



Open Data Readiness Assessment

Prepared for the Government of Uganda



Acknowledgements

At the request of the Government of Uganda (GoU) and led by the Ministry of Finance, Planning and Economic Development (MoFPED), the World Bank agreed to carry out an Open Data Readiness Assessment (ODRA). The ODRA was conducted by a World Bank expert team in collaboration with a Government Task Force led by the MoFPED and the Office of the Prime Minister (OPM), which included representatives of the Ministry of Information and Communications Technology (MoICT), the Ministry of Justice and Constitutional Affairs (MoJCA), Uganda Bureau of Statistics (UBoS), National Information Technology Agency (NITA) and other key Ministries, Departments and Agencies (MDAs).

The principal authors of this report are Pierre Chrzanowski, Timothy Herzog, and Jeanne Holm of the World Bank. The team has worked closely with colleagues from across the Ugandan Government and civil society during the assessment and recognizes the substantial support and contributions of all who gave generously their time and insights. The team also acknowledges the contributions and guidance of Barbara Magezi, Iker Lekuona, Chiara Bronchi, Oleg Petrov, Lyudmila Bujoreanu and Amparo Ballivian.

Disclaimer

This is a diagnostic and planning tool, it is not a measurement tool. This tool is intended to provide diagnostics and recommendations for action based on existing good practice elsewhere, but it is not a prescription for Open Data, nor is it a formal evaluation exercise. The output of any diagnostic, even following the guidance in this tool, needs to be carefully and critically considered in the context of the particular circumstances in which it has been made.

The purpose of the tool is to provide a plan for action for an Open Data program, as well as initiating a robust and consultative dialogue among relevant stakeholders. In that sense, use of this tool is the beginning of a process and not the end or result of a process. Using the tool will not guarantee a successful and sustainable Open Data program on its own; implementation is crucial to ensure success. This tool is a 'living' document and will be subject to continuous updating and revision based on experience from actual practice. In addition, other means of assessing readiness for Open Data are available, and this tool is not necessarily the only, or always the most appropriate, approach in all particular circumstances.

Acronyms and abbreviations

CIO	Chief Information Officer
CSV	Comma separated value
CTO	Chief Technology Officer
DHIS	District Health Information System
EPRC	Economic Policy Research Center
ESC	Education Service Commission
GAPR	Government Annual Performance Report
GIZ	German International Cooperation
HMIS	Health Management Information System
IFMIS	Integrated Financial Management Information System
IPPS	Integrated Personnel and Payroll System
LMIS	Land Management Information System
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning, and Economic Development
MoH	Ministry of Health
MoICT	Ministry of Information and Communications Technology
MoING	Ministry of Information and National Guidance
MoJCA	Ministry of Justice and Constitutional Affairs
MoLHUD	Ministry of Lands, Housing, and Urban Development
MoPS	Ministry of Public Service
MoW	Ministry of Works and Transport
MoWE	Ministry of Water and Environment
NPA	National Planning Authority
NSO	National Statistical Office
OPM	Office of the Prime Minister
PDF	Portable document format
PIMIS	Prime Minister's Integrated Management Information System
PPDA	Public Procurement and Disposal of Assets Authority
RCIP	Regional Communications Infrastructure Program
UBOS	Uganda Bureau of Statistics
UNEB	Uganda National Examination Board
UNHCO	Uganda National Health Consumers Organization
UNRA	Uganda National Roads Authority
UPF	Uganda Police Force
URA	Uganda Revenue Authority
URSB	Uganda Registration Services Bureau

Executive Summary

At the request of the Government of Uganda (GoU) and led by the Ministry of Finance, Planning and Economic Development (MoFPED), the World Bank agreed to carry out an Open Data

Readiness Assessment (ODRA). Open data is a policy under which certain government-held data are made publicly available, with very few restrictions on access, in formats that both people and software can easily read and use for any purpose.¹ The ODRA is an action-oriented assessment, based on a combination of desk research and stakeholder consultations,² designed to assist governments in identifying actions required in order to establish an open data initiative.

The ODRA in Uganda has a particular focus on how open data can support performance monitoring as a means to improve service delivery in priority sectors such as health, education, agriculture and energy, and address cross-cutting issues in budget, expenditure and public procurement management. The GoU has undertaken several initiatives that hold great potential for using data to improve government services. The Open Budgets Portal, for instance, provides the public with detailed information on how public money is being spent on the provision of services. Likewise, the Government Annual Performance Report (GAPR) published by the Office of the Prime Minister (OPM) is a powerful, data-driven approach to assessing government performance. The 2014 Census will certainly be a highly valued source of data for decision making and planning. Individually, any of these initiatives could provide a powerful foundation for an open data initiative. Collectively, the potential is significantly greater.

The overall finding of this assessment is that Uganda is in an advantageous position to move ahead with an open data initiative, aimed at achieving early success and demonstrable benefits with respect to improving service delivery, and becoming a sound foundation for sustainability over the long term, provided that issues regarding existing policy, data capacity, and civic engagement can be addressed in subsequent phases of this work, to be implemented by the GoU.

The summary assessments below reflect findings of both positive indicators and specific challenges in each of the eight dimensions of the readiness assessment.

Dimension	Assessment	Remarks
Senior Leadership	Green	Strong indicators of political leadership in key MDAs, but personal commitment from senior political officials is unknown
Policy and Legal Framework	Yellow	No legislation prohibiting an open data initiative, but key elements of the legal framework are missing or not complete

¹ More background on open data is available via the World Bank's Open Data Toolkit: <http://opendatatoolkit.worldbank.org>.

² Working closely with the GOU's ODRA task force, the consultant team met with representatives of 15 MDAs in addition to 12 CSOs and NGOs in the course of its research.

Dimension	Assessment	Remarks
Institutional Structures, Responsibilities, and Capabilities	Yellow	Essential institutional elements exist, but there are concerns about releasing data openly in some ministries
Government data management policies, procedures, and data availability	Yellow	Strong data management and capacity exists in certain ministries, but several MDAs lack critical capacity for data
Demand for open data	Yellow	There is a strong demand-side ecosystem for data, but government response to data requests is problematic
Civic Engagement and Capabilities for Open Data	Yellow	There is a vibrant community of data intermediaries and advocates, but GoU activity in this regard is nascent
Funding an Open Data program	Yellow	Clearly identified funding for data capacity tied to information systems, but lacking evidence for funding other important components
National technology and skills infrastructure	Red	Broadband access is low for the country as a whole, and data literacy is a challenge

The main findings and recommendations of this readiness assessment are:

Senior Leadership. Open data initiatives require leadership from key ministries to provide a strong political mandate for a new approach to government data, technical capacity in managing data, and IT infrastructure. Our consultations suggest that these requirements can easily be satisfied in the GoU at the national level, and that there is general consensus both within and outside government on the MDAs best positioned to provide leadership on open data. The most significant “unknowns” with respect to senior leadership are the degree of personal commitment to open data on the part of either the President or the Prime Minister, and the lack of plans for a public announcement of a formal open government data initiative.

Recommendations:

- Inter-agency Memorandum summarizing the ODRA findings, and inviting participation of all MDAs

- Announce the open data initiative publicly, with support from the World Bank and key civil society partners, focused on performance management and improved service delivery

Policy and Legal Framework. MDAs are already publishing data for various purposes and using a variety of approaches, but there is often little uniformity in how the GoU is making data available, including a uniform policy to define and safeguard individuals' rights to data privacy. As a result, data are often difficult to access or use. Gaps in the implementation of the current Access to Information Act are making it problematic as a means for making information publicly available, particularly for data.

Recommendations:

- Aim to adopt an open data policy, consistent with the core principles of the Access to Information Act. The GoU has recommended to the ODRA team that it would consider elaborating a Circular Standing Instruction (CSI) to provide MDAs with the information necessary for them to participate in the open data initiative and begin to publish data while a complete open data policy was being developed, reviewed and finalized.
- Conduct a full due diligence review of existing legislation, regulations and policies relevant to open data to identify gaps and inconsistencies.

Institutional Structures, Responsibilities and Capabilities. The GoU appears to have the essential institutional elements necessary to operate an open data initiative. There is already strong evidence of inter-agency working groups and processes which could be used to coordinate policies and activities for open data. However, some MDAs express a range of concerns about releasing their data in open formats. The fact that the GoU has not yet joined the Open Government Partnership, despite having qualified to do so, represents a missed opportunity for the Government to share experiences and learn from its peers.

Recommendation:

Convene an Open Government Data Working Group to guide the open data initiative, provide space for government to share learning and experience across MDAs, coordinate policies, procedures, and planning, and address specific concerns and barriers. The working group should include “champions” from key MDAs who are excited and knowledgeable about open data, and, supported by a high-level political mandate, willing to be change agents for how MDAs manage public data.

Government Data Management Policies, Procedures, and Data Availability. The GoU already has several examples of making data publicly available for improved service delivery and other purposes. Even in the absence of a formal open data policy, it is clear that most MDAs and ministries see the value in making data available, and several have begun to publish data on their websites. However, datasets are hosted on various systems in various formats and data classification systems across MDAs, and there is no centralized means to access

government data. The Key Datasets Assessment section of this report provides a comprehensive overview of government data held by various MDAs.

Recommendations:

- Establish an open government data portal that would provide online public access to authoritative versions of government sanctioned open data. The open data portal provides a “one-stop shop” for users to find government data regardless of which ministry provides it, and provides an authoritative reference for anyone to access in case data is misinterpreted or used improperly.
- Focus on the publication of a select number of high-value datasets for initial release, to be determined by the open data working group, aligned with the GoU’s goals of improving performance management and service delivery. Possibilities include datasets from the Government Annual Performance Report, the Open Budgets Portal, and the 2014 Census, along with several geospatial datasets held by different MDAs. It is likely that these datasets can be published as open data in a very timely manner with relatively little additional effort.
- Consider adding an open data component to the development of essential data information management systems, such as HMIS (health), EMIS (education) PIMIS (OPM), the URSB registry system currently in development, or any other MDA developing an information management system. These strategies will enable the GoU to publish open data more efficiently with reduced lag times.

Demand for Open Data. The demand for open data in Uganda is healthy and growing on many fronts. By providing more open data and at a higher quality, the Government of Uganda can achieve greater acclaim within the larger community serving its citizens, while improving service delivery, and in some cases, freeing up resources for better purposes. The release of government data will also directly and indirectly help Ugandans develop data literacy, critical thinking skills, and evidence-based decision making.

Recommendations:

- Encourage problem solving by sponsoring contests with the public for the use of government data. For instance, the GoU could announce a challenge or contest that invites civil society actors, researchers, journalists and citizens to use open data to create insights or solutions for a problem that the government is facing. The contest could focus on challenges such as preventing medicine shortages in rural hospitals, improving access to transport, tracking agriculture production, or evaluating educational performance and outcomes.
- Enable more people to use open data by increasing access to and usability of the data. Lack of access to government data and difficulty in using data published in newspapers or PDF documents result in substantial inefficiencies. Releasing data in standard, machine-readable formats substantially improves data access for both ordinary citizens and government itself.

- Implement data monitoring and feedback systems to measure increased efficiencies from publication of open data, and identify demand for additional data. Surveys of data users within Uganda as well as metrics built into the open data portal can help the GoU quantify and understand its efforts to improve usability.

Civic engagement and capabilities for open data. Demand for open data is high and infomediaries are poised to support the release of open government data. The Government is already using social media to connect in some areas with the public. With a few changes, the Government would be in good shape to engage the members of the open data ecosystem. Innovation hubs in Uganda present a particularly interesting opportunity for civic engagement. These organizations can help new and existing businesses realize the economic potential of open data, which could lead to the development of new data-driven products and services, new economic growth, and jobs. These new products could in turn produce additional economic benefits, as all Ugandans benefit from better information. For instance, improved information about transportation options can improve mobility and decrease commute times, while basic information about the capacity and operating hours of regional health clinics can improve well-being and levels of care. In other countries, research estimates the economic benefits from better use of public data in these sectors amounts to tens or even hundreds of millions of \$US annually (see Annex 4).

Recommendations:

- Create new partnerships: partner with civil society, researchers and journalists to foster new solutions and innovations in performance management and service delivery, building on open government data.
- Discover and recognize new insights: find out how people are using data to understand and enhance service delivery to citizens, and derive outcomes. Sponsor and organize events and surveys online and in person that would recognize and acknowledge the best of this work.
- Partner with innovation hubs in Uganda to transform open government data into new economic opportunities. As a first step, the GoU could reach out to innovation labs to begin discussions on what data will be made available in the first stages of the open data initiative and how this data could be used to build new products.

Funding an open data program. The GoU is already making significant investments in information management systems in several key sectors such as health, education, public registries and land management, and these systems can likely play a core role in the infrastructure for open data. Other important open data priorities such as innovation, demand side engagement, skills training, information and data management systems, and ongoing management of a centralized open data portal, are still in the proposal or implementation stages, and their prospects for ongoing funding are unclear.

Recommendation:

Identify and allocate funding for activities described under the action plan.

National Technology and Skills Infrastructure. Several MDAs already have significant experience and technical capacity in working with digital data and providing data services, but some MDAs simply lack this capacity. For the country as a whole, broadband internet penetration rates are low, which is a barrier to efficient information access. Data literacy will be a challenge. Public investments currently being implemented by NITA in national high-speed data infrastructure and the national data center have the potential to substantially improve infrastructure issues within MDAs and for Uganda as a whole.

Recommendations:

- Leverage existing training and capacity building programs to enable all Ugandans to use open data to make better, data-driven decisions about schools, health care and other critical issues.
- Create partnerships with telecommunications providers, intermediaries and businesses to help provide access to data in rural and low-bandwidth areas.

Action Plan

The initial phase of Uganda's Open Data Initiative is intended to cover a 6-month period beginning August 1, 2015. To lay the foundation for a successful, sustainable program, it is essential that the Government of Uganda (GoU) accomplish three objectives during Phase I:

1. Establish open data as a priority for the GoU and secure buy-in from senior GoU officials
2. Issue guidance for all MDAs to publish open data consistent with best practices, which will create the basis for a comprehensive open data policy in subsequent stages
3. Produce an initial offering of key indicators and high-value datasets that can be published relatively quickly in a centralized online portal, conform with open data standards, and provide a catalyst for innovation and citizen engagement

As a first step, the GoU should begin by taking up the recommendation to convene an inter-agency Open Data Working Group to provide a government vehicle for coordination of all government agencies and activities relating to the open data initiative. The working group is an essential first step and should be initiated from the highest levels of government and chaired by a single government entity to signal that open data is a priority. Based on our findings, MoFPED appears to be the ministry best suited to convene the working group, coordinate implementation of the action plan across MDAs, and provide overall leadership of the open data agenda across the GoU. A core technical team, as described under Recommendations, should also be appointed to coordinate and manage essential tasks during the initial phase. The inter-agency steering committee and implementation groups would also meet regularly to develop the action plan and report progress.

Expectations and enthusiasm for open data run high in both civil society and within many ministries. It is therefore vital that the GoU's open data initiative focus on opportunities for demonstrable early progress so that momentum is not lost. Accordingly, while the recommendations in this report assume a long-term strategy, we believe that the first phase should consist of five milestones to be accomplished within the first six months, with a more detailed timeline to be adopted by the working group. Although we have suggested a lead agency for each milestone, it is important that multiple agencies be involved in each process to ensure a balance of perspectives on questions of policy, data management, and technical issues.

- 1. Issue guidance for all MDAs to publish open data consistent with best practices and establish high-level commitment.** This guidance document, which the GoU has informed the ODRA team could take the form of a Circular Standing Instruction, would provide MDAs with the information necessary for them to participate in the open data initiative and begin to publish data, and identify the Open Data Working Group as the coordinating mechanism for the initiative. Guidance would address which types of data should be considered open (consistent with the underlying principles of the Access to Information Act), key indicators to publish right away, file formats to be used, basic metadata, procedures for coordinating with the open data portal, etc. This guidance would also provide a stepping stone to a comprehensive open data policy to be

developed in a later phase.

Lead Agency: MoICT

- 2. Establish a centralized online portal to provide a single listing of all available open data from the GoU.** As described under Recommendations, the open data portal would provide authoritative access to all open government data, and serve as the online portal for the open data initiative for information users in Uganda and around the world. The portal could also showcase how open data are being put to use in Uganda, and allow data consumers, both individuals and businesses, to suggest datasets that could be opened in the future, particularly those that hold significant economic or social value. While many open source and commercial solutions are available, this is a technology development process that typically requires significant attention, so it should begin early in the initial phase.

Lead Agency: NITA

- 3. Identify and coordinate preparation of 4-6 high-value datasets for early release.**

The GoU already has some experience making data public, but in most cases these datasets do not yet conform to open data best practices. As part of the initial phase, the working group should identify a “short list” of high-value, high-demand datasets that can be brought up to open data standards relatively easily. These datasets would be showcased on the open data portal, provide a thematic focus for activities in the first phase, and set an example of the kinds of data that could be released in future stages. Accordingly, these datasets should be relevant to the GoU’s focus on performance management and service delivery, particularly in the key sectors of health, education, energy, agriculture, and transport infrastructure. This would also provide MDAs that have already started to publish data an opportunity to build on their progress so far.

Lead Agency: UBoS

- 4. Engage citizens and advocates to find new ways to use open data to improve performance management and service delivery.** The GoU should take steps right away to begin to engage a broad range of information users throughout Uganda. This allows the GoU to take advantage of existing enthusiasm and capacity that appeared in our interviews, and create awareness of open data on both the demand and supply side. These engagements could take several forms; for instance, they could be modeled after the barazas employed by OPM, or they could be 1-2 day workshops designed for specific professional backgrounds. We strongly recommend partnering with one or more of the several non-profit organizations that are already conducting similar engagements in Uganda around data use. Ideally, there would be 2-3 engagements held during the first phase for different user segments, with many more events in future stages.

Lead Agency: OPM

- 5. Initiate partnerships with developers and innovation hubs to begin to unlock the economic value of open data in Uganda.** The developer community in Uganda is already beginning to do innovative work with data, while innovation hubs provide a mechanism to transform these innovations into new economic opportunities. As a first

step, the GoU should initiate a dialogue with developers and the innovation labs to discuss how open data can be used to develop new products and services, leading to new businesses and jobs. Just as important, these discussions will hopefully identify additional data within the government that could add to the economy if it was made openly available, and establish the necessary conditions for lasting economic utility, such as consistent updates, and licensing that allows for commercial re-use. Ideally, there would be at least two engagements with innovation labs during the first phase, possibly focusing on different sectors.

Lead Agency: NITA

To support these milestones, the working group should also adopt a light-weight communications strategy to inform the public and government agencies about the open data initiative, progress on the action plan, and new developments. The communications strategy could include:

- An initial announcement of the open data initiative that summarizes the benefits of open data and the key components of the action plan. This could be a media event with participation of high-level officials, designed to attract the attention of journalists.
- A social and traditional media campaign to keep citizens advised of latest developments
- Outreach to local governments
- A significant launch event at the end of the initial phase, debuting the open data portal and the availability of initial datasets. This could be paired with a series of user workshops involving partners.

Second Phase

While the focus of this action plan is on milestones to be achieved in a 6-month time period, the working group should also begin to think about next steps and priorities once the initiative moves beyond its initial phase. These activities, as detailed in the Recommendations section of this report are critical to achieving long-term sustainability. While a detailed work plan depends on lessons learned in the initial phase, we anticipate this work to include:

- Development of a comprehensive open data policy, expanding on the initial guidance established in phase one
- Additional releases of data from a broader range of MDAs and covering additional topics. The GoU may also encourage the use of more sophisticated tools for releasing data, such as application programming interfaces (APIs).
- Development of consistent standards for functional and economic classification of data across all MDAs, in line with international standards.
- Additional events and programs to engage individuals at the national and local levels, and promote the use of open data
- Training programs for government officials and staff on the availability of open data and the benefits to government
- Stronger integration of key information management systems into the open data initiative

Introduction

At the request of the Government of Uganda (GoU) and led by the Ministry of Finance, Planning, and Economic Development (MoFPED), the World Bank agreed to carry out an Open Data Readiness Assessment (ODRA). The ODRA in Uganda has a particular focus on how open data can support performance monitoring as a means to improve service delivery, with a particular focus on the health, education, energy, agriculture, and transport and infrastructure sectors.

Open data is a policy under which certain government-held data are made publicly available, with very few restrictions on access, in formats that both people and software can easily read and use for any purpose.³ “Open Data” and “Open Government” share a common focus on transparency and accessibility to government resources; however, open data is specifically focused on access to and use of data.

Open data is a rapidly growing movement across the globe. Governments at all levels understand that open data is not only a tool for transparency and accountability, but also a powerful catalyst for innovation, entrepreneurship, and improved public service delivery. Early experiences reinforce the belief that opening data can drive smarter development, better decision making, and contribute to improving the lives of millions of people.

The ODRA is an action-oriented assessment designed to assist a government in identifying actions required in order to establish an open data initiative. This means more than just launching an open data portal for publishing data in one place or issuing a policy. An open data initiative involves addressing both the supply and the reuse of open data, as well as other aspects such as developing skills, financing for the government’s open data activities, and targeting innovation financing linked to open data.

Methodology

The ODRA uses an “ecosystem” approach to open data, meaning it is designed to look at the larger environment for open data – “supply” side issues like the policy/legal framework and data existing within government and infrastructure (including standards), as well as “demand” side issues like citizen engagement mechanisms and existing demand for government data among user communities (such as developers, the media, civil society actors, and government agencies).

This assessment evaluates readiness based on eight dimensions considered essential for an open data initiative to build a sustainable open data ecosystem. Its recommendations address various aspects of an open data ecosystem.

³ More background on open data is available via the World Bank’s Open Data Toolkit: <http://opendatatoolkit.worldbank.org>.

The readiness assessment is intended to be action oriented. For each dimension, it proposes a set of actions that can form the basis of an Open Data Action Plan. The recommendations and actions proposed are based on global best practices while also incorporating the needs and experiences of the Government of Uganda to date.

Within each dimension, the assessment considers a set of primary questions, and for each notes evidence that favors or disfavors readiness. The evaluation of each dimension and primary question is color-coded:

- Green **G** means there is clear evidence of readiness
- Yellow **Y** means that evidence of readiness is less clear
- Red **R** means there is an absence of evidence for readiness
- Grey **U** means insufficient information to assess readiness

When addressing a particular question, evidence of readiness has a “+” sign. Evidence against readiness has a “-“ sign. Use of the “o” sign indicates that evidence has mixed implications or neither favors nor weighs against readiness.

Not all evidence is weighed equally when determining the overall color indicator for a given primary question. Certain factors may weigh more heavily when deciding readiness status.

Key Dimensions of an Open Data Ecosystem

Leading governments have learned that open data creates the most value when an “ecosystem” approach is used. Governments that only focus on releasing data fail to maximize its benefits since data release by itself is useless for most people. Value is created when data is reused by people seeking insights.

Best-in-class governments do not only focus on building an open data portal and the “supply” of government data. They focus on the larger environment for open data — its “ecosystem.”

This Assessment evaluates readiness based on eight dimensions essential for building a sustainable open data ecosystem.

1. **Senior Leadership.** By far the most critical success factor for open data is leadership. It is essential that top leaders publicly communicate their commitment to an open data agenda and keep agencies accountable for its implementation. Leaders must ensure that open data plans turn into actions. It is also important that open data champions emerge (or are cultivated) across government among senior leaders, mid-level officials, and outside government.
2. **Policy/Legal Framework.** Open data only works when every agency follows the same general policies and rules. Issuing an official Open Data Policy can ensure that agencies follow consistent policies on the release of data, use a standard “open data” license, and comply with technical standards for open formats. Laws and regulations that clearly and consistently address rights to information as well as data privacy and protection are also

vital. Global experiences show that legal clarity is essential to protect officials who release data and to avoid others incorrectly using laws as an excuse to withhold data, especially data related to important social and economic issues requested by the public.

3. Institutional Structures, Responsibilities, and Capabilities within Government.

Open data 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 clear business processes for data management as well as staff with adequate ICT skills and technical understanding of data (e.g., formats, metadata, APIs, and databases). Engagement among agencies and at all levels of government to set common standards and remove impediments to data interoperability and exchange is also vital.

4. Government Data Management Policies, Procedures, and Data Availability.

Creating value from open data requires actual data from government. Data is the raw material or the fuel for innovation. Open data requires that data are available in machine-readable formats (formats directly usable by computers and software), publicly, online and without charge. And importantly, it requires government to release data that people care about (such as education, water, health, government spending, crime, and other areas). Open data should also be easy to find, for example by having one open data portal that catalogues all data opened by government bodies. Importantly, the release of personal data on individuals is not part of an open data initiative.

5. Demand for Open Data. The value of data is in its use. A strong demand-side “pull” of data is important not only in informing government which data would be most useful (and how it might be used), 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.

6. Civic Engagement and Capabilities for Open Data. Governments need to play a multi-dimensional role in an open data ecosystem, and create (or build upon) partnerships with a wide range of stakeholders. Government officials must communicate inside and outside government about opportunities created by open data, demonstrate the possibilities for data-driven applications, and promote reuse among developers. Global experience also suggests that governments often need to invest in skill development and capacity building among users and civil society as a key to sustainability.

7. Funding an Open Data Program. Open data is not a high-cost initiative; still, it requires some financing. A government needs some funding to support training of officials, development of an open data portal and, very importantly, investment in the reuse of its data (though co-creation events and selected apps development).

8. National Technology and Skills Infrastructure. While open data programs are not ICT projects, they normally rely at least in part on national technology infrastructure to provide data access and communications for officials, infomediaries, and the general public. Having sufficient Internet/mobile access, a supply of technical skills within and outside government, and active use of the Internet help enable and sustain open data.

Senior leadership

Importance Very High

By far the most critical success factor for open data is leadership. It is essential that top leaders publicly communicate their commitment to an open data agenda and keep agencies accountable for its implementation. Leaders must ensure that open data plans turn into actions. It is also important that open data champions emerge (or are cultivated) across government among senior leaders, mid-level officials, and outside government.

1.1 To what extent is there visible political leadership of open data/open government/access to information? (Importance: Very High) **G**

- + The Prime Minister has been a consistent advocate for transparency and accountability in his positions on the GAPR, the PMIS, and the planned OPM Delivery Unit.
- + Transparency and accountability were also central themes in the launch of the Open Budgets portal in 2013, an initiative driven by MoFPED. Furthermore, according to the Open Budget Index, Uganda is one of the few African countries to be considered providing a significant level of information on its Budget process⁴.
- o While the President and Prime Minister have been advocates in the past for greater transparency and accountability, it is unclear whether either has specifically committed to an open data agenda.
- o There are several potential champions for open data in key ministries, which are on record as supporting transparency and accountability. These individuals could also be effective champions for an open data initiative.

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) **G**

- + UBoS coordinates an inter-agency working group to propagate consistent standards for statistical data across agencies.
- + There is a similar working group convened informally by UBoS to share best practices and experiences for geospatial data across government ministries.
- + The Open Government Data Task Force, convened by MoFPED as part of the process to conduct the ODRA, could provide an effective mechanism for coordinating open data efforts across multiple institutions. The task force includes representation from MoFPED, NITA, OPM, UBoS, and MoJCA. Key ministries such

⁴ Open Budget Index 2012

as MoH, MoES, MoICT, URSB, and some civil society groups also participated in the workshops in February and March.

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

G

- + MoFPED sponsors the “Know Your Budget” platform, which provides users with budget information on how resources are allocated and used down to the parish level. The platform also provides a mechanism for users to provide feedback on service delivery.
- + OPM has stated their desire to use open data to improve the preparation and delivery of the GAPR, particularly the performance indicators in the Data Annex, as well as to create a set of performance monitoring dashboards linked to the Prime Minister’s delivery unit.
- o There are no known plans or activities currently by the GoU to announce a formal open data initiative.

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

Y

- + The MoFPED has established a goal to explore how open data can support performance management as a means to improve service delivery, with a particular focus on the education, health, energy, agriculture, and transport and infrastructure sectors.
- + More broadly, there is a focus throughout the GoU on improving transparency and accountability throughout government. In particular, OPM has made transparency and accountability a central theme in its performance management program and the production of the GAPR.
- + Civil society is well acquainted with open data and is broadly supportive of GoU efforts to improve access to information, particularly the release of data.
- Conversations with CSOs and NGOs suggest that transparency provisions and regulations often fall short in terms of making complete information available in a timely manner, particularly for certain sectors and ministries. As a result, some groups have cautious or low expectations of what can be achieved.

1.5 What is the country’s position in relation to the Open Government Partnership? (Importance: Medium)

R

- Uganda has not committed to joining the Open Government Partnership, despite being one of six African countries to initially qualify.

Assessment of Senior Leadership

Open data initiatives require leadership from key ministries to provide a strong political mandate for a new approach to government data, technical capacity in managing data, and IT infrastructure. Our consultations suggest that these requirements can be satisfied in the GoU at the national level. We also conclude that there is general consensus both within and outside government on the MDAs best positioned to provide leadership on open data. The most significant “unknowns” with respect to senior leadership are the degree of personal commitment to open data on the part of either the President or Prime Minister, and the lack of a public announcement of a formal open government data initiative.

Question Area	Assessment	Remarks
Political Leadership	Green	Positions on transparency and Open Budgets are indicators of political leadership on open data
Political Structure	Green	Existing inter-agency groups provide a basis for leadership and governance
Existing Activities	Green	Know Your Budget and OPM initiatives provide strong potential synergies for open data
Wider Context	Yellow	Strong emphasis on improving transparency and accountability, although recent experience of some CSOs in obtaining information suggests need for improvement
Open Government Partnership	Red	GoU has not joined the Open Government Partnership
Overall	Green	Strong indicators of political leadership in key MDAs, but personal commitment from senior political officials is unknown.

Policy and legal framework⁵

Importance High

The long-term success and sustainability of an Open Data Program is greatly impacted by the policy and legal framework that exists. Open data requires that a range of policy and legal issues be addressed – for example, with respect to licensing of data reuse, data protection, safeguarding of data privacy rights, freedom of and access to information, and related issues. 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 if required.

2.1 What is the legal and policy framework for data privacy and the protection of personal information? (Importance: Very High) **Y**

- o There are currently no policies that regulate the protection of personal data consistently across all government entities. However, legislation is underway. NITA, together with MoICT and MoJCA, recently issued a draft *Data Protection and Privacy Bill*⁶ for public comment (dated August 2014). Some civil society organizations, such as CIPESA, a Uganda-based organization working on ICT Policy, responded to the consultation. The Bill was recently passed by the First Parliamentary Council and Top Management Team of the Ministry of ICT, and is expected to be presented to Parliament for enactment in FY 2015/16.
- o The draft of the *Data Protection and Privacy Bill* establishes NITA as the Data Protection Authority, with powers to order data processors and data controllers to comply with provisions of the legislation. However, NITA's own functions include the collection of personal data in the course of conducting IT surveys. In the event that a complaint was lodged against NITA's data collection activities, it is unclear how NITA could fulfill its role as the Data Protection Authority in an independent fashion.

⁵ The preliminary analysis and recommendations in this section are based on information and opinions collected from interviews undertaken and materials provided by the government and other local stakeholders during this study. This section is not based on 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 recommendations, or any actions that might be undertaken resulting therefrom, regarding the enabling policy, legal or regulatory framework for Open Data in the country. It is therefore recommended that, prior to undertaking any action to address any legal assessment issue raised herein, a formal legal due diligence be performed by competent, locally qualified legal counsel assisted by international legal experts with relevant experience and knowledge of these areas.

⁶ *Draft - Data Protection and Privacy Bill*, <http://www.nita.go.ug/publication/draft-data-protection-and-privacy-bill>, August 20, 2014.

- + Confidentiality of statistical data is embodied in the UBoS Act⁷ and the staff members are obliged to take an oath of Office and Secrecy. The Act also specifies that data are only disseminated in aggregate form.
- + Some other Ministries have specific regulations for protecting personal data that they collect or manage. For instance, the Patient Charter published in 2009 by the MoH establishes in its article 16 a patient's right to obtain his or her medical information, and includes provisions on privacy and confidentiality that require informed consent prior to release of one's medical information⁸. The National Information Technology Authority Act of 2009 includes confidentiality provisions nearly identical to those found in the UBoS Act.

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

- + Right to access public information is enshrined in the Constitution of Uganda⁹, article 41: "Every citizen has a right of access to information and records in the possession of the state or any public body, except where the release of the information is likely to prejudice the security or sovereignty of the state or interfere with the right to the privacy of any other person."
- + Uganda adopted an Access to Information Act in 2005, and its related Access to Information Regulation in 2011. According to these measures, MDAs should appoint information officers to deal with public requests, and requests should be processed within 21 days. The Act contains a list of circumstances that would preclude the release of public information, such as the "protection of the safety of persons and property" or "defence, security, and international relations."
- o In case access to information is refused, the requester may lodge a complaint with the Chief Magistrate and, if not satisfactory, an appeal to the High Court. However, there is no independent authority, such as the Information Commissioner's Office in the United Kingdom or CADA in France, in charge of regulating and facilitating the enforcement of the Act.
- An information Officer has the right to refuse a request for access if the record contains scientific or technical information from a third party and the party has not given consent for the information to be made public. This could constitute a barrier of access to publicly funded research data or publicly owned technical information such as the source code of a software product.
- + In August 2014, the Office of the Prime Minister (OPM) through the Ministry of Information and National Guidance endorsed the launch of the Ask Your

⁷ *Uganda Bureau of Statistics Act*, <http://unstats.un.org/unsd/dnss/docViewer.aspx?docID=364#start>, June 11, 1998.

⁸ *Patient's Charter*, <http://www.health.go.ug/Patient.pdf>, August 2009.

⁹ *Constitution of the Republic of Uganda*, http://www.parliament.go.ug/new/images/stories/constitution/Constitution_of_Uganda_1995.pdf, 1995.

Government platform (www.askyourgov.ug), which enables the public to make requests for information online. However, the platform is mainly driven by the civil society organizations CIPESA and the Africa Freedom of Information Centre, and to date only 25 requests out of 93 requests have been processed and answered by MDAs.

- o According to recent CIPESA surveys^{10,11}, public officials are aware of the existence of the Access to Information Act. However, the lack of requisite skills in ICT and lack of access to ICT within the government may contribute to the slow uptake of the Act. According to the same survey, while the Act and its provisions are familiar to many in the media, it remains unfamiliar to many ordinary citizens.
- o Fees charged in association with access to information requests are typically based on “cost recovery” and assumed to be reasonable, although the Act does not spell this out. Hence, there should be no issue with making such data available for free online.

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

- The Access to Information Act defines a record as any “recorded information, in any format, including an electronic format in the possession or control of a public body, whether or not that body created it.” However the Act does not define ownership rights for such records, for instance, whether ownership is based on where records were created or which entity possesses or controls them.
- o The main law regarding intellectual property in Uganda is the Copyright and Neighboring Rights Act (2006). However, the Act does not address ownership of government data.
- There is no general policy regarding the use of a specific license or terms of use for government data.
- + The Energy Sector GIS Working Group, coordinated by the MoE, is releasing data using the Open Database License (ODbL). This is the only identified evidence of MDAs releasing data under an open data license. The Working Group received support from GIZ on the establishment of its open data portal¹².

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

¹⁰ Ugandan Public Officials’ Perceptions of Using ICT to Advance the Right to Information, CIPESA, January 2015, http://www.cipesa.org/?wpfb_dl=103

¹¹ Citizens’ Perceptions of Using ICT to Make Right to Information Requests in Uganda, CIPESA, January 2015, http://www.cipesa.org/?wpfb_dl=104

¹² <http://data.energy-gis.opendata.arcgis.com/>

- o The country has adopted in 2001 the National Records and Archives Act. Public archives are defined as “public records of enduring value selected for permanent preservation.” The Act states that public archives shall be made available to the public after a period of thirty years. However, there has been no clarification regarding government data in the context of the Access to Information Act, 2005. This could constitute a barrier to the release of public archives as open data.
- The National Records and Archives Act does not address digital preservation and some key datasets, such as Company Register from URSB, are still paper-based. However UBoS set up a National Data Archive website giving access to digital archives and/or their metadata¹³.
- There is anecdotal evidence that the Official Secrets Act of 1964¹⁴, which relates to state security, may be being broadly cited as justification for refusing requests submitted pursuant to the Access to Information Act.
- The Oath of Secrecy has also been cited as an issue for civil servants when responding to requests for information¹⁵.
- Most government data available online are released in PDF format. Although it is not standard guidance, many MDAs see releasing data in PDF, instead of machine-readable formats like CSV, as a way to guard against misuse of data once online.

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

- There is evidence that digital or paper-based government data are sold by the following MDAs: URSB; the Ministry of Energy; the Ministry of Water; and UNEB. In the case of URSB, revenues collected for charging for data go directly to the Government’s general fund, and not the agency’s annual budget. Regarding examinations results, UNEB sells the hard copy and does not release any digital copy. According to Makerere University it would cost them \$50,000 a year to get access to raw data or query to verify individual results for admission.
- + All statistical data made available by UBOS are free of charge for academic use, research, and media products. However, it is not clear whether commercial reuse is also possible under the same terms or a separate license.
- o UBOS offers specific services “when the regular presentation of statistics does not fulfil the information need” of the user¹⁶. As UBOS is “interested in directly generating income with a view, in the medium term, to being in part self-supporting,” this could

¹³ <http://www.ubos.org/unda/index.php/catalog>

¹⁴ <http://www.ulii.org/ug/legislation/consolidated-act/302>

¹⁵ <http://www.ulii.org/ug/legislation/consolidated-act/19>

¹⁶ <http://www.ubos.org/services/>

prevent the agency to open up more detailed data and reserve them for consulting services only.

2.6 What other policies/laws exist that may have significant impact on open data?
(Importance: High) **Y**

- o There is a principle of general dissemination of statistical data, subject to quality and anonymity control, as stated in article 20 of UBOS Act¹⁷: “The Executive Director shall ensure that any statistical data collected, after appropriate processing and ascertaining its quality for accuracy, and also after ensuring confidentiality...” However, there is no clear provision regarding the format in which data should be released online to facilitate their reuse.
- + The eGovernment Regulation 2014¹⁸, under the scope of NITA, states that “Every public body shall establish and maintain a website.” Such websites should provide information on the mission of public bodies, as well as related laws, services and organizational structure. The regulation also mandates NITA to establish and maintain a government web portal containing all information relating to government services. However there is no provision regarding the format and terms of use attached to this information.
- + The Access to Information Act provides, under its section 8, that “an information officer shall, once in every two years, publish a description of the categories of records of the public body that are automatically available without a person having to request access” and explain how to obtain access to those records. Such a provision can be considered as a prerequisite to an open data policy. However, no evidence could be found of any MDAs already publishing such a list of records.
- o The National Information Security Framework (NISF) includes a standard for classifying information—from “unclassified” to “top secret”—according to the anticipated impacts if the information were released publicly. NITA anticipates that this framework will greatly facilitate the process of determining which government data can be released as open data.
- o Although there is an Access to Information Act, other ways of requesting and accessing government information are common practices. For instance, academics working with government data usually directly address their request to the Permanent Secretary of the relevant Ministry, not the Information Officer.

¹⁷ <http://unstats.un.org/unsd/dnss/docViewer.aspx?docID=364#start>

¹⁸ <http://www.nita.go.ug/publication/national-information-technology-authority-uganda-e-government-regulations-2014>

Assessment of Policy and Legal Framework

Uganda adopted an Access to Information Act in 2005, but the ODRA team was informed that lack of capacity within the Government and lack of awareness among citizens may be hindering the full implementation of the Act. Moreover, the Official Secrets Act of 1964 is still in force, and again, the ODRA team was informed that it could be used as a reason for not releasing public information. The scope of both Acts should be clarified. Lastly, Government/CSO initiatives such as askyourgov.ug and dedicated trainings should be reinforced.

Furthermore, Access to Information regimes rely on citizen requests to instigate releases of public information, whereas open data initiatives release data proactively, aside from and in advance of any formal request. Here, most of the legal framework appears yet to be established, including: clear criteria for which data should be released as open data, policies to protect individuals' rights to privacy concerning personal data, terms of use (licenses) for open data, and acceptable data formats to be used for publishing.

A clear and comprehensive policy framework with sufficient safeguards for privacy rights is vital to ensure the integrity of an open data initiative. Policies must ensure that individual rights to privacy are protected, but at the same time must provide sufficient clarity so that privacy is not inappropriately used as a guise to withhold data that should be made public once any privacy issues have been satisfied. In this regard, although there are policies for data protection for some MDAs, there is not yet comprehensive legislation that applies a consistent framework to the government as a whole. The Data Protection and Privacy Bill currently proposed in Parliament appears to be the most appropriate means to address this gap.

Question Area	Assessment	Remarks
Protection of personal privacy	Yellow	The enactment of the Data Protection and Privacy Bill should be considered a priority for the establishment of an open data initiative.
Access to information right	Yellow	There is an Access to Information Act, but its implementation has been impeded by a lack of awareness among government and citizens.
Ownership and licensing	Red	There is no clear ownership, nor licensing scheme over government data.
Data security, data archiving and digital preservation	Red	Some key datasets for the country are still archived in paper format. Digital preservation should be mandated by law.

Question Area	Assessment	Remarks
Government data being sold	Yellow	Funding models of some Government Agencies could hinder the release of key datasets.
Other policies/laws	Yellow	There is no open data policy stating that the Government should release its data online in machine-readable format.
Overall	Yellow	No legislation prohibiting an open data initiative, but key elements of the legal framework are missing or incomplete.

Institutional structures, responsibilities, and capabilities within government

Importance High

Open data 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 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 remove impediments to data interoperability and exchange is also vital.

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

- + MoFPED is consistently viewed as the ministry best positioned to provide the institutional and political leadership for a government-wide open data program.
- + NITA, established in 2009, has the capacity to provide technical leadership for an open data program. NITA's statutory objectives include advising the government on all matters of IT development; coordinating, supervising and monitoring IT in the public and private sectors; and providing guidance on infrastructure for information sharing by government and related stakeholders¹⁹
- + Furthermore, NITA's current Strategic Plan includes the "establishment of an open data system in government" as part of its objective to implement strategies for improving information sharing across government.
- + One component of NITA's statutory mandate includes the creation and management of a national data bank, which could provide a valuable IT component under an open data initiative.
- + UBoS has strong capacity to provide technical oversight with respect to data management, data production, and the establishment of data standards.

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

- While MDAs have varying degrees of ICT proficiency and capacity, ICT structure across MDAs is not uniform, and most lack clearly defined functions for ICT

¹⁹ National Information Technology Authority, Uganda Act 2009

- responsibilities, according to a report from the ICT Ministry.²⁰ That same report outlined several models for ICT staffing based on agency size.
- + Each Ministry has a statistics officer with responsibility for developing a ministerial plan for statistics, in consultation with UBoS and the National Statistical System.
- 3.3 What inter-agency mechanisms coordinate ICT issues (such as for technical matters)? (Importance: Medium High) **G**
- + NITA has statutory authority to monitor and regulate standards for IT planning, implementation, delivery and support. Its mandate includes promoting and providing technical guidance for e-Government programs.²¹
- 3.4 What process is currently used to measure agency performance or quality of service delivery? (Importance: Medium) **Y**
- + OPM is responsible for coordinating the monitoring and evaluation of all GoU policies and programs. OPM produces the Government Annual Performance Report (GAPR), which is a comprehensive assessment of government performance, the results of public spending, and progress against established indicators in each sector.
 - + Sector chapters of the GAPR also serve as a performance benchmark for agencies within respective sectors.
 - MDA consultations revealed concerns about the quality of data reported in the Data Annex of the GAPR. In particular, several performance indicators lack data or data validation, or there are suspicions that data submitted by MDAs may simply be copied from previous years.
 - + MDAs are generally required to submit an annual report detailing the performance of the MDA and future plans.
- 3.5 Which agency or ministry is primarily responsible for data or statistics? (Importance: Medium) **G**
- + UBoS has statutory authority over the national statistical system. This authority includes the establishment of standards to ensure uniformity of quality, and coordination of statistics across agencies and levels of government to promote efficiency and quality.
 - o UBoS currently publishes some statistical series through CountryStat, an FAO project to provide national data for food and agriculture, and participates in the Open

²⁰ Institutionalisation of Information and Communications Technology (ICT) Function in Ministries, Departments, Agencies/Local Governments (MDAs/LGs), Ministry of ICT, Final Task Force Report, May, 2012.

²¹ National Information Technology Authority, Uganda Act 2009

Data for Africa²² initiative. Statistics are also published annually in statistical abstracts (PDFs).

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) **R**

- o Several MDAs, including MoFPED, MoES and UBoS collect personal information from citizens, and in most cases are forbidden by authorizing statute of disclosing this information without the prior consent of the individual(s) concerned. Data management practices must ensure that only aggregated or non-personal data is released as open data, and that anonymization techniques be employed where necessary to ensure that personal information is not disclosed.
- Some MDAs expressed concern that government data not be used “inappropriately” or for unauthorized purposes. Some of these concerns may be addressed through provisions in an open data policy that would indemnify the GoU against liability for the use of open data.
- Some MDAs expressed concern that public data servers could be “hacked” and data files manipulated or replaced. Indeed, while robust IT practices can mitigate the chance of hacking, the possibility can never be eliminated entirely (this is true for all governments, as well as the private sector). In the past, governments have responded to hacking attacks by issuing a public response detailing the nature and extent of the hack, explaining which files were affected, and replacing the corrupted files with authoritative versions.
- Some MDAs currently charge for data access, either on a cost recovery basis or in some cases to generate revenue. In all cases identified by the assessment, revenue was directed to the “general fund” and not to the MDA’s own budget, meaning that the MDA did not have a direct incentive to charge for data. Nonetheless, there may be some minor budgetary impacts if data previously subject to fees was made available openly.

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

- While some MDAs have higher proficiency rates, overall rates of IT literacy in the GoU are reportedly very low.²³
- A 2015 survey of public officials by the Center for ICT Policy in East and Southern Africa (CIPEA) revealed “limited ICT access due to high equipment costs and skills

²² Although beyond the scope of this assessment, it should be noted that the Open Data for Africa platform requires user registration to download data, and thus does not fully meet open data best practices.

²³ Information Technology Policy for Uganda, Ministry of ICT, September, 2012.

- shortages,” “an ‘old school’ and ‘paper’ culture prevailing among the older officials,” and “distrust of ICT tools by some officials.”²⁴
- A 2012 Ernst & Young report commissioned by NITA found that 52% of government staff had computer access and 39% had Internet access, but only 32% of staff had received ICT training.²⁵
 - + In some cases, IT capacity in MDAs has been enhanced through implementation of specific data management systems. For example, MoFPED requires that Finance Officers, Accountants and Auditors have sufficient IT proficiency to operate the IFMIS system. The same applies for human resource and accounting officers that use IPPS (payroll system). Funds are also set aside to train land officers with the introduction of the LMIS.

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

- + As mandated by the eGovernment Regulations of 2014²⁶, each MDA in the GoU has its own website which provides information about the MDAs mission along with key documents and publications. In addition, NITA maintains a central Government website that provides information about government MDAs (including links to MDA websites) and eServices.
- + There is also a central Government website www.gov.ug, designed and maintained by NITA, offering general public information but also eServices such as the e-water bill payment system²⁷. The website contains some empty sections such as the page entitled Health Centres in Uganda²⁸. The release of health centres as open data by MoH would facilitate the integration of such content in the Government Website.
- Some MDAs report a lack of internal capacity to maintain their websites properly, or a lack of server capacity to reliably host large data files. NITA provides IT support for MDAs that do not have the capacity to manage their own websites.
- + A cursory survey of shows that several MDAs actively maintain their own social media pages on Facebook, Twitter and elsewhere.

Assessment of Institutional Structures, Responsibilities, and Capabilities

The GoU appears to have the essential institutional elements necessary to operate an open data initiative. IT and technical capacity exist, and many of these groups are familiar with open data and express a willingness to move ahead with a government open data program. There is

²⁴ http://www.cipesa.org/?wpfb_dl=103

²⁵ Electronic Government Readiness Assessment Survey, NITA, December, 2012.

²⁶ National Information Technology Authority, Uganda (e-Government) Regulations, 2014

²⁷ <http://www.nwsc.co.ug/index.php/home-mobile/itemlist/category/38-politics>

²⁸ <http://www.gov.ug/services/health-centres-uganda>

already strong evidence of inter-agency working groups and processes which could be used to coordinate policies and activities for open data. However, some MDAs express a range of concerns about releasing their data in open formats. As is often the case, it is likely that some MDAs in Uganda will move quickly to adopt open data practices and release their data, while other ministries will take more time to come up to speed.

Question Area	Assessment	Remarks
Lead OGD Agency	Green	Broad agreement within and outside government on lead agencies
Agency CIOs and CTOs	Yellow	ICT staffing is not consistent across agencies, but statistics officers are well established positions
Inter-Agency Mechanisms	Green	NITA has statutory authority to monitor and regulate IT standards and implementation
Performance Management	Yellow	GAPR reports are concrete evidence of processes to monitor performance management, although there are concerns about the quality of reported data
Data/Statistics Agency	Green	UBoS has statutory authority over the national statistical system
Agency Concerns About Data	Red	Several agencies reported concerns about publishing open data, including security, cost recovery, and “improper use.”
ICT Skills in Senior Management	Yellow	Investments in information management systems has enhanced ICT skills, but several surveys report low IT skills more generally
Government Web Presence	Yellow	Most MDAs have websites and many are active in social media, but some MDAs also report lack of capacity, particularly in serving large files and systems.
Overall	Yellow	Essential institutional elements exist, but there are concerns about releasing data openly in some ministries

Government data management policies, procedures, and data availability

Importance High

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 as open data and in reusable formats 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.

4.1 What are the policies and practices on the management of government information?
(Importance: High) **Y**

- + As stated in the UBoS Act²⁹, the statistical agency is responsible for “promoting standardisation in the collection, analysis and publication of statistics to ensure uniformity in quality, adequacy of coverage and reliability of statistics information” and “providing guidance, training and other assistance as may be required to other users and providers of statistics.”
- + In order to strengthen statistical capacities among MDAs, UBoS set up in 2006 a five-year Plan For National Statistical Development³⁰. Activities included the development and implementation of a policy guide to govern the dissemination, sharing and use of data; adoption of standard guidelines in statistical production in line with international standards; and training UBoS staff and MDAs’ statistics units in IT production, analysis dissemination and use of statistics. The Strategy has been updated and renewed in 2013 and is still under implementation.
- + UBoS set up sector-specific technical working committees, where the agency and relevant stakeholders discuss data methodology, definitions, terminologies and indicators. Specific technical working committees have been set up for the following areas: district level information; energy; health; education; and agriculture. UBOS also set up a specific working committee around post 2015 MDGs indicators. Main outcomes of such working groups are the publication of metadata and statistical concepts within the Compendium of Statistical Concepts and Definitions publication. All concepts can also be found online through a specific search engine³¹.
- o All standards developed for quality and data collection by UBoS are approved by Uganda Department of Standards. Therefore, all MDAs are compelled to comply with

²⁹ <http://unstats.un.org/unsd/dnss/docViewer.aspx?docID=364#start>

³⁰ <http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/PNSD%2020072011.pdf>

³¹ <http://www.ubos.org/Compendium2012/>

them. However, there does not appear to be a system in place for consistent classification of data across all agencies in Uganda that would conform to international standards.

- Lack of funding, IT skills and IT infrastructure has been cited by UBoS as the main barrier to the implementation and broadening of statistical data management policies across the government. As a result, although UBoS guidelines appear to be very robust, they are not yet fully implemented across MDAs.

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

- + UBoS has a coherent view of statistical data produced among the MDAs. Information can be found in its Plan For National Statistical Development.
- + NITA does have a good view of main data systems based on surveys performed in 2012 and 2015.
- Several Ministries such as the Ministry of Energy are structured into distinct departments, each of which manages its own data. As a result, these Ministries do not have a good sense of all data they collect, manage and share.

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

- Datasets are hosted on various systems in various format across MDAs. There is no centralized way of accessing government data, either for the public, or the MDAs.
- Several key government data such as the Company Register managed by URSB are still paper-based.
- o NITA has a mandate to provide a national databank for all MDAs and offer technical support for centralised data center facilities. The agency is quite new, in operation since 2011, and these objectives are still being implemented. Although the exact scope of the national databank is not yet clear (a dedicated regulation is coming), an open data portal offering datasets hosting and search services could be one of its components.

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

- A recent NITA survey asked MDAs which data from other MDAs they would like to be able to integrate with their own data systems. Preliminary results identified around 70 desired data inputs from other systems. This shows both the need in terms of data sharing within MDAs and the potential benefit open data would bring. However, this same survey suggests that currently, data sharing among MDAs is very limited.

- o NITA has been tasked to set up a government intranet to facilitate data sharing across MDAs. This is a response to a lack of a single internal point of access to government data. A public, open data portal could provide the same utility for datasets classified as “open.”
- + UBoS is partnering with Open Data for Africa and other International Statistical Organizations to share macro level statistics they produce.

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

- + A large number of civil society organizations are collecting data in the field or through surveys. In a few cases, these organizations are sharing the data with others or openly (for example, the UN Global Pulse’s Pulse Lab). Researchers are also gathering data about, for example, educational outcomes. But in general these datasets are not accessible outside the organization collecting the data.
- + Data.ug is a citizen driven open data portal initiated in 2012 by civil technology organization Fruits of Thought and private company Mountbatten to collect all existing data related to Uganda and turn them into open data. The platform currently hosts 374 datasets (February 16, 2015) and has received financial support from UNICEF. Data.ug can be considered as a best practice example in terms of citizen-driven open data in Africa.

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

- Only UBoS seems to have practical experience of data anonymization and there is no general guidance on the matter.
- Objectives of homogeneity in data quality and anonymity concerns are used by UBoS as an argument for not releasing data. For instance, lots of statistical data from UBoS are geolocalized. The release of such data would be of high-value, however ongoing processes of anonymisation and quality control still prevent the public to benefit from them.
- Privacy concerns have also been cited as justification for not releasing aggregated data at the village level. This may reflect a lack of awareness of what constitutes protected personal data. The proposed Data Protection and Privacy Bill should provide guidance on this area.

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

- + As stated in 4.1, UBoS has the required capabilities in data management (quality control, data standardization) and is already providing capacity building to other MDAs in this area. UBoS has been commended by other MDAs for its work on data

- management, even though people recognize that the agency may lack human resources and data analytical capacities. An open data program could take advantage of such experience.
- + NITA also has IT capacity in terms of data management and it is expected to provide guidance and technical support to MDAs in this area.

Assessment of Government Data Management Policies, Procedures, and Data Availability

There are already several examples of the GoU making data publicly available for improved service delivery and other purposes. Even in the absence of a formal open data policy, it is clear that most MDAs and ministries see the value in making data available, and several have begun to publish data on their websites.

Regarding government data available outside the Government, the citizen initiative www.data.ug can be considered a model for a future open data initiative, and perhaps even a potential partner in data management and publication.

Regarding statistical data management, thanks to the effort of UBoS, there is a strong statistical framework in the GoU. Working committees are advancing UBoS recommendations and setting standards for data quality and data sharing in specific sectors such as Energy. However, although UBoS guidelines appear to be very robust, they are not yet fully implemented within MDAs. This is mainly due to lack of funding and digital capacity. Additionally, there does not appear to be a system in place for consistent classification of data across all agencies in Uganda that would conform to international standards. Nevertheless, UBOS data management should be considered as a best practice that could help to establish procedures for collection and release of open data.

Lastly, datasets are hosted on various systems in various formats across MDAs. There is no centralized way of accessing government data, either for the public or MDAs. In addition to NITA's project of establishing a national data center, the integration of open data principles into existing and future data systems will be key for improving the flow of information within the Government and to the public.

Governments are sometimes concerned about misinterpretation of government data. In the absence of an open data program, citizens may acquire data through personal connections or unofficial channels. This makes it difficult to resolve differences in interpretation of data since the provenance cannot be verified. Thus, one of the benefits of an open data initiative is that it provides public, authoritative copies of government data that can be used to resolve disputes over interpretation. If users manipulate the data, the government can point to its own copy as the "gold standard." In some cases, governments will publish PDF versions of data because this format is perceived as less susceptible to manipulation. This practice is acceptable so long as the same data are also provided in machine-readable formats in the open data platform.

Question Area	Assessment	Remarks
Policies and practices	Yellow	UBoS establishes best practices and processes in terms statistical data management. This could be leveraged to open data. However many MDAs are still not complying with them
Coherent view of data within MDAs	Yellow	UBoS has a coherent view on statistical data. NITA has a coherent, but not comprehensive view on government data.
Government data hosting	Red	Data are spread across MDAs with no central sharing point. Many MDAs lack hosting capacities.
Intra- and inter-government demand for data	Red	Huge intra- and inter-government demand for data but inefficient data sharing mechanisms.
Data available outside government	Green	Citizen-driven Data.ug website is making lots of government data available online as open data.
Anonymization of personal data	Red	Lack of capacity and guidance in most MDAS.
Agencies with data management capabilities	Green	UBoS has data management capabilities. NITA is another candidate.
Overall	Yellow	Strong data management and capacity in certain ministries, but several MDAs lack critical capacity for data

Key Datasets Assessment

There are already several programs under which the GoU publishes data publicly. Most MDAs publish at least one dataset in some form. However, these datasets are not necessarily open, licensed, machine readable, accessible, or set in context. In most cases, these data are locked in PDF-formatted documents, and in some cases access is obtained by knowing the specific (often unpublished) URL or person within a Ministry where the data can be found. The Ugandan Bureau of Statistics (UBoS) is a noteworthy leader, as many of their datasets are more structured (although often still in PDF) and available from a set of portals accessible via the UBoS website.

The information below in Table 1 details the current state of key data managed by the GoU. The following items are noted in each case:

- Name of the originating Ministry, agency, or department
- Data source, which could be a dataset, document, or online system
- Whether this is key data from the perspective of the public (civil society, citizens, journalists, developers, or researchers)
- Whether this is key data for service delivery within government or to the public (in some cases, only a portion of the data would be made available due to privacy or security issues)
- The status of the openness of the data related to international standards³²
- Remarks and the URL of the data source
- If an MDA is not listed, it was not clear whether any data had been publicly released by that MDA on its website or in conversations with the MDA or citizens. These include Ministries of Defence, Disaster Preparedness, and Refugees.

³² The legend is a slightly modified version of the Tim Berners-Lee five star open data view. In this case, the first star refers to having data available online but does not require an open license (Tim Berners-Lee, *Linked Data*, <http://www.w3.org/DesignIssues/LinkedData.html>, July 27, 2006).

N/A	Dataset not available online
★	Data available online in any form
★★	Data available online as machine-readable data (such as Excel)
★★★	Data available online, in machine readable form, non-proprietary formats (such as CSV)
★★★★	Data available as above and using open standards (such as RDF or SPARQL)
★★★★★	Data available as above and linked to other data to provide context

Table 1. Key data published by the Government of Uganda

Ministry or Agency	Data Source	Key for Public	Key to Service Delivery	Status	Remarks
Energy & Minerals	Energy Sector GIS Working Group Uganda open data site	Yes	Unknown	★★★	http://data.energy-gis.opendata.arcgis.com/
Uganda Bureau of Statistics	CountryStat	Yes	Yes	★★★★	http://countrystat.org/home.aspx?c=UGA
Gender, Labor, & Social Affairs	Gender Statistics Database	Yes	Yes	★★	http://www.mglsd.go.ug/genderdb/
Gender, Labor, & Social Affairs	Orphans and Vulnerable Children Management Information System (OVCNIS)	Yes	Yes	★★	http://www.mglsd.go.ug/ovcnis/
Water and Environment	Water Supply Database	Yes	Yes	★★	http://ipsanad.com/
Uganda Bureau of Statistics	Compendium of Statistical Concepts and Definitions	Yes	Yes	★★	http://ugandadata.org/ecompendium/BrowseDefinitions.aspx
Agriculture, Animal Industry, and Fisheries	Statistical Abstract, 2011	Yes	Yes	★	http://www.agriculture.go.ug/userfiles/Statistical%20Abstract%202011.pdf
Education, Sports, Science and Technology	Education Management Information System (EMIS)	Yes	Yes	★	http://www.education.go.ug/data/menu/2/EMIS%20Statistics.html
Finance, Planning and Economic Development	Uganda Budget Information (Open Budget portal)	Yes	Yes	★	http://www.budget.go.ug
Foreign Affairs	Compendium of Diaspora Investment and Business Opportunities	Yes	Yes	★	http://cod.mofa.go.ug/index.html
Gender, Labor, & Social Affairs	Case Management Information System Child Helpline	Yes	Yes	★	http://childhelpline.mglsd.go.ug/index.php?pg=t&w=page&i=NDQ=&v=a00c3ed3ed333265b0b11ed19538ad46062f7c8e
Government of Uganda	Government of Uganda website	Yes	Yes	★	http://www.gov.ug

Ministry or Agency	Data Source	Key for Public	Key to Service Delivery	Status	Remarks
Health	Ministry of Health Knowledge Management portal	Yes	Yes	★	http://www.library.health.go.ug/publications
Health	National Performance Report on Medicines Management	Yes	Yes	★	http://health.go.ug/mohweb/sites/default/files/NPRMM_MARCH_2013.pdf
Health	Clinical Guidelines	Yes	Yes	★	http://www.health.go.ug/docs/ucg_2010.pdf
Health	Annual Health Sector Performance Report	Yes	Yes	★	http://health.go.ug/docs/AHSPR_2013.pdf
Information and Communications Technology	Entebbe Municipality Postcodes	Yes	Yes	★	http://www.ict.go.ug/index.php?option=com_docman&task=doc_view&gid=75&tmpl=component&format=raw&Itemid=61
National Water and Sewerage Corporation	Water bill payment e-service	Yes	Yes	★	http://www.nwsc.co.ug/index.php/home-mobile/itemlist/category/38-politics
Office of the Prime Minister	Government Annual Performance Report 2010/11	Yes	Yes	★	http://opm.go.ug/assets/media/resources/36/Data%20Index.pdf
Public Procurement Disposal of Public Assets Authority	National Register Of Providers	Yes	Yes	★	e-Tenders: entity name, ID, email http://www.ppdaproviders.ug/
Public Procurement Disposal of Public Assets Authority	Suspended Providers	Yes	Yes	★	e-Tenders: entity name, ID, email http://www.ppda.go.ug/index.php/downloads/cat_view/45-suspended-providers.html
Public Procurement Disposal of Public Assets Authority	Awarded Contracts	Yes	Yes	★	http://www.ppda.go.ug/tenderportal/listofawarded-contracts.html
Trade, Industry, and Cooperatives	National Industrial Database	Yes	Yes	★	http://www.mtic.go.ug/nids/
Uganda Bureau of Statistics	Government Statistics Portal	Yes	Yes	★	http://www.ubos.org most data in PDF, some released in Excel.
Uganda Bureau of Statistics	National Household Survey	Yes	Yes	★	Census 2014 still to be released. 2009/10 is at http://www.ubos.org/UNHS0910/home.html

Ministry or Agency	Data Source	Key for Public	Key to Service Delivery	Status	Remarks
Office of the Auditor General	Annual Performance Report	Yes	Yes	★	http://www.oag.go.ug/
Finance, Planning and Economic Development	National Budget Performance Report	Yes	Yes	★	http://www.budget.go.ug/budget/national-budget-performance-reports
Justice and Constitutional Affairs	Court Case Administration System (CCAS)	Unknown	Yes	★	Cause lists, court performance, judgments, licensed advocates information, licensed bailiffs information http://www.judicature.go.ug/data/archive/73//Archive.html
Office of the Prime Minister	Departmental Publications	Yes	Yes	★	http://opm.go.ug/resource-center/departmental-publications/administration-support-services.html
Police Force	Crime Records Management System	Yes	Yes	★	http://www.upf.go.ug/publications/
Office of the Auditor General	Annual Performance Report	Yes	Yes	★	http://www.oag.go.ug/
Finance, Planning and Economic Development	National Budget Performance Report	Yes	Yes	★	http://www.budget.go.ug/budget/national-budget-performance-reports
Health	Health Management Information System 2	Yes	Yes	N/A	http://hmis2.health.go.ug/ based on DHIS 2 platform
Finance, Planning and Economic Development	BOOST (expenditures)	Yes	Yes	N/A	Database under implementation with support from World Bank
Gender, Labor, & Social Affairs	National Gender Based Violence Database	Yes	Yes	N/A	Expected to have locations, victims, and types of incidents
Health	Health Resources for Health Information Systems	Yes	Yes	N/A	http://hris.health.go.ug (restricted access)

Ministry or Agency	Data Source	Key for Public	Key to Service Delivery	Status	Remarks
Health	Uganda Heart Institute patient database access system	Yes	Yes	N/A	Patient details: diagnosis, location, religion
Lands, Housing, and Urban Development	Land Information System (LIS)	Yes	Yes	N/A	There is an ongoing project of land registry digitization.
Revenue Authority	eTAX system	Yes	Yes	N/A	International trade: taxpayer, payment, return; https://www.ura.go.ug/leftMenu.do;jsessionid=da82d7871efb31a7db5453599a2e20ab42def583e6683d82ce8e9ad293d927f5.e38LaxeRbxySaly0Ob3qTbx8Pa3v0
National Examinations Boards	Examination Processing	Yes	Yes	N/A	Exam results: subjects, level, index, scores, aggregate score, grade
Registration Services Bureau	Company register	Yes	Yes	N/A	Company name, principals, location, and type of business
Human Rights Commission	Uganda Human Rights Commission Database and Search Engine	Yes	Yes	N/A	Monitor government compliance with international regional and local human rights recommendations: progress, recommendations. http://www.uhrc.ug/#
Human Rights Commission	Human Rights Integrated Information System	Yes	Yes	N/A	Complaint management: names, case #, complaint #, victim bio data, violation done, violator
Human Rights Commission	Information System (Microsoft Dynamics)	Unknown	Unknown	N/A	None
Internal Affairs	Special Pass and Work Permit System	Yes	Yes	N/A	None
Internal Affairs	National Information Security System	Unknown	Unknown	N/A	None
Internal Affairs	e-Visa	Yes	Yes	N/A	Visa processing and issuance
Internal Affairs	Community Service Database	Yes	Yes	N/A	None
Internal Affairs	National Counter Trafficking database	Yes	Yes	N/A	None

Ministry or Agency	Data Source	Key for Public	Key to Service Delivery	Status	Remarks
Justice and Constitutional Affairs	Administrator General System	Unknown	Unknown	N/A	None
Police Force	Express Penalty System	Yes	Yes	N/A	None
Police Force	Private Security Infrastructure System	Unknown	Unknown	N/A	None
Prisons Service	Prisons Management System	Yes	Yes	N/A	None
Registration Services Bureau	Industrial Property Automation System (IPAS JAVA System)	Yes	Yes	N/A	None
Registration Services Bureau	Mobile Vital Records System	Yes	Yes	N/A	Birth and death records http://www.mobilevrs.co.ug/birth_stats_view.php
Revenue Authority	Electronic cargo tracking	Unknown	Yes	N/A	Under implementation
Investment Authority	Act system	Yes	Yes	N/A	Land requests and licenses
Local Government	Local Government Information and Communication System (LOGICS)	Yes	Yes	N/A	None
National Drug Authority	Drug Registration Application	Yes	Yes	N/A	None
National Drug Authority	Exports verification System	Yes	Yes	N/A	None
National Drug Authority	Clinical Trials database	Yes	Yes	N/A	None
National Planning Authority	Geographic Information System	Yes	Yes	N/A	None
Registration Services Bureau	TRIM	Unknown	Yes	N/A	Records management system
Revenue Authority	Automated System for Customs Data	Unknown	Yes	N/A	Import data: container #, agent
Water and Environment	Water Information System	Yes	Yes	N/A	None

Certain data are recommended by the open data community for inclusion in any open government data initiative. These datasets are considered important because of the public need to have authoritative information (such as map data showing boundaries and borders), data uniquely available to government (such as census and legislative data), for transparency (budget and financial data), and for key public services (like health care and education). Table 2 lists the essential datasets identified in the [Open Data Barometer](#),³³ along with an assessment of those datasets for the GoU. Uganda currently ranks 64 out of 86 on this scale, down from 55 in 2013. *The decrease was due to limited engagement between the Government and civil society on the use of open data.*

Table 2. Uganda's status in releasing specific open data related to international best practice

Type of Data	Data Exists	Online	Machine readable	In bulk	For free	Open license	Up to date	Sustainable	MDA(s) in charge	Remarks
Map	No	No	No	No	No	No	No	No	MoLHUD	MoLHUD is responsible for providing a national basemap. In the absence of the data, other MDAs set up their GIS system (NPA, UBOS, URSB).
Land register	No	No	No	No	No	No	No	No	MoLHUD	There is an ongoing project of land registry digitization.
Detailed census	Yes	Yes	Yes	No	Yes	No	No	Yes	UBOS	Last census was held in 2014 and results should be released by end of 2015.
Detailed government budget	Yes	Yes	No	No	Yes	No	Yes	No	MoFPED	Uganda Budget Information website enables, to search for budget data at national and local level. However the underlying data are not available as open data, only as PDF documents.
Detailed government spending	No	No	No	No	No	No	No	No	MoFPED	There is an undergoing BOOST project to centralize all spending data. However data will not be released as open data.

³³ Web Foundation, Open Data Barometer, <http://barometer.opendataresearch.org/>, January 15, 2015.

Type of Data	Data Exists	Online	Machine readable	In bulk	For free	Open license	Up to date	Sustainable	MDA(s) in charge	Remarks
Company register	Yes	No	No	No	No	No	Yes	Yes	URSB	Record for a company can be obtained against payment of a fee, but only in paper format.
Legislation	Yes	Yes	No	No	Yes	No	Yes	Yes	All MDAs	Laws and Acts are to be found on dedicated MDAs, there is no centralized access.
International trade	Yes	Yes	Yes	No	Yes	No	Yes	Yes	UBOS	http://www.ubos.org/statistics/macro-economic/trade-2/
Health care system performance	Yes	No	No	No	No	No	No	No	MoH	Data collected under HMIS http://hmis2.health.go.ug/
Education performance	Yes	No	No	No	No	No	No	No	UNEB	Data are sold in paper format.
Crime statistics	Yes	Yes	No	No	Yes	No	No	No	UPF	Registered in the Crime Records Management System http://www.upf.go.ug/publications/
National environment	Yes	Yes	No	No	Yes	No	No	No	MoWE	http://www.mwe.go.ug/index.php?option=com_docman&task=cat_view&Itemid=223&gid=15
National election results	Yes	Yes	No	No	No	No	No	No	Electoral Commission	http://www.ec.or.ug/index.php
Public contracts	Yes	Yes	No	No	No	No	No	No	PPDA	http://www.ppda.go.ug/tenderportal/listofawarded-contracts.html

List of Priority Datasets

The priority datasets list is a combination of existing datasets flagged as key for public service delivery (table 1) and datasets considered by international standards as essential to open data (table 2). This list is sorted according to the level of effort that is likely needed, from a technical perspective, to release these datasets. Key datasets from planned projects are also mentioned. Lastly, it is worth mentioning that even though best practice recommends data be made available at the most detailed level, best practices also strictly exclude data that includes personally-identifiable information that would violate individuals' rights to privacy.

Datasets available online in machine readable format

This dataset can be considered a best practice in terms of open data and released directly "as-is."

- Water Supply Database, Ministry of Water and Environment

Datasets available online, but not in machine-readable format

The online version of these datasets would benefit from a conversion into machine-readable formats. In most cases, it is likely that this can be easily done from the data system itself.

- Government Annual Performance Report, Office of the Prime Ministry
- Annual Health Sector Performance Report, Ministry of Health
- Awarded Notices and Contracts (Tender Portal), Public Procurement Disposal of Public Assets Authority
- Crime Records Management System (Annual Crime Report), Police Force
- Education Management Information System (EMIS), Ministry of Education, Sports, Science and Technology
- Knowledge Management portal, Ministry of Health
- National Household Survey (Census 2014), UBOS
- National Performance Report on Medicines Management, Ministry of Health
- Open Budget Information (Open Budget portal on National and Local Government Budget and Performance), Ministry of Finance, Planning and Economic Development

Datasets that exist, but are not available online

There is an opportunity to rapidly make the following datasets available online in machine readable formats.

- Health Management Information System (HMIS), Ministry of Health
- Health Resources for Health Information Systems, Ministry of Health
- Examination Processing (Examination results), Uganda National Examination Board

Datasets under implementation or in planning stages

There is an opportunity to integrate open data in the design of the following data systems planned or currently under implementation. Open data by design means making sure the data can be exported or downloaded in bulk, machine-readable formats, or accessed dynamically via an application programming interface (API), while implementing adequate safeguards to protect data privacy.

- BOOST (detailed Government expenditures), Ministry of Finance, Planning and Economic Development
- Land Information System (LIS), Ministry of Lands, Housing, and Urban Development
- Company register, Uganda Registration Services Bureau

Demand for Open Data

Importance Very High

There is a lot of demand for open data from the Government of Uganda. A fair amount of this demand is actually intra-governmental, where other MDAs need data for service delivery, planning decisions, or budgeting. On the public side, demand comes from, among others, developers, journalists, researchers, civil society organizations, health care workers, and educators. Today, important data are published in newspapers, a practice which is expensive and extremely limiting in terms of utility. No one, inside or outside of government, seems satisfied with this option.

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) **G**

- + There is a growing demand from the Ugandan open data community for government data. This demand crosses all MDAs, but there's a particular focus on the release of data for **education, roads, infrastructure, health, agriculture, and energy**. As an example, some of the datasets that are of highest priority are noted in Table 3 below.
- + Datasets are needed in a machine-readable data format, such as Excel or CSV.
- + Data is required in enough detail to provide information following service components (budget, products, medicine) from the national to the District or institution level.
- Some organizations are not prepared to conduct detailed analysis or visualization of large or complex datasets.

Table 3. Key datasets and data attributes requested from the public

Sector	Description
Education	<ul style="list-style-type: none"> ● School enrollments, facilities, equipment, and locations ● Student-teacher ratio ● Examination results by population and school ● Budget allocation ● Teacher population, absenteeism, and certification ● Education system structure and performance ● Student population, welfare, and outcomes ● Inventory of all education data collected or available ● Graduates of universities (degrees, skills, employment)
Roads	<ul style="list-style-type: none"> ● Planned improvements (funds, status) ● Funding ● Status of work completed and validation

Sector	Description
Health	<ul style="list-style-type: none"> ● Health centers (locations and distance to populations, monthly reports, salaries, finances and funding, services available and costs, what's in stock, # of beds, staff, patient/doctor/nurse ratio, effectiveness by outcomes and diseases, public perception of health centers) ● Registry of doctors, nurses, and visiting physicians (facility, education, qualifications) ● Health Service Commission ● Traditional herbs (potency, where to grow, where to buy) and traditional health practices (effectiveness, historical data) ● Disease outbreaks (predicting Ebola and other infectious diseases) ● Nutrition and exercise needs and recommendations ● Prescriptions (cost, availability, effectiveness) and pharmacies (in stock, location, cost) ● Weather and links to disease (frequency, season, disease vectors, location vs. student migration) ● Health-related demographics (# of babies born with disabilities)
Agriculture	<ul style="list-style-type: none"> ● Crops planted and yield harvested ● Location of crop diseases ● Climate data
Infrastructure	<ul style="list-style-type: none"> ● Safe water location ● Public commuter transport ● Government-funded housing (contracts, builders, capacity, availability) ● National technology and skills infrastructure
Energy	<ul style="list-style-type: none"> ● Location and estimated size of oil and gas reserves ● Current management of oil and gas facilities and services ● Financial disclosures of costs and revenues
General	<ul style="list-style-type: none"> ● Government public service employment ● Cross-border export and taxation ● Travel costs for President, Cabinet ministers, and others ● Data available in other languages (such as Lugandan)

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

- The events and interviews of this ODRA team encountered very few businesses using open government data as part of their core business or service delivery. This does not mean that this is not happening, but only that we did not find evidence of it. It was not a particular focus for this ODRA, so further investigation may show evidence of some use.

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

- MDAs receive requests for data via an Access to Information request and respond. However, as noted previously, many requests appear to be going unfulfilled.
- MDAs receive requests for data via direct request from an outside organization or individual to an individual within the government.
- Citizens can request that the GoU open a specific dataset via the Ask Your Gov website (<http://askyourgov.ug/>), which is run by a group of citizens and not by the GoU.
- These requests are acted on and if the information is released, it is only released to that one requester in hard copy format.
- There is no official forum or online place to ask for datasets to be released.
- There is no central place or method from which to access datasets across the government or even within a single MDA.
- How the GoU publishes the data it does have is one of the key barriers to the use of the data. In general, data is published embedded within a PDF document or in the newspaper.

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

- + When asking a specific government official for data, some researchers were able to get hard copies of the data released to them, often for a fee.
- There is a sense of frustration in the inability to gain access to government data that is accurate, timely, detailed, and machine readable.
- Many researchers did not use the Access to Information process because they had either never had success with it or were not aware of it.

Summary of Demand for Open Data

The demand for open data in Uganda is healthy and growing. This comes from many sectors: journalists, developers, civic innovators, civil society, researchers, and citizens. Many of these people are well informed, have a high data literacy, and are trying to achieve outcomes that support a better quality of life for Ugandans. By providing more open data and at a higher quality, the Government of Uganda can achieve greater acclaim within the larger community serving its citizens, while improving service delivery. In some cases, the release of machine readable data would allow civil society to reposition funds from re-keying data to providing services, and all would clearly benefit.

Uganda is a global hub for social accountability and stands as an example to other regional governments. How the Government of Uganda responds to the demand for open data will lead the way for other governments as well. Supporting and responding to the demand for open data also gives internal and external benefits in the areas of public expenditure tracking surveys, social audits, scorecards, open budget, and contracts monitoring.

Question Area	Assessment	Remarks
Demand for open data	Green	This is robust
Business use of open data	Unknown	The ODRA did not focus on this area
Public agencies' response to requests for open data	Yellow	Response is inconsistent and data release is not made public
External view of agencies' response to requests	Yellow	Access to Information is available but not consistently adhered to
Overall	Yellow	There is a strong demand-side ecosystem for data, but government response to data requests is problematic

Civic Engagement and Capabilities for Open Data

Importance High

People outside of the government provide some of the best analysis, insights, and uses of open data. As part of the open data ecosystem, civil society, data journalists, developers, businesses, entrepreneurs, researchers, students, and others use government data to conduct their own business, and to help government in understanding how effective they are delivering services to citizens. In Uganda, several outside organizations are also transforming government data locked in PDF documents into visualizations, raw data, and insights.

Other governments address civic engagement in a variety of ways, focused first on engagement and secondarily on helping to create data literacy.

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) **G**

- + Interestingly, there is a growing open data ecosystem of developers, civil society organizations, universities, innovators, and volunteers who are posting data online that could be useful to or derives from GoU data. These include organizations like UNICEF, World Bank, Marie Stopes, Uganda Health Marketing Group, Doctors Without Borders, and UN Pulse Lab.
- + To make use of the data, outside groups have had to convert the tables in these Government PDF documents into datasets through time-consuming reentry of the data. In some cases, those civil society organizations may publish that data to share with others. One specific example of this involves data published by the Ugandan National Roads Authority (UNRA) for the proposed national roads for periodic maintenance. The data is available from the UNRA site³⁴, embedded within a PDF document. The data in this table was then recreated by a developer³⁵ as an interactive, online dataset in a CSV format, including with [an API](#) (application programming interface) to allow people to more easily use this data (Figure 1).
- + There are a variety of organizations participating in and leading the effort to reuse government data, including Code for Africa and Data.ug. They do so by holding events (such as a recent dBootcamp³⁶ for data journalists).
- + A growing number of innovation hubs have started in Uganda, such as Outbox, Mara Launch Pad, Hive Colab, AppAfrica and others. These organizations are well positioned to help businesses create jobs and realize the economic potential of open government data. Outbox recently hosted a Kampala instance of International Open Data Day on

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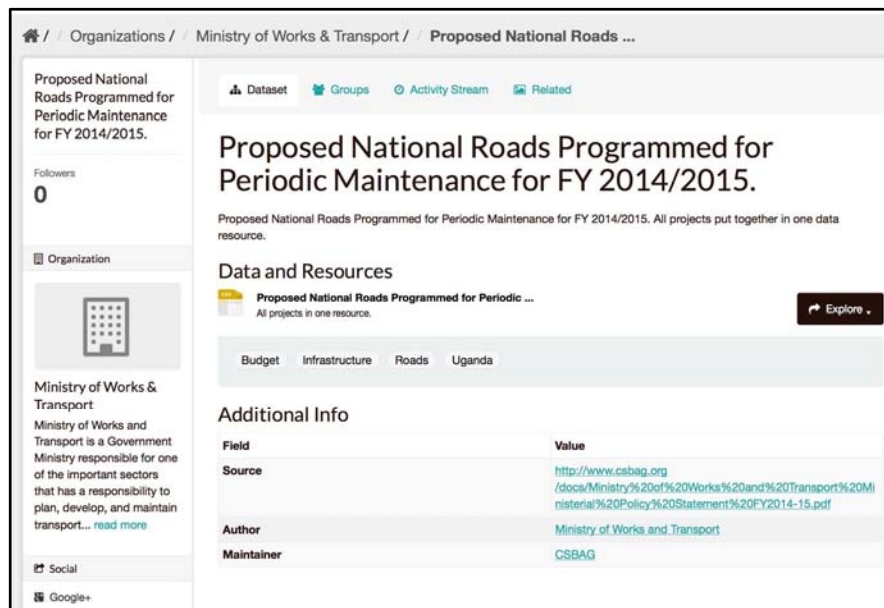
<http://www.csbag.org/docs/Ministry%20of%20Works%20and%20Transport%20Ministerial%20Policy%20Statement%20FY2014-15.pdf>

³⁵ <http://catalog.data.ug/dataset/uganda-national-roads-authority>

³⁶ <http://kampala.dbootcamp.org>

February 21, with about 75 developers, citizens, and journalists coming together to discuss and use open data.

Figure 1. Value added, interactive dataset for national roads



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) **R**

- The GoU has not officially engaged with the public in developing apps or organizing events. However, individuals within the GoU have personally attended such events organized by civil society.

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

- + Many GoU MDAs have Facebook pages that are fairly active and up to date. A few organizations are on Twitter (such as State House and the Bank of Uganda).
- o In both Facebook and Twitter, social media is used by the GoU primarily as a broadcast mechanism rather than for digital engagement.
- There does not appear to be any policy or platform that allows GoU personnel to engage directly with the public over social media.
- Only 1.7% of the population was registered on the Facebook³⁷ in 2012 making the country one of the less connected to social networks worldwide.

³⁷ Internet World Stats

6.4 To what extent is there an existing Apps Economy? (Importance: Medium High) **Y**

- + Cell phone penetration is high, and good examples exist in nearby countries of the use of either smart phone apps or SMS to reach citizens.
- + The GoU with UNICEF used UReport to deploy a mobile polling system that allowed 300,000 farmers and rural villagers to easily report the presence of a banana bacteria wilt disease that threatened the central crop of the Ugandan diet. Fast and easy reporting allowed quicker treatment of crops and control of the disease.³⁸
- + While the Apps Economy may still be quite small in Uganda, it is emerging with some flagship businesses such as hellofood.ug (food delivery), Kaymu (eCommerce) or Kolas Studios, the leader in mobile game development in Africa.

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) **Y**

- + Code for Africa and others provide workshops in how to use, understand, and visualize data. Such workshops often include training developers to be intermediaries in this process with the public.
- + Academic institutions like the Economic Policy and Research Center (EPRC) and the Ugandan Technology and Management University (UTAMU) are teaching data literacy courses. EPRC began teaching courses to government officials in March 2015 to focus on data-driven decisions. UTAMU has courses on how to use, analyze, and understand data as part of the student curriculum at UTAMU and at vocational colleges around Uganda.
- + UBoS provides some internal government training and a community of practice for the lead statisticians at each MDA.
 - o These activities are all quite new (some just starting this month) and need to be scaled up and made accessible for many more people.
 - There appears to be no effort to introduce data literacy skills to primary and secondary school students.

Summary of Civic Engagement and Capabilities for Open Data

Demand for open data is high and intermediaries are poised to support the release of open government data. The Government is already using social media to connect in some areas with the public. With a few changes, the Government would be in a good position to engage the members of the open data ecosystem.

First, developers, businesses, and analysts would prefer to have Ugandan data available in Excel, CSV (comma separate values), or other machine readable formats. This is particularly frustrating in that the data was originally in an electronic format, manipulated to publish into a

³⁸ Open Data, How Mobile Phones Saved Bananas From Bacterial Wilt in Uganda, <http://www.theguardian.com/global-development-professionals-network/2015/feb/11/open-data-how-mobile-phones-saved-bananas-from-bacterial-wilt-in-uganda>

paper format, and then re-keyed. The scarce resources within government and in civil society are being spent on data entry rather than on delivery of services to citizens.

Second, including data literacy in the primary and secondary schools would help to build both the demand for open data in future generations, but more importantly the critical thinking skills for a better informed society.

Innovation hubs in Uganda present a particularly interesting opportunity for civic engagement. These organizations can help new and existing businesses realize the economic potential of open data. The potential economic benefits of open data are two-fold. First, open data can lead to the development of data-driven products and services, particularly in key sectors such as agriculture and health, which in turn produces new jobs and opportunities, particularly for young people with technology skills. Second, the availability of better information can improve the quality of life for all citizens. For instance, better information about transportation options can improve mobility and commute times, while basic information about the capacity and operating hours of regional health clinics can improve well-being and levels of care. In other countries, research estimates the economic benefits from better use of public data in these sectors amounts to tens or even hundreds of millions of \$US annually (see Annex 4).

Question Area	Assessment	Remarks
Available infomediaries	Green	There is an active group of organizations already helping
Government engagement	Red	GoU is not visibly engaged with external organizations in using open data
Government engagement through social media	Yellow	There are some good examples of GoU using social media, but not for open data
Apps economy	Yellow	There is very little work going on for apps using government data
Data literacy and capacity training	Yellow	Good work has started, but it is very recent and only at government and university levels
Overall	Yellow	There is a vibrant community of data intermediaries and advocates, but GoU activity in this regard is nascent

Funding an Open Data program

Importance Medium High

Open data is not a high-cost initiative. Still, it requires some financing. A government needs some funding to support training of officials, development of an open data portal and, very importantly, investment in the reuse of its data (through co-creation events and selected apps development).

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) **G**

- + The prior existence of working groups and technical capacity suggests that initial funding requirements for certain essential functions could be modest. A significant amount of the initial logistical and technical work may be able to be supported under existing programs and processes.
- + MoFPED is well positioned to both lead the open data initiative and to identify the necessary resources for initial phase financing.

7.2 What, if any, resources exist or have any been identified to fund development of initial apps and e-Services that will use open data? (Importance: High) **Y**

- + NITA has indicated it has plans to build an open data portal and has indicated it has initial funds reserved for its development.
- o Funding for ongoing management and growth of the open data portal has not been addressed.

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) **Y**

- + Several MDAs are making significant investments in information management systems, including HMIS (health), EMIS (education), LMIS (lands), PIMIS (OPM), and IPPS (personnel) to name only a few. While not primarily intended as open data systems, these investments nonetheless support essential data infrastructure and capacity that could be integrated with an open data program, possibly with comparatively modest changes.
- o Uganda is currently discussing with the World Bank a Regional Communications Infrastructure Project (RCIP), which as proposed would provide funding for use of ICT and e-services to improve service delivery. However, this proposal is currently still being negotiated and has not yet been finalized.

- o NITA is in the process of developing a national databank, which could provide much of the necessary IT infrastructure for hosting data files. However, this planning appears to yet be in the early stages.
- o Training budgets are currently decentralized within each MDA. Coordinated training programs, organized by NITA, have been proposed and are currently subject to confirmation.

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

- There is no evidence of GoU having sponsored and funded innovation initiatives in ICT, although some initiatives have been proposed.

Assessment of Funding for an Open Data Program

Open data initiatives require several categories of activities, each of which must be supported through funding. Fortunately, the GoU is already making significant investments in information management systems in several key sectors, and these systems can likely play a core role in the infrastructure for open data. Funding for other essential systems, particularly the ongoing management of an open data portal (once it is developed and deployed) do not currently appear to be addressed. Other important programs, such as innovation, demand side engagement, and skills training are still in the proposal stages, and their funding prospects are unclear.

Question Area	Assessment	Remarks
Initial Phase Funding	Green	MoFPED can provide guidance for funding; existing working groups can support initial activities
eServices and Applications	Yellow	Funding for initial development of an open data portal is identified, but ongoing maintenance and growth has not
Infrastructure and Skills	Yellow	Significant investments in IM systems; funding for comprehensive skills training is unclear
Innovations	Red	Little evidence of funding for innovation initiatives
Overall	Yellow	Clearly identified funding for data capacity tied to information systems, but lacking evidence for funding other important components

National technology and skills infrastructure

Importance High

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 of citizens? (Importance: High) **R**

- The country ranks 156 of 193 on the UN eGovernment Development Index 2014, which assesses national websites and how eGovernment policies and strategies are applied in general and in specific sectors for delivery of essential services.
- In terms of eParticipation of the Government, the country is ranked 152 in the UN eParticipation Index 2014, whereas Kenya is ranked 33. The eParticipation Index focus on the use of online services to facilitate provision of information by governments to citizens (“e-information sharing”), interaction with stakeholders (“e-consultation”), and engagement in decision-making processes (“e-decision making”). Open data is one the components of eParticipation.
- + The UNICEF Innovation Team based in Kampala developed uReport, an SMS-based survey system used by young citizens to receive information and provide feedback on what is happening in their community. The tool has notably been used in the education and health sectors to gather beneficiary feedback³⁹, and to monitor the spread of a banana tree disease and enable a more efficient Government response⁴⁰. Almost 300,000 Ugandans have registered with uReport (March 2015).

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

- In 2013 only 16.2% of the population uses the Internet, access via mobile phone included. By comparison, the internet access rate in Kenya was 39%⁴¹.
- Average price per month for broadband connection was \$13.68 in 2013. Average price for mobile Internet (500MB) was \$7.73 in 2013. This is 18.18% of Growth National Income (GNI) per capita per month in 2013. This is more than 30% of GDP per capita per month which was \$42.5 in 2013⁴², making the country one of the less affordable in terms of Internet access.

³⁹ <http://blogs.worldbank.org/ic4d/asking-beneficiaries-report-how-we-are-doing-using-ict-innovations-education>; <http://blogs.worldbank.org/ic4d/crowdsourcing-feedback-improve-healthcare-systems>

⁴⁰ <http://blogs.worldbank.org/youthink/how-youth-saved-bananas-uganda>

⁴¹ Web Index 2014

⁴² ITU, Measuring the Information Society Report 2014

- + Uganda has one Internet Exchange Point (IXP) connecting 17 ISPs and other networks. A national IXP reduces cost, latency, and improves the bandwidth within the country.
- + Internet infrastructure is improving quickly. Through NITA, the GoU has added over 2,000km of fiber-optic cable, with plans for an addition 2,000km. The National Backbone Infrastructure currently connects to Kenya (at two points) and South Sudan, and connections to Rwanda and Tanzania are scheduled to be completed in March, 2016.
- + Kampala will be the first city to benefit from Google's Project Link, an initiative to “build high-capacity fiber network to enable any local mobile operator or Internet service provider (ISP) to connect more people in the city to a faster, more reliable Internet.” This project is part of Google’s effort to provide Internet access to under-served populations. The company selected Kampala, because of its “dense urban center currently limited to pre-broadband speeds.”⁴³
- + Regarding access to mobile phone and SMS, the number of mobile subscriptions in 2013 accounted for 44% of the population, up from 2.9% in 2003⁴⁴.
- + The country has an estimated mobile cellular coverage of 100%⁴⁵ meaning that there is no area in the country where people cannot receive and send SMS messages.
- + Main Internet mobile providers such as MTN⁴⁶ and Orange⁴⁷ are claiming a 3G+ coverage (more than 21Mbps) for most of the cities, and an EDGE coverage (less than 21Mbps) in most of rural areas of the country. This means that people can enjoy Internet mobile almost everywhere in the country. Both operators are also selling 4G LTE service for Kampala. Moreover, according to the International Telecommunication Union, 32% of rural areas had access to 3G coverage in 2012, which was one of the best levels for African countries⁴⁸.

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

R

- Uganda has only one Secure Internet server per 1 million people. Secure Internet servers are servers using encryption technology essential for secure Internet transactions. Although this is not a key indicator for an open data initiative, it is considered a measure of the level of security of IT infrastructure, and a source of potential breaches in data security that might impact an open data initiative.

⁴³ Google Project Link website

⁴⁴ International Telecommunication Union

⁴⁵ World Bank Development Indicator 2014, <http://wdi.worldbank.org/table/5.11>

⁴⁶ <http://www.mtn.co.ug/Coverage/MTN-Coverage.aspx>

⁴⁷ http://www.orange.ug/mobile-plans/pdfs/coverage_map_2013.pdf

⁴⁸ ITU, Measuring the Information Society Report 2014

- o NITA is planning to upgrade its national data center which should provide better hosting capacity for Government digital content, as well as high-speed internet to MDAs headquartered throughout Uganda. However, based on conversations with individual MDAs, it is not clear if all MDAs will migrate all of their systems to the national data center, and how the data center will interface with systems that continue to reside within individual MDAs.

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

- o Literacy rate – in Uganda, the percentage of the population aged 15 and over who can with understanding read/write a short simple statement - was 73% in 2014⁴⁹. This is close to median value for African countries.
- Digital literacy and data capacity both within Government and the population is considered very low and was cited as the major challenge to an open data initiative by several interviewees.
- + Multiple universities in Uganda provide degrees in statistics, including Makerere University, Kumi University, Uganda Technology and Management University, and Kampala International University. These universities also provide degrees in Computer Science.
- Data literacy in the general population is very low, and the use of data and statistics in primary and secondary schools is very low.
- Level of people engaged in tertiary education (University level) was 9% in 2012⁵⁰. This is comparable to other countries in the Region (Rwanda is 7%) but low compared to other developing regions.
- + The technology scene is relatively active and well served in the country with 4 startup incubators including Hivecolab and Outbook. Several developer communities are also active, including Mozilla Uganda, the Uganda Developer Community, the Uganda Linux User Group, and the Uganda ICT Association, the umbrella organization for ICT companies promoting diffusion of ICT in the country.
- + The country has a vibrant and dynamic ICT sector according to UK Trade and Investment Department⁵¹. Contribution of ICT sector to Gross Domestic Product has increased to 6.2% (GDP 2012) from 2.5% in 2006 and is considered a major contributor to national revenue. The sector has attracted an investment in excess of US \$73 Million employing over 1 million people.

⁴⁹ World Bank Development Indicators: <http://data.worldbank.org>

⁵⁰ World Bank Development Indicators

⁵¹ <http://opentoexport.com/article/ict-sector-in-uganda/>

- Contribution of ICT services to the growth of SMEs is still considered fairly weak in the country (score of 3 out of 10 on the Web Index 2014⁵²).

Assessment of national technology and skills infrastructure

Broadband Internet penetration is currently very low and confined to the main cities (16% of the population), but the rapid development of mobile broadband and a dynamic ICT sector should enable many more people to access Internet in the next years. Furthermore, significant infrastructure investments by both the GoU and the private sector hold the potential to significantly and quickly improve the IT landscape.

Lack of digital literacy within Uganda population will be one of the main challenges for realizing the full benefit of ICT and open data for the country. However, there is an active technology ecosystem of startups, tech hubs, academics and independent developers where the level of digital literacy is strong. GoU should leverage this ecosystem to build digital capacity among the population and address the digital divide.

Currently, poor IT infrastructure and lack of hosting capacities in most MDAs does not allow for efficient eGovernments services and information management systems within the government. NITA's investments in high-speed data infrastructure will address some of these issues, but there is uncertainty as to whether the agency will have sufficient funding and capacity to realize them fully.

Several MDAs already have significant experience and technical capacity in working with digital data and providing data services to the public and other ministries. But some MDAs simply lack this capacity, and their data may reside in paper-based filing systems or personal hard drives. As a result, these agencies are not in a good position to meaningfully contribute to (or benefit from) an open data initiative.

Question Area	Assessment	Remarks
Local ICT “ecosystem”	Red	Low rankings in recent eGovernment and eParticipation indices
Internet access	Yellow	Access to high-speed data is relatively low and costs are high, but recent technology initiatives hold promise
Compute and store infrastructure	Red	Low levels of installed server infrastructure
IT industry, developer community and digital literacy	Yellow	Uganda has a vibrant IT sector, but low overall levels of data literacy among citizens.

⁵² <http://thewebindex.org/data/?indicator=S5&country=KEN,RWA,UGA>

Question Area	Assessment	Remarks
Overall	Red	Broadband access is low for the country as a whole, and data literacy is a challenge

Recommendations

The overall finding of this assessment is that Uganda is in a unique position to move ahead with an open data initiative that can achieve early success, demonstrable benefits with respect to improving service delivery, and provide a sound foundation for sustainability over the long term.

To achieve these outcomes, we recommend the following actions:

Senior Leadership

Inter-agency Memorandum summarizing the ODRA findings, and inviting participation of all MDAs. Open data will impact every element of government in some way. Engaging all MDAs early in the process will provide the basis for a successful debut of an open data initiative. Just as important, this initial step sends a signal that open data is a significant priority for the GoU. Accordingly, the Memorandum would typically be issued from a high-level official such as the Prime Minister, the Minister of Finance, or jointly by a combination of Ministerial principals.

The suggested Memorandum should answer some basic questions about open data, what has already taken place in Uganda regarding open data, and articulate an agenda for moving forward:

- Define what open data is, the benefits and opportunities for open data in Uganda
- Briefly summarize the ODRA process and findings
- Anticipate and address some likely concerns about open data; for instance, information exempted under the A2I Act would not be released, in particular, personal information.
- Summarize the actions to be taken over the next 5-6 months, as described in the Action Plan
- Invite the participation of each MDA through the formation of a working group, as described below

Announce the open data initiative publicly, with support from the World Bank and key civil society partners, focused on performance management and improved service delivery. A public announcement would help firmly establish the GoU's agenda with the public, create excitement among key stakeholders, provide an opportunity to engage citizens and civil society, highlight the focus on improved service delivery and transparency, and provide a timeline for moving forward.

The announcement should be designed for maximum impact and exposure. Our recommendation is to hold a public event involving high-level political officials, stakeholders such as the World Bank, open data experts from the region and the international community and journalists in attendance. The announcement is also a chance to engage select civil society partners by giving them a prominent role in the event. For additional impact, the announcement could coincide with other relevant events in the public sphere, such as a regional data conference, an aspect of the budget cycle, or a flagship publication such as the 2014 Census.

Policy and Legal Framework

Aim to and adopt an open data policy, consistent with the core principles of the Access to Information Act. Our consultations reveal that MDAs are already publishing data for various purposes and using a variety of approaches, from machine-readable Excel tables to PDF files or even printed summaries in traditional newspapers. Data access in some cases is available to everyone, but in other cases may be restricted to certain applications or clientele. As a result, there is often little uniformity in how the GoU is making data available. Just as important, many of these strategies do not fully meet their objectives because the data in many cases is difficult to access, understand or use.

In theory, the Access to Information Act provides a mechanism for making data publicly available. However, aside from the issues of implementation discussed previously, the A2I approach entails three important shortcomings with respect to open data. First, A2I is triggered by a formal request being made for specific information. Particularly in the case of data, it is difficult for users to know precisely what to request without prior knowledge of what data the government has or what state they are in. As a result, many A2I requests or potential requests remain unfulfilled. Second, materials provided under A2I are typically provided only to the person who requested them. In the case of data, which if in digital form could be provided to many users online, this means that many users are deprived of the full benefits of public information. Finally, the A2I Act does not set a clear standard for how data should be provided. If in something less than machine-readable form, it is often difficult or time consuming for users to make use of what they have received.

These shortcomings with respect to data policy have an impact on governments as well. Many MDAs report difficulties in obtaining and using data from other government units for reasons similar to those just described.

An open data policy is designed to address these issues and provide the policy and legal foundation for a successful open data initiative. The Access To Information Act is closely linked to the open data policy, in that it clearly identifies the kinds of information and data that should *not* be released: to safeguard personal privacy, national security, the integrity of legal proceedings and so forth. An open data policy would begin with the premise that any data not subject to the exceptions in the A2I Law should be considered open data.

The open data policy would also include:

- A common understanding and set of principles about what makes data “open”
- A provision that data considered to be open should be listed in the government’s open data portal (not contingent on an A2I request)
- Data distributed pursuant under an A2I request should also be published on the open data portal
- Acceptable formats for data and metadata. The policy should also make clear that while publishing data in PDF formats may be desirable for archive reasons, the primary formats for open data should follow best practices.

- Identifying which government bodies or agencies are responsible for coordination and oversight of the open data initiative.
- Identification of the open data license that the government will use
- A limitation on government liability for data reuse by 3rd parties
- Requirements for a government-wide open data portal
- Performance metrics for open data initiative: for instance, the number of published datasets, number of contributing MDAs, etc

In practice, a comprehensive open data policy can take a significant amount of time to develop, review and finalize, particularly if legislative or regulatory processes are a factor. Consequently, governments will often invoke some form of executive authority to establish the basic principles and directives for a nascent open data initiative to move forward on an interim basis, and develop a more complete policy framework in a later stage. In the case of Uganda, the initial directive could take the form of a Circular Standing Instruction (CSI), which would provide to MDAs the information necessary for them to participate in the open data initiative and begin to publish data. The CSI could address which types of data should be considered open (consistent with the underlying principles of the Access to Information Act), which file formats are to be used, basic metadata, procedures for coordinating with the open data portal, etc.

Conduct a full due diligence review of existing legislation, regulations and policies relevant to open data. Our research and consultations identified several pieces of existing legislation that have implications for open data. Chief among these are the Access to Information Act, and the proposed Data Protection and Privacy bill which is currently before Parliament. However, the Official Secrets Act, the National Records and Archives Act, and the Copyright and Neighboring Rights Act are also relevant, as they include provisions for how certain kinds of government data should be managed. The Uganda Bureau of Statistics Act and the National Informational Technology Agency Act also contain data confidentiality provisions. It is likely that there are other relevant elements not identified by this research. As elaborated in this report's analysis, implementation of the Access to Information Act has suffered in part due to gaps and inconsistencies between these and other pieces of legislation. Left unaddressed, these issues may also pose similar challenges to implementation of an open data initiative. Therefore, we recommend a thorough review of all relevant legislation by qualified legal experts so that gaps in the existing legislative framework can be addressed as appropriate either through legislation, an open data policy, or other legal means.

Institutional Structures, Responsibilities, and Capabilities

Convene an Open Government Data Working Group to guide the open data initiative. Our consultations reveal that there are already many people in MDAs that understand the value and potential of open data and are thinking of how to build such an initiative within the GoU. A working group gives these champions space to share knowledge and solutions, learn from each other and from other stakeholders, bring those ideas back to their respective MDAs, and begin to change expectations about how government manages public data. The working group would also be a space to address policy and planning questions, build the political momentum

necessary to make the initiative sustainable, develop a road map to coordinate various activities, and address specific concerns and barriers raised by ministries.

This working group should be established as soon as possible, have clear leadership under a single government entity, and meet regularly. It's also important that the working group have a strong political mandate for its work, as alluded to under the previous recommendation for leadership.

In practice, the open government data working group would likely be organized into three or more separate groups, often with overlapping membership. A recommended approach includes:

- A **steering committee** comprised of senior government officials, responsible for oversight, policy development, and high-level decisions, that would meet on an as-needed basis.
- An **implementation group** of data practitioners across all MDA agencies that meet regularly to share progress and collectively help address specific issues by sharing experiences and knowledge. An implementation group may meet every 2-3 weeks and could function primarily by conference call. This group also provides a means to periodically engage outside groups, for instance local governments or select representatives of civil society and academia to get their views and build support outside the GoU.
- A small **technical team** in charge of daily operations and management of the open data initiative. This team should include the following roles:
 - **Data Coordinator:** oversees data collection and data management process; liaises with implementation group and data producers within MDAs
 - **Technical Officer:** maintains and administers the open data portal
 - **Communications Officer:** engages with the external ecosystem (entrepreneurs, academics, media, CSOs) to raise awareness on open data; responds to data demand; strengthens open data within specific sectors
 - **Legal/policy expert:** helps to develop the open data license; supports the design and implementation of the open data policy

Government Data Management Policies, Procedures, and Data Availability

Establish an open government data portal that would provide public access to authoritative versions of government sanctioned open data. A government open data portal would be a fairly lightweight system, modelled after those such as data.gov (US), data.ug and www.edostate.gov.ng, all of which use freely available open source software. The portal would be centrally managed, but capable of including internally hosted data or references to datasets on another ministry's public server, and include metadata about each dataset. The service could also include file conversion, data visualization, training materials and communications. The service should also include clear terms of use (licensing) that would apply to all datasets listed in the portal, as described under earlier recommendations.

One key function of the open data portal is to provide authoritative versions of government datasets, so that if government data is used improperly, the GoU has a public version that anyone can access.

Focus on the publication of a select number of high-value datasets for initial release. At the outset, the open data portal would initially contain a relatively small number of datasets, and it is imperative that these datasets are consistent with open data best practices, particularly involving machine readability. Fortunately, our research suggests that although most public data from the GoU are currently published as PDFs (which are not considered machine readable), many of the underlying data sources are likely to be consistent with open data formats. Therefore, we recommend focusing on datasets (to be determined by the open data working group) that provide immediate value, relate directly to the GoU's focus on service delivery and increased transparency, and are reasonably easy to convert to machine-readable form. Some possible candidates include:

- Indicators from the Data Annex of the OPM Annual Performance Report
- Data underlying the Open Budgets portal
- Data from the 2014 Census
- Datasets from high-priority sectors that are already published elsewhere, either on websites or in newspapers. Examples include: locations of health facilities, school achievement reports, budget disbursements and procurement notices.
- Geo-referenced data from the geospatial working group convened by UBoS

Because the PDF files currently published for these products appear to be generated from spreadsheets, it is likely the GoU could “convert” these sources to open data simply by publishing the original source files. This would provide an easy strategy for producing relevant data in a timely manner, as these underlying data files must be updated anyway as part of the GoU's ordinary responsibilities. This effort would be a big improvement on the current practice of publishing key statistics and performance indicators in newspapers.

Consider adding an open data component to the development of essential information management systems. Information systems such as HMIS (health), EMIS (education), PMIS (performance management), and the new business registration system being developed at URSB, are significant investments in IT infrastructure. Several of these systems are aligned with priority sectors for the GoU's focus on improving service delivery. Both MDAs and other groups have expressed interest in making data managed by these systems available as open data (subject to privacy restrictions). To our knowledge, open data is not a designed component of any of these systems, but has been raised as a potential future option. Including an open data component could significantly increase the efficiency of open data delivery at modest additional cost and effort, allowing the GoU to publish relevant data in a more timely manner. Doing so would also increase the efficiency of government workers by enabling electronic data exchange within government organizations which currently are often constrained by paper-based record systems.

Demand for Open Data

Encourage problem solving by sponsoring contests with the public for the use of government data. For instance, the GoU could announce a challenge or contest that invites civil society actors, researchers, journalists and citizens to use open data to create insights or solutions for a problem that the government is facing. The contest could focus on challenges such as preventing medicine shortages in rural hospitals, improving access to transport, mitigating traffic congestion, tracking agriculture production and support, or evaluating educational outcomes or teacher performance at schools. Such challenges could include rewards (such as money or certificates), be related to the release of new and/or key data, have clear criteria for awards, provide online tools if necessary, and host a face-to-face event in relation to the launch and awards.

Enable more people to use open data by increasing access to and usability of the data. Lack of access to government data and difficulty in using data published in newspapers or PDF documents results in substantial inefficiencies. As emphasized previously and supported by international experience, releasing data in machine readable ways allows government, researchers, journalists and ordinary citizens to more easily use it. Such data releases would be in Excel or CSV format (not just in PDF) and available freely and with an open license. Data releases should include key data requested by the public in areas of education, health, agriculture, roads, or other topics (see Table 3).

Implement data monitoring and feedback systems to measure increased efficiencies from publication of open data, and identify demand for additional data. There are several metrics available to help quantify and understand usability of data. For example, the GoU can track the number of datasets released, their “star” rating (see <http://5stardata.info/>), and the number of downloads per dataset via the open data portal discussed previously. The GoU can also survey members of the open data community to find out if they are finding new data releases to be more useful. This same survey could identify how new practices in the release of government data have helped to save money for civil society organizations, government ministries, and citizens. The survey can request information about what government data is needed, what government data is accessed and how it is used, what benefits have been derived from government data, how data could be released to increase efficiencies, and how have efficiencies been improved with the release of more or differently formatted data.

Civic engagement and capabilities for open data

Partner with civil society, researchers and journalists to foster new solutions and innovations in performance management and service delivery, building on open government data. As described previously, civil society groups, volunteers, and developers are already actively working with data, and are eager to engage with the GoU on improving service delivery to Ugandans. Informal partnerships around short-term, low cost projects could provide early evidence of the impact of open data and would build trust between government and stakeholders. Some ideas include:

- New tools to supplement the proposed OPM performance monitoring dashboards, building on data opened from the Annual Performance Reports
- A public competition, using data from the 2014 census, to explore low-bandwidth approaches to communicating government data
- Use of data in key sectors to develop localized maps for understanding service delivery and public health issues, similar to those developed during the recent Kampala Data Bootcamp (sponsored by Code for Africa and the World Bank).

Partner with innovation hubs in Uganda to transform open government data into new economic opportunities. As noted in the analysis section, there are already several innovation hubs operating in Uganda that are encouraging the development of new businesses and entrepreneurs. To this community, open data represents new opportunities for data-driven products and services, which could lead to new jobs and economic growth. In addition, partnerships with innovation labs could help the GoU identify and assess the value of data held by the government, and create feedback mechanisms to suggest ways that the open data initiative could be improved. As a first step, the GoU could reach out to innovation labs such as Outbox, Hive Colab, Mara Launch Pad and others to begin discussions on what data will be made available in the first stages of the open data initiative and how this data could be used to build new products. This could form the basis for longer-term partnerships that could help sustain the open data initiative.

Funding an open data program

Identify and allocate funding for activities described under the action plan. Several of the action plan items imply costs that must be covered by the GoU or by partners. These include: launch events, workshops, and consultations. While these costs are short term and relatively modest, it is important to identify funding sources at the outset.

Over the long term, the open data initiative should be reflected in the GoU's regular budget. Many requirements are modest enough that they likely could be "absorbed" by existing functions: for instance, ongoing production of open datasets, which once opened, impose very little additional cost. Functions that should be reflected in the budget include:

- Operation of the open data portal
- Staffing of the technical team within the open data working group
- Long term citizen engagement activities

National Technology and Skills Infrastructure

Enable all Ugandans to use open data to make better, data-driven decisions about schools, health care and other critical issues. For everyone to benefit from open data there must be investments in data literacy and use. Fortunately, there are already several organizations working to increase awareness of available data and build the skills to use it. For instance, EPRC is working with select government ministries to increase capacity to make

evidence-based decisions, UTAMU is training students at vocational schools on data literacy, and ACODE is advancing ways to engage citizens at the district level around the latest budget data. Outbox and Hivecolab are raising awareness in technology communities and helping to incubate data startups. UN Pulse is working with data scientists to provide data analytics. Other groups are working with developers, journalists and other communities. Rather than duplicate these efforts, the GoU can simply partner with existing programs by bringing open government data to the table.

Create partnerships with telecommunications providers, intermediaries and businesses to help provide access to data in rural and low-bandwidth areas. To improve service delivery to all Ugandans, data needs to be made understandable and available. Given the issues of bandwidth, connectivity, and data literacy (especially in rural populations), the impact of data on daily living is often facilitated by intermediaries. These may include developers using SMS apps to convey agricultural information, CSOs posting illustrations at markets about health education, or telecommunications companies providing low-cost options for remote users (such as schools) to upload data.