



KEMENTERIAN KOORDINATOR BIDANG PEREKONOMIAN

Effective Strategy for Digital Economy Transformation in Indonesia

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Asisten Deputi Telematika dan Utilitas,

disampaikan dalam FGD WANTIKNAS
Arah Strategis Transformasi Digital di Indonesia

Jakarta, 28 Januari 2020

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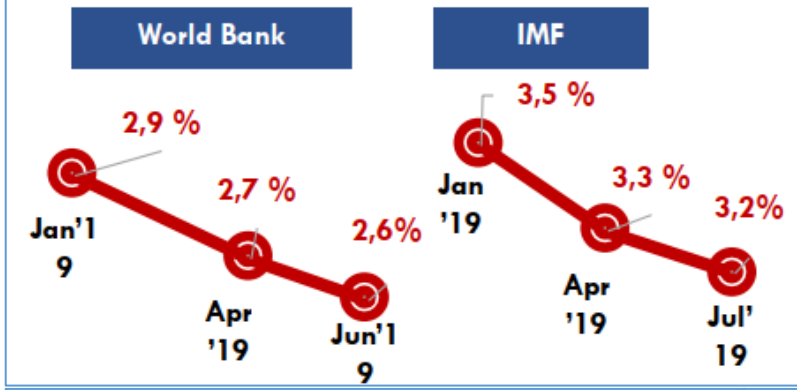
01

ECONOMY AT A GLANCE

TANTANGAN KETIDAKPASTIAN PEREKONOMIAN GLOBAL

Perekonomian global masih dipengaruhi oleh kebijakan dan kondisi ekonomi AS, Kawasan Euro dan China. Pasar keuangan terdampak oleh kebijakan moneter AS sementara pasar komoditas dipengaruhi oleh penurunan produksi di negaranegara industri. Sektor perdagangan juga mengalami tekanan dengan adanya eskalasi tensi dalam hubungan AS dengan negara-negara ekonomi besar seperti Tiongkok dan India.

PEMANGKASAN PERTUMBUHAN EKONOMI GLOBAL 2019

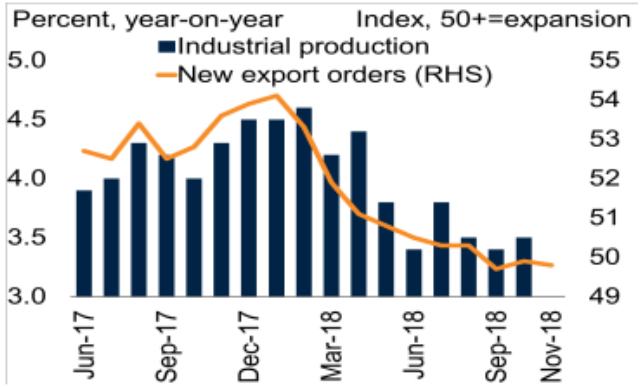


MENURUNNYA GLOBAL TRADE VOLUME GROWTH

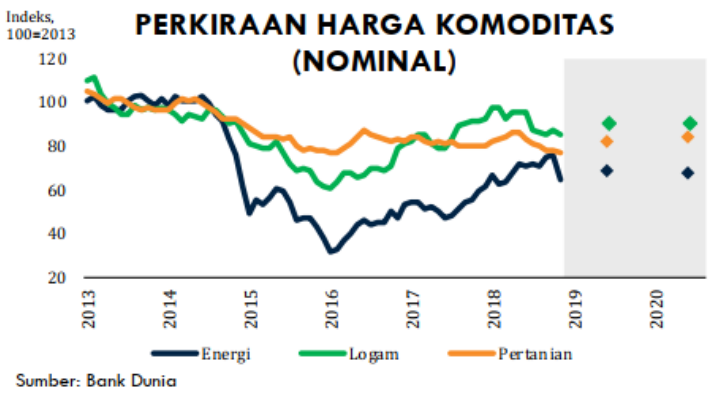
Trade Volume	2017	2018	2019	2020
World	5,5	3,7	2,5	3,7
Advances Economies	4,4	3,1	2,2	3,1
Emerging Market & Developing Economies	7,4	4,7	2,9	4,8

Sumber: WEO IMF, Juli 2019

PRODUKSI DAN PERMINTAAN EKSPOR BARU DALAM INDUSTRI GLOBAL



PERKIRAAN HARGA KOMODITAS (NOMINAL)



Sumber: Bank Dunia

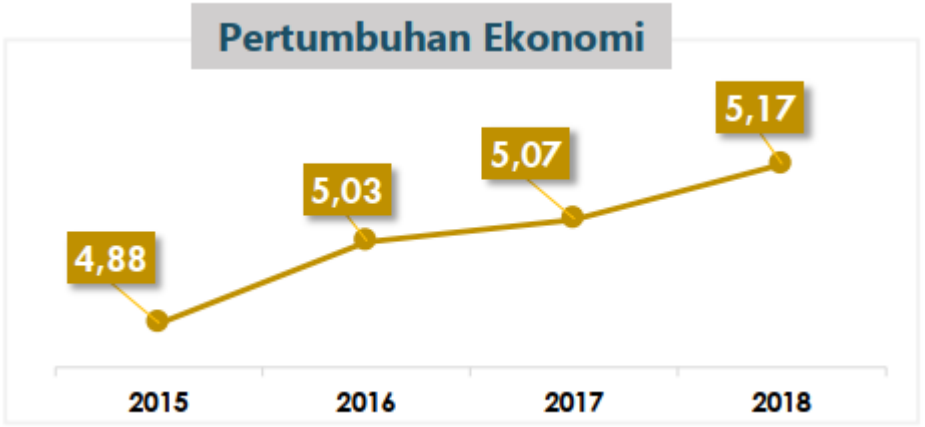
SUMBER KETIDAKPASTIAN GLOBAL

1. Geopolitik dan ketidakpastian kebijakan (Brexit)
2. Moderasi pertumbuhan pertumbuhan Kawasan Euro dan Tiongkok
3. Konflik Perdagangan AS-Tiongkok
4. Normalisasi Kebijakan Moneter AS

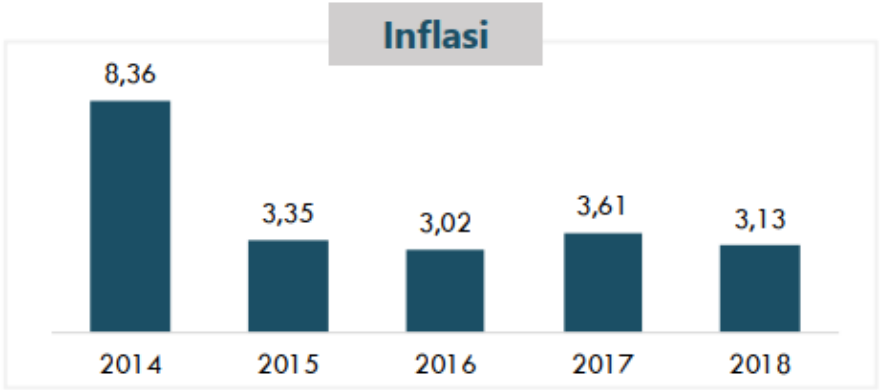
Sumber: Kemenko Perekonomian, 2019

PERTUMBUHAN EKONOMI DOMESTIK STABIL

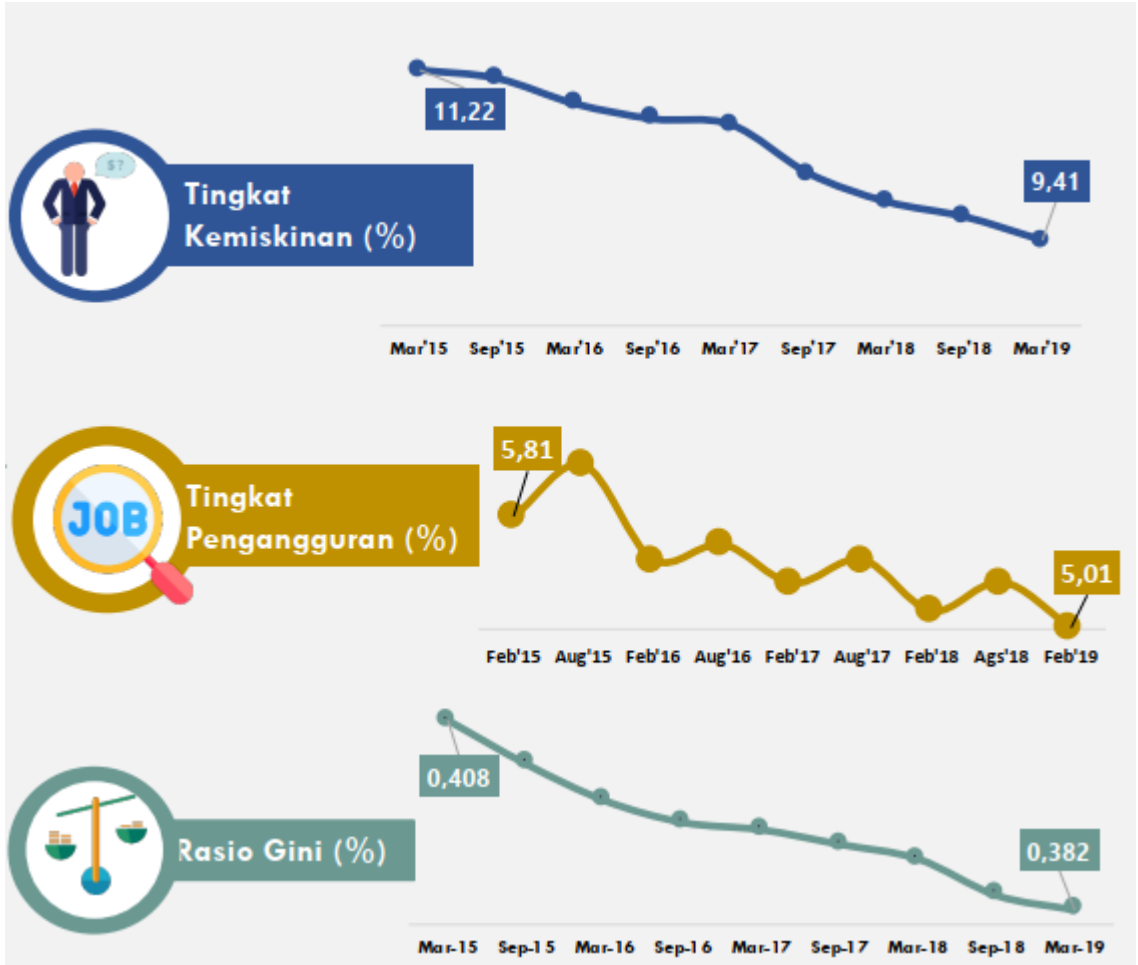
1 **PERTUMBUHAN EKONOMI MENUNJUKKAN TREN PENINGKATAN YANG SEMAKIN POSITIF DI TENGAH KETIDAKPASTIAN PEREKONOMIAN GLOBAL**



2 **TINGKAT INFLASI RENDAH DAN TERKENDALI SESUAI DENGAN TARGET YANG DITETAPKAN DALAM APBN**



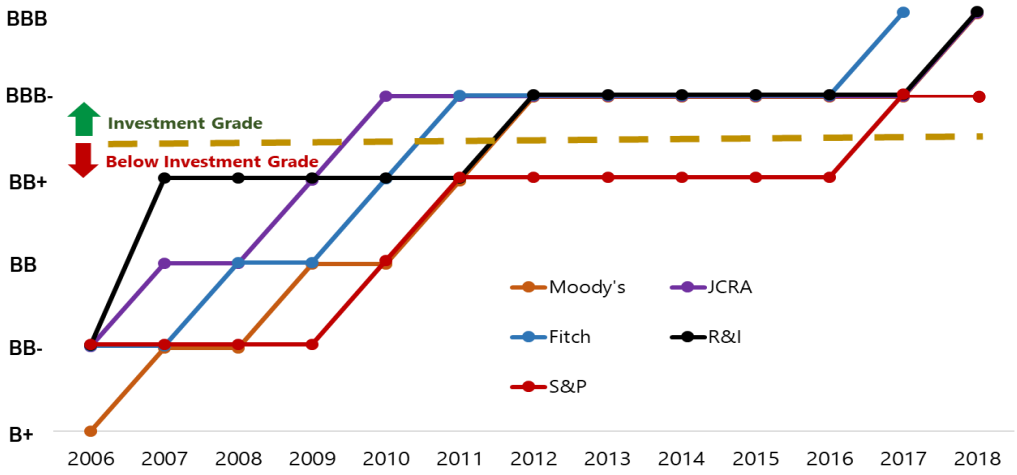
3 **KUALITAS PERTUMBUHAN SEMAKIN BAIK DITANDAI DENGAN TINGKAT KEMISKINAN, TINGKAT PENGANGGURAN DAN RASIO GINI YANG MENURUN**



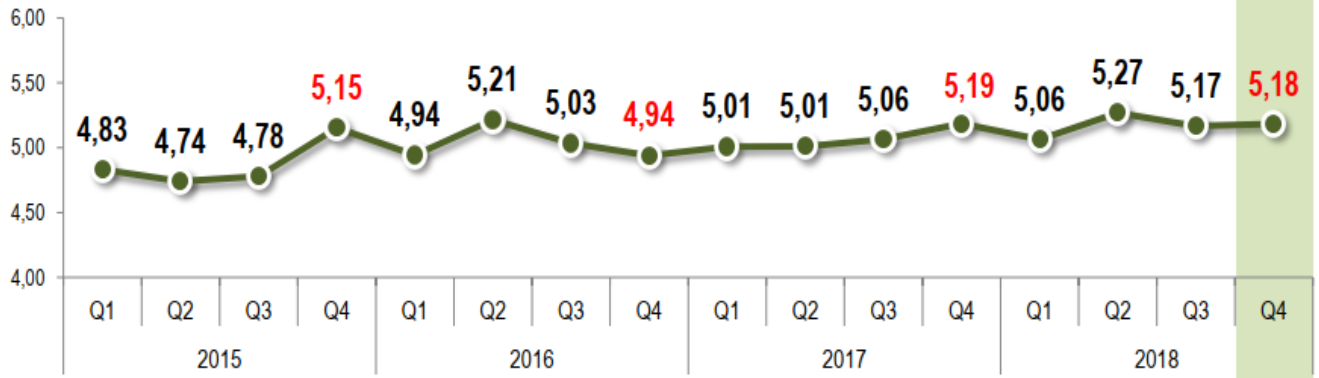
Sumber: Kemenko Perekonomian, 2019

INDONESIA ECONOMY AT A GLANCE

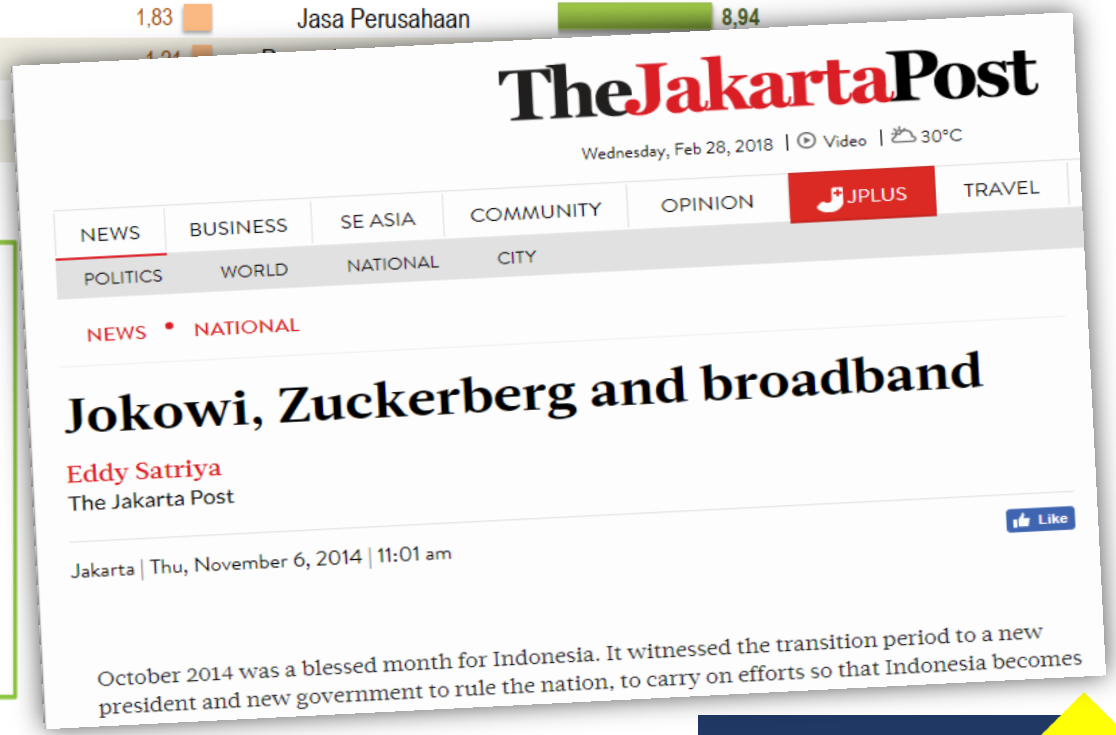
Investment Grade



Economic Growth 4th Q - 2018



Struktur PDB (%)	2018	Pertumbuhan PDB (%)
19,82	Industri	4,25
13,00	Perdagangan	4,39
11,11	Konstruksi	5,58
10,88	Pertanian	3,87
8,03	Pertambangan	2,25
5,39	Transportasi & Pergudangan	5,34
4,17	Jasa Keuangan & Asuransi	6,27
3,94	Adm. Pemerintahan	7,13
3,83	ICT	7,17
3,54	Jasa Pendidikan	4,97
2,79	Akomodasi & Makan Minum	5,95
2,74	Real Estat	4,24
1,84	Jasa Lainnya	9,08
1,83	Jasa Perusahaan	8,94


The Jakarta Post

Wednesday, Feb 28, 2018 | Video | 30°C

NEWS | BUSINESS | SE ASIA | COMMUNITY | OPINION | JPLUS | TRAVEL

POLITICS | WORLD | NATIONAL | CITY

NEWS • NATIONAL

Jokowi, Zuckerberg and broadband

Eddy Satriya
The Jakarta Post

Like

Jakarta | Thu, November 6, 2014 | 11:01 am

October 2014 was a blessed month for Indonesia. It witnessed the transition period to a new president and new government to rule the nation, to carry on efforts so that Indonesia becomes

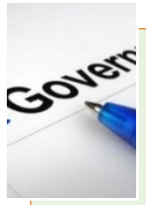
Sources: EODB Indonesia, BPS 2018

Government Has Been Doing... The Latest

General Infrastructures

Making Indonesia 4.0

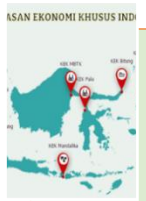
Smart City



e-Government

Palapa Ring

e-Commerce

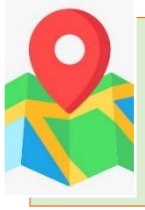


Special Economic Zone

On Line Single Submission (OSS)

National Strategy For Financial Inclusion (SNKI)

One Data Indonesia



One Map Indonesia

Waste to Energy

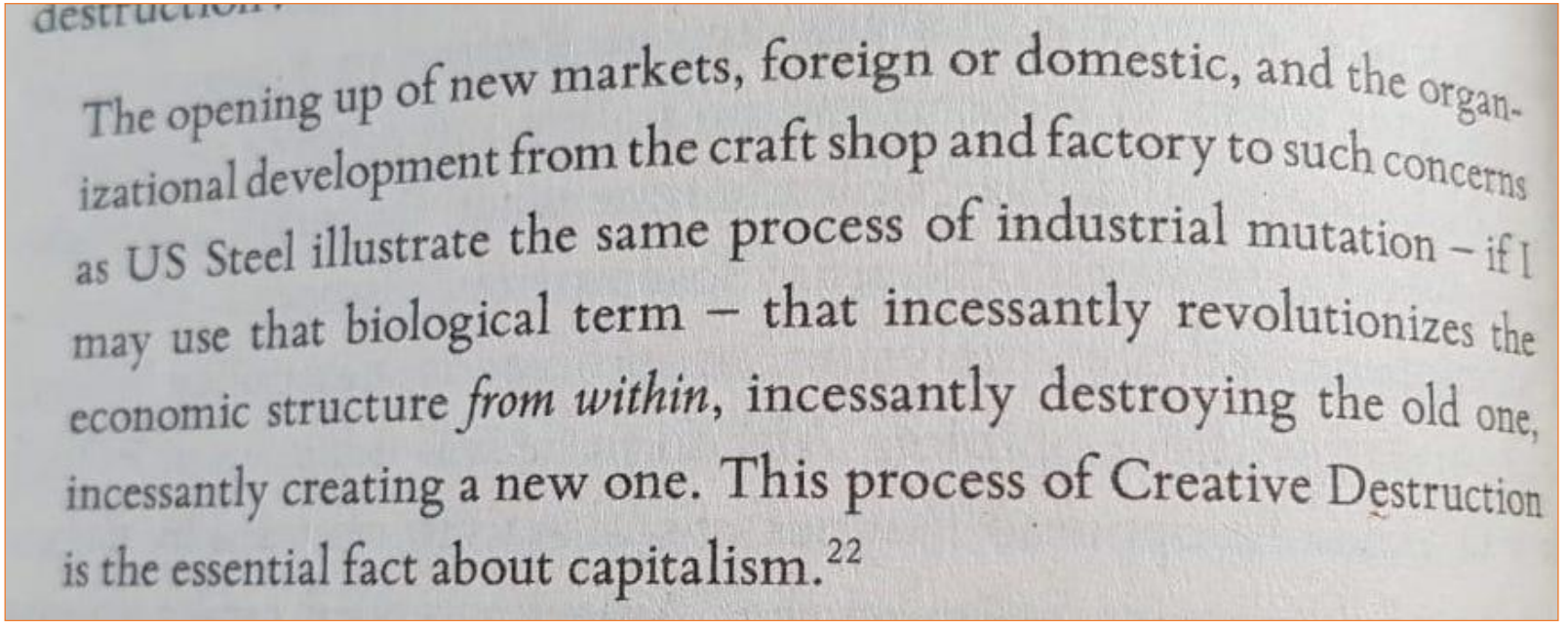
Omnibus Law

ANOTHER CHALLENGE: Disruptive Technologies

Sumber: Bambang Susantono, 2018, diolah

Joseph Schumpeter on Innovation (Revisited)

1. Innovation is the engine of economic growth – "Perenial Gale of Creative Destruction"
2. "Creative Destruction is the essential fact about Capitalism"
3. Five (5) types of innovation from entrepreneurship:
   - The introduction of new good or of new version of a good (better);
   - The introduction of a new method of production;
   - The opening of new market;
   - The conquest of new source of raw materials or half manufactured goods;
   - The creation of a new organization of any industry (monopoly, competition);



destruction.

The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory to such concerns as US Steel illustrate the same process of industrial mutation – if I may use that biological term – that incessantly revolutionizes the economic structure *from within*, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.[22]

ICT FOR ECONOMY

1. Population: 264,16millions;
2. Mobile Phones : 400 millions*;
3. Smartphone + Tablet: 131,2 millions;
4. Internet Users: 171,17 millions;
5. Economic growth : 5,17% (2018);
6. ICT is one of the highest for the GDP growth, 7,17%;
7. The challenge: how to maximize output through technological change/ICT and innovation. Not only for the economy but also for other public services;

*) Estimation number

CHANGING FROM LEISURE AND A MERELY SOCIAL MEDIA

TO

P R O D U C T I V I T Y,

YES... NATIONAL PRODUCTIVITY..!!

Challenges are to Maximize the use of ICT and innovation in production function

$$Y = f(K,L,i)$$

(i= innovation and tech change index)

Sources: BPS, Satriya (1997), APJII (2019)

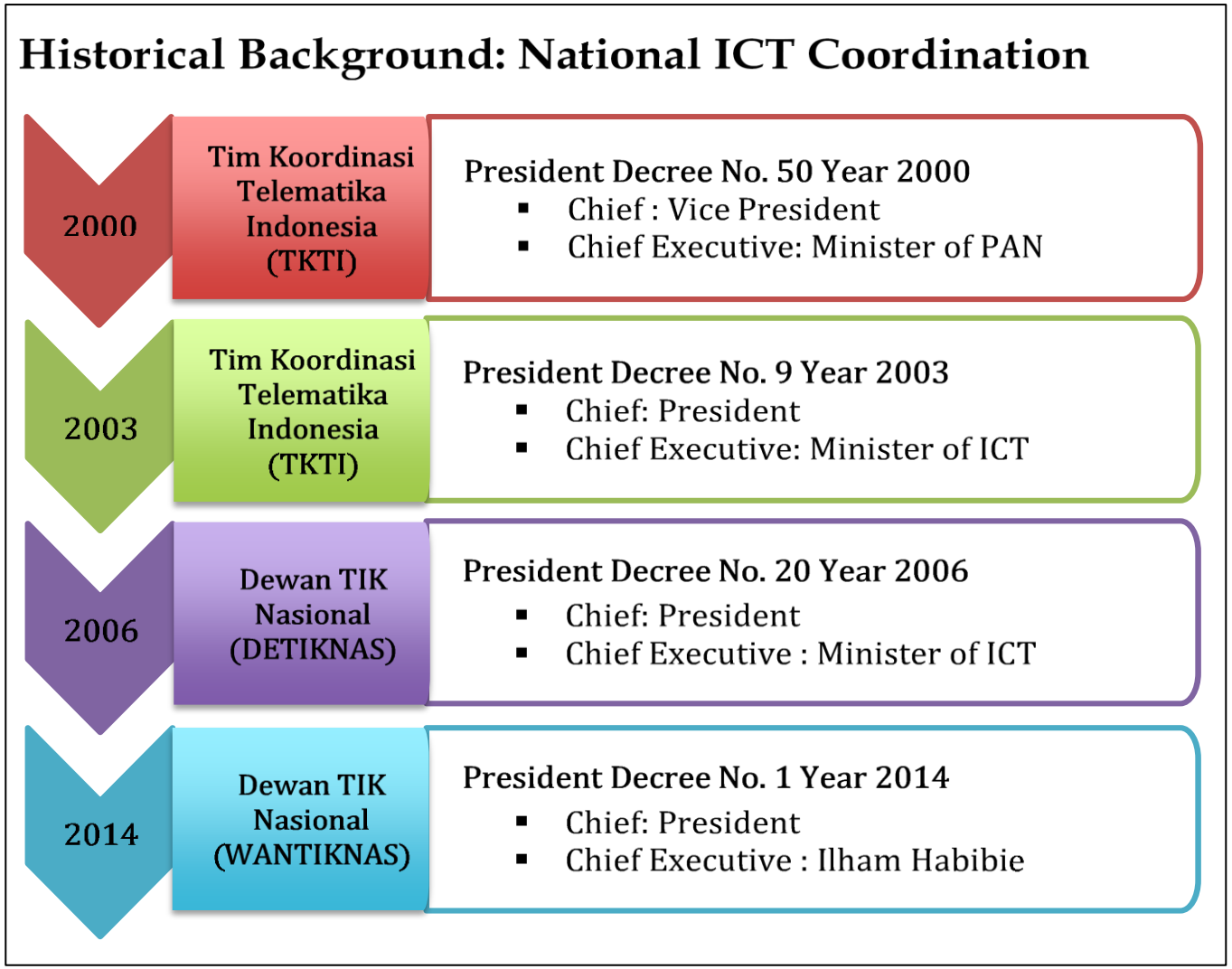
02

HISTORY, INDICATORS, AND TRANSFORMATION

Indonesia ICT Milestones

1907	Post, Telegraph dan Telephone
1961	Perusahaan Negara (PN) Pos dan Telekomunikasi
1965	PN Telekomunikasi
1966	Ministry of Post and Telecommunication
1966	Directorate General of Post and Telecommunication in Transportation Department
1974	Public Company for Telecommunication (Perumtel); PT. INTI; Sentral Telepon Digital Indonesia (STDI)
1980	PT. Indosat (GR No.53/1980)
1988	PT. Aplikanusa Lintasarta
1989	Law No.3/1989 on Telecommunication
1990	STDI 2 – Indonesia Digital Telephone Exchange 2
1991	Perumtel changed to PT. Telekomunikasi Indonesia (Telkom)
1993	PT. Satelido was founded
1995	IPO PT. Telkom
1997	Tim Koordinasi Telematika (TKTI) Presidential Decree No.30/1997
1999	Law No.36/1999 on Telecommunication
2000	Indosat and Telkom agreed to transfer of ownership of shares in Satelindo and Telkomsel to end cross-ownership in the two companies and to show goodwill in business competition
2001	Ministry of Communication and Information
2003	Presidential Instruction No. 3/2003 concerning National Policies and Strategies for E-Government
2005	Merge of Ministry of Communication and Information and Directorate General Postel
2006	Dewan TIK Nasional (DETIKNAS)/National Council on ICT
2008	Law No 11/2008 on Information and Electronic Transaction
2014	Dewan TIK Nasional (WANTIKNAS)/New National Council on ICT
2016	National Strategy on Financial Inclusion
2017	National Roadmap on E-Commerce Presidential Decree No. 53/ 2017 on National Cyber and Crypto Agency
2018	National Roadmap on E-Government
2019	PT. INTI's financial condition is not good, said to have debt of billions rupiah Government Regulation No. 71/ 2019 on Electronic Transaction and System Operation/ Maintenance

History



Source: (WANTIKNAS)

Another History: E-Commerce Multistakeholders Approach

Chronology of E-commerce Meetings / Activities

6 MAR 2015	• Coordination Meeting for e-Commerce • Assignment from Minister Sofyan Djalil to Deputy Assistent of ICT and Utility
16 MAR 2015	• Letter from CMEA Secretariat to relevant stakeholders/ ministries
19-23 MAR 2015	• Input compilation from ministries
24 MAR 2015	• Report to Coordinating Minister
30 MAR 2015	• Preparation meeting and outlining the Action Plan with DG ACT Application (Aptika)
6 APR 2015	• Discussion on Roadmap of Indonesia e-Commerce • Coordination meeting in Double Tree Hotel led by MICT
10 APR 2015	• Workshop on Roadmap of e-Commerce Indonesia in Telkom Landmark Tower Building
21 APR – 17 JUN 2015	• Discussion on draft RPP of Trade Transactions through Electronic Systems (TPMSE) at the Ministry of Trade. • Public Test of the draft RPP of Trade Transactions Through Electronic Systems (TPMSE) by the Ministry of Trade
24 JUN 2015	• Presentation of the draft e-commerce Roadmap by the Minister of Communication and Information at the Indonesia Services Dialog (ISD) series
19 OCT 2015	• Presentation of the draft e-commerce Roadmap by the Minister of Communication and Information in the Industry Coordination Meeting
3 NOV 2015	• Discussion on the revision of Presidential Decree 39/2014 on the Negative List of Investment (DNI) of the e-commerce sector by the Ministry of Trade
14 JAN 2016	• The Coordination Meeting on the e-Commerce Roadmap and agreeing to the Roadmap prepared by the MCIT, led by CMEA
25 JAN 2016	• Follow-up Meeting on Formalizing the Indonesian e-Commerce Roadmap regarding the proposed formation of an Office / Unit Project Management
1 FEB 2016	• The e-Commerce Road Map Discussion Meeting related to Financing and Taxation
3 AUG2017	• Roadmap e-Commerce launched (Presidential Regulation No 74/ 2017)

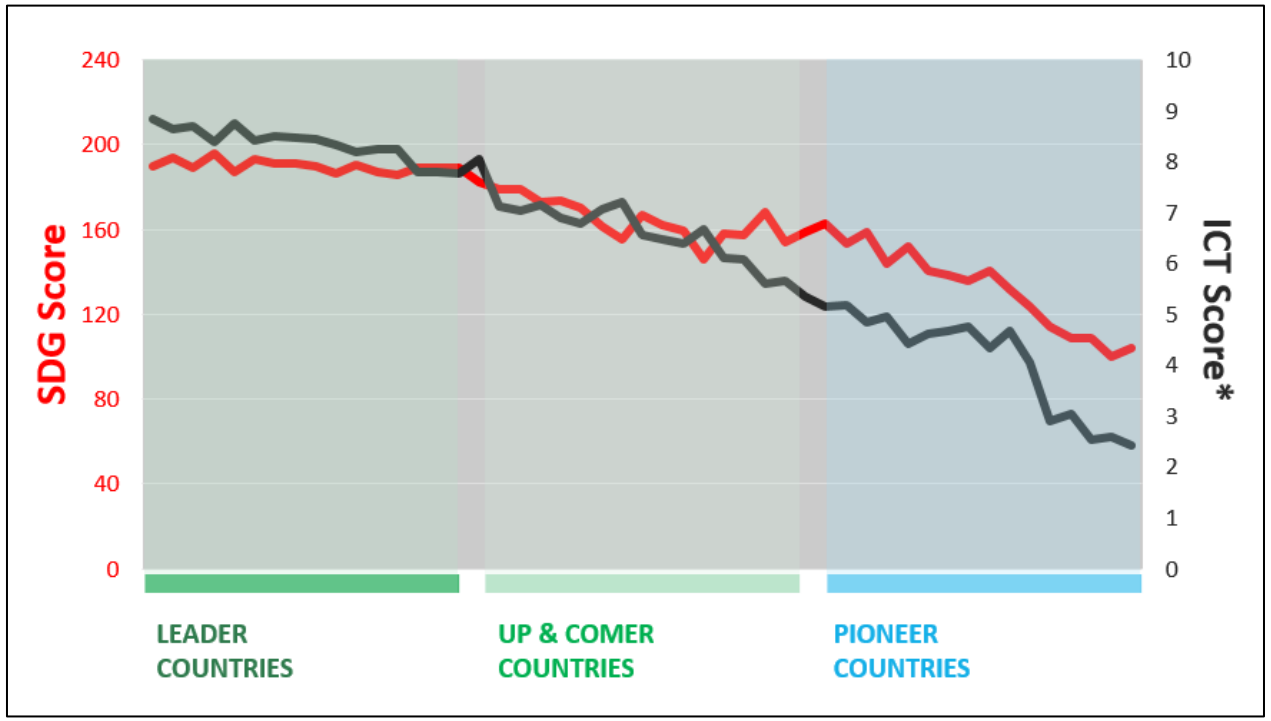
Stakeholder Meeting on E-Commerce Road Map Preparation

THE NEED TO TRANSFORM : NEW BALANCE!

Sustainable Development Goals

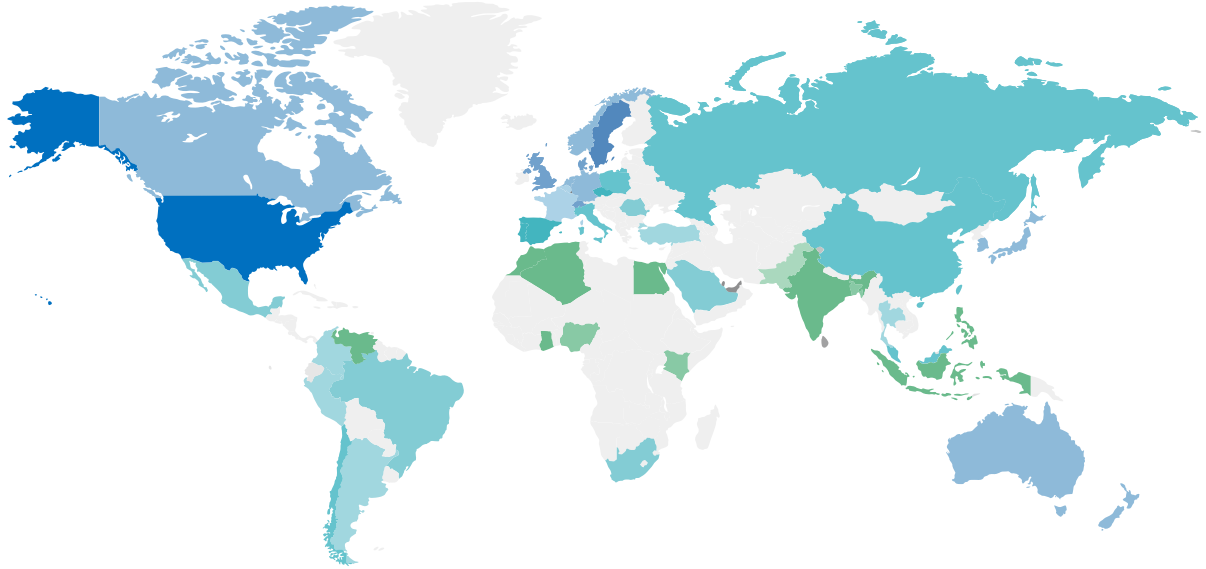
Source: (https://www.un.org/sustainabledevelopment/development-agenda)

Link Between ICT and SDG Progress



Source: (Huawei, ICT SDG Benchmark, 2017)

Digital Economy Heat Map



STARTERS
Average GDP Per Capita: US$3,700
GCI score: 20-34

ADOPTERS
Average GDP Per Capita: US$16,300
GCI score: 35-55

FRONTRUNNERS
Average GDP Per Capita: US$54,100
GCI score: 56-85

	FRONTRUNNERS	SCORE
1	United States	78
2	Singapore	75
3	Sweden	73
4	Switzerland	71
5	United Kingdom	70
6	Finland	68
7	Denmark	68
8	Netherlands	67
9	Norway	65
10	Japan	65
11	South Korea	64
12	Australia	64
13	Germany	63
14	Luxembourg	63
15	Ireland	62
16	New Zealand	62
17	Canada	62
18	Belgium	61
19	France	61
20	Austria	60

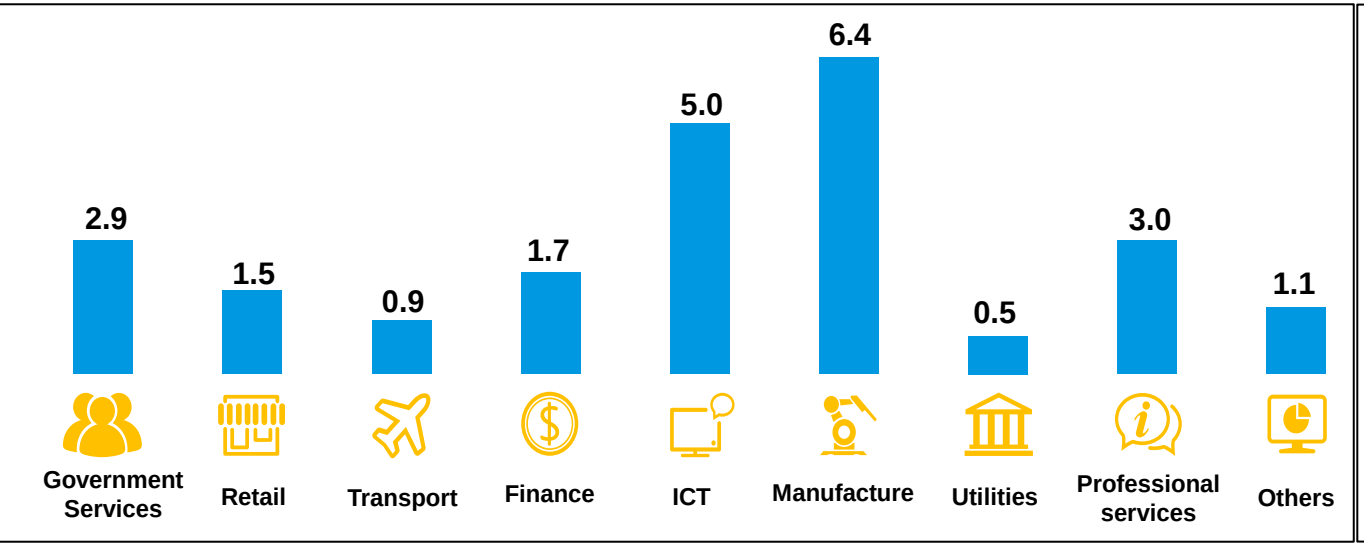
	ADOPTERS	SCORE
21	Spain	55
22	Estonia	54
23	UAE	53
24	Lithuania	52
25	Portugal	52
26	Slovenia	51
27	China	51
28	Italy	50
29	Czech Republic	50
30	Hungary	49
31	Slovakia	49
32	Malaysia	48
33	Chile	48
34	Croatia	46
35	Greece	46
36	Russia	46
37	Kuwait	45
38	Poland	45
39	Romania	45

	ADOPTERS	SCORE
40	Bahrain	45
41	Saudi Arabia	44
42	Belarus	44
43	Bulgaria	44
44	Brazil	43
45	Kazakhstan	42
46	Mexico	42
47	Oman	42
48	South Africa	42
49	Ukraine	41
50	Uruguay	41
51	Thailand	40
52	Turkey	39
53	Serbia	39
54	Colombia	39
55	Argentina	38
56	Peru	37
57	Philippines	35

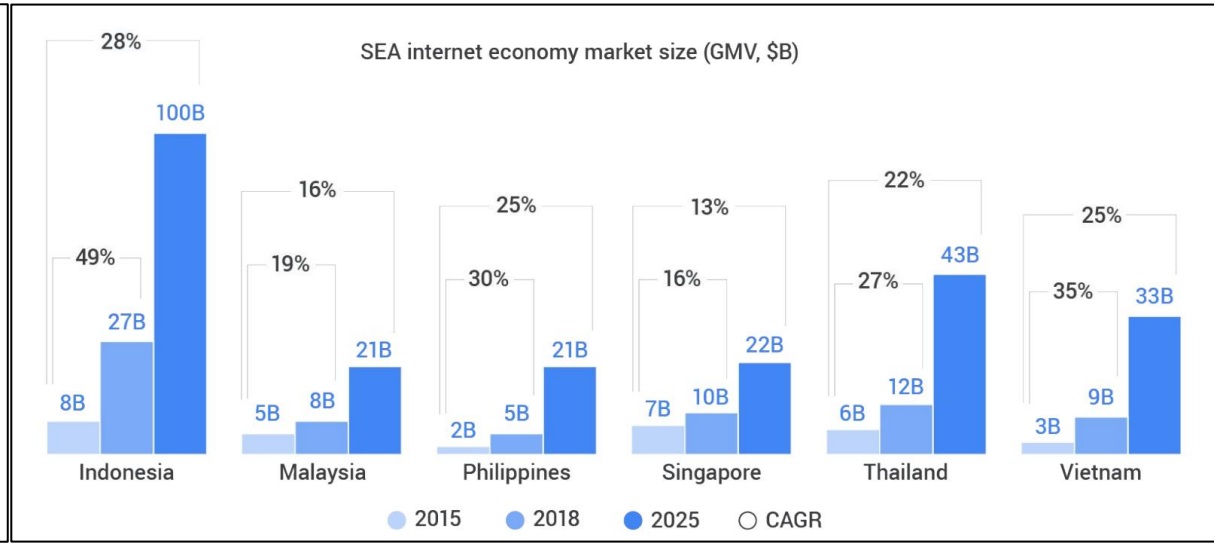
	STARTERS	SCORE
58	Jordan	34
59	Egypt	34
60	Lebanon	34
61	Vietnam	34
62	India	33
63	Venezuela	33
64	Indonesia	33
65	Morocco	33
66	Algeria	32
67	Ecuador	31
68	Ghana	29
69	Kenya	29
70	Nigeria	29
71	Botswana	29
72	Namibia	29
73	Paraguay	26
74	Tanzania	25
75	Uganda	25
76	Bolivia	25
77	Pakistan	25
78	Bangladesh	24
79	Ethiopia	23

Digital Economy Outlook

- Global Digital Economy Projection To Reach USD 23 Trilion in 2025
- Indonesia Internet Economy Market Size to reach USD 100 Billion in 2025



Source: (Huawei, Global Industry Vision 2025)



Source: Google Temasek 2018

Strategies and Policies to Encourage ICT Investment

Source: (ITU, 2017), *(Indonesia's Ministry of Industry, 2018)*

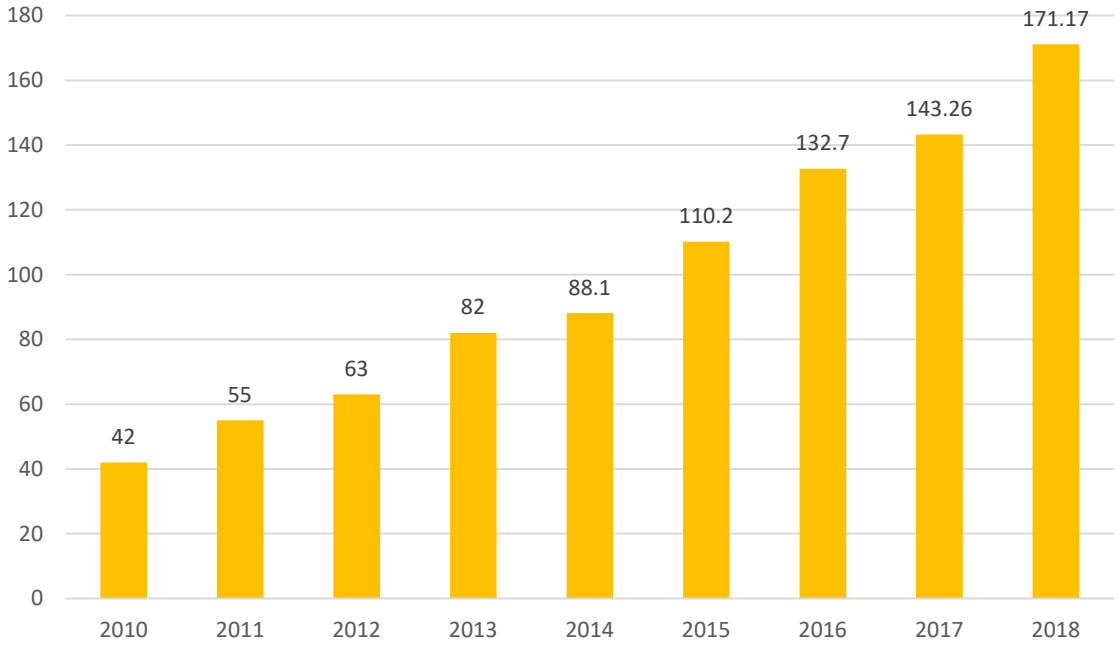
ICT as A Percentage Of GDP

Product group	Percent of GDP
Included in GDP (on a value-added basis):	
ICT equipment, semiconductors and software	2.8
Telecommunication and Internet access services	3.3
Data processing, and other information services	0.7
Online platforms, including e-commerce platforms	1.3
Platform-enabled services, (e.g., the "sharing economy")	0.2
Total (with incomplete adjustment for double counting of output)	**8.3**
Conceptually not included in GDP, or missed for procedural reasons:	
Wikipedia and open source software	0.2
Free media from online platforms funded by advertising	0.1
"Do-it-yourself" fixed capital formation of online platforms	0.3
Output of MNEs attributed to tax havens	0.4
Total (with incomplete adjustment for double counting of output)	**1.0**

Source: (IMF, 2018)

Some Key Indicators

The Number of Internet Users in Indonesia (in Millions)



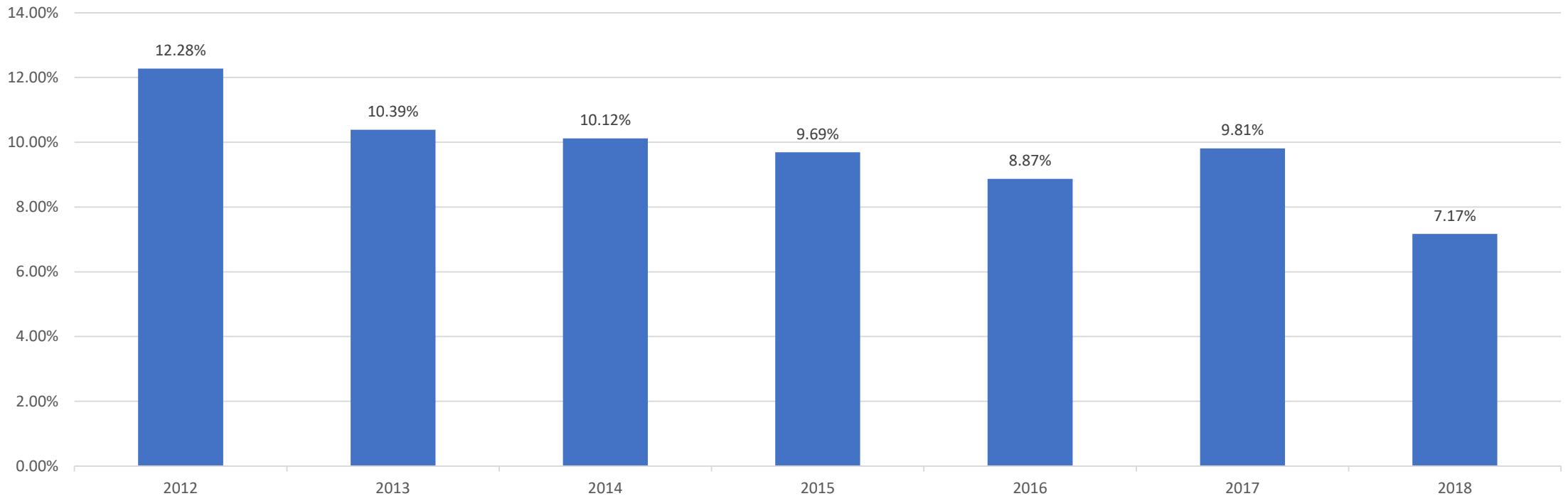
Source: (APJII, Buletin APJII Agustus 2019, 2019)

Indonesia Key Indications 2017

Key indicators for Indonesia (2017)		Asia & Pacific	World
Fixed-telephone sub. per 100 inhab.	4.2	9.5	13.0
Mobile-cellular sub. per 100 inhab.	173.8	104.0	103.6
Active mobile-broadband sub. per 100 inhab.	95.7	60.3	61.9
3G coverage (% of population)	93.8	91.3	87.9
LTE/WiMAX coverage (% of population)	90.4	86.9	76.3
Individuals using the Internet (%)	32.3	44.3	48.6
Households with a computer (%)	19.1	38.9	47.1
Households with Internet access (%)	57.3	49.0	54.7
International bandwidth per Internet user (kbit/s)	21.2	61.7	76.6
Fixed-broadband sub. per 100 inhab.	2.3	13.0	13.6
Fixed-broadband sub. by speed tiers, % distribution			
-256 kbit/s to 2 Mbit/s	43.6	2.4	4.2
-2 to 10 Mbit/s	12.7	7.6	13.2
-equal to or above 10 Mbit/s	43.7	90.0	82.6

Source: (ITU, ICT Development Index 2018)
Note: Data in Italics are ITU estimation

Indonesian ICT Contribution for GDP Growth

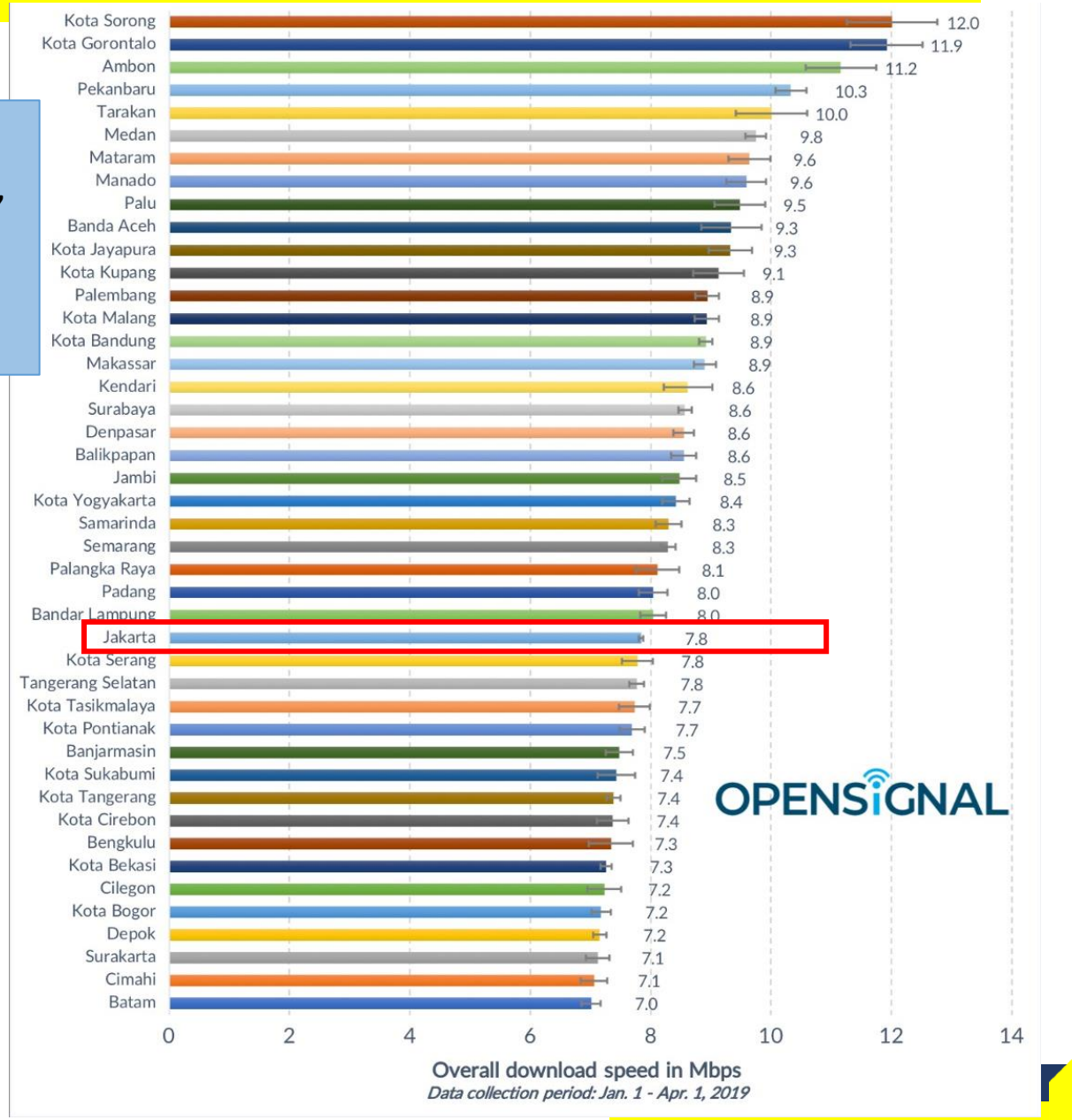


Source: **(Deputy Assistant for ICT and Utility)**

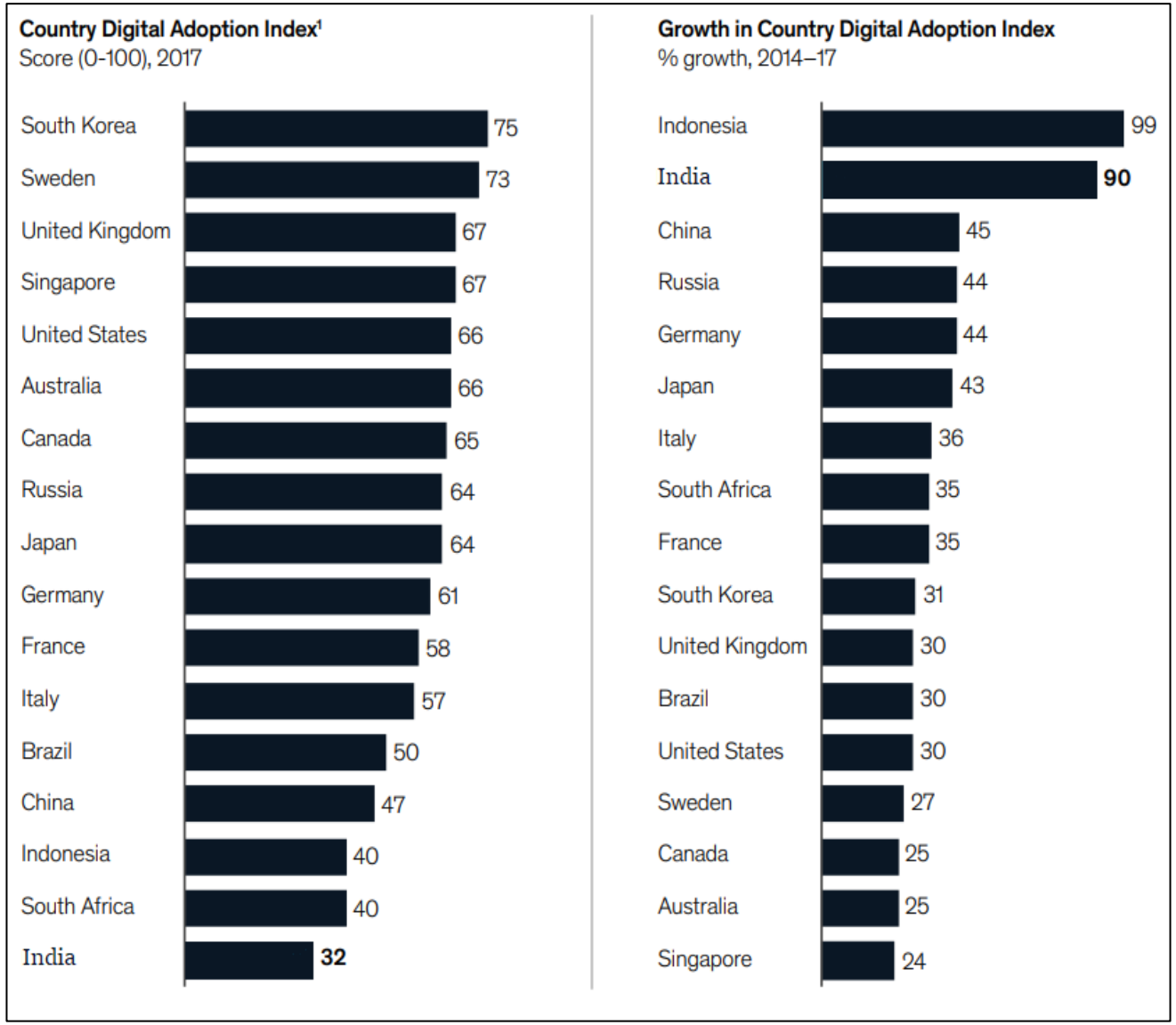
Download Speed Experience in Indonesian Cities

Peningkatan pengguna fixed broadband tidak diimbangi dengan peningkatan kualitas layanan, sebagai contoh peringkat kota-kota besar di Jabodetabek berada di bawah kota-kota kecil (Sorong, Gorontalo, dan Ambon).

Operators	Subscribers
FirstMedia	2.1 Mn
Indihome	5 Mn
Indosat	300 K
MyRepublic	200 K
MNCTV	260 K
Biznet	480 K



Country Digital Adoption Index and Growth



Source: [McKinsey, 2019]

Example of Commonality Across Industry Development Sectors (1)

SECTOR	SECTOR SERVICES	CONNECTED *Broadband, IoT*	INFORMATION ACCESS *Big Data, IoT, Cloud, Data Center*	APPS/PROCESS AUTOMATION *IoT, Cloud, Data Center*
AGRICULTURE	Access to Agriculture, Forestry & Fisheries Information & Apps	Broadband *Farmers*	Agricultural Information	Farm Apps
	Agriculture e-Commerce	Broadband *Sellers/Buyers*	Crop & Market Information	Marketplace Apps
	Precision Farming e.g. Monitoring Soil, High Tech Machinery	Narrowband *Sensors*	Sensor Information	Sensor Related Apps
TOURISM	Destination Awareness	Broadband *Tourism Operators & Local Government*	Destination Information	Marketing Apps
	Tour Planning	Broadband *Tourists*	Booking Information	Tourism Exchange
	Destination Commute	Broadband *Tourists*	Transport Information	Visa & Planning Apps
	Destination Experience "Smart Tourist Destination"	Broadband *Tourists, CCTV, City Management* Narrowband *Sensors*	Destination & Sensor Information	Destination Service Apps
TRANSPORT & LOGISTICS	Integrated Logistic	Broadband *Logistics Operators* Narrowband *Sensors*	Logistics & Sensor Information *Transport, Fleet, Cargo*	Logistics Apps *Inventory Mgmt, Distribution Mgmt, Transport Mgmt, Goods Tracking, Planning*
	Port Management	Broadband *Port Employees, CCTV* Narrowband *Sensors*	Port & Sensor Information	Port Management Apps *Command & Control, Security, ERP, Sensor Apps*
	Online Customs	Broadband *Logistics Firms, Banks, Transport Cos*	Customs Information	Customs Apps *Clearance, Tariff, Bonded Warehouse, Anti-Smuggling*
	e-Commerce for Online Byers / Sellers	Broadband *Buyers & Sellers*	Sellers Information	Commerce Marketplace Apps

SECTOR	SECTOR SERVICES	CONNECTED *Broadband, IoT*	INFORMATION ACCESS *Big Data, IoT, Cloud, Data Center*	APPS/PROCESS AUTOMATION *IoT, Cloud, Data Center*
HEALTH	National Health Information System	Broadband *Healthcare Professionals*	Patient & Hospital Information	Hospital Apps *HIS, LIS, Pharmacy, Disease Surveillance*
	Remote Telemedicine	Broadband *Remote Centers & Healthcare Staff* Narrowband *Patient Sensors*	Patient & Sensor Health Information	Communications Apps *Telepresence & Video Conferencing* Patient Sensor Apps
EDUCATION	Information Preparation and Management	Broadband *Teachers & Courseware Developers*	Education Information Management	Content Apps *Digitization Tools, Content Mgmt , Digital Libraries, Access Portals*
	Teaching & Learning	Broadband *Students, Teachers, Classrooms*	Courseware & Student Information	Learning Apps *e-Learning, Collaboration & Digital Learning Apps, Distance Learning (Virtual Reality, Video Conferencing)*
	School Administration & Management	Broadband *Teachers & CCTV*	Courseware & CCTV Information	Testing, Office & Admin Apps
FINANCE / FINTECH	Digital Payments Alternative & personal Financing Alternative Lending	Broadband *FinTech Customers* Narrowband *Wearable Devices*	Financial Information	FinTech Financial Apps *Blockchain, Augmented Reality, Artificial Intelligence, Finance Platforms*

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Example of Commonality Across Industry Development Sectors (2)

SECTOR	SECTOR SERVICES	CONNECTED *Broadband, IoT*	INFORMATION ACCESS *Big Data, IoT, Cloud, Data Center*	APPS/PROCESS AUTOMATION *IoT, Cloud, Data Center*
SMART CITY	City Surveillance Monitoring and Planning	**Broadband** *City CCTV* **Narrowband** *City Sensors*	**CCTV & Sensor Information**	**City Apps to support sensors** *Policing, Disaster Management, Traffic Management, Building Management, Parking, Waste etc.*
	City Operations and Management	**Broadband** *City Workers, Police, Emergency Services*	**Collection of all City Information & Analytics**	**City Operations Apps** *Command & Control Apps, Planning, GIS, Asset Mgmt etc.*
E-GOVERNMENT	Online Government	**Broadband** *Government Employees, Citizens & Businesses*	**Whole of Government & Service Information** **Citizen e-ID** **Property Information**	**Online Government Apps** *Access Information Portals, Government Apps Store, Business to Business Interaction i.e. Procurement & Logistics, Communications (Telepresence, Messaging, Collaboration)*
	Smart Government Planning	**Broadband** *Government Departments*	**Whole of Government Information Repository to enable Government Planning & Decisions**	**Data Analytic Tools & Planning Applications to support e.g.** *Health – Disease Surveillance MoH, Education – Trends in Learning MoE, Transportation – Roads, Traffic, Crime – Trends*
	Efficient Government	**Broadband** *Whole of Government Virtual Private Network fro Interagency communications*	**IT Infrastructure Consolidated & Shared Cloud**	**Government Apps To enable process efficiencies** *Finance, HR, Procurement etc.*

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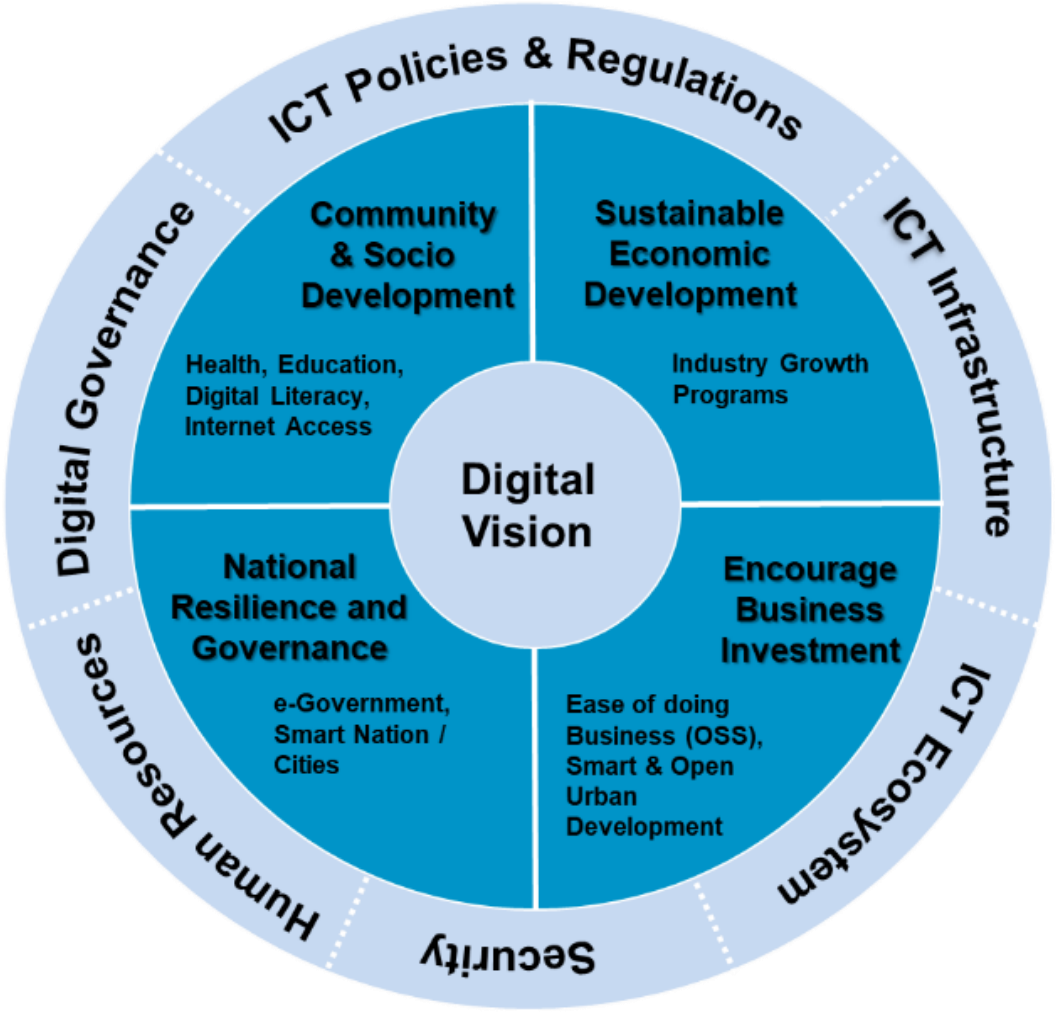
03

VISION AND INTERNATIONAL STANDARDS

ICT Vision in Indonesia



1 **Digital Vision:**

2 **4 National Development Priorities :**

1. Community & Socio Development
2. Sustainable Economic Development
3. National Resilience and Governance
4. Encouraging Business Investment

3 **Focus Sectors :**

- Agriculture
- Tourism
- Transport & Logistics
- Health
- Education
- Finance
- e-Government
- Smart Cities

4 **6 Key Enablers:**

1. National ICT Strategy, Policies & Regulations
2. National ICT Infrastructure
3. ICT Industry Ecosystem
4. Security
5. Human Resources
6. Digital Governance

Digital Initiatives & Mega Projects

Example:

- Sector Development
- Technology / Infrastructure Development
- ICT Industry Development

SOURCE: (DEPUTY ASSISTANT FOR ICT AND UTILITY)

ITU Strategy 2020-2023 Target

Goal 1: Growth

1.1: by 2023, 65% of households worldwide with access to the Internet

1.2: by 2023, 70% of individuals worldwide will be using the Internet

1.3: by 2023, Internet access should be 25% more affordable (baseline year 2017)

1.4: by 2023, all countries adopt a digital agenda/strategy

1.5: by 2023, increase the number of broadband subscriptions by 50%

1.6: by 2023, 40% of countries to have more than half of the broadband subscriptions more than 10 Mbit/s

1.7: by 2023, 40% of the population should be interacting with government services online

Goal 2: Inclusiveness

2.1: by 2023, in the developing world, 60% of households should have access to the Internet

2.2: by 2023, in the least developed countries, 30% of households should have access to the Internet

2.3: by 2023, in the developing world, 60% of individuals will be using the Internet

2.4: by 2023, in the least developed countries, 30% of individuals will be using the Internet

2.5: by 2023, the affordability gap between developed and developing countries should be reduced by 25% (baseline year 2017)

2.6: by 2023, broadband services should cost no more than 3% of average monthly income in developing countries

2.7: by 2023, 96% of world population covered by broadband services

2.8: by 2023, gender equality in Internet usage and mobile phone ownership should be achieved

2.9: by 2023, enabling environments ensuring accessible telecommunications/ICTs for persons with disabilities should be established in all countries

2.10: by 2023, improve by 40% the proportion of youth/adults with telecommunication/ICT skills

Goal 3: Sustainability

3.1: by 2023, improve cybersecurity preparedness of countries, with key capabilities: the presence of strategy, national computer incident/emergency response teams, and legislation

3.2: by 2023, increase the global e-waste recycling rate to 30%

3.3: by 2023, raise the percentage of countries with e-waste legislation to 50%

3.4: by 2023, net telecom-munication/ ICT-enabled Greenhouse Gas abatement should have increased by 30% compared to the 2015 baseline

3.5: by 2023, all countries should have a National Emergency Telecommunication Plan as part of their national and local disaster risk reduction strategies

Goal 4: Innovation

4.1: by 2023, all countries should have policies/strategies fostering telecommunication/ICT-centric innovation

Goal 5: Partnership

5.1: by 2023, increased effective partnerships with stakeholders and cooperation with other organization and entities in the telecommunication/ICT environment

Performance requirements for high data rate and traffic density scenarios

	Scenario	Experienced data rate (DL)	Experienced data rate (UL)	Area traffic capacity (DL)	Area traffic capacity (UL)	Overall user density	UE speed	Coverage
1	Urban macro	50 Mbps	25 Mbps	100 Gbps/km^2	50 Gbps/km^2	10 000/km^2	Pedestrians and users in vehicles (up to 120 km/h	Full network
2	Rural macro	50 Mbps	25 Mbps	1 Gbps/km^2	500 Mbps/km^2	100/km^2	Pedestrians and users in vehicles (up to 120 km/h	Full network
3	Indoor hotspot	1 Gbps	500 Mbps	15 Tbps/km^2	2 Tbps/km^2	250 000/km^2	Pedestrians	Office and residential
4	Broadband access in a crowd	25 Mbps	50 Mbps	[3,75] Tbps/km^2	[7,5] Tbps/km^2	[500 000]/km^2	Pedestrians	Confined area
5	Dense urban	300 Mbps	50 Mbps	750 Gbps/km^2	125 Gbps/km^2	25 000/km^2	Pedestrians and users in vehicles (up to 60 km/h)	Downtown
6	Broadcast-like services	Maximum 200 Mbps (per TV channel)	N/A or modest (e.g., 500 kbps per user)	N/A	N/A	[15] TV channels of [20 Mbps] on one carrier	Stationary users, pedestrians, and users in vehicles (up to 500 km/h)	Full network
7	High-speed train	50 Mbps	25 Mbps	15 Gbps/train	7,5 Gbps/train	1 000/train	Users in trains (up to 500 km/h)	Along railways
8	High-speed vehicle	50 Mbps	25 Mbps	[100] Gbps/km^2	[50] Gbps/km^2	4 000/km^2	Users in vehicles (up to 250 km/h)	Along roads
9	Airplanes connectivity	15 Mbps	7,5 Mbps	1,2 Gbps/plane	600 Mbps/plane	400/plane	Users in airplanes (up to 1 000 km/h)	

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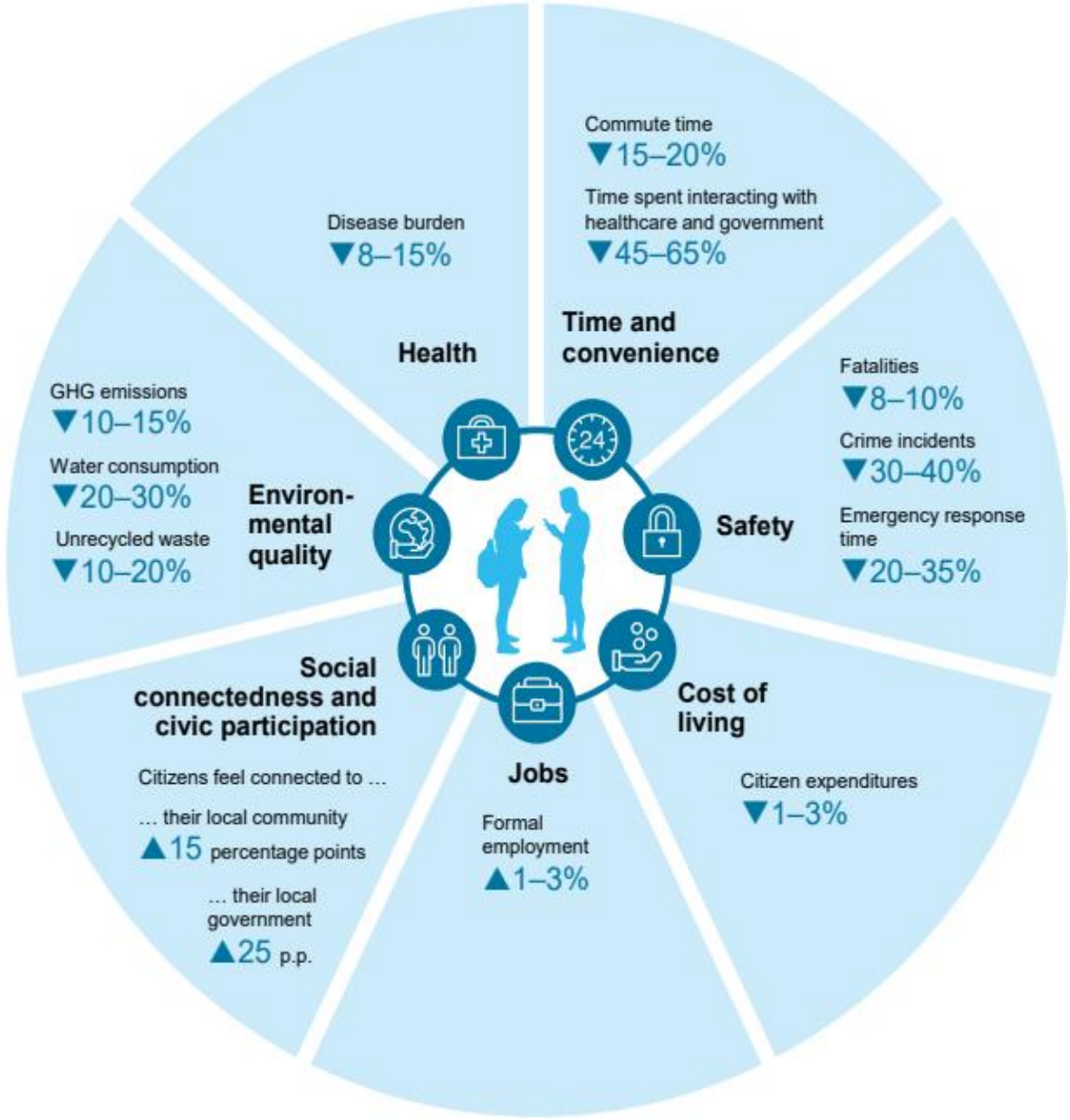
Digital city application improves quality of life



Source: (McKinsey & Company, 2018)

Broadband Standard Recommendation

Percentage		2020	2022	2024
Mobile Broadband (MBB)	Urban	90% at 5Mbps	90% at 10Mbps	90% at 25 Mbps
		50% at 10Mbps	50% at 25Mbps	50% at 100 Mbps
			20% at 100Mbps	20% at 500Mbps
				1% at 1 Gbps
		(Speed)	(Speed)	(Speed)
	Rural	60% Villages (Coverage)	70% Villages (Coverage)	80% Villages (Coverage)
		60% at 3Mbps	70% at 3Mbps	80% at 5Mbps
		(Speed)	50% at 5Mbps	50% at 10Mbps
			(Speed)	(Speed)
Wireless Broadband (WBB)	Overall	90% at 10Mbps	90% at 25Mbps	90% at 50 Mbps
		50% at 25Mbps	50% at 100Mbps	50% at 300 Mbps
		(Speed)	(Speed)	20% at 500Mbps
				5% at 1Gbps
				(Speed)

Broadband Standard Recommendation

Broadband Standard Recommendation

Percentage		2020	2022	2024
Fixed Broadband (FBB) Household	Overall	Connections：10 Mil (15% Household)	Connections：20 Mil (30% Household)	Connections：30 Mil (45% Household)
		100% at 100Mbps	100% at 100Mbps	100% at 300Mbps
		(Speed)	60% at 300Mbps	40% at 1 Gbps
			20% at 1Gbps	20% at 10 Gbps
			(Speed)	(Speed)
Fixed Broadband (FBB) Public Facilities		100% at 300Mbps	100% at 300Mbps	100% at 500Mbps
		40% at 500Mbps	70% at 500Mbps	50% at 1Gbps
		10% at 1Gbps	20% at 1Gbps	30% at 10Gbps
		(Speed)	(Speed)	(Speed)

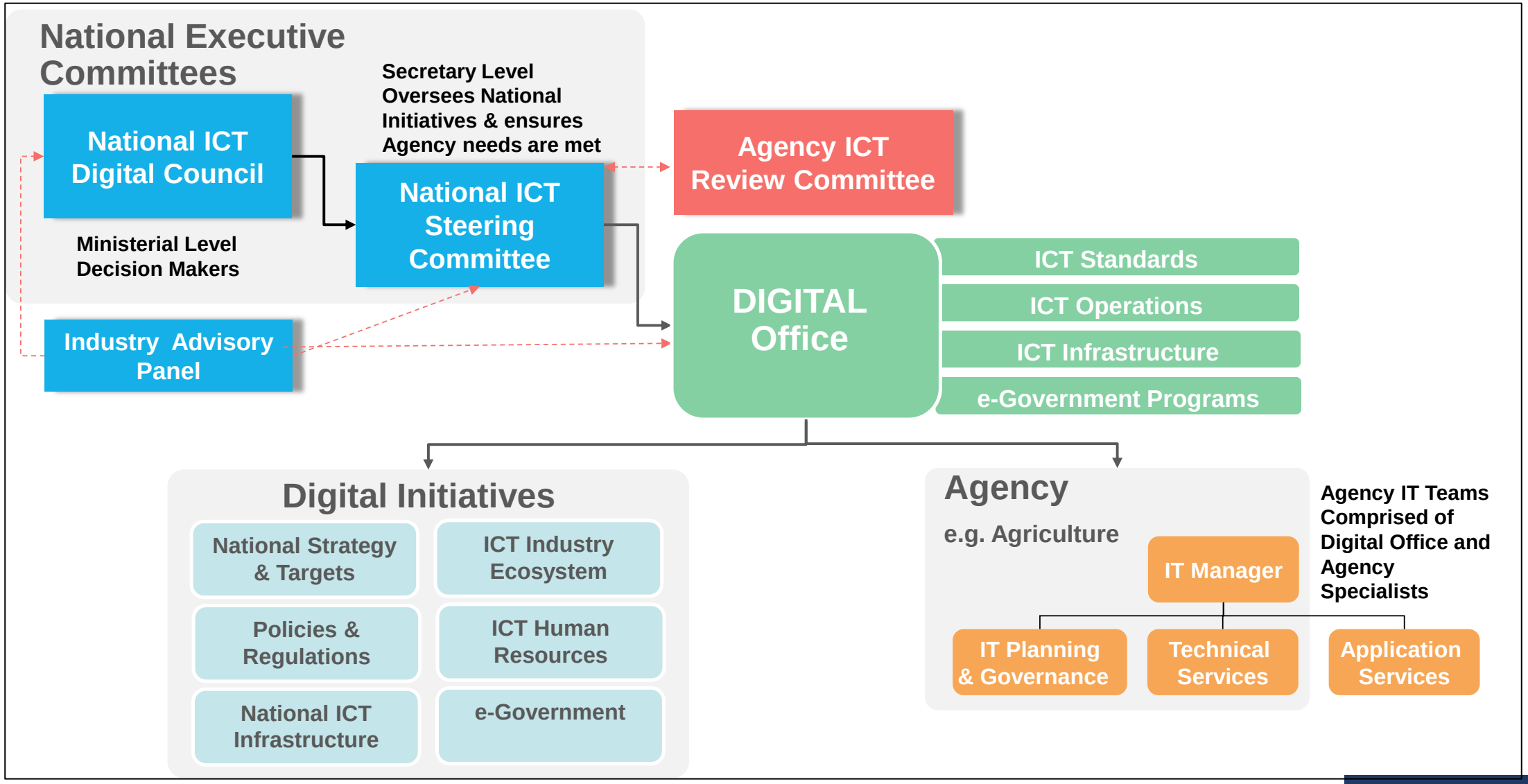
04

STRATEGIES TO ACHIEVE THE GOALS

Strategies to Achieve the Goals

- Supply sufficient spectrum for MBB at inclusive price
- Minimize the barriers for FBB
- Encourage site deployment to leverage spectrum
- Promote network performance to maximize the value
- Improve affordability to promote broadband ownership
- Accelerate broadband connection by WTTX
- Indoor digitalization development

Proposed Digital Institutional Design



Source: (Deputy Assistant for ICT and Utility)

WHITE BOOK

“INDONESIA DIGITAL FOR FUTURE ECONOMY AND INCLUSIVE URBAN TRANSFORMATION” IS AVAILABLE FOR FREE DOWNLOAD AND SHARING AT :

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Where is the life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
T.S. Eliot, Choruses from “The Rock,” I
(Collected Poems 1909-1919)
THANK YOU...!!
TERIMA KASIH
Foto: Web Paddy Field, NTT, by Iguh