch
- In 1990 there were 12 million mobile connections and no data services
- Dramatic mobile data growth since iPhone launch a decade ago

MOBILE BROADBAND AND SMARTPHONE EVOLUTION

Mobile broadband connections to increase from 55% of total in 2016 to

73%

by 2020

By 2020, there will be

5.7bn

smartphones – up from 1.9 billion from the end of 2016

Mobile data has grown

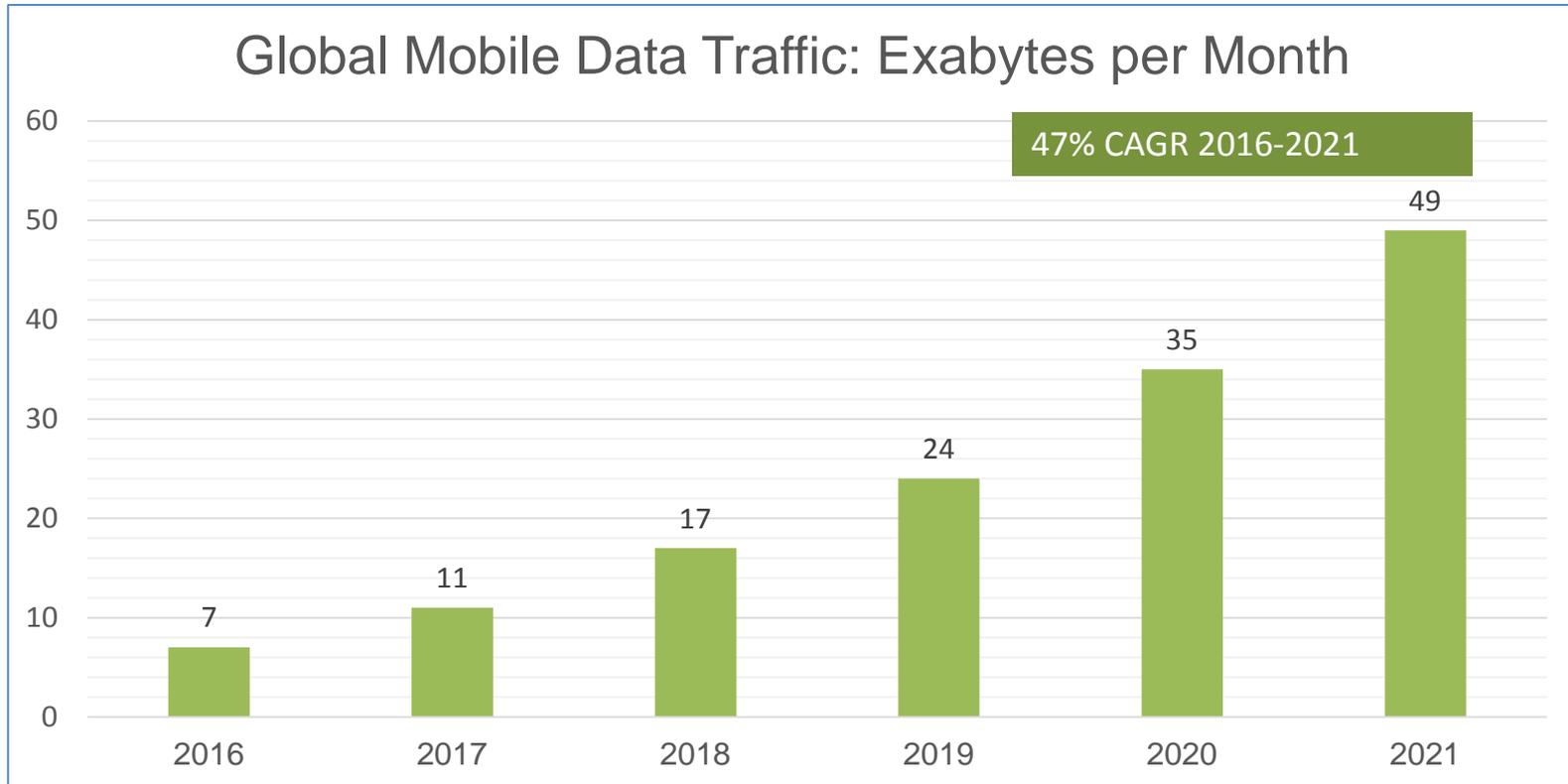
18-fold

In the past five years



Global data traffic forecasts

Worldwide, mobile data traffic is expected to increase sevenfold between 2016 and 2020



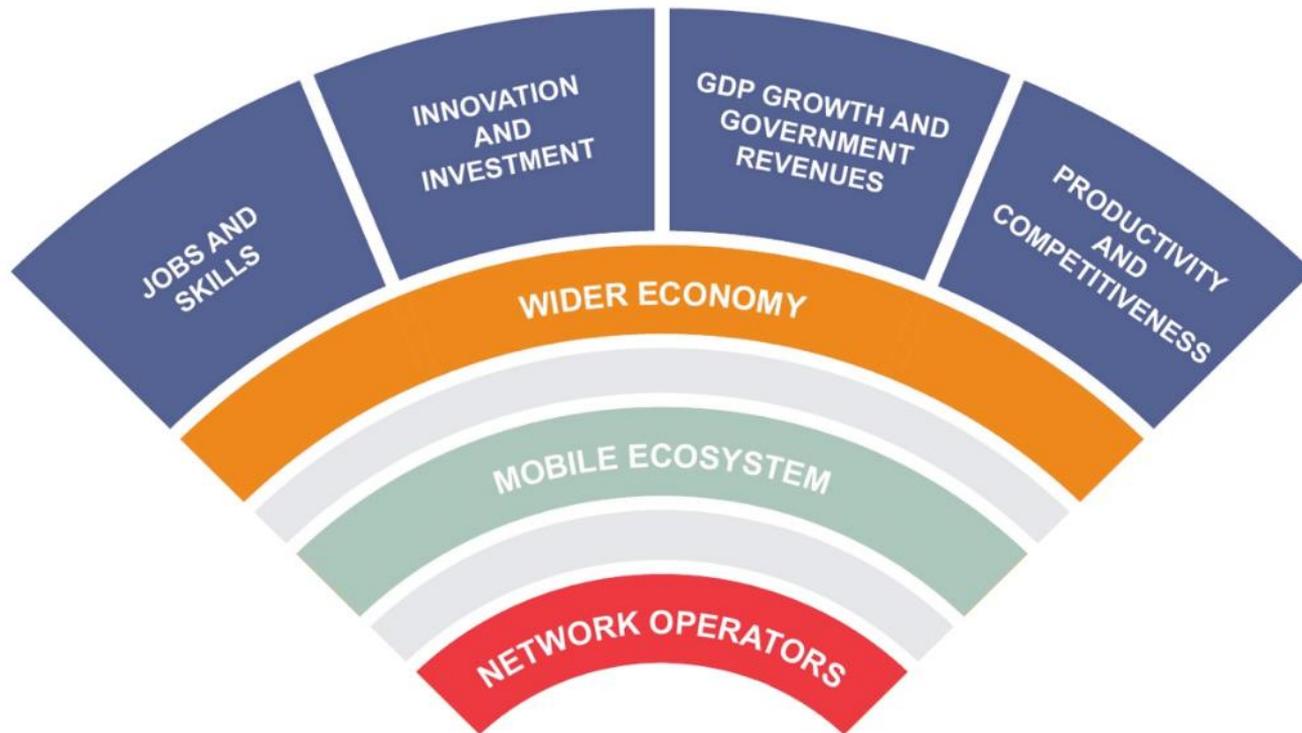
Source: Cisco VNI Mobile 2016

The growing adoption of data services has become the major source of traffic since 2010.



Socioeconomic areas the digital dividend can impact

Is there a sense of the economic impact the digital dividend can have in your country?





Mobile broadband uplift

Mobile broadband brings huge benefits to economies

A 10% increase in penetration of broadband services in low and middle-income countries accelerates economic growth by 1.38%

A 10% increase in broadband household penetration delivers a boost to a country's GDP that ranges from 0.1 to 1.4%

A 10% increase in broadband penetration translates into a 1.5% increase in a country's labour productivity over the following 5 years

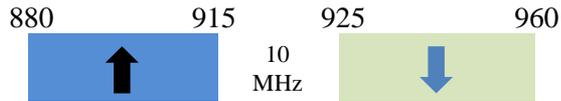
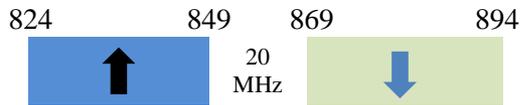
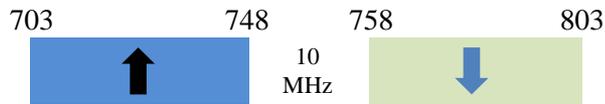
Countries with 80% broadband penetration are more than twice as innovative as countries with 40% penetration

Sources: World Bank, McKinsey & Company, Mobile broadband for the masses (2009), Booz & Company, Digital Highways: The Role of Government In 21st-Century Infrastructure (2009)

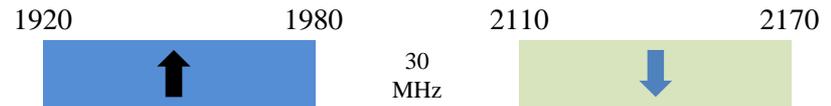
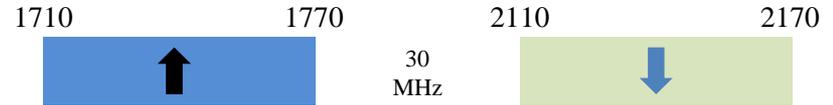
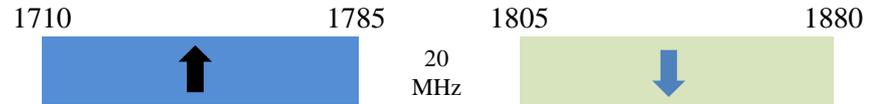


Identified spectrum bands in the Americas

Coverage Bands (<1GHz)



Capacity Bands (>1GHz)





Making better use of precious sub-1 GHz spectrum

Moving to digital TV means more can be done with less spectrum

Unique opportunity to significantly improve TV and mobile broadband services

Ideal for widespread mobile broadband coverage (inc. rural and in-building)

Changes mobile economics to bring affordable services to more people



470MHz



Analogue Broadcasting



803MHz or 862MHz

470MHz

Digital Broadcasting



698MHz or 790MHz



Mobile



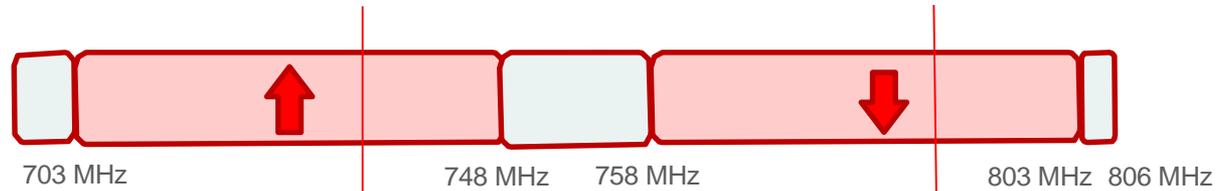
806MHz or 862MHz





700 MHz: a global band

Regions 2 & 3



Region 1





WRC-15 Outcome (5.293, 5.295, 5.296A, 5.308A..) and comments

Sub-700 MHz (614-698 MHz): Harmonised across North America

Identified for IMT in Bahamas, Barbados, Belize, Canada, Colombia, United States and Mexico
In Bahamas, Barbados, Canada, US, Mexico, 470-608 MHz or parts thereof also identified for IMT

Sub-700 MHz (470/614-698 MHz) was identified for IMT in several markets in R3

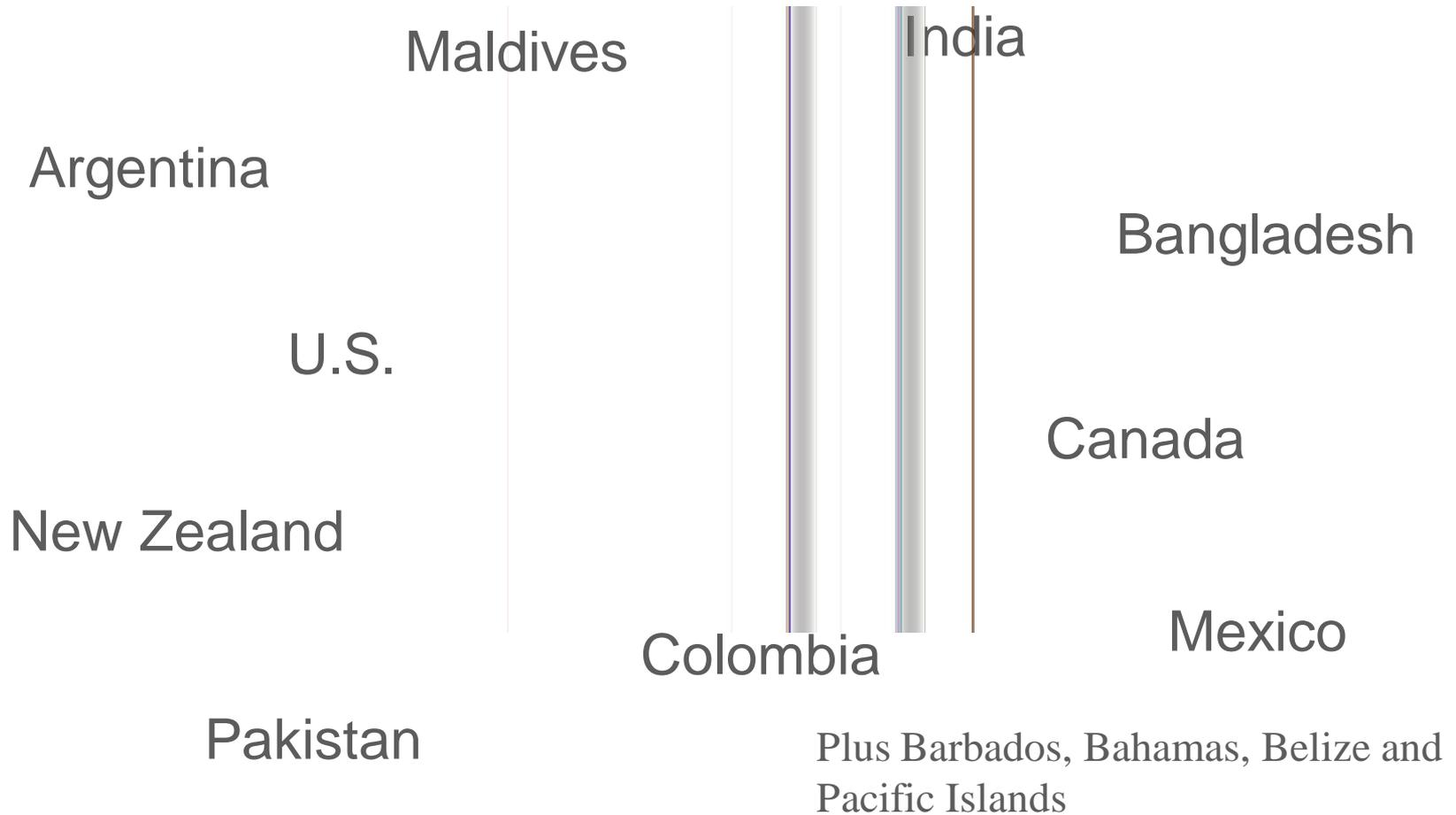
- 470-698 MHz: Micronesia, the Solomon Islands, Tuvalu and Vanuatu
- 610-698 MHz: Bangladesh, Maldives and New Zealand
- India and Pakistan did not sign up but have publically agreed to consider mobile in parts of the band
- Whole region has a mobile allocation, which could facilitate deployment before Europe.

A number of Arab countries at WRC-15 were in favour of IMT below 700 (including Jordan, Egypt, Morocco, Lebanon, Qatar, UAE, Kuwait and Palestine)

No sub-Saharan African countries were in favour of IMT/Mobile.



Countries backing 600MHz MHz spectrum for IMT





Why 600 MHz spectrum for IMT makes sense

Coverage bands – like 700MHz and 800MHz – will ultimately reach capacity putting mobile broadband at risk in emerging markets, rural areas and inside buildings

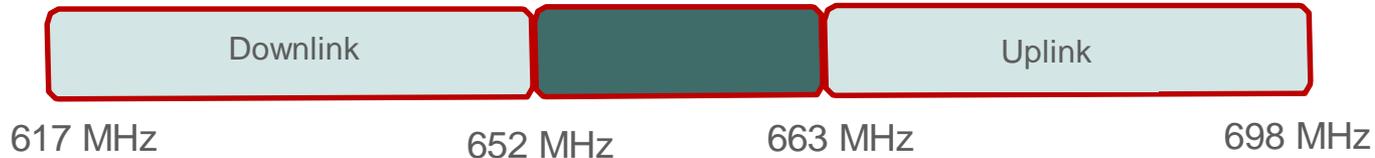
There will be less demand for a huge number of TV channels in future as people increasingly use the internet to watch whatever, whenever and wherever

Long-term planning is needed for countries that want the flexibility to use the band for mobile, broadcasting or a mix of both





The 600 MHz band plan a first step



- Mexico and New Zealand have proposed this band plan to the ITU and regional groups
- The same band plan announced by FCC, proposed by Canada in recent consultation and work continues in the ITU-R, Citel to develop Recommendation for this band plan
- Just like with previous band below 1 GHz, harmonisation will be key to success
- Spectrum made available in the US incentive auction





Digital dividend and TV whitespace considerations

Different impact, benefits and uses – TVWS should not delay the digital dividend

DD is a commercially proven success for delivering wide area, high- quality, affordable mobile broadband services – including in rural areas

Developing markets will struggle to deliver widespread, affordable LTE without it

TVWS has limited availability, limited QoS and is not commercially proven

May have a role to play but reliance on Wi-Fi means it will most likely be used for fixed hotspots





Summary

- 600, 700 and 800 MHz bands are coverage bands, ideal to improve rural coverage
- Long term planning needed to meet digital broadcasting and mobile broadband needs
- Ecosystem for 600 MHz has started to support 5G introduction
- Harmonized band plan will provide economies of scale

