Indonesia's connectivity challenge
Faster internet for all, to benefit from the digital economy

Digital Connectivity Focus Group Discussion
Jakarta, January 29, 2020

Natasha Beschorner/Jan van Rees
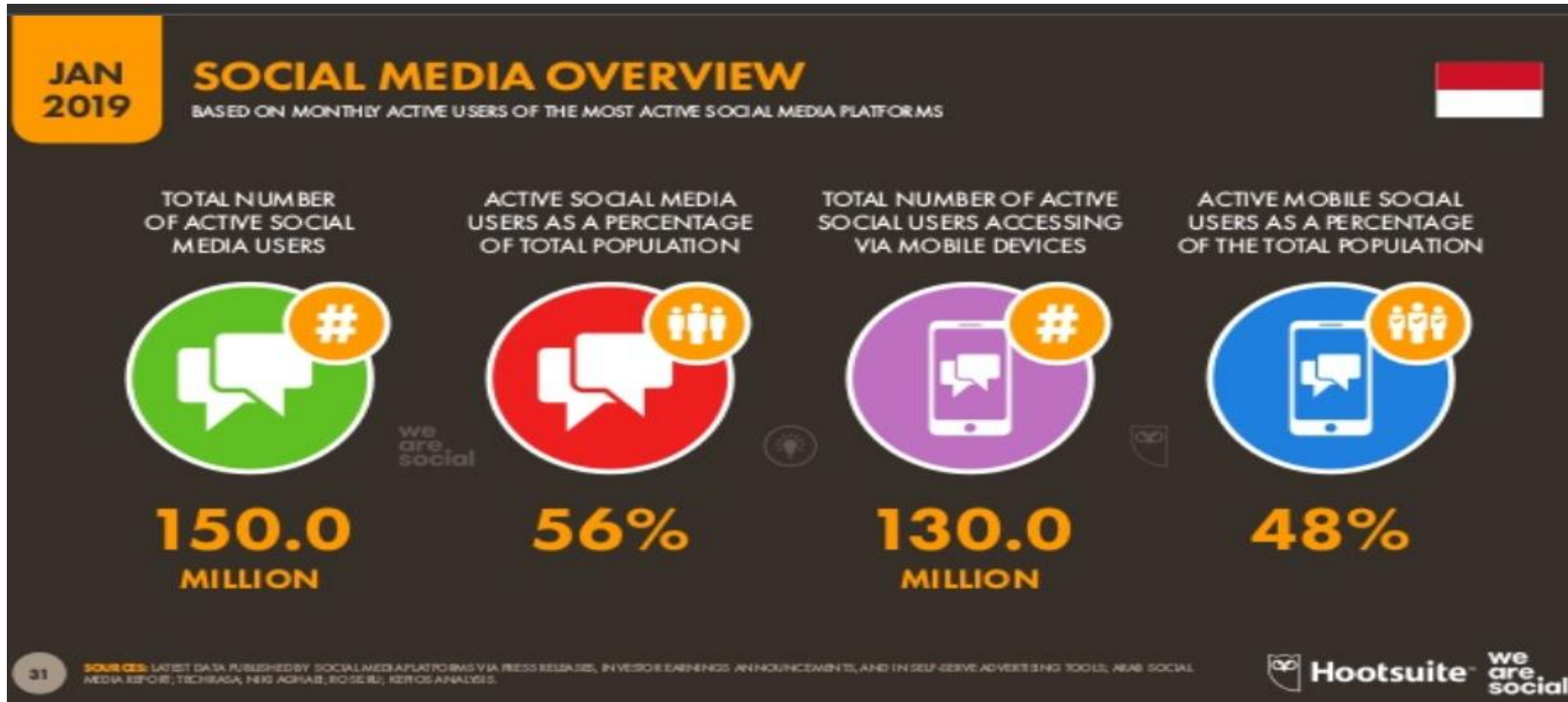**Digital Development Department**

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Indonesians are spending many hours a day on the internet….

Source: HootSuite, WeareSocial, Global Digital Report 2019

….using social media at world-leading levels

Indonesia's tech unicorns are becoming regional if not global brands

Gojek hits 10 million trips in Singapore

techinasia.com

Indonesia's Tokopedia kicks off global strategy, enables local players to export goods

Bukalapak Incar Status Decacorn Tahun Ini

WHATS NEW   27/06/2019, 16:14 WIB

Customer-centric Traveloka aims to be top online travel agency in SE Asia

Tourism November 20, 2018 17:39
By The Nation
4,884 Viewed

The Government has plans for Digital Transformation

- Making Indonesia 4.0 2018
- Indonesia E-Commerce Roadmap 2017
- E-Government Presidential Decree PP 95/2018

But there are significant constraints...

1. Indonesia **is lagging behind on key foundations** for the digital economy notably on **digital connectivity (internet access, quality and affordability)**	2. There is **great potential for digital transformation** of the economy and society if Indonesia's **digital divide** can be overcome	3. Through targeted policy actions Government can *facilitate* **faster and more efficient digital connectivity** for the majority of Indonesians.

Where should policymakers and regulators focus?

The number of broadband subscribers is increasing…

Fixed broadband (2019 Q3)

Telco	Subscriptions
Telkom	8.4 million
First Media/Linknet	0.646 million
Biznet	0.1 million
MNC	0.265 million
My Republic	0.15 million
Stroom (ICON+)	
Others	< 0.1 million
Total	**9.661 million (3.7% pop., 14.5% HH)**

Mobile broadband (2019 Q3)

Telco	Mobile Broadband Subscriptions
Telkomsel	112.1 million
Indosat	44.1 million
XL	47.7 million
SmartFren	15.8 million
Tri (3)	28.5 million
Bolt	0 million
Total	**248.2 million (94%)**—may not be unique users

# ..but the digital divide remains

A large number of Indonesians still lack fast, cheap, quality internet

- **Indonesia has uneven mobile broadband penetration and is lagging behind considerably on fixed broadband penetration—a concern for governments and businesses (large users of data)**
- **Fixed broadband less than 5% of the population and about 15% of households**

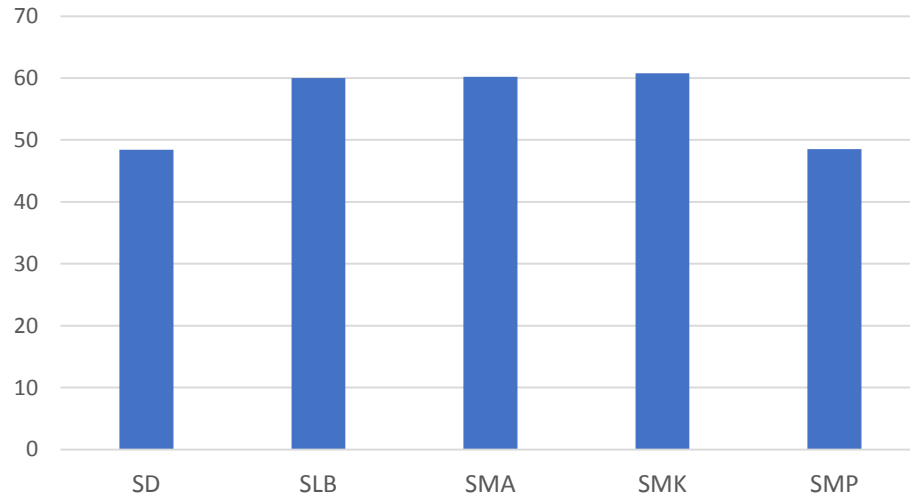### ASEAN Mobile penetration per technology (2019 Q3)

Legend: ■ GSM ■ 3G ■ LTE

Fixed broadband (2019 Q3)

Legend: ■ Fixed Broadband Population Penetration ■ Fixed Broadband HH Penetration
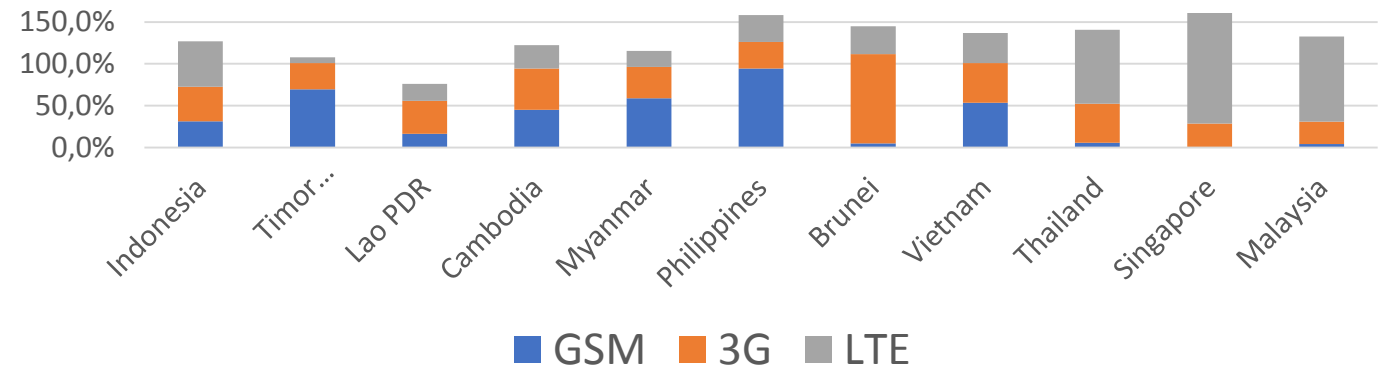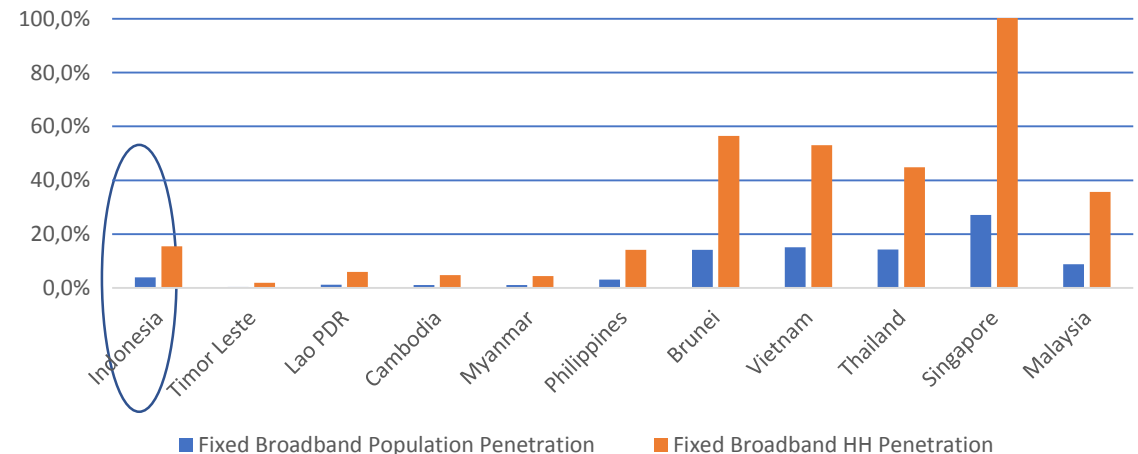
Source: Telegeography, 2020

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School internet access is an example of the digital divide

% of schools with internet connection, end-2017

Note: information about type of internet access and available bandwidth not available; schools now arrange for their own internet connections using BOS or local DINAS funds following the termination of the *Jardiknas* school network program.

Row Labels	Count of prop_ With Internet	Count of prop_ Without Internet	% with Internet
PROP. ACEH	2673	2587	50.8%
PROP. BALI	1499	1696	46.9%
PROP. BANGKA BELITUNG	554	582	48.8%
PROP. BANTEN	4277	2857	60.0%
PROP. BENGKULU	905	1113	44.8%
PROP. D.I. YOGYAKARTA	1545	1185	56.6%
PROP. D.K.I. JAKARTA	2710	1997	57.6%
PROP. GORONTALO	470	905	34.2%
PROP. JAMBI	1725	1765	49.4%
PROP. JAWA BARAT	17571	11678	60.1%
PROP. JAWA TENGAH	13933	10928	56.0%
PROP. JAWA TIMUR	14572	13051	52.8%
PROP. KALIMANTAN BARAT	2158	4049	34.8%
PROP. KALIMANTAN SELATAN	1812	2021	47.3%
PROP. KALIMANTAN TENGAH	1293	2492	34.2%
PROP. KALIMANTAN TIMUR	1334	1566	46.0%
PROP. KALIMANTAN UTARA	256	454	36.1%
PROP. KEPULAUAN RIAU	695	761	47.7%
PROP. LAMPUNG	3547	3333	51.6%
PROP. MALUKU	668	2036	24.7%
PROP. MALUKU UTARA	649	1343	32.6%
PROP. NUSA TENGGARA BARAT	2658	1988	57.2%
PROP. NUSA TENGGARA TIMUR	3345	4020	45.4%
PROP. PAPUA	574	2610	18.0%
PROP. PAPUA BARAT	355	1063	25.0%
PROP. RIAU	2965	2479	54.5%
PROP. SULAWESI BARAT	592	1280	31.6%
PROP. SULAWESI SELATAN	4666	4409	51.4%
PROP. SULAWESI TENGAH	1286	2793	31.5%
PROP. SULAWESI TENGGARA	1404	2107	40.0%
PROP. SULAWESI UTARA	1398	1943	41.8%
PROP. SUMATERA BARAT	2668	2893	48.0%
PROP. SUMATERA SELATAN	3701	3117	54.3%
PROP. SUMATERA UTARA	6335	7711	45.1%
(blank)			
Grand Total	106793	106812	50.0%

School internet access varies across Indonesia

Graph 1. Share of ICT Access in Province Level, 2017
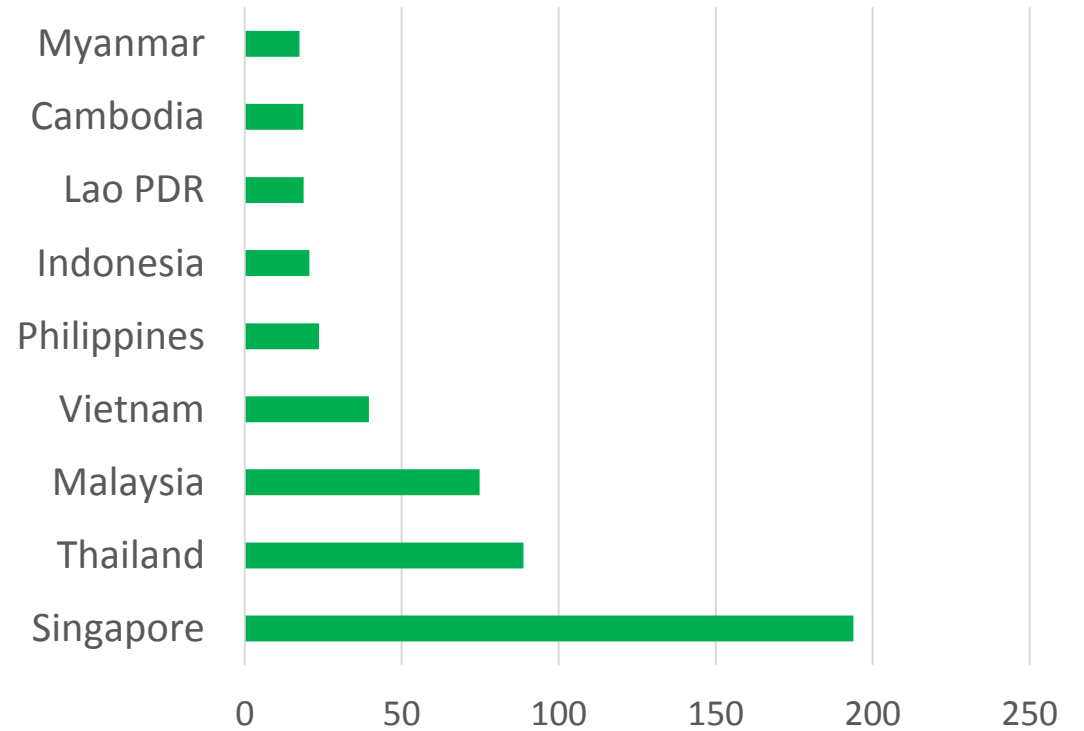
% School ICT 0.2067 — 0.6667
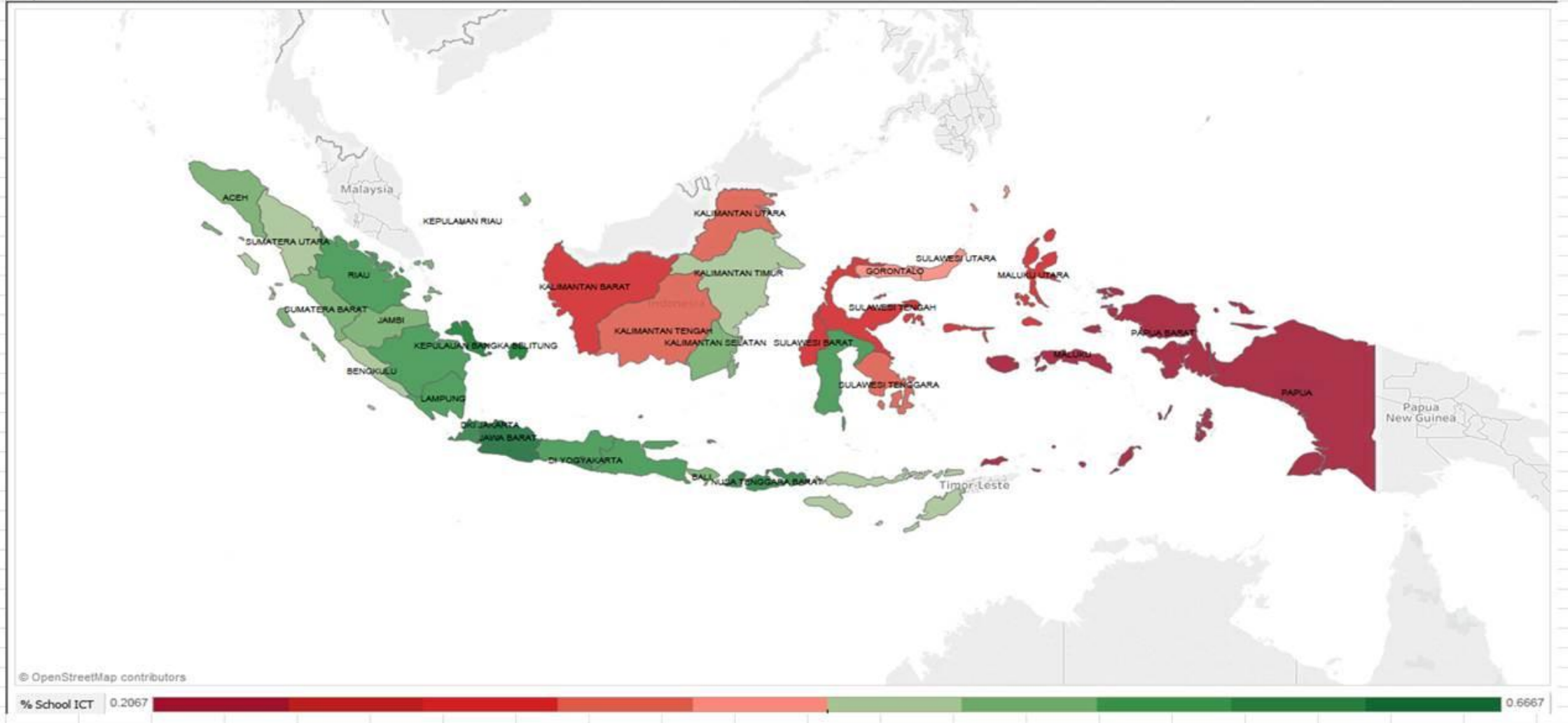
Quality of internet service is relatively low-
internet download speeds (Ookla, Aug 2019)

Mobile download (Mbps)
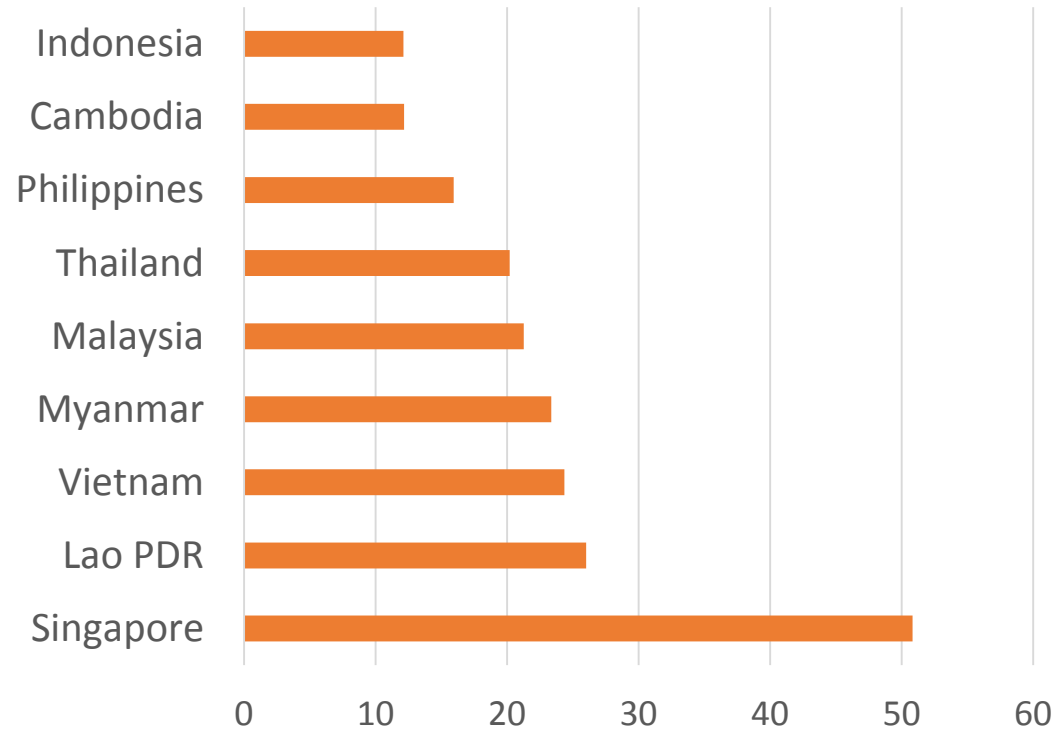
Fixed download (Mbps)

What can the government do?

- Access gaps
- Quality gaps

- Investment facilitation
- Regulation

Investment is private sector led

	2016 (Bn Rupiah)	2017 (Bn Rupiah)	2018 (Bn Rupiah)	2019 Q3 (Bn Rupiah)	Comment
Telkom	14,763	19,216	18,995	12,342	FTTH, submarine cable, satellite
Telkomsel	12,794	13,984	16,095	9,791	Mobile
Indosat	7,291	6,772	5,452	6,825	Mobile
XL	5,584	6,697	6,274	6,501	Mobile
SmartFren	1,499	2,963	2,937		Mobile
Linknet (First Media)	745	971	1,115		Cable TV + Internet
Tower Bersama	1,365	1,790	2,205		Tower infrastructure
SMN	3,725	1,305	4,291		Tower infrastructure
STP	577	712	375		Tower infrastructure

The Universal service (USO) program

- Responsible agency: Bakti (Kominfo)
- Ongoing programs:
  - "Palapa Ring". Telcos have already built backbone network connections to 457 commercially viable *kabupaten/kota* .The USO fund (drawn from industry tax) financed additional connections for 57 non commercially viable *kabupaten/kota* through PPP arrangement
- Planned programs:
  - Provision of mobile service in 5,000 underserved villages. Implementation has started, 1067 villages completed in 2019. The rest planned for 2020
  - HTS satellite (US$500M to lease 21Gpbs capacity-US$400/Mbps/month)-will benefit PSN
- **Recommendation:**
  - extend fibre optic connectivity from the *Kabupaten* level to *Kecamatan* and beyond and to many of the 150,000 priority locations (schools, *puskesmas* and Government offices)—more cost effective and technologically robust than HTS

Palapa Ring backbone network

Radio spectrum management

Spectrum (radio frequency) scarcity is the main reason for the remaining access and quality challenges

Spectrum reallocation and management are needed to accelerate mobile broadband deployment, particularly in rural areas which are unserved/underserved.

700 MHz band: reallocate from broadcasting to mobile broadband-4G/LTE

2.6 Ghz band: reallocate from satellite broadcasting to 4G/LTE

Enable sharing of 3.4-3.8 Ghz bands between satellite and mobile services for increased mobile broadband capacity, including 5G prospectively
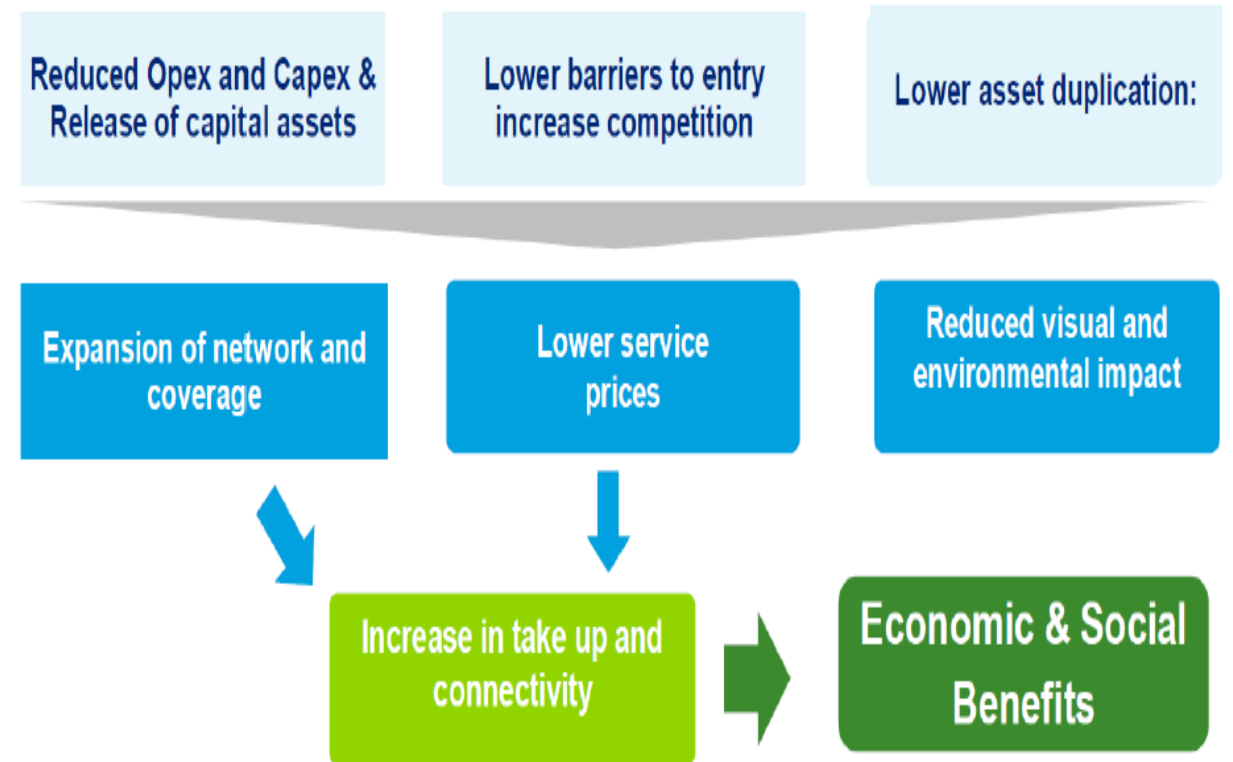
Prepare the spectrum in the mmWave band, 24-29 GHz, for 5G and assign this to operators as soon as the ecosystem to deploy exists

Requires revision of the Broadcasting law and negotiations with spectrum holders especially TV companies.
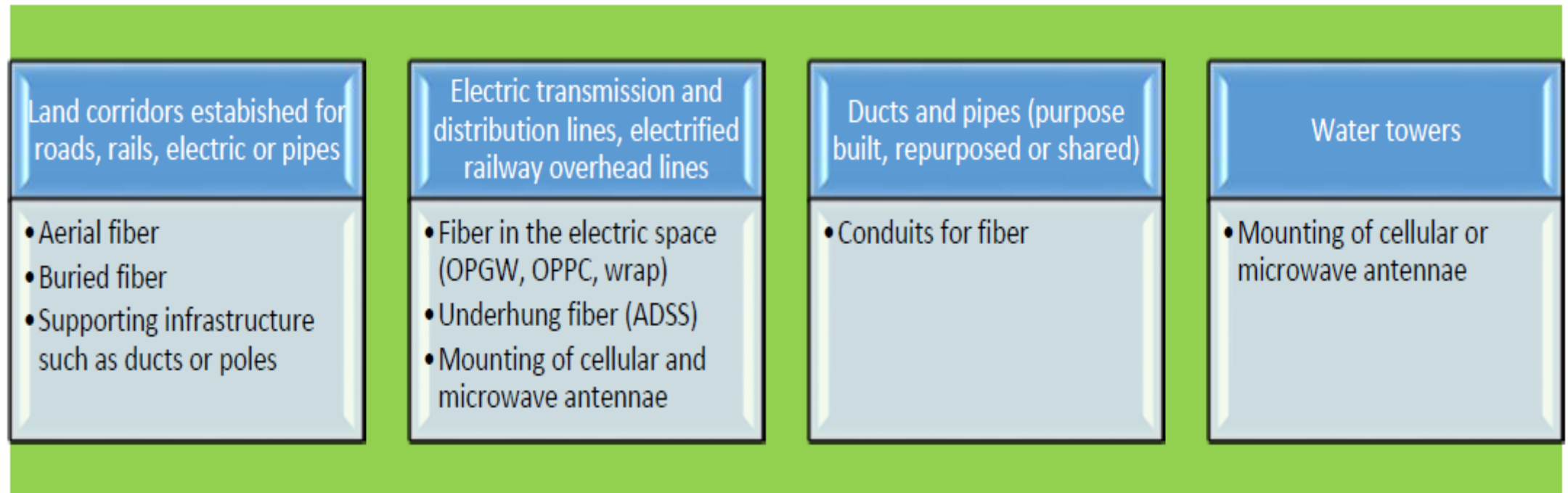
Infrastructure sharing & licensing revision

- **Introduce passive infrastructure sharing:** not only for towers (already practiced) but also ducts, poles, rights of way and related civil works needed for fibre rollout:
  - Create a database with all passive infrastructure available for sharing.
  - Establish a regulatory function to determine tariffs for passive infrastructure sharing.
  - Update the Telecom Law, PP 52/53 to allow sharing of active infrastructure on a business to business (B2B) basis

Reduced Opex and Capex & Release of capital assets	Lower barriers to entry increase competition	Lower asset duplication:
Expansion of network and coverage	Lower service prices	Reduced visual and environmental impact

Increase in take up and connectivity → Economic & Social Benefits

Source: Deloitte report, Unlocking broadband for all, 2015

Infrastructure-sharing/colocation across sectors

Figure 8.15: Matrix of common broadband cross-sector infrastructure sharing options

Land corridors estabished for roads, rails, electric or pipes	Electric transmission and distribution lines, electrified railway overhead lines	Ducts and pipes (purpose built, repurposed or shared)	Water towers
• Aerial fiber • Buried fiber • Supporting infrastructure such as ducts or poles	• Fiber in the electric space (OPGW, OPPC, wrap) • Underhung fiber (ADSS) • Mounting of cellular and microwave antennae	• Conduits for fiber	• Mounting of cellular or microwave antennae

Requires cooperation of national government agencies, state-owned and private companies and local governments

Other regulatory reforms

- **Open access and non discriminatory pricing for wholesale bandwidth**
  - to prevent abuse of monopoly power
- **Technology-neutral licensing**
  - introduce a single (unified) license to allow a larger number of telcos to deliver the full portfolio of services, enabling more effective competition for dual-play and triple play fixed broadband services

[dual play=voice+data; triple play=voice+data+TV]

- **Mobile number portability**
  - pro-consumer