NEXT GENERATION SPECTRUM MANAGEMENT

USTTI, WASHINGTON DC

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Future Areas of Focus

- Transformative Agenda of Digital Technologies
- Spectrum Management
- Building out infrastructure including infrastructure sharing
- Consultative approach- Policy and Regulatory Decisions

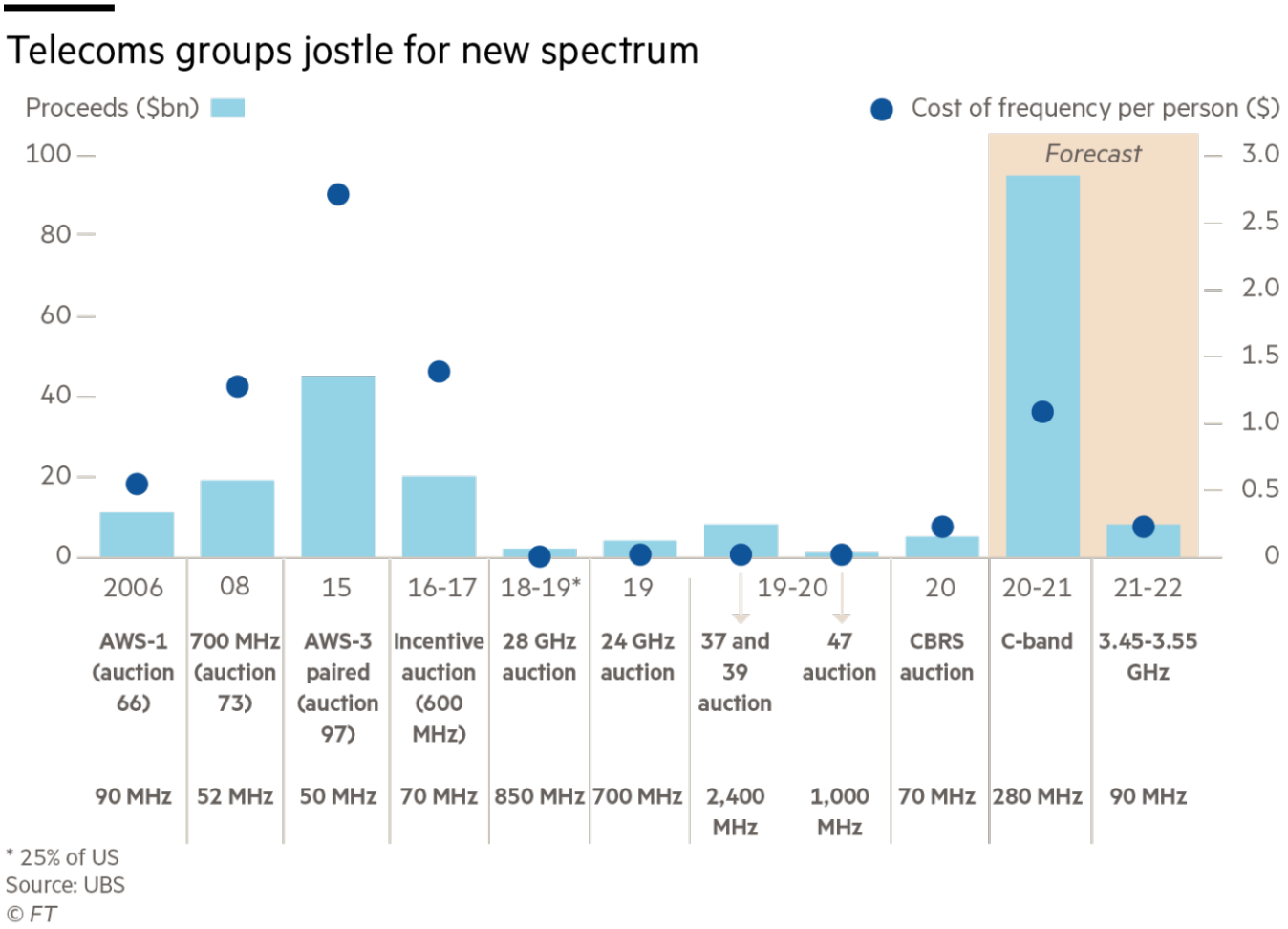
What Next ? Do we really Know?

- Future is nearer than what we think
- Infrastructure competition may not be sustainable.
- Future may have type of services using digital connectivity platform which you and me may not imagine today.
- COVID, Conflict , and Climate have shown this

Digital is bending the arc of development and offering ways to shape the development paradigm

- Global interconnected bandwidth is growing at 40 percent CAGR and is likely to reach around 100s TBPS within a short time period
- The digital economy is the single most important driver of innovation , competitiveness and growth. Again, COVID has proven it
- 90% of digital data has been created in the last 5 years.

US Spectrum Auction



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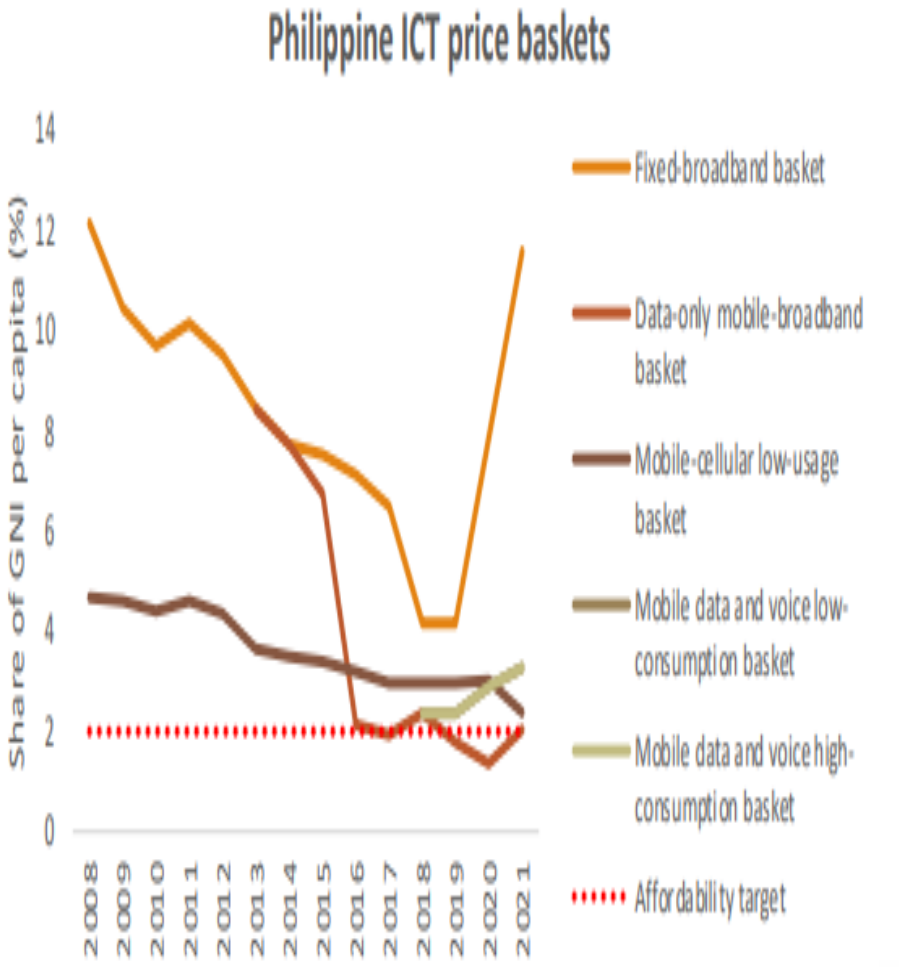
Philippines has the 3rd most expensive ICT services across all price baskets among the ASEAN countries.

In terms of share of GNI per capita:

Data only mobile broadband - most affordable (2.04%*)

Fixed broadband - most expensive (11.56%*)



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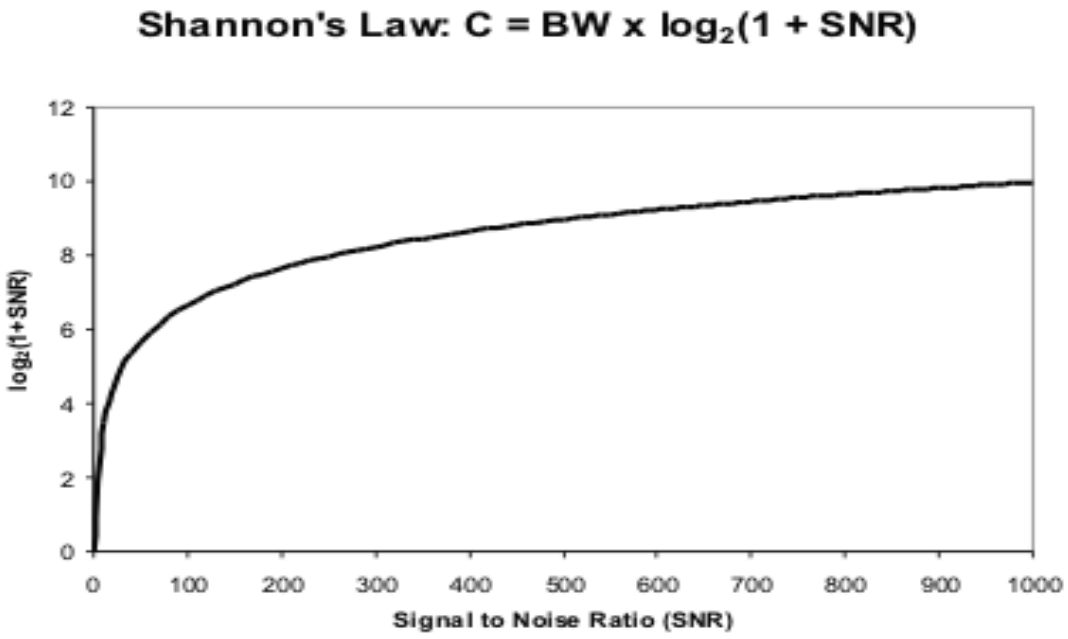
What is new in Spectrum Management?

- Spectrum Availability- From Sub-2GHZ to MM Wave
- More than 80 percent of telecommunication is within the buildings. Spectrum management for indoor and outdoor communication has different network attributes
- Software Defined Radio (SDR), Cognitive Radio , Open RAN, Telco Cloud, Disaggregation and virtualization of Networks

SHANNON'S THEOREM -WHAT DOES IT TELL?

Bandwidth(BW) increase is the only solution to enhance the channel capacity(C) beyond a limit



Spectrum Management

- Future wireless technologies will be driven by massive bandwidth , low latency as well, but high bandwidth is a big differentiator.
- About ten years ago, 4G services were launched with 10X10 MHz spectrum in different sub 3 GHz bands but today we are talking about 400 MHz to a Gig bandwidth. With more than ten-fold increase in spectral efficiency the uplink and downlink data speeds will be in multiple Gigs.
- Even the current technology launch will easily achieve 1 GBPS peak speed
- Use of MM wave (6-100 GHZ frequency range) will have its own challenges to the industry and regulators like small cell configurations in dense urban areas
- Government has a monopoly in supplying spectrum

Spectrum Policy for Resilient Networks in Emergency

- Telecom usage shifted from offices to residential areas during COVID-19. How to manage congestion with spectrum management flexibility. SoN Technology can help .
- In case of natural disaster, traffic increases at the affected site. Temporary increase in capacity is necessary to avoid congestion.
- Mobile Base station (Towers) in case of emergency also need flexibility in spectrum management

Spectrum : Land or Sea

- Should spectrum continue to be allocated like a piece of **Land** on lease for a definite period or spectrum be treated like **Sea** which can be accessed by different service providers following certain prescribed rules and regulations
- Technology can permit this. Human ear example

Spectrum Management and Digital Divide

- Dynamic Allocation of Spectrum and Network Sharing
- National Roaming

Consultation Process

- All policy and regulatory decisions should be taken in consultation with various stakeholders
- We suggest to streamline the consultation process. The World Bank team will be very happy to share international experience in this regard.

Thank you !

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