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OPEN GOVERNMENT CASE STUDY:

Costing Sierra Leone's Open Data Program

Results for Development

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Acronyms

MCCU	Millennium Challenge Coordinating Unit
MDAs	Ministries, Departments and Agencies
MoFED	Ministry of Finance and Economic Development
MIC	Ministry of Information and Communication
OGI	Open Government Initiative
OGP	Open Government Partnership
RAIC	Right to Access Information Commission

Executive Summary

This case study focuses on costing the Sierra Leone Open Data Program, an online program with two distinct phases: (1) Open Data Portal 1.0 and (2) Open Data Portal 2.0. The Sierra Leone Open Data Program was intended as a public resource to provide access to government data and was a step toward advancing government transparency, openness, and increasing citizen participation through the release of public datasets on budgets, agriculture, health and more.

The purpose of this case study is two-fold: (1) to validate the Open Government Costing Framework and Methods developed by Results for Development on behalf of the World Bank's Governance Global Practice to be used for costing of open government initiatives and (2) to provide an estimate for costs of the Sierra Leone Open Data Program to advocate for the adoption of other open data programs.

In conducting this costing analysis, we followed a six-step process and methodology to estimate the economic costs of the Sierra Leone Open Data Program, including: (1) defining the scope of the program, (2) identifying which costs to assess, (3) developing a framework for costing, (4) identifying cost categories, (5) conducting data collection and (6) conducting a data analysis. We collected costing data on both phases of the open data portal through interviews and emails with key government contacts, World Bank contractors, technical vendors and World Bank budget documents.

The total cost across the Sierra Leone Open Government Data Program is estimated at $558,688, with a cost breakdown estimated at $186,794 for setup, $99,701 for installation and implementation and $272,193 for operation. The budget listed here likely underestimates the full economic scope of the program; however, the estimates provide an important baseline for which to gauge the cost-effectiveness of this open data initiative, as well as provide context for future open data reforms in other countries.

Rationale for Open Government Costing

"Open government" is built on the idea that citizens have the right to access government information, to actively participate in government decisions that affect their livelihoods, and to hold government officials and/or service providers to account when they fail to govern properly (Heller, 2012; McGee and Edwards, 2016). Open government reforms aim to make government more transparent, more accountable, and more responsive to its own citizens, with the ultimate goal of improving the quality of governance, as well as the quality of services that citizens receive (OGP, 2015). The umbrella of open government programs and reforms includes initiatives such as open data systems, 311 systems for reporting service delivery complaints, e-procurement, participatory budgeting, citizen scorecards and citizen audits, as well as many other adjacent reform efforts.

According to the World Bank Group, when embraced, open government reforms can contribute to the twin goals of ending extreme poverty and promoting shared prosperity in low- and middle-income countries (GGP, 2016) in several ways. First, open government reforms can help increase the effectiveness of both domestic and donor-funded development spending, thereby improving the allocation and use of public resources (UN, 2008). Second, open government reforms can facilitate more inclusive decision-making processes and more effective management of public resources, and in so doing improve the delivery of government services, which are disproportionately used by the poor (Grandvoinnet, Aslam and Raha, 2015; Rocha, Menocal and Sharma, 2008). Finally, open government reforms can increase trust between government and citizens; such social capital is crucial for the success of a wide range of public policies (Brixi, Lust and Woolcock, 2015).

A review of the extant literature, however, raises more questions than answers as to whether these three statements hold in practice and the extent to which the potential gains associated with open government reforms are greater than the costs of implementing them. In particular, there exists a large gap in understanding the *value for money* for specific subtypes of open government reforms. Low- and middle-income governments are now expected to use the "billions" in official development assistance and development resources to attract, leverage, and mobilize "trillions" in investments of all kinds (Badré, 2015). However, analysis on the specific costs needed for implementation of specific government reforms, as well as the return on investment of these reforms, has yet to be conducted.

Given the reality of increasingly limited development resources from external funders, being able to weigh the full costs of open government initiatives is critical to ensuring that governments are allocating and using resources in the most efficient and effective manner possible. A better understanding of which open government reforms can be achieved for what price can be used to tailor and sequence open government components to the specific needs of low- and middle-income countries, particularly within the context of striving towards fulfillment of the Sustainable Development Goals.

Analysis of the total costs of implementing open government reforms also provides a first step towards conducting a cost-benefit analysis of open government reforms. Thus far, the growing global political momentum behind open government reform programs has often relied on rights-based arguments (Heller, 2016). Understanding the costs and potential returns on investment associated with open government reforms is an important next step towards making the case for why opening up government matters for instrumental gains as well.

This report presents one of two open government costing case studies conducted by Results for Development; the purpose of these case studies is to both validate and present concrete examples of how to use the Open Government Costing Framework and Methods.

The Open Government Costing Framework and Methods developed by Results for Development presents a general methodology for costing open

government programs and is summarized in the section below.[1] However, one of the biggest challenges is adapting this framework to account for different contexts and types of reforms across geographies. Given the diverse range of open government initiatives, each type of open governance program may have different structures, key components and players, as well as different economic and financial requirements and costs. Furthermore, even within the same type of reform (e.g. two similarly-structured open contracting reform programs in two adjacent countries), the implementation and structure of the reform may vary significantly. This framework is meant to present modifiable, adaptable scaffolding for open governance cost analysis, but by no means is it all-inclusive. For certain programs, specific activities or components may take precedent and contribute far more significantly to total costs while others may be less relevant.

[1] A detailed description of the costing methodology as well as adaptable costing tool are available as part of a consolidated report produced on the costing of open governance programs.

Overview of the Open Government Costing Framework and Methods

The Open Government Costing Framework and Methods outlines the major components needed to conduct a cost analysis of an open government program, with the ultimate objective of putting a price tag or a cost range on key open government reforms in various countries. As the methodology takes a high-level, conceptual approach to costing, we believe it can be adapted to cost open government programs of many types and potentially other government programs.

The Open Government Costing Process includes six essential steps for conducting a cost study: (1) defining the scope of the program, (2) identifying which costs to assess, (3) developing a framework for costing, (4) identifying cost categories, (5) conducting data collection and (6) conducting data analysis (see Figure 1 below).

Using the Open Government Costing Framework, we identify the activities, inputs and costs for three distinct implementation phases: setup, implementation and operation (Fixsen et al., 2005).

1. Setup: includes all exploration, adoption and adaption activities prior to implementation of the program. Key activities in this phase include planning, advocacy and any development of systems (hardware, software) or infrastructure investments needed for program implementation
2. Installation and Initial Implementation: includes all activities involved in putting the program in place. This is typically related to changes needed to support implementation of a new program, including staffing and skill levels and organizational mandate and capacity. Key activities would include any one-off requisite legislation, training and/or promotion required for success of the program.
3. Operation: includes all activities associated with the running of the program once in place. Key activities include program management, maintenance of equipment, monitoring and evaluation, utilization and refresher trainings

Figure 1: Step-wise Breakdown of the Open Government Costing Process

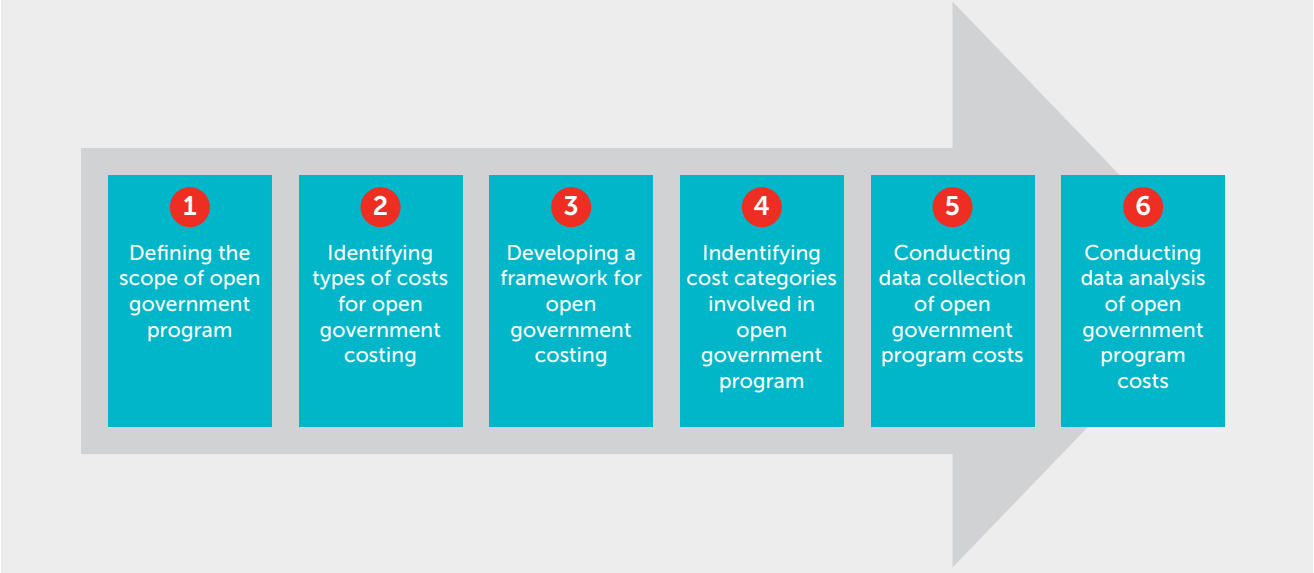
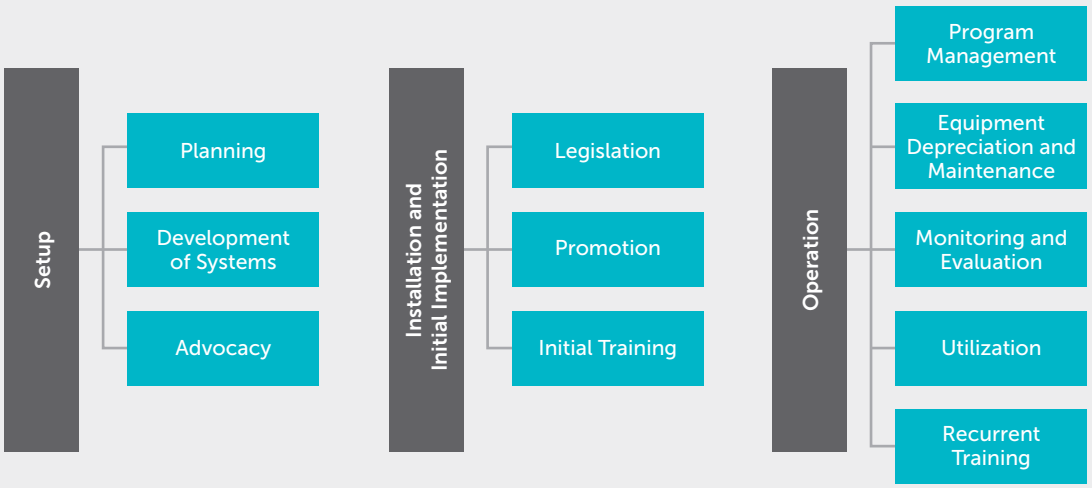


Figure 2: Framework of Open Government Costing



The subsequent sections of this case study provide details of how this methodology and framework was applied to the Sierra Leone Open Data Program. The case study begins with an introduction to the Open Data Program to provide context for this initiative, followed by a description of how each step of the costing process was applied for this open government reform. Finally, we provide conclusions from the case study including lessons for those seeking to implement the costing methodology for additional open government reforms.

Brief History and Context

The Sierra Leone Open Data Program was initially launched on May 15, 2015 in response to the government's determination to reinforce institutions, policies and practices after a destructive civil war that ended 13 years earlier. As a public good, the objective of open government data in general is to promote transparency, improve government effectiveness and efficiency and increase data sharing to promote business innovation. The Sierra Leone Open Data Program in particular is focused on government accountability, openness and increasing citizen participation while providing the tangible benefit of providing a national resource for public-use datasets, including national budgets, agricultural data, mining leases, parliamentary laws and other easily identifiable government data (Hughes, 2015; Hughes, 2016).

One aspect of influencing the launch of the Open Data Program was Sierra Leone's membership to the Open Government Partnership (OGP) in 2014. OGP member countries are obligated to multiple commitments; for Sierra Leone, one key commitment was the release of an open data portal. Within this commitment, OGP highlighted three baselines for Sierra Leone: (1) conducting an open data readiness assessment (ODRA), (2) designing and creating an open data portal and (3) resourcing the portal, including funding and uploading data (Hughes, 2015). While these steps are not meant to be comprehensive for the development of a sustainable open data program, each of these activities were deemed important to the Sierra Leone Open Data Program in particular and helped guide this costing exercise.

Another contributing factor to the Open Data Program's development was the May 2014 Ebola outbreak in West Africa. This health crisis motivated Ministries, Departments and Agencies (MDAs) within Sierra Leone to openly source funding intended for an online data repository that would allow aid workers and other stakeholders to track the virus's spread, provide resources to policymakers to more effectively respond with funding measures and give citizens tools to hold their government accountable on public health expenditures (Chrzanowski et al., 2016; Hughes, 2016). Though the portal was first launched in the year following the height of the Ebola crisis, several of the initial published datasets were related to the virus's outbreak to meet these goals.

The Sierra Leone Open Data Program has been released publicly twice: (1) Open Data Portal 1.0 launched in May 2015 and (2) Open Data Portal 2.0, which refreshed the first portal's efforts, opened in March 2017. The first data portal's initial launch included Ebola data, along with agriculture and mining leases; however, the portal's dataset collection remained inactive after that initial dissemination and the website ultimately shut down in June 2016 due largely to unclear responsibilities and accountability among the government agencies that managed the portal. In this analysis, the role of the government departments in the portal's closure is largely reflected in the labor cost of individuals managing the portal and the notation that the portal shifted management centers several times.

Open Data Portal 2.0 was launched in March 2017 as an effort to reactivate the initiative. Built from the baseline of the Open Data Portal 1.0, the new version of the portal was developed on the same online platform, though released on a new domain.[2] While the second data portal initially published the same datasets previously issued on the first portal, new datasets are continually being uploaded including census data, budget profiles, national laws and policies.[3] A major objective for Open Data Portal 2.0 is to create more sustainable and long-term

[2] The second data portal can be found at http://opendatasl.gov.sl/

[3] As of June 8, 2017, there are 62 datasets on the second data portal.

transparency from within the government, and ultimately, to have a consistent user base of Chief Technology Officers (CTOs) from within various ministries who will manage and upload data to the portal.[4]

There are two major challenges to the program's effectiveness and objectives for transparency: (1) Sierra Leone's low-bandwidth internet environment and (2) technical illiteracy within the government and the population (Open Government Partnership, 2014). The first risk is being addressed by technical vendors that are systematically adapting the portal's back end operating system to make it lightweight enough to function efficiently within Sierra Leone's under-developed online infrastructure. Stakeholders are targeting the latter risk through capacity-building efforts and promoting ownership over the portal's technical management through monthly trainings for various MDAs within the government. Currently, the principal users of the data portal are employees from MDAs during these monthly trainings.

Keeping the program's historical context in mind, the following sections outline the six-step process we followed for economic costing using the open government costing framework. Our methodology for this costing exercise includes (1) setting the scope of the data program, (2) identifying the critical costs in the case study, (3) situating this case within the costing framework, (4) identifying the relevant cost categories, (5) collecting the data and finally (6) analyzing the economic cost of the program.

[4] The ministries that will help manage the data include Agriculture, Energy, Education, Finance, Health and Fisheries.

1. Defining the Scope of the Program

Aligning with the Open Government Costing Framework and Methods, we began by outlining the scope of this case study. This step allowed us to pinpoint which key players timeframes, and activities were critical to the Sierra Leone Open Data Program.

The first step was identifying the purpose and perspective of costing the Sierra Leone Open Data Program. We identified the purpose of this work to be twofold: (1) building evidence to validate and, if necessary adjust the framework for future costing analyses and (2) conducting an economic costing that will allow us to apply lessons from this analysis to similar open data platforms in the future. We completed an economic costing of the Open Data Program as we are looking to estimate the program's total value, including hidden costs such as staff time, opportunity costs of volunteer labor and resource costs included in the portal's development and operation.

During this analysis, we first laid out a timeline of all events and activities related to the program and categorized these events into one of two categories: those considered to be only contextual and those which were critical to the program's development. Based on this categorization, we included critical events and activities in the costing estimates. From this timeline, we next determined the key players involved in both phases of the data program. Ultimately, we decided that activities and relevant actors within the setup, installation and implementation and operation phases for both Data Portal 1.0 and 2.0 would be considered critical in this costing exercise. In delineating costs for each phase and iteration of the portal, we captured a more complete picture of the platform's economic cost and a clearer reflection of each portal's distinct objectives.

There were also events, and thus, costs that we considered out of scope and not critical to this costing exercise; these events included the development and passing of the Right to Access Information Act of 2013, a piece of legislation that intended to improve public access to government data. Additionally, we focused this case study only on the economic costs incurred for both portals through June 2017, rather than scoping out projected costs for future activities related to the program.

Sierra Leone Open Data Portal 1.0: Key Informants

For the first data portal, we defined the individuals and organizations deemed critical to the portal's development and operation. The key players in this instance were the government agencies that managed the portal in-country, the World Bank Group as the funder, and NuCivic, the company that provided the technical development and maintenance for the portal.

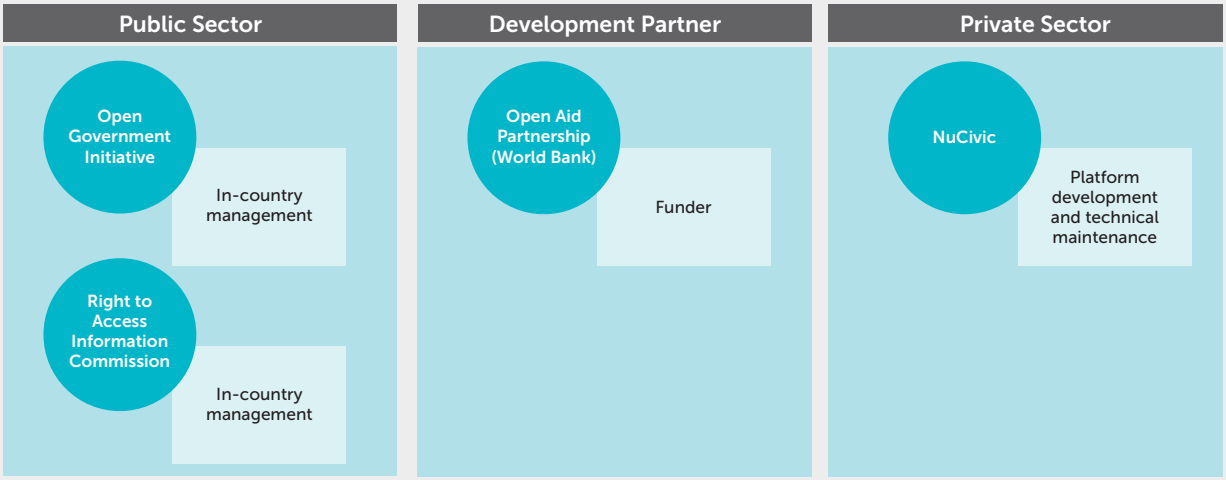
Public Sector

The Open Government Initiative (OGI) was responsible for the general management of the data portal from the initial planning stages in early 2015 through August 2015. OGI played the lead role in advocating for and securing funds for the portal from the Open Aid Partnership program from the World Bank (Chrzanowski et al., 2016), relied on volunteers who were paid a small monthly stipend to collect public data and gather feedback on the portal, and secured promotion for the portal through advertisements on local radio stations.

On August 28, 2015, the portal's in-country management transitioned from OGI to the Right to Access Information Commission (RAIC),[5] a change that was briefly facilitated by the Millennium Challenge Coordinating Unit (MCCU). RAIC played a lead role in requesting the ODRA report evaluation and was the local liaison for the portal through June 2016.

[5] RAIC was formed as the commission charged with promoting public access to government data in 2013 after the Sierra Leonean legislature passed the Right to Access Information Act.

Figure 3: Open Data Portal 1.0: Key Implementing Agents and Players



Development Partners

The Open Aid Partnership, a program within the World Bank Group, fully funded the platform's technical maintenance and hosting and was heavily involved in the portal's initial planning and implementation phases. The World Bank was also responsible for ensuring the success of the portal's management by OGI and RAIC.

Private Sector

Open Data Portal 1.0 was developed by NuCivic, a US-based company. NuCivic's flat-rate contracts were funded by the World Bank and were inclusive of all labor, monthly website hosting, technical maintenance, security patchwork and 24/7 website support. NuCivic developed the portal on an open-sourced platform called DKAN, and tailored the portal to specifications pinpointed in discussions and webinars with MDA representatives and World Bank consultants. NuCivic continued to provide free base-level support for the portal beyond the contract end-date which allowed the portal to remain online through June 2016.[6]

Sierra Leone Open Data Portal 1.0: Timeline

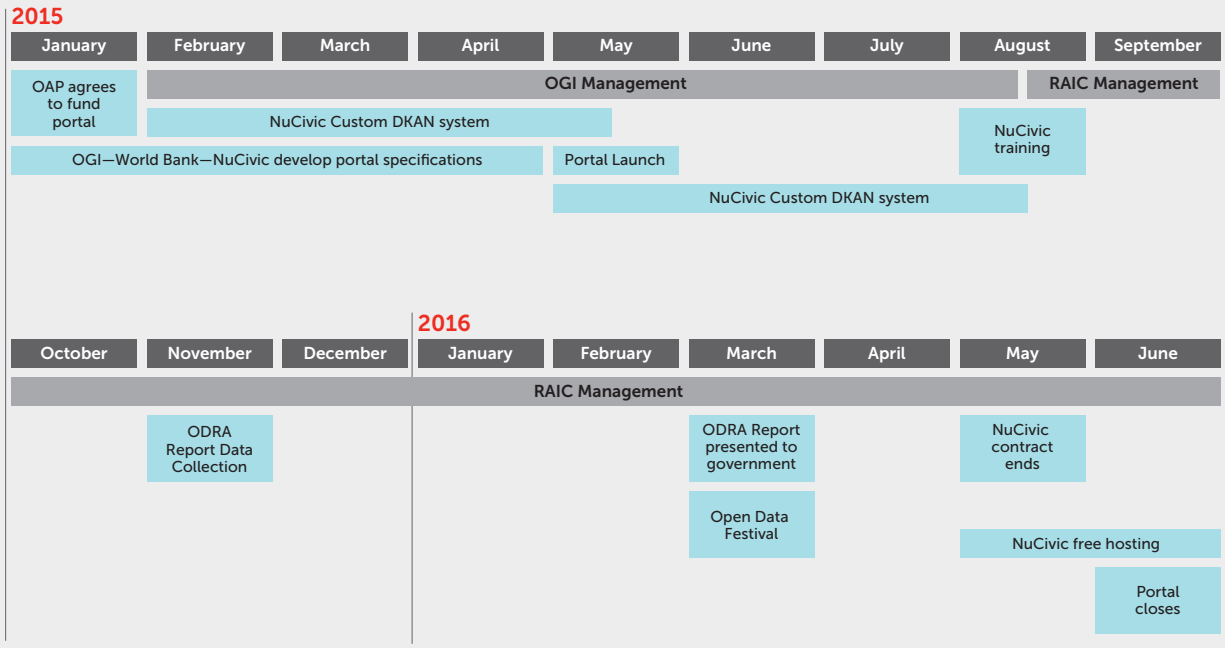
Figure 4 outlines the full lifecycle of the first data portal, along with key events and activities that were included in this costing exercise. Specifically, this figure highlights the following events:

- OGI, World Bank and NuCivic develop portal specifications: This was a period during the initial portal planning phase that included discussions between these organizations on the portal's development.
- NuCivic DKAN Custom Setup: This box outlines the timeframe during which NuCivic developed the portal on the DKAN system.
- Portal Launch: The portal's launch event that was attended by international World Bank consultants and various officials from local MDAs.
- Portal Promotion: OGI provided quarterly subsidies to 18 state-funded radio stations within Sierra Leone's 14 districts, as well as five stations in Freetown to promote government projects, a portion of which went to the data portal.[7]

[6] NuCivic's contract with the World Bank ended in May 2016.

[7] As part of this cost-transfer, during an interview, the OGI representative told us that radio station managers were also provided with android cell phones and other tools to help with the requested promotions, though we were unable to break these costs out further during this exercise.

Figure 4: Open Data Portal: 1.0 Timeline (January 2015 – June 2016)



- NuCivic Training: A two-day training for the data portal in August 2015 that brought representatives from various MDAs including RAIC, MIC, MCCU, OGI, MoFED and the National Statistics Office into Freetown.
- ODRA Report Data Collection: While the ODRA is typically completed prior to launching open government reforms, in this instance it was delayed due to the Ebola virus outbreak. The consultants working on the ODRA collected data during 12 days of meetings and focus groups with the government in November 2015, identifying 40 datasets that could be published on the portal, including data related to education, health and boundary maps (Chrzanowski et al., 2016).
- Open Data Festival & ODRA Report: This was a promotional festival for open government data within Sierra Leone, during which the open data portal was promoted and the completed ODRA report was presented to the government.
- NuCivic Free Hosting: This covers the free support NuCivic provided on Open Data Portal 1.0 before the portal shut down due to lack of funding.

The periods during both OGI and RAIC management have been delineated in grey to distinguish them from the key events and activities color-coded in blue.

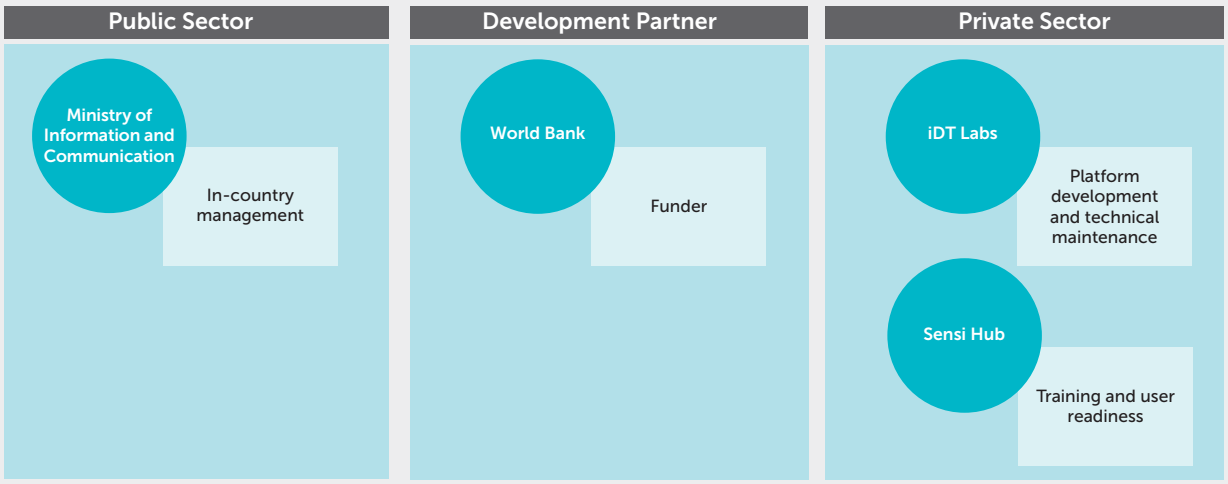
Sierra Leone Open Data Portal 2.0: Key Informants

Despite the first portal's closure, the Sierra Leonean government remained committed to open data. As with the first portal, the World Bank provided one year of additional funding for the technical maintenance of the second data portal which opened on March 18, 2017. Additional key players the second data portal, mapped in Figure 5, include the Ministry of Information and Communication, which currently provides in-country technical management, and local technology innovators iDT Labs and Sensi Hub, which respectively provide technical maintenance and training on the portal.

Public Sector

The Ministry of Information and Communication (MIC) currently oversees the technical aspects of the management of the second data platform. MIC is developing a workplan with the Ministry of Finance

Figure 5: Open Data Portal 2.0: Key Implementing Agents and Players



and Economic Development (MoFED) for the portal's future sustainability while other MDAs such as the Ministries of Agriculture, Education, Energy and Environment are expected to become involved in uploading and managing datasets in the future.[8]

Development Partners

The World Bank Group is funding the technical development and maintenance, as well as MDA training for Open Data Portal 2.0. They continue to provide general oversight and facilitate interactions between the government players and portal vendors.

Private Sector

iDT Labs and Sensi Hub are part of an innovation tech hub consortium called Code for Sierra Leone, the local affiliate of Code4Africa, designed to build technical capacity and improve technological and computer literacy within Sierra Leone. Both iDT Labs and Sensi Hub are committed to making the portal more accessible to the public, MIC and technical officers within other MDAs, who will be trained on uploading relevant datasets.

iDT Labs, based in Freetown, was contracted by the World Bank Group for one year to relaunch the second portal. iDT Labs led several activities in the launch of the revised portal, including developing the domain based on specifications from the government, migrating data from the first website, renovating and redesigning the DKAN platform into a more lightweight system that functions within Sierra Leone's low-bandwidth environment and updating the backend coding to promote accessibility for end-users. After the first year of hosting and maintenance ends in March 2018, iDT Labs will shift full technical management and maintenance over to MIC.

Sensi Hub works closely with iDT Labs and provides monthly trainings on the data portal. Sensi Hub provides these trainings on a monthly basis to various government agencies in addition to uploading datasets for public use. The first six months of training are intended solely for employees of MIC to generate buy-in and ownership, before shifting the trainings to staff from other MDAs. Additionally, Sensi Hub puts on promotional Sensitization events every few months which include activities such as hackathons and other technical challenges to generate public interest in the portal.

[8] The cost of any future activities has not been included in this analysis.

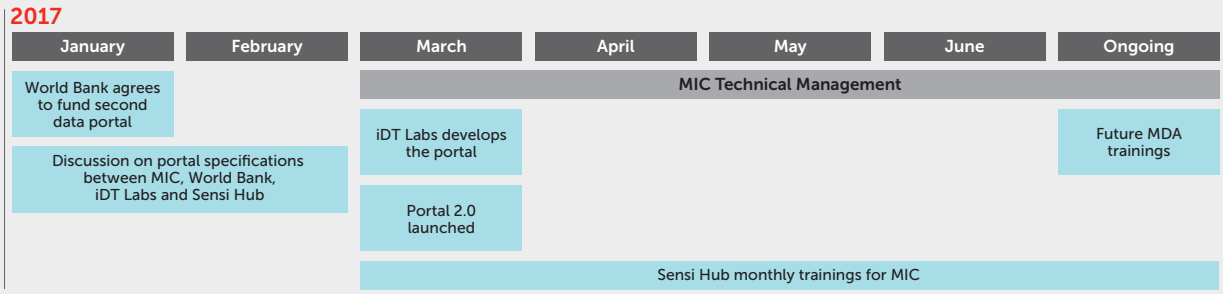
Sierra Leone Open Data Portal 2.0: Timeline

Discussions began on the second data portal's development in the first quarter of 2017 between the World Bank, MIC, iDT Labs and Sensi Hub. Figure 6 outlines the key events and activities through June 2017 for the second portal, specifically:

- Discussion on portal specifications: This box represents the time MIC, the World Bank, iDT Labs and Sensi Hub spent in discussions to reopen the data portal.
- Sensi Hub monthly trainings: These are trainings that Sensi Hub provides to MIC that are expected to continue through August 2017, which will extend to other MDAs in the Fall of 2017.

MIC, as the current in-country portal management partner, is highlighted in grey to distinguish from other key activities in blue.

Figure 6: Open Data Portal 2.0: Timeline (January 2017 – June 2017)



2. Identifying Types of Costs for Sierra Leone's Open Data Program

The next step in the open government costing framework involves identifying the relevant economic costs for each cost category. Being able to identify and separate costs by these categories allows us to understand where the most substantial costs are located for this program and provides insight into where we would expect significant costs for future case studies.

For both phases of the Sierra Leone Open Data Program, we clarified how each of the cost categories were defined, the costs included and noted which line items we were unable to capture over the course of the analysis. For this costing methodology, we conducting an economic costing as defined in the Open Government Framework and Methods. While each category outlined in Figure 7 may not be relevant for all costing exercises, we have included all cost categories from the Open Government Framework and Methods to serve as a point of reference. For the purposes of costing the Sierra Leone Open Data Program, one additional cost category – contract – was included due to the difficulty of isolating line item costs from larger fees noted within budget documents.

Figure 7: Definition by Cost Category for the Sierra Leone Open Data Program

Cost Category	Definition of Cost Category	Costs included
Salaried Labor	Represents the labor cost of government employees that spent a portion of their time on the program	Includes the salaries of government employees within MDAs that spent a percentage of their time on the portal, including time in meetings, webinars, trainings and general day-to-day management
Volunteer Labor	Opportunity cost of free labor provided over the course of the portal's development and operation	Includes labor time for consultants involved in portal development and maintenance beyond the specified amount in the contract and free advice provided during the setup phase of the second data portal
Consultants	Labor costs of consultants hired for the program	Includes all non-governmental labor costs for consultants hired to work on the data portal during the portal's planning, platform development, management, training, promotions, and monitoring and evaluation phases
Contract	Costs associated with any signed contracts with technical vendors that implemented the program	Fixed contract costs with technical vendors that we were unable to isolate over the course of the analysis
Rent	Venue and office space rent related to the program	Unable to capture these costs
Transport	Cost related to local and international travel to develop the portal	Flight and hotel costs for World Bank consultant travel to Sierra Leone during the scoping trip, program launch and training, as well as local travel within Sierra Leone for the first data portal's launch event
Per Diem	Cost related to extra daily compensation for consultant data portal-related travel	Daily per diem costs for international consultant travel
Materials	Cost of all materials used for data portal	Cost of all materials used in recurrent trainings for second data portal
Overhead	Cost of additional overhead for program	Unable to capture these costs
Equipment	Economic cost of technology used in data portal	Unable to isolate these costs from contract fees

3. Adapting the Open Government Costing Framework for Sierra Leone's Open Data Program

The Open Government Costing Framework and Methods separates program costs into three phases – setup, installation and implementation and operation – with each phase breaking out activity costs into the line item categories noted above in Figure 7. In Figure 8 we mapped the timeline, key implementers and activities of the Sierra Leone Open Data Program into the costing framework based on the above line item categories and the costing framework's key categories. The light grey cells indicate a key activity or player for Open Data Portal 1.0 while the dark grey cells indicate a key activity or player for Open Data Portal 2.0.

The setup phase includes all activities involved in the planning, advocacy, and development of software or hardware systems. Specifically:

- Advocacy includes the opportunity cost of government labor in seeking funds for the first data portal.
- Planning covers paid government and consultant labor during the initial portal setup discussions, opportunity cost of free labor or advice given outside a contracted agreement, transportation and per diem costs during a World Bank consultant scoping trip.
- Platform Development & Installation includes the World Bank contract fees for the DKAN platform setup and development for both the first and second portal.

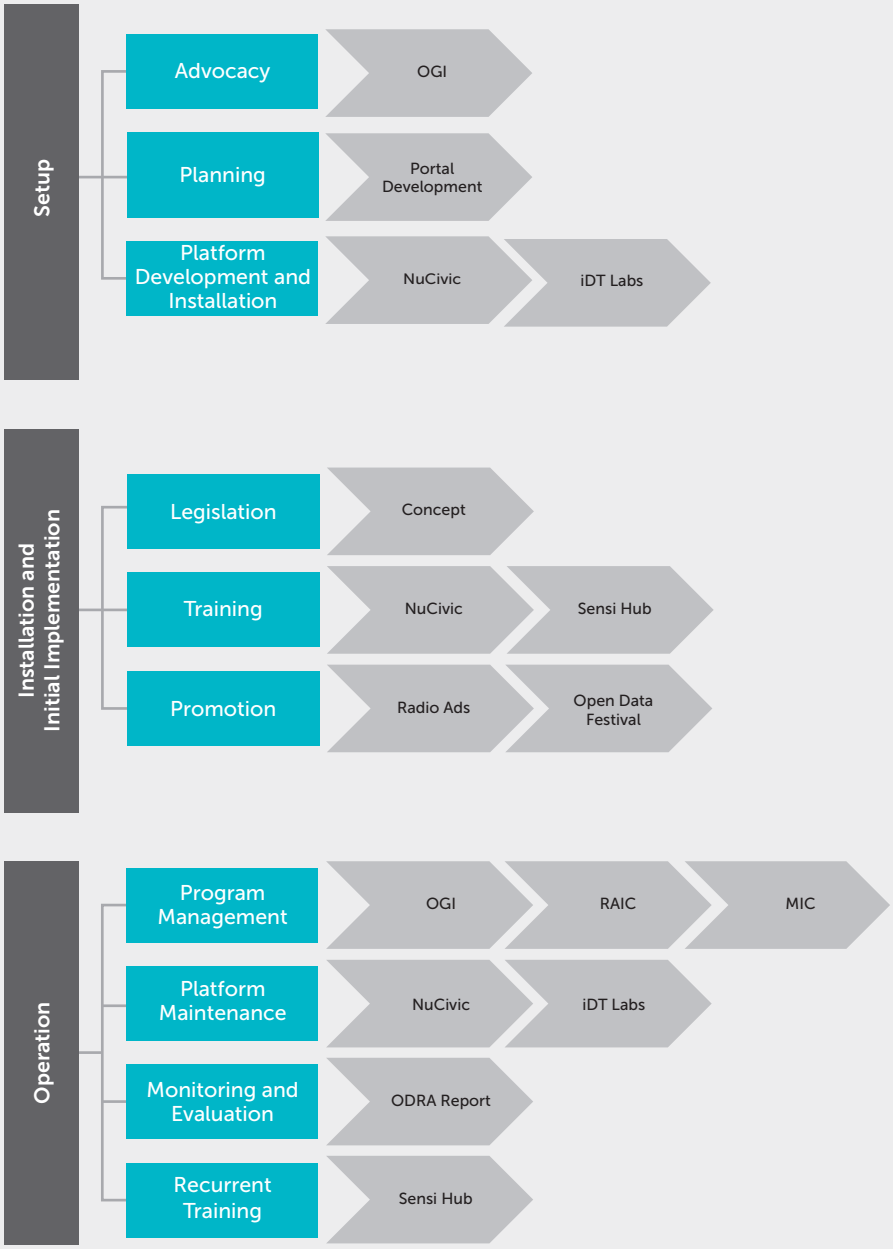
The installation and initial implementation phase includes any costs associated with legislation, training and promotions that were run for the data portal. Specifically:

- Legislation costs generally include the costs of undertaking critical legislation or reforms required for the implementation of the program. While there was legislation that facilitated the creation of the Open Data Portals, these costs were not included in the Sierra Leone case study as they were incurred much earlier to the implementation of this program and were considered out of scope.
- Training refers to government and consultant labor, transportation, and per diem costs associated with the initial two-day training for the first portal, and the initial management fee associated with the second portal's reoccurring training.
- Promotion includes the subsidies given to local radio stations, local and international transportation and per diem costs for the first data portal's promotional launch event. For the second portal, this includes the promotion events captured in the World Bank contract with iDT Labs and Sensi Hub.

Operation is the final phase of the framework and includes all costs and activities associated with running the program. This includes costs such as general management and maintenance of the program, ongoing monitoring and evaluation, utilization of the platform and recurring trainings. We determined that the utilization category in the costing framework was irrelevant to Sierra Leone's data program, and removed it from this analysis. The specific costs for each activity in this phase include:

- Program Management includes government and consultant labor and the opportunity cost of volunteer and free labor during general program management.
- Platform Maintenance includes the contract costs for monthly hosting and maintenance for Open Data Portals 1.0 and 2.0.
- Monitoring and Evaluation includes government and consultant labor, transportation and per diem fees during data collection for the ODRA report.
- Recurring Training includes the government labor and training fees for the monthly Sensi Hub trainings.

Figure 8: Costing Framework of Sierra Leone's Open Data Program



4. Identifying Cost Categories of Sierra Leone's Open Data Program

After situating the case study into the costing framework, we determined the relevant line items to the Sierra Leone Open Data Program within each program category based on interviews with implementing agents and a review of budget documents, highlighted as shaded cells in Figure 9. Each row denotes a line item category from Figure 7. The columns represent the relevant program activities within the three main phases of the costing framework (setup, installation and implementation and operation).

While we were unable to capture all costs within each relevant line item or phase, the figure below represents all costs that were incurred through the Sierra Leone Open Data Program.

Figure 9: Cost Categories of the Sierra Leone Open Data Program

	Setup			Installation and Inital Implementation			Operation			
	Planning	Advocacy	Platform Development	Training	Legislation	Promotion	Program Management	Platform Maintenance	Monitoring and Evaluation	Recurrent Training
Salaried Labor	■	■		■		■	■	■	■	■
Consultants	■					■	■	■	■	■
Contracts			■	■		■	■	■	■	■
Volunteer Labor	■		■			■	■	■		
Venue						■				
Transport	■			■		■				
Per Diem	■			■		■				■
Materials				■		■			■	
Overhead	■	■		■		■	■	■	■	■
Equipment			■	■		■	■	■	■	

5. Conducting Data Collection of Sierra Leone's Open Data Program

We determined the economic cost of the Sierra Leone Open Data Program using a mixed-methods data collection approach. World Bank contracts with NuCivic, iDT Labs and Sensi Hub provided budgets associated with maintenance, equipment, labor, training and monthly hosting fees for the portal. We also relied on interviews with key stakeholders and emails when interviews were not possible. Through this approach, we captured estimates of staff time, travel, promotions and other economic costs that we were unable to determine though contract documents alone. A full list of key informants is listed in the Annex. Figure 10 details the methodology of assembling the data for each line item category.

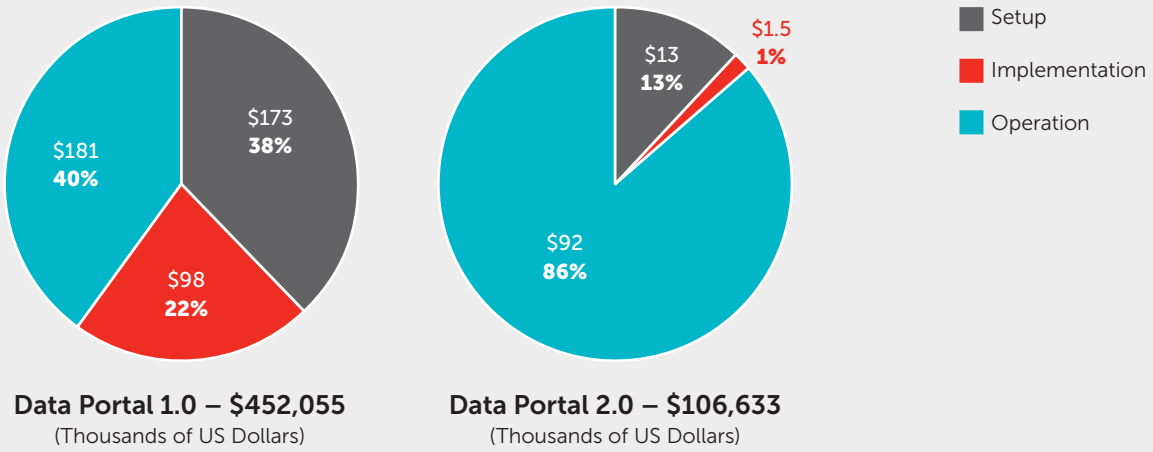
Figure 10: Methodology of Collecting Costs for the Sierra Leone Open Data Program

Cost Category	Costs Included	Data Collection Methodology
Salaried Labor	Salaries of government employees during the setup, installation and implementation and operation phases for first and second data portal	Government time was collected through interviews, salaries were estimated as average civil servant salaries within Sierra Leone and collected from Kargbo (2016)
Consultants	Consultants hired for portal development, management, and trainings for both data portals	Data collected through World Bank contracts and interviews with stakeholders
Volunteer Labor	NuCivic consultant labor time for portal development beyond the specified amount in the contract; includes volunteer labor and free advice provided throughout the program	This cost was the regular rate of the contractor multiplied by the number of free hours of labor
Rent	Venue and office space rent related to the program	Unable to determine these costs
Transport	Transportation costs for scoping trip, first portal's launch promotion, trainings and ODRA report data collection	Data collected through interviews with World Bank contractors and government officials and contract documents
Per Diem	Daily rate of additional compensation during data portal-related travel	Data collected through interviews with World Bank contractors
Materials	Materials needed for platform setup including software and data storage	Data collected through World Bank contracts
Overhead	Cost of additional overhead for program	Unable to determine these costs
Equipment	Economic cost of hardware and storage related to data portal	Unable to isolate these costs from contract fees

6. Conducting Data Analysis of Sierra Leone's Open Data Program

Through June 2017, we captured the open data program economic cost through both the first and second iterations and ultimately estimated the cost of the program at a minimum of $558,688 USD. The cost of Open Data Portal 1.0 was estimated at $452,055 and the Open Data Portal 2.0 was estimated at $106,633, shown in Figure 11. The discrepancy in costs between portals can partially be attributed to the second data portal having minimal implementation and setup costs due to the World Bank's conscious effort to reactivate and rebuild Data Portal 1.0, rather than founding an entirely

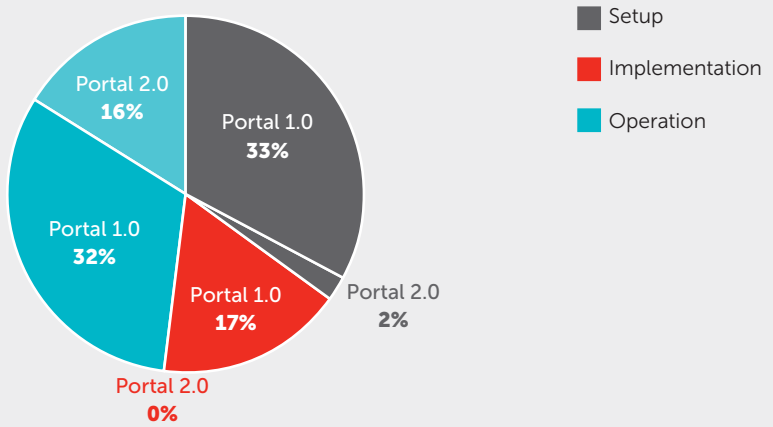
Figure 11: Breakdown of Cost by Costing Framework Phase for Sierra Leone's Open Data Portals 1.0 and 2.0



Data Portal 1.0 – $452,055
(Thousands of US Dollars)

Data Portal 2.0 – $106,633
(Thousands of US Dollars)

Figure 12: Cost Categories of Sierra Leone's Open Data Portals 1.0 and 2.0



new data portal. Additionally, labor and travel costs are lower for Data Portal 2.0 due to only being in operation for three months as of June 2017, compared to the first data portal being in operation for over one year. Finally, the costs in this analysis align with an internal and independent cost estimate assessment undertaken by the World Bank on open data in developing countries that estimates an initial investment of about $500,000, as well as similar annual operating costs, for a moderately-sized open data program with user engagement.

To further illustrate the full cost of both portals, Figure 12 indicates the costs of each portal within the costing framework's three phases and demonstrates that the costs in the setup and installation and implementation phases for the first portal were much greater relative to the second portal. Figure 13 and Figure 14 highlight the economic cost for each line item and program activity, respectively.

Figure 13: Cost Categories for Sierra Leone's Open Data Portals 1.0 and 2.0

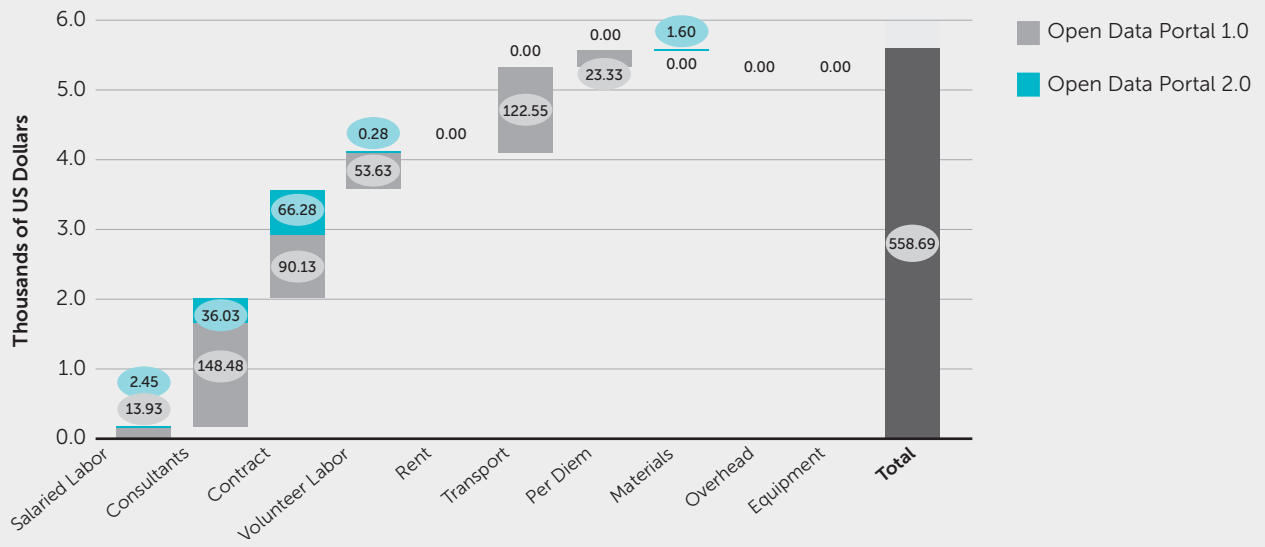
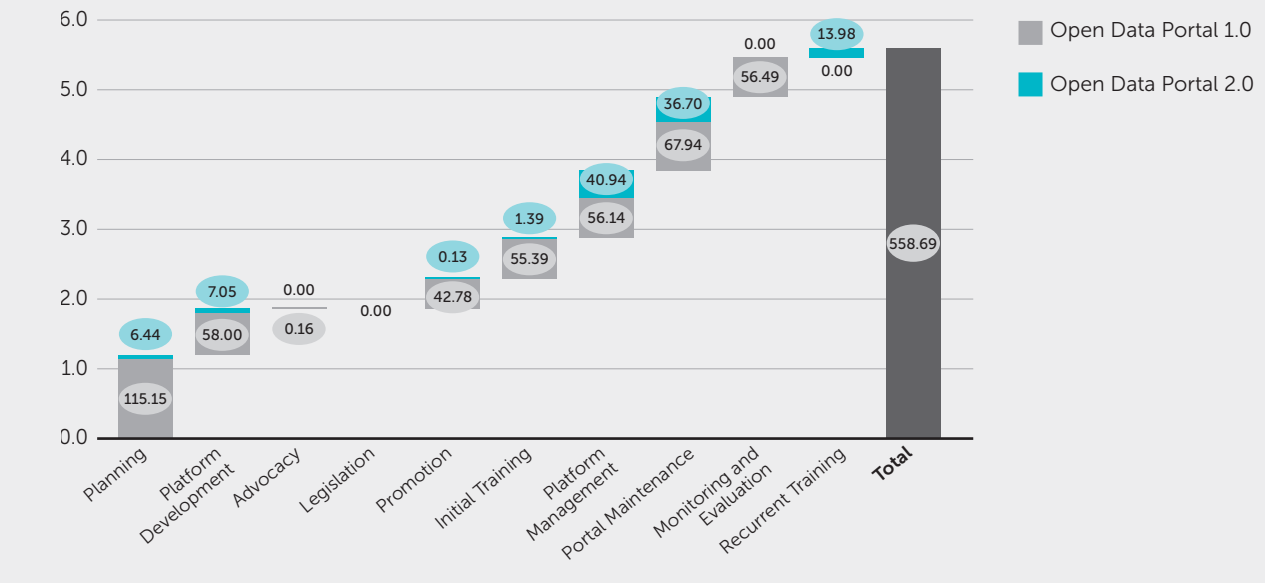


Figure 14: Program Activity Costs for Sierra Leone's Open Data Portals 1.0 and 2.0



Costing of Open Data Portal 1.0

Over 40% of the first data portal's costs were captured in the setup phase. Much of these costs were related to the initial planning of the data portal, including time spent in discussions on the specifications of the portal with consultants and in-country representatives and the initial fee for setup of the portal on the DKAN system.

Costs from the installation and implementation phase of the program made up 21% of the first portal's total economic cost. Promotional costs were mainly made up of local and international travel into Freetown for the portal's promotional launch event, while the radio promotions themselves made up only 2% of total promotional costs. The rest of the implementation phase costs came from the two-day training and included government salaries, consultant labor, transport and per diem fees.

The operation phase made up 39% of the first portal's cost and included government, contractor, and volunteer time for daily portal management, monthly platform maintenance and hosting costs, labor and travel costs related to data collection for the ODRA report, and the opportunity cost of NuCivic's free maintenance support and hosting of the portal through June 2016.

Costing of Open Data Portal 2.0

Most of the costs for the second data portal are centered on the operation phase. By building the second portal from the first data portal's foundation, the second data portal has been able to concentrate on generating an accessible platform for end-users, capacity building in-country for the MDAs that will eventually control the portal's data management, and promoting a sense of ownership to MIC for the portal's technical maintenance.[9]

Of the total costs in the setup phase of the second portal, 52% are for the iDT Labs contract with the World Bank to initially setup and develop the platform. The rest of the costs make up staff salary and consultant time during the planning activities. There have been very few installation and implementation costs for the second portal, with this phase only collecting an initial management fee for the monthly trainings.

About 45% of the portal's operation costs are in program management, which include labor costs for the government and consultants, as well as a contract with Sensi Hub to populate the portal with additional datasets. Recurring trainings make up 15% of the operational costs. Finally, 40% of the operational costs are for the platform maintenance by iDT Labs, which includes the monthly hosting and maintenance fees, and storage costs on Amazon cloud hosting services.

Projected future costs

Although analyzing projected costs is beyond the scope of this exercise, we expect the second portal to incur additional costs in the future as it expands in range and utility to end-users. These upcoming costs are anticipated to include monthly payments for supervision of the main MDA implementing units, labor costs for government actors and consultants, improving MIC's physical capital to better support the full maintenance of the portal, monitoring and evaluation, government labor costs for future monthly Sensi Hub trainings, as well as costs to populate the portal with additional data.

We can break down some of these costs from a draft work plan created by MIC and MoFED, which, while far broader than portal-related activities, are projected to equal $1,460,750 through 2019. Though this work plan is currently in the approval process, it includes activities such as training 30 individuals within various MDAs[10] to upload data, navigate, and evaluate the information on the data portal, material and equipment costs for computers and servers, security, firewalls, and backup systems, monitoring and evaluation and consultant fees to upload data from the relevant ministries.

[9] In speaking with iDT Labs, their goal is to create a consistent user base for the portal, though they do not expect more than 10 to 15 data uploaders on a regular basis; and instead will rely on dedicated staff members within Sierra Leone's ministries to source new datasets.

[10] The MDAs noted in the work plan include Education, Finance, Agriculture, Health, Social Welfare, Energy, Environment, Fisheries, Police, OGI and Labour.

This work plan is part of a $2.5 million component of a forthcoming $10.0 million World Bank loan to Sierra Leone for open government initiatives, a portion of which will go toward the data portal, though we are unable to break out the precise cost of these future projects.

Discussion

Comparing the price differences during each phase of both portals provides insight into the focus and main objectives for each. Namely, the first portal's costs were focused on planning, developing and launching the platform, while the second portal's costs are centered on longer-term program management, maintenance and readying a system that will eventually be fully supported by the government.

The largest costs to Data Portal 1.0 were consultant labor and transport costs with both local and international consultants playing a significant role in developing, planning and managing the data portal. In relying on international consultants, multiple international trips to Freetown significantly increased the economic cost to the first portal. Advocates for future open data programs should keep in mind that travel costs for a similar exercise will be context-specific. The greatest line item costs for Data Portal 2.0 were under contracts and consultants. Contract fees for the second data portal were high relative to other costs because one year of portal hosting, maintenance and training was paid up front.

Conversely, salary costs for the government were lower than might be anticipated in other case studies due to Sierra Leone's status as a low-income country; open government data portals based in a higher income country are likely to incur larger salary costs for the government implementers.

Additionally, the contracts for both portals' hosting and maintenance were fixed costs that included data storage fees and labor. Future case studies should keep in mind that fixed rate contracts may have a greater economic cost than the budget initially indicates. For example, in discussions with NuCivic, the first portal's hosting and maintenance vendor, we discovered that the flat fee contract covered 50 hours of website development; however, planning discussions on the portal unexpectedly took a significant amount of time beyond the contracted amount, causing NuCivic to lose money over the course of this contract. We counted the additional time these consultants worked in the planning and development phases as an opportunity cost in the volunteer labor line item. On the other hand, portal hosting and training costs on the second data portal are also lower than might be expected because the World Bank negotiated on the contract price and relied upon local vendors based in Freetown.

Future case studies should additionally keep capital costs in mind. Equipment and materials were lower than expected in this analysis because ministries and vendors had not purchased new physical capital such as computers or on-site data storage specifically intended for the data portal, though these costs are expected in the future. The recurring trainings also do not include capital costs that might be anticipated for future cases, as Sensi Hub brings previously owned laptops to the monthly government trainings.

Ultimately, had the first data portal not laid the groundwork for the second data portal, costs in this case study would have been much higher. However, because the World Bank helped to streamline lessons between the first and second iterations of the program, costs for Open Data Portal 2.0 were more focused on operations and longer-term success.

Limitations of this costing case study

A major limitation of this case study is the inability to capture all opportunity costs while relying on estimates and recollections of the key stakeholders. For example, it was difficult for stakeholders to accurately remember what portion of their time was spent in meetings related to planning or general portal management from several years prior. It is also likely that the cost of government time may be misrepresented due to difficulties during our own conversations with government stakeholders to collect an accurate picture of total government time during portal setup and operations.

Another limitation came from the inability to break down lump sum costs into line item categories. One example of this is in contract documents with flat rate fees for general hosting and personnel support; ideally, we would isolate the labor cost from the hardware or storage cost but this was not always

possible. Furthermore, it was difficult to gather data for line items that should typically be measured during a costing case study, including overhead on salaries and contracts, materials and equipment.

Conclusion

The main objectives of this analysis were to (1) justify and build evidence for the costing framework and (2) estimate the economic cost of the Sierra Leone Open Data Program, as well as gather lessons learned to apply to similar costing case studies in the future.

Based on this case study, we determined that the costing framework can be adjusted depending on context. For example, in this case, we removed the costing category of utilization because Sierra Leone's data portal has no cost to the user. Conversely, we included a contracts category due to the difficulty of breaking out line items for the monthly flat fee budget for hosting and maintenance. Open data programs in other contexts may require further adjustment of the framework based on their key components.

We estimated the economic cost of the two data portal, to be $558,688 through June 2017. This price can help provide context for other similarly designed open data programs, though this cost should not be attributed to other cases without first undergoing a similar costing analysis.

Advocates for other open data programs should keep in mind the lessons learned from this case study. One major challenge in costing this data portal was developing a firm timeline. Focusing our initial interviews on establishing the timeline with key players helped us scope out key events and dates in the portal's development and operation, and allowed us to emphasize costing in later interviews. We also relied on multiple informants to triangulate and more definitively establish the amount of time that key players spent working on the program, which was particularly important in this case due to this analysis occurring several years after the program's initial rollout.

Advocates and potential funders for future open data programs should also keep in mind current and long-term governmental capacity, specifically considering whether the government is able to fully manage the program when it first opens or if there should be time and funding built in to ensure success with the technical aspects of portal management. In our discussions with government representatives and technical vendors, many noted the importance of capacity building, and particularly the importance of utilizing local trainers to better prepare government staff for portal management and maintenance; this will help generate a long-term emphasis on transparency and accountability rather than relying on volunteers and private companies for these critical activities.

Within Sierra Leone's government, many individuals within the relevant MDAs spoke highly of the potential of the Open Data Program. Although currently the data portal has a limited reach within Sierra Leone, it is perceived as a valuable resource hub for official datasets that promises a more open and transparent government with greater citizen participation.

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Annex

List of Key Interviews in the Sierra Leone Open Data Program Costing

Stakeholder	Organization
Daniel Nogueira-Budny	World Bank
Rob Baker	World Bank
Elizabeth Dodds	World Bank
Qiyang Xu	World Bank
Jeanne Holm	World Bank
Andrew Hoppin	NuCivic
Morris Marah	Sensi Hub
Khadija Sesay	Open Government Initiative
Usman Khaliq	iDT Labs
Bakarr Tarawally	Ministry of Information and Communication
Yeama Thompson	Right to Access Information Commission
Ndeye Sesay	Millennium Challenge Coordinating Unit

The Sierra Leone Open Data Program Cost Data

Portal 1.0 Planning	
	Total
Salaried Labor	$1,407.60
Consultants	$91,096.05
Transport	$21,000.00
Per Diem	$ 1,650.00

Portal 2.0 Planning	
	Total
Salaried Labor	$1,585.08
Consultants	$4,569.18
Volunteer Labor	$281.25

Portal 1.0 Development of Systems	
	Total
Contract	$18,000.00
Volunteer Labor	$40,000.00

Portal 2.0 Development of Systems	
	Total
Contract	$7,048.00

Portal 1.0 Advocacy	
	Total
Salaried Labor	$156.40

Portal 2.0 Advocacy	
	Total
Salaried Labor	$0

Portal 1.0 Promotion	
	Total
Contract	$2,132.21
Transport	$39,000.00
Per Diem	$1,650.00

Portal 2.0 Promotion	
	Total
Contract	$133.33

Portal 1.0 Training	
	Total
Salaried Labor	$3,891.23
Consultants	$12,500.00
Contract	$4,000.00
Transport	$21,350.00
Per Diem	$13,650.00

Portal 2.0 Training	
	Total
Contract	$1,394.64

Portal 1.0 Program Management	
	Total
Salaried Labor	$8,000.75
Consultants	$36,382.54
Volunteer Labor	$11,759.58

Portal 2.0 Program Management	
	Total
Salaried Labor	$692.28
Consultants	$19,246.14
Contract	$21,000.00

Portal 1.0 Platform Maintenance	
	Total
Salaried Labor	$67.18
Contract	$66,000
Volunteer Labor	$1875.00

Portal 2.0 Platform Maintenance	
	Total
Contract	$36,702

Portal 1.0 Monitoring & Evaluation	
	Total
Salaried Labor	$406.64
Consultants	$8,499.98
Transport	$41,200.00
Per Diem	$6,380.00

Portal 2.0 Monitoring & Evaluation	
	Total
Salaried Labor	$0

Portal 1.0 Recurrent Training	
	Total
Salaried Labor	$0

Portal 2.0 Recurrent Training	
	Total
Salaried Labor	$168.35
Consultants	$12,213.07
Materials	$1,599.97

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