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Except for Indonesia and PH, all ASEAN countries are landmass, some with very few islands. It is much cheaper to extend internet connectivity to all households thereat.

While the public telecommunications entities (PTEs) in the PH are installing their own fiber network nationwide, these are concentrated in areas where households can afford the relatively high cost of internet access.

Connecting islands through submarine fiber network is approximately six (6) times more expensive than terrestrial fiber network. To reduce cost, Globe, Eastern Communications and Infinivan have agreed to jointly build a nationwide fiber network.

DICT should pursue the implementation of the national broadband plan to include middle mile infrastructure.

ICT Prices in the Philippines

Data only mobile broadband service is the most affordable at 2.04% of GNI per capita

Fixed broadband service is the most expensive at 11.56% of GNI per capita

ICT service across all baskets in PH is 3rd most expensive among the ASEAN countries, better than Cambodia and Lao PDR

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The cost of broadband infrastructure in Singapore is the lowest among the ASEAN countries. Singapore's land area is approximately 720 km². it has the most affordable ICT services.

The cost of broadband infrastructure in all ASEAN countries, except Indonesia, is lower than in the Philippines. Philippines and Indonesia is composed of many major islands. Providing broadband connectivity in major islands is expensive because of the need to install submarine fiber optic cable. Indonesia operates its own telecommunications satellite.

To help reduce cost of broadband infrastructure, DICT should pursue the implementation of the National Broadband Plan. The PTEs may have to jointly build submarine fiber optic cables.

Population covered by at least 4G mobile network
PH 94% better than Malaysia 87.2%, Cambodia 80.3%, Myanmar 75% (2018) and Lao PDR 43%(2018)

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While the figure of 94%, appears to be high, it is the 4ᵗʰ lowest in population covered by at least 4G network in the ASEAN.

To cover more population, the cellsites should be common and subsidized by government (DICT). The remaining 6% of the population are living in GIDAs (geographically isolated and disadvantage areas). To provide mobile network access to these areas is very expensive.

Median download speed Ookla

From March 2022 to March 2023 the download speed:

Mobile: increased by 32.25% from 19.38Mbps to 25.63Mbps (below global median)

Fixed: increased by 73.64% from 52.16Mbps to 90.57Mbps (above global median)

PH ranking for mobile median download speed:

ASEAN : 8th (Mar 2022 to Feb 2023) to 7th (Mar 2023)

Global : 93rd (Mar2022) to 79th (Mar2023)

PH ranking for fixed median download speed:

ASEAN : from 4th (Mar2022 to Jan2023) to 5th (Mar2023)

Global : from 60th to 41st (Mar2023)

Addressing mobile download speed

For voice and SMS, the bandwidth requirement is much less than high speed broadband. The capacity of broadband networks is directly proportional to bandwidth. The wider the bandwidth, the higher is the capacity or speed. You can achieve high capacity in two (2) ways:

- Increase bandwidth assignment
- Increase RF re-use, meaning build more cellsites. However, the number of RF re-use of lower RF band is less than the RF re-use in the mid band. This means that you can re-use RF in the mid-band more than in the low-band.

The annual SUF rates for the low RF bands (total of 300MHz bandwidth), except 700MHz, are fixed regardless of the number of radio base stations. For spectrum efficiency, mobile network operators are increasing RF re-use to the extend allowable considering harmful interference.

The annual SUF for the mid-band RF (total of 690MHz including 700MHz band) is on a per KHz per station basis. As one player increases RF re-use it has to pay higher SUF. Mobile network operators are therefore discouraged to increase RF re-use to the extend allowable considering harmful interference resulting to inefficient use of the RF spectrum.

For the RF bands 700MHz, 2300MHz to 2400MHz, 2500MHz to 2700MHz and 3300MHz to 3600MHz the annual SUF rates are

Less than 1Ghz	6.00/KHz/station (Metro Manila)
	5.00/KHz/station (Highly Urbanized Cities)
	4.00/KHz/station (All Other Areas)
1GHz to less than 10GhHz	5.00/KHz/station (Metro Manila)
	4.00/KHz/station (Highly Urbanized Cities)
	3.00/KHz/station (All Other Areas)

For one radio base station (RBS) with a bandwidth of 200MHz using mid-band RF, the SUF is PHP800,000.00 (PHP4.00 x 200,000).
For 1,000 RBS, the SUF is PHP800M
For 10,000 RBS, the SUF is PHP8.0B

NTC SUF Collections

Year	Collection (PHP)	Increase	Est. Number of Additional RBS[1]
2022	6,727,429,448.79	225,094,828.79 (3.46%)	**125 each**
2021	6,502,334,620.00	1,267,349,260.86 (24.21%)	**704 each**
2020	5,234,985,360.14	514,566,730.09 (10.90%)	**286 each**
2019	4,720,418,630.05	934,996,723.56 (24.70%)	**520 each**
2018	3,785,421,907.49		**Total each = 1,635** **Total all = 4,905**

[1] bandwidth per RBS is 150MHz each. Average SUF rate per RBS is PHP4.00 per KHz

To encourage the mobile broadband operators to increase RF re-use thereby increasing spectrum efficiency, the annual SUF rates for the RF bands 700MHz, 2300MHz-2400MHz, 2500MHz-2700MHz and 3300MHz-3600MHz should be fixed.

The annual SUF rates for low band RF spectrum (800MHz, 900MHz and 1800MHz) are too low. The annual SUF rates are:
- PHP5M for the first 20MHz;
- Additional PHP1M per MHz in excess of 20MHz but not exceeding 30MHz
- Additional PHP2M per MHz in excess of 30MHz but not exceeding 40MHz
- Additional PHP5M per MHz in excess of 40MHz

The annual SUF rates for 3G (2100MHz) are reasonable.

There is a need to rationalize SUF rates to reflect present spectrum pricing and at the same time encourage MNOs to install more RBS.

NTC must possess the attributes of an independent regulator.

I believe, NTC continues to support legislative measures to make NTC an independent regulator.

The NTC Commissioners should have fixed term of office similar to the Securities and Exchange Commission, Philippine Competition Commission, among others.

NTC should have fiscal autonomy. Staff should be exempted from the salary standardization Law, and Legal assistance should be provided in case Commissioners and personnel face lawsuit in the performance of their duties and responsibilities.

Policy framework for the management of radio spectrum is needed to ensure proper sub-allocation, assignment, use and valuation.

The International Telecommunications Union (ITU) through its World Radio Conference (WRC) allocates the RF spectrum to specific services such as satellite, maritime, aeronautical. Member countries of ITU have the obligation to comply with the RF spectrum allocation. Review of the allocation is done by the WRC every four (4) years. WRC is scheduled to be held later this year.

NTC sub-allocates the RF spectrum and assigns the sub-allocated RF spectrum to specific users/assignees.

RF spectrum allocated to maritime, aeronautical, amateur can only be assigned to stations on board ships, stations on board airplanes and radio stations of radio amateurs, respectively.

RF spectrum allocated and sub-allocated to fixed point-to-point radio stations, mobile stations, fixed point-to-multipoint radio stations are open and can be assigned to entities for private use and entities for public use.

Except for mobile stations, RF spectrum can be assigned on sharing basis. RF spectrum, in order to avoid or minimize harmful interference, can be shared by location and time of use. More than one radio station using the same RF in the same location and time of use cannot be allowed.

Since there are sufficient RF spectrum allocated and sub-allocated to fixed point-to-point and fixed point-to-multipoint radios stations, there is no issue on the assignment of said RF spectrum to individuals or entities desiring to avail of the use of such radio stations.

RF spectrum sub-allocated to mobile radio stations for public use are assigned nationwide on a 24/7 basis. RF spectrum sharing is not possible.

Due to limited RF spectrum allocated to mobile telecommunications networks, there is a need for policy guidelines for the assignment of said RF spectrum from DICT or Office of the President. RA7925 (1995) provides that if demand for specific RF spectrum exceeds availability, NTC shall conduct open tender.

In 1988, NTC sub-allocated 20MHz by 2 (TX and RX) in the 800MHz band, and 25MHz by 2 in the 900MHz band (TX and RX) to mobile networks for public use. PLDT (transferred its mobile network to Piltel in 1991) and Extelcom were assigned 10MHz by 2 each in 1988 and 1989 respectively. Piltel and Extelcom used the American mobile phone standard, advanced mobile phone system (AMPS). Due to financial losses, Extelcom ceased operations in 2000.

In 1993, three more mobile network players were authorized, namely: Islacom (now Innove) with 10MHz x 2 (acquired by Globe in 2001), Globe Telecom with 7.5MHz x 2, and Smart with 7.5MHz x 2. Islacom and Globe opted to operate GSM (group special mobile – European standard) while Smart opted to operate TACS (total access communications system – UK standard). In 1999 Smart migrated its TACS system to GSM due to the popularity of the SMS.

In 1997, NTC sub-allocated 75MHz by 2 in the 1800MHz band. In 2000, NTC authorized Digitel (acquired by PLDT in 2011) and Bayantel (acquired by Globe in 2013) to operate mobile network. In 2005, NTC sub-allocated 55MHz x 2 in the 2100MHz band (3G). CURE, a new entrant into the mobile network market was authorized. CURE was acquired by Smart in 2009. Effectively since 2013 up to 2019 there were only two (2) mobile network operators.

1n 2005, NTC sub-allocated RF spectrum bands 2500MHz to 2700MHz and 3400MHz to 3600MHz to broadband wireless access (BWA) networks. In 2007, NTC sub-allocated 2300MHz to 2400MHz to BWA. And in 2018, NTC sub-allocated 3300MHz to 3400MHz to BWA. These RF bands were assigned to MNOs.

RF bands 2300 to 3600MHz have a total bandwidth of around 600MHz. RF bands in the 800MHz, 900MHz, 1800MHz and 2100MHz have a total bandwidth of 350MHz. RF band in the 700MHz band has a total bandwidth of 90MHz.

NTC has authorized more than ten (10) mobile network operators MNOs) since 1988. But due to mergers and acquisitions, the number of MNOs was reduced to two (2) in 2013.

The MNOs in 2000, predicting the future demand for high speed internet access and to increase bandwidth, have opted to acquire PTEs with assigned RF spectrum sub-allocated to mobile networks and BWA networks.

The demand for high speed broadband services is high. To realize high capacity networks the RF bandwidth must be as wide as possible.

Fewer mobile broadband network operator result to wider bandwidth for each operator. As number of mobile broadband operator is increased the bandwidth assigned to each operator is less.

To increase capacity at low cost, there should be one (1) mobile broadband network operator (MBNO). However, monopoly is discouraged by the 1973 Constitution. The probability of cartel is high if the MBNO is two (2). Said probability is reduced if the number of operator is three (3). To ensure high speed broadband service is delivered to the subscriber/users and maintain effective competition in the mobile broadband market, the MBNO should be limited to three (3).

In most of the countries, the number of mobile broadband network operators is three (3).

There is a need for DICT or the Office of the President to issue a policy limiting the mobile broadband network operators (MBNOs) to three (3) and the RF in low and mid bands should be equally assigned to the three (3) MBNOs.

Licensing regime is restrictive and burdensome. Internet connectivity has the highest barriers to market entry.
Open access framework and increased transparency will reduce the barriers to entry and help facilitate growth of broadband.

Two (2) barriers to market entry exist, namely: Congressional franchise and authorization granted through a quasi-judicial process. These two (2) barriers should be removed to ensure fair and effective competition in the market.

The "open access" bills filed in Congress should be pursued and supported.

Reducing the digital divide in terms of internet access must continue to be the policy priority.

Providing broadband access to missionary areas and geographically isolated and disadvantaged areas (GIDA) should be pursued by government through DICT. Funds from annual SUF collections should be earmarked to extend broadband infrastructure in these areas.

Regulation of ICT Technology

Technology cannot be regulated. Technology is developed to address needs of people and industry.

Regulations must support technological development.

SUMMARY

To improve telecommunications and internet connectivity infrastructure and services:

- The annual SUF rates should be reviewed, rationalized and harmonized.
- Encourage PTEs to jointly build submarine fiber optic cables.
- DICT should pursue the implementation of the national broadband plan to include middle mile infrastructure.
- Support the enactment of a law for an independent NTC.
- DICT or the Office of the President should issue policy guidelines to limit the number of MBNOs to three (3) and the RF spectrum equally assigned.
- Support the enactment of a law on "Open Access".
- DICT should earmark part of the NTC SUF collections to provide broadband access, both fixed and mobile, in GIDAs
- Regulations should encourage and provide incentives to technology developers.

THANK YOU VERY MUCH