SMART GOVERNMENT

CABINET OFFICE
GOVERNMENT OF MONGOLIA

OPEN DATA READINESS ASSESSMENT MONGOLIA

Ulaanbaatar,
August 2018

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MONGOLIA

5483-MN SMART GOVERNMENT PROJECT

Ulaanbaatar,

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EXECUTIVE SUMMARY

Mongolia is moving forward in developing the digitization of public services that are designed to be open, transparent, prompt, efficient. It is also creating a legal framework to improve data and information systems and is implementing the Law on Information Transparency and the Right to Information (2011), the Glass Account Law (2014) and Government Resolution 159 of 2017. Steps are being taken to develop an open data policy, and to increase the use of open source based data, as well as to create integrated data and information management systems, These are reflected in the Government's Action Plan 2020 and are creating favorable conditions for the rapid development of opportunities for open data. In addition, efforts to create a unified state information system and improve data management has made it possible for Mongolia to develop an Open Source database.

Government agencies such as the Communication and Information Technology Authority (CITA), the National Data Center (NDC), the National Statistical Office (NSO), the, the Government Agency for Policy Coordination on State Property (PCSP) and the General Authority for State Registration (GSR), have launched the publication of public data, formatted in a machine-readable open data standard, to meet the demand of legal requirements. The following table summarizes key stakeholders in the development of open data, their role, and their impact, implementation and achievements.Key stakeholders

ORGANIZATIONS	IMPACT	ACHIEVEMENTS
CITA	Organizing and monitoring the implementation of the "Guidance on Developing State Open Data Systems, and Use of the System"	• Drafting the Policy on Open Data, Data Protection Law, and National Program on e-Governance.
NDC	Developing the State Data Exchange Infrastructure	• Developing systems such as "Khur", "Speed" and introducing the applications.
NSO	The public open data initiative has been illustrated and leada such initiatives. Representing a good example of the state open data processing and capability.	• The portal 1212.mn provides 700+ statistical data portals with CC-BY license in machine-readable format. Ranked 24th in the world and 2nd in East Asia by the ODIN Report. • Developed API data exchange

		(opendata.1212.mn) between machines.
PCSP	A good example of the coorporation between the Open Government Partnership and the Open Data Initiative. Leading the State Open Data Initiative.	• Publishing tender open data on http://opendata.tender.gov.mn portal in machine-readable format in accordance with the Open Contract Standard
GSR	The "National Registration Package Law" (2018) specified the development of the principal data for the use of various benchmarks for a variety of purposes.	• Public registration information such as legal entities, addresses and property was posted on the portal http://opendata.burtgel.gov.mn.
PIU Smart Government project	Working to develop an open source state portal and improving the legal environment.	• The Smart Government project is financing open data programs at start-up level and providing consultancy, technical assistance and support for open-source data development

This open data readiness assessment (ODRA) was conducted by assessing the general overview of the current conditions in terms of senior leadership, management, data and information policy and their legal framework, institutional and government accountability, capacity and government data management, the public's demand for data, open data program funding, technology, national infrastructure. The aim is to develop a national action plan based on the assessment's results.

This assessment was conducted in consultation with organizations which are responsible for datasets and information at all levels of government and non-government organizations and data users, identified as suitable assessment targets. The objective was to identify the readiness of the datasets and the necessary measures required for further development of the data.

The conclusion of this ODRA Assessment suggests a lack of political leadership in developing open data in Mongolia. There is no law or regulation that will prevent the development of open data, but there are laws and government resolutions supporting open data. There is a growing demand for government data in non-governmental organizations, academic institutions, enterprises and the media, but the government

does not create demand-driven data nor provide support data based on public-private partnerships. While Mongolia has invested relatively well in ICT infrastructure and government information systems, the data administration of public bodies, the capacity of the information and communication technology of public servants is weak, and information technology capabilities are not taken into consideration as part of an employee's performance.

On the basis of the assessment results, the following actions are required as further steps for developing sustainable open data initiatives and creating an open data ecosystem in Mongolia:

1. promoting open data, its creation, and significance at all levels of Government and the public, and developing senior leadership at the highest levels of political leadership;

2. reinvesting, licensing, protecting the privacy of public data, and clarifying its ownership;

3. developing close collaboration between government organizations, the private sector, and as well as with civil society organizations at the data level;

4. establishing an innovation fund to support open data use and organizing creative public-private partnership activities;

5. establishing a working group that has a multi-stakeholder role in administering the Open Data Program;

An integrated data readiness assessment, an overview of key datasets and an open data action plan were developed as a consequence of this assessment.

METHODOLOGY

This "Open data readiness assessment" (ODRA) was performed by a team of qualified experts with the support of the Smart Government Project at the request of the Government Cabinet Secretariat of the Government of Mongolia (CabSec).

The objective of the assessment is to provide support to the Government of Mongolia in defining and planning the activities required to implement the Open Data Initiative. Within the scope of this initiative, the Government is desiring to define the creation and implementation of an Open Data Integration Portal, to define and implement policies for

integrating and reusing data, to fund open data programs and open-source innovations, publish data, and develop skills in the use of Open Data.

The assessment was conducted using the World Bank's "ODRA Methodology". This uses the open data "ecosystem" approach. The ecosystem of policies of open data "suppliers", such as the legal framework and public data availability and standard hard and soft infrastructure (management, etc.) and the "demand" side of public participation mechanisms and data users (developers and the media and other government agencies and organizations) including real demand issues are considered more broadly. The readiness assessment was conducted according to the eight dimensions of the above-mentioned dimensions.

The readiness assessment was conducted to determine the actions needed to implement the Open Data Action Plan in respect of the eight dimensions. Recommendations and proposed activities have been developed taking into consideration international best practices and considering the current situation and needs of Mongolia. Based on the concrete evidence and other supporting evidence obtained, each dimension has been evaluated and assigned a color of GREEN, YELLOW or RED. On the basis of the assessment of each key question, the general assessment of each dimension has colored.

In particular,

- GREEN - means that there is clear evidence of readiness

- YELLOW - means that the evidence of readiness is less clear

- RED - means that the evidence shows a lack of readiness

If the evidence of readiness is found clearly during the answer of a primary question then it is marked with << + >> (plus). If the evidence of readiness is less clear then it is marked with << - >> (minus). If it is assessed as ambiguous, or the evidence is absent or low, then it is marked with << 0 >> sign. For the overall colored assessment, some evidence has not necessarily been weighted equally. With respect to the determination of some of the open data readiness assessment, some evidence may weigh more heavily when assessing the readiness status. For more information, visit http://opendatatoolkit.worldbank.org/en/odra.html.

ACKNOWLEDGMENT

DISCLAIMER

The analysis and recommendations in this Open Data Readiness Assessment report are based on the information and opinions collected from interviews undertaken and materials provided by the Government and other local stakeholders during this study. This Open Data Readiness Assessment is not based on a detailed, legal due diligence and does not constitute legal advice. Accordingly, no inference should be drawn as to the completeness, adequacy, accuracy or suitability of the underlying assessment or of any recommendations or any actions that might be undertaken resulting therefrom, regarding the enabling policy, legal or regulatory framework (including institutional aspects thereof) for Open Data in Mongolia.

LIST OF ABBREVIATIONS

API	Application Programming Interface
CabSec	Cabinet Secretariat of Government
CIO	Chief of Information Officer
CITA	Communications and Information Technology Authority
CRC	Communication Regulatory Commission
CSV	Comma-Separated Values
CTO	Chief of Technology Officer
E-barimt	E-barimt system VAT system
GAA	General Archival Authority
GDP	Gross Domestic Product
GIA	General Intelligence Agency
GSR	General Authority for State Registration
HTML	HyperText Markup Language
IAAC	Independent Authority Against Corruption of Mongolia
ICA	International Communication Association
ICT	Information and Communication Technology
IT Park	Mongolian Information Technology Park
JSON	JavaScript Object Notation
LAGCA	Administration of Land Affairs, Geodesy and Cartography
LLC	Limited Liability Company
MEMA	Meteorology and Environmental Monitoring Authority
MOF	Ministry of Finance
MNB	Mongolian National Broadcasting
MNET	Ministry of Nature, Environment and Tourism
MNT	Mongolian tugrik
MOF	Ministry of Finance
MTA	Mongolian Tax Authority
MUST	Mongolian University of Science and Technology
NDC	National Data Center
NGO	Non-Government Organization
NSO	National Statistical Office

NUM	National University of Mongolia
ODRA	Open Data Readiness Assessment
OGP	Open Government Partnership
ODWG	Open Data Working Group
PCSP	Government Agency for Policy Coordination on State Property
UN	United Nations

1   SENIOR LEADERSHIP

IMPORTANCE: Very High

CONTEXT: Open Data Programs require the implementation of change - often including legal, institutional, technological and cultural changes - and may affect stakeholders both inside and outside of Government. Focused, strong and sustained political/senior leadership is therefore critical in helping a Government overcome resistance and inertia of all kinds, to incentivize actors to make the necessary changes in a timely and effective manner and to achieving the desired objectives and benefits of an Open Data Program.

1.1   To what extent is there visible political leadership of Open Data/Open Government/Access to information? (Importance: Very High)

+ Neither the President nor the Prime Minister is yet to publicly support Open Data. However, article 5.4.8 of Cabinet Resolution #159 of 2017 on "Procedures on Creating and Using the Electronic Database of Government Information"[1] stipulates "to create an opportunity to use open data in the data readable format on the open data information system". This signals that the Prime Minister and Cabinet are willing to support open data.

o Minister of Mongolia, Chairman of CabSec of Mongolia, could provide leadership on open data programs at the national level. The Information Technology Policy Council was established under the Minister's administration in December 2017, and the principles of transparency and openness have been adopted by the Council.

+ The Government Agency for Policy Coordination on State Property, under the Ministry of Finance, has successfully developed an open data portal[2] for public procurement in line with the international standards for open contracts[3].

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[1] Cabinet Resolution #159 of 2017. Regulatory procedures on creating and using state electronic database of government information, http://www.legalinfo.mn/annex/details/7897?lawid=12739, Accessed: 2018-05-24

[2] Open Contracting Mongolia, http://opendata.tender.gov.mn, Accessed: 2018-06-05

[3] Open Contracting Data Standard, https://www.open-contracting.org/data-standard/, Accessed: 2018-04-06

+ Article 3.1 of "The Information Transparency and Right to Information Act"[4] addresses the right of access to information and for Governors and General Managers of public sector bodies to take responsibility for the right to access information. The Law did not specify a Minister responsible for administering open data activities. CabSec and the Independent Authority against Corruption in Mongolia (IAAC) are assessing the transparency of public organizations. The Minister of the Cabinet Secretariat is in charge of open government.

- In 2016, the Minister and the Deputy Minister of the Cabinet Secretariat held independent discussions among state administrative organizations about 'Data to support development' and 'government open data' respectively. No leading, consistent open data champions at the political level have become visible so far.

1.2 To what extent is there an established political leadership and governance model for policy and implementation of programs across multiple institutions or across government as a whole? (Importance: High)

+ According to Government Resolution #89 of 2017 on the "Procedures for monitoring and evaluating the implementation of policy documents and in the activities of administrative organizations", all programs which are implemented at the national level must be reported to the CabSec. There is an established governance model for the implementation of programs.

+ The Mongolian Government, local state administrative organizations and other state agencies are all involved in programs adopted by the Parliament to be implemented at national level.

1.3 What existing political activities or plans are relevant to Open Data? (Importance: Medium)

+ In 2016 a "Data to Support Development"[5] forum was organized, with participants

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[4] Law on Information transperancy and right to information of Mongolia
http://www.legalinfo.mn/law/details/374, Accessed: 2018-06-05
[5] "Data to support development" Conference at State Place, http://zasag.mn/news/view/12264, Accessed: 2018-04-10

from civil society, academic institutions, and government organizations, under the leadership of CabSec. A "Government Open Data"[6] discussion was also held in November 2016 under the initiative of the Deputy Minister of CabSec. There were about 120 representatives from more than 60 organizations, including the President's Office, the Parliament's Office, CabSec, Ministries, Agencies, research institutions, the private sector and civil society.

- No specific open data development plans are in place as yet.

- No specific open data activities have been conducted to date in terms of raising public awareness and encouraging civic engagement.

+ Mongolia joined the Open Government Partnership[7] in 2013. It has developed the 1st National Action Plan (2014-2016), and 2nd National Action Plan (2016-2018). As specified in the 1st National Action plan, commitments on the environmental protection transparency and the budget and crime roadmap have been successfully implemented with the support of decision makers.

- OGP's 1st Action plan committed to 21 goals. 14 of them have not been fully implemented.

+ The "Ulaanbaatar Big and Open Data Project"[8] was implemented by the Municipal Information Technology department of the City of Ulaanbaatar in 2015. As a result of that project, 60+ datasets have been published. A "Regulation on Municipal Big and Open Data"[9] was adopted.

+ The National Statistics Office has successfully developed open data[10] and published 700+ datasets so far.

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[6] "Public open data", https://www.news.mn/?id=251143, Accessed: 2018-04-14

[7] Open government partnership - Mongolia , https://www.opengovpartnership.org/countries/mongolia, Accessed: 2018-06-05

[8] Munipical open data portal, http://data.ulaanbaatar.mn, Accessed: 2018-05-06

[9] "City mayor, "The ordinance No.170, a regulation on municipal big and open data regulation, dated 2016-03-03 / A",

[10] Statistics Open Data http://opendata.1212.mn, Accessed: 2018-04-20

1.4 How does the wider political context of the country help or hinder Open Data? (Importance: High)

+ The Government Action Plan 2016–2020[11] addresses specific activities, including the development of an open data policy and increased applications based on open data. It signifies greater importance on transparency, improving the quality and efficiency of public service by emphasizing these as the main priorities.

+ An E-policy Standing Committee[12] was established in May 2018 by Parliamentary decision. The Minister of the Cabinet Secretariat and Members of Parliament G.Zandanshatar, J.Enkhbayar, and N.Uchral initiated the E-policy Standing Committee. These MPs are willing to provide support to the implementation of an open data program.

+ Political elections are held every four years and two years remain until the next Parliamentary election. It will be feasible to approve a National Open Data Program and to fully stabilize activities related to the publishing of data within this timeframe.

o With regards to open data, there is political interest to launch new products and services as well as to deliver a transparent and efficient e-government service to the public. On the other hand, there is caution in that it may cause complications in regards to data protection and information security by making data open to the public.

+ Open data could make a contribution to development policies, such as supporting economic growth and making government/public service more efficient, timely and transparent. Therefore these commitments are seen as a priority at the political level.

1.5 What is the country's position in relation to the Open Government Partnership?

- Mongolia is a Member Country of the Open Government Partnership. The

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[11] Resolution #121 approved by Government of Mongolia 2016-10-26
http://legalinfo.mn/law/details/12308 Accessed: 2018-03-18
[12] Parliament Resolution #38 dated 2018-05-24, http://www.legalinfo.mn/law/details/13411, Accessed: 2018-06-04

Government has made 13 commitments to uphold the OGP's principles on ensuring transparency, accountability, public participation, technology, and innovation. It is implementing OGP's 2nd Action plan. No commitments in regards to developing open data as a direct or indirect concept have been defined in this action plan.

- With regards to the Open Government Partnership, Mongolia does not take a leading role by acting as a member of any working group nor proposing a prompt solution for urgent matters.

+ NGOs, such as "Globe International", the "Transparency Initiative on Extractive Industries" and the "Open Society Forum" are actively participating in developing the National Open Government Action plan and providing an independent expert evaluation.

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Political leadership	Very High	YELLOW	Although the President and Prime Minister have not expressed their support for open data in public, the intention is applied in the Prime Minister's manifesto
Governance structure	High	GREEN	There is a stable governance model for implementing the national Open Data National Program.
Existing activities	Medium	GREEN	Some public organizations publish open data.
Political wider context	High	YELLOW	The Government's Action Plan 2016–2020 proposes developing an open data policy and increasing open data applications. No political position has been shown supporting open data.
Open government partnership		YELLOW	Mongolia is a member of the Open Government Partnership, However, it does not show active leadership. Commitments in the national action plan have been poorly administered, and there implementation is weak.
OVERALL		YELLOW	The need to create a robust political leadership will be a key factor in developing open data.

2 POLICY/LEGAL FRAMEWORK

IMPORTANCE: High

CONTEXT: The long-term success and sustainability of an Open Data Program depends greatly upon the enabling policy and its legal framework. Open Data requires that a range of policy and legal issues be addressed – for example, with respect to the licensing and reuse of data, ensuring privacy and data protection and anonymizing personal and personally identifiable data. It is important to identify at an early stage the existing policies, laws, and regulations with respect to a core set of issues and to identify actual or perceived obstacles in order that policy or legal change can be initiated early. It is recommended that a qualified local counsel, familiar with these subject matter areas, assisted by a qualified "international" legal counsel with relevant experience, perform the legal assessment.

2.1 What is the legal and policy framework for the protection of personal privacy? (Importance: High)

+ The Law on Personal Secrecy[13] and article 16.17 of the Constitution of Mongolia[14], provide general regulation of the protection of privacy.

- There is no established legislation for the specific use and protection of personal data or information.

+ In any government organization, the person-in-charge of personal privacy takes responsibility for ensuring personal data protection, adhering to the internal procedures and legal framework. There should be only one employee in each organization who has the right to access personal private information.

- CITA is drafting a data protection law. There is no proper mechanism to protect personal data whilst processing, transmitting and disseminating data.

o The enforcement of Personal Privacy Act is weak. There is insufficient information regarding the effectiveness of personal privacy protection and its security

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[13] Personal privacy act, http://www.legalinfo.mn/law/details/537, Accessed: 2018-03-5
[14] Constitution of Mongolia, http://www.legalinfo.mn/law/details/367, Accessed: 2018-03-10

mechanism. Very few court cases related to personal privacy protection have been finalized.

- A consolidated data record for personal confidentiality use is not available at Government level. Government organizations use their own personal privacy data record according to their respective laws.

- There is currently no law regulating anonymous publishing of personal data information.

+ The NSO issues its own internal procedures to anonymize and protect personal data.

2.2   What rights of access to information exist? (Importance: Very High)

+ Article 16.17 of the Constitution of Mongolia and the Law on 'Information Transparency and the Right to Information' stipulate that individuals and legal entities have a right to request any information except for confidentialy held information.

+ Under the "Information Transparency and Right to Information" law citizens have the right to obtain other public information by written request in accordance with the Government's official records procedure. Citizens can request all information from any public sector body, where the information is believed to be held. No request will be accepted for information, which is classified as confidential at the State level.

+ Government data and information provided in electronic formats is free of charge.

o Public sector bodies and individual agencies are responsible for processing information requests themselves.

o Government organizations generally have been fulfilling their legal obligations for processing information requests.

- No official record exists in government organizations concerning the volume and type of information released under information request regulations, although a certain demand has arisen for the data.

2.3 What is the legal and policy framework for data security, data archiving and digital preservation? (Importance: High)

+ CITA is responsible for formulating an information security policy. Implementation rests with the General Intelligence Agency of Mongolia (GIA).

+ The National Program for Information Security[15] was implemented from 2010 to 2015.

+ In terms of data archiving, the General Archiving Authority (GAA) stores official data in a digital format and in a paper format. CITA is responsible for formulating the electronic archiving policy and is actively collaborating with GAA.

+ Government Resolution #159 of 2017 stipulated the general requirements for managing electronic database storage and protecting State administrative organizations. Therefore database resources must be constantly updated and adequately archived in administrative bodies.

o 13 standards are available on information security, including "Rules of Information Security Management" /MNS/ISO 17799:2007/ and "System and Requirements for Information Security Management" /MNS/ISO 27001:2007/. The adopted standards should be adhered to in respect of information security so as to comply with the approved resolutions, decrees, and regulations. However, enforcement is weak.

+ GIA takes responsibility for evaluating Government Organizations' tasks in order to enforce compliance with the information security policy.

+ Relocating the electronic records and databases of government organizations to NDC is being carried out in accordance with Government resolution #146 of 2012. NDC has professional expertise in ensuring unified information security.

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[15] Resolution #141,Government of Mongolia, dated 2010-06-02, http://legalinfo.mn/law/details/4716, Accessed: 2018-06-05

2.4   What is the policy on the ownership and licensing of government data? (Importance: Very High)

- Although no law regulates the ownership of government data, the data holder owns the data. Higher level governing bodies have practical experience in obtaining and owning data of their affiliate organizations.

- There is no decree or resolution adopted by the Government to regulate the ownership and licensing of Government data.

+ Government bodies have experience in transferring their own copyrighted data to other organizations by signing Memorandums and contracts.

- Data ownership - organizations generally set the requirements to use and distribute the data and information themselves. However, those requirements do not adhere to the relevant regulations.

+ The "Procedure to Create and Use an Electronic Database of Government Organizations" was adopted under Government Resolution #159 of 2017. It regulates the use of government data.

- There is currently no law or policy regulating the use of government data for the purpose of making a profit.

- There is no central policy or regulation in terms of addressing data ownership and licensing in Government contracting and procurement activities.

- Government bodies are able to regulate data ownership and licensing under the terms of an agreement signed with a third party. But, the requirements on the use and ownership of data are not specifically addressed in the contract terms and conditions.

- Government organizations have common perceptions that organizations are in charge of handling data ownership and licensing issues.

- No usage of (Creative Commons etc.) licensing for public information has been encountered.

2.5   To what extent is government data sold by agencies? (Importance: Very High)

-   There is no formal policy or regulation on how to set the cost of, or payment for, government data and information.

+   Articles 3.1 and 16.2 of the Law "Oon Information Transparency and Right to Information", and the Government resolution on "Payment for Public Information and Providing Public Information with a Concession, Free of Charge"[16] stipulate the legal requirements pertaining to the payment, concession, and exemption from payment whilst providing public information to individuals and legal entities.

+   Legal actions concerning devising a government data payment ordinance will be regulated in accordance with the respective resolutions of the Mongolian Government or Parliament.

+   Some organizations including the Meteorology and Environmental Monitoring Authority (MEMA) and the Administration of Land Affairs, Geodesy, and Cartography (LAGCA) sell their data products commercially in the market. The revenue from data sales that they generate is not high and goes directly into their budget.

o   The ODRA assessment revealed that there is no clear practice for bodies to sell their own data unofficially to other Government organizations.

+   The National Statistics Office sells anonymized, well-processed data. However, anonymization diminishes the value of the data. Users have shown interest in purchasing data which are not anonymized.

+   There is no organization responsible for selling personal data and information without removing any information of the organization to whom it belongs.

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[16] Resolution #54 of 2013 of Government, on payment of public information, and providing public information with concession, free of charge http://www.legalinfo.mn/annex/details/5805?lawid=9104, Accessed: 2018-03-10

2.6 What other policies/laws exist that may have a significant impact on Open Data? (Importance: High)

+ The State and Official Secrecy Act[17] is likely to have an impact on open data and is responsible for enforcing compliance with the Act. This law specifies that the list of information that belong to the confidential information shall be determined in accordance with other laws and regulations. Therefore the establishment of open data can be resolved at organizational levels.

+ Relevant actions and revisions of laws are being proposed by GIA and being submitted to the CabSec in terms of disclosing confidential information and State secrets the public. Regulations on disclosing secrecy were adopted by the Government. Article 19 of the "State and Official Secrecy Act". It prescribes the grounds for disclosing secret information. Information or data is regulated to be disclosed if it is identified as being secretly held without any justifiable reason.

+ Each organization is responsible for releasing data and information for public use as well as classifying it as confidential if that is necessary. The data holder and/or bodies owning data may publish data and information except data classified as "official secret".

+ The Law on "Statistics"[18] regulates the publishing of national statistical data and information. Statistical data is published according to the internal schedule of the National Statistics Office.

- The law on "Concessions" stipulates that legal regulation by the State can be delegated to the private sector, although there is no specific regulation regarding the use, publishing, and dissemination of the data set.

- No regulation exists to address third party access to public information (registration of companies, business statistics data etc.) or ensuring confidentiality within the legal framework.

+ The Law on "Archiving" and Government resolution #159 of 2017 stipulate the legal

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[17] State and Official Secracy Act, http://www.legalinfo.mn/law/details/12408, Accessed: 2018-04-01
[18] Law on statistics, http://www.legalinfo.mn/law/details/461, Accessed: 2018-04-01

requirements for data archival and digital data storage.

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Privacy protection framework	Very High	RED	Although there is a law on the protection of privacy, there are no mechanisms for its enforcement. In particular, the protection of the secrecy of electronic data has been disregarded.
Access to information framework	Very High	GREEN	A Law on Information Access and the Right to Information exists.
Date security framework	High	YELLOW	There is no regulation on data protection and coordination
Ownership nad licensing framework	Very High	RED	There is no integrated regulation on data ownership policy. Decisions of public organizations vary widely as each organization is responsible for the ownership of its data.
Revenue based on data	High	YELLOW	Public organizations rarely sell government data officially. There is no law, regulation or policy to define the value of the public data.
Other relevant policy frameworks	High	YELLOW	Laws on "State and Official Secrets" and "Statistics" exist. However, state ownership and third party usage of data are not regulated.
OVERALL		YELLOW	There is no legal barrier to generating open data, but the conditions and permissions to use open data are unclear.

3   INSTITUTIONAL STRUCTURES, RESPONSIBILITIES AND CAPABILITIES WITHIN GOVERNMENT

IMPORTANCE: High

CONTEXT: As well as political and senior leadership, middle management level skills and leadership are important for success. Creating an Open Data Program requires agencies to manage their data assets with a transparent, organized process for data gathering, security, quality control, and release. To effectively carry out these responsibilities, agencies need to have (or to develop) clear business processes for data management as well as staff with adequate ICT skills and technical understanding of data (e.g., formats, metadata, APIs, databases). Engagement among agencies and at all levels of Government to set common standards and to remove impediments to data interoperability and exchange is also vital and requires mechanisms for inter-agency collaboration.

3.1   Which agency or agencies have relevant capabilities, mandates, project management experience, and technical skills to be a suitable lead institution in planning and implementing an Open Data Program? (Importance: Very High)

+   CabSec and CITA could jointly constitute the logical bodies to lead an open data program at government level in terms of providing political power and support for its smooth implementation.

+   CabSec is working to ensure unified collaboration, the interaction of all public agencies and Ministries for open data program responsibilities and tasks. CITA is responsible for providing monitoring, professional and methodological guidance throughout the open data program's implementation. CITA is also working to seek and spend sufficient financial resources for the program's implementation. Currently, the public information exchange system "KHUR" is being implemented within this model.

-   National level programs or projects indicate that their management is always lacking willingness, effort, and senior leadership in terms of ensuring sustainable development and continuity. Implementation is weak. Therefore, this may be a potential risk for an open data program.

+ IT Park, CITA and CabSec worked on promoting open data in public agencies from 2014 to 2016. The focus was on introducing open data to officials and specialists of Government bodies. The Government's Action Plan 2020 included 2 goals on open data, indicating support for the open data program.

- The leadership teams of key open data developer-agencies experience constant and rapid change due to a highly politicised situation. Thus, politicization has brought about an adverse impact on the long-term sustainable implementation of some pre-planned ICT projects and programs.

+ NSO, MoF, MNET, and PCSP are currently publishing a certain amount of open data[19,20,21,22]. The General Authority for State Registration, the Mongolian Tax Authority (MTA), and the Administration of Land Affairs, Geodesy, and Cartography are key stakeholders.

3.2 Which any agencies have a CIO, CTO or permanent official positions dedicated to data management? (Importance: Medium High)

o In some public sector bodies, there are permanent positions – a director, who should be in charge of ICT. However, these type of roles is no executed in the same way as CIO/CTO roles in other countries.

- There is no permanent type of role responsible for data management in most public organizations.

+ Some organizations, like NSO, MTA, and GSR have a large information system and produce a significant amount of data. They have adequate experience in managing data issues.

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[19] Open data of the National Statistics Office, http://opendata.1212.mn/mn/doc, Accessed: 2018-04-12
[20] Open data of Government agency for policy coordination on state property, http://opendata.tender.gov.mn/, Accessed: 2018-02-18
[21] Electronic system of transparent account, http://shilendans.gov.mn/, Accessed: 2018-02-18
[22] Ministry of Environment and Tourism, https://www.mne.mn/, Accessed: 2018-02-22

3.3 What inter-agency mechanisms coordinate ICT issues (such as for technical matters)? (Importance: Medium High)

- No organization is fully responsible for coordinating the information systems' policy and management of all Ministries and Public Agencies at Government level. Each organization takes responsibility for developing its own information system.

+ Under the initiative of the Information Technology National Council of CabSec, the introduction of the inter-ministerial/agency integrated information exchange "KHUR" system is being successfully implemented.

+ In compliance with Government Regulation #146 of 2012, all electronic records and databases of or held by government organizations were relocated to NDC. Those electronic records and databases are electronically transmitted through the public integrated network between Government organizations. The State Information and Communications Office under GIA is responsible for administering this public integrated network. But, NDC began the work to coordinate the relevant data standard and address other technical problems.

- No specific regulation or proper practice exists to resolve issues like systems architecture, data integration, quality control, distribution and transmission, and data consistency.

+ CabSec, CITA, NDC, MTA and GSR are playing an active role in the data exchange mechanism of public organizations.

3.4 What process is currently used to measure agency performance or quality of service delivery? (Importance: Medium)

+ Public organizations and agencies all have their own outcome-based contracts regulated and are separate and independent from each other in terms of monitoring general performance measurement in their organizations. CabSec takes responsibility for compiling reports on general performance management, submitted by public organizations.

- No ICT or service performance management exists.

3.5 Which agency or ministry is primarily responsible for data or statistics? (Importance: Medium)

+ NSO hosts the 1212.mn website, which provides downloadable open data in a re-usable format. However, that data does not have an open source license.

+ NSO is responsible for data processing, by implementing established management mechanisms such as systematic data collection and data cleansing.

+ NSO has good practices regarding data management. For instance, it uses specific regulations to prepare its database for the census and surveys.

+ The NSO 1212.mn website has released 736 spreadsheet data in a re-usable, open format.

3.6 Which agencies or ministries appear most concerned about the release of data, and what is the basis of their concern? How can they be handled procedurally, and how can their concerns be addressed? (Importance: High)

o NSO, the PCSP, and the MNET, the LAGCA have their own data published on their own initiative. Their primary interest focuses on meeting legal requirements on the data that must be disclosed to the public. The process of publishing data is automatically published from the information system as far as possible without human interaction.

3.7 How strong is the government's overall ICT skill base among senior government leaders and civil servants? (Importance: High)

- No records exist in the Civil Servant Council (CSC) to determine the digital literacy levels of senior management position holders working on electronic data/documents in public organizations. Most candidates who took the "Public Officials' Recruitment Examination" achieved a low score on the computer skills online test. The computer skills test assesses candidates' basic level of applying computer skills and processing electronic documents.

- It is identified that no ICT related training on data standards or data analysis has been held for public officials.

- No information was gathered concerning the specific performance measurement of ICT skills of government officials.

- ICT skills are exempted from decisions on setting the ranking and incentives of public officials. Traditional practice has shown that years of employment and work experience are key in determining the corresponding ranking and levels of incentive for public officials.

3.8 What is the government's presence on the Web? (Importance: Medium)

o The Mongolian IRIM independent research organization has been conducting research[23] on web monitoring of the transparency of government agencies for the last 4 years. Scores from the latest monitoring in 2017 were:

    a. website transparency of government agencies - 58.4 percent

    b. information reliability - 55.3 percent,

    c. timeliness of information - 38.5 percent,

    d. adequacy of information delivery - 59.6 percent and

    e. ease of using the information - 68.5 percent

These monitoring results show that performance on the transparency of government agencies was average. It indicates that significant work still needs to be done.

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[23] Web monitoring of transparency of government agencies, http://www.irim.mn/web-monitoring, accessed: 2018-04-22

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Suitable lead institution	Very High	YELLOW	Although there are a governance model and experience in implementing a national program, the lead institution(s) to implement open data programs have not been identified.
Data management capabilities	Medium High	YELLOW	With regards to the key dataset owner organizations, data management, authorization, and experience are not proactively managed. There is an official in charge of information technology, but not a CIO/CTO.
Integragency ICT coordination	Medium High	YELLOW	The technological infrastructure is ready. However, each organization has its own policies and operations.
Performance measurement	Medium	YELLOW	There is a general performance evaluation mechanism, but there is no ICT performance management.
Agency responsible for statistics	Medium	YELLOW	There is no centralized data management body responsible for operating other public data management. The Statistical Data Agency performs adequately.
Concerns about data release	High	YELLOW	NSO, MOF, MNET, and the Office of Policy Coordination on State Property are very interested in publishing open data. However, other institutions are reluctant to create open data.
ICT Skillbase	High	RED	There is no regular assessment of the skills of senior and middle-level officials and public servants.
Government web presence	Medium	YELLOW	State of web spatial indicators is average.
OVERALL		YELLOW	**It is necessary to evaluate the performance of data management and ICT skills for improvement.**

4 GOVERNMENT DATA MANAGEMENT POLICIES, PROCEDURES AND DATA AVAILABILITY

IMPORTANCE: High

CONTEXT: Open Data programs can build on established digital data sources and information management procedures within Government where they already exist. Where data is only available in paper form it will be hard to release it as Open Data and in a reusable format quickly and cheaply. Conversely, good existing information management practices within Government can make it much easier to find data and associated metadata and documentation, identify business ownership, assess what needs to be done to release it as Open Data and put processes in place that make the release of data a sustainable, business-as-usual, downstream process as part of day-to-day information management. For key dataset components, the readiness assessment of open data determines whether the data set is available or what they need to be disclosed. Depending on the circumstances which data collection depends, it depends on political support or their use in national priorities.

The Open Data Objectives show the experience of Open Data programs implemented in other countries where the specific data components are particularly effective in increasing the economy, improving public services and enhancing open governance and transparency. These datasets are described in the World Bank's Open Data Readiness Assessment Methodology. The rest of the data may be defined on the previously prepared readiness assessment report, based on the state, sector, or internal affairs of the organization. For example, water resources, agricultural products, natural resource extraction, disaster preparedness, and their management.

4.1 What are the policies and practices on managing government information? (Importance: High)

o   The "State and Official Secrecy Act" stipulates that Government agencies should appoint an Officer in Charge to manage the confidential information within their organizations. GIA is responsible for enforcing Government organizations' compliance with the relevant legal requirements. Government resolution #159 of 2017 requires Government agencies to take responsibility for managing their own information system security, although enforcement is weak.

- In the Antivirus software producer Kaspersky Lab's 2018 report, the vulnerability of the Government electronic system security of Mongolia was described as 'very high'. This shows the issues related to the effectiveness of information and data security management.

+ The legal requirement for making available information and data as open data is regulated by the Laws "On Transparent Accounts" and "Information Transparency and the Right to Information".

- No legal framework governing data protection issues is in place. This is likely to cause uncertainty and hinder a decision on determining which data could be open to the public.

- There is no specific information to establish the existence of government wide standards or policy for data quality, including provenance, accuracy, timeliness, and completeness.

+ The Law on the "State Official Language" stipulates that the Mongolian language is the only official language.

+ Open data is seen to be very efficient and fully compliant with monitoring objectives of the government policy to improve the transparency and the quality of public service. This is referred to within the Government's Action Plan for 2016-2020.

4.2 To what extent does the Government have a coherent view of its data holdings? (Importance: Medium)

- No general data register exists across all government agencies. Government agencies have their own data registry. The data formatting, meta-data and documentation requirements for data are vague and inadequate.

+ NSO has compiled recordings of the statistics data and a census survey catalog.

- In general, there are electronic service /e-service/ procedures to ensure the completeness of the data. However, Government agencies do not pay much attention to ensuring the timeliness and the accuracy of data.

- The governance system or a decent policy concerning the use of data from primary sources has not been properly developed among Government organizations. This may lead to many cases of significant discrepancies being found when storing the same data.

- No overall metadata standards exist across government agencies.

+ NSO stores detailed data register along with the meta-data.

+ Article 2.1.3 of the Government Resolution on State Public Information Database and Application of the Dataset[24] provides a list of the common, primary dataset.

- The primary dataset used at all levels of Government is not available for direct use. No data register, catalogs or detailed information exist. They are only available to use based under a contract or agreement made between organizations.

4.3   How and where is government data held? (Importance: High)

+ NDC stores digital data in various formats of most government agencies as complete and mirror copies.

- To date, there has been no specific study on the type, volume, and technological formats of data located in NDC.

+ GAA has created an archival registry by converting obsolete, paper-formatted data into electronic forms, such as audio recordings and pictures.

- Other Government agencies have done very little about converting obsolete data into digital formats.

- Government official documents are usually in the paid program file format.

+ Primary information systems utilize an Oracle database management system. Simple use, for instance, website data exists in free of charge, open source format.

+ Some government agencies have started using the state integrated information

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[24] "Regulation on state public information database, and application of the dataset", http://www.legalinfo.mn/annex/details/7897?lawid=12739, Accessed: 2018-04-26

exchange system "KHUR" to exchange data between public organizations.

+ Government agencies have no barrier to making their data open data in terms of considering the technological aspects and the technical capacity of their organizations.

+ Most government agencies have stronger technological and technical capabilities for their information system management and providing services. Therefore, they can work towards publishing data automatically. Humans would no longer be involved in this operation.

- The Government's policy on public-private partnership stipulates adopting regulations regarding private sector entities to allow them to provide specific public services and implement projects based on a contract. The draft regulation specifies several tasks and responsibilities including selecting competent private companies and signing contracts, monitoring the quality of the service provided and assessing the outcomes of the contract related to the project's implementation. However, this regulation has never been adopted. Contacts are in place but they are substituting for the regulation.

- Government agencies lack understanding in relation to data licensing and ownership, the right to access data, conditions for using data and data dissemination.

+ According to the MNS:15489 standards, data which is no longer being used at the operational level are to be archived in digital form in accordance with Law on "Archives" and specifications, regulations, and standards of GAA.

+ If not specified in the Law on "Archives" that electronic data is to be stored in the NDC in compliance with the electronic archiving regulation.

4.4 What are the extent of intra- and inter-government actual demand and latent demand for data? (Importance: High)

+ Data is regularly shared between Ministries and same level public agencies through the State integrated network.

+ Organizations exchange/share data based on agreements made between agencies. Making an agreement every time data is to be shared is difficult.

- Across different level of government agencies, organizations don't share all the data available. This only occurs if as the data is categorized 'very important' for their work. Public organizations are restricted in sharing different types of data freely.

- Government agencies face difficulties as they have to wait for written orders for communication in order to take common, primary dataset from other agencies.

- There is no general categorization for data available in government agencies.

+ NSO collects statistics data by e-mail from other organizations.

+ The statistics data of NSO is directly accessible from the data information system (API, web service).

- Government agencies access work-related or statistical data from another agency in different ways, such as from paper reports, websites or by email.

- There were practices whereby public agencies collected research data from NGOs by making a payment to them for the data. On the other hand, public organizations haven't collected or purchased any data from private sector entities.

4.5 What data is already made available outside government - either free or for a fee - and under what conditions? (Importance: High)

+ NSO currently publishes 700+ open dataset components under a CC-BY 4.0 license. Of these, complex data formats are available to re-use in JSON, CSV and Microsoft Excel formats. There are a few HTML datasets.

+ Open datasets of NSO and PCSP are available to be accessed in API and files. Open datasets of other agencies can be accessible in files.

+ There is a practice of earning income by selling data from some government agencies. For instance, weather archives and data of maps are sold by some organizations.

- Some provisions exist to regulate data selling/purchasing. Agencies are not permitted to transmit them further or resell data. However, more specific conditions are not included in those provisions.

o Downloadable data from most websites of government agencies are usually in PDF and DOC(X) type formats. Article 6.1 of the law on "Information Transparency and the Right to Information" stipulates that reports regarding an organization's financing, staffing information and capabilities are placed as downloadable or 'view only' format.

4.6 What practical experience does the Government have in anonymizing personal data? (Importance: High)

+ NSO operates in line with certain guidelines concerning anonymizing personal data to process information for its internal use.

- No practice exists to make personal data anonymous in government organizations other than NSO.

+ No standard is applied for the anonymization of data.

+ Currently no practice has been heard to exist whereby private information of any individual citizen can be secretly obtained by using anonymized data taken from another data source.

4.7 Which agencies with established capabilities in data management (e.g. the NSO) could give leadership to a wider program? Useful existing capabilities would include? (Importance: Medium)

+ NSO is a Government agency which has successfully introduced data management including data collection, storage maintenance, and data publishing.

- Most public agencies have developed their information system, although there still needs more to be done to improve their data management.

+ NSO is working to supply data documentation in its data management and monitoring the "standardized" workflow.

+ NSO is responsible for conducting data analysis and processing statistics data/information.

- Other Government agencies have little experience in achieving results in terms of conducting electronic data analysis successfully.

+ NSO protects personal data and makes data anonymous for its internal use and does not publish anonymized data as open data for the public.

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Information management	High	YELLOW	Most public bodies manage high-value and big size data in a machine-readable format.
Data holdings	Medium	RED	Understanding of meta-data and data logs and documentation is insufficient.
Data form and location	High	GREEN	The NDC and the data of most public bodies are kept in one place. There is a well-structured database. The "KHUR" system is being developed.
Government data demand	High	YELLOW	There is a demand for data, but there is a reluctance to exchange data.
Public data availability	High	YELLOW	There are a few examples that illustrate the downloadability of the data. The terms and conditions of the use of the data are unknown. There is a demand for data, but there is a reluctance to exchange data.
Experience in anonymization of data	High	RED	No existing regulation on the anonymization of the data of public organizations has been found except for the National Statistical Office.
Agencies that can take a leadership role	High	GREEN	NSO has well-managed data management capabilities.
OVERALL		YELLOW	Data management capacity and experience of leading organizations shall have to be introduced into other organizations.

5   DEMAND FOR OPEN DATA

IMPORTANCE: Very High

CONTEXT: The value of data is in its use. A strong demand-side "pull" of data is important not only in creating and maintaining pressure on Government to release data but also in ensuring that the wider Open Data Ecosystem develops and that Open Data is turned into economically or socially valuable services for citizens. The "pull" can come from civil society, the private sector, international organizations, donors and individual citizens.

5.1   What is the level and nature of actual demand and latent demand for data from Civil Society, Development Partners, and the media? (Importance: High)

+   Civil society organizations such as the Transparency Initiative on Extractive Industries[25], the Open Society Forum, and the Transparency Foundation are the leading champions of open data. They distribute open data after collecting some government data and converting them to open data, Some civil organizations process government open data and disseminate them as public information.

+   NGOs, such as the Open Society Forum, the Transparency Initiative on Extractive Industries, the Transparency Foundation, the network of civil societies "Citizen's monitoring on budget"[26] and "Publish the payment receipts and purchase" coalition[27] gather systematic information about the Government budget and the mining industries. They use this as the information of their core business.

o   Development partners use government data within their collaboration although this data does not exist as open data.

+   Within legal frameworks, such as the Laws on "Transparent Accounts", on "Fiscal Transparency" and other laws, information as specified in the law is required to be published in an open and transparent way. Citizens now have the opportunity to monitor State Budget expenditure. This situation led to the establishment of NGOs

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[25] Resource contracts, http://resourcecontracts.org/search?q=mongolia, Accessed: 2018-04-13

[26] Citizin's monitoring on budget , http://www.tusuv.mn, Accessed: 2018-04-13

[27] Publish the payment reciepts and purchasement, https://tanevsel.wordpress.com, Accessed: 2018-04-13

such as "Citizen's Monitoring of the Budget", the "Civil Society Network", the "Publish What You Pay" coalition, the Transparency Foundation, the Budget Specialists/Professionals' Association and the Open society forum.

+ Civil society organizations obtain data and "formal" document information by making a request to State Agencies.

- The legal environment on obtaining data has been created, however, data or information obtained is not available at the appropriate level. Civil society organizations believe that State agencies are conscious of their responsibility in this regard, but Government officials' knowledge and skills in handling data are lacking.

+ The "MIDAS" NGO conducted training on data processing for media organizations. Recently there has been a trend in conducting analyses and informing findings based on open data rather than relying on investigative journalism. Ikon.mn e-newspaper has a practice of releasing interesting videos/contents that process information regarding the income statement of Government officials and other open data.

- Quite a few organizations utilize techniques of data-driven journalism. The journalism industry is limited in its capacity to use information technology and to process data appropriately.

o Civil society organizations such as the Open Society Forum and the Transparency Foundation have good practices in organization management and website development.

- The capability to develop software, manage and design new/innovative websites is weak across civil society organizations. To process data, traditional/outdated software that runs in tabular data is used.

5.2   What is the level and nature of actual demand and latent demand for data from business/the private sector? (Importance: High)

- Few private sector entity exist in terms of efficiently using government data for their business activities.

o   Independent entities/organizations have shown interest in operating efficiently by using Government data. However, Government data which is suitable for use in their core business is not openly available.

o   There are some business organizations/companies that usually purchase maps from government agencies[28]. But most agencies that use maps, prefer accessing OpenStreetMap and Google Maps which contain Spatial Information and other open pools. Private sector entities are still in need of more detailed information on land management and quality data from a reliable source.

+   Private companies/sector entities in the field of farming and agriculture use an array of water and climate-related data which is released by the MEMA[29].

-   No private sector organization uses transportation data. If technical inspection history, passenger routes and real-time data of traffic are made available as open data, there will be business/private sector organizations to use them.

o   Some organizations conduct market and investment research based on business to business principles and they usually use statistical data.

5.3   How do public agencies listen to demands for data and respond? (Importance: Medium)

-   Across all levels of government, there is no study available defining how many requests for data there are, as opposed to information that individual citizens and legal entities sought to obtain or supply. Registries, which can be utilized to determine data demand (all types of formal documentation registries, recordings, and monitoring programs etc.) exist at certain levels, but no work has been done to respond to the demand and supply of data by using those registries.

-   According to the Law on "Information Freedom", NGOs and researchers access data and information but there is no detailed study of the demand to get information from Government agencies.

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[28] Administrative authority on Land Affairs and Geodesy and Cartography, http://www.gazar.gov.mn, Accessed: 2018-4-16

[29] Meteology, and Environmental information service, http://tsag-agaar.gov.mn/, Accessed:2018-05-15

+ Government agencies are working to create conditions for citizens to monitor implementation and to ensure transparency whilst at the same time informing the public in line with the Law on "Transparent Accounts". This is one way of meeting the demand for supplying information regarding the income and expenditure of the State Budget[30].

+ Under the Law on "Information Transparency and the Right to Information" individual citizens can obtain information by making a request to any government body.

- No study has been conducted about government data on the enforcement of the Law on "Information Transparency and the Right to Information".

+ NSO is an affiliate organization of the Parliament. Its priorities are specified in the Law on "Statistics". In addition, the international statistics directive ratified by the UN is also reflected in NSO's activities. Also, NSO defines its responsibilities in compliance with "Government action plan 2020". The national program on "Capacity Building of Statistics in Mongolia 2017-2020[31] is proven evidence of this fact.

+ The Authority for Land Affairs, Geodesy, and Cartography is responsible for spatial data. The sustainable development policy of Mongolia 2030[32] specifies that a national spatial infrastructure would be created. Directives to develop spatial data are included in the national development programs. A new law draft for spatial data infrastructure[33] is under discussion.

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[30] Transparent accounts, https://shilendans.gov.mn, Accessed: 2018-03-13

[31] National program on capacity building of statistics of Mongolia, https://www.nso.mn/page/153, Accessed: 2018-03-25

[32] Sustainable development policy of Mongolia 2030 http://www.mfa.gov.mn/wp-content/uploads/2015/06/монгол-улсын-тогтвортой-хөгжлийн-үзэл-баримтлал-2030.pdf, Accessed: 2018-04-24

[33] The Preliminary Surveys on the prerequisite requirement on developing a new law draft for spatial data infrastructure http://www.gazar.gov.mn/upload/news_files/5-201711161641719.pdf, Accessed: 2018-07-10

5.4   How do external stakeholders view the public agencies' willingness to listen to demands for data and respond? (Importance: Medium)

- In regards to domestic and external stakeholders, no concrete positions have been determined in relation to defining the demand for non-public data or activities aimed at supplying non-public data.

+ External stakeholders and NGOs financed from abroad believe that the Government's responsiveness is relatively good following a data request, although the data disseminated is still of low quality.

- No action has been taken by the Government to resolve high-demand data issues by making available that data as open data and publishing them for public use.

+ The UN (as an external stakeholder) and other organizations are actively collaborating to define the priorities of key database infrastructure, such as statistics and spatial reference information.

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Demand in civil society and media	High	YELLOW	Parties seeking data, such as citizens, NGOs, and journalists are less active.
Demand in business sociaty	High	RED	There is low data demand by business organizations.
Willingness to respond to demand	Medium	RED	Willingness to respond to demand
Perceived responsiveness	Medium	RED	Despite the response to the data request, there is no plan to publish high-demand data. Also, the quality of the data is not well regarded.
OVERALL		RED	Government agencies should collaborate closely with other data stakeholders. It is essential to clearly identify the demand for data and meet the demand effectively.

6 CIVIC ENGAGEMENT AND CAPABILITIES FOR OPEN DATA

IMPORTANCE: High

CONTEXT: Experience among leading governments has demonstrated that Open Data initiatives are more sustainable and of higher-impact when Open Data efforts use an "ecosystem" approach – meaning Governments invest not only in supplying data but also in addressing the policy/legal framework, institutional readiness, capacity building (for government and infomediaries), citizen engagement, innovation financing, and technology infrastructure. Governments need to play a multi-dimensional role in an Open Data ecosystem and create new types of partnerships with a wide range of stakeholders.

6.1 Which potential infomediaries (such as data journalists) are able to help translate Open Data into meaningful information for the public? What actions are needed to develop or enhance these parts of the Open Data Ecosystem? (Importance: High)

+ Some NGOs and media outlets have a practice of making various data contents available to the public, in a tabulated, simple and interactive form by processing government open data. For instance, Mongol TV, ikon.mn, gogo.mn, Bloomberg TV, Open society Forum and Transparency Foundation etc. use this approach

- Mongolian journalism is often organized to be aligned with a major media outlet. Few independent/freelance journalists exist, but they make good use of the advantage of Social Networking and information technology development.

+ 72% of Mongolian media outlets are private entities. The state owns 10% of TV stations, 8% of Mongolian newspapers, 13% of magazines published, and 12% of radio stations[34], although as regulated by the Law on "Public Service Radio and Television"[35], the only national level public service entity is the Mongolian National Public Broadcaster (MNB).

+ There is an independent journalism association called the Mongolian Media

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[34] Mongolian media market, Media ownership monitoring of Mongolia, http://mongolia.mom-rsf.org/mn/translation-context/translation-media-market/, Accessed: 2018-04-20

[35] Law on public radio and television, http://www.legalinfo.mn/law/details/424, Accessed: 2018-07-24

Council.

6.2 What activities has the government engaged in to promote reuse of Government-held data (e.g., in developing apps or organizing co-creation events)? How could such promotion be developed or enhanced? (Importance: High)

- The participation of Government and its agencies in the development of software products (web, mobile phone apps) is increasing noticeably. This phenomenon shows that the State competes with the private sector and it would have a negative impact on the participation/engagement and cooperation with the private sector.

+ CITA organizes a Mongolian Software Industry Forum annually in collaboration with the Mongolian Software Industry Association.

o Several hackathons have been organized by organizations such as IT Park, Startup Mongolia, and NUM. There has been no participation by Government agencies in those hackathons.

+ Some NGOs, such as "Open Society Forum", "Transparency Initiative on Extractive Industries" and "Transparency Foundation" frequently use Government data.

6.3 What is the extent of engagement with Government through social media and other digital channels? (Importance: Medium)

+ The number of total social media users is very high in Mongolia. The Inclusive Internet Index: Measuring Success 2018 which was released by the Facebook company, indicated that Affordability[36] is the nation's strongest area: 1st in Asia, and 10th in the world. The most popular social media platforms with the highest users are Facebook, Twitter, and Instagram.

- Government agencies often advertise their activities through social media and other digital channels. No general policy is in place on using social media platforms

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[36] The Inclusive Internet Index 2018,
https://theinclusiveinternet.eiu.com/explore/countries/performance?category=affordability, Accessed: 2018-03-21

and making online contact with citizens.

+ The Government's 11-11 center[37], an Open Legal Forum[38] of Governor's office by the Parliament and ub1200.mn website of Ulaanbaatar city are in operation to receive feedback, complaints, and petitions. Citizens can provide feedback or complaints via the websites of Government agencies, although the operation of the websites is fairly weak and their scope limited.

- A complaint or grievance redress mechanisms are poorly developed to provide remedies or provide a range of measures aimed at handling citizens' recommendations and complaints. They could strengthen citizens' digital participation.

o The Government aims to improve policies on public participation in order to promote digital participation and communicate with citizens online. Government policies are widely advertised through public broadcasting as well as on Radio and TV.

+ Citizens are connected on social media platforms and are voicing concerns about mass political and social issues.

- Public discussions are not held in the form of data-driven discussions.

- Most Government data is not accessible by the public and difficult to obtain. Therefore, citizens have less of an opportunity to discuss key political and social issues based on the data-driven information.

6.4   To what extent is there an existing Apps Economy[39]? (Importance: Medium High)

+ There have been fixed cultural norms. For instance, the most commonly used banking applications and some public services have become available for mobile applications.

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[37] Citizens and conmunnication center for Government of Mongolia, https://11-11.mn, Accessed: 2018-03-09

[38] Open legal forum /www.forum.parliament.mn/, Accessed: 2018-02-23

[39] Apps economy activities

- No Government open data based apps are in place yet.

- No practice exists whereby private entities are providing service by utilizing Government data.

6.5 To what extent is there an academic or research community which trains people with technical skills or has capabilities in data analysis? (Importance: Medium)

+ The School of Applied Science and Engineering of National University of Mongolia (NUM) and the School of Information, Communication, and Technology of the Mongolian University of Science and Technology (MUST) are the oldest pioneers preparing software, computer science specialists. NUM and MUST run bachelor's, master's and doctoral programs in the field of IT and software development. Private universities and colleges also offer degree programs in this field.

+ In the 2017-2018 academic year, the number of bachelor's degree graduates who earned an undergraduate degree in computing was 711[40].

+ NUM runs the undergraduate and postgraduate program in statistics and prepares specialists in the field.

+ NUM and MUST are closely collaborating with ICT organizations, such as CITA, CRC, the Municipal Information Technology Office in the field of web and computer science.

+ Since 2013 the Mongolian Information Technology Consortium has been working to connect research institutions in this field.

+ NUM and MUST specialists conduct research on data analysis, big and open data.

+ The secondary school curricula contains subjects about ICT.

+ Textbooks were published by CITA in 2015 with the purpose of improving the universal use of computers and enhancing independent learning. Those textbooks

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[40] Statistics Higher Education Sector 2017-2018 statistics, https://mecss.gov.mn/news/728/, Accessed: 2018-06-05

were utilized to provide training for secondary school teachers[41].

+ In software engineering and information technology the programs of NUM and MUST contain courses on web engineering, semantic web, big data technology. Database management and technology compatibility with data are also covered.

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[41] Applications of computer, http://www.ict.edu.mn/uploaded/book/TextBook1.pdf, Accessed: 2018-06-13

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Potential infomediaries	High	YELLOW	Mongolian media is highly dominated by the private sector and still is controlled by the number of large companies. The space for freelance journalism is low.
Re-use promotion	High	RED	State involvement in the reuse of State data is low and not promoted
Government engagement	Medium	YELLOW	Although citizens and Government digital communication channels have been established, implementation is inadequate.
Apps economy	Medium High	YELLOW	A culture of app users has developed but no app has yet been developed on the basis of open data
Academic framework	Medium	YELLOW	Work experience and the number of graduates are limited.
OVERALL		YELLOW	It is essential to improve citizens' participation by improving the cooperation between public data user stakeholders at the online platform level

7 FUNDING AN OPEN DATA FOR PROGRAM

IMPORTANCE: Medium High

CONTEXT: Funding with respect to both the "supply side" and "demand side" of Open Data is important to ensure that the objectives of an Open Data Program are met.

7.1 How could resources be identified to fund an initial phase of an Open Data Program? Who would need to take what action to do so? (Importance: Very High)

+ The implementation period of the Smart Government Project up until 2020 can possibly be the most suitable funding vehicle for the 1st phase of the open data program.

o The Government has indicated interest in financing an open data program from the State Budget in the future.

- The Government is not willing to receive funding from external organizations to implement a project or program at the national level.

+ The World Bank specifically expressed further interest and included components of open data development in the Smart Government project with a loan provided for financing the open data program.

o Since open data is quite a new concept for stakeholders including the Government of Mongolia, whether discussions have been held or not on expanding the use of open data into the private sector/business entities is not clear.

+ In terms of financing, an open data program needs to be supported by the Prime Minister, and the Minister of the CabSec and the Minister of Finance. Open data actions could also be supported by the E-Policy Standing Committee of Parliament.

+ An open data program can possibly be financed from the Common Service Obligation Fund.

7.2 **What resources exist or have any been identified to fund the development of initial apps and e-Services that will use Open Data? (Importance: High)**

+ There has been a practice whereby mobile apps to deliver public services have developed and financed by the budget of the Government agency. The first app based on open data could possibly be financed in that way.

7.3 **What funding is available to support the necessary ICT infrastructure and ensure enough staff have the skills needed to manage an Open Data Program? (Importance: Medium High)**

+ It is possible to establish and introduce a common data integration platform for the compilation and dissemination of public data by using the public information exchange platform "KHUR", based on its openness availability. This is being financed by the state fund.

- There is no specialist or officer specifically responsible for data management in most government agencies.

+ NSO has an officer in charge of data management.

+ The key agencies are responsible for supplying data to the open data portal. Those agencies have departments, units with different directorates and their specialists widely utilizing an information system and responsible for the information system's operation and maintenance as well as working in some ways to develop data. Therefore, those key agencies have the technical skills to process data and publish them.

+ The key data publishing agencies are able to manage the utilization of their budget for supplying data to the open data portal.

7.4 **What funding mechanisms does the Government have for innovation? (Importance: Medium High)**

- No state fund exists to develop software or e-services.

- There is a Small and Medium Enterprises Development Fund[42] in Mongolia. The Government implemented Small and Medium Enterprises development programs in 1999, 2005 and 2014. Currently, the Small and Medium Enterprises development program 2018-2020 is being developed. However, no policy is in place to promote development and issue a concessional loan to software companies and e-service development companies.

+ The Government is working towards facilitating and developing products and services of the IT Park entrepreneur, start-up companies and incubator companies, to make them internationally competitive companies, as well as managing their human resource development.

+ #Hub innovation center was established by the Metropolitan Enterprises and Innovation Department in 2018 and is now operational. Several private sector centers exist in Ulaanbaatar city for promoting innovation and start-up companies.

+ There have been some instances whereby NGOs and private sector entities cooperate with the Government as well as work independently to advertise and promote entrepreneurship, start-up businesses, and SMEs.

- The Innovation Support program was implemented from 2007 to 2015, but its implementation was inadequate.

- No funding exists to build the capacity of civil society organizations aimed at improving the Government accountability and transparency except foreign donor countries and NGOs.

- The State Policy on Public-Private Partnerships was adopted in 2009. There is no value determination system that appreciates technology, thus the public-private partnership in regards technology remains problematic.

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[42] Small and medium enterprises development fund, http://www.smefund.gov.mn/, Accessed: 2018-07-21

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
Initial phase recources	Very High	YELLOW	Political leadership is essential to fund open source programming from the budget. The smart Government project is supporting a certain amount of open data. However, long-term financing for the program is not determined.
Initial app funding	High	YELLOW	It is possible for Government organizations to finance their apps and e-services from their budgets however this is not so clear.
ICT Infrastructure and skill funding	Medium High	YELLOW	The budget for preparing infrastructure and technical staff required to develop the Open Data portal financed through the State Budget is insufficient.
Innovation funding	Medium High	RED	The Innovation Fund has closed. There is a slim chance of reliable state budget financing. Can only be funded through Start-up support Center and other private entities.
OVERALL		YELLOW	Political support is essential for establishing a solid financing system. Innovation funds need to be built.

8 NATIONAL TECHNOLOGY AND SKILL INFRASTRUCTURE

IMPORTANCE: High

CONTEXT: In very practical ways, Open Data Programs normally rely for their success at least in part on the national technology infrastructure, in terms of technology and communications services and the ICT skills among officials, infomediaries and the general public.

8.1 What is the local ICT "ecosystem"? Which technologies reach what proportion citizens? (Importance: High)

+ 122.3%[43] of the total population access mobile cell phone services and, 62.7% use smartphones.

o The number of active users of landline communications was 144,768[44] in 2017.

o The number of stable internet users was 267,451[44] in 2017.

o All public organizations have websites that provide information about the activities of stakeholders. Citizens often use Internet browsers for information access and for entertainment purposes.

+ Public services have delivered on the basis of ordinary internet browsers. For example, the VAT system has 1.3 million citizen and business users.217,000 are using internet browsers. In addition, many people use a simple web browser for accessing public procurement operations; and social insurance, financial and tax reports; check vehicle information, pay taxes, pay fines and sell bus tickets. Many make internet banking transactions; as well as paying for household expenses.

+ The smartphone technology based Android system VAT application was downloaded 1 million times)[44], and 5% (40 000 car) of the total vehicle tax was paid through the SmartCar app, downloaded 10 000 times and launched in December 2017.

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[43] Sectoral 2017 end year indicators, http://www.crc.gov.mn/k/35/23, Accessed: 2018-04-13
[44] VAT mobile app, https://play.google.com/store/apps/details?id=mn.mta.vatps, Accessed: 2018-07-26

- The total number of mobile bank users was 1,219,959[45] in the first quarter of 2018 or 38.4% of the total population.

+ SMS text messaging is actively being used for some of the services provided by e-banking and reference correspondents. It is also possible to activate and retrieve the services of cellular operators using SMS.

- The digital divide is high. Due to the expensive internet access in the rural areas, the localized access is poor and around 90% of Internet traffic is being overloaded by the city Ulaanbaatar.

8.2 What is the level and cost of internet access, both by broadband and mobile technologies? (Importance: High)

+ In all 330 soums in Mongolia, there is 3G, 4G/LTE mobile internet access and in 298 soums (90.3%) fiber optic cables are installed. 91.6% of the total population can access the Internet.

+ 42.6%[46] of all households have a computer.

+ 3G mobile internet is accessible to 95% of the population, and 25% have 4G/LTE accessibility.

+ The cost of 3Mbps high-speed internet is 15,000 MNT in Ulaanbaatar, which is lower than the international average price. The cost is a relatively high 21,500 MNT in the rural areas. These prices are 0.015% in Ulaanbaatar and 0.022% in rural areas of the average monthly income of a household.

+ Average mobile phone subscription fee is 18,000 MNT.

+ All soums in Mongolia are covered with GSM900/1900/2100, CDMA450MHz and WCDMA networks.

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[45] Mobile Banking Report July, 2018
https://www.mongolbank.mn/documents/paymentsystems/2018Q1HB.pdf, Accessed: 2018-04-20
[46] Information technology and telecommunications in 2017, http://cita.gov.mn/wp-content/uploads/2017/01/white_paper_2017_mn.pdf, Accessed: 2018-04-13

+ Mongolia ranked 87th in 2016 and 91th in 2017 under the ICT development index[47] released by the International Telecommunication Union (ITU) and ranked 11th among Asian countries.

8.3 How readily available is compute and store infrastructure? (Importance: Medium High)

+ There are 20+ companies providing web hosting services, of which the biggest three; Datacom LLC, ITools LLC, and NDC provide the cheapest package services priced on average at 9,130 MNT,[48] These services have high inclusivity.

+ All web hosting service provider companies in Mongolia provide a virtual server service. Itools LLC is the leader among private sector companies.

+ According to Government Resolution #159 of 2017 public agencies are prohibited from using foreign clouds. Government agencies, receive cloud services only from NDC.

8.4 How strong are the IT industry, developer community, and overall digital literacy? (Importance: High)

+ The total number of employees in Mongolian telecommunications and information technology sectors was 18,100[49] in 2016 accounting for 1.6% of the total economically active labor force.

+ Total revenue of the telecommunications sector was 1,074.4 billion MNT in 2017.

+ The information and communication sector accounted for 1.95%[50] of Mongolia's GDP in 2017.

+ Systems developed for organizational activities, the integrated performance monitoring system, and its maintenance services at the level of all ministries and

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[47] Global ICT Development Index, http://www.itu.int/net4/ITU-D/idi/2017/index.html, Accessed: 2018-04-14

[48] Datacom, Itools, National Data Center cheapest web hosting service average portfolio value

[49] Information technology and telecommunications in 2017, http://cita.gov.mn/wp-content/uploads/2017/01/white_paper_2017_mn.pdf, Accessed: 2018-04-13

[50] GPD Stattistics http://www.1212.mn/stat.aspx?LIST_ID=976_L05&type=tables, Accessed: 2018-04-14

government agencies are provided and outsourced by the local company "Able" LLC.

+ The development potential of domestic web development/web design is excellent. There are a few companies and developers who sell web design products in foreign markets. Most of the software manufacturers do web development and web design businesses.

+ Non-governmental organizations such as the Mongolian Software Industry Association[51], and the Young Programmers Association are actively operating.

+ The IT Park is focused on developing and directing products and services for entrepreneurs, start-up companies, and incubator companies, and internationally competitive companies and human resources.

o Activities of incubators/accelerators such as #hub innovation center, Startup Mongolia and Startup Terminal Mongolia are in the early stages of the development.

- Venture funds and start-up investment funds are not yet developed.

- There is no study on the level of skills of Government officials and the public.

+ There are higher skills for social networking use.

o A general study on identifying the data skills of the non-governmental organizations has not conducted.

+ The literacy rate of Mongolia is 98%, which is higher than the global average.

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[51] Mongolian Software Industry Association, http://mosa.mn, Accessed: 2018-06-11

ASSESSMENT:

QUESTION AREA	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
ICT Penetration	High	YELLOW	Penetration of high-speed internet access is 25%. The number of mobile users is very high. The digital divide is high and the internet cost is high in rural areas.
Level of internet services	High	GREEN	Internet access level is high. Most internet use is driven by the mobile internet. Internet access cost is lower than the international average.
Compute and storage availability	Medium High	GREEN	Government agencies have begun applying the integrated information exchange system of the National Data Center.
IT sector, developer community digital literacy	High	YELLOW	Electronic literacy cannot be justified, but digital usage is graded well. The potential to use Government services, if provided, is good. There is a small group of information technology industry and developers.
OVERALL		YELLOW	Insufficient high speed internet penetration. Digital separation is high. There is a small group of information technology industry and developers.

CONCLUSIONS AND RECOMMENDATIONS

The eight overall dimension assessment results are shown in the table below.

DIMENSIONS	IMPORTANCE	ASSESSMENT RATING	COMMENTARY
1. Senior leadership	Very High	YELLOW	Creating a strong political leadership is key in developing open data.
2. Legal and policy framework	High	YELLOW	There are no legal barriers to developing open data, but the conditions and permissions to use open data are unclear.
3. Institutional structures, responsibilities, capabilities	High	YELLOW	The performance of data management needs evaluation as well as information communication technology skills.
4. Government data management policies	High	YELLOW	Capabilities and experiences of the leading data management organizations shall have to be introduced into other organizations.
5. Sociatal demand for open data	Very High	RED	Government agencies should collaborate with other data stakeholders in order to define data demand clearly and supply the data effectively.
6. Civil engagement and capabilities for for open data	High	YELLOW	The data use engagement of citizens at the e-level should be improved.
7. Funding open data	Medium High	YELLOW	Political leadership is crucial to solving the financing of the system. Innovation funds are required.
8. National technology and skill infrastructure	High	YELLOW	High-speed Internet penetration insufficient. There are a high digital divide and a small group of information technology developers.

The following conclusions and recommendations have been developed for the implementation of the Open Data Program in Mongolia.

Senior leadership

In respect to the governance and leadership framework, the National Statistics Office and the Government Agency for Policy Coordination on State Property have successfully started developing open data. The Government Action Plan 2020 stipulates the development of open data policies and increased open source-based applications. However, open data programs need to be developed and managed under the genuine political leadership for developing open data at the national level. In order do this, an open data working group (ODWG) shall be established, and a political or government high-level official shall be appointed as the head of the working group. An open data implementation plan shall be approved by the government as well.

It is also important to coordinate in line with the Open Government Partnership.

Policy/legal framework

The fact that the Laws on "Information Transparency and the Right to Information" and on "Transparent Accounts" provide citizens and legal entities with the right to information and the transparency of public entities provides real support for open data. However, policies and regulations to ensure the protection and use of personal confidentiality in an online environment and data ownership policies and specification of the compliance of the license required for re-use of the data in other domestic laws need developing. The law specifications and amendments required in the existing regulations should also be reviewed by professional consultants.

Institutional structures, responsibilities, and capabilities within government

The number of mid-level organizations capable of successfully implementing the Open Data Program is low. The State needs to address the following issues:- including introducing data management procedures at all levels of Government, consistently upgrading the ICT skills of civil servants through reflecting them in performance evaluations and developing the structural partnership of private sector, NGOs, citizens, and other government agencies which are the targeted interest

groups of open data information re-users. Open data knowledge should be introduced to the administration officials and staff of all levels of Government organizations annually.

Government data management policies, procedures and data availability

Government agencies host their high-value and structured data in the National Data Center. Introducing the integrated management of data into one open source data center will provide a good environment for open data publication. However, some other data management issues shall be re-addressed. In particular, meta-data, data logging, data documentation, the electronic supply system of data demand, the terms and conditions of use of the data, and a valorized data publication methodology for publishing data, identification of open data leaders and providing them all possible support should be re-addressed.

Demand for open data

Data demand requires data creation, maintenance, public disclosure of data from public organizations, data integrity, accuracy and the quality of assurance. It is essential to identify the demand for data and facilitate its supply upon request by civil society organizations, the private sector, and citizens. These are the key factors that will generate demand. In addition to this, activities aimed at improving the culture of data re-use among public organizations and public awareness programs on data use should be promoted. In particular, it is important to disclose the most demanding open data and implement an open data initiative in a successful collaboration built between civil society and private sector participation. Each public organization needs to conduct regular open data demand surveys within the respective sector.

Civic engagement and capabilities of open data

There is a limited number of communication channels in Mongolia that are part of an open ecosystem, under limited engagement of freelance journalists. Fewer communication channels are used by citizens, An insufficient number of experts have the technical capacity for data reuse. Therefore, the government needs to cooperate and support activities aimed at enhancing citizen participation in

developing open data by increasing the number of electronic channels established for citizen communication and data re-use capability.

Funding open data for program

Although the Smart Government Project has some funding for developing open data, it is insufficient to establish an open ecosystem. Therefore sources for the long-term funding of Open Data programs need to be defined. The senior leadership and budget decision-making are essential for creating an open source program funded by the Budget, as well as the private sector, which needs further assessments, and for an Innovation Fund for the start-up and data-driven business support fund.

National technology and skill infrastructure

High-speed internet penetration is high among all level of cities and provincial areas including Ulaanbaatar, 122.3% of the population has access to a cellular mobile. Mobile costs are cheaper than the global average. All government agencies are connected to the public network and exchanging information on the state data exchange system "KHUR" shows that Mongolia has high inclusivity of consumer and public infrastructure.

Although Internet usage is high with 91.6% of the population connected to the Internet, the cost of internet service is expensive in rural areas. Accessibility, and overall e-government education and public education are inadequate at provincial levels. In the future, the Government should support digital education by implementing a policy on improving access to the internet.

ANNEXES

A. GLOSSARY

Archiving	The storing of records, documents, or other materials of historical interest (or a collection of them) in a defined place or repository.
Data management	The development, execution, and supervision of plans, policies, programs and practices that control, protect, deliver and enhance the value of data and information assets.
Infomediary	A person or entity that helps make data/information more easily understandable to a broader audience such as the general public. For example, the media are important infomediaries for sharing information with the public in a more understandable way.
Meta-data	Metadata is "data about data" – meaning data that describes basic aspects of a dataset, for example when the dataset was created, which agency is responsible for the dataset, the format of the data, etc.
Open data	Data in a machine-readable format that is publicly available under an "open" license that ensures it can be freely used/reused/redistributed by anyone for any legal purpose.
Open Data Ecosystem	An approach to Open Data that focuses not only on data but on the larger environment for Open Data – its "ecosystem" – including other key dimensions like leadership, policy/legal framework, institutions, infrastructure and the state of user communities (like developers, universities, private sector).
Open data portal	A platform (usually accessed as a website) that at a minimum acts as a catalogue providing a single point of access for the public to search and access Open Data available from a government, agency or organization.
Open Data Program	A set of actions designed to introduce and manage Open Data by a government, agency, organization or company. The Assessment focuses on Open Data Programs developed by governments or individual public sector agencies.
Open Government	A philosophy or principles for a government that focuses on changing how government works to make it more transparent, accountable, participatory (with greater citizen engagement) and collaborative.
Open Government Partnership	A global partnership of governments dedicated to implementing domestic reforms that make government more open, accountable, and responsive to citizens. Launched in 2011, the OGP now has over 60 member countries.
Open Standards	Technical standards that are publicly available, non-proprietary and can be implemented on a royalty-free basis. Often open standards are also developed in an "open" transparent process that enables a larger group of people to contribute to their development.

B. LIST OF MEETINGS AND INTERVIEWS CONDUCTED

#	Organizations	Date
Organizations responsible for data and information at the national levels		
1	Cabinet Secretariat of Government of Mongolia	2018.03.19
2	Ministry of Finance	
3	Ministry of Justice and Home Affairs	2018.03.20
4	Communication and Information Technology Authority	
5	National Archiving Authority	2018.03.21
6	National Statistical Office	
Key dataset holders		
7	Mongolian Tax Authority	2018.03.28
8	Intellectual Property and State Registration Authority	
9	Meteorology and Environmental Monitoring Authority	2018.03.29
10	Health Insurance Authority	
11	Natonal Data Center	2018.03.20
Possible data-holding agencies		
12	Parliament Office	2018.03.22
13	Ministry of Education, Culture, Science, and Sports	
14	Ministry of Health	2018.03.23
15	Ministry of Mining and Heavy Industry	
16	Ministry of Nature, Environment, and Tourism	2018.03.26
17	Ministry of Construction and Urban Development	
18	Ministry of Road and Transportation	2018.03.27
19	National Center for Transportation	
20	Independent Authority Against Corruption	2018.03.30
21	Financial Regulatory Commission	
22	Government Agency for Policy Coordination on State Property	2018.04.02
23	Standardization and Metrology Authority	
24	General Authority for Special inspection	2018.04.03
25	Civil Service Committee	

	Civil societies and data users	
26	The representative of technical universities (IT professionals)	2018.04.04
	1. National University of Mongolia 2. Mongolian University of Science and Technology	
27	Private sector representatives and professional associations	2018.04.05
	1. Interactive LLC 2. Itools LLC 3. Astvision LLC 4. Mongolian Association of Software developers NGO 5. KKTT LLC (QPay)	
28	Representative of the media organization	
	1. Benecraft LLC (ikon.mn) 2. Remo Media LLC 3. Mongol TV	2018.04.06
29	Representatives of civil society organizations	
	1. Association of the Budget professionals NGO 2. Transparent Fund NGO 3. Open Forum Society 4. Mongolia Extractive Industries Transparency Initiative	
30	Innovation and incubator centers	2018.04.09
	1. Information Technology National Park	

C. OVERVIEW OF KEY DATASETS

Datasets	Responsible organization	Avail-able?	Digital?	File format	Access-ible online?	Free or Paid	Complete data set or as individual queries?	Remarks	Licensed?	5-star schema
Budget data (national, local)	Ministry of Finance	Yes	Yes	PDF and HTML	Yes	Free	Complete, Separate	The budget draft is available on the website of the Parliament. Also, the information on the budget framework and budget proposal can be found on the website of the Ministry of Finance.	Un-licensed	★
Financial plans and execution reports of the national budget	Ministry of Finance	Yes	Yes	HTML	Yes	Free	not complete, Separate	Can be found on the website of the Ministry of Finance and Transparent account. The data is not complete as the law enforcement is not sufficiently tempered.	Un-licensed	★
Aids, expenditure	Ministry of Finance	Yes	Yes	HTML	Yes	Free	Separate	Information on budget expenditure, budget aids are can be collected from the website of transparent account. However, the data is not complete as the law enforcement is not sufficiently tempered.	Un-licensed	★
The project investment	Ministry of Finance	Yes	Yes	HTML	Yes	Free	Separate	Relevant information can be found on project and programs tab of Transparent account website.	Un-licensed	★
National statistics	National Statistical Office	Yes	Yes	Multiple formats, API	Yes	Free	Complete	As there are many types of statistical data components, data updates are performed on different timeframes.	CC BY 4.0	★★★
Population Census	National Statistical Office	Yes	Yes	Multiple formats, API	Yes	Free	Complete	Raw data versions can be downloaded in a comprehensive way.	Un-licensed	★★★
Parliament and law draft discussions	Office of Parliament	Yes	Yes	PDF, DOCX	Yes	Free	Complete		Un-licensed	★★
laws and regulations in force	Ministry of Justice and Home Affairs	Yes	Yes	HTML, PDF, DOCX	Yes	Free	Complete		Un-licensed	★★
Procurement and tendering	Government agency for policy coordination on state property	Yes	Yes	Multiple formats, API	Yes	Free	Complete	Sufficient data if the Open Data System introduced to the public.	Un-licensed	★★★

Community and civil society institutions	Ministry of Justice and Home Affairs	Yes	No	N/A	N/A	N/A	N/A	To some extent, information on registration of public community organizations not uploaded to the website.		
Government and public services	Cabinet Secretariat of the government of Mongolia	Yes	Yes	HTML, PDF	Yes	Free	Separate	Relevant data on public services can be found on the website of the particular organizations respectively.	Un-licensed	★
Road transport	Ministry of Road and Transportation	Yes	Yes	HTML, PDF	Yes	Free	Separate	Pdf file on the list of entities have licensed on rail construction and sea transportation, road construction and the use of a road, vehicle inspection, freight and vehicle plate manufacturers can be found online. Municipal public transportation routes, parking data can be seen as an image from the website of smartcard (smart.mn)	Un-licensed	★
Criminal records	Ministry of Justice and Home Affairs	Yes	Yes	Multiple formats	Yes	Paid	Complete	service.police.gov.mn show criminal records and location on the electronic system, but its' data not provided. National statistics office holds criminal data. The lowest level of location is at soum levels.	Un-licensed	★★★
Professional inspection	General Authority of Special inspection	Yes	Yes	PDF	Yes	Free	Separate	Directive of Inspector General and its affiliate regulations are published on inspection.gov.mn.	Unclear	★
Legal entity registration	Intellectual property and State registration office	Yes	Yes	Data-base	No	Unclear	Complete	Inspection monitoring system operates under 27 directions, that operated since 2007 has been uploaded to khyanalt.gov.mn, the transparent inspection system.	Un-licensed	★★★
Cadaster information	Meteorology and Environmental Monitoring Authority	Yes	Yes	Data-base	No	Unclear	Complete	No open data has released by the Intellectual property and state registration authority. However, some of the data in image format have provided by the National Statistics Office.	Unclear	★★★
Spatial information and maps	Administration of land affairs, Geodesy, and cartography	Yes	Yes	Data-base, HTML	Yes	Free	Complete	The map data can be found on the website egazar.gov.mn	Un-licensed	★★★
Address registry	Administration of land affairs, Geodesy, and cartography	Yes	Yes	HTML	No	Paid	Complete	Address registration belongs under the Administration of Land Affairs geodesy and Cartography. New national addresses planned, and the system is not yet operating.	Unclear	★★★

Tourism destinations	Ministry of nature, environment and tourism	Yes	Yes	Data-base	No	Unclear	Complete	All locations information of the tourism destinations can be found on the geo-database software of environmental database system.	Un-licensed	★
Weather	Meteorology and environmental monitoring authority	Yes	Yes	HTML	Yes	Free	Not complete	5-day weather forecasts available for free on the website tsag-agaar.mn. However, weather forecasts for different periods shall be purchased.	Un-licensed	★★★
Constructions licensing, zoning	Ministry of construction and urban development	Yes	Yes	XML	Yes	Archival data shall be paid	Complete	Construction, licenses, zoning regulations managed by the local affiliate authorities. The respective data of Ulaanbaatar can be found under the news tab of the website of the General Planning Authority of Ulaanbaatar.	Un-licensed	★
Real estate records	Intellectual property and State registration office	Yes	Yes	HTML, PDF	Yes	Free	Separate	Registration of real estates held at the Intellectual property, and state registration general authority, but no open data published.	Unclear	★★★
Intellectual property registration	Intellectual property and State registration office	Yes	No	Data-base	No	Unclear	Complete	Complete data published on the former website of the Intellectual Property Authority.	Un-licensed	★
Financial market regulation	Financial regulatory committee	Yes	Yes	HTML	Yes	Free	Complete	Data available from the website of the Financial Regulatory Commission and the website of the National Statistics Office.	Un-licensed	★
Asset and income statement of public servants	Independent authority against corruption	Yes	Yes	PDF	Yes	Free	Separate	IAAC publish open data annually.	Un-licensed	★
Registration of educational institutions	Ministry of Education, Culture, Science and Sports	Yes	Yes	PDF	Yes	Free	Separate	The data on the education tab of the website of Ministry of Education, Culture, Science, and Sport are relatively qualified as it had uploaded at HTML format, but the address information is missing and only contact phone number has shown.	Un-licensed	★
Registration of Health organizations	Ministry of Health	Yes	Yes	HTML	Yes	Free	Separate	Links to the health organizations can be found in the organization's tab of the website of the Ministry of Health. However, the link to private hospitals and medical information have provided these are seemed not functioning. Also, license registration of Health providers can be found by filtering data on "Orders" issued by the Minister of Health.	Un-licensed	★
Pharmacy records	Ministry of Health	Yes	Yes	HTML, PDF	Yes	Free	Separate but some data	Pharmaceuticals data can be found on the website of Health insurance organization, but the website of	Un-licensed	★

					missing		the health insurance organization seemed not functioning. However, information on only registered health insurance pharmacies found. All pharmaceuticals can found on the website of the Ministry of Health.			
Mongolian national standard	Standardization and Metrology	Yes	Yes	PDF	No	Free	Separate	Some standards are free, but many standards sold under the fixed tariff.	Conditional applicability	★
Mineral resources	Ministry of Mining and Heavy Industry	Yes	Yes	PDF	Yes	Some of it is free	Complete	Mongolian Geological Summary can be found from the Geological Catalogue system of Mongolia.	Un-licensed	★
Water resources	Ministry of Environment and Tourism	Yes	Yes	HTML	Yes	Free	Complete	Varieties of data for mineral water can be found in the information database of Mongolian Environmental Information Center administered by Ministry of Environment and Tourism.	Un-licensed	★
License	All ministries and CRC	Yes	Yes	HTML	Yes	Free	Separate			★

D. ACTION PLANNING

INTRODUCTION

This action plan was developed on the basis of the assessment results driven from the Open Data Readiness Assessment (ODRA) of Mongolia that reflected the experience of other countries which had successfully implemented open data initiatives. Each of the activities included in the plan shall be addressed by the to be newly formed Open Data Working Group (ODWG).

Open data as an instrument

Publishing the public data that is available to have somebody to make unlimited use of it is not the primary purpose of open data. Open data is a means of producing a wider range of opportunities within the framework of public and other organizations. This tool can improve the efficiency, effectiveness, and quality of public services, and improve transparency and the socio-economic benefits.

Open data starts from the top down, from the middle out and from the bottom up

The founder of the Open Data Institution, Tim Berners-Lee, concludes that "Open data starts from the top down, from the middle out and from the bottom up". Open data activities get implemented in close coordination and collaboration across the top, middle and bottom levels.

- The legal and public policy frameworks in this context belong to the top level. This is the level that enables the opportunity to create open data.

- The middle level is formed by the sectoral ministries and agencies and the data sets that they hold. This is where translation into everyday processes and practical interpretation takes place. This level provides government transparency, efficiency, and effectiveness.

- The bottom-up level is where the demand for open data is determined. Flagship projects for publishing and using open data take place as a collaborative exploration of both government agencies and civil society and business stakeholders. This is the socio-economic impact of open data.

These three levels are inter-collaboratively influenced and support one another. The flagship projects are able to demonstrate how public data holders and external stakeholders can successfully develop open data. Such projects, when implemented within the framework of public organizations, or at the national level, can demonstrate the key initiatives implemented under the bottom-up approach. In particular, changes to the level of government coordination are the starting point of bottom-up project initiatives. Sectoral ministries and agencies carry out specific work-related activities to demonstrate the practical importance of existing policies and the legal environment. Also, external stakeholders will be key actors in engaging with open-ended data. Implementation of an open data program is a "learning process" when it comes to implementing unplanned and unintended activities. Activities must always be linked or interlinked at other levels.
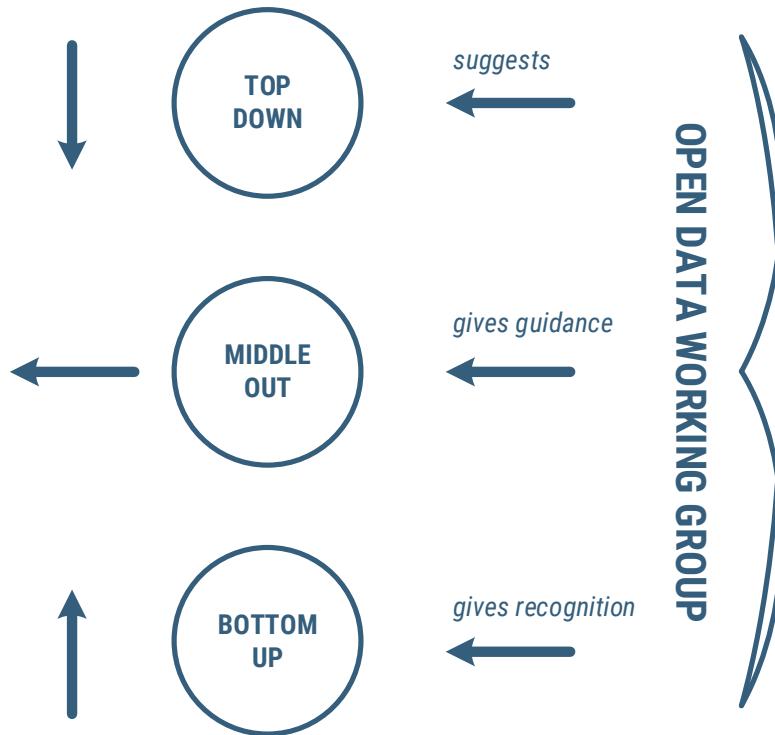
ACTION PLAN

The open data working group is the key importance

A number of ministries and agencies that hold key datasets expressed their willingness to develop open data in the future during the assessment interviews. It is also recommended that the Cabinet Secretariat be a champion in developing open data. Furthermore, it is concluded that the Cabinet Secretariat of the Government should also be proactively committed to strengthening open data commitments and providing leadership on commitments to open data at the public and government levels.

Therefore, ODWG shall be managed by the Prime Minister of Mongolia and the Cabinet Secretariat of Government, including participants of the key ministries and agencies responsible for policy coordination. They should implement the Open Data Action Plan successfully by facilitating the participation of non-governmental organizations, civil society and business entities. This structure of the ODWG is ideal for initiating an open data program. This action plan shall primarily be implemented by the ODWG. The activities that can be implemented in the early stages are included in the Open Data Action Plan. The activities for the implementation of flagship projects that define the benefits and importance of open data are also included. It is important that the data to be used in this project is easily published and able to demonstrate a high impact on the public More importantly it should be an excellent example of the results that can be achieved by the public by using open data. These projects allow open data participants to study what they

need to do. At the same time, the open data published by the flagship project will promptly engage social participation. Such activities will strengthen the confidence of future cooperation between civil society, business and government.

The image above depicts the role of the ODWG in coordinating between the different levels of implementing an open data action plan.

Actions

A list of implementation activities is provided in the table. The timing, relevance level for each activity and the responsibilities of the counterparts should be included in the intervention of other parties outside ODWG.

The activities of the top, middle and bottom-up levels have been assessed in accordance with the appropriate dimensions of the ODRA methodology. The Open Data Action Plan is not restricted to activities listed in the table. Activities can be modified on the basis of comments provided by the ODWG and other stakeholders during the implementation phases, but the linked interaction between levels should not be distracted.

In short, the activities that are required, are implementable and can be implemented potentially in the current situation are specified in the action plan.
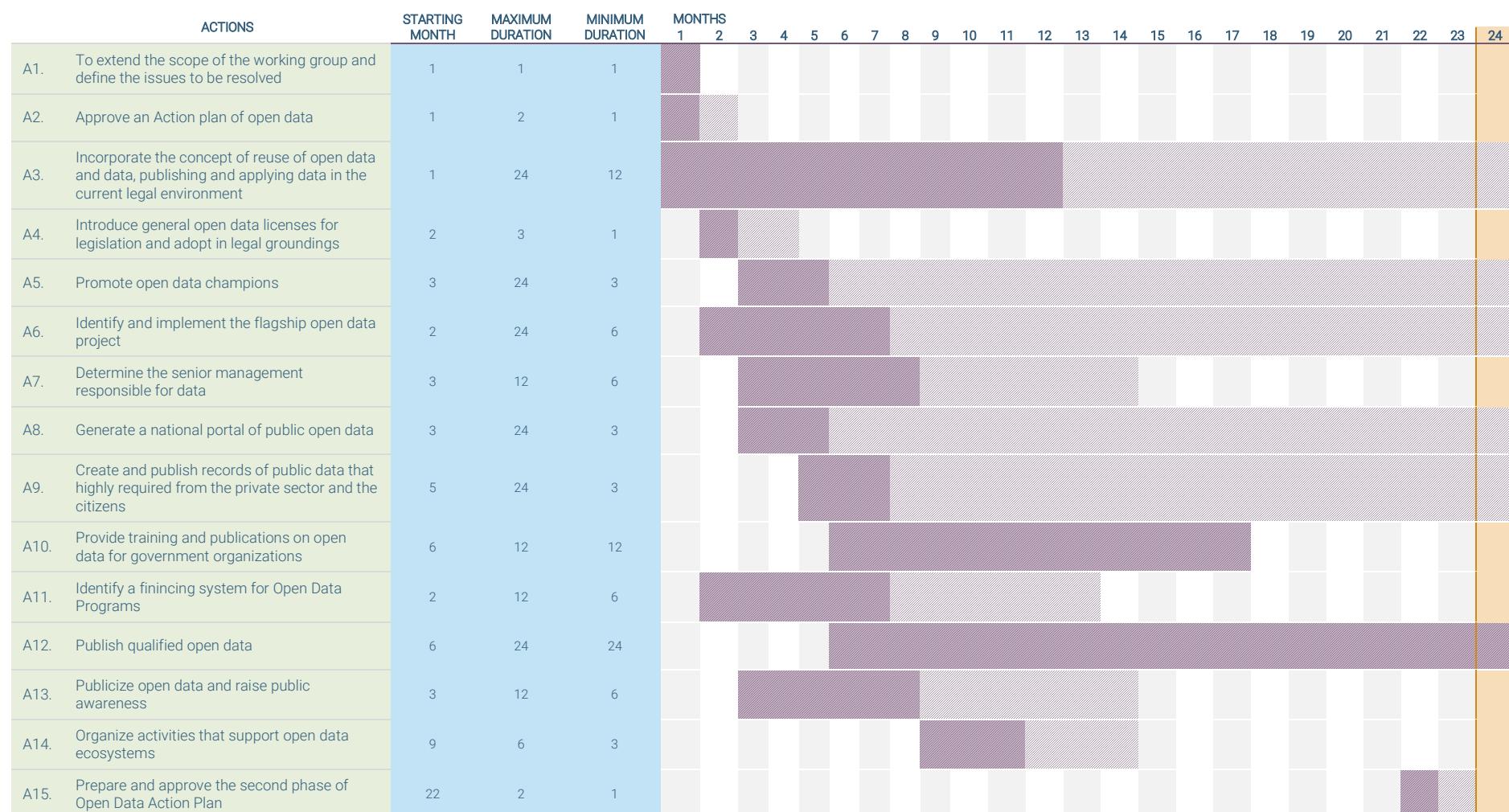
#	ACTIONS	LEADERSHIP	RESPONSIBILITY OWNERSHIP	TIMELINE	DETAILS
A1.	To extend the scope of the working group and define the issues to be resolved	1. Senior leadership	CabSec	M1	Open Data Working Group (ODWG) to be headed by the Chairman / Deputy Chief of the Cabinet and the scope of the participation shall expand including representatives from the private sector and non-governmental organizations; Identify the activities to be performed by the ODWG in detail and promote the activities specified in the action plan;
A2.	Approve an Action plan of open data	1. Senior leadership	CabSec, ODWG	M1-2	Discuss the findings, conclusions, and recommendations of the ODRA and to have the Action Plan approved by the Government resolutions; Include open data efforts in the second version of the National Action Plan for Open Government Partnerships in relation to relevant activities;
A3.	Incorporate the concept of reuse of open data and data, publishing and applying data in the current legal environment	2.Policy/Legal framework	CabSec, ODWG, CITA	M12-24	Create a favorable legal environment for the reuse of State data, data transparency, publishing State data, and dissemination of open data and disclosure to the public; Amend the law on "Information Transparency and the Right to Information" Draft and adopt the Data Protection Law
A4.	Introduce general open data licenses for legislation and adopt in legal groundings	2.Policy/Legal framework	ODWG, and Ministry of Justice, CITA	M1-3	Determine Creative Common licenses as the state open data licenses; CC0 (public use ownership), CC-BY (to mention names), CC-BY-SA (to mention names and to disseminate under the same conditions) to adopt the license to relevant laws

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					and regulations;
A5.	Promote open data champions	4. State data management and data availability	ODWG	M3-24	Support promoting activities to manage and implement Open Data activities across government agencies and users of open data. Provide support and develop multilateral cooperation;
A6.	Identify and implement the flagship open data project	5. Demand for open data	ODWG, respective government bodies, other participants	M6-24	Identify and implement projects aimed at promoting open data for social and public institutions by defining flagship projects; Define and publish a dataset that has a high impact on the successful implementation of the project; Implement projects in conjunction with civil society and business organizations; Study the possibility of using the Spatial Information Database, VAT dataset-Ebarimt, Credit Information database, and Tender open datasets for the successful implementation of the project;
A7.	Determine the senior management responsible for data	3. Institutional structures, responsibilities, and capabilities within government	CabSec, ODWG, CSC, CITA	M6-12	Determine the role of senior management for the integrated management of data and determine the responsibilities of data managing officials at organizational levels; Assign managers task within the responsibilities of the frameworks of public bodies; Assign publishing open data as a task in the performance agreements of managers at the all levels
A8.	Generate a national portal of public open data	4. State data management and data	ODWG, NDC	M3-24	Develop and establish an integrated portal through open source CKAN system

		availability			for publishment of government data and to ensure continuous operation; Get support from the data business entities, interested in activities related to the mirror data saving, distribution, and dissemination of open data;
A9.	Create and publish records of public data that highly required from the private sector and the citizens	5. Demand for open data	ODWG, Organizations to publish data	M3-24	Track public record requests at the level of each organization and publish as open data on the open data portal in order to define the demand for public data;
A10.	Provide training and publications on open data for government organizations	3. Institutional structures, responsibilities , and capabilities within government	CabSec, ODWG	M12	Senior officials and specialists at all levels of government agencies to introduce publicly available open data at least once in a quarter ; Develop and organize training programs;
A11.	Identify finincing system for Open Data Programs	7. Financing of an open data program	CabSec, ODWG	M6-12	Resolve the financing system and funding requirements to implement the Open Action Plan; Determine the funding of the flagship project from multiple sources; Address financial issues required to produce and publish data in cooperation with that part of the private sector interested using the data;
A12.	Publish qualified open data	4. Government data management policies, procedures, and data availability	Organizations to publish open data, ODWG	M19	Define the publicly needed and highly efficient state data for society and publish an open data portal (the data portal which shall be a window to find the state data and located a link to the data of the specific organization); Determine an open data of state data that is in compliant with the Law on "State and Official Secrecy" with each organization to

					create an open list of the data ;
					Publish the data that will have a high impact on societies, such as Spatial dataset, VAT E-barimt database, Credit information database, Tender, and Social Insurance datasets;
A13.	Publicize open data and raise public awareness	6.Civic engagement and capabilities for open data	ODWG, Flagship project implementer	M6-12	Publicize the concepts and advantages of open data, its use, project outcomes, good examples. Publicize public open data publications through public information channels;
A14.	Organize activities that support open data ecosystems, develop and implement Communication Plan for participants	6. Civic engagement and capabilities for open data	ODWG, other participants	M3-6	Develop and provide training programs designed to create and support open data ecosystems, such as hackathons, app competitions, incubator programs streamlined to non-governmental organizations and media organizations;
A15.	Prepare and approve the second phase of Open Data Action Plan	1. Senior leadership	ODWG	M1-2	Review and approve the second phase of the action plan by evaluating the implementation of the Open Data Action Plan.

Action plan Gantt chart

ACTIONS		STARTING MONTH	MAXIMUM DURATION	MINIMUM DURATION	MONTHS
A1.	To extend the scope of the working group and define the issues to be resolved	1	1	1	
A2.	Approve an Action plan of open data	1	2	1	
A3.	Incorporate the concept of reuse of open data and data, publishing and applying data in the current legal environment	1	24	12	
A4.	Introduce general open data licenses for legislation and adopt in legal groundings	2	3	1	
A5.	Promote open data champions	3	24	3	
A6.	Identify and implement the flagship open data project	2	24	6	
A7.	Determine the senior management responsible for data	3	12	6	
A8.	Generate a national portal of public open data	3	24	3	
A9.	Create and publish records of public data that highly required from the private sector and the citizens	5	24	3	
A10.	Provide training and publications on open data for government organizations	6	12	12	
A11.	Identify a finincing system for Open Data Programs	2	12	6	
A12.	Publish qualified open data	6	24	24	
A13.	Publicize open data and raise public awareness	3	12	6	
A14.	Organize activities that support open data ecosystems	9	6	3	
A15.	Prepare and approve the second phase of Open Data Action Plan	22	2	1	

End month: 24

Maximum duration   Minimum duration