PROPOAL FOR OPEN FORUM
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Adopting Data Governance Framework: From Silos to Ecosystem

EXECUTIVE SUMMARY

Data and related issues and developments in the public sector have become increasingly important in terms of government analysis and operations, academic research, and real-world applicability and acceptance. Data are now integral to every sector and function of government—as essential as physical assets and human resources. Much of the operational activity in government is now data-driven or data-centric, and many Governments would find it difficult, if not impossible, to function effectively without data

This Open Forum seeks to address existing challenges and gaps in digital data governance, data management and cooperation, focusing on enhancing the institutional capacities of countries to utilize, manage and govern data in a comprehensive, objective and evidence-based manner, through regional and global cooperation. The aim is to build the awareness about the institutional capacities of government officials and stakeholders in countries, especially those in Africa and the Asia Pacific region.

1. BACKGROUND

1.1 Context

The increase of computing power means that increasing quantities of data can be analysed in ever shorter time and at lower cost. The growth of the internet, the polarity of social platforms, and the roll-out of the Internet of Things (IoT) results in enormous quantities of data being generated. This data, often combined data from different sources, are analysed using artificial intelligence (AI) technologies to gain insight and take decisions. Furthermore, systems based on AI technology are fed with increasingly large amounts of data to train them in machine learning and automated decision-making. There's a wide range of policy issues and concerns directly linked to the collection, management, and use of data in an IoT, Big Data, AI context, including data quality, impact of legislation on data quality and accuracy, privacy, data ownership, data availability and digital data divides; data sharing and the flow of data.[1]

[1] IGF 2019 Best Practice Forum on Internet of Things, Big Data, Artificial Intelligence

The proliferation of digital technology and data is moving the world in a positive direction, but it also comes with a whole host of risks and challenges. Security, privacy and ethical issues are major concerns, and digital and data literacy and related institutional capacities remain insufficient in many areas, especially in developing countries, transition economies and countries in special situations. With the exponential increase in government data and the growing awareness of its enormous potential and attendant challenges, the need for effective data management and institutions has gained new urgency. Governments are not only among the largest producers and consumers of data in many countries, but they also play a critical role in data regulation. [2] In the context of globalization and new development of international division of labour, maintaining supply chain security of ICT products and services, including data, through regional and global cooperation, has never become more important for boosting users' confidence, ensuring data security and promoting digital government and digital economy.

Table 1 Sources and related terminologies of government data
(Source: 2020 UN E-Government Survey and others**)**

Data type	Description
Public data	Includes all data that are available in the public domain, including those created by governents, academia, civil society and the private sector.
Government data	A subset of public data "recorded and documented in any manner and on any medium and obtained or created upon performance of public duties provided by law or legislation issued on the basis thereof.
Census and survey data	Data collected through observation of a given population or universe, including demographic data and other survey data on items such as housing, land use, agriculture and business.
Administrative data	Data collected by government agencies on their operations such as data on public service transactions in sectors such as health, justice and education; administrative registers of persons and legal entities and the records of ministries, departments and specialized agencies, including tax returns, social services records and customs data.
Open Data	Information that is open in terms of access, redistribution, reuse, absence of technological restriction, attribution, integrity, no discrimination.
Open Government Data	Data open to and available in the public domain in various (including machine-readable) formats and normally licensed for all to access, use, modify and share. Essentially, all Open Government Data (OGD) are government data, but not all government data are OGD, see figure 1.
Big data	Describe the exponential growth and availability of data, both structured and unstructured and is defined by 3 V's: Volume, Velocity and Variety. Big data analytics can be used for deeper and more complex tasks such as social media sentiment analysis. lead

[2] Ibid, page 146.

Data Science	The study of the generalized extraction of knowledge from data by employing machine learning, predictive and prescriptive methodologies, thereby creating direct value on an experimental and ad-hoc basis.
Geospatial data	Data and information that have an implicit or explicit association with a geographical location
Real-time data	Constant streams of live data delivered immediately after collection. Such data show the actions of Governments and/or people almost instantaneously and are usually deployed with the expectation of a rapid response such as the monitoring and analysis of Twitter feeds to understand the movements (or migration) of particular populations within a country in order to anticipate and plan for e-service needs at the subnational level.

This Open Forum seeks to address the existing challenges and gaps, focusing on enhancing the institutional capacities of countries to utilize, manage and govern data in a comprehensive, objective and evidence-based manner, through regional and global cooperation. The dialogue will build on the momentum of recent initiatives related to data governance, including the Initiative on Partnership for Africa's Development, EU's proposed Data Governance Act (November 2020), UN Secretary-General's Data Strategy, as well as other UN's related work on data governance (UN DESA), data economy (UNCTAD), digital dividends (WB), etc.

1.2. Link to the 2030 Agenda for Sustainable Development

According to the United Nations E-Government Survey, the 2030 Agenda for Sustainable Development has made data a focal point, acknowledging that data are key to effective decision-making and that timely, reliable, quality and disaggregated data are needed to facilitate the measurement of progress towards sustainable development and to ensure that no one is left behind. The latter imperative is reflected in multiple global indicators and entails not only reaching the poorest and most vulnerable groups but also combating rising inequalities within and among countries.

In the meantime, data and related issues and developments in the public sector have become increasingly important in terms of government analysis and operations, academic research, and real-world applicability and acceptance. Data are now integral to every sector and function of government—as essential as physical assets and human resources. Much of the operational activity in government is now data-driven, and many Governments would find it difficult, if not impossible, to function effectively without data.[3]

Given the cross-cutting nature of data management and coordination, its development and application would contribute potentially to the attainment of most SDGs and targets. Specifically, the Open Forum relates to the following SDGs and selected Targets, including:

[3] UN E-Government Survey 2020, Chapter 6, page 145.

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Target 8.2. Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors (enabled through data governance) and

target 8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services (enabled through data governance)

Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation):

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all;

9.b (Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities); 9.c (Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020).

Goal 10. Reduce inequality within and among countries

10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (with increased availability of disaggregated data of vulnerable groups; and better data management/governance)

10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard (with increased availability of disaggregated data of vulnerable groups; and better data management/governance)

Goal 11. Make cities and human settlements inclusive, safe, resilient

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums (better data management for enhanced e-service delivery)

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries (with increased availability of disaggregated data and better data management/governance)

Goal 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Target 16.6 Develop effective, accountable and transparent institutions at all levels (e-government)

Target 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels (e-participation)

Target 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements (access to data and information)

Goal 17 Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development – TECHONOLOGY)
Target 17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
Target 17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

1.3 UN DESA's related work in digital government and digital government data

In the Declaration on the commemoration of the seventy-fifth anniversary of the United Nations, the General Assembly stressed that "Digital technologies have profoundly transformed society. They offer unprecedented opportunities and new challenges. When improperly or maliciously used, they can fuel divisions within and between countries, increase insecurity, undermine human rights and exacerbate inequality. Shaping a shared vision on digital cooperation and a digital future that show the full potential for beneficial technology usage, and addressing digital trust and security, must continue to be a priority as our world is now more than ever relying on digital tools for connectivity and socioeconomic prosperity. Digital technologies have a potential to accelerate the realization of the 2030 Agenda. We must ensure safe and affordable digital access for all. The United Nations can provide a platform for all stakeholders to participate in such deliberations."

Additionally, the General Assembly in resolution 74/306 on comprehensive and coordinated response to the coronavirus disease (COVID-19) pandemic, recognizes that "substantial digital divides and data inequalities exist within and among countries and regions, and between developed and all developing countries, and that many developing countries lack affordable access to information and communications technologies, and urges Member States and other relevant stakeholders to accelerate the catalytic role that digital technologies play in reducing the impact of the COVID-19 pandemic on education, health, communication, commerce and business continuity and to take concerted action to further digital governance and economy, scientific research, emerging technologies and new data sources and to build resilient, inclusive and integrated data and statistical systems, under the leadership of national statistical offices, that can respond to the increased and urgent data demands in times of disaster and ensure a path towards the achievement of the Sustainable Development Goals;"

As the UN Secretariat Department, UN DESA is uniquely placed to support capacity building in data management and governance. As well as its role in supporting Member States in monitoring progress towards the SDGs, DESA through its Division for Public Institutions and Digital

Government has developed strong expertise in digital government and in Internet governance, having published over 12 editions of UN E-Government Survey and provided support to sixteen sessions of the Internet Governance Forum, convened annually by the Secretary-General in response to the mandate of the World Summit for the Information Society (WSIS) where issues relating to data, privacy, security and regulatory frameworks for data governance have been annually reviewed through a multi-stakeholder process.

2. BRIEF ANALYSIS OF CURRENT DATA GOVERNANCE LANDSCAPE

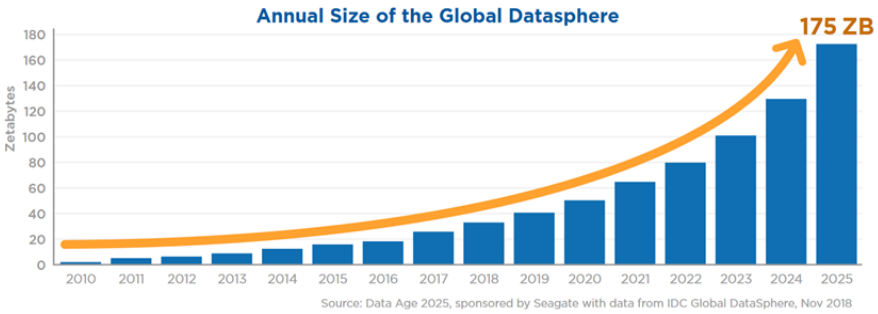
At the global level, the quantity of data is expected to increase more than fivefold from 33 zettabytes in 2018 to 175 zettabytes in 2025, with 49 per cent stored in the public cloud. Researchers have estimated that the number of devices driven by the Internet of Things (IoT) will reach 10 times the world population (about 75 billion) in 2025. These trends, coupled with the propagation of 5th Generation (5G) networks and other next-generation devices, will also equip society with data-centric applications in areas such AI, blockchain, and augmented and virtual reality (AR and VR) and will further boost data supply and demand, moving the world closer to becoming a truly digital society.[4]

At the same, the world continues to witness growing digital divides between and within developed and developing countries in terms of the availability, affordability and use of information and communication technologies (ICTs) and access to broadband. Such divides are preventing and inhibiting developing countries, in particular African countries, least developed countries (LDCs) and small island developing States (SIDS) in their efforts to contribute to and benefit from integration into the global economy.

Special emphasis is given to Asia Pacific countries and African countries. The emerging economies in Asia and the Pacific are faced with increasing data governance challenges, while the African region is always of special interest to UN DESA as development partners, as also demonstrated in GA resolutions and ECOSOC resolutions, such as E/RES/2021/9 “Social dimensions of the New Partnership for Africa’s Development”; and in context of “United Nations-African Union Partnership on Africa’s Integration and Development Agenda 2017–2027”;

[4] Ibid, page 145.

Figure 1 – Annual Size of the Global Datasphere



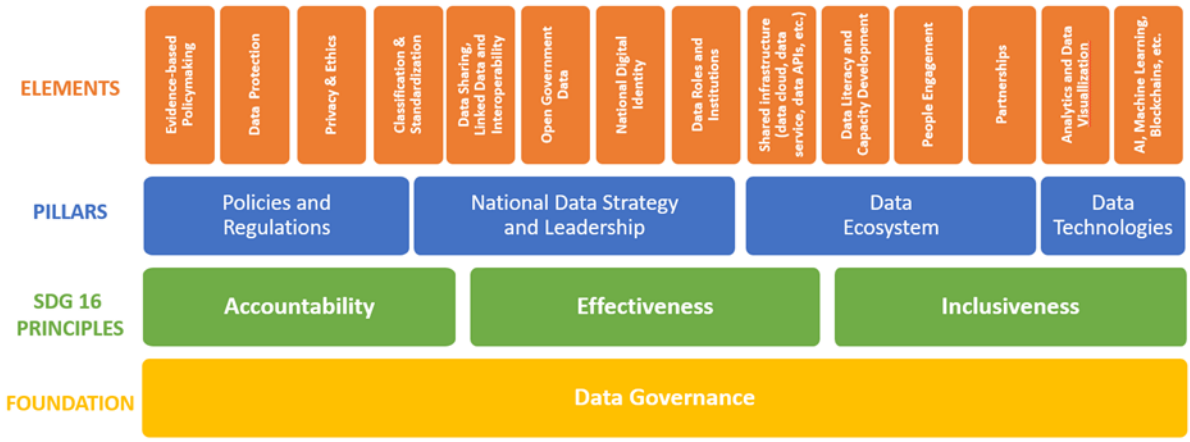
The exponential growth and rapid evolution of new digital and data technologies and related applications will unquestionably affect the public sector. Conventional government data sources include censuses, surveys and administrative data, and while those have served administrators well, the future of data holds virtually unlimited promise. Big data, social media, analytics and a wide range of digital technologies can be leveraged to develop cost-effective, time-saving policy solutions in all development sectors, including health care, employment, production, public transport, water management, corruption prevention, regulatory oversight, public safety and security, climate change adaptation and resource management.[5] The growing dependence on digital technologies during the COVID-19 pandemic provides further evidence of this vital trend.

Likewise, despite its efficiency in managing government information technology resources and potentials for modernization and innovation, the adopting rate of cloud computing, for instance, varies from country to country and public institutions are still sceptical about trusting it wholeheartedly due to its challenges and risks. Consequently, the need for effective data management strategy with maximizing the effectiveness of the shared resources and minimizing the risk of data when data is stored and manipulated in the cloud is highly essential. While the consideration of cloud computing is more technocratic, cloud governance may not be the only critical factor in data governance, given the difference in data maturity and digital maturity among developing countries in the Asia Pacific and the Africa regions.

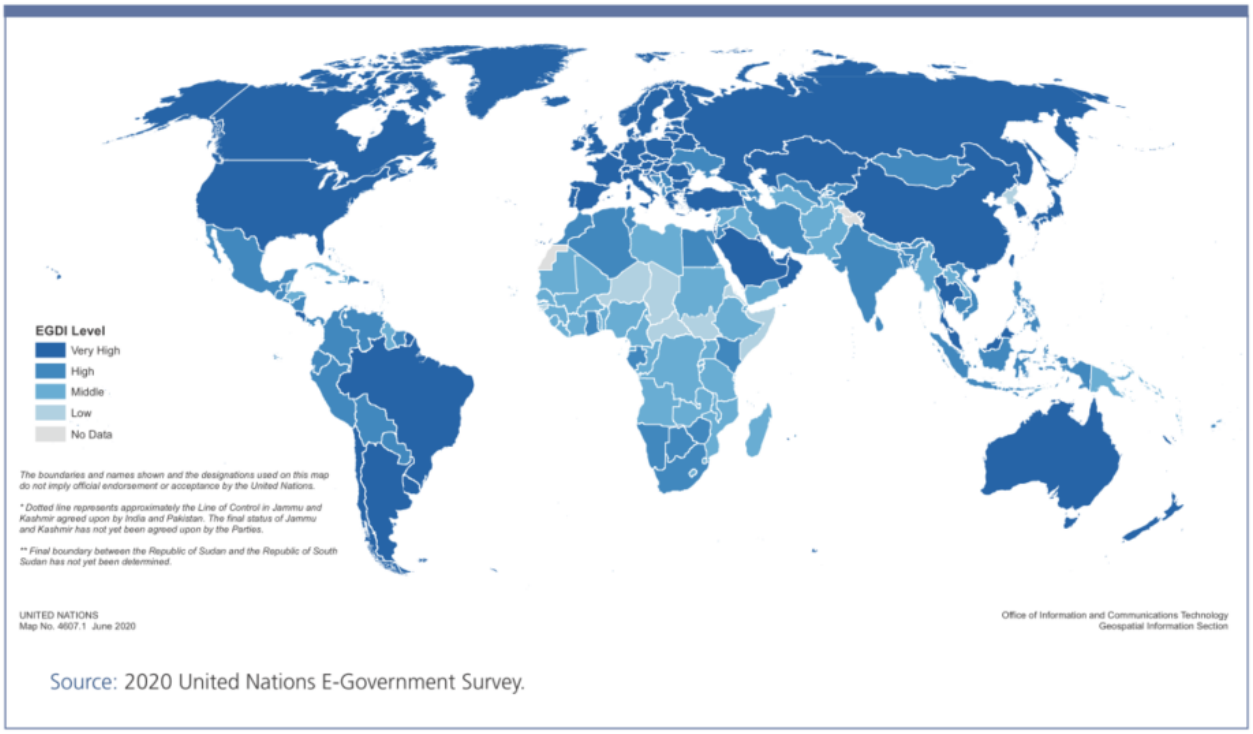
In the UN E-Government Survey 2020, a model is developed to illustrate the data governance framework based on principles of SDG Goal 16, and four pillars of policies, institutions, people, processes, and enabling technologies, and (at least) six supporting elements including:

a) Data standards and classification
b) Data sharing, exchange and interoperability, including open government data
c) Data security (in relation to overall national cybersecurity)
d) Data privacy (and ethics)
e) National data infrastructure (e.g., datacentres, cloud computing, data services, etc.)
f) Linking data governance to digital identity (or a lack thereof)

[5] Ibid, page 146



Under this model, an effective national data governance framework for e-government should be underpinned by four pillars: policies and regulations, a national data strategy and leadership, a data ecosystem, and investment in data technologies. The first and second pillars highlight the importance of legitimizing and institutionalizing policies for effective leadership. The third pillar. the data ecosystem reflects the relationship between data processes and public engagement, and the fourth pillar highlights the adaptive application of technologies in supporting data use and governance. The primary aim of good data management is to ensure that all data and data-related processes are trustworthy and standardized.



This Forum will, therefore, build on DESA's work in data management in the design and implementation of technology policies and strategies for inclusive and sustainable development. The

baselines and current capacities of data management and data governance of countries are very often linked to their current e-government development. The 2020 UN E-Government Survey[6] reflects global trends and e-government development gaps. 57 countries have very high EGDI values ranging from 0.75 to 1.00; while 69 countries have high EGDI values of 0.50 to 0.75, and 59 countries are part of the middle EGDI group with values of between 0.25 and 0.50. Eight countries have low EGDI values (0.00 to 0.25), which represents a 50 per cent reduction in the number of countries in this category in 2018. The following map shows the geographical distribution of the four EGDI groups in 2020.

Asia Pacific (8):

Bangladesh, Bhutan, Cambodia, Fiji, Laos, Samoa, Sri Lanka, Vanuatu;

As seen in the following table, 6 out of the 8 selected countries in Asia Pacific are ranked above 100 (out of 193 UN Member States) in the UN E-Government Development Index (EGDI), according to the 2020 UN E-Government Survey. Bangladesh, Bhutan, Cambodia, Fiji, and Sri Lanka at High EGDI level while the remaining 3 countries (Laos, Samoa and Vanuatu) are at Middle EGDI level.

Country	Region	Sub-region	2020 EGDI Level	2020 Rating Class	2020 EGDI	2020 Rank
Bangladesh	Asia Pacific	Southern Asia	High EGDI	H1	0.5189	119
Bhutan	Asia Pacific	Southern Asia	High EGDI	H2	0.5777	103
Cambodia	Asia Pacific	South-Eastern Asia	High EGDI	H1	0.5113	124
Fiji	Asia Pacific	Melanesia	High EGDI	H3	0.6585	90
Laos	Asia Pacific	South-Eastern Asia	Middle EGDI	M2	0.3288	167
Samoa	Asia Pacific	Polynesia	Middle EGDI	M3	0.4219	149
Sri Lanka	Asia Pacific	Southern Asia	High EGDI	H3	0.6708	85
Vanuatu	Asia Pacific	Melanesia	Middle EGDI	M3	0.4403	142

Africa Countries (9):

Egypt, Ethiopia, Gambia, Ghana, Morocco, Namibia, Rwanda, Sierra Leone, Tanzania

As seen in the following table, all 9 selected countries are ranked above 100 (out of 193 UN Member States) in the UN E-Government Development Index (EGDI), according to the 2020 UN E-Government Survey. Egypt, Ghana, Morocco, and Namibia are at High EGDI level (with EGDI score between 0.50 and 0.75), while the remaining 5 countries (Ethiopia, Gambia, Rwanda, Sierra and Tanzania) are at Middle EGDI level (between 0.25 and 0.50).

Country	Region	Sub-region	2020 EGDI Level	2020 Rating Class	2020 EGDI	2020 Rank
Egypt	Africa	Northern Africa	High EGDI	H1	0.5527	111
Ethiopia	Africa	Eastern Africa	Middle EGDI	M1	0.2740	178

[6] https://publicadministration.un.org/en/Research/UN-e-Government-Surveys

Gambia	Africa	Western Africa	Middle EGDI	M1	0.2630	181
Ghana	Africa	Western Africa	High EGDI	H2	0.5960	101
Morocco	Africa	Northern Africa	High EGDI	H2	0.5729	106
Namibia	Africa	Southern Africa	High EGDI	H2	0.5747	104
Rwanda	Africa	Eastern Africa	Middle EGDI	MH	0.4789	130
Sierra Leone	Africa	Western Africa	Middle EGDI	M1	0.2931	174
Tanzania	Africa	Eastern Africa	Middle EGDI	M3	0.4206	152

Table 1 – Country/Regional/Sectoral analysis

Description of the Issues to be addressed	Status of affairs /Baseline	Realistic Outcomes/Target
Asia Pacific (8): Bangladesh, Bhutan, Cambodia, Fiji, Laos, Samoa, Sri Lanka, Vanuatu	Asia Pacific countries vary widely in e-government development. The individual levels of e-government development are highly diverse and this region has the widest variance in EGDI values. This also demonstrates wide gaps in data capacities among countries in the Asia Pacific region.	- Enhanced individual (government officials) and institutional capacity in data management (please refer to the next Table) - Integrated/linked national data strategy, linked to national digital/e-government strategy and national sustainable development strategy
Africa (9): Egypt, Ethiopia, Gambia, Ghana, Morocco, Namibia, Rwanda, Sierra Leone, Tanzania	Africa region continues to face gaps in infrastructure and human capital development and has experienced a 22 per cent decline in fixed (wired) broadband coverage. Africa is also home to the largest number of countries in special situations; 38 of the region's countries are LDCs, LLDCs and/or SIDS. It is evident that data capacities are lacking in most African countries, but there is a potential of leapfrogging given the political will and high mobile phones penetration (allowing data-driven services)	- Enhanced individual (government officials) and institutional capacity in data management (please refer to the next Table) - Integrated/linked national data strategy, linked to national digital/e-government strategy and national sustainable development strategy

Desired skillsets could be grouped by roles of data users and government officials in the following table. The information provided here is on what capacities to be built on respective roles and responsibilities of officials/institutions. The starting point for most of these countries are mostly at the low to middle-low level, and in some cases, close to base zero.

Roles (non-exclusive)	Description	Required skill sets
Data leadership, data stewards	Various titles and functions: • Chief data officer (national and/or subnational) • Chief digital strategy officer • Chief information officer • Chief government technology officer • Chief evaluation officer • Chief innovation officer • Data ambassador	Leadership skills (in technical and policy areas) to provide data oversight, policy and technical frameworks for data reuse, sharing, scalability (such as master data management), data quality, security and privacy; set cross-government data standards and manage inventory of data assets; manage open government data (OGD) (Examples: The Government of New Zealand gave statisticians the title of chief data officer; in the United States, the first chief data officer was appointed in 2015.)

Policymakers and decision makers	Ministers, secretaries, directors general, or other senior officials with decision-making roles	Understand and interpret reports in data analytics for value-adding insights and decision-making; derive data-driven or data-centric insights to generate desired outcomes and impacts through strategic decision-making. (Senior executives are unlikely to be engaged users of analytics technology but can direct others to conduct analyses for them.)
Policy analysts (sectoral)	Those with analytical skills, especially with domain expertise relating to specific sectors (such as health or education); able to assist in policy analysis in support of public policymaking (from planning to implementation to evaluation)	Skills in using business intelligence tools and self-service analytics and adept at working with data to "discover" answers; provide data-driven insights and foresight for policymakers to understand structured and unstructured data; use algorithms in analytics software programs to make informed decisions in diverse fields (including health care, disaster management, crime and security, and traffic management)
Public officers (administrators)	The majority of public sector employees	Able to benefit from data visualizations; can use data for daily operations or reporting
Data scientists	Technically trained specialists in analytics and data science; "power users" associated with business intelligence	Trained academically or technically; have specific skills (able to deal with Python and other data tools and data services); able to handle data-based infrastructure, data warehousing and statistics; have a contextual understanding of domain subject-matter expertise; may have specialized skills (in areas such as AI)