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# Broadband

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## Philippine Broadband: A Policy Brief

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# Philippine Broadband: A Policy Brief

## I. SUMMARY

This policy brief is about Philippine broadband service, its real and potential benefits, problems and challenges, and recommendations on how to address them. It is the result of independent research with inputs from a roundtable discussion with key stakeholders. Philippine broadband penetration is limited, quality is poor, and access is expensive. It has one of the slowest average connection speeds in the Asia Pacific and is the costliest in the world. Major problems identified include the presence of barriers to entry, anti-competitive practices, inadequate infrastructure, weak and ineffective regulation, prohibitive bureaucratic requirements in infrastructure build-out, and the lack of interconnection. To address these binding constraints, some of the key

recommendations include: (1) adopting an open access model, where segments of the internet infrastructure will be opened up to more and different players both local and foreign; (2) updating and upgrading laws and policies, which includes amendments to the Public Telecommunications Policy Act and the enactment of the bill creating a Department of ICT; (3) leveling the playing field by promoting open and neutral internet exchange points (IXPs) and encouraging infrastructure sharing; (4) updating the country's ICT strategy and plan, including the development of a national broadband plan; (5) improving spectrum management; and (6) ensuring and protecting the competitiveness of the telecommunications industry.

## II. INTRODUCTION

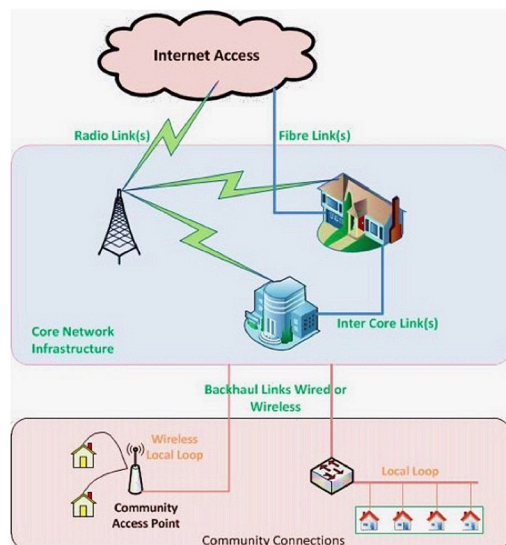
Broadband internet access<sup>1</sup> has been widely considered as a tool that can help achieve development and accelerate economic growth. An often-cited World Bank study estimates that a 10-percent increase in broadband penetration can lead to a 1.38-percent increase in a country's GDP. According to the Organization of Economic Cooperation and Development, the benefits of broadband access to less developed countries (e.g., Brazil and China) are even greater. An entry-level connection of 0.5 Megabits per second (Mbps) has been found to increase household income by \$800 per year. According to the recently launched ICT Manifesto for the Philippines,<sup>2</sup> the diffusion of broadband technologies can have a greater impact on economic growth. It says,

*In the ASEAN region, other factors being equal, a 1-percentage point increase in internet penetration rates translates into an additional .65 percentage point of GDP growth, on average. This would mean at least PHP 75 billion more in GDP for the Philippines based on 2013 values (p. 5).*

At the recent APEC Summit in Manila, Trade Secretary Greg Domingo highlighted the need for government to promote micro, small, and medium-sized enterprises (MSMEs) and to help make them "go global." Reliable broadband connectivity is an essential tool for making

businesses, especially MSMEs, competitive in the global arena. It helps improve their processes and allows them to expand their marketing and clientele. As MSMEs comprise a majority of businesses in the country, the broadband initiative becomes part of building an inclusive economy. Expanding and improving broadband

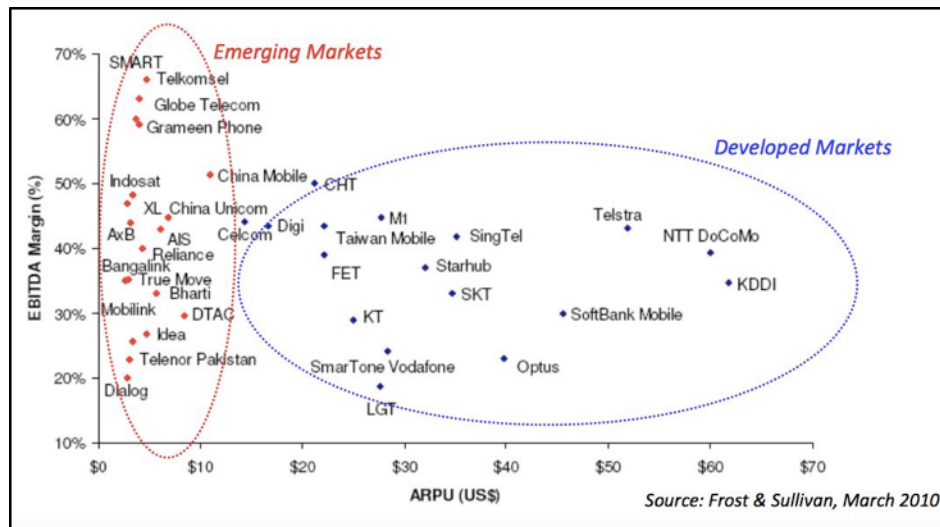
Figure 1. Internet infrastructure



Source: Rural Broadband Partnership.

1. Broadband is defined as "high-speed Internet access which is always-on and capable of multiple service provision simultaneously." Broadband Commission. 2010, September. A 2010 Leadership Imperative: The Future Built on Broadband. [http://www.broadbandcommission.org/Reports/Report\\_1.pdf](http://www.broadbandcommission.org/Reports/Report_1.pdf).  
2. Lee Kuan Yew School of Public Policy & Microsoft. 2015. Shared Prosperity: An ICT Manifesto for the Philippines for 2016 and Beyond.

Figure 2. Telcos with Strong Profitability, Low ARPU



Source: Cited in Alcatel-Lucent (2010).

connection also helps address the problem of increasingly congested cities, as it enables telecommuting or working remotely. This also allows certain industries, such as business process outsourcing (BPO) and other internet-dependent services, to expand to areas outside of the urban centers.

In the Philippines, the Internet is considered an enhanced or value-added service (VAS).<sup>3</sup> By law, the provision of internet service is anchored on the telecommunications (telcos from here on) networks owned and controlled by private telecom operators. The telecom companies' (telcos) network infrastructure (see Figure 1) consists of the international connectivity (through fiber optic submarine cables or communications satellites), international gateway facilities (IGFs) and cable landing stations (CLS), backhaul or "middle mile,"<sup>4</sup> and the "last mile."<sup>5</sup>

Two telcos dominate the market: the Philippine Long Distance Telephone (PLDT) Company (with 70% market share) and Globe Telecom, Inc. (28%). The incumbent operator, PLDT, and main competitor, Globe, are the major providers of fixed and mobile broadband services nationwide. The two incumbents have some of the

highest earnings before interest, tax, depreciation, and amortization (EBITDA) margins<sup>6</sup> compared to other telcos globally. In 2010, PLDT and Globe were enjoying between 60% and 70% EBITDA margins despite very low average revenue per user (ARPU) (see Figure 2). Over the past few years, PLDT and Globe have recorded EBITDA margins of 40-45%.

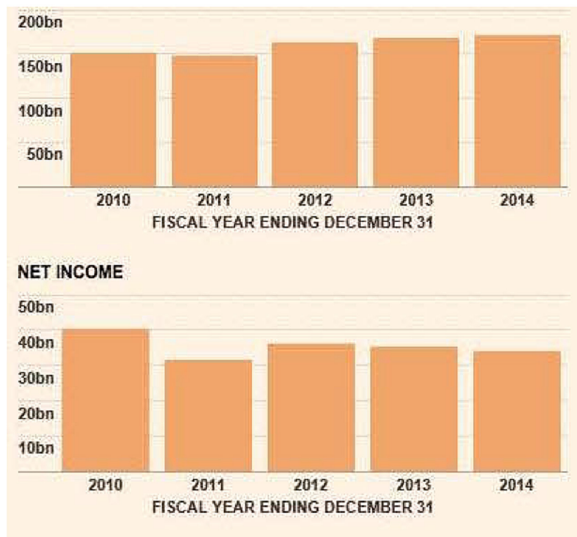
These two companies are also among the top companies in the land. In 2013 and 2014, PLDT was named the country's most valuable listed company, with market value estimated at P576 billion and P562 billion, respectively. In 2015, Forbes Global 2000 listed its market capitalization at P669 billion (US\$14.1 billion).<sup>7</sup> PLDT has had consistent revenues of about P150 billion and net income of not lower than P35 billion since 2010 (see Figure 3). Meanwhile, PLDT's lone rival, Globe Telecom, was valued at P241 billion in 2015.

**Internet access in the Philippines is growing but at a much slower pace compared to ASEAN neighbors.** Internet use by Filipinos was estimated at 44 million out of the 100-million total population—either through subscription or shared access—as of end-2014.<sup>8</sup> Broadband access is much lower, estimated at 22.9

3. RA 7925 defines a VAS provider as an entity that "offers enhanced services beyond those ordinarily provided for by [telecom] carriers."  
 4. "Middle mile" provides transmission services between first and last mile facilities, which originate and terminate Internet traffic, and long haul networks, including domestic and international backbone networks.  
 5. "Last mile" or kilometer refers to the link provided by a retail ISP to subscribers so they can download and receipt content from the Internet cloud and also upload content and instructions. World Bank Group. Overview of Broadband Networks. Broadband Strategies Toolkit. <http://broadbandtoolkit.org/5.2>.  
 6. EBITDA margin is a measurement of a company's operating profitability. It is equal to EBITDA divided by total revenue.  
 7. Forbes. 2015. Forbes Global 2000 <http://www.forbes.com/companies/pldt/>.  
 8. This figure is based on estimates by Google Philippines. ITU's figure is lower, at 39.7 million as of end-2014.



**Figure 3. PLDT Revenue and Net Income in PHP, 2010-2014**



Source: Financial Times, 2015.

per 100 Filipinos in 2013. In 2013, the U.N. Broadband Commission estimated fixed broadband subscription at 2.6 per 100 Filipinos and mobile broadband at 20.3 per 100 Filipinos (Broadband Commission, 2014). However, the same report revealed a huge increase in broadband subscription the following year, with fixed broadband subscription suddenly jumping to 23.2 per 100 capita while mobile broadband was pegged at 28.0 per 100 capita. This would put Filipino broadband subscribers for 2014 at 51.2 million, a much higher number than the estimated total number of internet users in the country for the same year.<sup>9</sup>

PLDT and Globe, the country's largest internet service providers (ISPs), own and control most of the existing Internet infrastructure—from the submarine cables, the landing stations, the backhaul network (“middle mile”), up to the last mile. As such, the dominant telcos also dictate access to and the cost and quality of Internet and broadband service in the Philippines, both fixed and mobile.

**Fixed broadband.** Much of the country's internet service is still dependent on the legacy copper network of telcos

from the landline era, and only a small portion of internet users have direct fiber connection. The Philippines has the historical problem of a dominant carrier that has been commercially driven to focus on high revenue areas and is able to keep its major competitor at bay. While the mobile markets are competitive, the national fixed-line coverage has left many remote areas underserved.<sup>10</sup> PLDT was a monopoly of landlines for several decades and accounted for about 94% of the country's copper-wire network until the early 1990s. It owned and controlled a national transmission backbone through which all voice calls had to pass for long-distance connections. The remaining 6% of the fixed line network was maintained by small local operators who formed the Philippine Association of Private Telephone Companies (PAPTELCO); they were scattered throughout the provinces and rural areas (Lichauco, 2006). However, PLDT eventually either bought these small players out, including the Philippine government's telephone system, or drove them into bankruptcy by choking calls going to their networks (Salazar, 2007). Fixed line subscription has remained stagnant over the past 15 years. It was estimated at 3.09 million as of end-2014, 70% of which was in Metro Manila. Bayan Telecommunications (Bayantel), a telco put up by the Lopez Group of ABS-CBN broadcasting, started competing with PLDT in landline service in the early 1990s. It also offered fixed broadband, with about 200,000 subscribers in 2014. Bayan was bought by Globe in 2015 through a debt-to-equity conversion transaction. Fixed broadband services are often bundled with landlines, and are concentrated in the densely populated and commercially viable urban areas.

**Mobile broadband.** As with many developing countries, mobile phones are the primary mode of telecommunications in the Philippines. Mobile phone access is expansive, at 114 mobile-phone subscription per 100 Filipinos as of end-2014. Over the past five years, internet-enabled smartphones have been increasingly replacing feature phones.<sup>11</sup> In 2014, the smartphone-to-feature phone ratio reached 47%, up from 24% a year earlier (IDC, 2015). The PLDT Group (Smart, Talk 'n' Text, and Sun Cellular) and Globe are the only cellular mobile telecommunications service (CMTS) providers in the

9. The discrepancy in the data on broadband access is a critical issue that needs to be resolved immediately, as this would help inform policy and programs on universal access.

10. Internet Society and TRPC. 2015. Unleashing the Potential of the Internet for ASEAN Economies. [http://www.internetsociety.org/sites/default/files/ISOC\\_ASEAN\\_Digital\\_Economy\\_Report\\_Full\\_s.pdf](http://www.internetsociety.org/sites/default/files/ISOC_ASEAN_Digital_Economy_Report_Full_s.pdf).

11. A feature phone is a low-end mobile phone which contains a fixed set of functions beyond voice calling and text messaging, but which are not as extensive, powerful and integrated as a smartphone.

Table 1. Internet Access in Philippine Public Schools (2012)

School type	No. of Schools	With Internet access		Without Internet access	
	Total	No. of schools	% of total	No. of schools	% of total
Primary	38,683	5,503	14.23%	33,180	85.77%
Secondary	7,915	4,360	55.09%	3,555	44.91%
Total	46,598	9,863	21.17%	36,735	78.83%

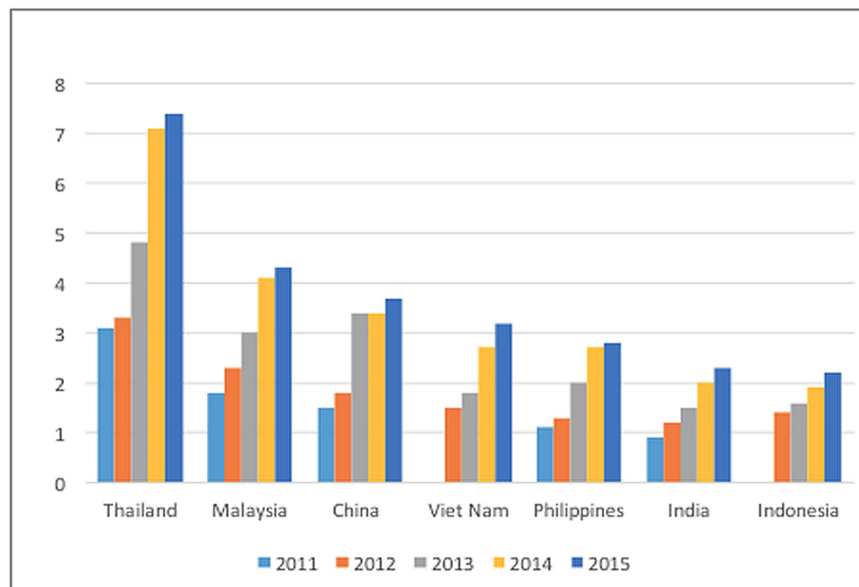
Source: Department of Education, 2012.

country. As mobile internet access depends on cellular networks, by default, PLDT and Globe are also the dominant providers of mobile broadband through feature and smartphones, tablets, and USB dongles.<sup>12</sup>

Based on 2013 estimates, about 90% of internet users depend on mobile access.<sup>13</sup> There is a huge demand for mobile internet, which is growing at 112% year-on-year. Despite this rapid increase, however, the country still suffers from poor internet connectivity. In a 2012 survey, the Department of Education (DepEd) revealed that 79% of public schools across the country had no internet access in their area, wired or wireless (Casambre, 2014) (see Table 1).

**Philippine Broadband is one of the slowest in the Asia Pacific.** In Akamai’s State of the Internet report for Q3 2015, the Philippines recorded the second slowest average download speed (at 2.8 Mbps) in the Asia Pacific, besting only India. The country has been constantly outperformed by its ASEAN counterparts such as Indonesia (3.0 Mbps), Vietnam (3.4 Mbps), Malaysia (4.9 Mbps), and Thailand (8.2 Mbps).<sup>14</sup> A summary of Akamai’s measurements in every Q1 of each year since 2011 reveals how much the Philippines is lagging behind its neighbors in terms of improving average download speeds year on year (see Figure 4).

Figure 4. Average Download Speed (in Mbps) of Broadband in Select Asia Pacific Countries



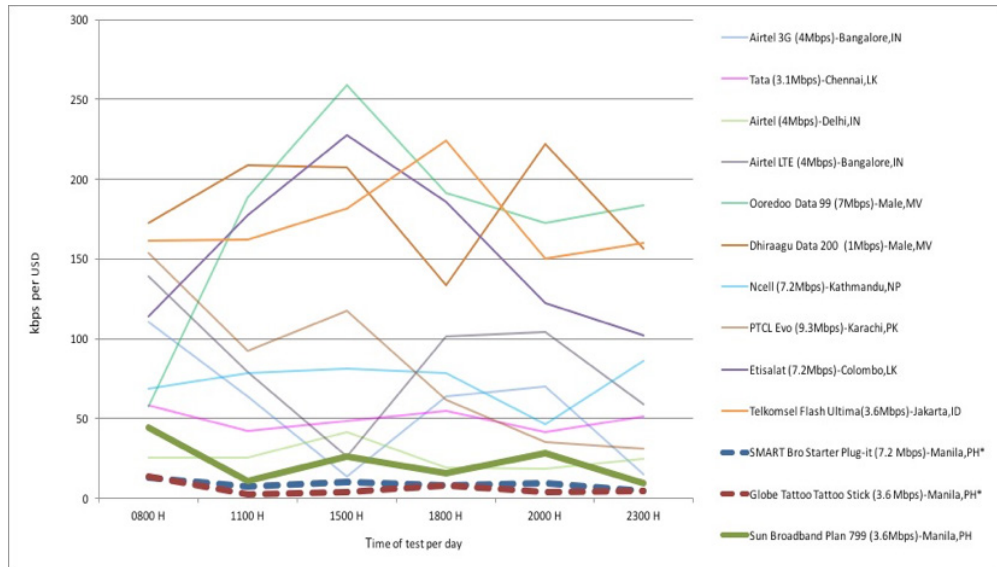
Source: Akamai State of the Internet Reports, Q1 2011-2015.

12. A dongle is a small device connected to and used with a computer that allows access to wireless broadband.

13. The paper will refrain from using 2014 estimates given the discrepancy in the figures given.

14. Akamai. 2015. State of the Internet Report Q3 2015 <https://www.stateoftheinternet.com/resources-connectivity-2015-q3-state-of-the-internet-report.html>.

Figure 5. Value for Money (Actual Speed/US\$ Monthly Data Plan) of Select Asian ISPs



Source: LIRNEasia, Q1 2014.

**Philippine broadband service is one of the most expensive in the world.** According to Ookla, in Q4 2014, the Philippines offered the second most expensive retail internet service out of the 62 countries that were ranked. Meanwhile, LIRNEasia’s broadband quality of service experience (QoSE) study in Q1 2014 found that Philippine ISPs offered the lowest value for money—in terms of actual download speed experienced by customers vis-à-vis the cost of a monthly data plan—compared to their counterparts in South and Southeast Asia (see Figure 5).<sup>15</sup>

A recent TechInAsia survey<sup>16</sup> showed that 1 Gigabytes (GB) of data is “very expensive” in the Philippines (at \$7.10) compared to other ASEAN countries. Looking at

the real price of data services vis-à-vis the purchasing power of internet users, the survey showed that a typical Filipino minimum-wage (estimated at \$0.69 per hour) earner needs to log in over 10 hours of work to afford 1 GB, the second worst in ASEAN. The same bandwidth was more affordable in neighboring countries, such as Vietnam, Indonesia, Malaysia and Thailand (see Table 2).

**Policy and Regulatory Environment.** Telecoms and ICT infrastructure and services (fixed telephone, cellular mobile telephone, and internet) in the Philippines are mainly private sector-driven. From the 1920s to the 1960s, a single private operator, PLDT, provided basic telecoms services in the country. Back then, telecoms

Table 2. Cost of Mobile Broadband in ASEAN (2015)

Country	Price of 1-GB data (in US\$)	Minimum wage per hour (in US\$)	Hours of work to afford 1-GB data
Brunei	7.09	5.76	1.04
Singapore	7.11	4.03	1.46
Cambodia	1.50	0.66	2.16
Thailand	2.74	1.15	2.23
Malaysia	4.42	1.18	3.45
Laos	4.11	0.84	4.53
Indonesia	2.84	0.54	5.16
Vietnam	3.58	0.59	6.04
Myanmar	3.68	0.46	8.00
Philippines	7.10	0.69	10.17
Timor-Leste	10.00	0.60	16.40

Source: TechInAsia, 30 December 2015.

15. LIRNEasia. 2014. Broadband Quality of Service Experience (QoSE) Indicators 2014. [http://lirneasia.net/wp-content/uploads/2014/09/BBQoSE-Report\\_Final.pdf](http://lirneasia.net/wp-content/uploads/2014/09/BBQoSE-Report_Final.pdf).  
 16. Freischlad, N. 2015. The cost of mobile data in Southeast Asia. TechInAsia. <https://www.techinasia.com/cost-mobile-data-southeast-asia-infographic>.

services were in very poor shape. Fixed-line teledensity<sup>17</sup> remained at 0.91 per 100 persons from the 1960s to the 1980s, mostly during the Marcos regime.

By virtue of Commonwealth Act (CA) 146 or the Public Service Act of 1936, telecommunications—defined as “wire or wireless communication” and “wire or wireless broadcasting”—is considered a public service offered by a public utility. As such, telecoms falls under the rule on 40-percent foreign-ownership cap enshrined in the 1987 Philippine Constitution<sup>18</sup> and further defined in RA 7042 or the Foreign Investments Act of 1991 (as amended by RA 8179), which provides for the formulation of a Regular Foreign Investment Negative List to be issued by the Executive branch.

The newly installed administration of Pres. Corazon Aquino (1986-1992), through the Department of Transportation and Communication (DOTC), issued Department Circular (DC) 87-188 in May 1987 affirming that “a coherent development of the national telecommunications system could take place through the introduction of competition and regulated entry into the market.” But it was in 1993 through the reform program of Pres. Fidel Ramos (1992-1998) that the telecoms sector began to be truly liberalized.

Executive Order (EO) 59 mandated interconnection among local telcos and lowered telephone subscription rates for consumers. EO 109 mandated the improvement of local exchange carrier (LEC) services and established the Service Area Scheme (SAS).<sup>19</sup> The eventual passage of RA 7925 or the Public Telecommunications Policy Act strengthened Ramos’ executive issuances and cemented the role and mandate of the National Telecommunications Commission (NTC) as the industry regulator, which were previously defined in EO 546.<sup>20</sup> NTC’s mandate includes (i) regulating basic telecoms services; (ii) ensuring a healthy, competitive telecoms market environment; and (iii) protecting consumer welfare. Any decision by the NTC can be appealed through the Court of Appeals and the Supreme Court.

RA 7925 was anchored on basic telecoms services, particularly voice calls via a local exchange and cellular mobile telecommunications services (CMTS). LEC and

CMTS providers are required to secure a franchise from Congress (in the form of a republic act) and a certificate of public convenience and necessity (CPCN) from the NTC. Voice call rates on fixed and mobile phone services are regulated. In the past, international direct dial (IDD) calls and to some extent national direct dial (NDD) calls became the source of cross-subsidy for local call services, particularly in more remote areas where provision of such services would not be commercially profitable for the private telcos.

Almost immediately after the policy reforms were put in place, new players entered the market and fixed-line teledensity began to increase, reaching 9.05 in 2000 or an 800-percent increase in just 10 years. However, new players struggled to grow their business in the presence of PLDT, which used its incumbent position and market lead to stifle competition by refusing or making it very expensive for new players to interconnect to its network. NTC seemed powerless and rarely intervened, despite its mandate (Salazar, 2007).

It was the shift to mobile phones, and the introduction of short messaging service (SMS) and prepaid payment, that expanded access to telecoms services rapidly. Throughout the 1990s, new mobile service operators were granted franchises, including Express Telecommunication Co., Inc. (Extelcom), Globe Telecom (Globe), Smart Communications (Smart), Bayan Telecommunications (Bayantel), Digital Telecommunications Philippines, Inc. (Digitel), Isla Communications Co., Inc. (Islacom), Pilipino Telephone Corporation (Piltel), MultiMedia Telephony, Inc., and Next Mobile (NextTel). The first mobile phones were analog and prone to cellular fraud and cloning. When digital mobile phones became available, especially those capable of sending SMS, and operators started offering prepaid payment schemes, fixed-line subscription began to decline rapidly. From almost zero in 1990, mobile phones overtook fixed-line use in the Philippines in 2000 by over 100 percent—a similar trend seen in other developing nations in Asia.<sup>21</sup>

With the emergence of cheaper mobile phones and the mass popularization of SMS, IDD and NDD calls were no longer profitable. The cash cow of telcos quickly

17. Teledensity is the number of telephones for every 100 individuals living within an area.

18. See Art. XII, Sec. 11 of the 1987 Philippine Constitution.

19. The SAS divided the country into 11 geographical service zones and required new IGF and CMTS operators to install a minimum of 300,000 and 400,000 local telephones in their respective areas within five years (later reduced to three years). The idea was for the profitable IGF and CMTS operations to subsidize the sluggish fixed-line segment, prioritizing underserved and unserved areas based on a 10:1 urban-rural ratio.

20. EO 546 entitled “Creating a Ministry of Public Works and a Ministry of Transportation and Communications” was issued in 1979.

21. In Cambodia, mobile phone subscribers overtook fixed-line subscribers as early as 1993. See ITU (2003).



shifted to mobile phone services. Similar to landlines, interconnection was again a problem among mobile operators. In the late 1990s, a fierce and protracted legal battle ensued between PLDT's mobile arm, Smart, and Globe Telecom. The standoff led to mobile phone subscribers unable to connect to other networks. Amid public clamor, and personally irked by the interconnection problem, President Joseph Ejercito Estrada (1998-2001) played "mediator" between the two telecoms giants. After a press-conference style meeting called by Estrada, PLDT/Smart and Globe agreed to interconnect their GSM networks. The Supreme Court's ruling on the matter, which included a reprimand to NTC for not clearly defining what constitutes VAS, became seemingly moot as the issue was resolved out of court (Mirandilla-Santos, 2011).

### III. BINDING CONSTRAINTS

#### Barriers to entry

Key stakeholders<sup>25</sup> agree that the Philippine telecoms sector will benefit from the entry of new players, both domestic and foreign, and effective competition. Past reforms that introduced liberalization and competition have proven that the entry of new players can reinvigorate the market, promote better services, and lower prices due to competing providers that ultimately benefit consumers. The Philippine telecoms market has been tagged as "less competitive" and "effectively a duopoly" by various analyses.<sup>26</sup> It lags behind in terms of contestability or the freedom of market entry and exit. Contestability is important as studies have shown that even the threat of a new entrant will improve the quality of service and pricing of current market players.<sup>27</sup> Market entry in Philippine telecoms is hampered by several major barriers. First, the Congressional franchise requirement for a service provider—regardless of whether the service is delivered directly to the general public—is unique to the Philippines. In other countries, an entity (whether a telco, a dark-fiber

Internet connection was introduced in the Philippines in 1994, and became commercially available soon after. In the 1990s, there were reportedly 300 small ISPs operating nationwide. This number quickly dwindled to about 10 major ISPs in 2014. RA 7925 assumed the emergence of value-added or enhanced services in the future, the provision of which is allowed to any entity that need not secure a franchise from Congress. However, RA 7925 requires VAS providers to utilize the "network"<sup>22</sup> of duly enfranchised telcos, which includes the submarine cables,<sup>23</sup> landing stations, backbone and backhaul networks of telcos. Connecting to these telco facilities entail access charges,<sup>24</sup> which are considered deregulated and bilaterally negotiated between the telco and client ISP.

provider, or an ISP) need only to secure a license, often issued by the regulator, to operate a specific type of infrastructure or offer a particular service (see Table 3). In the Philippines, the cumbersome and protracted process of securing a franchise from Congress, apart from separate licenses/permits to operate from the regulator, various national government agencies, and local government units can be seen as a disincentive for new players to invest.

By law, **telecoms as a public utility favors Filipino-owned companies.** The 1987 Philippine Constitution requires that a public utility be 60-percent owned by Filipino nationals. While the Constitution does not define what a public utility is, the 1936 Public Services Act includes telecoms. But to date, apart from Digital Telecommunications Philippines (Digitel), which introduced Sun Cellular in 2003, no other local company has invested massively in the Philippine telecoms sector. San Miguel Corporation (SMC), a giant food and beverage conglomerate and owner of several small telcos such as Eastern Telecoms, Bell Telecommunications, Liberty Telecoms, and Vega

22. Under NTC Memorandum Circular (MC) 08-09-95 or the implementing rules and regulations (IRRs) of RA 7925, a network "refers to a set of nodes and links that provides connections between two or more defined points to accommodate telecommunication between them."

23. While submarine cables are not bound by Philippine laws and anyone can invest in or buy capacity from a cable consortium, only local telcos can build and operate an IGF and landing station through which international bandwidth can be purchased.

24. Access charge is defined as "remuneration paid to a PTE by an interconnecting PTE for accessing the facilities and/or customer base of such PTE, which are needed by the interconnecting PTE for the origination, termination and/or transiting of all types of traffic derived from the interconnection." See Sec. 2[a] of MC 14-7-2000, "Implementing Rules and Regulations (IRR) for the Interconnection of Authorized Public Telecommunications Entities." <http://ntc.gov.ph/wp-content/uploads/2015/10/LawsRulesRegulations/MemoCirculars/MC2000/MC%2014-07-2000.pdf>.

25. The American Chamber of Commerce held a roundtable discussion on Philippine Broadband on December 3, 2015 which was attended by key stakeholders from government, private sector (telcos, BPO and IT companies, etc.), academe, and civil society.

26. See, for example, ESCAP. 2013. An In-Depth Study on the Broadband Infrastructure in the ASEAN-9 Region. [http://www.unescap.org/sites/default/files/Broadband%20Infrastructure%20in%20the%20ASEAN%20Region\\_0.pdf](http://www.unescap.org/sites/default/files/Broadband%20Infrastructure%20in%20the%20ASEAN%20Region_0.pdf).

27. Montenegro, L. 2015. Competition and Broadband Outcomes in the ASEAN-5 (presentation).

**Table 3. Telecoms and ISP licensing, local loop unbundling, and retail market share in select ASEAN countries**

Country	Licensing	Local Loop Unbundling <sup>28</sup>	Retail Subscribers Market Share by Provider <sup>29</sup> (as of June 2015)
Indonesia <sup>30</sup>	Based on operation: (i) network operator, (ii) service operator or (iii) special operator  Issued by the Indonesian Telecommunications Regulatory Body	Legal obligations exist but alternative providers have not pushed Telekom and Indosat to open their networks	Telkom Indonesia (50.4%) Internux (20.6%) First Media (13.1%) Bakrie Telecom (6.8%) LinkNet (5.8%) Other (3.3%)
Malaysia <sup>31</sup>	Based on service type: (i) network facilities provider; (ii) network services provider; (iii) application services provider; (iv) content application services provider  Issued by the regulator, Malaysian Communications and Multimedia Commission	Regulated prices for bitstream access since 2005; Telekom Malaysia's new high-speed broadband network is exempted currently	Telekom Malaysia (78.7%) Packet One Networks (11.6%) YTL Communications (4.9%) Maxis (3.4%) Other (1.4%)
Thailand <sup>32</sup>	Based on business type: (i) ISP (Type 1); (ii) International internet gateway (IIG) and national internet exchange (IX) (Type 2); (iii) Network provider (Type 3)  Issued by the regulator, the NTC	Private agreements between TOT and service-based operator	True Corp (37.2%) Triple T Broadband (31.1%) TOT (27.6%) CAT Telecom (3.1%) Other (1.0%)
Philippines	Telco license is in the form of a franchise awarded by Congress as a Republic Act  ISP needs only to register with NTC, but required to use facilities of a telco  Separate service-based licenses issued by the NTC, but many services require operation by a telco	Not specific	PLDT (56.1%) Globe Telecom (41.9%) Sky Cable Corp. (1.3%) Wi-Tribe Telecoms (0.6%)

Source: Montenegro, L. (2015). Competition and Broadband Outcomes in the ASEAN-5 (presentation); Additional information provided by the author.

Telecom, has not been able to deploy on a nationwide scale or to tap into the retail mass market.<sup>33</sup>

Telecommunications is a capital-intensive and technology-driven sector. And yet the law bars foreign players from fully participating even in wholesale segments (e.g., cable landing station and backhaul), which effectively limits the

presence of companies that can inject fresh new capital, bring in state-of-the art technology, and compete in the market. In contrast, neighboring countries, such as Indonesia, are starting to ease foreign equity restrictions in key sectors including telecommunications. Although foreign entities can operate as an ISP, they must have a paid-up capital of at least US\$2.5 million in compliance

28. Local loop unbundling (LLU) is the process requiring the incumbent operator to provide competitors with access to the “local loop,” or the circuit wiring (loop) that links the telecommunications network with the customer premise, allowing them to offer broadband and other advanced services to existing users of fixed line. ITU. The importance of national fibre backbones. <http://www.itu.int/itudocs/manager/display.asp?lang=en&year=2008&issue=02&page=sharingInfrastructure-importance>.

29. Based on autonomous system number (ASN).

30. See Overview of Telecom Industry in Indonesia. [http://www.telkom.co.id/UHI/assets/pdf/EN/03\\_Overview%20of%20Telecom%20Industry%20in%20Indonesia.pdf](http://www.telkom.co.id/UHI/assets/pdf/EN/03_Overview%20of%20Telecom%20Industry%20in%20Indonesia.pdf).

31. See MCMC. Fixed Services. <http://www.skmm.gov.my/Sectors/Telco.aspx>.

32. See NECTEC. Internet in Thailand. <http://internet.nectec.or.th/document/pdf/210908080401.pdf>.

33. As of 31 December 2015, SMC was in the middle of talks with Australian telco Telstra for a possible joint venture to rollout 4G mobile services in the Philippines.

with RA 8762 or the *Retail Trade Act*. Additionally, foreign ISPs, like local ISPs, cannot build their own network and must use the infrastructure of duly enfranchised local telcos.

The dominant players, PLDT and Globe, both have foreign investors. But some critics are skeptical as to whether these telcos comply with the 40% foreign-ownership cap. PLDT’s ownership has been in question ever since control of the company was acquired by Hong Kong-based company *First Pacific Company, Ltd (FPC)*. In 2012, the Supreme Court made a landmark decision in *Gamboa v. Teves*<sup>34</sup> when it held that Philippine nationals must have both voting control and beneficial ownership of a public utility. This decision further makes foreign equity in a telco (or any public utility) smaller. In 2014, a comprehensive three-part exposé-type of article was published by *The Manila Times* detailing how allegedly the Indonesian Salim conglomerate owns the majority of PLDT and other public utilities in the country through Metro Pacific Investments Corp. (MPIC), further fanning suspicions that some companies are able to skirt the foreign ownership rule by putting up Philippine-registered holding companies.<sup>35</sup>

Limitation on foreign ownership is a major issue that affects telecommunications. PLDT and Globe have been said to have majority foreign equities that are technically accepted as compliant due to layers upon layers of holdings companies that mask these ownerships. This is a cumbersome but effective way of circumventing the law. The constitutional provision has given rise to workarounds that encourage non-transparent and scheming business practices. Meanwhile, other legitimate foreign telcos are discouraged from entering and competing in the market by the company-layering and even political lobbying that are necessary to work around the law.

### Anti-competitive practices

Local telcos have several ways to get return on their investments, especially in a setting like the Philippines where wholesale pricing and access charges are not regulated. The two dominant telcos have full control of the landing stations, where submarine cables beach once they reach Philippine shores, and backhaul networks that connect to the in-land domestic link. There are nine (9) operational submarine cables landing in the Philippines. PLDT has investments in six and Globe in two cables. PACNET (Telstra) owns the only non-incumbent controlled submarine cable that lands in Cavite and Batangas.<sup>36</sup>

The backhaul is said to be the bottleneck where the small players suffer from price squeeze from the large telcos who own the landing stations and backbone. When buying bandwidth capacity, about 75% of the cost is reportedly in the backhaul network, a segment dominated by PLDT and Globe. International bandwidth providers need to enter into a commercial agreement with local telcos in order to sell bandwidth to local clients. They are able to make money only because they can adjust their own price and sell capacity very cheaply from the source.

To illustrate, a 10-Gbps capacity for a 15-year indefeasible right of use (IRU) would be very cheap when sourced from abroad (see Table 4) but will quickly become expensive once the transaction takes place inside the Philippines. In the example below, backhaul in the Philippines comprises about 75% of the cost of international bandwidth.

The current structure makes smaller telcos and ISPs prone to anti-competitive practices by the large telcos who not only control the infrastructure and wholesale pricing, but are also allowed to compete in the same retail market as their client ISPs. As a result, smaller ISPs and end-users

Table 4. Cost of Connecting from PH to HK at 10Gb

Backhaul originating in the Philippines	Submarine cable	Backhaul terminating in Hong Kong
\$3 million	\$500-800K	\$150K
75.9%	20.3%	3.8%

Source: Estimates by an industry player, 2016.

34. See Supreme Court of the Philippines. (October 9, 2012). G.R. No. 176579, Heirs of Wilson P. Gamboa v. Teves, et al. <http://sc.judiciary.gov.ph/jurisprudence/2012/october2012/176579.pdf>.  
 35. Tiglao, R. 2014. How Salim group skirted foreign ownership limits. *The Manila Times*. <http://www.manilatimes.net/how-salim-group-skirted-foreign-ownership-limits/79660/>.  
 36. The landing station in Cavite, the East Asia Crossing (EAC), was owned and operated by Digitel, which was bought out by PLDT in 2011.

have to contend with high wholesale and retail costs (See Table 5).

This is also seen by small players as a means for large telcos to put a stranglehold on their competition in the last mile. If, for example, an international operator could sell capacity directly from a landing station in the Philippines, the price would be around \$3 to \$6 per Mbps if buying at a minimum of 1 Gbps. However, in practice, the operator would need to get into a commercial arrangement with a local telco who owns/operates a landing station in order for its capacity to reach a data center in Manila (or another location in the Philippines). This would hike up the price to a range of \$20 to \$105 per Mbps, depending on the location. Bringing this capacity outside of Manila, especially to secondary cities in the Visayas and Mindanao, would necessarily incur additional cost for the buyers. Buying in small quantities can also add cost. For ISPs operating in small municipalities, like the cable TV operators, some report getting charged as high as \$200 per Mbps.<sup>37</sup>

In other countries, local loop unbundling, or the process requiring the incumbent operator to provide competitors with access to the “local loop” or the telecoms network, is

## Weak and ineffective regulation

Deregulation was introduced in the telecoms sector to ensure that market players will not be overburdened by heavy-handed government intervention. However, there are areas where regulation is not only appropriate but also necessary in order to put a check on anti-competitive practices, create an environment that encourages new entrants and promote innovation, and to protect consumer welfare.

The NTC is the government agency mandated to regulate and supervise the provision of public telecommunications and broadcasting services in the country (EO 546) and to enforce RA 7925. It issues certificates of public convenience for “the operation of communication utilities and services, radio communications systems, wire or wireless telephone or telegraph systems, radio and television broadcasting systems and other similar public utilities” (EO 546); manages radio spectrum (Act No. 3846, as amended, and RA 7925); and performs quasi-judicial functions (RA 7925). The NTC is under the Office of the President.<sup>38</sup>

Table 5. Wholesale price of business-grade bandwidth (1 Gbps)

Country	Price per Mbps
USA	\$0.35 to \$2
Hong Kong	\$1.50 to \$6
Australia/NZ	\$6 to \$9
<b>Manila</b>	<b>\$18 to \$45</b>
<b>Cebu</b>	<b>\$25 to \$50</b>

Source: Estimates by an industry player, 2016.

also mandated. This is done especially in cases where the incumbent has a large market share in order to give new entrants a fair chance at competing. In the Philippines, there is no specific policy on local loop unbundling and areas of regulatory intervention are not clearly defined (see Table 3).

Local telcos have argued, however, that the high cost of building and expanding telecoms infrastructure can be blamed in large part on the number and cost of permits and clearances imposed by the local government of each area that will be affected by the construction of telecoms infrastructure (see more detailed discussion in the section below).

The Commission’s functions and decisions are subject to the review of the courts and limitations imposed by laws. Its decisions are appealable to the Court of Appeals and the Supreme Court. Industry players have used this to delay or overturn decisions that do not favor them. The imposition of penalties for any violation is based on CA 146 or the “Public Service Act” that was passed in 1936, 80 years ago. Up to this day, violators are fined only P200 per day.<sup>39</sup> Clearly this amount is not sufficient enough penalty to encourage telcos to do the right thing, as the cost of compliance is exponentially higher than the cost of the fine.

37. Based on anecdotes from the Federation of International Cable TV and Telecommunications Association of the Philippines (FICTAP).

38. See E.O. 47, s. 2011 <http://www.gov.ph/2011/06/23/executive-order-no-47/>.

39. It is not clear whether the P200 penalty applies to each violation, each subscriber, or both.



Limitations notwithstanding, stakeholders and observers point to the following three areas where the NTC either failed to fulfill its mandate or exhibited weakness as a regulator.

**Mergers and acquisitions.** In the Philippines, final approval of mergers and acquisitions rests with the sector regulator. In the case of telecoms, the responsibility is with the NTC. This was clearly illustrated in a Supreme Court decision *PLDT v. NTC* (G.R. No. 88404), which states that “transfers of shares of a public utility corporation need only NTC approval, not Congressional authorization.”<sup>40</sup>

As the final decision-maker, NTC argues that there are no legal barriers to approving telco mergers and acquisitions. There are also no set guidelines in place to help the regulator prove whether a merger or acquisition would be detrimental to public interest.<sup>41</sup> This argument, however, is not in line with the antitrust mandate provided by RA 7925 and EO No. 546. It is within the NTC’s powers and functions to establish competition rules and the guidelines required for their effective implementation, similar to what other sector regulators, such as the Energy Regulatory Commission (ERC), have done.

In 2011, PLDT sought to buy a majority share in Digitel through a share-swap agreement. The sale and transfer to PLDT of approximately 51.55% equity of Digitel was approved by NTC in October 2011. In 2013, Globe and Bayantel submitted a joint application seeking authorization for Globe to convert its debt holdings in Bayantel into equity. NTC approved the debt-to-equity deal which resulted in Globe owning at least 54% of the shares of Bayantel in July 2015.

In NTC’s decisions to approve the two recent mergers, no official position papers for public review were circulated. Comments submitted by the oppositors as well as the final decision of the NTC on the two cases were not made public.<sup>42</sup> In the NTC’s decisions, it made use of the public-interest criterion in evaluating the two mergers. However, it did not define what constitutes public interest. For the PLDT-Digitel merger, for example, NTC justified its approval

by requiring the divestment by PLDT of its subsidiary CURE, including 10 MHz of its 3G frequency in the 2100 band. It is not clear how such a divestment would maintain competition in the market or protect public interest. As of March 2015, CURE was still waiting for NTC’s advice on how to proceed with the planned divestment. As of December 2015, the bidding and auction of the 3G license of CURE have yet to take place.

**Spectrum management.** Radio frequency or spectrum<sup>43</sup> is a scarce natural resource that is granted for telecommunications and broadcasting purposes. Under RA 7925, the NTC is mandated to manage and award spectrum licenses.

Spectrum user fees (SUF) collected by the NTC reach about P2.5 billion annually. This makes up over half of the regulator’s entire license revenues per year. However, the full SUF collection goes directly to the National Treasury. NTC does not keep any of its income. Its annual budget in the General Appropriations Act is about P300 million.

Based on RA 7925, spectrum management and allocation in the Philippines is to be done through open tenders “when demand for specific frequencies exceeds availability.”<sup>44</sup> The process and procedure for the review, allocation, and assignment of spectrum is contained in NTC MC 03-03-96.<sup>45</sup> The National Radio Frequency Allocation Table is to be reviewed once every two years during the second quarter and may be revised or amended, as necessary. It is in accordance with the International Table of Radio Frequency Allocation issued by the ITU. The review, re-allocation, and revision of allocation is done in consultation with the industry and/or affected parties to optimize spectrum use.

To date, no bidding has ever been carried out to allocate spectrum. Ever since mobile phone service became commercially popular, especially with the introduction of SMS, the radio frequencies for 2G to 3G have always been assigned to the telcos by the Commissioner.

The valuation of spectrum is based on three factors: (i) demand, (ii) amount of available bandwidth, and (iii) use

40. See *PLDT v. NTC* (G.R. No. 88404), 18 October 1990, 190 SCRA 717, 730-731. [http://www.lawphil.net/judjuris/juri1990/oct1990/gr\\_88404\\_1990.html](http://www.lawphil.net/judjuris/juri1990/oct1990/gr_88404_1990.html)

41. Personal communication with Director Edgardo “Egay” Cabarios of the regulation branch of the National Telecommunications Commission. 15 July 2015. NTC main office, Quezon City.

42. Copies of the two decisions were acquired by the author through official channels.

43. Radio spectrum is a subset of the electromagnetic waves lying between the frequencies from 9 kilohertz (kHz - thousands of cycles per second) to 30 gigahertz (GHz - billions of cycles per second) that is used for wireless communications and transmission of data. ITU & InfoDev. Spectrum Management Overview. ICT Regulation Toolkit. <http://www.ictregulationtoolkit.org/5.1>.

44. Article V, Section 15 of RA 7925.

45. NTC MC No. 03-03-96 or the “Review, Allocation and Assignment of the Radio Spectrum,” <http://ntc.gov.ph/wp-content/uploads/2015/10/LawsRulesRegulations/MemoCirculars/MC1996/MC%2003-03-96.pdf>.

of spectrum or the social impact of spectrum. The NTC supposedly calculates the value of the spectrum based on the reasonable amount of contribution of the subscribers, since the cost is passed on to them by the telcos. For example, 10MHz of 3G in the 2100 band is currently valued at P65 million, as this would translate to a contribution of P1 per month for each subscriber. An additional 5MHz will cost P50 million.

NTC's valuation of spectrum, however, has not been efficient and transparent. In the recent PLDT-Digital merger, for example, the NTC has yet to decide on the best mechanism to determine the value of CURE's 3G frequency five years after the deal was consummated.

Some telecoms stakeholders have pointed out that key spectrum bands have mostly been allocated to the large telcos without consideration for the smaller players and new entrants. PLDT has rights to 800 MHz, 900 MHz, 1800 MHz, and 2100 MHz frequency bands. Globe has licenses to 900 MHz, 1800 MHz, and 2100 MHz bands. Meanwhile, San Miguel holds most of the 700 MHz, in addition to its 800 MHz, 1800 MHz, 2300 MHz, and 2500 MHz frequency bands.

The seeming lack of due process in spectrum allocation is a critical issue today with the growing demand for broadband spectrum. The NTC has begun reallocating spectrum for broadband wireless use. In 2005, NTC issued MC No. 06-08-2005 on "Frequency Band Allocations for Broadband Wireless Access." Under this, NTC assigned certain frequencies from broadcasting companies to public telecoms entities. The following frequencies have been reallocated by NTC: (i) 2572 to 2596 MHz; (ii) 2670 to 2686 MHz; and (iii) 2670 to 2690 MHz.

Recently, the most pressing issue on spectrum allocation is that of the 700 MHz band, which experts say is a crucial frequency for expanding access to low-cost mobile broadband technology. The band's wide propagation capabilities can translate to lower capital investment to cover an area and can aid the growing smartphone uptake in the coming years.<sup>46</sup> SMC currently holds 90 MHz of the total 100 MHz on the 700 band through Wi-Tribe Telecoms, Inc. (80 MHz) and High Frequency Telecommunications, Inc. (10 MHz). The remaining 10 MHz is held by New

Century Telecommunications. It is said that the 700-MHz spectrum is SMC's most valuable asset in a potential joint venture with Australian telco Telstra. As of December 2015, it was reported that SMC and Telstra were in the final stage of negotiations. In November 2015, PLDT and Globe issued statements clamoring that NTC reallocate the 700 MHz band for equitable distribution. PLDT claims that it has lodged its request to NTC since 2008, but has not received any official reply. In press statements, NTC said that the frequency reallocation would be difficult as it is a quasi-judicial process and that there must be a reason to recall the spectrum from SMC, such as non-utilization or non-payment of SUF.<sup>47</sup> PLDT has hinted on legal action against one of NTC's deputy commissioners because of this statement.<sup>48</sup> This is a constant looming threat that Philippine government officials have to deal with when going against big corporate interests.

A number of observers have raised the need to apply a "use it or lose it" approach in managing spectrum to ensure that this precious, scarce resource is maximized. Meanwhile, others point to the risks in applying a confiscatory approach to spectrum management based on pressure from other (larger) players, without due process.

Still, some are advocating for the deregulation or opening up of more unlicensed frequencies in order to allow more providers to offer internet service. In many countries, industrial, scientific, and medical radio (ISM) bands are considered unregulated outdoor frequency that people can use and VAS providers can use to sell internet service. This has opened up the market to many small-scale networks and community-based ISPs, without the need to rely on large telcos.

**Promoting competition.** The NTC is mandated specifically to "maintain effective competition among private entities" in the use of communications, radio, and television broadcasting facilities.<sup>49</sup> However, it has so far failed to lay down a competition policy framework or a set of principles that would guide it in fulfilling this function. In 2005, the NTC issued a consultative document on competition policy, which emphasized the need for a competition policy framework as "necessary to correct the flaws in the regulatory environment that restrain

46. Dela Paz. C. 2015, December. 700 MHz band to aid smartphone penetration uptake – Ericsson. Rappler.com. <http://www.rappler.com/business/industries/172-telecommunications-media/115565-smartphone-penetration-philippines-ericsson>.

47. These conditions, according to NTC, do not apply to SMC who is currently building its network to use the spectrum and paying the necessary fees.

48. Bushell-Embling, D. 2015, December 21. PLDT may sue regulator, San Miguel over 700-MHz. TelecomAsia. <http://www.telecomasia.net/content/pldt-may-sue-regulator-san-miguel-over-700-mhz>.

49. See Section 15 (g) of EO 546.

50. See NTC. 2005. Consultative Document on the Development of a Competition Policy Framework for the Information and Communications Technology Sector. <http://www.ombudsman.gov.ph/UNDP4/wp-content/uploads/2013/01/NTC-consultative-document-on-competition-policy1.pdf>

competition and prevent the efficient functioning of the market.<sup>50</sup> The document contained a review of market trends that impinge on the current and future state of competition in the sector, explored major policies that may change the balance of market power, an assessment of the quality of current regulation, and discussed the urgent tasks for the NTC to effectively govern a dynamic and complex industry. Four urgent tasks were identified that the NTC needs to accomplish: (i) assume a proactive regulatory stance on competition-related issues; (ii) enforce strict reporting requirements on regulatees (industry players); (iii) strive to restore regulatees' confidence in the Commission; and (iv) work with the legislature to introduce changes in the regulatory structure.

In August 2006, the NTC issued a consultative document on significant market power (SMP) obligations, with funding support from USAID. Under the said document, certain obligations are proposed to be imposed on carriers with SMP by using a roadmap, consisting of the following critical processes: (i) defining markets to be used as basis for regulatory intervention; (ii) determining if one or several operators in the defined markets have the degree of market power that merit regulatory intervention; (iii) identifying appropriate SMP obligations to achieve policy objectives; and (iv) determining conditions that justify withdrawal of regulation.

According to the NTC, these consultative documents were not pursued due to strong opposition from telcos.<sup>51</sup> To date, there is no definition of what constitutes “public interest” in telecoms regulation. There are also no obligations imposed on telcos with significant market power.

In 2011, the president created the Office for Competition (OFC) under the Department of Justice (DOJ). To date, the DOJ has not taken any legal action against telcos although it had issued two advisories related to Internet services.<sup>52</sup> A new development is the enactment of RA 10667 or the Philippine Competition Act in July 2015,<sup>53</sup> which is expected to have implications on how telcos behave as corporations. This law is also set to impact on cases involving anti-competitive practices of telecom industry players, especially the incumbents, as well as the role of the regulator. On February 1, the newly-appointed chairperson and four commissioners of the Philippine Competition

Commission began operations.

### **Prohibitive bureaucratic processes imposed by government for network expansion**

Some barriers to competition are institutionalized, which can be in the form of prohibitive bureaucratic requirements, arbitrary fees and permits, or simply too much discretion on the part of government officials. Telcos and new entrants alike have complained about not being able to put up or expand infrastructure in the last mile because of these difficulties. Telcos also complain about bureaucratic and bribery issues. Local governments reportedly impose arbitrary fees for permits and clearances that are sometimes unaccounted for (no receipt or legal basis). The fees charged by a local government for setting up a cell site, for example, can be as low as P2,000 a month to as high as P200,000 a month. National government agencies also require telcos to secure clearances for various purposes. Apart from government, exclusive villages and homeowners' associations may give telcos a difficult time to set up in their area. Sometimes the refusal is because the officers and residents do not want to have unsightly antennas. Other times, it is because of “enterprising” individuals and groups.

Table 6 is a list of permits and clearances required for putting up one cell site.

### **Inadequate infrastructure**

Wired technology best delivers reliable and good quality Internet connection. However, less than 10% of Filipino households have landlines. Fiber optic cable deployment is ideal but can be very expensive. In the absence of coordination and policy that streamlines infrastructure build-out, each telco has to dig up its own utility corridor. This involves civil works that can consist up to 75% of the cost of deployment. Each telco also has to deal with right-of-way issues in various jurisdictions, as well as apply and pay for numerous permits and clearances.

Wireless/mobile technology is a more affordable means to expand broadband access, especially in geographically non-contiguous and rural areas. Cellular-tower expansion can be expensive. It can consume up to 50% of a mobile carriers' capital expenditure and up to 60% of its operating expenses.

51. Personal communication with Dir. Edgardo Cabarios, 29 July 2015.

52. The advisories warned telcos against misleading “unlimited” internet ads and data throttling.

53. See RA 10667 or the Philippine Competition Act, <http://www.gov.ph/2015/07/21/republic-act-no-10667/>.

54. Latency is the time it takes for a packet of data to get from one designated point to another, as often measured in milliseconds (ms).

55. Jitter is “uneven latency and packet loss.” It is the variation of end-to-end delay from one packet to the next within the same packet stream/connection/flow.

Table 6. Red tape to put up cell sites

National Government	Local Government
<p>Department of Environment and Natural Resources:</p> <ul style="list-style-type: none"> <li>• certificate of non-coverage</li> <li>• environment clearance certificate</li> <li>• hazardous waste generator registration permit</li> <li>• protected areas clearance (under the National Integrated Protect Areas System)</li> </ul> <p>Civil Aviation Board:</p> <ul style="list-style-type: none"> <li>• height clearance</li> </ul> <p>Department of Health:</p> <ul style="list-style-type: none"> <li>• radiation clearance</li> </ul> <p>Department of Energy</p> <ul style="list-style-type: none"> <li>• generator set operation permit</li> </ul> <p>National Commission on Indigenous Peoples:</p> <ul style="list-style-type: none"> <li>• certificate ensuring protection of indigenous peoples</li> </ul>	<ul style="list-style-type: none"> <li>• Building permit</li> <li>• Occupancy permit</li> <li>• Certificate of electrical installation (local power connection)</li> <li>• Tower fee (ranging from P40 to P200K/tower/year)</li> <li>• Zoning clearance</li> <li>• Special use permit</li> <li>• Annual mayor’s permit</li> </ul>

Source: Local telcos.

Towers and base stations also require users to be within 0.5km - 2km radius, particularly for mobile wireless internet. For areas with low population concentration, this would require major investments.

For this reason, infrastructure sharing is being practiced in many countries—from passive infrastructure (e.g., site locations, masts, cabinets), radio access network (RAN) (e.g., base station equipment, operation and maintenance), to deep sharing or integration (e.g., radio spectrum, core network). Examples of countries that implement infrastructure sharing include Australia and France (duct sharing), Sweden (RAN), Japan (ducts, manholes, and poles), and the United States (poles, including any attachment to a pole, duct, conduit, or right-of-way).

Both the private telcos and the NTC have agreed that more capital investment is needed to fund the expansion and improvement of broadband service. The NTC has proposed to set up a universal service fund, which will be sourced from telco earnings and spectrum user fees. The telcos, on the other hand, believe that financial incentives, e.g., VAT-exempt equipment imports and income tax holidays, for existing carriers can help achieve universal broadband access.

### Lack of interconnection

Local IP peering is the exchange of local data traffic between two ISPs without leaving the national borders, thereby keeping domestic traffic local. This includes locally hosted data and cached content. Peering takes place predominantly at Internet Exchange Points (IXPs) and is usually offered either without charge (settlement-free) or subject to mutually agreed commercial arrangements. In other countries, e.g., Japan and Indonesia, local IP peering through IXPs has proven to lower latency,<sup>54</sup> reduce jitter,<sup>55</sup> and encourage the growth of localized content and content delivery networks (CDNs).<sup>56</sup>

In 2011, it was estimated that 15-23% of internet traffic was domestic. According to a former telco executive, 40-70% of local traffic back then was routed through Hong Kong, China or Los Angeles, US, with most transit going through PLDT’s gateway.<sup>57</sup> However, in the absence of peering, domestic traffic between two ISPs often gets sent abroad to be exchanged in another country, before getting routed back to its local destination. This affects the quality of internet service due to high latency. Big telcos also tend to charge high interconnect/transit rates to competitors and smaller telcos/ISPs.

56. A CDN is a globally distributed network of proxy servers deployed in multiple data centers in various geographical locations.

57. Fafunwa, T. 2010. The need for a True National Internet Exchange (Philippines) – V1.2, <http://www.scribd.com/doc/36570333/The-Need-for-a-True-National-Internet-Exchange-Philippines-V1-2-by-Tunde-Fafunwa-of-Kitskoo-com>.



Another aspect of peering is promoting the security of Internet traffic. Since local IP peering keeps content within the national border, it is less susceptible to spying by other governments. Majority of the Philippines' internet traffic that are not exchanged locally are routed to Hong Kong, China and other territories. This practice could compromise national security and the privacy of Filipino citizens.

The Department of Science and Technology (DOST) set up the Philippine Open Internet Exchange (PHOpenIX) in 2007 to provide an open and neutral IXP where multilateral and settlement-free local IP peering can be done. This allows anyone to connect for a minimal fee, exchange local traffic freely, and with no one “peer” dictating the rules and peering arrangements. All major telcos and ISPs, except

for PLDT, are already peering in the PHOpenIX. The PLDT Group has been doing bilateral, commercial negotiations and has refused multilateral, settlement-free peering. In September 2015, PLDT donated dark fiber to connect to the PHOpenIX and signed an agreement with DOST that it would start peering with the government. It remains unclear whether PLDT will also peer with private ISPs that carry government content.

## IV. RECOMMENDATIONS TO MAKE PHILIPPINES BROADBAND COMPETITIVE

There are a number of recommended reform initiatives that key stakeholders believe could help improve Philippine internet connectivity and service. These options range from legislative to regulatory to market-driven solutions, which may be enforced in the short to long term.

### Adopt an open access model

The current structure of the telecom market, as allowed by law, imposes a high barrier to entry of new, independent players, both local and foreign. It encourages an operator to own and maintain a network as a vertical, monolithic whole that provides all services—from international connectivity to internet service direct to end users—and even for segments that do not serve the public directly, such as the IGF or landing station, backbone, middle mile, the law and NTC issuances require a Congressional franchise and the rollout of local exchange services, which is no longer relevant today.

Instead of a single, vertically integrated network, an “open access” approach is recommended. **Open Access Model** is the separation of the physical infrastructure from service provisioning (Alcatel-Lucent, 2010). This means identifying the various segments in the infrastructure and opening them up to more and different players without requiring a Congressional franchise.

Open access has a number of principles and economic benefits. First, it allows **sharing of the physical infrastructure across multiple operators**, which can contribute significantly to improving cost effectiveness. Open access offers **non-**

**discriminatory terms** for service providers or equal access and charges for clients across the board. This is because the wholesale service provider is different from and does not compete with the retailer (Alcatel-Lucent, 2010). By allowing the sharing of infrastructure, open access contributes to lowering the cost of network operation, maintenance, and expansion.

Telecoms access business models in many countries, such as the Philippines, remain fully integrated. The ideal scenario is a fully separated, open access model, such as in the United Kingdom and Singapore, where there is competition in different segments (see Figure 4). In a fully separated open access model, a **network operator (N.O.)** focuses on designing, building, and offering access to (passive) infrastructure, typically aiming for maximum coverage. Finally, there are multiple service providers, i.e., the **communications operators (C.O.)**, that use the network operator's infrastructure and focus solely on developing attractive service offerings. Another layer can be added, the **retail service providers (RSP)**, which compete in offering the most innovative services for the best price directly to public end users.

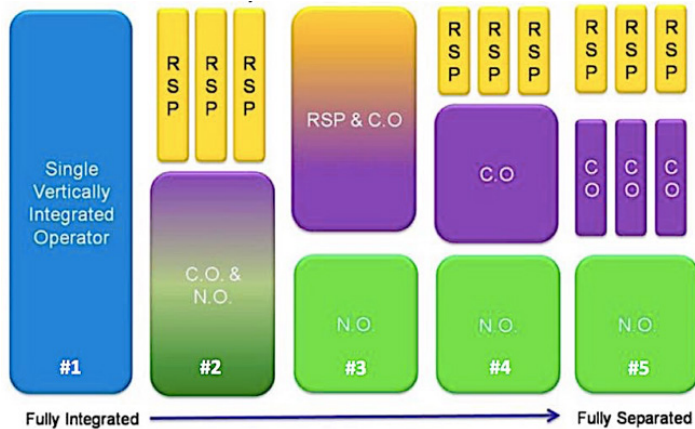
In the Singaporean model, particularly for its national broadband network, there are several layers of operators and licensing: (i) the **network operator** offers passive infrastructure in the form of wholesale ducts and dark fiber (layer 1); (ii) the **wholesale communication operator(s)** offers active infrastructure, including switches and transmission equipment, in the form of bandwidth wholesale (layer 2) and services wholesale (layer 3); and (iii) the **retail**

**service providers** purchase bandwidth connectivity from the wholesale operators and compete with each other in providing competitive and innovative services to end-users. Subsidies are given to the network and wholesale operators, and the pricing of services offered by these operators are set and known. Only the RSPs are allowed to set their own price based on market competition (Alcatel-Lucent, 2010).

In the UK, open access is enforced through “unbundled access” policies wherein new entrants of the telecoms market are allowed access to the incumbent’s facilities. This has helped increase the number of unbundled broadband lines from 123,000 in 2005 to over 8 million in 2012, or 6,400% in just seven years.

The open access model recognizes that a license, not a Congressional franchise, can be awarded to various types of operators, such as data service providers that will focus on building an IP network for broadband service offerings. The license can be awarded by the regulator, which follows global best practice. Without the need for a franchise, this model would also allow for unrestricted foreign equity in most of its components.

**Figure 5. Open access business model: Options for implementation**



Source: broadbandtrends, cited by Alcatel-Lucent, 2010.

Access to the infrastructure as well as pricing of the various segments in the network can also be made more transparent. In following the UK and Singapore models, for example, it can be gleaned that network and wholesale operators receive some form of financial incentive by bidding for the least amount of government subsidy they need to build and maintain the network. This way, the government can also set a ceiling price for the services offered in these segments.

As a result, open access is expected to encourage the entry of multiple independent players operating in different segments, as well as the building of neutral, passive infrastructure, where the business incentive of the operator is to grow and improve services for its clients instead of treating them as competition.

Open access can be introduced as the framework for the amendments to RA 7925, which will effectively differentiate the old telephone network system from the more open, dynamic, and distributed nature of the Internet. This can also be adopted by the NTC as an executive order issued by the president.<sup>58</sup>

**Update laws and regulatory framework to promote investment and innovation in communications and connectivity**

The following legislative agenda are recommended:

1. Amendments to RA 7925
2. Enactment of the Department of ICT Act
3. Amendments to CA 146
4. Passage of the NTC Reorganization Act

**Amendment of RA 7925.** The Public Telecommunications Policy Act was crafted and enacted over 20 years ago, at a time when the Internet was not yet commercially available and considered a vital technology. Thus, the law’s vision, principles, and rules were based on how traditional telecommunications services were offered. There is a huge difference between the public switched telephone network (PSTN) and the IP based network infrastructure and the way they provide means to communicate and connect. IP-based communication and connectivity is highly decentralized, and new innovations that improve and expand the network are being constantly introduced. Interconnection is vital to exploiting the advantages of Internet-based connectivity, and service providers depend on connecting with each other compared to traditional carriers that can operate in silos.

The Philippines badly needs a law that promotes innovation in communications and connectivity and to ensure that they are not tied to any particular technology, service, or industry. Broadband networks, for example, need not be tied to a private local telco. This entails abolishing the requirement for a telco Congressional franchise and opening up the market so that Internet infrastructure can

58. Globe Telecom is currently lobbying for the filing of a bill on open access, but which specifically targets the reduction of the bureaucratic red tape involved in expanding telecoms infrastructure.

be built and operated by any able service provider—whether private or public, large or small, local or foreign. This law should also take into account the convergence of technologies and the need to open up vital resources, such as spectrum, to the most number of stakeholders who would benefit from them the most.

**Creation of a Department of ICT.** The country needs the leadership of an agency to set a national vision and steer the direction of ICT development. This government agency will integrate and coordinate all ICT-related functions and services of government, promote ICT-based and related industries, and prescribe the appropriate policy framework for the improvement of access, quality and affordability of ICTs, including Internet service. This can be done through the enactment of the bill creating the ICT Department. In 2015, the 16th Congress ratified the DICT bill, and it should become law in early 2016.

**Amendment of CA 146.** As a sector regulator, the NTC still follows the provisions in the Public Service Act, which defines wire or wireless communications as a public service and, therefore, subject to foreign equity restrictions. Although the definition is unclear as to what constitutes “communications,” a Supreme Court ruling on *JG Summit Holdings vs. Court of Appeals, et al* (September 24, 2003) defines “public utility” as “a business or service engaged in regularly supplying the public with some commodity or service of consequence such as electricity, gas, water, transportations, telephone or telegraph service.” CA 146 imposes a penalty of P200 per day on a public service that “violates or fails to comply with” the orders or decisions of the Public Service Commission, whose powers have been designated to the NTC. Amendments must be put in place to reflect the current realities of public service, especially in the broadband age. Similar to how RA 9136 or the Electric Power Industry Reform Act (EPIRA) amended CA 146 to make power generation and supply as not to be considered as “public utility operation,” amendments can be made to exempt certain segments of the Internet infrastructure as a public service, particularly those that do not serve the public directly.

**Passage of the NTC reorganization bill.** The NTC’s overall regulatory framework should also be updated to suit the demands and challenges of the Internet age. It needs to adopt a regulatory approach that lowers, if not eliminates, barriers to entry; creates equal opportunities for different players to participate and a market environment that allows small players to grow; promotes rather than stifles innovation; and protects consumer welfare and rights. In order to achieve this, the regulator has to have the institutional capacity, competent human

resources, and independent leadership to carry out its functions. The proposed bill on the NTC reorganization aims to strengthen the regulator’s independence in order to avoid regulatory capture. Among others, the bill’s main provisions include fixed terms for the commissioners, use of NTC’s revenues from fees and licenses for its own capacity building, and exemption of the commissioners and key personnel from the Salary Standardization Law.

### **Level the playing field: “Anyone can connect!”**

**Local IP peering.** Support the growth of open and neutral internet exchange points, such as PHOpenIX that allows local IP peering. Non-commercial IXPs give an alternative for smaller players to buy uplinks (international bandwidth) as they are allowed to access locally hosted content and cached data in a local IXP. As of December 2015, the PHOpenIX has reached 14 Gbps of traffic being exchanged in its facilities. This figure does not include PLDT. The government, being a large internet user, would benefit tremendously from having a more secure network, with ISPs keeping domestic government traffic within Philippine shores.

**Shared infrastructure.** Promote open access policy for infrastructure through (i) a shared utility corridor to coordinate one-time civil works and (ii) secure right of way and LGU permits. Allow and encourage tower co-location in order to lower cost for smaller players, especially for networks outside urban centers. This also includes sharing of radio spectrum and allowing the use of unlicensed frequencies at the community level.

The government can also lease its own fiber optic networks and other assets such as electricity poles, national roads, and transmission grids to service providers, especially those that need assistance in expanding their reach to unserved or underserved areas or in connecting to core networks or an IXP. This can be done in coordination with the Department of Public Works and Highway, Department of Energy, the National Grid Corporation of the Philippines), and toll road operators.

Another option is to build a national broadband network that will serve as a carrier-neutral network service provider or operator, which will allow any ISP to connect. The government can then allow multiple service providers, acting more as mobile virtual network operators, to connect to a government-owned or operated network and, in turn, serve the end-users. For the last mile, the government can open up unlicensed frequencies for use by any willing and able entity. An example would be TV White Space or unused TV channels between the active ones in the VHF and

UHF spectrum. While these frequencies could become congested and offer lower quality of service, opening them up could allow and spur the entrance of more, albeit unlicensed, carriers.

## Update and upgrade the country's ICT strategy and plan

**Update the Philippine Digital Strategy.** The Philippine Digital Strategy (PDS) 2011-2016 contains the national vision and roadmap to achieving ICT development in the country. It was formulated by various ICT stakeholders through a highly collaborative, multi-sectoral consultation process conducted nationwide—a first for such a strategy—led by what was then the Commission on ICT. The PDS sets overarching goals with targets and action plans to be achieved in various aspects of ICT development. These include (i) transparent government, (ii) Internet for all, (iii) digital literacy for all, and (iv) ICT industry and business innovation for development. After five years of implementation, there needs to be a proper assessment of what goals have been achieved, what targets have been completed or missed, what is still relevant, and what remains to be done. This assessment will then become the basis for a revised, updated strategy that will help steer the country towards an ICT-enabled development.

**Develop a National Broadband Plan.** Apart from an overall strategy, there needs to be clearly defined steps on how to achieve the country's national broadband goals. This plan must include ways on how various key stakeholders will work towards a more accessible, more affordable, and better quality broadband service. It should also include specific policies on how to attract investments, encourage competition, and promote the meaningful use of broadband for socio-economic development. In ASEAN, only Lao PDR, Myanmar, and the Philippines do not have an explicit national broadband or ICT master plan.

## Improve spectrum management

The allocation and management of spectrum are critical functions of the regulator that have a significant impact on the quality of mobile broadband service. The NTC must work towards developing a spectrum management plan through a consultative approach in order to accommodate the growing number of stakeholders who are affected by

spectrum. It should also adopt a more transparent allocation process, which includes a rationalized set of criteria for assigning spectrum, a clear mechanism for the valuation of available spectrum, and a more publicized allocation process.

The NTC must be definitive in asserting the value of spectrum by adopting a “use it or lose it” approach. Apart from efficient management, this can also prevent the hoarding of valuable bands. This entails sun-setting spectrum assignments and refarming<sup>59</sup> spectrum resources when necessary, instead of allowing entities to sit on spectrum for an indefinite period of time.

The regulator should seriously consider the potential positive impact of deregulating some frequencies, such as industrial, scientific, and medical radio (ISM) bands. Making this frequency free for all, which is the case in most countries, could help spur the emergence of wireless ISPs especially in unserved or underserved communities, conveniently connect locations (e.g., buildings), and quickly expand wireless connectivity in many parts of the country. Deregulating this spectrum to a level where VAS players could operate outdoor equipment would open up the market completely. This would also be relevant to emerging areas such as smart sensors and internet of things devices.

## Ensure the competitiveness of the telecommunications industry

In the drafting of the Philippine Fair Competition Act, it was noted by the principal author that telecommunications was one of the sectors that would benefit from its passage. The telecoms sector is operated by a duopoly with a dominant, incumbent player. Mergers and acquisitions have resulted in the dwindling number of telcos and, hence, independent market players. The newly formed Philippine Competition Commission should prioritize studying whether the telecommunications industry is adequately competitive. The bigger challenge, however, is for the commission to take corrective actions to increase the competitiveness of the sector, if found weak or wanting.

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59. Refarming spectrum is the clearing of frequencies from low-value (by economic and/or social criteria) and reassignment to high-value applications. See ITU. Refarming of Spectrum Resources. ICT Regulation Toolkit. <http://www.ictregulationtoolkit.org/en/toolkit/notes/PracticeNote/2320>.



## V. CONCLUSION

The Internet is an information and communications tool that is increasingly changing the way people live. Connectivity can improve the quality of life by the sheer reduction of time and distance in carrying out tasks related to education, health, and livelihood. It can increase a country's competitiveness, promote inclusive growth and development, and spur investment directly by the emergence of Internet-related businesses and indirectly by improving the ease of doing business. The Internet has also been known to help promote good governance by increasing transparency and aiding in initiatives such as open data.

In the coming months, the Filipino nation will elect a new leadership. This is a good opportunity to design and implement another cycle of major reforms. It is hoped

that broadband connectivity would be one of the key focus areas not just as an issue of infrastructure, but that of competitiveness, innovation, development, and consumer welfare.

There are numerous policy reform and market-led options that can be undertaken. But the challenge for the next administration is whether it has the vision and informed appreciation for how broadband technology could influence a country's development path. If it has the right priorities, then the Internet and reformist telecommunication policies can yield immense benefits to current and future generations of Filipinos.

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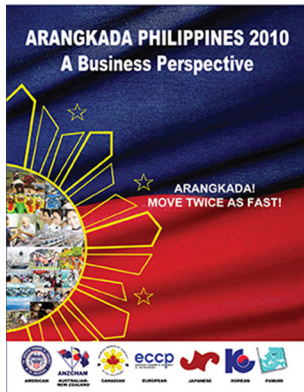
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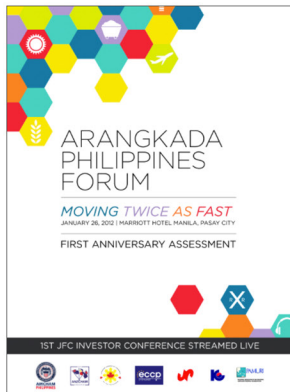
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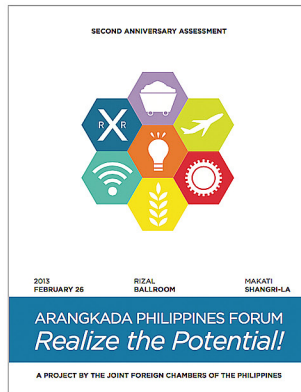
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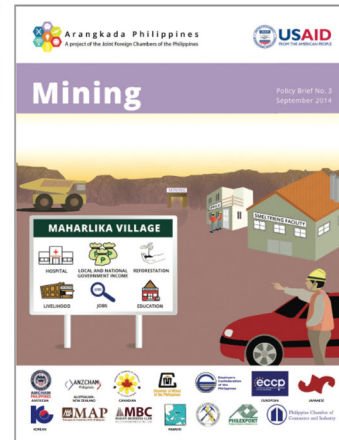


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