

Situational Analysis on the State of Data in Indonesia

United Nations Resident Coordinator Office (UNRCO) MAY 2021 • JAKARTA



United Nations Resident Coordinator Office (UNRCO) Jakarta

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List of Abbreviations

Abbreviation	Indonesian	English
APBN	Anggaran Pendapatan dan Belanja Negara	State budget
ASDK	Aplikasi Satu Data Kesehatan	One Health Data Application
Balitbangkes	Badan Penelitian dan Pengembangan Kesehatan	National Institute of Health Research and Development (NIHRD)
Bappeda	Badan Perencanaan Pembangunan Daerah	Regional Development Planning Agency
Bappenas	Badan Perencanaan Pembangunan Nasional	National Development Planning Agency (NDMA)
BIG	Badan Informasi Geospasial	Geospatial Information Agency
BKKBN	Badan Kependudukan dan Keluarga Berencana Nasional	National Planning and Family Planning Board
ВКР	Badan Ketahanan Pangan	Food Security Agency
BMKG	Badan Meteorologi, Klimatologi, dan Geofisika	Meteorology, Climatology, and Geophysical Agency
BNPB	Badan Nasional Penanggulangan Bencana	National Disaster Mitigation Agency
BOS	Bantuan Operasional Sekolah	School Operational Assistance Programme
BPBD	Badan Penanggulangan Bencana Daerah	Regional Disaster Mitigation Agency
BPS	Badan Pusat Statistik	Statistics Indonesia
BULOG	Badan Urusan Logistik	Indonesia Logistics Bureau
BUMN	Badan Usaha Milik Negara	State-Owned Enterprise
CSO	Organisasi Masyarakat Sipil	Civil Society Organization
Dapodik	Data Pokok Pendidikan	Education Unified Database
DDA	Daerah Dalam Angka	Regions in Numbers
DfSDGs	Kelompok Kerja untuk Data TPB	Data for SDGs Working Group
DIBI	Data Informasi Bencana Indonesia	Indonesia Disaster Data Information

DTKS	Data Terpadu Kesejahteraan Sosial	Integrated Social Welfare Data	
Dukcapil	Kependudukan dan Catatan Sipil	Population and Civil Registration	
EMIS	Sistem Informasi Pendidikan atau basis pangkalan data Pendidikan Islam oleh Kemenag	Education Management Information System or the Islamic Education database managed by Kemenag	
GOI	Pemerintah Republik Indonesia	Government of Indonesia	
HDI	Indeks Pembangunan Manusia (IPM)	Human Development Index	
IAR	Kajian Aksi Intra	Intra Action Review	
IDG	Indeks Pemberdayaan Gender	Gender Empowerment Index	
IFLS	Survei Kehidupan Keluarga Indonesia	Indonesian Family Life Survey	
IGD	Informasi Geospasial Dasar	Basic Geospatial Information	
ILO	Organisasi Buruh Internasional	International Labour Organization	
INGO	Lembaga Swadaya Masyarakat Internasional	International Non-Governmental Organization	
IPG	Indeks Pembangunan Gender	Gender Development Index	
JIGN	Jaringan Informasi Geospasial Nasional	National Geospatial Information Network	
Kemenag	Kementerian Agama	Ministry of Religious Affairs	
Kemendag	Kementerian Perdagangan	Ministry of Trade (MoT)	
Kemendagri	Kementerian Dalam Negeri	Ministry of Home Affairs (MoHA)	
Kemendikbud	Kementerian Pendidikan dan Kebudayaan	Ministry of Education and Culture	
Kemenkes	Kementerian Kesehatan	Ministry of Health (MoH)	
Kemenkeu	Kementerian Keuangan	Ministry of Finance (MoF)	
Kemenko Perekonomian	Kementerian Koordinator Bidang Perekonomian	Coordinating Ministry for Economic Affairs	
Kemenko PMK	Kementerian Koordinator Pembangunan Manusia dan Kebudayaan	Coordinating Ministry for Human Development and Cultural Affairs	
Kemenko Polhukam	Kementerian Koordinator Bidang Politik, Hukum, dan Keamanan	Coordinating Ministry for Political, Legal, and Security Affairs	

Kemenpan-RB	Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi Republik Indonesia	Ministry of Administrative and Bureaucratic Reform	
Kemensos	Kementerian Sosial	Ministry of Social Affairs (MoSA)	
Kementan	Kementerian Pertanian	Ministry of Agriculture (MoA)	
Kementerian ESDM	Kementerian Energi dan Sumber Daya Mineral Republik Indonesia	Ministry of Energy and Mineral Resources	
Keppres	Keputusan Presiden	Presidential Decree	
Kominfo	Kementerian Komunikasi dan Informatika	Ministry of Communication and Information	
КРАІ	Komisi Perlindungan Anak Indonesia	Indonesian Child Protection Commission	
KPCPEN	Komite Penanganan COVID-19 dan Pemulihan Ekonomi Nasional	COVID-19 Response and National Economic Recovery Committee	
КРК	Komisi Pemberantasan Korupsi	Corruption Eradication Commission	
КРРРА	Kementerian Pemberdayaan Perempuan dan Perlindungan Anak	Ministry of Women Empowerment and Child Protection	
KSP	Kebijakan Satu Peta	One Map Policy	
LAKIP	Laporan Akuntabilitas Kinerja Instansi Pemerintahan	Accountability and Action Report of Government Institutions	
LAPAN	Lembaga Penerbangan dan Antariksa Nasional	Indonesian National Institute of Aeronautics and Space	
LNOB	Tidak Meninggalkan Satu Orang pun	Leave No One Behind	
MSME	Usaha Mikro-Kecil Menengah (UMKM)	Micro-Small Medium Enterprise	
NGO	Lembaga Swadaya Masyarakat (LSM)	Non-Governmental Organization	
OKFN	Yayasan Pengetahuan Terbuka	Open Knowledge Foundation	
P2PML	Direktorat Pencegahan dan Pengendalian Penyakit Menular Langsung	Directorate of Direct Infectious Diseases Prevention and Control	
РВІ	Penerima Bantuan luran	Contribution Assistance Recipients	
PD Dikti/ Forlap Dikti	Pangkalan Data Pendidikan Tinggi	Higher Education Database	
Permensos	Peraturan Menteri Sosial	Regulation of the Minister of Social Affairs	

Perpres	Peraturan Presiden	Presidential Regulation
PIHPS	Pusat Informasi Harga Pangan Strategis	Center for Information of Strategic Food Price
PIP	Program Indonesia Pintar	Smart Indonesia Programme
РКН	Program Keluarga Harapan	Conditional Cash Transfer
PLJ	Pulse Lab Jakarta - UN Global Pulse	Pulse Lab Jakarta - UN Global Pulse
PNBP	Pendapatan Negara Bukan Pajak	Government Non-Tax Revenue
Podes	Potensi Desa	Village Potential
Pusdalops	Pusat Pengendalian dan Operasi Penanggulangan Bencana	Centre for Disaster Management and Control
Pusdatin	Pusat Data dan Informasi	Centre for Data and information
RAD	Rencana Aksi Daerah	Regional Action Plan
RASTRA	Program Beras untuk Keluarga Sejahtera	Rice for Welfare
Riskesdas	Riset Kesehatan Dasar	Basic Health Research
RKAKL	Rencana Kinerja dan Anggaran Kementerian Negara/Lembaga	Action and Budget Plan of Line Ministries
RPJMN	Rencana Pembangunan Jangka Menengah Nasional	The Medium-Term National Development Plan
SDBI	Satu Data Bencana Indonesia	Indonesia One Disaster Data
SDGs	Tujuan Pembangunan Berkelanjutan (TPB)	Sustainable Development Goals
SDI	Satu Data Indonesia	One Data Indonesia
SEPAKAT	Sistem Perencanaan, Penganggaran, Pemantauan, Analisis dan Evaluasi Kemiskinan Terpadu	Integrated System for Poverty Planning, Budgeting, Monitoring, Analysis, and Evaluation
SETKAB	Sekretariat Kabinet	Cabinet Secretary
SIGA	Sistem Data Gender dan Anak	Gender and Child Data System
SIMFONI PP	Sistem Informasi Online Perlindungan Perempuan dan Anak	The Online Information System for the Protection of Women and Children
SME	Usaha Kecil Menengah (UKM)	Small Medium Enterprise

SNPHAR	Survei Nasional Pengalaman Hidup Anak dan Remaja	National Survey of Children and Adolescents' Life Experience
SPHPN	Survei Pengalaman Hidup Perempuan Nasional	National Women's Life Experience Survey
SP2KP	Sistem Pemantauan Pasar dan Kebutuhan Pokok	Monitoring System for Staple Commodity Market
SSGBI	Survei Status Gizi Balita Indonesia	Indonesia Infant Nutrition Status Survey
SAKERNAS	Survei Angkatan Kerja Nasional	National Household Health Survey
SUSENAS	Survei Sosial Ekonomi Nasional	The National Socioeconomic Survey
UNCT	Tim Negara Perserikatan Bangsa-Bangsa	United Nations Country Team
UNFPA	Dana Kependudukan Perserikatan Bangsa-Bangsa	United Nations Population Fund
UNICEF	Dana Anak Perserikatan Bangsa-Bangsa.	United Nations International Children's Emergency Fund
UNSDCF	Kerangka Kerja atas Kerja Sama Pembangunan Berkelanjutan PBB	United Nations Sustainable Development Cooperation Framework
WFP	Program Pangan Dunia	World Food Programme
WHO	Organisasi Kesehatan Dunia	World Health Organization

Background

The United Nations Country Team in Indonesia (UNCT Indonesia) is developing a Country Data Strategy for Indonesia in order to make better use of data to support stronger decision making, ensure greater data access and sharing, improve data governance collaboration and other outcomes in the country. The UNCT Indonesia Country Data Strategy (the "Strategy") will serve as a basis to operationalise the UN global strategy, namely the "Data Strategy of the Secretary-General for Action by Everyone, Everywhere," highlighting the importance of building the UN's capacity and infrastructure to leverage data to achieve its mandates ¹. The Strategy is intended to guide the UNCT to effectively leverage data to provide reliable and timely insights that would allow Indonesia to achieve broader development targets, including the Sustainable Development Goals (SDGs).

There are a number of elements which serve as the basis for the Strategy: 1) situational analysis on the state of data in the country, 2) mapping of disability data, 3) analysis of the UN capacity mapping, 4) the UNCT vision on data action and data transformation, and finally, 5) the implementation plan. The following chapter outlines the first pillar of the report: a situational analysis of the state of data relevant to public policies at both central and decentralised levels.

Methodology

This analysis looks at key stakeholders in the development data ecosystem in Indonesia and major data initiatives utilised and managed by the Government of Indonesia (GOI); the extent to which data is available, utilised, and undergoing a quality assurance process in various sectors in Indonesia; and other elements so as to answer the following list of research questions:

- What data does the GOI need, prioritize and regularly produce? What is the current state of this data in the country?
- What is the demand? The analysis of demand should refer to Indonesia's national regulatory framework on SDGs (Perpres 59/2017) in reference to RAN (Rencana Aksi Nasional) SDGs, Perpres Satu Data and demands from subnational governments, particularly RAD (Rencana Aksi Daerah) SDGs?
- What is the quality and availability of data of the SDG indicators (as demanded by the SDGs Secretariat (Bappenas) National SDGs Dashboard), disaggregation by people with disability of all UNSDCF Outcome indicators, humanitarian, including COVID-19 data in the country, both at the national (line ministries and other data produced by other data producers) and subnational levels?
- Who are the key data actors in the country that produce and demand the data the GOI needs and prioritizes? Who are the key data producers of the disaggregation data by people with disability of all UNSDCF outcome indicators?
- What are the opportunities and challenges in collecting SDGs data (all that are listed as UNSDCF Outcome indicators) disaggregated by people with disability?
- What is the pathway to ensure these key data actors would contribute to the provision of SDGs data as demanded by the National SDGs Dashboard?
- How does the UN fare in their data support amongst other key data actors in the country? What are the existing UN initiatives around data?

¹ UN Secretary-General's Data Strategy (UN, 2020).

- How do external stakeholders (GOI, SDGs Secretariat) perceive any UN data initiative and capacity building to support them? How do they perceive the UN Data for SDGs Working Group?
- What are the pathways to meet and overcome the aforementioned data gaps and challenges? What are the low hanging fruits and proposed long-term plan based on the above findings?

The research in this section employs a number of data collection methodologies to answer the questions, including:

- Desk review of government regulations, development planning documents, sectoral data policies and regulations, organizational data policies, and SDG implementation reports;
- Analysis of a current SDGs data mapping exercise;
- Semi-structured expert interviews (qualitative) with government officials and representatives from non-state development organisations as listed in <u>Annex 2</u>.

Findings: Situational Analysis of Data in Indonesia

Context: Data spectrum and variations

By definition, data is understood as means of representation² or an interpretation of objects it represents and an object that must be interpreted³. However, in the context of development, the abstract definition of data may not be sufficient to explain relevance, especially how data plays its part in influencing development outcomes. The World Bank, in its forthcoming World Development 2021 on Data for Better Lives, attempts to categorize data into two major types: traditional and new⁴. Traditional types of data are understood as surveys and administrative data, while new data is defined as data that comes from non-traditional sources, such as satellite imagery, social media, mobile applications, facial recognition, and procurement data in eGovernment systems.

Looking at various definitions of data and the purpose of this report to capture the state of data, we adopt the World Bank's proposed division of data with particular emphasis of the *traditional* data sources that are broadly categorized into two categories: (i) statistics and surveys, and (ii) administrative data. In this report, statistics and survey data are understood as data produced by deliberate data collection activities using survey instruments. While administrative data is defined as data that is collected through administrative processes or byproducts of government services that are stored in database systems. Although there are statistics that are produced using administrative data, we limit our focus to statistics that are produced by surveys, especially surveys that are intended to support key statistics.

The report does not examine new sources of data--not because they are considered not important, but there are many issues with existing traditional data that require immediate attention. New data sources are increasingly understood to be valuable when used to complement traditional data, and so the priority should be on improving these traditional

² Chisholm, 2010

³ Sebastian-Coleman, 2013

⁴ The concept note for The World Bank's World Development Report 2021: Data for Better Lives is available here

data. There have been attempts to introduce non-traditional data sources, such as social media or data from technology companies, to enrich the evidence basis to inform policy. BPS itself has been exploring the use of big data to generate statistics. However, some challenges remain such as validity and statistical robustness of these new sources of data⁵.

We also limit what data actually means in this report. Data is understood in the raw sense and does not include analytical products derived from the use of data, such as research reports, dashboards or presentations.

The reason for this definition is to assist in narrowing the scope of data for development and to focus on the key elements that are related to development, in particular on processes related to production of survey and statistics as well as administrative data. Both major types of data, statistics and surveys as well as administrative data, are still inseparable parts of the development process. Traditional data have been an inseparable part of the national development system. The National Development Law (Law 25/2004) on the National Development System explicitly mentions the importance of data and information as the basis for development planning.

Administrative data, on the other hand, are part of the operationalization of development programs. Many major government programs that specifically contribute to development outcomes such as poverty reduction and improving school net enrolment rates require administrative systems to be deployed. One notable example is the four major social assistance programs--PKH (Program Keluarga Harapan), PIP (Program Indonesia Pintar), Rastra (Beras Sejahtera), and PBI (Penerima Bantuan Iuran)--which rely on a data system named DTKS (Data Terpadu Kesejahteraan Sosial)⁶. This categorization of statistics and surveys as well as administrative data will be the basis for analysis used throughout this report.

While the report will use SDGs data as the anchor for discussion, broader data issues are also discussed in this report to provide richer context about data for public policy and development in Indonesia. Although it is not possible to capture the details of every data issue in respective SDG sectors, the report will identify both the cross-cutting data issues that the UN should pay attention to as well as specific data issues in each sector.

The specific sectors that the report covers are: poverty, health & nutrition, education, population & family, gender and child protection, food & agriculture, humanitarian & disaster management, as well as environment and earth observation.

Indonesia and data: a macro perspective

Indonesia can be considered to have high capability in producing quality data, in particular basic statistics, based on the World Bank's Statistical Capacity Indicator. As shown in the figure below, among its peers in the East Asia Pacific Region, Indonesia has the highest

⁵ BPS has published an analysis on the role of big data to complement social statistics. Although big data is recognized as valuable sources of information, there are some cautions BPS has presented in the report including the validity of information as well as statistical robustness due to non-representative data (BPS, 2020)

⁶ Major social assistance programs are based on DTKS even at the local level. An example can be drawn from this <u>policy brief</u> produced by the Ministry of Social Affairs (Kemensos, 2020).

statistical capacity score in 2019⁷ (Figure 1). Indonesia's capacity in statistics also helps the country in producing key indicators for national development monitoring and SDGs, despite the fact that only 85 local indicators are a match with the global SDG indicators and the remaining indicators have to be proxied using existing local indicators or are unadopted⁸.



Figure 1. World Bank Statistical Capacity Score 2019 of selected countries in East Asia Pacific

However, despite its standing as a country with relatively high statistical capacity, not all data can be easily accessed in Indonesia, and such accessibility is fundamental to enable better development monitoring for non-government actors. This is, in large part, due to massive fragmentation in the data ecosystem. Interviews with key government counterparts indicated how fragmented data ecosystems in Indonesia are, especially if one takes into account the broader data ecosystem that includes administrative data.

Although there is no complete assessment to date to capture data fragmentation, the Open

Data Barometer by the Web Foundation and the Global Open Data Index by OKFN (Open Knowledge Foundation Network) can provide an overview of how some data in Indonesia are not available, open, and interoperable, which are indications of a lack of robustness and poor integration of data systems. The latest Open Data Barometer result for Indonesia in 2017 scored Indonesia 37 out of 100 and placed it below its peers such as India and Philippines. In addition to an absence of data licensing policies, other areas that Indonesia lacks are machine-readability of data and absence of identifiers, which are key ingredients in achieving data interoperability and integration between data systems⁹. Although it does not mean that these are completely non-existent, the Open Data Barometer highlights the

⁷ World Bank Statistical Capacity Score data (World Bank, <u>n.d.</u>). The score measures the capacity of a country's statistical system based on the assessment against 25 criteria in methodology, data sources, periodicity, and timeliness of data.

⁸ Indonesia uses 319 indicators to monitor SDGs achievements (Reagan, <u>2019</u>; Rustam and Dini, 2020).

⁹ Indonesia Open Data Barometer in 2017 (World Wide Web Foundation, <u>2017</u>).

difficulties citizens face when they try to obtain public datasets in Indonesia. This indicates a bigger issue of opacity of data production, management, and dissemination in Indonesia.

The other open data index, the Global Open Data Index, also scores Indonesia poorly by placing it in 61st place, below other neighboring Asian countries such as Japan, Singapore, the Philippines, and Thailand. The reason is mainly due to the fact that many key datasets, such as draft legislation, company registrations, and land ownership, are not available in open data format,¹⁰ although some of these datasets are available to some extent¹¹.

If we look into the broader data ecosystem in Indonesia there is still plenty of room for improvement, especially related to administrative data systems that usually support the operationalization of development programs. As an example, the COVID-19 pandemic has revealed the extent of fragmentation that occurs in government administrative data systems. The Komite Penanganan COVID-19 dan Pemulihan Ekonomi Nasional (KPCPEN) acknowledges there are data discrepancies between central and subnational governments and has been trying to address this by providing an integrated application to enter data¹². The problem is due to massive fragmentation of information systems that hinder effective coordination as highlighted in the latest Indonesia-WHO joint IAR (Intra Action Review) in 2020 that evaluated the progress of COVID-19 response¹³. The situation should alert policy makers and relevant stakeholders to put more attention and allocate more resources to invest in more robust, integrated, and interoperable administrative data systems. Without robust, integrated, and interoperable administrative data systems. This will affect the achievement of the SDGs.

There is an absence of a strong regulatory framework on how administrative data systems should be managed in Indonesia. All administrative data systems are tied to the institution and development programs they serve. These administrative data systems also reflect their respective regulations that might not be aligned with one another. The GOI recognizes the challenge and has attempted to address this issue more systematically by issuing two related regulations: (i) the Presidential Regulation 95/2018 on E-Government and (ii) Presidential Regulation 39/2019 on Satu Data. Both regulations are designed to provide guidance on how public sector organizations in Indonesia should manage their digital assets, which include administrative data and data in general.

The E-Government Regulation focuses on infrastructure and broader IT management of information. Meanwhile, the Satu Data Regulation focuses on data governance aspects. These two regulations are interrelated and should be viewed as one set of policy that defines the future path of data management in Indonesia. At the moment, implementation of the Satu Data regulation still focuses on statistics, although a new implementing regulation was just issued recently that explains government data management in e-government systems (Permen Bappenas 16/2020 on E-Government Data Management). The focus on

¹⁰ Based on Indonesia OKFN Global Open Data Index 2017 result (OKF, n.d.)

¹¹ For example, company registrations can be accessed via Directorate General Administration and General Law's <u>website</u> (Administrasi dan Hukum Umum or AHU) of the Ministry of Law and Human Rights. However the dataset cannot be easily downloaded and information must be purchased.

¹² Nurdiana, <u>2021a</u>.

¹³ The IAR found that two systems are actually running to manage COVID-19 information, the BLC (Bersatu Lawan Covid) by the Task Force and the all-record system by Kemenkes. At the time of this review, these systems have not been integrated yet and this affects the speed of the government to collect more accurate information from the field and to respond to situations on the ground (WHO, <u>2020</u>

statistics is indicated by the pilot conducted by Bappenas itself. The pilot was designed to improve the end-to-end process of 17 SDG indicators. It is expected that through this pilot, Bappenas could understand better ways in implementing Satu Data in the future, especially when it covers different types of data in various sectors in the government. These regulations will be discussed in more detail in the next section.

Key Aspects of the Regulatory Framework for Data

Most data collection in Indonesia, through surveys or administrative systems, is governed by regulations. These regulations can be categorized into two parts: (i) cross-cutting regulations that underpin the drivers of data collection, management, and dissemination and (ii) sectoral regulations that specifically regulate the data collection, management, and dissemination of specific sectors.

The major cross-cutting data regulations are as follows:

 Statistics Law - UU 16/1997. The Statistics Law is the foundation of statistical governance in Indonesia. The statistics law outlines the three main classifications of statistics: (i) basis statistics, (ii) sectoral statistics, and (iii) special statistics. The Law grants mandates to BPS as the overseer of statistical processes in Indonesia including the main producers of basic statistics. Basic statistics, as defined by the Statistics Law, are defined as cross-sectoral statistics that serve broad interest of both government and citizens. The list of basic statistics can be accessed via BPS's website¹⁴.

The law itself requires updates to be relevant. The definition of data in the law is still linked to the old definition of data that is confined only to numerical information. This is no longer relevant since today's definition of data encompasses more than just numerical information. It can be in a form of multimedia, voice, pictures, as well as administrative records. Another aspect that could be considered is the administration of special statistics. An evaluation should be conducted on how well BPS monitors the special statistics activities in the country. The current law mandates that statistical results from any special statistics that are conducted by non-government entities (including a person) must be reported to BPS. However, there are no consequences for non-compliance. Going forward, this highlights the importance of BPS engagement with non-government entities to collaborate in producing meaningful and quality statistics.

2. Geospatial Law and One Map Policy - UU 4/2011 (later revised under the Omnibus Law UU 11/2020) & Perpres 9/2016. These are not specifically related to data, but since many data have geospatial identifiers, the Geospatial Law is a relevant law pertaining to data governance in Indonesia. The Geospatial law outlines the principles and classification of geospatial information and how geospatial information is collected. Meanwhile, the One Map Perpres is more on the acceleration of integrating some thematic geospatial information to improve the reliability and reduce uncertainty of geospatial information. The One Map Perpres has successfully integrated 84 thematic geospatial information sources that address land overlaps issues. The integration identified 77.3 million hectares, or the

¹⁴ See BPS search engine here: <u>https://www.bps.go.id/searchengine/</u>

equivalent of 40% of land in Indonesia, suffers from overlapping land titles¹⁵. The result of this identification led to the issuance of PP 43/2021 on Resolving Inconsistencies in Spatial Layout, Forest Area, Permits, and / or Land Rights which is an implementing regulation of the Omnibus Law¹⁶. The experience from One Map Perpres shows that if data can be managed well this will aid the government to develop an appropriate policy to respond to the situation on the ground.

- 3. One Data Presidential Regulation Perpres 39/2019. The One Data Perpres provides the broad outline on how data should be governed and managed in Indonesia. The Perpres provides the regulatory basis for Indonesia to establish the first whole-of-government data governance and sets the three layers of authorities in data governance: data stewards, data custodians, and data producers. These separate layers of data stakeholders will be governed and overseen by a steering committee that consists of key ministries such as: Bappenas, Kemenkeu, Kemenpan-RB, Kominfo, and Kemendagri.
- 4. E-Government Presidential Regulation Perpres 95/2018. While the Perpres does not specifically address data issues, it provides a broad guideline on how Indonesia should organize its IT infrastructure, applications, and electronic data as part of supporting government administration and service delivery. The Perpres is strongly related to Satu Data Perpres and specifies the role of Bappenas to be the leading agency for the establishment of data architecture as part of broader e-government architecture in Indonesia.

Satu Data and E-Gov Perpres are two sides of the same coin. There will not be digital government without enabling seamless exchange of data between government agencies¹⁷. The issuance of Permen Bappenas 16/2020 on E-Government Data Management should be considered as a significant leap to ensure that government data should be treated as key assets in administering more efficient services and not only as sources for statistics. More information about Satu Data and its implementing regulations are presented in subsequent sections of this report.

In addition to these four foundational laws and regulations, there are other laws and regulations that drive data collection and management in Indonesia, especially in the context of national development, such as the National Development Planning Law, Omnibus Law, and the forthcoming Personal Data Protection Law. These cross-cutting laws regulate the necessity of data at the national level across line ministries and agencies.

1. National Development Planning Law (UU 25/2004). The national development law underpins all the development planning activities in the country and explicitly mentions the needs of using data and information in preparing national development plans. This law requires all planning processes, including the development of

¹⁵ Sekretariat Tim Percepatan Kebijakan Satu Peta, 2020.

¹⁶ Sekretariat Tim Percepatan Kebijakan Satu Peta, 2021.

¹⁷ The OECD issued a policy brief that outlines how a country could strengthen digital government. There are at least 3 enablers that a government should invest in or continue to invest in: digital identity, shared data services, and shared business processes. Satu Data and E-Gov Perpres are designed to accelerate the development of these enablers (OECD, 2019

RPJMN, to include accountable data to monitor Indonesia's development progress.

- 2. **Presidential Regulation on SDGs (Perpres 59/2017)**. The Pepres specifically mandates relevant ministries and agencies to provide data to support the monitoring and achievement of SDGs.
- 3. Omnibus Law (UU 11/2020). The Omnibus Law has revised many provisions in other laws. However, one of the most important highlights regarding data is related to the setting of a minimum wage. In the original Labor Law, there is no provision on referencing labor, economic, and household expenditure statistics when deciding the minimum wage. The Omnibus Law makes it explicit and implies that the statistics that are related to this important decision must refer to the statistics that are generated by the BPS. This ensures that statistical legitimacy will be one of the key elements that BPS must take into account when disseminating these numbers in the future.

In addition to provisions about the use of statistics to inform key decision making, the Omnibus Law also has a provision on the establishment of a new administrative data system named the SME Single Database. The trend of establishing integrated and unified databases is apparent in Indonesia, especially after Indonesia's long journey with unified databases for social protection and education. The details about this new database are yet to be seen since the Omnibus Law delegated the technical implementation to subordinate regulations on SME governance.

There are also a number of sector-specific Peraturan Menteri or regulations at the line ministries level that specify the data points that a particular program needs or demands. For example, Permen Kemendikbud 10/2020¹⁸ states that to administer Program Indonesia Pintar (PIP), Kemendikbud will require data on children aged 6-21 years old from poor families collected by relevant authorities. However, this research will not look at this level of detail considering the following: not all line ministries or programs have regulations that explicitly specify what data is required in the program. Consequently there is limited way to capture all data requested or possessed by the GOI at this granular level. This may be caused by the sensitivities of such information especially about data in large administrative systems that contain personal information such as tax or ID systems. Most of the examples available (that demand specific data points) are also specific for government programs¹⁹ while the statistics data are demanded usually at the Bappenas level, for example for RPJMN or SDGs monitoring as discussed above. This research focuses on crucial, strategic cross-cutting regulations.

Beyond the sector-specific regulations, while there are multiple regulations that drive demand and governance of data in Indonesia, another regulation plays a significant role in shaping broader data governance in Indonesia: Perpres Satu Data.

Perpres Satu Data is supposed to be a game changer for data governance in Indonesia. The rationale of having Perpres Satu Data was to eliminate data duplication and enable better use of data for both governments and citizens. However, the regulation itself is

¹⁸ Kemendikbud, <u>2020</u>.

¹⁹ Permen Kemendikbud 10/2020 for PIP, Permen Kemensos 5/2019 for DTKS

incomplete without more detailed explanations on how data governance itself could be implemented at the sectoral or organizational level.

The regulation provides clear guidance on high-level governance aspects and key principles, such as: (i) one data standards, (ii) one metadata standards, and (iii) one portal. The end goal of this regulation is to improve the quality of data, ensure interoperability, and ultimately reduce the uncertainty of data duplication across different GOI agencies. However, the task will not be easy. Most government systems were created and are governed by their own sectoral regulations. For example, when discussing social protection data or DTKS (Data Terpadu Kesejahteraan Sosial), this is governed by Kemensos regulation 5/2019. In another sector such as education, the education unified database or Dapodik (Data Pokok Pendidikan) is governed by Kemendikbud Regulation 79/2015. These regulations do not refer to Perpres Satu Data and instead they use their own institutional and program mandates to regulate the administration of their data systems. On the other hand, Perpres Satu Data is yet to define the approach on how to address administrative data system issues that are more pertinent and multidimensional than statistics and surveys.

Bappenas has recently issued three implementing regulations of the Perpres Satu Data. These three regulations cover: (i) E-Government Data Management (Permen Bappenas 16/2020), (ii) Management of Satu Data Portal (Permen Bappenas 17/2020), and (iii) Administration of Satu Data at Central Level (Permen Bappenas 18/2020). These three regulations specify the technical aspects of Satu Data implementation, especially on its relations with the Perpres E-Government. For example, the implementing regulation on E-Government Data Management System strengthens the position of Perpres Satu Data as an overarching data policy that includes every type of data, including administrative data. The regulation outlines four areas that Satu Data has to cover vis-a-vis E-Government, namely: (i) data architecture, (ii) master data and reference data, (iii) databases, and (iv) data quality. The subsequent parts of the regulation explain the governance process for each area.

The four areas that are outlined in the Permen reaffirm the position of Satu Data as the policy for government data regardless of their types, especially in the need to have a standardized approach in data planning and quality assurance. The master data aspect answers the issue of data duplication or which data should be used for decision making if two similar datasets exist. The quality governance part of the regulation also reveals the GOI's commitment to implement a more systematic approach in ensuring data quality, in particular in administrative data systems by mandating data stewards and data custodians to develop standards for data quality and monitor them. This addresses the initial perception of Perpres Satu Data as tilting towards statistics governance only.

Implementing the Perpres Satu Data will be challenging. With the current fragmentation and different levels of data maturity, Satu Data will face enormous challenges to be fully implemented and to realize the real benefits of standardizing and enabling interoperability between data systems in the government. Based on the interview with the Head of the Satu Data Secretariat, there are at least four challenges in implementing Satu Data across the government:

1. **The magnitude of managed institutions** - For example, for every government institution, there must be one data custodian. For each institution, there will be

supporting data custodians. The estimated number of these data custodians, including those in subnational governments, will be around 5,500. In addition to these custodians, Indonesia also has many units that can be classified as data producers. It is estimated that there are tens of thousands of data producers.

- 2. Massive amounts of data that have to be standardized As described earlier, with around 80 central government agencies, 548 subnational governments, and 5,500 data custodians, Bappenas admits implementation of Satu Data requires significant work since data that are produced by these institutions are plentiful and difficult to be traced. In addition to the variation of data types as well as the number of sectors that are covered, there will be a number of standards that need to be issued and enforced by respective data stewards. Not only standardizing these data, the Secretariat must play a role in coordinating the development of standardized metadata for these data. As a result, it may take time to achieve the goal of Satu Data in improving the standards, interoperability, and openness of government data in Indonesia.
- 3. Potentially conflicting regulations As earlier described, the recently promulgated Omnibus Law is an example of how other regulations affect the way Satu Data is implemented. Based on earlier analysis of the data governance aspect of the Omnibus Law, there will be some implementing regulations deriving from the Omnibus Law that may touch on data governance issues, such as labor, land, and MSME data. If there is no coordination between the Satu Data Secretariat and relevant ministries that develop the Omnibus Law implementing regulations, Satu Data will not be effectively implemented. Therefore, the Satu Data Secretariat has been working closely with these line ministries and agencies to avoid potential conflicting regulations that may deteriorate the ability to enforce Satu Data.
- 4. Human resources Based on interviews with BPS and Bappenas, they recognize that the level of statistical and IT capability of each line ministry, agency, and subnational government is not equal. While no specific analysis exists on the capability gaps, the World Bank identified that there has been an indication of inadequate definition of a digital skills framework and absence of critical digital capabilities in the government, which are fundamental for improvement of data management and quality²⁰. The latest *Gatra* edition on Satu Data echoes the same concerns and puts lack of capacity and quantity of quality human resources as major bottlenecks for Satu Data implementation. And such capabilities are not sufficient if Indonesia would like to produce more quality datasets. Some datasets require specific domain knowledge such as education, agriculture, forestry, and environment that will provide context to the data that are produced. Investing in human resources, especially in areas that are related to data such as statistics and ICT, will be another challenge that the Satu Data Secretariat has to address systematically if Satu Data policy is to be implemented nationwide.

In addition to the implementing regulations, the secretariat is also working closely with the SDGs Secretariat to conduct piloting on how One Data policy should be operationalized on the ground.

²⁰ The result was presented during a webinar co-organized with MENPAN-RB in August 2020 (Kemenpan-RB, 2020).

The SDG Perpres is designed to support the implementation of SDGs. While it is not directly related to the One Data policy, since both the SDG Secretariat and One Data Secretariat are hosted by Bappenas there is close collaboration between these two units. SDG Perpres provides a regulatory basis for the SDG secretariat to coordinate data collection from line ministries and agencies. More discussion about the SDG secretariat and its roles are in a subsequent part of this report.

Overview of data actors in Indonesia

Data actors in Indonesia can play multiple roles. They can shape policies, produce data, and use data to deliver their mandates and services. The following table summarizes each key data actor or category of actor and briefly explains their respective roles in the Indonesia data ecosystem. Further explanation is provided in the subsequent part of this section.

No	Institution	Data Policy	Data Producer (in broader development/ public policy context)	Data User (in broader development/ public policy context)
1	Badan Perencanaan Pembanguna n Nasional (Bappenas)	Coordinating government data governance through Satu Data policy	No	For development planning purposes
2	Badan Pusat Statistik (BPS)	Owner of the broader statistics policy. Advising on the development of sectoral statistics	Producer of basic statistics	Limited role. Internal use of data for planning and budgeting
3	Kominfo	Shaping the data policy in electronic systems. Spearheading privacy and personal data protection regulation	Producer of key datasets related to digital infrastructure (broadband connectivity, internet coverage, as well as limited information on digital government services)	Use information from other line ministries and agencies to implement development programs in ICT sector
4	Kemenpan-R B	Shaping the e-government policy, which is closely related to the administration of data systems in the	The producer of LAKIP, government accountability report, that monitors government agencies'	Use information from other line ministries and agencies to implement development

		government	achievement annually	programs in government administration
5	Badan Informasi Geospasial (BIG)	The custodian of Geospatial Law. BIG is also leading the implementation of One Map Policy	Producer of basic geospatial information	Limited role. Internal use of data for planning and budgeting
6	Kemenkeu	Data steward for financial data. Role in allocating budget for government programs and activities that may include data related activities	Government financial data	Use data to monitor budget disbursement and performance
7	Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah (LKPP)	Limited role, except for procurement data. The procurement data is key to monitor what the government truly delivers on the ground	Government procurement data	Use data to monitor government procurement activities
8	Line Ministries/Ag encies	The role in shaping data policy is limited to data that is directly managed by respective ministries	Producers of sectoral statistics and administrative data	Use data to monitor and evaluate their respective programs
9	Subnational Government	Very limited role since most data policies are shaped by central government entities	Producers of sectoral statististics and administrative data in their respective provinces or districts	Use data to monitor and evaluate their respective programs
10	Private Companies (including state-owned enterprises, or BUMN)	Private companies and BUMN can only govern the data within their organizations	Producer of administrative data as byproducts of their services	Use data to inform their business decisions
11	International Organizations & other	These organizations can only influence the data within their	Some organizations produce data, especially	Active users of government data especially for

Development Partners organizations but support advocacy on broader data policy issues	international organizations. CSOs, NGOs, and Think Tanks are very limited in their capacity to produce high quality data regularly with a few exceptions, such as IFLS by RAND Corporation and Survey Meter	research purposes
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- 1. **Bappenas** The chair of the Satu Data Steering Committee and the policy owner of Satu Data. In the development context, most of the data for development planning, monitoring, and evaluation are driven by the needs from Bappenas as the national development planning agency.
- 2. **BPS** The leading agency for statistics policy and overseer of the national statistical system. One of the data stewards that is appointed in the Perpres Satu Data to oversee statistical data.

BPS does not only define policy on statistics production in the country. In accordance with the Statistics Law, BPS is responsible for producing basic statistics. Basic statistics, as defined by the Statistics Law, is defined as cross-sectoral statistics that serve the broad interests of both government and citizens. The list of basic statistics can be accessed via BPS's website²¹.

- 3. **Kominfo** Kominfo shapes the electronic system policy which most administrative data systems abide by. Kominfo is also the leading agency for the implementation of personal data protection. Although the law has not been promulgated yet, Kominfo has issued Kominfo Regulation 20/2016 on personal data protection.
- 4. **Kemenpan-RB** This agency is not directly involved in the data for development context but Kemenpan-RB is the chair of the eGovernment coordination team and One Data is part of the broader eGovernment reform that Kemenpan-RB is currently leading. In particular, the data architecture that is currently being developed by Bappenas will be incorporated into the national enterprise architecture that is designed by Kemenpan-RB.
- 5. **BIG** The leading agency for geospatial information and one of the data stewards that is appointed in the Perpres Satu Data. While BIG is sometimes considered to be part of Satu Data, most of the data discussions and the reforms in administrative data systems do not involve BIG. BIG is only included in the conversation when particular datasets or data systems require specific geospatial information or mapping exercises, such as those related to administrative boundaries, land coverage, and forest coverage.

²¹ BPS, n.d.

Like BPS, BIG is also mandated to produce basic geospatial information (IGD - Informasi Geospasial Dasar). This basic geospatial information can be accessed via the Portal Satu Peta Indonesia²².

6. Kemenkeu - Kemenkeu is one of the early data stewards appointed under the Perpres Satu Data. Kemenkeu will play a significant role in defining, monitoring, and enforcing standards on financial data. Although there have not been any subsidiary regulations issued by Kemenkeu on Satu Data policy for financial data, the Ministry has been playing the role for a long time as overseer of central level financial information. Through the budgeting process, the chart of accounts, which is the basis of financial data structure, is controlled by the Ministry²³. Although implementation of Satu Data for financial data is yet to be seen, with an already strong mandate and relatively more mature system in place (SPAN - Sistem Perbendaharaan Anggaran Negara), this could bring a great leverage to accelerate the implementation of Satu Data policy for financial data.

In addition to its role as a data steward, Kemenkeu has the mandate to allocate resources for all government institutions. Another area that has yet to be explored is how Kemenkeu could use this budgeting mandate to help in allocating sufficient resources to data systems that contribute directly to development outcomes as well as reducing duplication of data systems. A similar practice can be adopted from the recent circular of KOMINFO on the procedures for seeking clearance for procurement of ICT in government agencies²⁴. The circular is intended to filter out duplication and unnecessary ICT procurements in the government by adding a layer of scrutiny by KOMINFO. The circular letter mandates that any budget allocation on ICT, such as procurement of new data centers or general applications, must be reviewed first by KOMINFO before obtaining budget allocation from Kemenkeu. Kemenkeu may draw similar arrangements in the area of data too. This can be collaborated with Bappenas as the focal point of Satu Data implementation.

- 7. LKPP while LKPP is not traditionally viewed as a principal actor in shaping data policy, it is one of very few agencies that is able to roll out a centralized information system to manage a competitive government procurement system named SPSE. The centralized nature of SPSE allows LKPP to collect massive amounts of procurement information and it is well situated to be an actor that can provide more insights into how the government executes its budget through various procurement activities. More work is required to connect all of the pieces under the PFM system due to poor integration, as described in the E-Government Perpres.
- 8. Line Ministries and Agencies. In this context, actors can be divided into two categories:
 - a. Statistics and surveys Line Ministries and Agencies are responsible for producing sectoral statistics and geospatial information. This information is produced to inform the development planning and monitoring of their respective sectors. Although Bappenas, BPS, and BIG are involved in the production of this type of data, the results lie in the hands of these line

²² Satu Peta Indonesia website.

²³ The Chart of Accounts (COA) or Bagan Akun Standar (BAS) are set by the Minister of Finance Regulation 214/PMK.05/2013.

²⁴ Based on Surat Edaran Kominfo <u>5/2020</u>.

ministries and agencies. As described earlier in this report, the capacity of these line ministries and agencies vary and this may affect the quality of the statistics produced by them.

- b. Administrative data As part of their respective mandates, every line ministry and agency most likely manages one or several data systems to implement its programs. For example, for administering the civil registry, Kemendagri maintains a civil registration database that has become the basis for the population registry. Other ministries that implement large programs, such as the Ministry of Health, Ministry of Education and Culture, Ministry of Social Affairs, Ministry of Finance, and Ministry of Public Health, have various administrative data systems in their respective organizations. Most of these data systems are tied into a particular program or DG and often do not talk to other systems even in the same ministry.
- 9. Subnational Governments Subnational governments usually produce data that is relevant to the respective administrative region they are governing. Although some of the information is collected through basic statistics by the BPS, some specific information, especially at Kecamatan and Desa/Kelurahan levels, are collected by subnational governments themselves. There are also collaborations between the BPS (usually BPS regional offices) and subnational governments' departments in producing DDA (Daerah Dalam Angka or Regions in Numbers), the annual publication of each subnational government on key statistical indicators. The information from subnational governments is quite difficult to be captured unless the subnational governments themselves publish this or it is part of the national data sharing (for example with Dapodik of Kemendikbud and DTKS of Kemensos). This is one of the key challenges that is described earlier with attempts to implement Satu Data nationwide.
- 10. Private companies Private companies can be considered to be sources of alternative data. Although their data have limited access, companies such as Linkedin²⁵, Gojek²⁶, Grab²⁷ and Facebook (through its Data for Good initiative) collaborate with research institutes and produce studies using their data. Some companies such as Whatsapp²⁸ and Twitter allow more open channels for researchers and other users to use their data. Katadata represents one private research company that explicitly touts its focus on data and public policy. PLJ's experience has been that access to data from the private sector is dependent on convincing private sector data owners of common interests that can be achieved if they are willing to either share their data or allow external partners to collaborate, run algorithms and provide resulting insights. However, the weakness of data privacy laws is an obstacle to greater cooperation with the private sector. Without a regulatory framework, human capacity and infrastructure that ensures data security

²⁵ LinkedIn regularly releases reports and insights using their data. Although the raw data is restricted, the public can still access these reports freely (LinkedIn, n.d.).

²⁶ Gojek collaborated with LD UI (Lembaga Demografi Universitas Indonesia) to identify the economic impact of Gojek. This set an example on how private sector data can be used to capture development outcomes (LD UI, 2018).

²⁷ The study of Grab's impact also shows the importance of utilizing private sector information to complement the official statistics (Damuri et al., 2019).

²⁸ Whatsapp allows their data to be accessed on a very strict case by case basis and only for research purposes. They opened a call-for-proposals for researchers interested in conducting research on misinformation (Whatsapp, 2018).

and privacy, data sharing between the private sector and the GOI will entail high risk. Stakeholders interviewed also cite broader UN and INGO lack of trust in--and understanding of--the private sector as an obstacle to pursuing collaboration in this regard.

When discussing private companies, this may include BUMN as a data actor, too. While they operate like private companies, one distinguishing feature of BUMN is their dominant role in the market. It can be a market leader such as Telkom, or a sole player such as KAI or PLN. Given the market size as well as the resources they have, these BUMN might be able to collect much more data about their customers than their competitors. These data can be used to generate insights that are relatively representative about the reality on the ground. However, there can be discrepancies in results. An example is the electrification ratio that is produced by PLN and BPS. The difference in data in this case is caused by the nature of data itself. The statistics that are generated by PLN come from the administrative data of PLN where it records PLN customers only. On the other hand, the BPS number comes from surveys that also include households that are not customers of PLN²⁹.

11. International Organizations and Development Partners - Most of these organizations do not generate data on Indonesia. These organizations usually collect data on Indonesia to be fed into global datasets they are maintaining. For example, the World Bank regularly issues the Ease of Doing Business Index³⁰ and Indonesia is one country assessed. Based on our initial research, most of the datasets that are generated come mainly from UN Agencies, World Bank, and the IMF. Bilateral development partners do not produce or maintain datasets for development purposes. Most stored data are related to the projects and programs on which they are collaborating with the Government of Indonesia and are not publicly disclosed. Some of them appear in the form of dashboards that sometimes are handed over and become the assets of the Government of Indonesia but often disappear as projects close.

While in the SDG context, state and private universities, as well as non-government actors such as CSOs, private companies, survey research institutions, such as SurveyMeter, and think tanks are expected to contribute in the production of SDGs related data, based on our interviews with representatives from these actors they do not produce their own datasets. There are research institutions that can produce their own data, such as SurveyMeter with the IFLS. However, this is an exception rather than the norm³¹. The main reason is that sustainably producing quality data is difficult and such actors tend to have much more limited resources (human and financial resources) than government agencies. Most NGOs and research institutions in Indonesia rely on government datasets, both publicly and freely available or publicly available at cost.

²⁹ As documented by BPS itself in their metadata (BPS, n.d.c).

³⁰ World Bank, n.d.b.

³¹ IFLS is supported by RAND Corporation and has not been updated since 2015. The data itself is in high quality and useful for longitudinal study to the panel nature of the data. However, it must be acknowledged that its samples are only 83% representative of Indonesia's population. This may be due to limited resources to reach the similar scale like BPS do in their annual survey such as SUSENAS and SAKERNAS (RAND Institute, n.d.)

The Center for Indonesia's Strategic Development Initiatives (CISDI) has produced an online platform, www.tracksdgs.id, through which non-state actors can share news, articles, learning videos and research related to the SDGs. In its own words, CISDI's objective for this platform is "through stories [to] complement the quantitative data provided by the government through [the] SDGs Dashboard."

Our research suggests that the most suitable role for NGOs and research institutions is as the users of government data. As such, they perform the critical role of knowledge makers--using data for research to support evidence-based policy--to support policy makers. In addition to using government data, they could also evaluate the quality of data and assist the government in refining not only the quality but also the scope of data. As noted in a recent JPAL forum on using administrative data to improve social protection, independent researchers have led in exploring the use of administrative data for evidence based policy in Indonesia. But more research is not necessarily better research: one university researcher interviewed noted the overall poor quality of NGO data-driven research and urged adherence to better practices, that include basing research on a priority policy need and the right questions, partnering with an appropriate GOI institution that is vested in the research results, conducting ethical reviews and ensuring copyright of data for all collaborators.

It is worth noting that while there are relatively few opportunities for NGOs' involvement in data production that will be eventually adopted by GOI as official national data, considering their limited capacities and incentives for producing data that is routine and sustainable enough to be endorsed by the BPS and other data experts, this research has identified indications that the GOI may be willing to engage NGOs more actively, particularly on development data. For example, NGO data has been used in the GOI's SDGs Voluntary National Reviews (VNRs) Report, albeit not being thoroughly adopted as many of them are qualitative data. In interviews conducted for this research, Bappenas also indicated a possibility to discuss with NGOs and development partners the key data gaps that need to be collected by the GOI. Mapping out types of collaboration that are possible and not, depending on the opportunities available and characteristics of the ministries, could be useful in understanding the potential contribution of NGOs. The Director of a notable think tank referenced this issue in an interview. As an organization that focuses on analysis of the education sector, this think tank views that the government collects too much information about education inputs (such as number of teachers, number of schools, and number of students) instead of education outcomes (for example, literacy rates). This type of discussion should be facilitated more actively by the government to further improve both statistics and surveys as well as administrative data.

The following diagram visualises the relationship between data actors that are specifically involved in driving data policies in Indonesia, specifying who is involved and the responsibilities and dynamics between them.



Figure 2: Simplified Representation of Key Data Actors & Their Roles in Driving Data Policy in Indonesia

Current state of data in the country

This report attempts to address the big question of the state of data for development and public policy in Indonesia by looking at three key aspects: (i) availability, (ii) utilization, and (iii) quality assurance mechanisms. These aspects are considered critical to understanding how accessible and usable data are as well as to understand the caveats of using these data considering the existing quality assurance mechanism for their production. These aspects are adopted from existing frameworks, such as the DAMA-DMBOK (Data Management - Data Management Book Knowledge) functional framework as well as the ODRA (Open Data Readiness Assessment) toolkit by the World Bank. These frameworks look into the state of data from various perspectives that include inter alia business processes, data architecture, demand from external stakeholders, master data, and technology readiness. Considering the time constraints of this research assignment, we focus on the three aspects identified above, since these aspects are fundamental due to the nature of data use in development. It is not possible to use data if the data is not available and not of good quality. Hence, having a broad assessment about these aspects will be useful to provide better context on how data in Indonesia could contribute to better development outcomes.

Many of the sector-specific data discussed in the following sections include SDGs indicator outcome data (for example, a number of SDG-related questions are included in the Dapodik data, covered under the Education sector). The state of data, challenges, and opportunities

discussed below would then partially reflect SDGs data, providing that particular dataset is used for SDGs indicator outcome monitoring.

Introduction to the three pillars

Availability

Availability could relate to a number of qualities. According to Open Government Data³², public data availability could be about timeliness and frequent updates. It could also relate to access, the extent to which users can obtain data with ease. Data that are not subject to confidential individual privacy provisions should be made public, electronically stored, and available to anyone. Formats and types of data available matter too: ideally data should be available at the primary or micro level, which means processed statistics data should always be accompanied by its microdata. This is important as it allows different data actors to conduct additional analysis, thereby promoting accountability.

Furthermore, data availability could be examined in terms of depth: at what *level of granularity* is the data available or how disaggregated is the available data? Data should have the right level of and relevant granularity³³ and not be presented in aggregated forms. In the context of Indonesia, this may mean the availability of disaggregated data by geography (data available at kabupaten/kota level) or by certain groups of population (breakdown by migrant status, gender, age, disability, and so forth). Beyond granularity, one can even look more critically at whether the data is available in a format that allows interoperability between different data systems. This, in particular, echoes one of the key principles of Satu Data: the likelihood of available data to be connected to or operating in other directorates or agencies.

This report assesses the situation of data in various key sectors by considering the elements mentioned above.

Utilisation

Indonesia might be data-rich and have a capacity to collect and analyse data, but it is critical that the GOI uses this data and analysis to inform policy making, administer the implementation of policy, and to evaluate policy. Understanding the extent to which data is utilised and used strategically is important as it will explain if the data users, or in this case the GOI, have a culture of data or evidence-based programs or policy. It is also a question of who utilises the data: is utilisation allowed or facilitated beyond internal stakeholders? The following sections will discuss a few examples on how utilization is driven by various factors including trust in data, accessibility of the data, and capacity of the institutions to utilize data. Based on interviews, there are numerous examples of use of data in policy making. However, one question to be probed further--as it is beyond the scope of this report--concerns the quality of utilization and whether the utilized data answers the questions that users ask.

As described earlier, utilisation of data will only be possible if data is available and presentable, and assessment of this issue intertwines with data availability and quality assurance, the other pillars discussed in this report.

³² Tauberer, <u>2014</u>.

³³ In order to ensure representativeness of the currently overlooked part of the communities, to make sure no one is left behind.

Quality assurance

Assessing data quality, both of statistics and administrative data, requires a huge effort. In the current decentralized and fragmented data ecosystem, assessing quality for each data in each sector requires extensive resources and commitment. In addition, to assess the quality of data, against such measures as completeness, uniqueness, timeliness, validity, accuracy, and consistency³⁴, one must possess sectoral knowledge, especially in understanding the relevance and coherence dimensions of quality.

This report focuses on assessing the extent to which quality assurance mechanisms do or do not exist for data in a particular sector. Quality assurance mechanisms are identified and will be discussed in the report. The report will not provide further assessments as to whether the existing quality assurance mechanisms are sufficient or not to ensure the quality of data. However, by knowing whether a sector has quality assurance mechanisms or not, the UN can devise a more precise approach to address data quality issues in the sector. For sectors that have relatively more established quality assurance mechanisms, the intervention can be moderate to minimal. On the other hand, for sectors that have less established quality assurance, the intervention could be directed to assist the government to develop relevant mechanisms.

Findings are detailed in the sections below. Analysis focuses on data initiatives (large datasets) instead of exhaustively listing all datasets available in Indonesia. This is for two reasons: first, the GOI, even the Satu Data Secretariat, does not yet have a list of all datasets available in all of its line ministries³⁵; and second, looking at the datasets at the high level allows this research to strategically identify actionable next steps for the UN, instead of dealing with the individual components of detailed datasets.

Availability

The following sections will discuss the main data in various sectors, the state of data availability, and challenges, based on the elements discussed above: access, availability of micro or primary data, disaggregation, connectedness and integration, and frequency of updates.

Poverty and social protection

Poverty alleviation is one of the main priorities of the GOI, and its data is among the most mature key datasets produced by the government. There are two main poverty data in Indonesia: statistics and microdata from Survei Sosial Ekonomi Nasional (SUSENAS) by BPS, and administrative data to assist the implementation of social protection programs, namely Data Terpadu Kesejahteraan Sosial (DTKS), managed by the Ministry of Social Affairs.

Data to measure poverty

SUSENAS is the main data source to monitor the country's characteristics related to social welfare and poverty. The data is updated twice a year, every March and September, and it employs a large sample size--approximately 300,000 samples representative at the kota/kabupaten level and 80,000 samples, respectively, for the two rounds of updates. It considers the multidimensional nature of poverty as it covers not only economic-related data, but also includes questions on access to education, housing, and consumption, thus

³⁴ DAMA UK, 2013 in CDC, <u>2020</u>.

³⁵ Except BPS. BPS provides metadata of all its data and publications on its <u>SIRUSA</u> website.

allowing users to conduct multi-sector analysis of what correlates with economic poverty. Some of its questions are used to shape the DTKS data.

SUSENAS is the main and only source of poverty data in the country³⁶. While there are other large-scale government surveys that collect socio-economic information, such as BPS's Population Census (SP), national labour force survey, or Survei Angkatan Kerja Nasional (SAKERNAS), and Potensi Desa (Podes) by the Ministry of Villages, none of these specifically measures poverty. Outside government data there is also a longitudinal survey which measures economic (and non-economic) well-being by the RAND Institute, namely the Indonesian Family Life Survey (IFLS), but this is updated once every seven years, and is only available at the national level³⁷. From the perspective of substance, the IFLS allows data users to understand the behavioral determinants of poverty, but it cannot be used for programmatic purposes by the government.

This by no means is to suggest that SUSENAS has no room for improvement. For example, in terms of access: SUSENAS' microdata is accessible for the public to use, which means it allows anyone to scrutinise the data and conduct any slicing-and-dicing of the data as they wish. However, it is not available for free and access requires a substantial amount of cost (payment per kilobyte of data) since it is subject to PNBP regulation that BPS abides by. By being a subject of PNBP, obtaining micro data, including from SUSENAS, must incur cost as prescribed in the regulation³⁸. Only government agencies, universities, and select organisations can request for free access by submitting an official request and proposal, explaining the purpose of data use³⁹. Not all requests are granted, and requests can take many months for approval. Even if the proposal is approved, BPS might still need time to perform a number of frequent checks if the requestor asks for specific indicators.

SUSENAS has disaggregated data based on gender, and its data is representative down to the kota/kabupaten level as a result of its massive sample size. Still, the data is not representative at any level lower than kota/kabupaten level and calculation as such will be met by statistical sampling errors, which is of growing importance minding the disparity of poverty and income across different areas within a kota/kabupaten⁴⁰. Research institute SMERU has mapped poverty levels down to the village level using small area estimation modelling from 2010 SP, 2010 SUSENAS, 2015 SUSENAS, and 2014 Podes⁴¹ data, but this report took time to develop. The resulting map has not been updated since 2015.

In addition to geographic-based disaggregation, for rich datasets and surveys such as SUSENAS, it is unfortunate that these are yet to consider minorities in data capture. While there are a few questions capturing limited data for minority groups, for example, individuals with disability, tabulation of this data may have high statistical errors and wide confidence intervals. This is caused by the inadequate sampling design, which does not prioritize sufficient data on minorities. There is also no data disaggregation which considers refugee status. Enlarging the sampling to accommodate this issue would likely lead to higher cost and longer fieldwork time. But creating a new survey just to accommodate such a module would need to justify why such data could not be integrated within SUSENAS, rather than becoming another disconnected, siloed dataset.

³⁶ Gerke, <u>2003</u>.

³⁷ RAND Institute, <u>n.d</u>.

³⁸ Latest PNBP Policy for BPS, PP <u>7/2015</u> on Non Tax Revenue Applies in the BPS.

³⁹ Regulated by latest Perka BPS <u>2/2019</u> on Application of 0 Rupiah Tariff for BPS Products.

⁴⁰ Sari and Kawashima, <u>2016</u>.

⁴¹ SMERU, <u>n.d</u>.

Being connected to other relevant survey data is important, especially for poverty datasets such as SUSENAS, considering how multidimensional poverty is. It can be related to income and consumption, to nutrition, health, political handicap, assets, and many other factors. Based on this, many factors are then linked to poverty and it is ideal when the poverty survey data is linked or connected with other surveys, such as Kemenkes' Infant Nutrition Status Survey (SSGBI) and Basic Health Research (Riskesdas) for health-related data. While it is true that Riskesdas has been connected to SUSENAS in 2018⁴², the public still cannot access Riskesdas' microdata as it is only available for the National Institute of Health Research and Development (Balitbangkes) team in Kemenkes.

Moreover, another characteristic of poverty beyond its multidimensional nature is that it is dynamic. Individuals can fall into and fall out of poverty. COVID-19, for example, has already caused almost 150 million individuals globally to fall below the extreme poverty line⁴³. As important as this is to be understood, at the moment one cannot obtain any insights on downward and upward mobility from poverty from SUSENAS. It is not a longitudinal study, involving no panel respondents in the sample, so it is not entirely possible to conduct time series analysis of why individuals or families fall into poverty or climb out of it. For this reason, it is also difficult to disaggregate the data by migration status or other dynamic phenomena.

Nevertheless, having acknowledged the challenges and gaps, in the attempt to make substantial changes to SUSENAS, one has to thoroughly examine the impact of any changes made, beyond additional cost and resources. BPS for example, highlights how changing methodology may have implications to the targeting processes, and even the number of resources disbursed to one specific area. For example, changing the definition of poverty might change the ranks of the poorest provinces in the country, and this may cause some areas to receive less or even more assistance and grants. It certainly has a larger effect than simply a more robust calculation.

Data to administer social protection

While SUSENAS is the key statistics data to measure and monitor poverty, the DTKS is used specifically to identify the targeted individuals that will receive social assistance from the government. Formerly referred to as Basis Data Terpadu or Unified Database (UDB), DTKS was initially managed by TNP2K and BPS for social protection and poverty reduction programs targeting purposes. Since 2016, it has been managed by the Ministry of Social Affairs (Kemensos)⁴⁴, regulated under the Minister of Social Affairs' Regulation 5/2019⁴⁵. DTKS comprises names, addresses, and characteristics of the poorest 40 percent (the bottom 40 percent) in Indonesia, as well as a list of eligible beneficiaries of a number of social protection programs, such as Program Keluarga Harapan (PKH), Program Beras Sejahtera (Rastra), and others. It is aimed to cover not only the data of the bottom 40 percent but also 100 percent of Indonesian citizens by 2024.

DTKS cannot be used to measure poverty in Indonesia because, from a statistical perspective, its 'population' or 'universe' or total people surveyed are only the country's poorest 40 percent. It is a specific, targeted dataset. DTKS is highly granular as it provides individual data and it has information on gender and geographical locations, but it does not

⁴² Dinas Kesehatan Banten, <u>2018</u>.

⁴³ World Bank, <u>2020</u>.

⁴⁴ Kemensos, <u>2020</u>.

⁴⁵ BPK, <u>2019</u>.

consider minority communities' characteristics such as disability, refugee status or migration status. DTKS aims to be able to rank households based on socio-economic status and there has been no demonstrated urgency to have this address other data points, such as disability prevalence. This absence of urgency to look at the elements outside socio-economic status is alarming, given links between, for example, refugee status and poverty, or between disability and poverty⁴⁶: people with disabilities are twice as likely as people without disabilities to live in poverty.

Currently, being the clear-cut and program-driven administrative data that it is, it is understandable that DTKS limits public access to some parts of its datasets, particularly to any personal data. This is not to suggest, however, that the public should not be able to access DTKS data at all. Aggregated statistics of DTKS could still be used to inform the public about the state of the social assistance program. This could be one of possible approaches to balance privacy and accessibility for this information. At the moment, the public can only access processed data in dashboards, down to the kecamatan level, and only for a number of data points, such as the distribution of the bottom 40 percent of individuals in all kecamatan in Indonesia, as well as their characteristics of houses and basic services. There is no available disaggregated data and thus no further analysis can be derived from the data.

Individuals or organisations that wish to access DTKS data can still submit a formal request to Kemensos and have to also submit a report afterwards, detailing how they use the data. Non-government organisations that have undergone this procedure mentioned that this bureaucracy was more challenging compared to when the data was managed under TNP2K, now that the request has to be signed by the Regent or other sub-national government officials according to the level of disaggregation requested in the data. What is more interesting about the process is that this order of data request submission also applies to sub-national governments. According to the DTKS' legal basis, Permensos 5/2019, other GOI agencies and sub-national governments that wish to access DTKS data have to go through the same requesting process as the public.

This presents a unique dynamic between Kemensos (as part of the central government) and the sub-national governments, particularly the local government or Pemda: because despite having to submit a formal request to access the data, Pemda is mandated by Kemensos to collect the data for DTKS in their area at least once a year, and have to submit the data via applications to Kemensos. Kemensos expects local governments to drive the updating process of the data, but at the same time, to some extent limits their data ownership and access. While it is understandable why local or sub-national governments are appointed to collect DTKS data, as they have better local knowledge about the characteristics of households in the area and thus can minimise error in the targeting, there still has to be a clearer arrangement and positioning for the sub-national government in the larger process of DTKS data governance. In Permensos 5/2019, there is also no evidence of a clear coordination mechanism that addresses roles and responsibilities of MOSA at the national level, Dinas Sosial at the subnational level, and Pemda in DTKS data governance.

The national-sub-national government tension in the DTKS data updating process could also be related to the fact that sub-national governments might not have the capacity to collect and model data, or have the capacity to do so but are not helped to understand the steps and processes of the data updates. Some local governments that have the capacity to

⁴⁶ Banks, Kuper, and Polack, 2017; Dalrymple, 2016.

update their data, for example, Jakarta, have submitted its bottom 40% data to Kemensos, but it is unclear how Kemensos would reflect the changes submitted. If there is any procedure or SOP that explains the grand design of data governance (including the data updating process, how the data is being used, and how the new updates are incorporated into the database), this has not been made clear.

The absence of a grand scheme of data governance is also shown through the fact that there has not been a clear regulation that mandates systematic and regular updates of the DTKS. There is no clear time sequence of updates. DTKS was updated at the national level in 2008, 2011, 2015, and more recently, in 2021 (ongoing). This means data updates, as far as we can know, do not happen on a regular basis. Updating this large database centrally requires significant resources and this may be the main reason why the database is not regularly updated as expected. There are some micro updates occurring through self-registration to kelurahan, but only in limited 'piloting' areas, which means this effort is even more sporadic. This poses a risk of data being outdated.

In the context of DTKS, outdated data could potentially decrease the precision of the targeting process, especially considering the dynamic nature of poverty. Individuals can move downwards and upwards in the 'rank' list of DTKS, and ideally speaking, as DTKS is the basis to administer social assistance program, the data should be able to identify individuals that have to be removed from the list as they step out of poverty, and ensure new poor receive social assistance when they fall into poverty. If this dynamic is not captured well (and this is best if close to real time), this could lead to errors in targeting, which then pose a risk to DTKS and Kemensos as the main stakeholders in this context.

Unclear division of roles, inconsistent updating sequencing and steps are the primary overarching data governance issues of the DTKS. There is still no grand design for data governance, a foundation for data flows, quality, and division of roles by Kemensos (or other agencies) that are considered responsible for the DTKS.

Health and nutrition

The Ministry of Health (Kemenkes) has two main streams of data: first, program-related data stored in the Satu Data Kesehatan portal by Center for Data and Information (Pusdatin); and second, the Basic Health Research (Riskesdas) survey data, updated once every five years led by the ministry's National Institute of Health Research and Development (Balitbangkes). Data sources for Satu Data Kesehatan come from either other information systems or applications developed for programs, such as for the TB program, HIV/AIDS, Nutrition, and others, or manual data entry from Puskesmas across Indonesia.

That said, not all program (or non-program) datasets are incorporated into Satu Data Kesehatan, and even from these limited datasets, not all of them are available for the public. Some datasets from the program are available only on an internal platform, referred to as Aplikasi Satu Data Kesehatan (ASDK). Ministerial regulation 1/2015⁴⁷ outlines the types of data that have to be kept confidential, namely medical records, unrealised budget for existing financial year, and other data that, according to Pusdatin, might be 'controversial' for the public. However, it is worth noting that there are some datasets or indicators that are not classified as 'confidential', but still not available on the Satu Data Kesehatan public platform because the program units do not include them in the internal system. This means the program units get to decide which data they want or do not want to share to other

⁴⁷ Kemenkes, <u>2015</u>

directorates within the Kemenkes (let alone to the public), unless specifically requested by the Minister.

Restriction of data access is also identified in Riskesdas. Aggregated⁴⁸ processed data publication is available for the public to use on an annual basis, but they provide no microdata. It is also difficult to request data: all proposals requesting data need to be approved by Balitbangkes and are not necessarily granted access. Moreover, considering how closely related welfare status (SUSENAS) is with health and nutrition intake⁴⁹ (discussed in Riskesdas), both survey data should have been integrated, for example, through a single identity or ID that links the two. While this was partially done in 2018⁵⁰ when Riskesdas used SUSENAS' samples, this integration only occurs in data collection and sampling, not in terms of data publication. Unlike SUSENAS, which provides microdata, albeit upon purchase, Riskesdas only provides highly processed statistics, hence not allowing the public to conduct any analysis between health and poverty.

In addition to accessibility issues, another challenge of data availability that the Kemenkes has to tackle is the integration between internal systems within the ministry. Pusdatin, as the warden of Satu Data Kesehatan, is aware that most directorates work in silos: none share their data unless it is requested. This situation is exacerbated by both technical and political challenges. On the technical side, each of the programs, all of which are led by different directorates within the Kemenkes, such as the Directorate of Direct Infectious Diseases Prevention and Control (P2PML), have their own working groups, data team, reporting mechanisms, and applications (systems). Even across programs under the same directorate, for example the five programs under P2PML⁵¹, they often have different operational definitions. Connecting all of these datasets and applications into Satu Data Kesehatan is challenging and prone to technical complications. For example, ASDK requires manual reconfiguration whenever there is an individual system upgrade. This is caused by the fact that all data systems are built not to be interoperable, many of which were developed with the support from the non-government organisation The Global Fund.

Beyond technicalities, there is also a certain level of unwillingness for the programs to share or reconcile similar data. The teams have arguably low trust in other programs' ability to collect 'better' data compared to their own. This results in identical or similar indicators being calculated by more than one directorate, making it difficult to standardize: for example, according to Pusdatin, Directorate of Nutrition, Directorate of Family Health, and Sub-directorate of Immunisation,⁵² each calculates the number of pregnant mothers. There is also concern around safety and utilisation of the data once it is made available for

⁴⁸ With limited disaggregation at kabupaten/kota level, and gender on a number of data points. No disaggregation on migration and refugee status available. Note that only aggregated data is available, thus no disaggregated microdata is available.

⁴⁹ Adji and Asmanto, <u>2019</u>.

⁵⁰ BPS, <u>2018</u>. Both SUSENAS and Riskesdas used the same samples, and questions asked in Riskesdas are not asked again in SUSENAS, vice versa.

⁵¹ HIV/AIDS and Sexually Transmitted Diseases, Tuberculosis, and others.

⁵² The first two directorates are under the Directorate General of Public Health, while the latter is part of the Directorate General of Diseases Prevention and Control (P2P).

Pusdatin, despite the fact that Pusdatin has implemented necessary precautions⁵³ on data security management. And it is unclear why Satu Data Kesehatan only stores data from programs within the Kemenkes and does not include research data managed by Balitbangkes.

The challenge of data integration does not only occur in the context of systems within the Kemenkes, but also in the data collection process. Research by Open Data Lab Jakarta⁵⁴ identified that enumerators at the local level found some gaps between data required by District Level Health Office (Dinkes) and Satu Data Kesehatan: for example, the data requested in the ASDK's sanitation application/system does not cover all data points required by Dinkes, so the Puskesmas have to send the manual data separately. For stunting data, enumerators have to enter the data manually in several formats and platforms (the PosyanduQu application by Kemenkes, nutritional book, physical data sent to Dinkes, and others). It is also difficult to reconcile data points and formats asked by each of these sources.

Furthermore, limited resources also cause data collection at the local level to be even more challenging. There is limited to no incentives for non-government facilities to collect and submit their data. In most cases, there is a lack of human resources for data entry. Remote Puskesmas will likely not have a dedicated data staff, as they usually comprise only a few nurses and one doctor. Midwives or cadre of Puskemas have to do both data collection tasks and their own specific jobs. The high disparity in technology makes digital data collection time consuming for all parties involved, as it takes more time to transfer manually-collected data into electronic forms. There is also an extra burden to sort and clean the data for the Kemenkes.

Furthermore, there is also a dynamic of the power relations between the Puskesmas, Dinkes, Kemenkes, and local governments that affects the compliance of data collection. Puskesmas, or even Dinkes, are more likely to prioritise instructions and agendas of local governments, such as the Regent or Governor, over those from the Kemenkes. However, quite similar to the procedures of DTKS data access, if the local government wishes to access any data from Dinas Kesehatan, they most often would need approval from Kemenkes in Jakarta, regardless of the stronger power they exercise over the local Dinkes and Puskesmas.

All of these issues in data collection: reconciliation between multiple systems and forms, resources, power relations, and governance intertwine and result in under reporting from sub-national government agencies. This then circles back to the data access problem: incomplete data creates the sense of low quality data as well as forcing the data to have low granularity, which means the data could be not presentable for external use below the provincial level.

Education

The Ministry of Education and Culture (Kemendikbud) has a number of key basic datasets, the largest one being Data Pokok Pendidikan, or Dapodik, which covers educational data from all elementary, junior high, and senior high schools in Indonesia. Dapodik includes lots of data, for example on school infrastructure and the number of active students,

⁵³ Following the procedure from ISO <u>27001</u> on Data Security Management.

⁵⁴ Maail, <u>2018</u>.
disaggregated by gender and level of education at the sub-district level. Other smaller datasets include Pangkalan Data Pendidikan Tinggi or Forlap Dikti⁵⁵; data on vocational schools; as well as basic educational data for madrasah or pesantren (EMIS), managed by the Ministry of Religious Affairs (Kemenag). BPS also produces a number of more high level education data, usually used by the relevant Coordinating Ministry.

Dapodik covers more than 270,000 schools in Indonesia and is the reference used by administer school operational assistance (BOS) Kemendikbud to and other teaching-learning related programs, making it one of the key administrative data in the education sector. Many of its data points are available for the public on its website down to school level. It is mandatory for schools to report their data at least once per semester, and this update determines assistance, for example the amount of BOS funds that the respective schools will receive. Kemenag-managed basic educational data for madrasah, or EMIS, is now also available in the public domain, but in the past that has not always been the case. The move to make it more open may indicate that Kemenag is more comfortable with the quality of the data.

Dapodik appears at first glance to be a good example in which there is relatively high access to primary data, granularity, frequency of updates, as well as a clear incentive for schools to update or collect the data. However, upon scrutiny a number of gaps were identified. For example, as all data are self-reported with a minimum checking mechanism, the data collected might not reflect the actual situation on the ground. It is also possible for schools to submit the last semester's data without any updates, in order to fulfil the minimum obligations required to receive assistance, or to purposely increase or decrease the number of staff or students reported to influence the BOS fund allocation. While Kemendikbud has implemented limited in-person data quality checking (discussed further in the Quality Assurance section of this analysis), considering the small scale of these activities, the data quality remains questionable.

The number of data collected has also decreased during the COVID-19 pandemic. Only 1,200 schools did not report their data in Dapodik for the first semester in 2020, but the number of non-compliant schools increased to almost 20,000 in the following semester, decreasing the reporting rate by 4%⁵⁶. This lower participation in data collection might be induced by the fact that many schools do not implement online learning and have no activities at the moment.

Data collection issues in the education sector also go beyond technicalities. The quality or availability of education data reported might be influenced by power relations between teachers, schools, sub-national government, and Kemendikbud (at the national level). Similar to the findings shared in the Health section above, the reporting line at the subnational level does not match with the Kemendikbud's chain of command. Teachers, as civil servants, are technically managed and recruited not by Kemendikbud but by the Ministry of Administrative and Bureaucratic Reform (Kemenpan-RB), while school headmasters and Dinas Pendidikan (Education Office) often report to or follow the instructions of respective local government leaders such as the Bupati, more than the Kemendikbud in Jakarta. These power dynamics affect the way education programs are managed on the ground and lead to how data related to education is collected and

⁵⁵ https://pddikti.kemdikbud.go.id/

⁵⁶ Kemendikbud, <u>2020</u>.

maintained. Understanding these power dynamics will help relevant stakeholders to design better interventions in improving education data quality and collection.

Furthermore, in terms of integration, while Dapodik is already a result of data integration between previously different data systems managed by different directorates, it has yet to be integrated with the other data initiatives managed by other directorate general in Kemendikbud, such as Forlap DIKTI, or with Satu Data initiatives. This might be related to the fact that Satu Data is newly launched, but also to the absence of urgency to consolidate the data with other parties. This is different to the clear incentives imposed on schools, for example, in engaging them in Dapodik data collection. The fact that Dapodik operates on a different database than both Forlap DIKTI and Satu Data further exacerbates the issue of data integration.

From a substantive perspective, Dapodik measures extensive data points at a highly granular level, and most of which are related to 'inputs' in learning, such as the number of students, information about teachers, and schools' infrastructure. There is limited measurement on education 'outputs', or the learning outcomes of education. To address these key data gaps, data collection should be widened to also measure the outputs. Indonesia's RPJMN for 2020-2024 requires measurement of only two learning outcomes: PISA test scores and AKSI test scores, which are measured once every few years and have no disaggregated data (only available at the national level, measuring students in only a few provinces). While this has to be further discussed among education experts, a gap in the absence of learning outcomes might be of interest in improving education data in Indonesia.

Population and family

There are two important sources of data in Indonesia which offer information on population with individuals as the data unit: the Sensus Penduduk (Population Census, or SP) by BPS, and administrasi kependudukan (Dukcapil) from Direktorat Jenderal Kependudukan dan Pencatatan Sipil, at the Ministry of Home Affairs (Kemendagri). The former is statistics data, the latter administrative data. BPS updates SP data once every ten years, with one survey in between two censuses, and Dukcapil every day, whenever a national ID (KTP) or NIK is created. Having two data sources capturing the same data points pose the risks of data differences, as it happened with BPS and Kemendagri on census data⁵⁷. However, in 2020, BPS tried to build their sampling list for SP based on Kemendagri's Dukcapil data⁵⁸. In a way this decision was also driven by COVID-19 which stopped enumerators from visiting many houses without constraints. Nevertheless, this integration has happened and the goal moving forward is to conduct the Sensus Penduduk 2030 with a registry-based approach. In the meantime, though, there are two steps of data collection for SP: first, data collection using short form for larger sample (less data points), followed by census with long form, with more data points⁵⁹ but a smaller sample. In SP 2020, data collection with short form was completed in Q4 2020, while the long form census will continue in 2021.

Dukcapil, the other piece of population data, is managed by Kemendagri's Directorate General of Civil Registries and Population. It comprises the registry of population and issues as well as all relevant documents pertaining to births, deaths, and ID information. The

⁵⁷ Rusdiana, <u>2021</u>.

⁵⁸ BPS, <u>2019</u>; Kemendagri, <u>2020</u>.

⁵⁹ For example, according to BPS, data disaggregation by disability will only be available in the long form.

database has captured around 271 million people⁶⁰ and its administrative systems are connected to major databases such as the DTKS⁶¹, Tax Registry⁶², and COVID-19 vaccination roll-out⁶³. This shows the magnitude of the administrative data system's coverage and the complexity of administering civil registries in a country like Indonesia.

Kemendagri should be commended for their achievements withthe civil registry system, which became the basis for the recent census⁶⁴. Dukcapil itself has also developed a shared platform named "Platform Bersama" to enable private companies to access Dukcapil data securely⁶⁵. While there is no publicly available information about the security measures, privacy safeguards, and broader data accessibility--making it hard to objectively assess the comprehensiveness and robustness of the platform--this is considered to be a closer step for Dukcapil to be the single reference number for citizens, a necessary foundation for a country to truly move into the digital space.

However, challenges persist--for example, relating to data on deaths, domicile status and legal identity. Recent research studies⁶⁶ have identified significant under-reporting of death rates due to over-reliance on data on deaths from public cemeteries, domicile status barriers for those not residing in official administrative areas, such as in forests and at sea, and challenges in receiving legal identity documents from those stigmatized in society, such as religious minorities and children with special needs.

Moreover, although many programs can benefit from synchronization with Dukcapil data, it is difficult to be done in practice since most systems are developed independently and there is no strong policy to enforce the use of reference numbers such as the NIK or other ID for systems that require information about individuals. For example, in the past, the social protection database, DTKS, had difficulties in synchronizing with the NIK database since they did not use NIK as the basis⁶⁷. However, this problem has slowly been addressed. The latest synchronization exercise led to almost 90% matched entries for both the Dukcapil database and DTKS⁶⁸. In the broader context, Dukcapil data has slowly become the basis for many administrative data systems in the country, especially administrative data systems that contain individual information. An important question arising from this is how safe and secure is this interconnection between systems? This relates to the forthcoming personal data protection law that is long overdue⁶⁹. Discussion on the personal data protection law had not resumed as of when our research was conducted. The personal data protection law is fundamental in safeguarding unauthorized

⁶⁰ The aggregated number of populations from the Dukcapil database can be publicly accessed on GIS Dukcapil website.

⁶¹ Maharani, <u>2020</u>.

⁶² Kemenkeu, <u>n.d</u>.

⁶³ Kemendagri, <u>2020</u>a.

⁶⁴ Kemendagri, <u>2020b</u>.

⁶⁵ Platform Bersama was launched in 2019 and is designed to be a e-KYC (Know Your Customer) infrastructure (Kemendagri, <u>2019</u>).

⁶⁶ Racing Against Time: A Policy Paper on the Prevention and Handling of COVID-19 Impacts on Children and Vulnerable Groups, 2020.

⁶⁷ Mulyana, <u>2020</u>.

⁶⁸ Kemendagri, <u>2021</u>.

⁶⁹ The discussion on Personal Data Protection was delayed in 2020 and to be resumed in 2021 (Andarningtyas, <u>2020</u>).

access of personal data as well as the issue of overcollection of personal information that is pervasive in Indonesia⁷⁰.

At the family--rather than individual--unit level, the GOI has Family Data Collection or Pendataan Keluarga (PK) by The National Population and Family Planning Board (BKKBN). This data is updated once every five years, with the next update scheduled to occur in 2021. This administrative dataset measures mostly program achievements, such as for the Program Pembangunan Keluarga, Kependudukan dan KB, and uses the results to plan, evaluate, and monitor progress of indicators included in RPJMN. The PK data is not available for the public, and it is yet to be connected to other social protection data, such as DTKS. The extent of which the PK data is utilised or connected well with other programmes is important, considering some social assistance programs, such as Program Keluarga Harapan (PKH), are ideally administered to households, instead of individuals.

As there are many approaches on population data discussed above (the census data, individual registry data, family data), BPS aims to have Satu Data Kependudukan Indonesia to capture all population-related data in one place. While commitment and buy-in from relevant ministries working on this issue remains one of the key challenges to moving this plan forward, from the perspective of substance, the GOI also needs to be careful as to what extent this data should regard other sectors as well, as population data is related to many other relevant issues, such as education status and socio-economic conditions. Attention should also be given in thinking of the focus of the data collected going forward, in terms of population. Should the GOI and BKKBN, for example, move forward from narrowing down family planning to birth and mortality headcount, and widen the focus to the quality of families' resources within a population? This includes mobility, disparity between areas, population distribution, as well as migration.

Should migration become the focus of key strains of population data in the future, it is important that the data is well-managed and integrated. At the moment, BPS has the headcounts for migrants⁷¹ disaggregated by gender, urban-rural location, and province-non-province migrants in the SP long form, but there is limited data beyond this and of course it is only updated once every ten years. BPS has explored another data collection method that is able to collect real-time mobility data, such as Mobile Positioning Data (MPD) which conveys individuals' movements based on records from Base Transceiver Stations (BTS) from mobile network operators. However, this is still a work in progress. In terms of coordination in this sector, BPS is also currently working towards Satu Data Migrasi Nasional, one of the key topics under population mobility. Currently there is no ministry or agency mandated to produce data on this subject and lead other ministries in integrating related data, hence the initiative from BPS. A number of SDG indicators data from BPS have also been disaggregated by migration status but further data production processes need to be coordinated in order for Indonesia to have comprehensive data on migrants.

⁷⁰ In many aspects of life, private companies and public institutions tend to collect personal data separately. There has not been any caveat or mitigation principles if this personal data misused, what citizens can do. The DG of Dukcapil highlights this issue in 2019 (DISDukcapil Pontianak, <u>2019</u>).

⁷¹ Including recent migrants, individuals who moved to different provinces or kota/kabupaten in the past 5 years, or permanent migrants, individuals who, during the time of census, live in different provinces or kota/kabupaten than their place of birth.

Gender and Child Protection

The Ministry of Women's Empowerment and Child Protection (KPPPA) is the designated leading government agency for gender and child protection data as stipulated in Regulation of the Minister of Women's Empowerment and Child Protection 5/2014 concerning Guidelines for the Implementation of Gender and Child Data. KPPPA collects and manages two data platforms: the Gender and Child Data System (SIGA) and the Online Information System for the Protection of Women and Children (SIMFONI PPA). <u>SIGA</u> showcases various data points, including program-related data, gender-related index, population profile, as well as a number of multi-sector data from BPS beyond gender and children, although most of them are not available upon scrutiny. Disaggregation is only available in regards to gender at the province level for limited data points on SIGA. <u>SIMFONI PPA</u>, on the other hand, provides only aggregated statistics specifically related to violence based on reported cases. All statistics in both platforms are mostly available in dashboards, created as a visualisation and monitoring tool of the program, in light of the implementation of One National Violence Data (Satu Data Kekerasan Nasional).

On both platforms users can identify to a certain extent issues on accessibility, availability of microdata, data timeliness, and so forth. While the public can access both platforms, not all data managed by KPPPA is accessible on SIGA. Some data is still limited for internal use, particularly on participation of women in education and in the workplace, as well as disparity between men and women in terms of fulfilment of basic rights. Only data at the provincial level is available, with sex and age group breakdowns but no further disaggregation of the data. Moreover, there is no clear information on the frequency of updates as well. There is also no microdata available for all data, with SIGA allowing processed data exports only for some datasets, and SIMFONI PPA only providing dashboard analytics but no filter feature which limits tailored analysis.

In addition to these two platforms, KPPPA also had gender-related data based on the National Women's Life Experience Survey (SPHPN) and National Survey of Children and Adolescents' Life Experience (SNPHAR), both of which will be updated in 2021 in collaboration with the BPS⁷². Similar to data provided in the two platforms, none of this data is available for public access except the aggregated/ prevalence rates of gender and child protection related data: neither the microdata nor statistics (not even publications) can be found in the public domain.

Besides KPPPA, there are also data sources from other government agencies which complement other aspects of gender and children related-data. BPS has the National Labour Force Survey (SAKERNAS) and The National Socioeconomic Survey (SUSENAS) which capture related child protection data such as the prevalence of child workers, child marriage, and domicile status of children and their biological parents. While SAKERNAS is the sole reference for the child labour figures as is specialised in the field of labour information, the data is considered obsolete with the latest update in 2009.

SUSENAS, on the other hand, provides the prevalence rates for child marriage and has become the baseline for the National Strategy to Eliminate Child Marriage led by Bappenas. The Population Administration Information System (SIAK) by Kemendagri also provides birth registration data and domicile status of children and their biological parents data which is also being captured in SUSENAS. These data overlaps between SIAK and SUSENAS,

⁷² KPPPA, <u>2021</u>.

however, also result in different data results, such as birth registration, as they are using different sources and methodology.

One good practice is KPPPA's awareness on data sensitivity with the annual ISO audit is regularly conducted to check its compliance.⁷³ However, misconception on confidentiality in the way the institution presents the data has limited meaningful utilisation. Whereas, presenting rich data for further analysis while maintaining the subjects as unidentifiable is feasible. The complete SUSENAS data by BPS, for example, provides good sample size and covers basic information on a household basis, which is very useful to help further study and analysis.

Indeed, these limitations in data availability from KPPPA are also related to data collection process issues. KPPPA has no technical capacity to collect data by themselves, and there are no dedicated resources, human or financial resources, within the ministry to collect data. This is true both at the national and subnational level. And it is not only about the lack of surveyors or surveys. The lack of knowledge from the support system of children, women, and other survivors combined with the lingering stigma in reporting gender-based violence are considerable challenges. This can be a significant challenge even in one interview or data collection with one person, let alone in pursuing massive data collection that satisfies statistical sampling requirements. In collecting data, enumerators have often met with hesitance as there is limited safe space for women, children, and other survivors to express their experience, and often there is also trauma involved.

On the other hand, data collected by other government agencies, in general, tends to lack a gender and child protection perspective, therefore, might result in data bias. In particular, children with special protection data are not yet available or updated regularly by BPS. Moreover, while gender- and child protection-related programmes might have traction at KPPPA, this has not always been the case with other ministries. This is not yet the priority for many agencies at the national and subnational level. This is illustrated through the fact that there is no regulation that mandates statistics to prioritise gender-based analysis and disaggregation, resulting in most data provided by other ministries or agencies being gender neutral or containing no sex or age-group disaggregation. While RPJMN 2020-2024 used the child protection data from SNPHAR to develop the development target of child protection⁷⁴, the only mandatory related data required in development are the Gender Development Index (IPG) and Gender Empowerment Index(IDG), which is why SIGA has this data down to the provincial level.

Even for agencies or ministries that are already open to track or collect gender-related data, they experience significant hurdles. In KPPPA's coordination with like minded organisations, for example Komnas Perempuan or KPAI, the ministry often faces difficulty in reconciling the data indicators and definitions used by the other agencies, for example, in defining 'violence'. There is yet to be reconciliation or standardization of definitions on this, and it is unclear on who should start this process or how.

Food and agriculture

There are a lot of stakeholders involved in food and agriculture statistics data production in Indonesia, with the Ministry of Agriculture (Kementan) collecting the most robust sectoral

⁷³ The virtual interview with Lies Rosdianty, Head of Planning Bureau of KPP PA, 1 February 2021.

⁷⁴ The written interview with Ali Aulia, Child Protection Specialist of Unicef, 2 March 2021

data. Three general key topics available are: data on agricultural production and stock, farmers, and commodity prices. BPS and Kementan collect agriculture production data, with Kementan having more data points on programs, agriculture inputs, technology, areas, crop failures, and others. Some are produced in partnership with the Geospatial Information Agency (BIG) and the National Institute of Aeronautics and Space (LAPAN), particularly for the geospatial and remote sensing data. Kementan, Ministry of Trade (Kemendag), and the Indonesia Logistics Bureau (BULOG) also track the stock/availability of a number of key commodities. On farmers, there is only one data available specifically providing sufficient socioeconomic information of farmers, which is BPS' Sensus Pertanian (Agricultural Census), updated once every ten years. Basic information on farmers is also available in SUSENAS.

Data on commodity prices, on the other hand, are collected by more agencies independently. Kementan's Food Security Agency (BKP) conducts price surveys at the market level, BPS conducts price surveys for urban and rural areas on a monthly basis⁷⁵ (published once or twice a year), and Bank Indonesia and its Pusat Informasi Harga Pangan Strategis (PIHPS) system tracks prices for key and volatile commodities which contributes to inflation. Additionally, the Ministry of Trade's Sistem Pemantauan Pasar dan Kebutuhan Pokok (SP2KP)⁷⁶ does price surveys as well for slightly different commodities.

Each stakeholder collects similar data points even for the same commodities but according to their own mandates, interest, and methods. This disintegrated approach has resulted in mismatched data, overestimation (or underestimation), and conflicts between government agencies (for example, between BPS and Kementan) in explaining the country's food production⁷⁷. There have been discussions recently about integrating all data in the pursuance of Satu Data Pertanian, with Bappenas driving the process of drafting MOU between BPS and Kementan on integrating production data, and the Minister of Agriculture encouraging agricultural stakeholders to refer to BPS' data going forward.⁷⁸ However, so far, the discussion has been limited to production data of key commodities, and that the integration is still in its early stage. There is limited to no synergy in terms of data sharing across ministries, which is further exacerbated by unstandardised format; hindering the data to be reconciled or analysed effectively altogether.

More on the issues of data availability is on the granularity of and public access to data. Ideally, production data should be disaggregated at the kecamatan or kota/kabupaten level, considering the climate variation that can occur in different kecamatan in one kota/kabupaten. As climate is one of the key factors in agriculture practice, linking the two will be advantageous in understanding crops better. However, at the moment, many agriculture data is only available at the provincial level or at the provincial capital city (or for large cities). Kementan has data at the kota/kabupaten level but only for three data points: total area, production, and productivity. There is no data on price disparity across different areas in a province. Moreover, data from Kementan's BKP, in particular, are relatively more limited for the public compared to BPS. While BKP publishes a list of its public data once a

⁷⁵ BPS, <u>2013</u>.

⁷⁶ Kemendag, <u>n.d</u>.

⁷⁷ BPS and Kementan have different methods to calculate the total areas of crops and production (grid square by BPS and eye-estimate by Kementan). In 2019 Kementan claimed that BPS' data, produced through satellite, has error of more than 90%, as it identifies less than 1 million hectares of rice fields than Kementan's data (Murdaningsih, <u>2019</u>; Puspaningtyas, <u>2019</u>; Permatasri, <u>2019</u>).

⁷⁸ CNN Indonesia, 2019

year⁷⁹, most of the data listed are not accessible, and almost all are likely to be processed statistics⁸⁰.

The time lag for a large part of the data also further prevents the public from getting more updated snapshots, particularly for a sector as volatile as agriculture. Time lag in spatial data can even cause data users to wait until 1-2 years before they can access the data. A number of NGOs and research institutes provide geospatial data on land cover, particularly for plantation commodities such as palm oil, but most of these data can not be adopted or used by the government, as official regulations mandate GOI to only use data from appointed government agencies.

Substance wise, there are concerns identified around the fact that some commodities have better data than the others: despite being important commodities linked to health, food security, and nutrition, horticulture commodities have fairly limited data. This includes both statistics and geospatial data. Horticulture commodities, for example, have fairly limited remote sensing applications, due to technical issues: the small size of the commodities, wide variety of crops, necessity to differentiate types of commodities according to its land use (rather than land cover), and their relatively fast-paced growth stages⁸¹.

The data gaps also occur not only for commodities data, but also data on farmers. While Sensus Pertanian provides rather extensive snapshots of agriculture practices and productions, there is also considerably limited information on socio-economic data on farmers. The available proxies related to poverty among farmers are done through SUSENAS or the Survey of Farming Household Income⁸² by BPS. However, from these datasets, users will not be able to understand why farmers are poor or not poor. There is no information on production per individual farmers, access to finance, numbers of farm labour used, production processes, marketing, characteristics of individual farmers, access to farmers organisations, and others. There is also no data on the number of farmers that are part of small medium enterprises (SMEs)⁸³, despite SMEs status (or other legality measures of farmers) being one of the priorities of the GOI, as reflected in RPJMN 2020-2024⁸⁴. From a statistical perspective, SUSENAS is also not designed to have sufficient sampling specifically on farmers. Ensuring these data are available is not enough: it is also important to note that the data collection might be challenging. Farmers might not record their yield or production in detail.

Moreover, at the moment there is limited to no data on supply-demand dynamics of one specific commodity in one particular area at one point of time. Attention is perhaps given to commodities classified as *'barang penting'* or important goods⁸⁵, but even this is limited to supply (stock or availability) data only. No real-time supply-demand data means it is difficult to manage supply chain planning. This might threaten the ability of subnational governments and the national government to properly mitigate food security issues, especially in times of emergencies. It is also worth noting that the agricultural commodities

⁷⁹ Kementan, <u>2020</u>.

⁸⁰ See BKP's annual publication Statistik Ketahanan Pangan 2019 (Kementan, 2019).

⁸¹ Marinelli, Scavuzzo, Giobellina, Scavuzzo, <u>2019</u>; and the interview with Directorate of Food and Agriculture, Bappenas.

⁸² BPS, <u>2015</u>.

⁸³ Pulse Lab Jakarta, <u>2019</u>; World Bank, <u>2020</u>.

⁸⁴ Noegroho, <u>2021</u>; Bappenas, <u>2019</u>.

⁸⁵ Four agricultural commodities classified as important goods or barang penting as per Perpres 71/2015 (SETKAB, <u>2015</u>): rice, soybean, chili, and shallots.

listed cannot be added to or reduced without large-scale amendment to the prevailing President Regulation 71/2015. A number of agritech and startups, as well as initiatives managed by universities and agricultural experts might have detailed data on the supply-demand dynamics, although it is likely that their data is extremely small-scale. For example, HARA, a startup in Bojonegoro, collects blockchain data on farmers' production practices and other activities up in the supply chain, in exchange for access to finance and utility tokens for the farmers⁸⁶. Many startups brokering the smallholder farmers directly to end consumers might also have data both on the supply end and the demand end. The scale up of these initiatives could address some data gaps mentioned above.

Humanitarian and disaster management

Emergency data in Indonesia, in the context of natural and social disasters, are managed by the National Disaster Management Agency (BNPB). In times of natural disasters, data from the Meteorology, Climatology, and Geophysical Agency (BMKG) are relevant too, however its focus is entirely on the natural elements of disasters, while the BNPB touches on different data points as well.

BNPB has many platforms and data systems, each serving different purposes but generally presenting data on disasters' scale and impact, including affected areas and population. The GIS BNPB website stores mostly geo-spatial data from ongoing or recent emergencies and shows data of the disaster impact up to the kabupaten level, while Indonesia Disaster Data Information (DIBI) provides historical data of all disasters in Indonesia in the past 200 years, from 1815 to 2019. There are also three early warning platforms, namely: InAWARE, providing hazard monitoring and disaster early warning; inaRISK, highlighting disaster risks in different areas in Indonesia as well as the Index Risiko Bencana, one of the SDGs indicators; and InaSAFE⁸⁷, specific for real time earthquake detection. Outside BNPB, there are also a number of ministries that publish data on disasters: BIG provides disaster early warning maps called Peta Sebaran Bencana.⁸⁸ LAPAN also has an early warning platform specifically for fires, collecting data on daily basis⁸⁹. The Ministry of Energy and Mineral Resources (Kementerian ESDM) also has similar platforms for geological natural disasters such as earthquake, volcano eruption, tsunami, and liquefaction⁹⁰.

Each of these platforms has its own database and is not integrated in any sense. BNPB's Pusdatin also aspires for the DIBI platform (past disasters) and GIS (recent emergencies) to be kept separated, as DIBI is envisioned to be similar with the global disaster database Global Unique Disaster Identifier Number (GLIDE) that only stores information from disasters that are 'already completed'. However, against this disintegrated approach to data BNPB has recently launched its Indonesia One Disaster Data (SDBI) strategy, which was conceived in 2020 but has yet to come into fruition. In an interview conducted for this research, BNPB officials also mentioned DIBI and SDBI interchangeably, which shows the extent to which Satu Data principles are yet to be fully adopted.

Not only do they promote a disintegrated approach to managing disaster-related data, but the multiple platforms and databases with rather overlapping data points can also induce the risks of repetitive, or worse, inconsistent, data input. Not to mention that there are also

⁸⁶ Naim, <u>2018</u>.

⁸⁷ http://inasafe.org/

⁸⁸ Peta Potensi Bencana by BIG, <u>n.d</u>.

⁸⁹ LAPAN, <u>2020</u>.

⁹⁰ Ministry of ESDM, <u>n.d</u>.

no clear flows on integrating multiple data collection which happens all at once during large-scale disasters, during which a lot of organisations want to be involved.

For example: when a large disaster occurs, data collection on the affected communities and their immediate needs will be coordinated by the Centre for Disaster Management and Control (Pusdalops), a directorate within BNPB or the Regional Disaster Management Agency (BPBD) in affected areas which is responsible to deploy responses on the ground in case of emergencies. Data collection will involve wider stakeholders beyond BNPB and BPBD, such as NGOs, the Red Cross, and others, and it is possible that each of these institutions produces its own data. Even BNPB and BPBD will have their own assessment teams: BNPB mandates a Tim Reaksi Cepat (first responder from BNPB/central government) to manually fill in a needs assessment form to get data on affected communities, which is separate from the BPBD response team. The information collected is also distributed manually and sporadically through each organisation's communications network. BNPB also updates more frequently via their press releases, rather than the online database. Considering all of these processes and dynamics, we circle back to the question of integrated data and database; how can all of this information be incorporated into a database, into which database, and must data input be done multiple times?

In times of emergency, single data is important, not only to calculate the impact of disasters but also to avoid replication of support and coordinate relief shared to the affected areas. However, there are specific challenges: collecting data in emergencies is often unsafe, and some argue that the timeliness of data in such situations is more important than its integration. It is also difficult to coordinate and collect data in life-threatening situations, let alone having to deal with potential problems of disruptions of connection networks and data infrastructure in general. This might call for manual data collection, which then poses other problems: i) how to move from manual collection to data automation, and ii) how to integrate data from different sources?

Issues with disaster data collection also occur in cases of 'small-scale' emergencies. When no large-scale crisis occurs, Pusdalops BPBD still has to report the total number of disasters--for example, house fires or local forest fires--occurring in their respective areas to BNPB. Based on this report, BNPB will then publish total disasters occurring for that respective month to the public, disaggregated by kota/kabupaten. The problem with this procedure is that all data collection is done manually. BPBD shares the data by email or personal communications, which BNPB then has to download, 'clean' by excluding disasters that are 'too' small-scale or not affecting many people, and manually input the data to the system. While the coverage of this data collection is very high (90% of kota/kabupaten), there is no single entry and no automation of the data collection process. This poses a high risk of human error.

Moreover, on top of the issues of disintegrated databases and disorganised data collection is low access and availability of micro or primary data. Most of these platforms are available in dashboards, particularly for geospatial data, and not all platforms are accessible for the public. InAWARE is only for internal BNPB use, and the inaRISK website, while meant for the public, is not also not accessible due to continuous technical issues, despite the fact that one of the elements measured in inaRISK, the Indeks Risiko Bencana, is used as one of the SDGs indicator data.

Environment and earth observation

The environment sector has the most data gaps according to the SDG secretariat and other data stakeholders. Due to the segmented and sectoral nature of these data, BPS cannot provide extensive environmental data, and so data availability is dependent on the commitment and willingness of relevant ministries. There is also limited support from the UN for these SDG data at the national and subnational levels. A number of government agencies have been producing data in this sector but there is yet to be coordination and standardisation, let alone integration.

Geospatial data is one of the most common visualisations/types of earth observation and environment data, and can, of course, be used to explain data in support of all sectors. In Indonesia there are two main institutions responsible for geospatial information: the Indonesian National Institute of Aeronautics and Space (LAPAN) and Geospatial Information Agency (BIG)⁹¹. LAPAN provides licensed remote sensing data for limited stakeholders only (mainly government agencies). BIG, on the other hand, is the Satu Data custodian for spatial data, leads the Satu Peta Indonesia initiative, manages the thematic-maps stored in Jaringan Informasi Geospasial Nasional (JIGN), and manages a number of spatial data platforms.

The public can access a number of low-resolution data from LAPAN⁹², although only limited datasets are available to access given LAPAN's state budget (APBN) constraints. Stricter access limitation, however, is identified for BIG-managed Geoportal KSP⁹³ system. The public can still access a number of datasets from JIGN's public platform⁹⁴ (mostly in low resolution) with exceptions, but non-government users are banned from accessing the thematic maps available at the Geoportal KSP system, as regulated in President Decree (Kepres) 20/2018⁹⁵. Limited data that is available to the public includes land-use data. The Coordinating Ministry for Economic Affairs even published a detailed regulation in 2018 following the decree, stating that only a number of government agencies will have access to thematic maps and even not all of these agencies will be able to do more than download the data. The public can only see the list of data available without being able to access it. Key questions emerging from this include what constitutes off-limit spatial data and what are the considerations behind these classifications?

In addition to access, there is also the issue of integration of BIG/LAPAN data into other ministries' work. This includes three things: first, integrating between the two platforms under BIG and JIGN; second, the existing spatial data produced by agencies outside BIG, for example, BIG's Peta Sebaran Bencana with BNPB's GIS and <u>InAWARE</u>; and third (something acknowledged by BIG, LAPAN, and Bappenas as yet to occur): can geospatial data be integrated with other types of data, such as statistics data, on the environment and other sectors? Integration between different spatial data is important, not only for streamlining purposes, but also because overlapping similar maps produced by different organisations, especially on land use, allows users to reconcile conflicting concessions licenses and violations of land use.

⁹¹ Hidayat, <u>2018</u>.

⁹² LAPAN, <u>n.d</u>.

⁹³ The Geoportal KSP <u>website</u> is managed by BIG and Kemenko Perekenomian

 ⁹⁴ The national portal (<u>Ina-Geoportal</u>) of Jaringan Informasi Geospasial Nasional (JIGN) network, managed by BIG.
 ⁹⁵ Keputusan Presiden 20/2018 (SETKAB, <u>2018</u>b).

Availability of maps for spatial planning and land use streamlining purpose is particularly relevant at the local level. As researched by environment think tank World Resources Institute when assisting Bappeda in adopting Satu Peta Indonesia at the local level: the absence of spatial data on boundaries and, more importantly, its governance (how the data is used, utilised, adopted by tribes and locals, etc) can induce tenurial conflicts.

On the availability of SDG indicators outcome data

This report has discussed the availability of data in various sectors, many of which are already used by the GOI to measure the SDGs impact or outcomes (for example, a number of SDG-related questions are included in the Dapodik questionnaire⁹⁶). This following section will further identify the state of SDGs data, specifically in the context of SDGs achievement monitoring process in Indonesia.

SDGs monitoring data can arguably include a lot of information, from the SDGs indicators outcome data, to, for example, data of the outcomes of SDGs-related development programmes included in Rencana Aksi Nasional, which are implemented under line ministries and reflected in each ministry's annual Rencana Kerja dan Anggaran Kementerian Negara/Lembaga (RKAKL) and Laporan Akuntabilitas Kinerja Instansi Pemerintahan (LAKIP)⁹⁷. Scrutinising program-level data, however, or even program outcome-level data in each ministry would require abundant effort; moreover, there are no agreed and direct links between the program outcomes with the SDGs, which means not all program-outcome data are relevant to be discussed as part of the SDGs. With this in mind, this report focuses only on the SDGs indicators outcome data.

Indonesia has adopted a good part of 247 global indicators and created 319 national indicators to measure the development goals in the country, which recently increased to 401 in the latest metadata. However, this does not mean that the country has no challenges in deriving the full picture of SDGs data. For instance, there are more than 40 global indicators that are yet to be adopted⁹⁸, with no agreed methods on how to measure them as well. Indicators that are yet to be adopted, albeit being relevant for the Indonesian context, have not been measured by the government and are not available in any national datasets. Not even proxies are available for these indicators. According to the SDGs Secretariat, for a new indicator to be adopted ⁹⁹ the government has to create new data collection tools or surveys, which requires significant time and effort. This is not only in terms of conducting the data collection itself (at the national level), but also in ensuring that the conceptual framework and definition of the indicators are correct and endorsed by the Forum Masyarakat Statistik, а multi-stakeholder platform that aims to provide the check-and-balance function for BPS data quality.

For the indicators that are measurable for the Indonesian context and adopted to the 319 national indicators reviewed for this analysis, the government uses data only from 'official' statistics, meaning only data generated by the government: either from BPS, line ministries, or a combination of both the BPS and line ministries. Despite the fact that the SDGs

⁹⁶ Kemendikbud, <u>2021</u>.

⁹⁷ See example of RKAKL here (KemenPU, 2020) and example of LAKIP here (KemenPU, 2018).

⁹⁸ In 2019, BPS identified 75 global indicators that must be developed (Reagan, 2019). Our latest calculation for this research however, identified 41 global indicators that are not included in the 319 national indicators list, not classified as "not relevant for Indonesia", <u>and</u> identified as "Global indicators that must be developed" in the Guidelines to National Plan of Action (Rencana Aksi Nasional) 2020 (Bappenas, 2020).
⁹⁹ BPS, 2017.

⁵⁵ BPS, 2017.

Secretariat acknowledges the importance of data generated by non-government actors in SDGs monitoring, in practice the government always refers to government official data and gives no space to other actors' data, considering the limitations of non-governmental organizations and the private sector in data collection¹⁰⁰.



SDGs data sources in Indonesia

Figure 3. Sources of SDGs indicator data in Indonesia

In terms of data type, SDGs data can come from survey or statistics data, as well as administrative or programme data systems.



Figure 4. Sources of SDGs indicator data in Indonesia

Going beyond the descriptive, the more significant question concerns to what extent the SDGs data are available. To some extent they are: Bappenas has published SDGs annual reports¹⁰¹ that summarise the achievement of each indicator, often in single numbers (see below). Bappenas' SDGs Secretariat also monitors the progress of achieving SDGs and presents its data on the SDGs Dashboard, a platform that consolidates the SDGs data from various data sources in the country.

Example of data points included in the SDG Annual Report:

¹⁰⁰ On paper, non government actors are included as "data source" on SDGs Dashboard's <u>website</u>, but they have no official mandates and possess limited resources to do large-scale data collection. SDGs data from

non-state actors, particularly non-profits, are often anecdotal, in a form of stories (tracksdgs.id for example). See "Key data actors in Indonesia" section above.

¹⁰¹ Report on "Pelaksanaan Pencapaian Tujuan Pembangunan Berkelanjutan/Sustainable Development Goals (TPB/SDGs)" by Bappenas, last published in 2020 (for achievements as of 2019).

TUJUAN 11. KOTA DAN PEMUKIMAN YANG BERKELANJUTAN									
Kode Indikator	Nama Indikator	Sumber data	Satuan	Baseline	Target (2019)	Capaian (2019)	Status		
11.1.1.(a).	Persentase rumah tangga yang memi- liki akses terhadap hunian yang layak dan terjangkau.	Kemen- terian Peker- jaan Umum dan Peru- mahan Rakyat	%	47,99 (2015)	56,75 (2019)	56,51 (2019)			

However, this contains heavily processed statistics and is designed to be a summary report instead of detailed data sets. It is, therefore, difficult to track the actual sources of data, as it provides no disaggregated detail nor microdata. Moreover, when looking at the SDGs Dashboard prepared by Bappenas, not all of the 319 indicators are there. Based on the latest mapping exercise, there are only 81 indicators available in the Indonesia SDGs monitoring dashboard. Indicator availability varies between goals. For Goal 5: Gender Equality, most (60%) of the indicators are available on the dashboard. However, for Goal 13: Climate Action, Goal 14: Life Below Water, and Goal 15: Life on Land, all indicators are absent in the dashboard. More details are in Figure 2 below.

Percent availability in SDGs Dashboard per goal



Figure 5. Availability of SDGs data in SDGs Dashboard for each goal¹⁰²

¹⁰² The percentage indicates how many of all indicators in the respective goal are included in the SDGs Dashboard. For example, 60% of all indicators under Goal 8: Decent Work and Economic Growth are identified in the platform.

The discrepancies in SDG indicator data are mainly due to variations of capacities among line ministries and agencies in generating SDGs indicators. For SDGs indicators that are generated by BPS, there are few concerns about data quality and data dissemination. As explained earlier, BPS has established a robust data production, management, and dissemination and this is shown by the relatively high statistical capacities score of Indonesia.

It is important to note that not all SDGs outcome indicators data can be generated by BPS. Some of these indicators come from data sources that are managed by line ministries and agencies. For line ministries and agencies that do not have sufficient statistical capacity, this can be a bottleneck to smoothly produce high-quality SDGs indicators in a systematic manner. Many of the SDGs data at the moment are also produced from programs (administrative data), making some of them not statistically representative to be treated as statistics that represent larger populations. All these quality gaps then lead to the SDGs Secretariat excluding indicators from the dashboard.

Currently, for line ministries and agencies without sufficient statistical capacity, Bappenas plays a role in generating the indicators using the data provided by these line ministries and agencies. While this is a good solution to ensure the production of SDGs indicators, it may not be the optimal one if Indonesia is pursuing more systematic production and disclosure of SDGs indicators.

SDG issues become far more complicated when these involve subnational governments. Since BPS is a vertical organization, the local BPS offices are the main focal points for SDGs indicator production at the subnational level. However, like their national counterparts, local governments and their departments also manage data that can become sources for SDGs indicators. The variation of statistical capacities among subnational governments plays a role in determining the availability and quality of SDGs indicators.

In the future, it is expected that all indicators could be generated automatically by line ministries and agencies and channelled through electronic systems. The SDGs Secretariat is now working toward that direction by conducting a joint pilot with the Satu Data Secretariat on how they can enable integrated and system-to-system quality data sharing. The SDGs Secretariat is also now pursuing a revision of the current SDG Perpres to strengthen this mechanism¹⁰³ and ensure that data collaboration between line ministries and agencies and Bappenas are conducted under the purview of the One Data mechanism.

In terms of data disaggregation, the SDGs Secretariat also wishes to go beyond providing the aggregated data as it is currently available on the platform, to try to be the advocate for data disaggregation minding the Leave No One Behind principles. This means pursuing all indicators to have sufficient and available disaggregation. Making this a reality, of course will require efforts not only from the SDGs Secretariat or Bappenas, but also data producers such as BPS and line ministries, who are essentially responsible to produce disaggregated data. The issues of line ministries' capacity to produce data at a granularity level that is higher than usual will then have to be addressed, along with the issue of raising the importance of issues highlighted in the disaggregation (e.g. gender, migration status, refugee status) as the priorities for different agencies across the GOI.

¹⁰³ Currently there is no legal basis for Bappenas to inquire about mandatory data collection for SDGs. The latest Perpres SDGs regulate relevant activities until 2019.

Furthermore, in order to close the SDGs data gaps as highlighted above, there are a number of options that the GOI can explore, should it be open to going beyond relying on government data to measure SDGs outcome indicators. For example, the GOI could map the currently unavailable/unmeasured data required to calculate the outcome of unadopted indicators, then identify whether there are any existing non-state actors' data initiatives that collect those particular data points and explore potential business-to-government collaboration and data sharing. It is also possible to consider alternative or new data sources to fill in the data gaps in addition to the traditional statistics. These options will require the GOI to go beyond business as usual. Consistent external support and advocacy efforts could be beneficial in supporting the GOI to improve the state of SDGs outcome data in Indonesia.

Utilisation

Most data collected by the GOI does have purposes, such as to monitor the achievements of programs and to administer programs. Government programs rely on their data systems to monitor and decide how many resources are needed to be disbursed. The government also regularly uses statistics to inform development planning and progress monitoring, as clearly seen in official government planning documents such as the RPJMN, RKP, and Renstra. However, throughout this research we identify that some data, mostly statistics used for development planning or outcomes monitoring, tend to be used less strategically than those that are more directly used for program implementation. As an example, it is easier to point out how DTKS data is used (that is, to administer the social assistance programs), than to explain how some statistics used in SDGs monitoring the SDGs. As observed from the conversations with data producers in this research, apart from Bappenas, which evidently implements evidence-based policy making¹⁰⁴, it is unclear how exactly statistics data is utilised by the line ministries in the policy making process.

Building on the argument above, consequently, many non-program statistics data producers have fairly limited plans or knowledge on data utilisation. Data producers (that are not working on programs), such as BPS¹⁰⁵ or line ministries' Pusdatin, do not go above and beyond to find out about how people are using their data. These data teams do not have a clear pathway on how the data that they publish would be possibly used and utilised after it is collected and presented. For example, Pusdatin BNPB explained that their responsibility is to share data they collected to Echelon II officials in each directorate, and leave the data use up to these leadership or program teams.

Based on this evidence, it is difficult to say that the GOI has implemented a clear evidence-based policy making culture. This does not suggest that most government data has unclear data use cases, but, rather, the data use cases in each program should be made clear in order for the Pusdatin or non-program data producers to understand precisely what data is needed from them and what data should be provided in the future.

¹⁰⁴ For example, Bappenas Food and Agriculture technical directorate uses and requires data of plantation productivity and age estimation to plan the rejuvenation policy in specific areas. While this data has been actively utilised for planning purposes (as well as other data), according to the team within this directorate, utilisation of spatial data in the national planning process is still far behind the tabular statistics data. ¹⁰⁵ Although BPS keeps track of some indicators related to use of their data, such as the user profiles, purpose of

use, and most accessed datasets, it does not track the end products of the data. This is a gap that could be addressed in the future. See BPS Analysis of Data Need Survey 2020 (BPS, <u>2020</u>).

For each data that is created or supplied, data producers (e.g., Pusdatin) could also support data users (in the case above, the directorates within BNPB) in creating demand for knowledge by exploring and presenting new ways to utilise those data for program improvements.

Should the data producers or GOI wish to build even stronger cases of data utilisation and create demand for knowledge and analysis, one possible way to better use the data is by continuously and creatively thinking out-of-the-box on how other stakeholders--other than the usual data users--could possibly use the data beyond business as usual. Earth-observation data provides one example. While there are a number of satellite or earth observation data available, what is unclear is the extent to which the geospatial and remote sensing data is accessed, integrated, and utilised by government and non-government stakeholders with the data of their own sector. How can LAPAN and BIG ensure that other government agencies, such as Bappenas, Kementan, Kemenkeu, as well as external users, make use of their data? What kind of data demand from these agencies can be answered by LAPAN or BIG's data supply?

The issue is also relevant in utilising 'non-conventional' or new datasets for SDGs monitoring. UNESCAP and LAPAN, remote sensing data producer for example, have launched a number of partnerships to streamline the utilisation of satellite data for SDGs monitoring, but how to ensure this data is actually 'adopted' or incorporated as one of the data points in SDGs monitoring by the SDGs Secretariat? Can one utilise satellite and earth observation data to answer some of the floating indicators in environment or climate related indicators? Can one go beyond monitoring statistics data and actually combine/divert our attention to a combination of both statistics and satellite data in tracking SDGs?

Of course, developing new data use cases and creating new demand as above requires creativity, knowledge, and sufficient resources and capacity of the data users; or in this case, the other government agencies. Unfortunately this has not always been the case: our discussion with the Food and Agriculture technical directorate at Bappenas for this research revealed that while geospatial data is available from LAPAN, there is fairly limited knowledge within the Bappenas team on how to use and operate the data before even integrating it into their planning activities. Ideally speaking, data producers within the GOI have to be able to work with data users, or knowledge makers, on assisting the technicalities, and afterwards co-creating the demand and mapping potential new data use cases. Not to mention that this collaboration will also have to allow data users to identify what data is available for them to use in the first place. Currently, there is no exhaustive inventory that lists every dataset produced by the GOI: according to the Satu Data Secretariat, the GOI has not yet requested the line ministries to provide a list of datasets that they have, which means that there is no evidence of line ministries knowing all of the data available in their own institutions. This absence of knowledge about what data is available to key stakeholders can inevitably hinder their creativity in producing analysis to address key development problems.

More importantly, data interoperability, which would allow seamless inter-agency data sharing and combination between different ministries and agencies (the data producers and potential data users), has to be put in place as one of the enablers of data utilisation. This interconnectedness could then unlock novel ways to utilise and analyse data. For example, combining geospatial information with social protection and education data could illuminate the spatial distribution of social protection beneficiaries and their access to school; and

could inform more nuanced conditions about social protection and education policy implementation on the ground. Yet, this in itself presents another challenge: currently there is limited evidence of the regular use of combining different data to produce meaningful insights. Interoperability is also currently still a goal that GOI works towards. Moreover, the process of merging data from different agencies, even if they comprise of different data points, could lead to the issues of contradicting datasets which do not correlate, causing each data producer to defend their own dataset against the other agency¹⁰⁶.

In terms of data utilisation by sub-national government agencies: , this research reinforces that it is possible for sub-national governments to use, or at least have the willingness to use the data presented or published by the national government, for example for planning purposes. However, sub-national governments can have challenges in understanding the data, analyzing the microdata, or are not sure on how the data could help their work. Not to mention that in many cases, sub-national governments do not even have access to key datasets in the first place¹⁰⁷. Bappenas has tried to push for better data utilisation by sub-national governments, for example by working with World Bank-KOMPAK to launch SEPAKAT¹⁰⁸, a platform that allows local governments not only to access integrated poverty-related data¹⁰⁹ but also to generate evidence-based insights and action plans to reduce poverty in respective areas. SEPAKAT has identified that sub-national governments require support in integrating data from multiple sources, and more importantly, generating analysis to prioritise the action plans that they should do based on data--instead of simply making the data available to them.

While subnational governments face the challenges of limited capacity to both analyse and access the data before being able to utilise it, data utilisation by external or non-state actors poses different challenges. Knowledge makers, such as NGOs and research institutes that are highly proficient with data, often have a clear idea on how they would build new analysis using GOI data and support evidence based policy by doing so. Research institute SMERU, for example, built on SUSENAS' data to create a poverty map at village level. However, the challenge with this is that this type of data utilisation often requires access to microdata, or in many cases, raw data, but this is often not accessible for external use, or accessible with a cost that not all organizations can afford. In SMERU's case, they had to work closely with BPS, which accommodated many of their additional data requests, but nevertheless required close coordination and intensive partnership building prior. Should these issues of access be addressed, it is possible that think tanks, research institutes, and other non-state development partners could better support the GOI to utilise the data available at the national and sub-national levels.

Lastly, to take the data utilisation issues even deeper, there is also a question of how one should broaden the scope of data for SDGs. Does data have other uses in SDGs, apart from being used for monitoring purposes? As described earlier, data (or in this case statistics) have been used regularly to monitor SDGs outcomes. However, for a country to

¹⁰⁶ Nugroho, 2019.

¹⁰⁷ For example, Bappeda Kebumen identified that in order to get data, they had to rely on Dinas (BAPPENAS, n.d.). There is also a notion of national government limiting access to data for local governments, even mandating them to submit a proposal or establish an MOU to get access to the data, let alone use it, such as with DTKS and Dinas Kesehatan data, as discussed in previous sections.

 ¹⁰⁸ Sistem Perencanaan, Penganggaran, Pemantauan, Analisis dan Evaluasi Kemiskinan Terpadu (BAPPENAS, n.d.)
 ¹⁰⁹ SEPAKAT processes data from SUSENAS, PODES, and SAKERNAS (BAPPENAS, 2020).

be able to reach that outcome, it also requires data and this is the role of most administrative data. They are not designed to monitor SDGs achievement but more to ensure programs that lead to SDGs outcomes can be executed in the most effective and efficient manner. In this context, the utilisation of relevant administrative data should have a clear link with the SDGs. Utilising SDGs indicator data beyond the usual practice to achieve the goals is also considerably important, as delivering SDGs by 2030 is outlined as one of the UN Secretary General's priorities in 2020-2021¹¹⁰.

Quality assurance

Government statistical and survey data are governed by a robust quality assurance mechanism. BPS, as the main agency that defines the statistics policy and basic statistics producer, has invested in a thorough quality assurance mechanism to ensure all statistics that are produced are valid and of good quality. The mechanism involves layers in quality assurance in every stage of statistics production. From design, methodology, enumerator training, data cleansing, and data analysis, BPS scrutinizes every step and involves external stakeholders such as FMS (Forum Masyarakat Statistik) to ensure the quality of statistics. BPS itself has implemented the GSBPM (Generic Statistical Business Process Modelling) to standardize its business process in generating statistics. In addition to implementing internationally recognized standards, BPS statistics are overseen by Forum Masyarakat Statistik, international agencies (especially for key development indicators such as GDP and poverty rate)¹¹¹, and other internal processes that ensure all numbers are reliable and accountable.

Although BPS can impose a strict quality assurance mechanism for its statistics, the sectoral statistics may not have similarly robust quality assurance mechanisms. The reason is most sectoral statistics belong to line ministries and agencies and BPS does not have authority and control over the production of these statistics. Line ministries and agencies often involve BPS in their sectoral statistics production. However, BPS plays only an advisory role and does not get into technical details of statistics production and dissemination. For example, when producing sectoral social statistics with Kemensos, BPS provides training and advice on questionnaire design, enumerator training, and validation rules when quality checking survey results. BPS itself says that there has not been any formal arrangement on how it should play its advisory role. But this arrangement has been around for many years and BPS has closely collaborated with many line ministries and agencies to produce quality statistics. Therefore, it is difficult to observe whether there is a standardized quality assurance mechanism in sectoral statistics. However, since BPS is usually involved in the production of these statistics, some form of quality assurance mechanism is imposed, although it may not be identical to that BPS imposes for its own statistics.

However, for administrative data systems the quality assurance processes are not entirely clear. Although there are efforts that the government has put to ensure that data captured through administrative systems are quality data, consistent application of these has been challenging for several reasons. For example, to significantly improve the quality of school

¹¹⁰ Data Strategy of the Secretary-General for Action by Everyone, Everywhere: 2020-22, internal version (UN, 2020b).

¹¹¹ BPS has refuted that Indonesia's GDP number is manipulated and presented some key processes that scrutinize the number thoroughly (Portal Informasi Indonesia, <u>2019</u>).

information in Dapodik would require changes in the way reporting is made and improving school capacity to report. Most of the reporting is done through self-reporting mechanisms. Hence, there should be an additional mechanism to verify whether the report is true or not. Beyond the self-reporting nature of the system, the time lag is another issue that needs to be addressed. The window for data updating for Dapodik happens when schools need to obtain the disbursement for BOS. For example, in 2020, the cut-off date for data update in Dapodik is August 31st, 2020. It is unknown whether there will be any update for school data after the cut-off date. On the other hand, schools' conditions can change any time. This implies that the data is not up-to-date with the reality on the ground.

Another good example is the DTKS. The ideal state of social protection data is to be updated in real time. However, acquiring this type of information requires significant cost and massive logistics. In addition to the budget constraints for information acquisition, budget constraints also apply to the amount that will be disbursed. For example, if there are 100 million people that can be considered as eligible for social assistance while the budget is only sufficient for 50 million people, it affects the way data is being collected. When discussing quality of social protection data, this inherent non-technical aspect has to be considered and will make the definition of quality become more nuanced. Therefore, the quality assurance mechanism for this type of information will never be a straightforward exercise.

The quality assurance mechanisms usually are delegated to the administrative data systems owners. Based on initial interviews with some system owners, the quality assurance mechanisms that are implemented are minimal and are not nearly as robust as the ones implemented in statistics production. While it is still too early to judge the robustness of quality assurance mechanisms in administrative data systems, some reports and news indicate that there are still many areas for improvements to enhance the quality of data in the administrative data systems.

As described earlier, the COVID-19 situation has illuminated the extent of fragmentation in health data systems¹¹²,civil registry data, and social assistance data¹¹³. The fragmentation of administrative data systems is one of many factors that affect the quality of information in the administrative data systems. Hence, if one would like to improve the quality of data in administrative data systems, the issue of system fragmentation has to be addressed as well. Quality assurance mechanisms are mitigative processes to reduce quality issues across the data management cycle. However, if system fragmentation and system standardization are not addressed, no matter how robust the quality assurance mechanisms for administrative data, it will not be as effective as they are expected to be.

¹¹² Data synchronization between national and subnational governments is one of the biggest issues in COVID-19 data management. This indicates the poor condition of the systems on the ground that are unable to provide automatic exchange of information as in digitally advanced countries (Nurdiana, <u>2021b</u>). The recent IAR that was conducted by GoI and WHO also highlights data issues (WHO, <u>2020</u>).

¹¹³ The sudden surge of new social assistance beneficiaries has tested the robustness of the DTKS and it shows that many improvements are needed. The Corruption Eradication Commission (KPK) in January advised Kemensos to immediately update and integrate the data with Dukcapil to improve the quality of social assistance beneficiaries data (Rozie, <u>2021</u>).

Summary on the state of data

The state of data in Indonesia is rather bipolar: on one hand, statistics and survey data, in particular, are considered to be of relatively high quality. This is due to the capacity of BPS as the national statistics office. On the other hand, data that is managed under administrative systems is not of the same quality as the official statistical data. Unlike its statistical data counterpart, there is no overarching regulation that governs how government data systems should be managed, maintained and developed. If one looks across different sectors, this pattern of data issues persists. The statistics of the sector are in good shape while the data in the administrative systems may require additional scrutiny to ensure these data are reliable and able to generate meaningful insights for policy making. Satu Data policy aims to address this issue. However, based on interviews and our assessment, it will take time until Satu Data policy can take shape and solve this structural issue of data management fragmentation.

There is a high-degree of variation between sectors in Indonesia that makes it difficult to have a complete summary on the state of data in Indonesia. There are some consistent data issues across sectors that usually revolve around administrative data issues. Nevertheless, to comprehend the complete picture of the state of data in Indonesia, one must look at each sector carefully to understand the nuance of data issues. Some issues are not exactly data issues but are tied closely with the program and nature of the sectors as well as other political economy influencers. Understanding the nature of the sector is one way of navigating the complex and fragmented data ecosystem in Indonesia.

Through analyzing interviews and reviewing secondary sources such as reports and regulations, this report has identified several data challenges in Indonesia, especially in relation to the development context.

Availability and accessibility of data to relevant stakeholders

While basic statistics are readily available and accessible for almost everyone, the same level of accessibility and availability does not apply to sectoral statistics and administrative data. For some administrative data, especially those that contain individual level information such as beneficiaries data, tax data, or civil registry data, this is understandable. However, for more aggregated information, this information should be available and accessible for everyone. Based on interviews and reviews on the regulations, many sectoral statistics and data are not easily available for external stakeholders. While there is a mechanism for requesting information and data as per Indonesia's Freedom of Information law, there is no evidence of a standard way for the government in reviewing such requests.

In addition to limited availability and accessibility of information to the public, requesting data is not easy even for the government--be that from units under the same ministry or requests across ministries. Our interviews identified that many datasets are still shared using Memorandum of Understanding (MOU) or request letter mechanisms that actually hinder collaboration and impose unnecessary barriers to the use of data for analysis. While there is no specific regulation mandating this arrangement, the practice has been around for years. The Satu Data Perpres recognizes this practice and has a specific provision in the regulation to address this. The provision outlines that access of data in the Satu Data Portal (data.go.id) does not require a signing of MOU or request letter¹¹⁴. This a significant deviation from the common practice by the government.

¹¹⁴ Article 39, Section 2 of Satu Data Perpres (Sekneg, 2019).

Availability of raw information is also a challenge. Some of the statistics that are published, especially sectoral statistics, do not have the accompanying microdata that allows replication by stakeholders. BPS represents best practice in this area. For basic statistics, BPS allows external stakeholders to access their raw data from BPS' microdata website. However, these raw data are available only at cost. If Indonesia is going to fully embrace open data principles as outlined in the Satu Data policy, this issue has to be addressed to enable more people to access the data.

However, one should be careful when implementing open data principles. While all government data should be considered as public information, there needs to be strong restrictions for access in certain cases, and especially for private information. Better and simplified practice would consist of publishing aggregated information as much as possible and keeping all granular information that contains private information confidential.

Maintaining balance between freedom of information and privacy is the key in this area. While Indonesia already has a Freedom of Information Law (UU Keterbukaan Informasi Publik - 14/2008), the country is still in the process of promulgating the Data Protection and Privacy Law (UU Perlindungan Data Pribadi). The current regulation Indonesia has is still considered weak in protecting privacy and data protection since it only imposes administrative sanctions to those who violate the regulation. A stronger control and supervision on data protection and privacy is expected under the forthcoming UU Perlindungan Data Pribadi. On the other hand, the Freedom of Information Law and its subsidiary regulations should be covering the classification of data, too, that can help government agencies in deciding which data should be publicly available and which data should be held with strict confidentiality. There is no regulation to date that provides a whole-of-government framework on conducting data classification analysis and the institution who is responsible for this exercise. As a result, this classification exercise is done in a fragmented way and largely depends on the initiatives of each state institution, such as the Ministry of Finance¹¹⁵, Ministry of Marine and Fisheries¹¹⁶, and Ministry of Manpower¹¹⁷.

Limited data utilization

The national statistics office BPS has been regularly producing data and many government agencies manage data systems with various maturity levels. Many of these data do not sit idly and go unused. Government programs, especially those that deal with resource allocation such as budgeting, social assistance, and subnational transfers, rely on their data systems to monitor and decide how many resources are needed to be disbursed. The government also regularly uses statistics to inform development planning and progress monitoring, however it is unclear how exactly statistics data is used by the government to develop policies.

Another challenge arises when it comes to combining different datasets from different ministries and agencies, which has been the main goal of the Satu Data initiative. Ideally speaking, interoperable data could lead to data from different sources being used and

¹¹⁵ The classification framework is done through KMK 274/KMK.01/2010 (Kemenkeu, 2010).

¹¹⁶ The importance of data classification as an attribute in metadata is mentioned in the Permen KKP 67/2017 on Satu Data KKP (KKP, 2018).

¹¹⁷ It is mentioned as Aksesibilitas as an attribute in the labor data metadata. The regulation is named Permen 15/2020 on Satu Data Ketenagakerjaan (Kemnaker, 2020).

utilised as it allows data to be operated not only by the data producers. For example, combining geospatial information with social protection and education data could illuminate the spatial distribution of social protection beneficiaries and their access to school. This type of analysis could inform more nuanced conditions about social protection and education policy implementation on the ground. However, based on interviews and reviews of government data, currently there is limited evidence of the regular use of combining different data to produce meaningful insights. The process of merging data, even if these comprise different data points, has also highlighted issues in individual data sets which do not correlate, in which each data producers defend their own datasets against other data¹¹⁸.

This research also identified other factors that further exacerbated suboptimal data utilisation, such as: limited knowledge on how to operate certain types of data in policy making, as mentioned during the interview with Bappenas; the fact that some institutions do not implement clear evidence-based policy making culture as the Pusdatin of the agency has a fairly limited idea on how their programme units utilise data; and that there is little evidence of data producers and data users working together to create knowledge demand and new data use cases.

In addition, not all data is available and it is difficult to know what data exists and does not exist. As of writing this report, there is no government agency in the country that knows all of the data that is produced by the government. This absence of knowledge about what data is available to key stakeholders will inevitably hinder their creativity in producing analysis to address key development problems.

At the subnational level, subnational governments regularly use data to prepare their development planning and budget. For subnational governments that have capacity and resources, they could take data utilization to the next level, as the Jakarta provincial government and West Java provincial government have done. These two provincial governments have digital service units named Jakarta Smart City (JSC) and Jawa Barat Digital Service (JDS) that have the capability to explore various sources of data to produce relevant insights for their governors. These capabilities have been demonstrated by both JSC and JDS during the pandemic. JDS even collaborated with PLJ and UNICEF in exploring the use of administrative data and Facebook Data to identify what areas would be suitable for micro-scale restriction¹¹⁹. JSC, on the other hand, also built an interactive public dashboard to monitor the status of COVID-19 in Jakarta¹²⁰. For now, these are the exceptions. Not all subnational governments have the political interest, resources, and capabilities such as Jakarta and West Java. We would not expect that every region would replicate this model in the near future. However, putting data at the center of every policy decision should, ideally, be the norm.

Absence of standardized strong quality assurance mechanisms across all data

BPS, as the statistical data steward, has set a strong example in ensuring the quality of all data it produces. As will be explained in subsequent sections of this report, all statistics that are produced by BPS are under tight scrutiny, review, and are even internationally monitored. BPS understands clearly the impact of poor data and makes significant efforts to ensure all information that is produced is reliable and relevant. However, BPS cannot expect to impose similar standards to other government agencies who produce sectoral

¹¹⁸ Nugroho, 2017.

¹¹⁹ Pulse Lab Jakarta, 2020.

¹²⁰ Pemda DKI, 2020.

statistics. Interviews with BPS highlight that sectoral statistics belong to the sectoral agencies and ministries and BPS does not have control over the quality assurance of these statistics. At best, BPS can provide training, methodologies, and guidance to ensure the statistics that are produced by agencies are in accordance with good practices in statistics production. The idea of One Data policy is to democratize this process to everyone and BPS has a mechanism to enforce the process. Nevertheless, this is still some way off and the effect One Data can have on quality assurance mechanisms is yet to be determined.

For administrative data, the issue for quality assurance can be more complex. Unlike statistics that have relatively standard processes to ensure quality, administrative data quality assurance depends on the context of the programs that the administrative data systems are part of and the program owners' capacities in data management. While quality issues can be immediately identified in administrative data systems such as missing values, timeliness, or even wrong entries, these issues can be attributed to the way programs are administered. For example, Dapodik is supposed to be the main data about schools and it has to be regularly updated. However, in reality, updates to Dapodik only occur when BOS is about to be disbursed, which provides the incentive for schools to update their information in the system. While Kemendikbud can impose a policy of data updates, without a strong lever or ties to relevant programs, updating might not be effective.

The inseparability between data and the political economy context

It is difficult to separate the issue of data governance from the government programs that the data are related to since programs are driven by political motivations. This does not mean that data governance only serves narrow political interests, but issues of poor data quality and limited access to data can be traced back to how government programs are designed and implemented.

A couple of examples can illustrate this issue. First is how the dynamic between the Puskemas, Dinkes, Kemenkes, and local governments affects the ways that health data is collected. While the central government, represented by Kemenkes, has the greatest interest to collect data from the local level, the Puskesmas, or even Dinkes, are more likely to prioritise instructions and agendas of local governments, such as the Regent or Governor, over those from the Kemenkes. This presents a challenge especially for collection of data that are not tied to national policy levers such as fiscal transfers or performance evaluation. Aligned political will of national and sub-national government becomes key here, as also separately voiced by local government officials in different contexts¹²¹.

Another example is the Human Development Index (HDI) measurement. The introduction of a new methodology to measure the HDI has raised concerns among local governments. The new methodology may affect the HDI calculation and it could increase or decrease the HDI results of some districts. While districts that derive benefit from this change will accept this, districts that experience calculation decreases will certainly oppose it. The reason is that the HDI is one of the districts' performance evaluation metrics and, therefore, can affect overall performance evaluation results.

Beyond the data collection process, political factors can also play a role in how the data is published. The Ministry of Health's PUSDATIN, for example, does not publish all data they collect from the program units within the ministry, unless the program units and minister say

¹²¹ Pulse Lab Jakarta, 2017.

so. This presents gaps between the data collected and data published linked to the state of health data availability. and identifying how this type of structural notion impacts the state of data published is crucial in understanding the state of data in the country.

The nature of development programs, the dynamics between actors in a particular sector, as well as the prevailing regulations that govern the program will eventually determine how comprehensively and how well data is collected, managed, and disseminated in a sector. Addressing data problems in a sector means that one will inevitably address aspects of political economy in that sector. Details about the political economy context that are related to data management of each sector are discussed above in the sectoral analysis section of this report.

Data standardization

There are two layers of data standardization issues: (i) standardization of definition & methodology and (ii) standardization of format. The standardization of definition is related to the substance of data. Those usually involved in this area are statisticians or sectoral experts who can provide strong definitions. UN agencies have played a role in this. Many statistics offices around the world use definitions that are issued by UN agencies and prominent international organizations, such as the human development index.

In some cases, definitions of data elements can lead to contentious debates--such as over the definition of poverty. While poverty is statistically defined by how far someone is from the poverty line, the definition of poverty can be argued, especially if it is related to social assistance programs. Based on interviews with two agencies that actively collect data on this issue, Kemensos and BKKBN, we identified there are some differences on how Kemensos developed its definition of those who are eligible for social assistance (or considered as poor) and on how BKKBN, through its local apparatus, collects information that they consider can better reflect poverty conditions on the ground. The difference stems from the perspective of these two agencies. Kemensos uses statistical modelling and relies on the data collected through a census-like instrument, while BKKBN collects data regularly by mobilizing its apparatus on the ground. While it is too early to judge which one is correct, an issue like this is an example of how data standardization is an essential subject to be addressed. There are many examples on difference in methodology and definition that lead to different results such as: BPS and Kementan in 2018 on rice data¹²², BPS and Kemendagri in 2020 on census data¹²³, and central and subnational governments on COVID-19 data¹²⁴.

The other layer of standardization issues is the standardization of format that enables better integration between data. The standardization of format is more a technical issue on how administrative boundary code should be presented, how the name of districts should be written, and how every object should have an identifier that can be linked with other datasets. The challenges of format standardization can be easily identified when one reviews different datasets from different ministries and agencies, in which the naming convention of districts can be slightly different.

The standardization of both definition and methodology as well as format are part of the standardization agenda in Satu Data. This issue is slowly being addressed but it is hard to

¹²² Pablo, <u>2018</u>; Puspaningtyas, <u>2019</u>.

¹²³ Rusiana, <u>2021</u>.

¹²⁴ Pandamsari, <u>2020</u>.

judge now whether this problem can be solved. While difference in format should be an easier fix, the difference in definition and methodology comes from a more fundamental issue on how an observation could be viewed. The difference in net school enrollment rate is an example. The difference in BPS numbers and Kemendikbud numbers stems from different ways of calculating the number of students. BPS uses students' districts of residence, and Kemendikbud uses students' districts of school. This does not mean one is wrong and one is right. It just presents the information in a different way. Those who use it should know the basis for such calculation.

Limited relevant data disaggregation in some key datasets

The UN has been promoting the concept of LNOB (Leave No One Behind) to ensure that development outcomes should include everyone regardless of their condition. To be able to achieve that, the monitoring of development outcomes should be equipped with data that are disaggregated by sex, age, gender, rural or urban location, disability status, migrant or refugee status, and ethnic or religious minority group.

Basic disaggregation is prevalent in data in Indonesia such as for sex, age, gender, rural and urban location. New information, such as disability status, exists, too, in major surveys such as SUSENAS and significant administrative data such as DTKS. However further disaggregation, such as for migrant, refugee status, or ethnic or religious minority groups apparently are not a government priority for the time being. Regarding ethnicity, to certain extent information is collected through the census¹²⁵. However, further analysis is required to determine whether a certain individual or group can be considered an ethnic minority or not. Information is derived from self-reporting and may overlook those who really belong to ethnic minority groups. Regarding religious minorities, since Indonesia only officially acknowledges six religions, religious minorities can be overlooked and may not be present in the data that is collected by the government.

In addition to disaggregation that is related to the LNOB principles, there are other disaggregation issues such as geographical disaggregation. Major surveys such as SUSENAS and SAKERNAS have limitations of geographical representation. Since these are surveys and bound to the number of samples, the limit of disaggregation on the statistics that are generated from these surveys are down to the district level and cannot go below this. To get information at the Kecamatan level and below, another mechanism would need to be established. Based on our interviews, this relies on the capability and capacity of local governments since they are the closest with the Desa/Kelurahan levels. To further push SUSENAS and SAKERNAS to be representative at the village level would require an additional number of samples that implies an exponential increase of the cost for data collection. The participation of local governments in data collection and enabling them to improve their data quality as well the data sharing capability will be critical to fill in the geographical disaggregation gap that has been identified.

The absence of sufficient data disaggregation could be linked to low prioritisation of specific groups or issues that could be facilitated by disaggregation, or the lack of resources to collect data for small geographical units. However, in some cases, it is possible that the information required for data disaggregation is available ast raw data, but is not being analysed or used as part of the published data, due to the limited internal

¹²⁵ According to the list of questions for the 2020 census (Tamtomo, <u>2020</u>).

capacity to do the disaggregated analysis or the absence of demand for disaggregated data.

The question then, is who should be pushing policies which demand data disaggregation? Data producers, either BPS or sectoral line ministries, should, of course, be responsible in conducting the implementation of data disaggregation. However, minding its strategic position as the GOI's focal point for SDGs and development in Indonesia, BAPPENAS can also play a role of pushing the agenda of having sufficient levels of data disaggregation under the context of a broad development agenda. BAPPENAS will have to work with data producers, users, and, more importantly, policy actors in order to incorporate the disaggregation agenda into the data demand in Indonesia, through influencing, advocacy, advising, and monitoring of implementation.

Ineffective resource allocation for data management

In all sectors there is the prevalence of data duplication--for example, with two directorates or two different government agencies collecting similar information. One such case comes from the Kemenkes in which two directorates, the Directorate Of Nutrition and Directorate of Family Health, collect and calculate the same pregnant mother information. One of the primary reasons why the Satu Data regulation was issued was to reduce unnecessary duplication of information.

Duplication of information can be caused by low trust between actors, limited availability of data, and absence of standards. It can also lead to another problem, namely ineffective resource allocation for data. The duplication of information means more budget is spent by the government to collect the same information without adding value to what the government already has. Another implication of duplication is that resources are spread thinly. Instead of focusing on one data and investing heavily to improve that data, the resources are used to finance collection and management of similar data that may not be priority data or data of the highest quality.

As such, the GOI should look comprehensively on how much it has spent for data and how it should strategically allocate resources for data management. The lesson from the E-Government policy could be taken as a good practice. The formulation team of the E-Government Perpres conducted research to identify the cost of IT duplication and incorporate that fact in the regulation to justify why a more centralized government ICT management is needed¹²⁶. In addition to this Perpres, Kominfo as the technical lead of government ICT management issued a regulation that stipulates all new ICT investment should be scrutinized by Kominfo before Kemenkeu can allocate budget¹²⁷. A similar procedure could entail a central agency, such as Bappenas as the warden of Satu Data, to improve coordination among data producers and identify potential activities that may produce data duplication. By streamlining activities that potentially produce similar data, Indonesia could invest more in key datasets and improve the quality as well as disaggregation significantly. Further study would be required to calculate the potential impact of streamlining data management activities across the government.

¹²⁶ The annex of Perpres 95/2018 on E-Government regulation shows that Indonesia annually spent 4.2 Trillion IDR (299.6 Million USD) for ICT and 65% of software purchase are used for developing similar applications (SETKAB, <u>2018</u>a).

¹²⁷ Surat Edaran Kominfo 5/2020 ("The Implementation of Clearance Request from Government Agencies on the Procurement of ICT for Fiscal Year 2021") is the basis for the mechanism (Kominfo, <u>2020</u>).

Sector - including SDGs indicators data	State and issues
Poverty	 Statistics to measure poverty: Relatively rich data available (SUSENAS) Microdata is not available for free, and special request for fee waiver can take months to approve Data not disaggregated at lower than district level Offer no insights on social mobility from poverty as the sampling involves no panel respondents Data to administer social protection: DTKS data is not available for the public and difficult to be accessed due to sensitivity of the information Tension between local and national government: local government is mandated to update DTKS but has limited access to the database Unclear scheme of data governance and updates of DTKS Lags in updating, potentially decreasing the precision of social protection targeting No evidence of strong quality assurance mechanism
Health & Nutrition	 Most sectoral information is generated by Kemenkes. However, within Kemenkes itself there are two units responsible for data management: Pusdatin and Balitbangkes Most datasets are not available for the public (on the Satu Data Kesehatan platform). Not all data are shared to Kemenkes's Pusdatin by directorate/program teams Riskesdas microdata is not available for the public and there is no standard mechanism to access it Disintegrated data and no standardized methodology between internal systems within the ministry Limited coordination between directorates in Kemenkes, including between Pusdatin and Balitbangkes Duplication of data collection at the local level as different data points are required by Dinas Kesehatan and Satu Data Kesehatan (at national level) Power relations between Puskesmas, Dinas Kesehatan, Kemenkes, and local government affects the prioritisation of data collection and might result in under-reporting
Education	 Dapodik is the major dataset in education sector and has become the basis of many important education policies, such as BOS allocation Relatively high access to primary data (Dapodik) Data is self-reported with minimum quality assurance mechanism Decreased participation in data collection during COVID-19 pandemic

	 Power relations between teachers, schools, sub-national government, and Kemendikbud: the reporting line at the local level does not match with Kemendikbud's chain of command Dapodik is not yet integrated with the Satu Data platform or other data within Kemendikbud 	
Population & Family	 Dukcapil data is a foundational administrative data system and is connected to many major administrative data systems that require personal information, such as taxation and social protection. Further thinking around data security and privacy of Dukcapil is needed, especially since Dukcapil allows third-party entities to access the Dukcapil data through a platform named Platform Bersama Pendataan Keluarga (PK), data at the family unit level, is not yet integrated with Kemensos-managed social assistance programs' administrative data Limited data and coordination on population mobility and migration 	
Gender & Child Protection	 Many data are limited for internal use No clear information on the frequency of data updates Only processed statistics data is available, with limited disaggregation Limited capacity to collect data at the national and sub-national level, particularly in the context of surveys about gender-based violence Gender issues are yet to be the priority for many GOI agencies Complicated issues of database and dashboard integration, as well as standardised definitions across different agencies 	
Food & Agriculture	 Disintegrated approach in collecting similar data points for the same commodities across different agencies Limited to no synergy of data sharing across ministries No standardised format of data Most data available are at provincial level or at the provincial capital city level; there is a limited amount of granular data, especially for district or village level data Time lag in data availability, particularly geospatial data More data on horticulture, farmers, and real-time supply-demand needed 	
Humanitarian & Disaster Management	 Fragmented platforms and data systems within the same agency with overlapping data points In the event of large-scale disasters, there are many data collection processes occurring at once and there are no clear flows on integrating these data Manual data input by the national government based on data collected from sub-national agencies. No standardised format on the data collected Low access and availability of micro or primary data 	

Environment & Earth	 Limited public access to a number of thematic maps, e.g. land use data
Observation	 Both geospatial and remote sensing data are yet to be fully utilised to inform tactical decisions and policies of other ministries Further integration between different platforms to be considered Data should be available at the local level

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Annex 1. Internal Documents

The documents provided may not be for external use. Treat the documents in a confidential manner and any distribution or re-share must be requested to the Author/Owner or between UNCT and Saraswati.

Author/Owner Title		Year Published	Link	Retrieved from
Dikot Pramdoni Harahap/United Nations Indonesia	Data for DGs Working Group (DfSDGs) Minutes and Related Documents	2019	<u>Folder GDrive</u>	UNCT
SDG Academy Indonesia	Policy Making in Post Normal Times (Webinar)	2020	<u>Youtube</u>	UNCT
Taufik Hanafi/Bappenas	One Data Indonesia (Presentation)	2020	<u>GDrive</u>	UNCT
Track SDGs	The Role of Non-State Actors Data: Lessons learned from TRACK SDGs effort and CISDI participation in COVID-19 response coalition	2020	<u>GDrive</u>	UNCT
UNICEF Philippines	Data for Children Landscape Diagnostic	2018	<u>GDrive</u>	UNCT
United Nations	Data Strategy of the Secretary-General for Action by Everyone, Everywhere with Insight, Impact and Integrity		<u>GDrive</u>	UNCT
United Nations	Tier Classification for Global SDG Indicators	2020	<u>GDrive</u>	UNCT
United Nations	SDGs Indicators Mapping and UNSDCF	2020	<u>GDrive</u>	UNCT
United Nations Indonesia	SDGs Indicators Mapping and National Metadata	2020	<u>GDrive</u>	UNCT
United Nations Indonesia/Virna Tobing	UN Collective Support on Data	2020	<u>GDrive</u>	UNCT
Saraswati/ SIAP SIAGA Palladium	Needs Analysis: Harnessing Data to Support Disaster	2020	<u>GDrive</u>	Saraswati

	Management in Indonesia: Focus on COVID-19			
Saraswati/IMFC	Scenario Planning: Impacts of the COVID-19 Pandemic on Indonesia	2020	<u>GDrive</u>	Saraswati
Yanuar Nugroho/KSP	Data dan Perubahan Paradigma Pengambilan Keputusan dalam Kebijakan Pembangunan Manusia Indonesia (Presentation)	2019	<u>GDrive</u>	Saraswati

Annex 2. List of Key Informant Interviews

The list is based on the date of interview (oldest to newest). The complete interview notes are provided in the folder <u>here</u>.

No	Institution	Unit Department	Name	Title	Interview Notes
1	National Disaster Management Agency	Directorate of the Development of Disaster Management Strategy	Dr. Ir. Agus Wibowo, M.Sc	Director of the Development of Disaster Management Strategy	. <u>GDocs</u>
		Data and information Center, and Disaster Communication	Teguh Harjito, S.Si	Head of Data Management and Information Systems	
2	National Development Planning Agency	Coordinator of One Data	Drs. Oktorialdi, MA, Ph.D	Expert Staff of the Minister of National Development Planning for Equity and Territorial Affairs	<u>GDocs</u>
3	Asian Development Bank Institute	N/A	Daniel Suryadarma	Research Economist	<u>GDocs</u>
4	Statistics Indonesia	Directorate of People's Welfare Statistics	Ahmad Avenzora, SE, MSE	Director of People's Welfare Statistics	<u>GDocs</u>
5	Public Health Faculty of University of Indonesia	N/A	Prof. Dr. dr. Sabarinah Prasetyo, M.Sc	Dean of Public Health Faculty	<u>GDocs</u>

6	SMERU Research Institute	N/A	Widjajanti Isdijoso	Director	<u>GDocs</u>
7	Indonesian Midwives Association	N/A	Dr. Emi Nurjasmi, MKes	Head	<u>GDocs</u>
8	World Research Institute	N/A	Dean Affandi	Research Data Innovation (RDI) Manager	<u>GDocs</u>
9	Ministry of Health	Centre for Data and information	Rudy Kurniawan, M.Kes.	Head of Information Systems Development	<u>GDocs</u>
10	National Planning and Family Planning Board	Planning Bureau	Ir. Siti Fathonah, MPH	Head of Planning Bureau	<u>GDocs</u>
11	Ministry of Women Empowerment and Child Protection	Planning Bureau	Dr. Ir. Lies Rosdianty, M.Si and Team	Head of Planning Bureau	<u>GDocs</u>
12	Ministry of Health	Directorate of Disease Control and Prevention	dr. Siti Nadia Tarmizi, M.Epid	Director of Center for Disease Control and Prevention	<u>GDocs</u>
13	Statistics Indonesia	Directorate of Population and Labor Force Statistics	Nurma Midayanti, S.Si, Menv.Sc	Director of Population and Labor Force Statistics	<u>PDF</u>
14	Ministry of Social Affairs	Centre for Data and information	Ujang Taofik Hidayat, S.Sos., M.Si	Head of Data Dissemination	<u>GDocs</u>
15	National Development Planning Agency	Directorate of Population and Social Security	Dr. Muhammad Cholifihani, SE, MA	Director of Population and Social Security	<u>GDocs</u>
16	National Development Planning Agency	National Secretariat of SDGs	Gantjang Amannullah, MA	Manager for Monitoring and Evaluation	<u>GDocs</u>
17	Indonesian National Institute of Aeronautics and Space	Deputy of Remote Sensing	Ir. Dedi Irawadi	Head of the Center for Remote Sensing Technology and Data	<u>GDocs</u>
			Ir. Rubini Jusuf, M.Si	Coordinator of Center for	

				Technology and Data Dissemination	
18	National Geospatial Agency		Drs. Adi Rusmanto, M.T	Deputy for Geospatial Information Infrastructure	<u>GDocs</u>
		Deputy for Geospatial Information Infrastructure	Syamsul Hadi	Head of Geospatial Data and Information Management	
			Rachman Rifai, S.Si.,M.Si	Head of Geospatial Information & Communication Technology	
			Dehny Sampurno	Analyst	
19	Center on Child Protection and Wellbeing at Universitas Indonesia	N/A	Santi Kusumaningrum	Director	<u>GDocs</u>
20	UN Pulse Lab Jakarta	N/A	Petrarca Karetji	Head	<u>GDocs</u>
21	National Development Planning Agency	Direktorat	lfan Martino, S.Si, PGCert, MS	Functional Planner	
		Pangan dan Pertanian	Wulan Metafurry	Functional Planner	<u>GDocs</u>
			Hendi Sumantri, SHut, M.Si	Spatial Data Processing Staff	
22	Indonesia Global Compact Network	N/A	Josephine Satyono	Executive Director	<u>GDocs</u>
23	National Development Planning Agency	Directorate for Family, Women, Child, Youth and Sport	Ir. Yosi Diani Tresna, MPM	Head of the Sub-Directorate for Child Protection	<u>GDocs</u>
24	UNICEF	Child Protection	Ali Aulia Ramly	Child Protection Specialist	<u>GDocs</u>

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