



Draft

# Open Data Kenya

Case Study of the Underlying Drivers, Principal Objectives and Evolution of one of the first Open Data Initiatives in Africa.

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Long Version

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open  
development  
technology  
alliance

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## **Abstract**

In July 2011, Kenya became one of the first African countries and 22<sup>nd</sup> internationally to launch an Open Data initiative, making over 160 government datasets freely available through a publicly accessible online portal. The initiative is expected to support greater public transparency and accountability, fundamentally changing the nature of citizen-government interaction. The release of public data online creates a platform supporting the development of third-party applications, enabling a vehicle for expanded public outreach and engagement leading to “a more responsive and citizen-focused government” (Madera, 2009).

This paper outlines underlying drivers, principal objectives and the evolution of the Kenya Open Data Initiative from inception to realisation. A comparative study of Kenya Open Data and related US and UK initiatives is included, highlighting implications for the applicability of a ‘default model’ in developing countries. This paper also provides preliminary insights into the platform’s access and usage patterns since the launch, as well as perceived present and future impact of this initiative in Kenya. Finally, it outlines the vision moving forward describing the principal barriers and supportive factors that must be addressed for the effective use of public sector information in Kenya. Adopting a mixed-mode research design, the study draws upon surveys, observational data and interviews conducted with key actors.

# Introduction

The term “Open Data” refers to the democratization of data that enables citizens to access and create value through the reuse of public sector information (Rahemtulla, 2010). Although government institutions in the US and UK initially led the field, Open Data is gathering momentum worldwide. Pioneering Open Data initiatives, such as *data.gov* and *data.gov.uk*, are being replicated at national and sub-national levels by government and third party intermediaries, providing access to “non-sensitive datasets, at no cost, to citizens...non-governmental organisations (NGOs) and businesses” (Lauriault and McGuire, 2008).

In July 2011, Kenya became one of the first African countries to launch an Open Data portal, releasing over 160 datasets including budget and expenditure data, as well as information on health care and school facilities. The initiative intends to support greater public sector transparency and accountability, fundamentally changing the nature of citizen-government interaction. The release of public data online will create a platform supporting the development of third-party applications and provide a vehicle for expanded public outreach and enhanced public engagement leading to “a more responsive and citizen-focused government” (Madera, 2010).

The Kenya Open Data Initiative has generated excitement in the developer community interested in the creation of innovative applications, tools and visualizations that repurpose and enrich public data. Characterised by the combination of information, creative vision and digital technology, this wave of creativity is driven by technologists and social entrepreneurs and has successfully turned public sector information (PSI) into new services or goods. One such example is Eduweb, an online school portal using data from the Ministry of Education to provide a service for parents selecting schools for their children.

It is estimated that the release of public sector information will open up new opportunities for businesses and social entrepreneurs to create economic value by building innovative applications and services that make use of government data (Newbury *et al.* 2008 and Pollock 2009). Such innovation, it is envisioned, will drive enterprise, create new products and markets, and improve efficiency delivering benefits to firms, customers and society. To this end, the Ministry of Information and Communications through the state sanctioned Kenya ICT Board launched the Tandaa Digital Content Grant offering awards to entrepreneurs to develop applications that utilize the data to provide services or products for citizens.

However, the release of public sector information to promote transparency and accountability represents only the first step to a more informed citizenry (Boyd, 2010; Rahemtulla, 2011). The next step involves understanding who is in a position to make effective use of this newly available data and addressing barriers limiting access such as digital inclusion and information literacy (Gurnstein, 2010). This requires the existence of supportive factors encompassing four conditions outlined by Zainab *et al.* (2002) including: the existence of an info-structural environment, a reliable and robust ICT infrastructure, a community that is ICT literate and supportive governance.

This paper charts the evolution of the Kenya Open Data Initiative from inception to realisation and envisions its future. Sections 1 and 2 document underlying drivers, principal objectives and the journey of Kenya Open Data. Section 3 analyzes Kenya Open Data versus related US and UK initiatives, assessing the wider applicability of this ‘default model’ of public sector information release to developing countries. Section 4 and 5 describe the Kenya Open Data portal, providing insight into the platform’s access and usage patterns since the launch and its perceived impact.

Section 6 outlines principal barriers and supportive factors required for the effective use of public sector information in Kenya. Finally, Section 7 outlines recommendations for moving forward.

# 1. Driver of Kenya Open Data

Despite being the fourth largest economy in Sub-Saharan Africa, Kenya has faired less well than Newly Industrializing Countries at a similar level of development thirty-five years ago (Hon. Amos Kimunya, Minister of Finance, 2006). After independence from Britain in 1963, Kenya experienced moderately high growth rates with high levels of development, investment and production contributing to an annual increase in gross domestic product (GDP) of 6.6% from 1963 to 1973 (Owino, 2009). However, in the 1980s and 1990s Kenya suffered its worst economic performance since independence when GDP stagnated and inflation reached “a record 100% in August 1993” (US Department of State, 2011). In the mid-1990s, the Kenyan government embarked on a series of initiatives to stabilize economic performance and restore sustainable growth (see Hon. Amos Kimunya, Minister of Finance and Alternative NESC Chair, 2006). These measures were guided by policies and development plans charting a vision to confront the country’s most entrenched problems and improve the economic well being of Kenyans (Owino, 2009), including an Economic Recovery Strategy (ERS), implemented in 2003, that triggered an increased GDP growth rate of 6.1% by 2006. However, the economic recovery in 2010 remains uncertain “after a series of shocks including post election violence, drought and global food and financial crisis in 2008 and 2009” (The World Bank, 2011). Calls to produce a development plan that would propel Kenya to middle-income country status culminated in Kenya’s Vision 2030, a development blueprint covering the period 2008 to 2030, laying the foundation for an economic revolution for the present and future leadership. Vision 2030 has been developed through an inclusive consultative process, involving Kenyans from across the country and integrating “learning from...past failures while building on the strengths and confronting the realities of poverty, unemployment and globalization” (Kimunya, Minister of Finance and Alternative NESC Chair, 2006). The vision is based on three pillars including: economic, social and political environment (see Kenya Vision 2030, 2010).

Integral to the economic pillar of Kenya Vision 2030 is Information and Communication Technologies (ICT), viewed as a tool to boost economic growth through providing access to new markets or services for income generation. It is also viewed as central to the political pillar as a mechanism for poverty reduction by contributing to better governance through increased participation, accountability and transparency. The reason for this lies in the fact that the ICT sector has been the main driver of Kenya’s economic growth over the last decade, attracting global attention. Today, Kenya has the largest mobile money platform in the world. An estimated 15 million mobile phone users are expected to be using mobile money by end 2010, the equivalent of three out of every four adult Kenyans. Kenya has positioned itself to become a global ICT hub, attracting investors who want to extend the ICT revolution domestically and look for applications in other developing countries. Since 2000, the ICT sector has outperformed all other segments of the economy, growing an average of 20 percent annually and propelling the combined transport and communications sector into the economy’s second largest. ICT has had a transformative impact on the financial sector and contributed positively to agriculture, healthcare and other areas of the economy that benefited from rapid communication of critical information. As Director General of Vision 2030 Mugo Kibati states:

“In the last three years IT and ICT, is one of Kenya’s biggest potential growth areas...[and] became for me, one of the most exciting parts of Vision 2030 [in the] long term.”

(Director General of Vision 2030 Mugo Kibati, 2011)

In conjunction with ICT, there has been a growing demand for various types of government data, and increasing capacity to interpret and present data in ways that contribute to economic and social development. As Alex Howard of O'Reilly Media states, the “growth of M-PSEA, Kenya's mobile banking system, and the success of Ushahidi platform for crowdsourced information gathering is evidence of Kenya's vibrant mobile ecosystem and local development community” (2011, p.02). With its large ICT-enabled private sector, award-winning ICT developers, research community, and civil society, Kenya is well positioned to build sectors of its economy that rely on timely, accurate data for economic activities and for providing infrastructure and social services efficiently and equitably. Responding to these calls, Permanent Secretary Dr. Bitange Ndemo of the Ministry of Information and Communications (PS Ndemo) through the 2006 Kenya ICT Strategy called for the release of government data for the development of ICT products and services. As Al-Kags (2011) the Former Chief Executive Officer of the Kenya ICT Board recalls:

“The ICT policy had three pillars: infrastructure, access, content. Under the content pillar, there has always been a desire within [the Ministry of Information and Communications]...to find a way of releasing data.”

(Chief Executive Officer at Goode Communications, Al Kags, 2011)

The release of government data gained further impetus during 2008-2009 after Kenya's reputation as one of Africa's forerunners in the mobile ICT development came under threat due to decreased economic growth, reduced donor support and a growing inflation rate, exacerbated by the fairly restrictive policy and regulatory environment. PS Ndemo viewed Open Government Data as a mechanism to reignite the ICT sector and reaffirm Kenya's leadership position in the mobile market, viewed as fundamental to economic growth and prosperity in Kenya:

“Kenyans are leading...in mobile applications. We are just about to lose it, because we are not giving [public sector] data to [those] who are doing it...[Open] Data will fuel employment and wealth creation.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

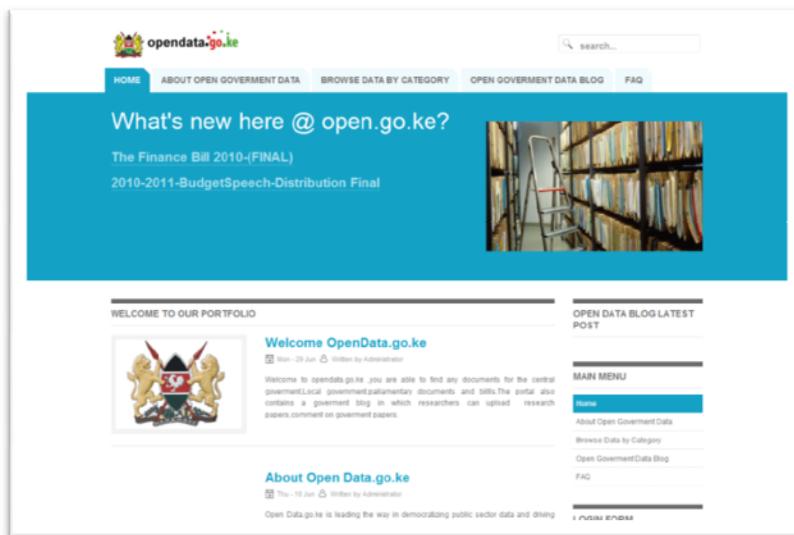
Reinforcing this driver is a new constitution, providing impetus for improved public access to government data through its emphasis on a government data guarantee. The new Kenyan Constitution, enacted in August 2010, replaces an older one in place since 1963. The new constitution guarantees citizens access to information held by the state. Objectivity, impartiality, and accountability are enshrined as guiding principles for all state officers, and parliament must enact legislation translating these principles into an ethics and anti-corruption commission by August 2011. As Director General of Vision 2030 Mugo Kibati reflects:

“We've also had a democracy for the last 20 years and I think Kenya's ahead of the curve with what's happening with...neighbouring countries...The new constitution last year was... revolutionary...[in that] information was guaranteed...So the notion of transparency and accountability has been germinating in this country for a long time.”

(Director General of Vision 2030 Mugo Kibati, 2011)

## 2. The Journey of Open Data Kenya

PS Ndemo began requesting ministry data in 2009 and over the next twelve months he had obtained data from several ministries, facilitating the launch of an online government data catalogue portal, *opendata.go.ke*, in beta in June 2010 “to provide access to government data...as well as parliamentary documents” (Kenya ICT Board, Ministry of Information and Communication, 2010). Negotiations with ministries were ongoing and the release of further datasets remained elusive, with PS Ndemo becoming increasingly frustrated. Kenya’s tech community echoed this sentiment, expressing concern that the portal had only released a handful of content since its publication a few months earlier (Figure 2.1).



**Figure 2.1.** Kenya Open Data Catalogue: Opendata.go.ke in Beta

In March 2011, PS Ndemo addressed “iHub”, an event in Nairobi attended by more than 100 developers and ICT sector specialists (Figure 2.2), promising that more government datasets would soon be made available through the government data catalogue:

“I went to the iHub and...they were saying, ‘we need data to work on our applications’. I actually promised that I was going to deliver that...and I said...I will come back and talk to you, when we have gotten the data.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)



**Figure 2.2.** PS Ndemo addresses the local tech community at the iHub to encourage developers to create local apps using government's Open Data. The meeting was chaired by Agatha Gikunda of Nokia and Eric Hersman of Ushahidi and iHub (Image source: Eric Hersman 2011).

To realize this vision, PS Ndemo forged catalytic partnerships outside of government with the World Bank, Google and Ushahidi to obtain support and garner further credibility for the initiative within government and the wider international community. These relationships were formed largely through serendipitous connections and nurtured over several months. The relationship with the World Bank, for instance, arose out of several meetings between PS Ndemo and Kenya Country Office, focusing on areas of possible collaboration. The conversation around Open Data resonated much more widely within the World Bank following the launch of its Open Data Initiative in April 2010. For the Kenya Country Office, Open Data presented an opportunity to advance the partnership with PS Ndemo and to connect and engage the World Bank at a much broader level.

Drawing upon connections within the World Bank, representatives of the World Bank Institute's Innovation Practice (WBIIN) in Washington DC met with PS Ndemo in February 2011, presenting on the World Bank's Open Data Initiative and provided tangible examples of productive third party use of government data. In the subsequent discussions, PS Ndemo and WBIIN outlined a vision for Kenya to be a pioneer in Africa on Open Data and outlined an opportunity for Kenya to be part of the new multilateral initiative known as the Open Government Partnership (OGP).

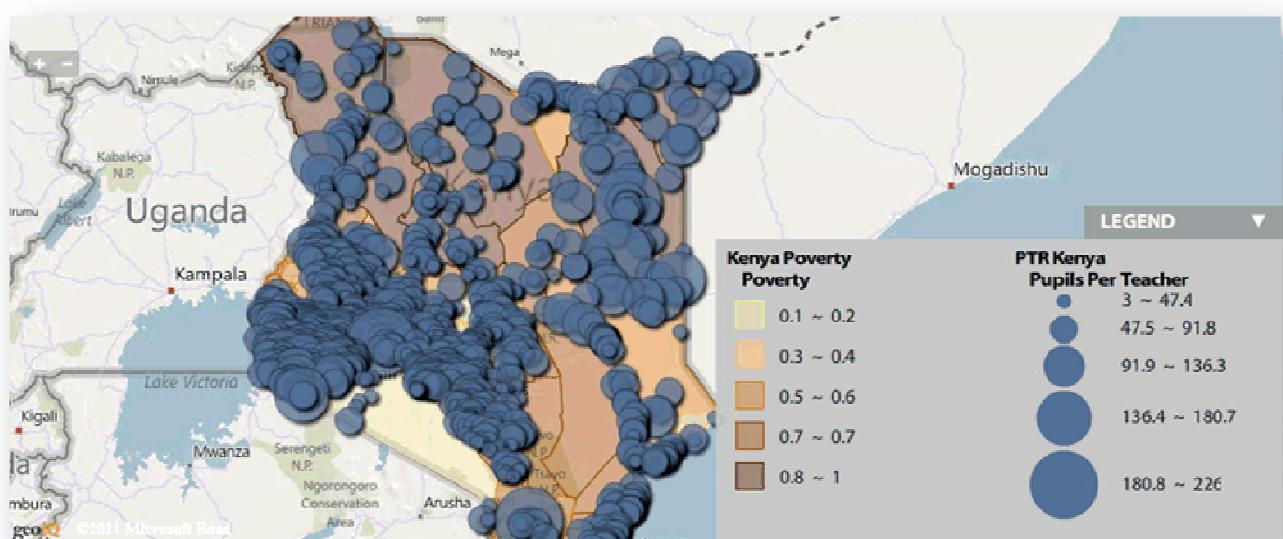
Following these meetings, PS Ndemo resumed his outreach with various government ministries advocating for the release of data. However, in a departure from previous discussions, PS Ndemo requested the release of mostly "existing published datasets" which would be reformatted in a manner usable by the tech community and made available through an online Open Data catalogue. PS Ndemo also accepted responsibility for all liabilities arising from the subsequent use of the data and agreed to find compensation for ministries that had established revenue streams from the commercialisation of datasets that were to be released. As PS Ndemo recalls:

"I had approached the Ministry of Planning in 2009, if we could [use] the Census [data], and I could give it to the tech community...and they refused...but after the meeting at iHub, I decided I would go there and convince them that it's correct that they give us the data...I sat for six hours at the Ministry...and I said, I would actually take responsibility if something went wrong. All I needed was mostly published data. I would put it in formats. I would find ways of paying for it, if it is the money...On that

account, they actually said they will give me a special percentage of the data...and from then on, I started going ministry by ministry, [saying] can I use most of this data...which you have already ...published?"

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

Despite PS Ndemo's success in eliciting agreements from various ministries to release selected published data, many of these datasets failed to materialise. To reignite the conversation, WBIIN sent representatives to work with the Kenya Country Office to implement a sector pilot, demonstrating how open access to public expenditure data, combined with school performance related data (i.e. examination results and teacher to students ratios) and the use of interactive mapping could improve public service delivery for citizens at the local level. The sector pilot project visualized the location of 12,000 schools on an inter-active map, developing a system enabling users to overlay this information with socio-economic indicators and locations of World Bank-funded projects in the education sector (Figure 2.3). WBIIN and the Kenya Poverty Reduction and Economic Management Network (PREM) were then able to showcase the potential of the school datasets to reveal interesting patterns and trends, convincing the Ministry of Education to make these datasets publicly available.

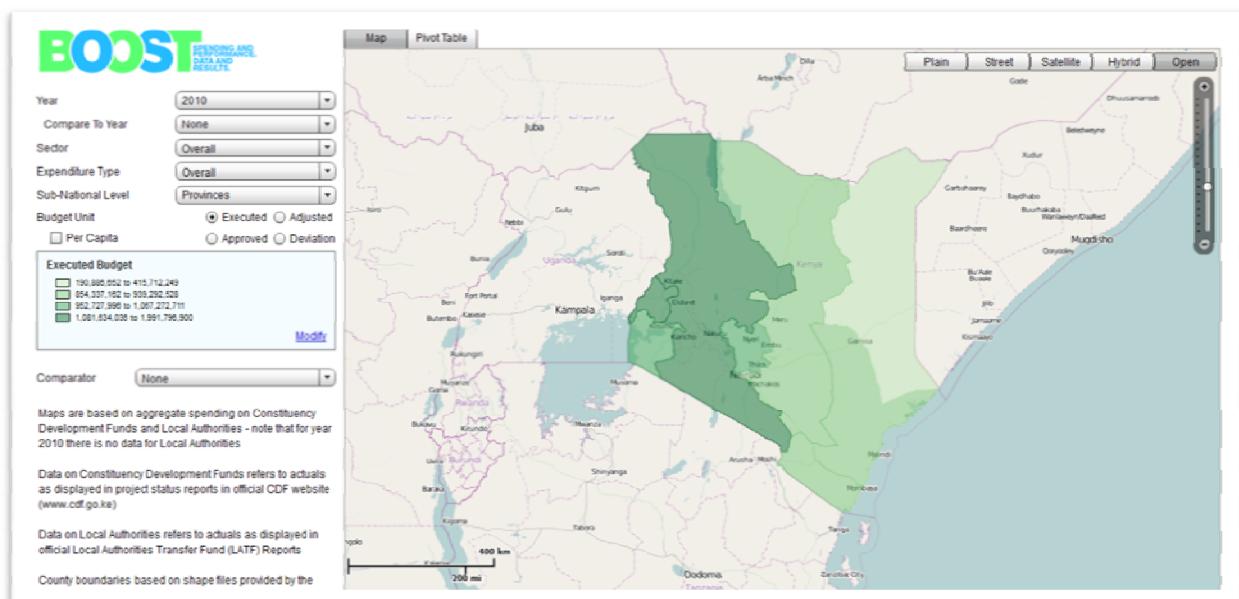


**Figure 2.3.** Mapping school data to reveal interesting patterns and trends such as pupil to teacher ratio in public secondary schools against poverty by county

In parallel, the PREM team refocused their efforts on compiling a comprehensive dataset on central government spending for the Kenyan government's Public Expenditure Review program led by the Ministry of Planning, National Development and Vision 2030. Part of an existing World Bank initiative that commenced eighteen months earlier, the PREM team's objective was to enhance the transparency and efficiency of public spending by improving access to government expenditure data. The PREM team over this period had formed relationships across the Kenyan government including with the Kenya National Audit Office, Ministry of Finance, Ministry of Planning and the Kenya National Bureau of Statistics (KNBS) to establish a National Public Expenditure Review (PER) Steering Committee, comprising of representatives both internal and

external to the Kenyan government to oversee the data collection and analysis. The PREM team, through the PER Steering Committee, had been given the mandate to request electronic copies of audited accounts from the Kenya National Audit Office and follow up until a complete central government public expenditure database was established and made publicly available on the Ministry of Planning website.

The PREM team also collaborated with the World Bank Institute in Washington DC on the BOOST initiative (started by the World Bank in 2010) to combine central government datasets with information from local authorities and CDF spending, including geo-coding CDF projects and providing a friendly online interface for users to access public expenditure data and visualizations (Figure 2.4). This formed part of a strategy seeking to generate interest in publicly available datasets, including pamphlets translated into Swahili for broader outreach.



**Figure 2.4. BOOST - Mapping Public Expenditure Data in Kenya**

The breakthrough signifying a political environment conducive to realizing Kenya Open Data came in June 2011, when the Ministry of Planning provided its Census data for 2009, setting in motion a chain of events towards realising an Open Data initiative in Kenya less than one month later. Confident that there was now sufficient support and data to launch an Open Data catalogue, PS Ndemo selected a date for an official launch of the initiative at which President Kibaki would attend.

During this period, there was no legal framework or Cabinet approval for an Open Data initiative in Kenya. PS Ndemo made the political calculation that it was better to obtain permission directly from President Kibaki, whose executive authority would override concerns at lower levels, rather than seek approval via legislative frameworks that could be a stumbling block. For PS Ndemo the emphasis was on “symbolically releasing [Open Data] and then begin to work backwards”. He obtained executive permission following a meeting with President Kibaki where PS Ndemo argued that the release of data would position Kenya as a leader in ICT in Africa.

With the official launch set in motion, PS Ndemo transferred responsibility for the delivery of the Open Data initiative to Paul Kukubo of the Kenya ICT Board, a government agency under the Ministry of Information and Communication mandated to coordinate ICT projects in development. The Kenya ICT Board is a government agency under the Ministry of Information and Communication mandated to market, position and promote Kenya as an ICT destination, including coordinating and implementing ICT projects. Kukubo recognized the importance of mobilizing a team to realize Kenya Open Data, formulating a diverse taskforce equitably comprised of actors from government, private sector and academia:

“We came up with the taskforce idea...mainly because of the knowledge of the people who acted in that space and who we felt should be involved, mainly because of their interaction with it over many years. [We] needed a team that moves forward...[and then we] rely on our collective experience to make that task happen.”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)

Of the 23 individuals on the taskforce, there was equal representation from the public and private sector (39% each), with the remaining participants coming from international organisation (13%) as well as academia, think tanks and research centres (9%). While representation was drawn from various sectors, representatives were an exclusive group of actors. For example, the public sector was represented by only a few government ministries including the ministries of Information and Communication, Land and Education. The Kenya ICT Board and National Council for Law Reporting represented two thirds of all representatives from the public sector. The private sector was represented by the Kenya Private Sector Alliance and by technologists from Google, Ushahidi, iHub and mLab East Africa. In the remaining sectors, representation from international organisations included only the World Bank, while the World Resources Institute and University of Nairobi represented academia, think tanks and research centres. As Kukubo notes, the composition of the taskforce was more of a reflection of the individuals and their potential contribution, rather than an attempt to be all-inclusive:

“PS will set the goals, we’ve got to execute them...and for us we’ve got to think in terms of teams of people, individuals, energy...sometimes somebody who’s very technically proficient may not be the right person for the task because they’ve got the wrong energy.”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)

It is striking that there was no invitation for representation from civil society groups such as Transparency International and National Taxpayers Association., despite the participation of these groups in drafting the Freedom of Information (FOI) law. However as Willis Ollis from Transparency International notes, this limited level of engagement is not uncommon, especially in the implementation of government ICT orientated initiatives:

“Most government departments do not engage with civil society groups, especially at the implementation stage. They [sometimes solicit]...feedback at the formulation or validation stage of a product, but when it comes to implementation the government is comfortable doing it themselves.”

(Transparency International, Willis Ochieng , 2011)

Following the selection of the taskforce, the first taskforce meeting was convened and Kukubo established four teams to focus on four specific areas of the initiative:

- **Technical/Usability:** To design and develop an online platform (*opendata.go.ke*) hosted by the Kenyan government for the publication, visualisation and customisation of Open Datasets;
- **Data:** To collect, digitise, collate and organise data from key government ministries and other development partners to aid in better planning and design of development projects;
- **Launch:** To organise the launch and popularise the initiative to increase usage and position the government of Kenya as a proactive in driving the open government approach;
- **Legal and Policy Development:** To develop an Open Data license to ensure consistency and transparency in how government data is released for public reuse.

### **Technical/Usability Team**

Led by Athman Mohamed, CTO of Trademark, the technical/usability team consisted of seven members from the technology and local developer community including Google Africa, Ushahidi and iHub. In delivering the online platform the group focused on three specific tasks: platform architecture, user experience and development of applications demonstrating the use of Open Data.

With regards to platform architecture, Socrata a commercial vendor in the US was selected as an “out of the box platform” which was both cost effective and rapid to deploy. As discussed in Section 2.2, concerns were expressed regarding the perceptions of citizens about the hosting of the data outside of Kenya. However, these concerns were balanced against the short development timeline and commitments made to the Kenyan President on the launch of the initiative. In partnership with Socrata, the technical team specified the requirements and provided direction in terms of the “look and feel” of the site as well as content, including visualisations and applications of the data.

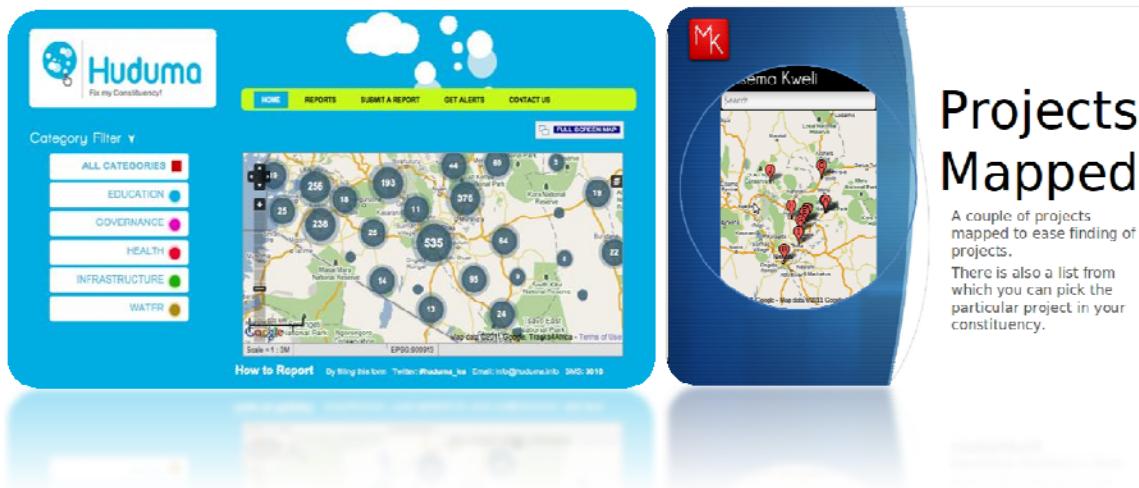
The development of applications arose from requests by PS Ndemo and the technical team to showcase the potential of this data at the official launch alongside the data catalogue. As members of the technical team state:

“When they pulled up a Socrata site for the first time and I looked at it, I said...yes, it’s going to be great and it’ll be a nice publicity move, but it is not going to have any impact...[If] we do not engage with the developer community [in Kenya] and show how this data can be used, then it will not resonate in the minds of Kenyan citizens...that’s where I volunteered both Ushahidi and the iHub as communities that could get involved.”

(Co-Founder of Ushahidi, Eric Hersman, 2011)

More specifically, the technical team developed four info-graphics and applications (Figure 2.5). For Google Africa, this involved utilising Google Public Data Explorer to generate visualisations based on available datasets. For Ushahidi and the iHub, this involved reaching out to developers across their network and conducting a series of “code sprints” bringing together 8-10 developers for one or two days to write code for the applications. Hampered by availability of key datasets on

the Socrata platform that only became accessible three days before the official launch, development of the applications took place within severe time constraints.



**Figure 2.5:** (a) Huduma: A platform that enables citizens to amplify their voices in the demand for services directly to authorities and service providers; (b) Msema Kweli allows a citizen to find Constituency Development Fund (CDF) projects near them and add pictures to them.

## Data Team

Led by the World Bank Kenya Office, the data team consisted of members from the World Resources Institute, University of Nairobi and WBIIN. In addition, the World Bank in Kenya and Washington, DC reallocated researchers and consultants to support the wider team in the delivery of the data for the initiative. The World Bank team requested that the group begin by completing the curation of the public expenditure datasets and the 2009 census tables, also compiling publicly available government datasets already held internally within the World Bank which could be released through the data catalogue. In vetting the data, the group adhered to two principles: (1) focus on the most relevant information for grassroots citizens (Kenya ICT Board, 2011) and (2) prioritize information that had previously been published in hard copy so that it would be shareable through the online portal without need for additional permission (Ndemo). As such, the data released was, as an official in the World Bank Kenya Office stated, “a combination of what’s important, what’s available and what could be done in three weeks”. The resulting data came from a variety of sources and topics, such as household surveys, public expenditures, school and health facilities, etc. With only the Census data directly released by the Kenyan government, it is argued that “it’s quite possible that the biggest role [the World Bank] played was...[as a] data repository” (World Bank, 2011).

In addition to compiling various datasets, the World Bank team also conducted significant processing of the datasets on behalf of citizens “to make the data easily accessible, understandable, and usable” (World Bank Kenya, 2011). Certain datasets, only available in hardcopy, would be scanned and transferred into electronic format. The team would also validate the data for errors, inconsistencies, or omissions with the relevant ministry before publishing the data to the site. The World Bank team worked with the National Bureau of Statistics to create county estimates from district files, by developing the estimates from several large datasets including the Census and Kenyan Integrated Household Budget Survey to ensure such datasets remain meaningful and relevant to citizens. Similarly, the team also sought to include datasets in

both English and Kiswahili to elicit a better response from the average Kenyan citizen. While the World Bank took the lead in compiling and curating, it was shared vision and relationships with Kenyan government officials that critically facilitated access to the data.

## Legal and Policy Development

Led by Michael Murungi (Kenya Law Review), the legal and policy development team was tasked developing an Open Data License providing clear guidance regarding the use and reuse of data released under this initiative, in consultation and collaboration with Ory Okolloh (Google) and Magero Gumo (eGovernment Directorate). After extensive consultations, the team agreed to adopt the UK Open Government Licenses (OGL) which “has been widely transferred to other jurisdictions that use the same license seamlessly” (Eaves, 2012, p.01). This license allowed for the copying and distribution of this information, freely and flexibly, with only a few condition such as acknowledging “the source of the information by including any attribution statement by the Information Provider(s)” (see UK OGL, 2011, p.01).

## Launch Team

Inaugurating Kenya Open Data on July 8<sup>th</sup>, 2011, President Kibaki called “upon Kenyans to make use of this ...portal to enhance accountability and improve governance in our country” (President Kibaki, 2011). President Kibaki officially launched the Kenya Open Data Initiative on July 8<sup>th</sup> 2011 in Nairobi (Figure 2.6). An estimated 3000 people attended the launch event in Nairobi (CIOEastAfrica, 2011), eighty-five percent of which were from Kenyan ICT businesses and academic institutions. As Kukubo states, this reflected the communication strategy employed by the Kenya ICT Board:

“We got a huge invitation out, because we need to fill that room...We called group leaders of different IT groups. We also called university lecturers and told them that this initiative would be of interest to their students. We did the same for the business community. We subsequently had very high attendance from these communities.”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)



**Figure 2.6.** President Kibaki at the Kenyatta International Conference Centre in Nairobi, Kenya launching the Kenya Open Data Initiative.

The launch garnered international acclaim from civil society, private sector and government representatives, with Kenya widely acknowledged as among the first African countries to have an Open Data portal. Following the launch, PS Ndemo was invited to address representatives from governments, civil society, and the private sector at the OGP meeting - a new multilateral initiative promoting more open and accountable government - organized by the U.S. Department of State in Washington DC. Over 250 attendees gathered to hear PS Ndemo and other open government champions from various governments speak about the successes and challenges of building a more Open Government, utilizing innovation and partnerships between the public and non-governmental sector. During the meeting, Undersecretary Maria Otero praised the Kenya Open Data Initiative stating “the government of Kenya moved bureaucratic mountains by launching a first class Open Data website” (Otero, Open Government Partnership Meeting, Department of State, July 12 2011). While Kenya Open Data attracted global attention, the launch of the initiative almost did not happen and the decision to turn to a US based company as the platform provider raised concerns within the local tech community about why the government selected Socrata, rather than use Kenyan developers and host the data locally.

## **2.1. Launching Kenya Open Data**

Within forty-eight hours of the official launch, PS Ndemo was summoned before President Kibaki and several high-ranking ministers. The meeting was scheduled after several ministers expressed concerns, viewing Open Data as a threat to national security similar to WikiLeaks, the whistleblowing website. This meeting was also marked by tension between the Ministry of Information and Communication and the Ministry of Planning after a Time Magazine article surfaced quoting PS Ndemo as saying, “there has been some resistance [to the Open Data initiative] – the Planning Ministry refused for a whole year to give us their data but we have convinced them” (Time Magazine, 30 June 2011).

During the meeting, PS Ndemo persuasively communicated that releasing Kenya’s data was imperative for economic prosperity:

“During the meeting I raised several points regarding how releasing information could change this country. I provided examples from across several sectors...For example, we import sun-dried tomatoes from Spain. However...[while] we have more sunshine...over 60 percent of our tomatoes go to waste... the reason is because we do not fully understand the market, as information is kept at the Ministry of Trade. I said, all this data is on our shelves and this is what we want to bring out [so that it can] benefit us.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

Working with private sector developers, PS Ndemo also showcased the potential of Open Data using a series of visualisations and applications including the Kenya Gazette (dating back to 1906) and Google’s Public Data Explorer amongst others to allay concerns expressed. While the President and ministers ultimately aligned behind the initiative, these stories exemplify that a champion is necessary but insufficient without broad-based support secured through communicating a clear vision.

## **2.2. Kenyan Open Data Platform**

Managed by the Ministry of Information and Communications through the state sanctioned Kenya ICT in partnership with the World Bank, the Kenya Open Data portal is powered by Socrata, a Seattle-based start-up providing Open Data solutions. The choice of a US company raised several concerns within the local tech community about why the government selected Socrata, rather than use Kenyan developers and host the data locally, and the perceived lack of transparency in reaching the decision. During this same period other members of the consortium representing Ushahidi and Google had offered their services and existing platforms to host the Kenya Open Data portal. As Eric Hersman from Ushahidi stated:

“Kenya public data should be managed and run by somebody...in the information and communications part of the Kenyan government. However in the absence of that, Ushahidi was willing to handle it. We’re willing to use our kind of technology expertise and platform management expertise to do that.”

(Co-founder of Ushahidi, Eric Hersman, 2011)

Socrata was not initially the preferred option of PS Ndemo, but one dictated largely by a short development timeline and the nascent capacity of local developers. In an assessment of the various options, Socrata was considered as an “out of the box solution” that was both cost effective and rapid to deploy. While the decision to adopt Socrata was agreed to by PS Ndemo and the Kenya ICT Board, the perceived unilateral nature by which the platform was selected gave rise to an area of contention. The platform itself also remained largely unknown to other members of the consortium including Google and Ushahidi, as Eric Hersman stated:

“When Socrata was mentioned, I had to do some quick [searching]...to really dig into Socrata and see who they were and if I trusted them. They came out looking good so we got fully behind that with the understanding...that the Kenyan government would keep another database of backup files so that [there]...would be redundancy in the system.”

(Co-founder of Ushahidi, Eric Hersman, 2011)

While these issues were expressed, over time a general consensus emerged within the consortium that, given the development timeline, there was insufficient local capacity to develop the platform:

“Socrata is an online hosted service that enables data to be visualised to enable graphs and charts and data comparisons with ease. The visualisation is what gives meaning to the data in a way that the common citizens can view it. The benefits of doing this for launch and citizen access far outweigh the cost of waiting for the time it would have taken for us to develop a similar online application locally”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)

“With the timelines given, there’s nobody here [in Kenya] who’s built a platform dealing with massive data sets...made to be accessible [to] outsiders...So Socrata is a very special type platform. There are only a handful of companies around the world who make that kind of platform.”

(Co-founder of Ushahidi, Eric Hersman, 2011)

Following the launch, concerns regarding the use of a US platform arose again within the tech community and internally within government regarding the hosting of data locally. These concerns gained traction after users began tweeting the web address of the portal displayed as kenya.socrata.com, which soon led to comments such as “as a country, we need to own our data...we can’t just pass it off to somebody else all the time” (Hersman, 2011). In accommodating these concerns, the Kenyan ICT Board publicly announced that the use of Socrata was not a long-term solution. Rather, the local developer community in Kenya would be encouraged to replicate and extend the functionality of the existing platform providing an alternative solution. As Kukubo stated:

“The issue of local hosting has our attention and we will resolve it, not just with a local data centre..but the replication of a similar online tool to visualise the data...Once [local] developers have a system that can replicate...improve or add value to...Socrata and Google’s public data tools, the hosting decision will be easy. As an implementation agency, we are committed to working with all to make this happen. There is much to be done”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)

### 3. Open Data Initiatives in Developing Countries

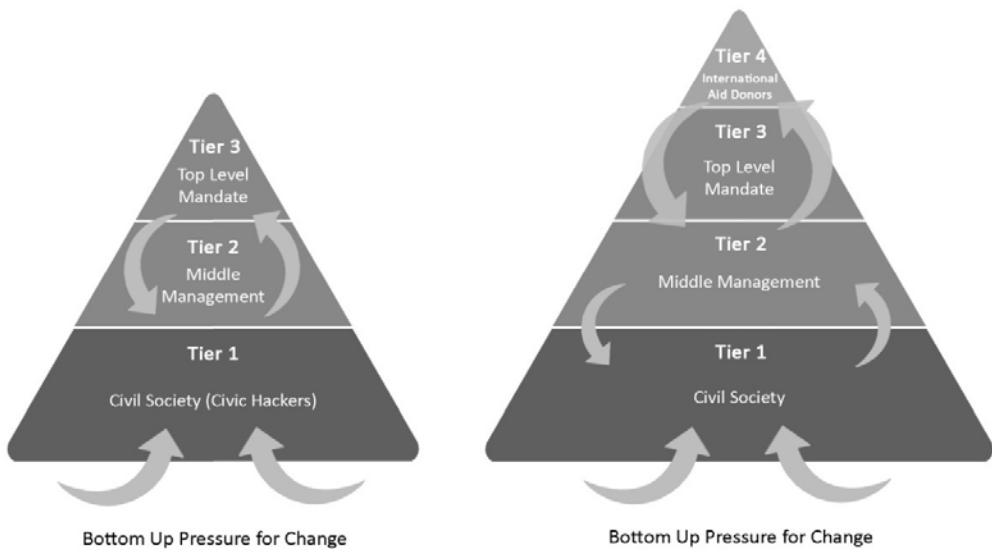
Initially led by pioneering initiatives *data.gov* and *data.gov.uk*, Open Data initiatives are rapidly proliferating worldwide. While the preponderance of government data catalogues launched to date are from OECD countries, the emergence of initiatives in countries such as Kenya, Moldova, Morocco and Timor-Leste demonstrate widespread interest in its transformative potential, irrespective of income group or region. Such initiatives frequently cite the UK and US that have become the default model' for the release of public sector information that countries seek to emulate, regardless of their relative level of development (Gigler *et al.*, In Review).

In a Transparency and Accountability Initiative (TAI) commissioned Open Data Study, Becky Hogge derives a three-tier model of actors crucial to successful introduction of Open Data based on the US and UK experience.

- **Civil society**, in particular a small and motivated group of "civic hackers", provided bottom up pressure for change through traditional advocacy and setting up websites demonstrating open data's potential;
- **An engaged and well-resourced "middle layer" of skilled government bureaucrats** became interested in Open Data to improve public sector efficiency;
- **High-level political leaders**, including Heads of States and Ministers, provided the third layer motivated by either an outside force (in the case of the UK) or a refreshed political administration hungry for change (in the US).

The report concludes, based on interviews conducted with a selection of experts pursuing similar goals for, that in developing and middle-income countries there would need to be a fourth tier of potential drivers towards Open Data (Figure 3.1), international aid donors able to provide funding and technical assistance for successful implementation. International aid donors could also additional catalytic roles either indirectly influencing developing countries through releasing their own data, or linking development assistance to progress on such initiatives, effectively creating a new form of governance conditionality (Gigler *et al.*, In Review).

With reference to models proposed by TAI (2010), there is an implicit assumption that actors representing the demand and supply side of public sector information remain constant for both developed and developing countries. On the demand-side, it assumes civil society or other private sector intermediaries have the will and capacity to use open government data to achieve social and commercial value. On the supply-side, it assumes that governments can be convinced to mandate the release of public sector information and that once agreed they have the endogenous capacity to implement such an initiative (Gigler *et al.*, *In Review*).



**Figure 3.1.** A conceptual model of Open Data in (a) Developed and (b) Developing countries. These models have been developed by Rahemtulla based on reflections of the TAI (2010) Open Data study.

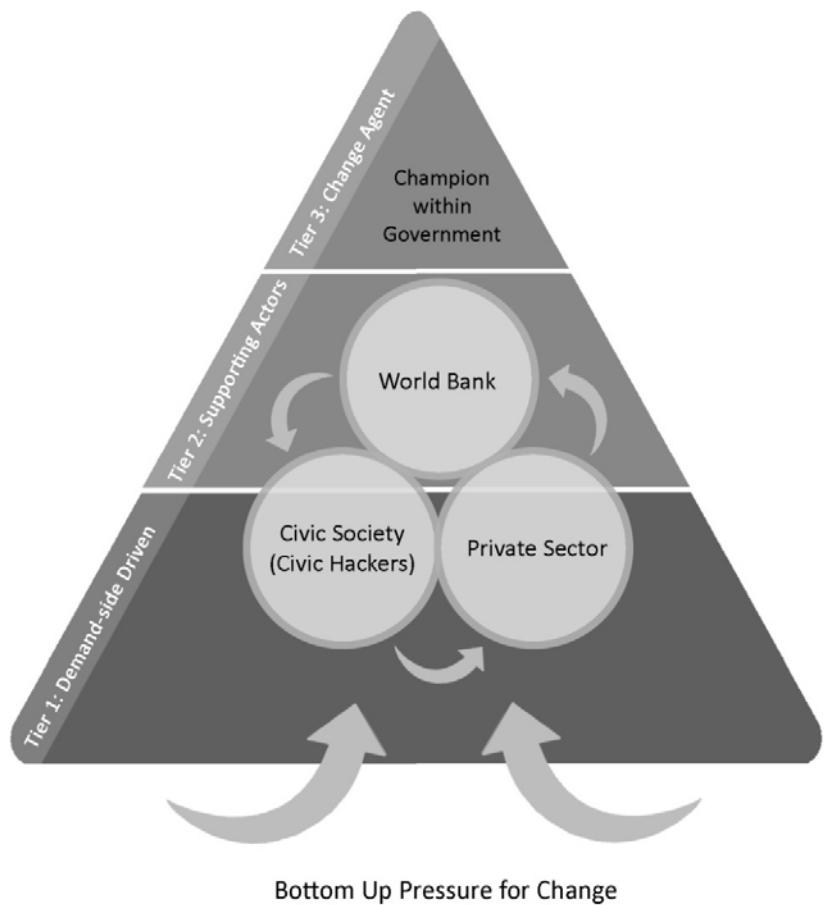
Analyzing the Kenya Open Data Initiative, this paper identifies three actor groups (Figure 3.2) as instrumental to the inception and realisation of this initiative in Kenya:

- **A High-Level Change Agent within government** with the political will, leadership and vision to be the Open Data champion within government (i.e. - PS Ndumo);
- **Supporting Actors** within and external to government providing capacity building at an institutional level (i.e., World Bank, Civic Hackers and the Private Sector);
- **Civil Society, Civic Hackers and Private Sector** as demand-side drivers advocating for the release of public sector information (i.e., Google, Ushahidi and the Local Tech Community).

As our model illustrates, these groups are distinct from the three and four-tier model proposed by Hogge (2010), for both developed and developing countries and reflects the complex interaction between actors across multiple tiers driven by a distinct set of motivations by each actor group (see below). As Eric Hersman notes:

“It’s complicated, because there’s a mixture of things...Many people who have been actively trying to make it happen over time and also leadership in place that is willing to give it a whirl, and a community of experts around Open Data...[and] technology and what you can do with data that has allowed it to...come to fruition.”

(Co-founder of Ushahidi, Eric Hersman, 2011)



**Figure 3.2.** The Conceptual Model of Kenya Open Data by Rahemtulla

### 3.1. A Champion within Government

Since 2005, PS Ndemo has championed strategies of moving Kenya into the digital age in all spheres. Kenya Open Data formed part of this vision and Dr. Ndemo acted as a high-level change agent within government, providing the political will to overcome the inertia of entrenched bureaucratic silos and secrecy that could inhibit the release of government data (Gigler *et al.*, *In Review*). PS Ndemo forged effective partnerships outside of government, including with the World Bank and local tech community, to garner further credibility for the initiative within government and the wider international community.

The US Open Data programme, launched in 2009, and inspired PS Ndemo's vision for Kenya Open Data. PS Ndemo saw Open Data as a mechanism to increase transparency and address underlying issues that led to the 2007-2008 Kenyan Crisis - a political, economic, and humanitarian crisis erupting after incumbent President Mwai Kibaki was declared winner of the presidential election held on December 27, 2007:

“When Obama came into office and declared an Open Government and then an official from the Obama administration came to Singapore [to present on US Open

Data]...the speech by the gentleman, really influenced me, and I said that, actually we can do this...I was in government when we messed up the country in 2007 and 2008, and I think the solution [for] us is greater transparency, so that we are able to trust the government, because you get into many problems when there is no trust between [the public and the] government.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

The initiative also represented a step towards Ndemos efforts to enact a FOI law dating back several years. For Ndemos, a former academic, realising FOI had become a personal mission within government, born out of frustration from obtaining data for research:

“I started working on this freedom of information some time back. I was eager to see it go through, because coming from the University...one of my goals in government was...to free up the data for research...[through an] access to information law which, I was driving myself...[and] a portal known as [beta] opendata.go.ke”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

In championing the Open Data initiative, PS Ndemos obtained permission directly from President Kibaki , overriding any immediate legislative frameworks and approvals required (see Section One). This reflected Ndemos belief that such approaches are required for initiatives to succeed within governments in developing countries. It also reflects the close relationship between PS Ndemos and President Kibaki, who had previously agreed to a similar request by the PS three years earlier, subsequently leading to the development of the cable infrastructure in Kenya:

“The normal procedures never work here...For example...we were trying to build our cable infrastructure here for five years involving a long process of meetings and discussions with representatives from other countries. After a year of discussions I simply said ‘I think I am going to build the capability’. So I went straight to the President and I said ‘I want to do cable ourselves and this will change this country’. The President responded ‘Are are you serious?’ I replied ‘Yes...we will do it. All I need is a letter from you’. He said ‘Fine’. We started and 18 months we had the cable here.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

For PS Ndemos, championing Open Data and other initiatives had been driven by social entrepreneurship with the emphasis on developing models for other countries to replicate. This drew largely on Ndemos academic background, which provided him with personal “insurance” when championing initiatives within government:

“It is actually very difficult for me to have done what I’ve done...It’s because I had insurance. If you ask me to leave my position today, I would go back to my job at the university. That... has helped me to do this much [and take] some of the risks that I’ve taken.”

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

### **3.2. Capacity Building within Government**

The Kenya ICT Board, World Bank, civic hackers (i.e., Ushahidi and iHub) and the private sector (i.e., Google and Socrata) can be characterised as ‘enablers’ of this initiative, supporting capacity building at an institutional level. The Kenya ICT Board provided administrative and managerial capacity. The World Bank became the primary ‘supply-side’ driver of government data based on their willingness and capacity to release datasets for public use, harnessing existing relationships with government officials for obtaining access to the data in the first instance. The World Bank, Google, Ushahidi and iHub provided tangible examples of productive third party use of government data, converting new mid-level Open Data champions within government. Finally, civic hackers and the private sector, through Socrata, provided the technical capacity outside of government necessary in delivering the online platform. PS Ndemo welcomed the capacity building effort, particularly at a time when internal resources were already strained. As Al Kags (2011) states:

“The PS manages the Ministry and the Kenya ICT Board, who ideally would have been the ones to implement this project, but it was hard for everyone because...resources were very stretched... So...this team of people...said ‘PS, we are able to help you to put this together, we will build the applications for you, we’ll sort out the data, [and] we’re going to do all the work on your behalf. All you need to do is to get us the data...and the permissions...because a lot of the data has already been published...with [various] conditions.””

(Chief Executive Officer at Goode Communications, Al Kags, 2011)

For members of the World Bank in Kenya, there were several underlying motivational drivers to be part of this initiative. For some, their participation represented a small contribution towards an important step in the country’s history. For others, it represented an opportunity to “bring together data in one place” and, in doing so, address difficulties in accessing information stored in large data silos both within government and internally within the World Bank:

“It was frustrating using personal contacts to gather data, since it often came with a caveat that ‘it’s just between you and me’...[however] all of the World Bank team had experienced similar situations and we were also personally motivated to make sure there was good quality data that was widely available to everyone that wanted to use it for research....We were all very driven.””

(World Bank in Kenya, 2011)

For other members of the team, it presented an opportunity to further promote access to information and “bypass” difficulties experienced in similar initiatives launched internally by the World Bank. As a World Bank member reflects trying to build capacity across the national statistical system through funding programmes to provide reliable, timely and accurate data in accordance with international standards:

“The World Bank has been supporting public access to information on development results to improve public accountability in [East Africa region] for a long time. The results have generally not been as successful as intended. Reasons include both financial and capacity constraints as well as governments...not seeing themselves as

public service providers with respect to information...[While] a number of databases have been launched, [by] both line and planning ministries and statistical offices...generally their success has been short lived and depended on the availability of specific donor funding rather than on internal government demand...Few countries have managed to grow a culture of openness in government with respect to access to information...But even if we have not been as successful as we had hoped, there is notable progress...including Kenya's Open Data Initiative."

(World Bank, 2011)

Underlying these drivers was a collective belief that this initiative represented a new era of research and analysis, social accountability, evidence based policies and issues-based politics in Kenya:

"Kenya has been an interesting case in comparison to many other countries in this region. Since the mid 1990s we have had a very open press; there has been a lot of information available but it has largely not translated into the social accountability that Kenyans have been expecting...Although there is probably no tipping point, the [Kenya] Open Data initiative has the potential to slowly push the social accountability process forward towards a scenario where Kenya is fundamentally different and where impunity is being replaced by accountability."

(World Bank, 2011)

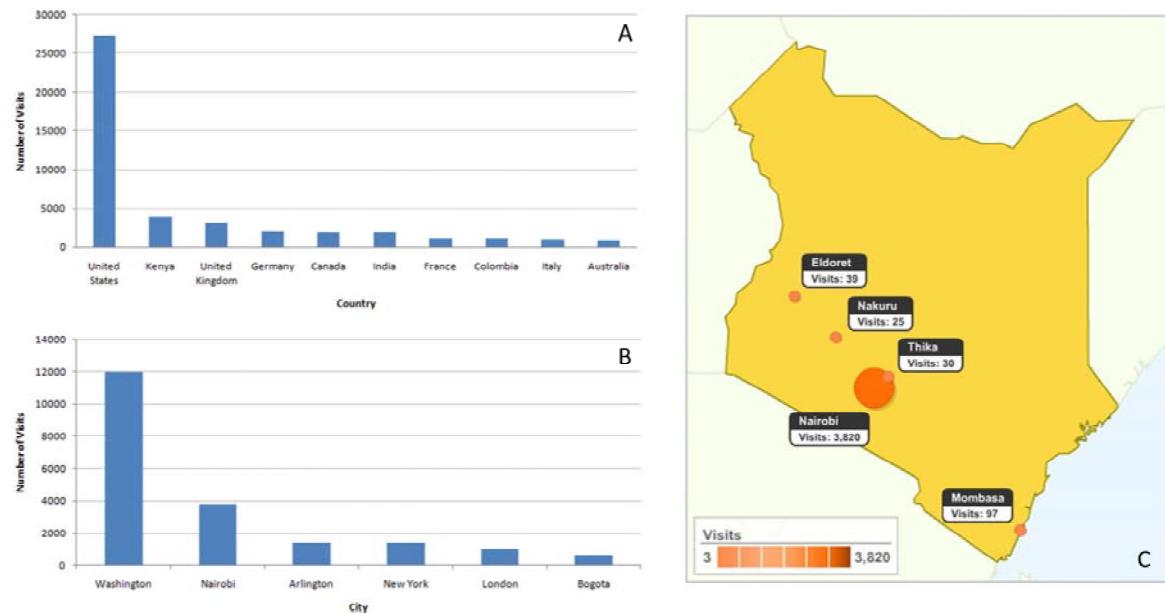
The role of the World Bank is seen as critical with regards to its capacity to release datasets for public use and provide guidance towards successful implementation of Open Data programmes for other developing countries pursuing a similar goal. Similarly, civic hackers and the private ICT sector was a critical 'demand-side' driver of Open Government Data in Kenya. These groups advocated for the release of public sector information to generate commercial value and produce applications featuring government data to provide new public services or goods. As Eric Hersman from Ushahidi recalls:

"The developer community, which we're a large part of here at the iHub and Ushahidi, was very interested in accessing this data because we thought that it would allow us to do some interesting things around...crowd sourcing of information and transparency on what's going on, not just in the urban areas but also in the rural areas, and being able to...help people interact with the actual public services around them...While some government data was available from the Ministry of Health we could not get Ministry of Education information...courthouse information...general demographic census data [or] shape files of the different constituencies. We started agitating together around that and...it was at that point we started talking to Dr. Ndumo for the Ministry of Information and Communication Technology....I remember saying to him, 'You open that data up and just watch what we can do.'"

(Co-Founder of Ushahidi, Eric Hersman, 2011)

This demand for information in Kenya can be illustrated with reference to the World Bank's Mapping for Results (M4R) platform. The M4R platform visualizes the location of World Bank projects and provides access to data about indicators, sectors, funding and results for more than 2700 World Bank financed activities across 105 countries. Between October 2010 and August

2011, Kenya ranked second only to the United States in total number of visits to the M4R and ahead of the United Kingdom, Germany, Canada, India and France. Nairobi was ranked second ahead of Arlington, New York and London in terms of numbers of visitors. Our analysis reveals an uneven distribution of visitors to the site from across Kenya, as 95 percent of all traffic from Kenya originated from Nairobi compared to 5 percent from Mombasa, Eldoret, Thika and Nakuru combined (Figure 3.3).



**Figure 3.3.** Usage of the World Bank Mapping for Results Platform by: (a) Country; (b) City and (c) within Kenya.

While this vision was the realisation of multiple actors, fundamental to this was managing the perception of the initiative and its implementers. This was particularly pertinent with regards to the perceived close relationship between the Kenyan government and World Bank, particularly at a time when many international donors including the World Bank had suspended funding to the Kenya Free Primary Education (FPE) programme after “an audit in 2009 revealed that 1 million USD in grant money was missing and 26 million USD has been diverted from the education fund” (Rezac 2010). This relational strain had to be carefully managed by reinforcing the underlying reasons for such an initiative:

“The World Bank’s involvement led to [concerns that]...this project [was intended] to monitor us...[exacerbating pre-existing] tensions...with donors...[over allegations of misappropriated funds]. And so, it was then necessary to sell this particular project on a development platform, which I think, in retrospect, [was] the right thing to do.”

(Anonymous, 2011)

## 4. The Kenya Open Data Portal

On July 8<sup>th</sup> 2011, Kenya became one of the first African countries and the 22<sup>nd</sup> internationally to launch an Open Data initiative, making over 160 government datasets freely available through a publicly accessible online portal. The 2009 census, national and regional expenditure, and information on health care and school facilities were some of the first datasets to be released. These datasets were compiled from multiple sources such as participating ministries and the World Bank. Datasets have been classified into several categories including education, energy, health, water and sanitation, population and poverty. These datasets are complemented by the release of the newly created geospatial boundaries for Kenya's 47 counties and geocoded datasets to enable contextually relevant data exploration and visualisation of the data by researchers and the general public. Furthermore, through the portal, users can compare different datasets, create maps, graphics and interact with the data programmatically through an Open Data API providing a platform facilitating the development of innovative applications and services. The portal enables users to provide feedback and input into what datasets they would like to see released.

### 4.1. Usage Patterns

Over a two-month period of June 1-August 1, 2011, the Kenyan online portal was viewed 12,619 times with an average of 204 views per day. However, an analysis of usage patterns over this same time period reveals significant fluctuations. While the portal had 9,074 views in the 25 days preceding the official launch of the site (an average of 395 views per day), there were only 2,795 views in the 25 days following the launch (an average of 122 views per page). The highest number of views was recorded 2 days prior to the official launch with 1,817 views, a sharp contrast to the 633 views recorded on the actual day of the official launch. Our analysis also reveals that usage of the online portal since the launch has declined to an average of less than 120 views per day.

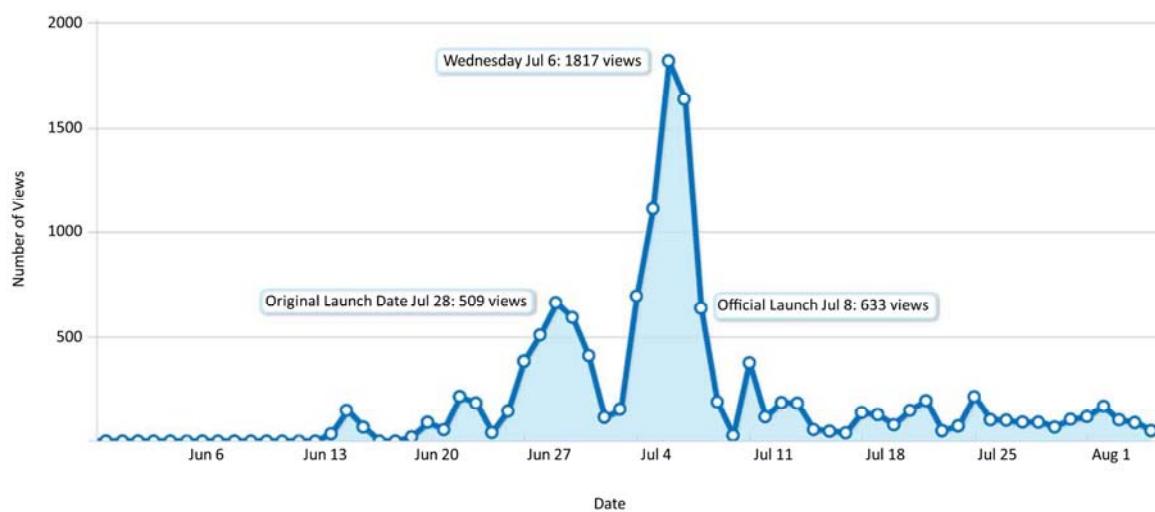
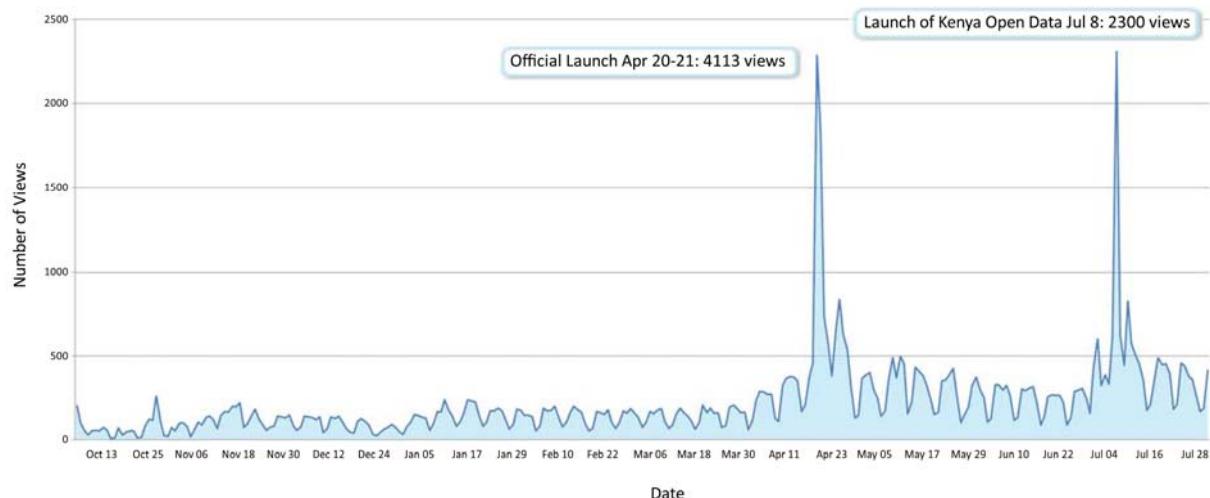


Figure 4.2. Usage patterns on the Kenya Open Data platform from June 1st 2011 to August 1st 2011

The usage patterns of the Kenyan online portal over this period can, in part, be explained by the launch and media strategy adopted by the Ministry of Information and Communications. As noted

earlier, the official launch date was moved three times (June 28th to July 11th and finally to July 8th 2011). These changes were due to scheduling President Kibaki attendance to preside over the official launch and requests by the consortium to extend the time period for delivery of the online portal. These changes may explain the initial peak in usage of the portal. The media strategy employed by the Office of Public Communications through the Kenyan ICT Board embargoed all official press releases, requesting all media organisations including Kenya's largest newspapers and broadcasting agencies to withhold all reporting of the initiative until the official day of the launch. As such, interest generated prior to the launch came largely through unofficial channels such as blog posts and Twitter (see Section 5). Our study has also identified that the increase in visitor numbers to the Kenyan online portal of 5,200 in the four-day period prior to launch coincided with an official announcement and activation of an online-registration form by the Kenyan ICT Board requesting individuals to sign-up to attend the launch.

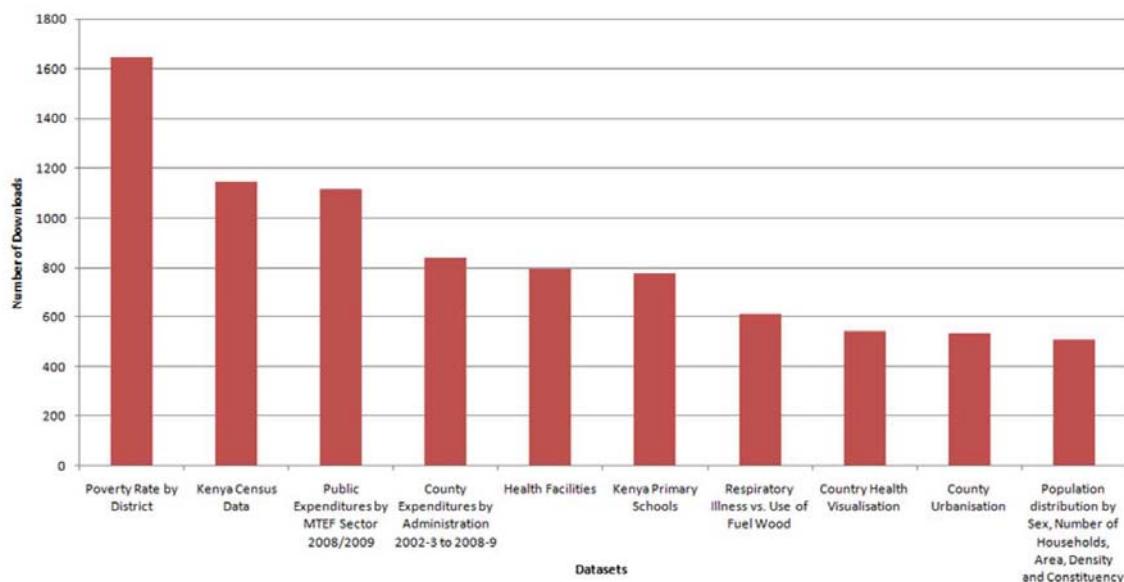
While usage of the Kenyan online portal is small by Web standards, it is comparable to other Open Data initiatives including data.gov, USA Spending.org and the M4R initiative. For instance, since the inception of the M4R platform in October 2010 to August 2011, 65,411 visitors viewed the portal, with an average of 219 views per day. Similarly, usage patterns have fluctuated over time. During the official launch of the platform for the World Bank's Annual Meetings on April 20-21, 2011, there were 4,113 visitors to the site, however, subsequently there has been only one day where the number of visitors exceeded more than one thousand. This instance coincided with an article on the M4R website on July 8<sup>th</sup>, 2011 regarding the Kenyan Open Data initiative, attracting more than 2,300 visitors to the M4R platform, almost four times as many users than the Kenyan online portal itself. Drawing from across these initiatives, there are much wider implications regarding the level of engagement and impact of such Open Data initiatives (see Section 6).



**Figure 4.3.** Usage patterns on the Mapping for Results platform from October 7th 2010 to August 1st 2011

While trends in usage patterns provide some interesting fodder for consideration, analysis of user sessions provides a deeper insight into patterns of user behaviour on the Kenyan online portal. Analysis of search behaviour reveals that the most frequent search terms used by visitors to the site relate to expenditure and population information at local authority and county level, while the less-frequent and more generic search queries referred explicitly to counties. Furthermore, our

analysis reveals the most frequently viewed datasets included public expenditure information, census data and poverty rates. Over a two-month period of June 1-August 1, 2011, these datasets were viewed 3,903 times, accounting for almost one quarter of all downloads from the 337 datasets available. Interestingly, over two-thirds of datasets most frequently downloaded were at either district or county level. This, combined with users' search behaviour, indicates a strong geographic component to user's information needs with a focus on more granular (or localised) datasets.



**Figure 4.1.** Datasets most frequently downloaded on the Kenya Open Data platform from June 1st 2011 to August 1st 2011

## 4.2. Data Request

From July 8th 2011 to August 1st 2011, there were 110 data requests received through the online portal. Seventy-four percent of requests received were in the first five days following the site's launch in contrast to 27% in the ten days following and 12% in the ten days thereafter. Of the 110 requests made, 43 datasets were requested. Specifically, datasets relating to economic, population and health were requested more frequently compared to datasets relating to tourism, housing and security.

However, of the 43 datasets requested, only 3 datasets are currently available for release. In contrast, 22 datasets would need to be solicited from the Kenya National Bureau of Statistics and other government departments and ministries, while uncertainty remains regarding the sources of the remaining 18 datasets encompassing energy, security, infrastructure and religion.

Rank Order	Category	Datasets
1	Economy/Trade	Detailed expenditure data
		Annual Data on Imports and Exports
		Spending deficit
		GDP/GDRP figures by county/province
		Municipal council projects and spending
		Public service reforms
		World Economic Forum Mobile Financial Services Development Report
2	Health	Incorporated companies
		NHIF facilities
		Healthcare dataset
		Medical personnel statistics
		Health Statistics by district
2	Population	Respiratory illness
		Demography and population projections
		Population in towns and urban centres
		Birth, deaths and marriage records
		Immigration and refugee data
3	Environment	Diaspora statistics
		Environment, wildlife and geology data
4	Education	Climate and climatic effects; Metrology and Environmental
		Exam results and
		Quality of education
4	Development	Tertiary colleges
		Administrative Data/ Maps
		Sub-location data
		KDHS and KIHBS Data
		KNBS full statistical abstract
4	Information & Communication	Voters register for civic education, political and economic analysis and sharing.
		Internet access
		ICT impacts
		Library information
4	Agriculture	Community radio stations
		Livestock populations
5	Lands/Economy	Agricultural production of main crops, exports of the crops over the years
		Land adjudication and property titles, ownership and allocation/transaction information
5	Energy	Energy data
		Access to Electricity
5	Labour	Employment statistics and specific career projections
6	Transport	Motor Vehicle Data
6	Infrastructure	Information on Roads
6	Tourism	Travel and tourism
6	Housing	Housing data
6	Security	Security data
6	Religion	Demographics related to the self-identified religious affiliations of population by county.

**Table 4.2.** Datasets most frequently requested on the Kenya Open Data platform from July 8th to August 1st 2011

**Figure 4.1.** The Kenya Open Data Portal

## 5. Communicating Kenya Open Data

The Kenya Open Data Initiative was released to international acclaim and fanfare, with Kenya widely acknowledged as the first developing country to have an Open Data portal. Following the launch, PS Ndemo was invited and subsequently addressed the World Bank in Washington D.C. reflecting on the process, challenges and potential of the Open Data Portal and Kenya's renewed push towards transparency and social accountability. The initiative also received widespread international media coverage including an article in the New York Times, and blog posts by O'Reilly and the World Bank with the latter entitled, "Kenya Leads on Open Data in Developing Countries". The groundswell of international media coverage also included acknowledgement by the United States with Data.Gov tweeting "Welcome to the family of #opengov #opendata sites ... Kenya!"

However, while Kenya Open Data attracted substantial attention from the international community, PS Ndemo has expressed concerns regarding the lower than anticipated use and interest by the media and citizens in Kenya:

"I'm disappointed. We haven't used it the way I thought we would use it. I'm going to begin to write articles myself so that I can bring it out. That way, people will start asking questions such as 'How come you have this knowledge?' And then I will tell them "It's available. Here, we can do it. The blogs that I participate in, they ask and we have discussed, and we have shown them, this is where you can get a lot of this information, so I have a lot of work to do. [However], it has not resonated...it's media that can do it...but I'm disappointed as either the media did not understand or [doesn't care]."

(Permanent Secretary, Dr. Bitange Ndemo, 2011)

As noted earlier, while usage numbers for the Kenya Open Data portal are modest, it is comparable to that of other Open Data initiatives, as outlined in Section 4.1, and the concerns expressed by Dr. Ndemo are widely acknowledged within the international Open Data community. As Torkington (2010) states "data catalogues around the world have launched and then realised that they now have to build a community of data users. There's value locked up in government data, but you only realise that value when the datasets are used. Once you finish the catalogue, you have to market it so that people know it exists" (p.05). As such, there is an increasing sense that a more holistic approach is required and one not centred on the development of infrastructure underlined by the mantra of "build it and they will come" but one of outreach and engagement (see Section 6).

Dr. Ndemo's comments also highlight the importance of the media as a vehicle to engage the public and raise the profile of an Open Data initiative. As Collender (2007) notes, "the media in Kenya is a diverse and vibrant growing industry. It includes four major daily newspapers, more than 20 FM radio stations and the Kenya Broadcasting Corporation (KBC) - the only nationwide broadcaster" (p.03). In recent times, the relationship between the mass media and the Kenyan Government has been tense, particularly following the Ministry of Information and Communication's proposal to introduce a Media Bill to formally regulate the sector. While those tensions are acknowledged by Dr. Ndemo and others, it remains unclear the reasons for the limited

media coverage given to the initiative, characterised as sporadic, uneven, and ineffective in connecting with citizens.

Of the five articles published on the Open Data initiative in Kenya's largest independent newspapers, the Daily Nation and Business Daily, the focus of three pieces were considered only loosely related to the initiative itself , while only one of the articles utilised the data released to create a news story. As a World Bank official notes:

“If you look at the newspapers a few days after the launch of the initiative, it’s almost like people wrote about what they wanted to hear. They’d heard it was about transparency and accountability so people just went off [and wrote about that]...I think it’s great but, there was so little in the portal that would actually help with transparency and accountability in the way they were thinking about...At the same time, one of the headlines in one of the biggest newspapers in Kenya...was ‘Open Data portal success hinges on high speed Internet’...[with a picture of President Kibaki at the launch]...and a caption [about making] Internet more accessible...That’s just one angle but that felt bigger news than the Open Data initiative to [the Kenyan media].”

(World Bank, 2011)

It is important to note, that while “journalism has always been about reporting facts and assertions and making sense of world affairs” (Beauvais, 2009), the use of data is a new form of journalistic process known as data-driven journalism. This “connection between data and story can be viewed as a “new arc” trying to span the gap between developments that are relevant, but poorly understood, to a story that is verifiable, trustworthy, relevant and easy to remember” (Wikipedia, 2011). However, while Open Data gives rise to a many new opportunities, it also poses challenges for journalism. Specifically, journalists trained in traditional narrative elements of storytelling are struggling to cope with the rising flood of information with only a few newsrooms across the globe beginning to retool their staff and systems to prepare for this next new wave (McGhee, 2010). This, it is argued, is a reason for the shallow reporting of the initiative as described above:

“Journalists are terrified of numbers...Even those that are in the financial reporting sector, very few of them actually read spreadsheets...Journalists are very narrative, [preferring] storytelling [to analysis]...But it’s not just using publicly accessible data, it’s about unlocking the data in their own news rooms so it’s changing the way they are reporting...They [can] do their job in a completely different way...aggregating and disaggregating...[content into] datasets and re-interpreting it.”

(Anonymous, 2011)

It is also argued that the media strategy employed by the Kenyan Government contributed to the lower than anticipated usage of the online portal. As an illustrative example, the Office of Public Communications through the Kenyan ICT Board embargoed all official press releases requesting all media organisations including Kenya's largest newspapers and broadcasting agencies to withhold all reporting of the initiative until the official day of the launch. Moreover, it is argued that there was no sustained public media strategy to communicate the initiative after the official launch:

“The government should have prepared for [the launch] for three months to four months, telling Kenyans what it is...and why it is useful, [so that] that they...know that it exists”

(National Taxpayers Association, Michael Otieno Oloo, 2011)

“When the portal was launched, there was fanfare; [however] after the fanfare, everybody has gone back to their normal duties. So the level of awareness was not sustained or even maintained...If you did a random survey the statistics will show you that only one in ten Kenyans may even be aware of what that portal is. There has not been proactive sharing of information as to the existence of that portal in the past weeks following the launch...[such that] the bulk of Kenyans might not even have noticed such a thing happening”

(Transparency International, Willis Ochieng , 2011)

It is also noted, that all public communications were conducted in the official language of English, arguably excluding large sections of the population. As Orao (2009) notes, Kenya is a multilingual state with more than forty languages. Indigenous languages including Kikuyu, Kalenjin, Luhya and Dholuo are the mother tongue for more than eight million speakers predominately based in rural areas with minimal education opportunities and where official languages, such as English, are secondary languages remote from daily living (Orao, 2009). This constitutes a language barrier to participating in public discourse and debate conducted in the official languages.

Furthermore, it has been argued that other channels of communication available to the Kenyan government, including printed material, television, billboards and community/vernacular radio stations broadcasting in local languages were rarely, if at all, used to communicate this initiative to the wider public. With regard to the latter, radio remains one of the most effective and popular modes of communication in the country in both urban and rural areas. According to the BBC World Service Trust (Collender 2007), the market share of these local language radio stations was 27 percent compared to 33 percent held by mainstream radio stations. Moreover, the vernacular radio stations has witnessed unprecedented growth in terms of the number of listeners and reach in the country, which has expanded from being concentrated in urban areas to covering whole regions and, in some cases the entire country.

“There should be efforts to increase awareness similar to other government programs, such as the Transformation Initiative, which is being advertised very aggressively on national media... [The] government runs [a] radio station... [and] broadcast station...in the vernacular languages to specific localities....They should use this to reach out to the masses.... in parallel, information needs to be distributed about the portal in all government departments that offer services to the public...and all areas popularly accessed by Kenyans on a day to day basis”

(National Taxpayers Association, Michael Otieno Oloo, 2011)

There are increasing calls upon the Kenyan government to launch a sustained high profile media campaign to raise awareness of this initiative including reaching out to intermediaries such as civil society groups which ‘have access to and influence over, important actors and groups where external organisations (e.g. governments or donors) do not’ (OECD 2005, p.02):

“Civil society organisations such as Transparency International can disseminate this information through our networks because most of our networks are community based organisations at the rural areas...Awareness amongst citizens needs to exist even before you tell them how you access [the portal].”

(Transparency International, Willis Ochieng , 2011)

Civil society occupies an important third space between the state, the market and the individual, in which people can debate and tackle action. While lacking the regulatory power of the state and the economic power of market actors, civil society wields power through its networks of people. For example, links with ‘local’ communities enable civil society organisations to have valuable local knowledge, access, and often influence (OECD 2005). As such, civil society groups have been particularly effective in facilitating dialogue at the local level, mobilising communities, enabling vulnerable and/or marginalised people (e.g. women, youth and indigenous groups) as well as drawing attention to populations and communities that are often left out of policy debates and deliberations (Cohen and Arato, 1992).

Finally, the effectiveness of any media campaign will depend on how the concept of “Open Data” is conveyed. For instance, the word “open” is a broad concept, differently understood by different people. The word has been associated to various nouns such as format, standard, source, government, data, and so forth; giving rise to various terms such as “Open Access” and “Open Government” that may hold meaning specific to those familiar with the field but likely inaccessible and incomprehensible to the non-expert, lay public. These terms also come under fierce criticism for alienating the disenfranchised from the privileged few, reinforcing elitism. In fields such as Open Data, which work across disciplinary boundaries, institutions and communities, the use of language communicated clearly and precisely with skill and understanding, and use of non-explained jargon is paramount. As a World Bank official recalls from an experience communicating Open Data to technologists at the iHub in Kenya:

“There were about 20 people...asking questions about what the meaning of all this is and how it could be useful. One of my favourite questions was, ‘Why do you call it Open Data [and not] free government data because that’s what it is, right?’ I think [coming] into this we hadn’t realised that the term ‘Open’ [is highly contextualized among those familiar with] the culture of open source and open government...[For]sustainability and communication...you’ve got to be careful about the language that [is used], [something that is] probably fine for someone from a country with an open government or open source culture...may not click with everyone locally in the same way.”

(World Bank, 2011)

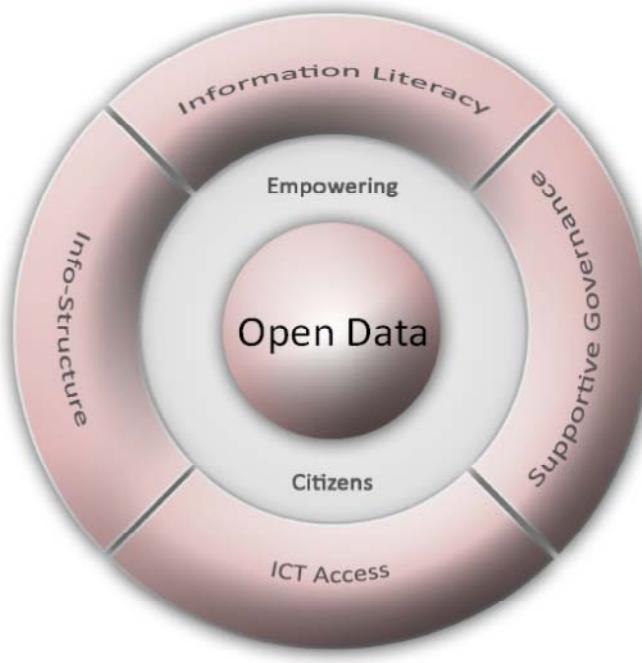
## 6. Empowering Kenyan Citizens

As Gurnstein (2010) and Rahemtulla (2011) argue, most of the discussions on “Open Data” are founded on the premise that everyone has the potential to make use of the data. Despite its inclusive ideals, Open Data is launched within societal contexts often rife with existing inequities, effectively “empowering those with access to requisite infrastructure (e.g., the digital infrastructure such as hardware and software) background knowledge and skills (e.g., financial and educational resources) to make use of the data for specific ends. Thus, rather than the entire range of potential users being able to translate Open Data into meaningful applications and uses, the lack of these foundational requirements means that exciting new outcomes from Open Data are available only to those who are already reasonably well provided for technologically and with other resources” (Gurnstein 2010, p.03). These arguments are encapsulated by comments made by Angela Gachui reflecting on the Kenya Open Data Initiative:

“A lot of people who are not engaged in this space had no idea what [Open Data] was. They were not able to conceptualise the...potential impact, or the way they could engage with it. So you've launched it, great, but the meaning comes out of the story, the analysis, and the ability to link various data sets together. And, yes, that can be done via technology, but...what about the people who want to use this information to help communicate...what's really going on in the country. If they don't understand what Open Data is, they don't know how to use it or that it's important for them to engage, [then]...they're not involved in this conversation [and it] just remains data”.

(Triple Bottom Line Associates, Angela Gachui, 2011)

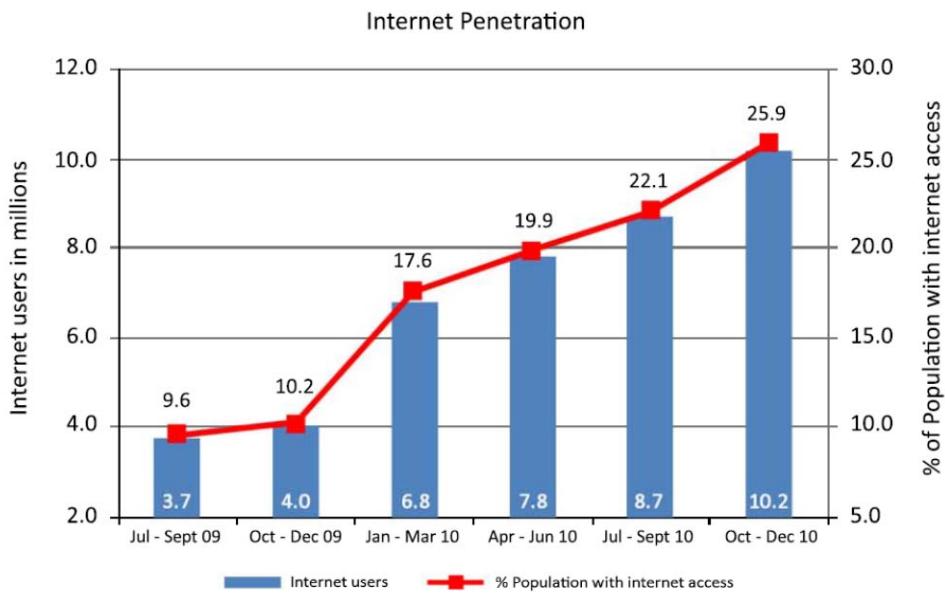
For this reason, the release of public sector information to promote transparency represents only the first step to a more informed citizenry (Rahemtulla, 2011). The next step involves understanding who is in a position to make effective use of this newly available data and addressing existing barriers to access including digital inclusion and information literacy (Gurnstein, 2010). This will require the promotion of supportive factors encompassing four conditions outlined by Zainab *et al.* (2002), including: the existence of an info-structural environment; a reliable and robust ICT infrastructure; a community that is ICT literate and supportive governance (Figure 6.1).



**Figure 6.1.** Empowering citizens with Open Data (adapted from Zainab *et al.*, 2002)

## 6.1. Infrastructure

The Internet first became available in Kenya in 1993. In 2010, the Communications Commission of Kenya estimated Internet access had increased to 22.1 million users, corresponding to a penetration rate of 8.7 percent, as illustrated in Figure 6.2.



**Figure 6.2.** Internet penetration in Kenya (Source: Communications Commission of Kenya 2010)

However, there is a significant divergence in Internet access between urban and rural areas. Specifically, there are lower penetration rates in rural areas, reflecting in their type of use and access to digital technologies. This dichotomy has been attributed to several factors, including: poor infrastructure (such as access to electricity and signal reception) for accessing media and ICTs; lower socio-economic status (notably in terms of lower income and educational attainment) or lack of interest either in using a particular source or in obtaining news and information. Furthermore, these communities are, by extension, significantly more likely to be underrepresented as active users of open government data if sensitisation on access and benefits are not marked as a priority:

“Accessibility of high-speed Internet connections remains a challenge for many in remote areas since most Internet service providers in Kenya have not made inroads into these parts of the country. Also because of these firms cautious approach, Internet access remains relatively expensive for the average ICT consumer in a remote town in Kenya...Accessibility of high speed Internet in rural areas should be the next priority for the government.”

(ICT Consultant, Francis Waithaka in the Business Daily July 2011)

In order to address this disparity, the Ministry of Information and Communication and the Kenya ICT board are developing a network of *Pasha* or Digital Village Centres, aimed at encouraging new micro-enterprises by providing access to information, education and new products. Pasha “are electronic centres that will provide among other things, Internet access, portal development and service (e.g., e-education, farmer-market links), ICT training and ICT network maintenance and technical support to businesses, NGOs, and schools” (Kimutai, 2011). These centres represent a substantial investment in improving the physical information infrastructure throughout the country with six centres in 2009 training 82 people across the country, with a further ten pilot projects planned for 2010-2011. Despite this, there remain concerns regarding the impact and sustainability of such ICT initiatives:

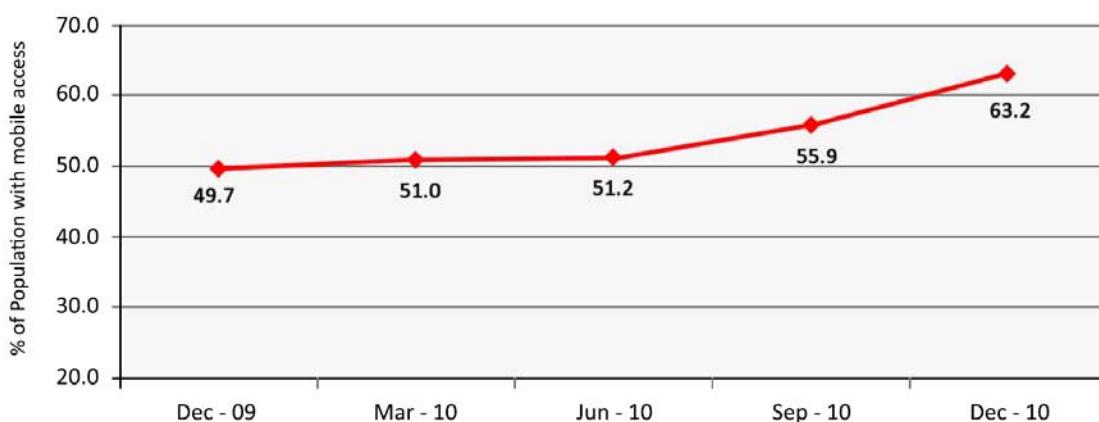
“Internet penetration in rural areas is still poor...Despite the developments in fibre optic technology, [the] connection speeds remain low...Although the government initiated the digital villages programme, Internet service providers still shy away from making large investments in rural areas.”

(Deputy ICT Administrator Kisumu Municipal Council, Maurice Otieno in the Business Daily July 2011)

Furthermore, it is argued that such initiatives focus disproportionately on access to technical infrastructure and technological tools rather than addressing the underlying issues of social exclusion. For instance, race, gender, religion, language as well as education levels, opportunities and motivations to learn are strongly tied to a person’s ability to access and utilise technology to its fullest capacity; and the extent of access and usage exists on a continuous scale, rather than simply the divide between those that have access and those that do not. As InterMedia (2010) states “lower levels of education in rural areas in Kenya also limit the scope for information gathering, particularly given that new ICTs such as the Internet and SMS services usually require literate audiences”. Similarly, studies by Huyer and Sikwka (2003) show women and girls are at risk of falling behind when it comes to ICT, especially within the context of emerging economies.

In Kenya, women have historically been disenfranchised from fully participating in the information age. As such, ICT initiatives such as Digital Village Centres need to be complemented with other programs. For example, ways of enhancing female access to ICT in rural areas include “women sharing ICT experiences, creating an enabling environment for ICT in education, and increasing ICT careers for women” (Dlodlo 2009, p.01).

The importance of other forms of access such as mobile technology is becoming more widely acknowledged. As stated, Kenya recorded 12 per cent mobile subscription rates, increasing from 22.3 million recorded in the previous quarter by CCK to 24.96 million subscribers in the second quarter of 2010-2011 (Figure 6.3). This corresponds to a penetration rate of 63.2 per 100 inhabitants. Significantly, over 99 percent of Internet traffic is conducted via mobile operators, which have led many to argue that the Open Data portal should be seen as an important first step towards the development of mobile applications to improve the lives of ordinary citizens particularly in rural areas where mobile penetration is high.



**Figure 6.3.** Mobile penetration in Kenya October-December 2010/11 (Source: Communications Commission of Kenya 2011)

For this reason, organisations are developing mobile applications using available government datasets including applications such as Huduma from Ushahidi and Msema Kweli from iHub Nairobi (see Section 2). In addition, the Ministry of Information and Communications through the Kenya ICT Board launched the Tandaa Digital Content Grant, offering thirty awards valuing \$1.5 million dollars to support entrepreneurs to develop web and mobile applications that utilize the data to provide services or products for citizens.

However, while the aim of such grants is to promote the use of Open Data for wider societal benefit there has been much criticism regarding the awarding of previous Tandaa Digital Content Grants. As TechMitaa (2011) states “... grants have been awarded to mostly foreigners who developed applications just to win the grant ... many foreigners have rushed to register companies locally just to win the competition and close shop immediately the whole amount is transferred to their briefcase companies”. Further this has wider implications regarding the long-term impact of such initiatives particularly as such grants are aimed at stimulating innovation for social and economic benefit.

Furthermore, whilst technologists and social entrepreneurs are seen as core in stimulating innovation for social and economic benefit, the value of Open Data will only be realised when such data is used to address the real needs of individuals and communities, empowering them to advance their own use, interpretations and representations of the data to collectively debate and drive local change. At present, however, it is argued there is a large discrepancy, or divide, between what the developer community and social entrepreneurs thinks it has to offer, and what society has demanded and supported. As a means of redress, Clarke *et al.* (2002) calls upon the technological community to “align research goals with community requirements and expectations, though better market research and solution-focused R&D conducted in close collaboration with ‘local’ stakeholders and decision makers” (p.32). As the International Council for Science Union (ICSU) states “such place-based knowledge cannot be simply imported or transferred from other regions. Rather, it resides in local people and in their landscapes, their technologies and their cultural artefacts” (2005 p25). As World Bank official states:

“The process of Open Data innovation usually begins with a lot of tinkering and creation of fun concepts and visualisation...with time, these innovations need to be tweaked to connect positively with citizens for them to have any longevity. Toys bring excitement when new, but they get used and discarded...The resultant services based on Open Data must add such value that the citizen will actually feel sad if the services were unavailable.”

(World Bank, 2011)

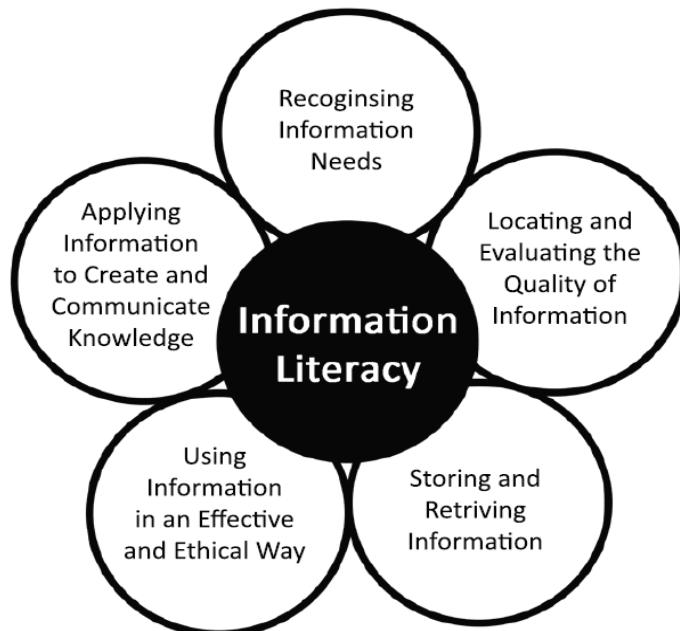
This is reiterated by Cooper (1999) who notes that projects that focus on peoples’ needs have double the success rate of, and 70 percent higher market share than those that do not. Such innovation, it is envisaged, will lead to more efficient processes, the creation of wealth through new services that generate revenue and having a more informed citizenry leading to better participation in democracy and governance (see Section 1).

## 6.2. Data Literacy

As Davis (2010) states, while “social and commercial entrepreneurs play a core role, direct access...[to] trusted sources of facts is valuable for many individuals and across all sectors from mainstream media, companies and different levels of government who are today all afforded the possibility of advancing their own use, interpretations and representations of the data” (p.30). For this reason, Eaves (2010) argues that “forward-looking governments and institutions – those that want an engaged citizenry, a 21st-century workforce and a creative, knowledge-based economy in their jurisdiction – will need to reach beyond the developer community and get their citizens using, visualizing, writing about and generally engaging with Open Data. This will, it is argued, foster a sense of opportunity among a generation to interact and participate in this wave of innovation and change, thus empowering citizens to improve services, reduces costs and boost productivity” (p.01).

Fundamental to this vision is the ability of individuals, groups and organizations to identify, retrieve, evaluate and utilize the available information that is relevant to their local and global needs (Figure 6.4). More specifically, it refers to the “capacity of such groups to recognise the value of information to solve or address a certain task; the ability to know where to search for the required information and evaluate the quality of information for accuracy, credibility and

reliability; the capability of using information optimally in problem solving and/or for critical thinking; an understanding of the ethical use of information and the ability to create and communicate knowledge” (Tilwawala *et al.*, 2009, p.05).



**Figure 6.4.** Different aspects of information literacy (Source: Tilwawala *et al.* 2009)

For this reason, the release of public sector information without a commensurate increase in data literacy will do little to empower the average citizen. However as Gigler et al (*In Review*) assert, expanding the information capabilities of citizens is a more insurmountable task facing the governments of developing countries with comparatively low levels of human capital from constrained educational prospects. As the Kenya National Adult Learning Survey (2006) conducted by the Kenya National Bureau of Statistics states, approximately 39% (7.8 million people) of the Kenyan adult population is illiterate, which is a major challenge, given the central role literacy plays in national development and empowerment of individuals to lead a fulfilling life. Another critical finding is that among youth 15-19 years old, the recorded literacy rate is approximately 69%, implying that about 30% of this age group are illiterate (p.01). This has deleterious effects on the capacity of individuals, groups and organisations to recognise their information needs:

“While we're talking about making available data in a timely manner and making sure it's accurate...do sectors understand how the data is useful to them? For instance, do universities know how they can use this data and why it's beneficial? Similarly, do hospitals know and people within infrastructure understand why this is important?”

(Triple Bottom Line Associates, Angela Gachui, 2011)

“If you go out of Nairobi into the rural areas, there are vast areas of Kenya which even the very fact of accessing that information may not be priority to them...[They are more concerned with] the fact that they need to get food [and may not be aware of how] knowing that information...can influence their access to food.”

(Transparency International, Willis Ochieng , 2011)

Open Data initiatives must be supported by intensive education and training programs to expand the information capabilities of citizens (see Section 7). To demonstrate, a recent statement by Richard Sterling (Former Head of *data.gov.uk*) in July 2010 acknowledged that the public are already struggling to make sense of the huge volume of datasets that have been published online and expressed concerns that individuals may be coming to conclusions that “weren’t quite valid” after browsing data sets available on *data.gov.uk*. Sterling attributes this to the format of the data (e.g., structure, configuration and pre-processing) which impacts on the overall capacity of end users to make use of the data. Most public sector information is “simply not collected in usable form at present” (Allan 2009, p.01) and the systematic organization of information is not a neutral act (Snowdon 2010, p.01) involving decisions that impacts both on its interpretation and future use” (p.58).

Providing online query and visualization tools may make it easier to visualize the data, however, the Kenya Open Data portal assumes the public has sufficient skills to correctly interpret and use the datasets, a dangerous assumption. In addressing these challenges, Paul Kukubo calls upon data intermediaries to act as facilitators with the skills and knowledge to place data into context for the wider public:

“Citizens themselves will not necessarily have the skills required to understand the data and will need intermediaries. These are those individuals who sit in the middle of citizens and [that assist in their] understanding, [such as] technicians, statisticians, politicians, policy makers, entrepreneurs, schoolteachers...[These intermediaries] provide leadership with respect to understanding what data is and [how to] interpret...what it is that it’s telling us. And then beyond that to say, because I have this information it’s possible to build applications for the schools, exhibition of resources, management of agriculture, even things like the drought crisis. I’m sure if they look at that data properly they can... and its effects on government, the answers lie in there somewhere in terms of supply chain, food resources, the issue of pricing, they’re all lying there somewhere. So we need clever people to apply themselves to the programme and almost create a national data management project”

(Chief Executive Officer, Kenya ICT Board, Paul Kukubo, 2011)

However, this raises an important question regarding how to ensure that existing third party actors use public sector information in a manner that is productive for society and not exploitative of those that do not enjoy commensurate opportunities due to digital exclusion or limited information capabilities. The ‘public domain’ ideal of third party groups using OGD to create social and commercial value for society could unintentionally strengthen ‘rent-seeking groups’ that ‘asymmetrically exploit’ freely accessible information, benefiting the interests of some at the expense of others (see Gigler et al., *In Review*).

### **6.3. Info-Structural Environment**

Info-structure refers to the accessibility and usability of the information management system (or portal) by a community, which is integral to the effective flow of information (Zainab *et al.*, 2002). As Lieberman (2010) states, the “best-organized information in the world is useless without an effective way to present that information to the interested audience. Poorly designed interfaces, inadequate search and filtering support, and confusing visual displays can severely hamper the success of any information architecture. To make complex information accessible to end users, you must make a significant effort to research and design the way users will interact with your information management system” (p.01).

From this perspective, the Kenya Open Data portal allows users to compare different datasets, create maps, graphics and interact with the data and includes a bilingual outreach strategy so that language is not a barrier for common citizens (see Section 4). However, it is argued that the sheer volume and complexity of the data means that it remains largely inaccessible to the general public. Rather, the data needs to be simplified and put into a meaningful and useful context before being communicated to citizens who will then use it to make decisions:

“We are not talking about the government rewriting everything in another language, but producing it in a simplified version that ordinary Kenyans can clearly understand. For example, under the medium term expenditure framework, citizens are supposed to participate in the budget making process but you cannot ask citizens to participate with the huge volumes of graded estimates. They will have no idea at all what you are talking about...So ideally, the information should...be simplified. Of course...as civil society we have a task to be part of that process and help civilians understand. But the ultimate responsibility ideally lies with the government because the government exists for the citizens. It doesn't exist for some citizens, it exists for everybody.”

(National Taxpayers Association, Michael Otieno Oloo, 2011)

While datasets released through the initiative represent an important first step, it is argued that there needs to be a rebalancing of the data held in *opendata.go.ke* in favour of more relevant, granular level and current datasets. Otherwise, as Gigler *et al* (2011) asserts, individuals and third party intermediaries from the private and civil society sectors will be limited in their capacity to utilize such data for their own benefit and for that of society at large:

“Information is there, but you know, it's not the information that was otherwise difficult to get, previously anyway...The kind of information we want is, for instance, the actual expenditures...[rather than] the public expenditure reviews, which is what is [currently] accessible through the government. We need a detailed expenditure report...but if you look at what the government is providing now, it is still very conservative in nature. It is not the kind of information that...civil society actors and watchdogs...[can] forthrightly use to hold the government to account. But then, more importantly is the information at the local level. Now, a lot of resources are being spent at the local level, distinct level and constituency level, and that is still not available.”

(National Taxpayers Association, Michael Otieno Oloo, 2011)

The portal does provide mechanisms for users to provide feedback and request datasets. From July 8 – August 1, 2011, there were 110 requests for 43 datasets received through the online portal. However, only a handful of requests have been met, and the overall number of data requests has declined since the launch of Kenya Open Data (see Section 4). As such, it is argued that data requests should be responded to promptly with a focus towards establishing a ticketing system for all requests valuable for maintaining visibility, measuring performance of the operations function and identifying areas that need additional resources. Further, there needs to be a move towards the “right” to request data that has not yet been released, as Willis Ollis from Transparency International states:

“At present, the emphasis is upon the release of certain information, but individuals should claim the right...to be given that information that [has not previously] been released. Now when it comes to the next phase...mechanisms should be put in place so anybody could initiate a process...to obtain access to...[datasets] that are necessary but [not yet] released through the Open Data portal.”

(Transparency International, Willis Ochieng, 2011)

Furthermore, along with data availability is the ongoing process of managing data for continuing access and use. As Fyffe (2004) argues, information cannot simply be curated once and set aside. Rather, datasets need to be maintained and updated. Correspondingly, the success of Kenya Open Data will depend upon the government’s successful day-to-day management of its digital information. Finally, while an Open Data License was developed to encourage the use and re-use of information, there remains confusion arising from the conflicting terms within the license:

“The site is openly licensed, although there appears to be some lack of clarity about the exact terms of the license...[and we] would encourage the Kenyan Open Data portal to clarify that their license conforms to the Open Definition.”

(Publish What You Fund, July 13 2011)

#### **6.4. Supportive Governance**

Many government programs such as Open Data are funded as “projects” characterised by short term objectives, fixed timelines and funding. For instance, earlier this year Data.gov, along with a number of other data related sites of the government such as USA Spending.gov and Apps.gov, were due to close after annual budgets were reduced from \$37 million to \$2 million dollars. To put this into context, Nathan Yau (2011) states “it reportedly costs \$4 million per year (about \$333k per month) to maintain USA Spending.gov alone” (p.01). Similarly, as Torkington (2010) purports, there are no funds allocated for the ongoing maintenance and distribution of data for the New Zealand Open Data program. For this reason, it is argued that if such programs are to have the impact as envisioned by Sir Tim Berners-Lee and others, such programs need to be viewed as “initiatives” characterised as open ended with no fixed termination point with resources allocated for the sustainability of the program. Furthermore, the impact of programmes such as in Kenya will be critical in the adoption of such initiatives by other countries.

However it is important to note, the sustainability of such programs goes beyond simply maintaining resources to include: 1) the institutionalization and adoption of the program within government; 2) policy change and 3) community ownership and engagement through the emergence of productive channels for the use of Open Data for citizens to participate in

governance. The importance of all these approaches on the impact and longevity of programs such as Kenya Open Data is outlined by the World Bank:

“On the one hand, people trust the data because it’s coming from a government source. But will they invest the time and energy to do something with that data, if they think it will be taken away from them? If that sort of faith in the infrastructure, policy and intention is not there, then I think...[it could potentially] scupper a lot of future work.”

(World Bank, 2011)

Following the launch of Kenya Open Data, the Ministry of Information and Communication is coordinating efforts with a view towards institutionalising the initiative within the government as high-level, publicly visible, institutional programme similar to the US 2009 “Open Government Directive”, laying out ongoing expectations of government actors and the beginnings of a quality and policy framework. In moving towards this policy framework, a Kenyan Open Data Steering Committee will be established consisting of individuals from across the Kenyan government, civil society and private sectors. This committee will: 1) provide strategic and tactical direction to the Kenyan Open Data Initiative (KODI), ensuring it continues to be a valuable resource for the government and general public and 2) bring together key individuals who are able to act as champions, influencers and thought leaders for Open Data and Open Government in Kenya and to facilitate the work of the KODI team.

In parallel, a transitional team is being formed within the Kenya ICT Board with the task of embedding this initiative into the government’s long-term operations. The transitional team will initially be tasked for the data curation/production, relationships with data holders, overall web content, operational issues, and community engagement. Over the long-term, these functions will be transferred and embedded at the departmental level where the production and release of data will be proactive and policy-driven, such that departments become producers of data that needs little further production work in order to be released. The transitional team will responsible for supporting and training individuals within these departments.

However as Gigler et al (2011) states, the impact of such programmes will be severely limited if it is not accompanied by complementary efforts to foster the emergence of productive channels for the use and reuse of public sector information. Angela Gachui further emphasizes this:

“The Government is not necessarily responsible for doing all the analysis, and creating all the solutions based on the issues that pop up from the data. That is where you start to engage with the private sector, to solve these problems. In a sense Open Data gets to be a way for the Government to help the rest of the country, and help them do some work, help them to address issues. And they're willing...everyone wants to know how they can help the country get better, but do they know that [Open Data] is one of the channels?”

(Triple Bottom Line Associates, Angela Gachui, 2011)

For this reason, the Kenya ICT Board and World Bank are seeking to “connect the supply and demand side of open government communities while broadening and invigorating both” (World Bank, 2011).

## 7. Kenya Open Data: First Steps and the Road Ahead

The Kenya Open Data Initiative forms part of a national effort to create an enabling infrastructure that can accelerate human and economic development through communities in Kenya. The initiative aims to democratize access to vital data about economic and human development at the national, provincial and county level, supporting greater transparency and accountability within government. Furthermore, it seeks to fundamentally change the nature by which Kenyan citizens interact with their government. The release of public data online will create a platform supporting the development of third-party communication applications outside of government, providing a vehicle for expanded public outreach and engagement leading to a “more responsive and citizen-focused government” (Madera, 2010).

In realising the vision underpinning the Kenya Open Data Initiative, PS Ndembo announced that Kenya “will join the Open Government Partnership” (OGP) as a way to integrate Kenya further into the global community and provide invaluable external pressure to keep Kenya moving ahead on transparency and openness (PS Ndembo, Open Government Partnership Meeting, Department of State, July 12 2011). The OGP represents a unique opportunity to “bring to fruition, the dream of Kenya joining...eight countries as the ninth country to be part of the Open Government Partnership and the first in Africa” (Al-Kags, 2011). The success of programmes such as that in Kenya will be critical in the adoption of such initiatives by other African countries, as outlined by Angela Gachui:

“Being the first African country to do this...if we mess up, everyone will just be like, we're not doing it. Do you remember what happened to Kenya? So there is an element of responsibility to the rest of the continent, at the minimum to these African communities...If we're trying to build a block, very soon we should be talking about Open Data East Africa, not just Kenya. But if we can't get it work here...we're probably nipping it in the bud even before [it takes off].”

(Triple Bottom Line Associates, Angela Gachui, 2011)

Formally launched in September 2011, the OGP is a multilateral initiative that aims to secure commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance. For countries such as Kenya, electing to participate in the OGP will require embracing an Open Government Declaration; delivering a concrete action plan, developed with public consultation and feedback; committing to independent reporting on their progress going forward; and contributing to the advancement of open government in other countries through sharing of best practices. This paper posits a series of recommendations, towards realising the Open Data vision in concert with four strategic OGP areas: (a) an Open Data Roadmap for the next 3-5 years; (b) open development (c) performance management and (d) citizen engagement.

### 7.1. An Open Data Roadmap

Kenya Open Data will require a significant commitment within the government, guided by an Open Data Roadmap outlining the vision over the next 3-5 years, and underlined by supportive mechanisms and resources including:

## **An Open Government Directive**

A high-level, publicly visible piece of work is required that sets out clear expectations for the Kenya Open Data Initiative in the long-term. Specifically, the Open Government Directive should outline ongoing expectations of government actors and the beginning of a legal and policy framework for Open Data. As Tariq Khokhar (2011) states, a clearly communicated vision and expectations emanating from a high level of government is essential. The concept of Open Government means different things to different people, both inside and outside government. Without clarity of purpose and intention behind the Kenya Open Data initiative, it will be difficult to demonstrate success internally and to the public; easy to create confusion in communications and engagement work; and hard for the public to hold the government to account or to provide feedback at the right level.

## **Institutionalisation**

The Ministry of Information and Communication and the World Bank, are currently coordinating efforts with a view towards institutionalising Open Data within the Kenyan government (see Section 6.4). Fundamental to this, is the need for swift clarification of the institutional environment and arrangements for the maintenance of the platform. Discussions are ongoing regarding the adoption of the site by Kenya National Bureau of Statistics (KNBS) and Kenya ICT Board (KICT)/Ministry of Information and Communications. This paper recommends that KNBS is best positioned to be responsible for curation of the datasets they have, as well as for receiving and processing data from other ministries for release to the public. For KNBS/Ministry of Information and Communications, institutional arrangements will need to be accompanied by instituting change management within its own operations and allocating additional resources to sustain and scale this initiative.

## **A Steering Committee and National Level Chief-Information Officer**

This paper recommends the implementation of an Open Data Steering Committee consisting of representatives from the Kenyan Government, civil society and private sector. This committee would provide strategic and tactical direction to the Kenyan Open Data Initiative, ensuring it continues to be a valuable resource for the government and general public. It will also bring together key individuals who are able to act as champions, influencers and thought leaders for Open Data and Open Government in Kenya that would facilitate and add value to this initiative.

As Open Data and other related government initiatives progress, this report recommends the appointment of a National Chief Information Officer (CIO) within the Kenyan government. The CIO will act as a catalyst, providing vision and leadership for ongoing development of the Kenya Open Data program. In appointing a CIO, the Kenyan government should select an individual that is known and well-respected both inside and outside of government circles and who also embodies a wide range of pertinent experience and knowledge, including: strategic policy development and analysis, program design and delivery, media and intergovernmental relations, facilitation and leadership. The CIO will report to, advise, and execute the priorities of the Open Data Steering Committee and be responsible for: (a) offering strategic input and support to the establishment, institutionalization and sustainability of the Kenya Open Data initiative; (b) developing and managing relationships across government with producers and publishers of data; and (c) participating in a capacity-building and knowledge-sharing program that provides deeper exposure to technical and policy issues related to Open Data and other key areas.

## **An Open Data Unit & Technical Committee**

This report recommends establishing an Open Data Unit (1-3 people) within the KNBS/Ministry of Information and Communication responsible for the technical operations of *opendata.go.ke* including: (1) ensuring data quality, accuracy and timely publication; (2) managing acquisition, curation and publication of new datasets; (3) building and maintaining an inventory of Kenyan Government data assets, including who owns data, where it resides, its lifecycle and the public demand for it; (4) supporting data owners and publishers across government to identify and curate data for release; (5) managing the data catalogue and publishing platform website; and (6) supporting users of data through community engagement work, responding to requests for data and helping people to use the platform.

A Technical Committee will need to be convened consisting of members both within and external to Government to provide guidance on the technical aspects of Open Data including data standards, formats, and converters; as well as transfer standards to improve the availability and accessibility to government data. The Technical Committee will be guided by experiences from the Open Data Unit and report to the Open Data Steering Committee.

## **Guidance for Open Data Programmes within Ministries**

Over time, functions conducted by the Open Data Unit will be transferred and embedded at the departmental level, where the production and release of data will be proactive and policy-driven, such that departments become producers of data that needs little further production work in order to be released. This report recommends instituting training programmes to build capacity of government departments in practical issues such as data standards for capturing, describing, structuring and publishing government data. This should be offered alongside complementary programmes including technology support and technology showcases highlighting tools available to support the dissemination of government data both internally and with the wider community.

## **Clarification of the Kenya Open Data License**

This report calls for the timely clarification and simplification of the Kenya Open Data License regarding the terms under which citizens can use/reuse government data. Professor Nigel Shadbolt, reflecting on the UK Open Data License, outlines the importance of keeping licensing as simple as possible:

“It's great to see a simple and straightforward licence so that people and organisations can re-use government data in any way they want. This is an important step forward in opening up government and making it more transparent.”

(University of Southampton, Nigel Shadbolt in a Blog Post on *data.gov.uk* September 2010)

## **Funding Allocation for Open Data Programme**

As outlined in Section 6.4, many government programs such as Open Data are funded as projects, often characterised by short-term objectives, fixed timelines and funding. If such programs are to have the impact as envisioned by Sir Tim Berners-Lee and others, such programs must be viewed as initiatives characterised as open-ended with no fixed termination point and resources allocated for the long-term sustainability of the program. With regards to the latter, the Kenya Open Data Initiative will require an allocated budget projected over a 3-5 years period. This report calls for

the commission of a management/financial plan related specifically to the Kenya Open Data program and leading to a firm commitment regarding the structure and finances available moving forward.

## 7.2. Advancing Open Development

Since its initial inception in July 2011, the number of datasets available on *opendata.go.ke* has increased from 160 to 350 with over 17,000 page views and 2,500 datasets downloaded and embedded to various websites and portals. As outlined in Section 4, the platform also allows users to compare datasets through a series of embedded interactive visualisations and includes a bilingual outreach strategy involving converting and uploading some datasets to Swahili so that language is not a barrier for common citizens.

While *opendata.go.ke* represents a significant step forward to the beta version of the platform launched in 2009, concerns remain regarding the lower than anticipated usage of the portal. This section outlines a series of recommendations intended to increase traffic to the site through the development and evolution of *opendata.go.ke*, focusing on the data and functionality aspects of this info-structural environment.

### Data

As part of the Kenyan government's commitment to openness and transparency, it needs to continue to publish new datasets through *opendata.go.ke*. This will require the implementation of institutional mechanisms, facilitating easy collection and publication of datasets held by ministries, government agencies and organisations. First, an institutionalised link between *opendata.go.ke* and the information management systems of the various ministries, agencies and organisations must be developed to enable seamless collection and subsequent publication of data at regular timed intervals to ensure the constant flow of information to the portal. Second, data must be harvested from existing government data repositories, including: digital land records from the Ministry of Lands, Hansard Records from the Kenya National Assembly, Kenya Socio-Economic Database (KenInfo) available from KNBS and Economic Stimulus Programme (ESP) Budgets from the Office of the Deputy Prime Minister and Ministry of Finance. Third, a reliable inventory of the data the government actually holds must be developed to assist in tracking the extent to which the Kenyan government as a whole or individual departments, are releasing their data. Finally, the Kenyan government should support co-production of new services and goods based on public sector data by providing a space for third parties including the private sector to upload datasets to the platform.

This report also calls for a rebalancing of data held in *opendata.go.ke* in favour of more relevant, granular level and current datasets (see Section 6). Otherwise, as previously stated, individuals and third party intermediaries from the private and civil society sectors will be limited in their capacity to utilize such data for their own benefit and for that of society at large.

### Functionality and User Interface

As stated in Section 6.3, the sheer volume and complexity of the data on *opendata.go.ke* means that it remains largely inaccessible to the general public. This report calls for the simplification of these datasets, allowing users to place this information into a meaningful and useful context within which to make decisions. The recommendations outlined include: (1) allowing users to create

visualisations and analyse Open Datasets through enhanced *opendata.go.ke* functionality; (2) creating a community of users around the datasets, including providing a virtual space or medium for users to connect to one another; (3) providing online training programmes for harnessing and utilising government data; and (4) providing information and resources to aid in data literacy.

### **7.3. Performance Management**

The Open Government Partnership requires members to “publish a self-assessment report on progress after 12 months of Open Government Partnership implementation, and cooperate with the independent reporting mechanism in generating its own report” (p.05). This will require the implementation of both internal and independent reporting mechanisms:

#### **A National Open Data Dashboard**

The UK and US have adopted the use of dashboards and scorecards to track how individual departments are performing in providing access to information. This paper recommends the replication of such aids for Kenya Open Data. The importance of such mechanisms to promote transparency, measure performance and be “powerful motivators” for departments is outlined by the U.S. Department of State Freedom of Information Act (FOIA), which is implementing a performance dashboard:

“The FOIA Dashboard will apply the principles of transparency and openness to the administration of the FOIA itself, allowing the public to easily track information about FOIA compliance. The Dashboard will allow the public to generate statistics on FOIA compliance across the government and from year to year. Not only will this visual report card itself promote transparency, but it should also have the effect of encouraging FOIA offices across the government to “race to the top” to improve their compliance efforts...The Dashboard will serve as a powerful motivator for agencies to improve timeliness, reduce backlogs, and release as much information to the public under FOIA as possible.”

(U.S. Department of State Freedom of Information Act on FOIA.gov March 14 2011)

#### **Independent Impact Assessment**

This report also advocates for the development of an independent impact evaluation framework for Kenya Open Data, formulated through a process of engagement with diverse stakeholders, including: the research community, government analysts, third party intermediaries, etc. A starting point for such a framework should be addressing four fundamental questions raised by Dani Kaufmann at OGP, adapted for Open Data. First, who is doing the work of measuring progress of Kenya Open Data and what approaches are they using? Second, how do Kenya’s definition of “open data” and its desired outcomes vary, and what are the corresponding implications for impact and assessment efforts? Third, what examples do we have of government working with external partners to assess the impact of open data? Fourth, what are the ingredients to a successful impact evaluation scheme for Kenya Open Data? Results of the independent impact assessment should be made publicly available.

## **7.4. Citizen Engagement**

Citizen engagement is stated explicitly within the Open Government Partnership referring to citizen participation and engagement in policymaking and governance. This will require a combination of awareness raising, community and capacity building and international outreach and engagement:

### **Awareness Raising**

This report recommends that the government launch a high profile media campaign to raise awareness of Kenya Open Data initiative through multiple communication mediums, including: print, television, radio, billboards and social media. To reduce the possibility of language barriers, the media campaign should include broadcasting in local languages (see Section 5). Social media platforms are “quickly gaining popularity in Africa with Facebook’s penetration in Kenya hitting 30.8% in relation to the country’s Internet users” (Minto, 2011). Such social media sites including “have enabled people to find quick research work and educative information available on the Internet” (Minto, 2011).

This report also calls upon the Kenyan government to more intentionally reach out to intermediaries such as civil society groups, which ‘have access to and influence over, important actors...where external organisations (e.g. governments or donors) do not’ (OECD 2005, p.02). As such, civil society groups have been particularly effective in facilitating dialogue at the local level, mobilising communities, enabling vulnerable and/or marginalised people (e.g. women, youth and indigenous groups) as well as drawing attention to populations and communities that are often left out of policy debates and deliberations (see Section 6.1).

### **Community and Capacity Building**

The government must proactively connect its supply of public sector information with nascent individual and third party demand. This report recommends that the government identify mechanisms for citizen feedback as outlets that demonstrate benefits of use and reuse of government data. As Khokhar (2011) states, this will involve several strategies, including: (a) leading outreach and capacity building work among journalists and developers; (b) encouraging partnerships between citizens and government; (c) providing mechanisms for citizen feedback and engagement in evaluating public services; (d) encouraging innovation through championing competitions or co-creation of new public goods or services; and (e) encouraging ownership of the Open Data agenda to institutionalize Open Data practices and policies.

This report recommends refocusing the Tandaa Digital Content Grant to better target awards to applications that address the most pressing needs of individuals and Kenyan society at large. As Adrienne Valdez (2011) argues:

“In the past, when the government identified a problem, it would make a plan, do necessary studies, consult the experts, and carry out the implementation. That was because [initially] the government had the best resources in the society, and was able to mobilise these resources most effectively for the benefits of addressing specific challenges...However that is the old approach; [as] following the strong growth of the region’s private IT sector [and the concept] ‘crowdsourcing’, [the practice of] soliciting innovative ideas from the public...even before the conception stage of a programme,

has been gaining ground. This is a natural evolution, especially when more and more people are realising the benefits of open government and jumping onto the bandwagon.”

(Journalist, Adrienne Valdez in a Blog Post on *FutureGov* October 2011)

The Kenyan government should also appoint an Open Data Communications Officer to spearhead promotion of Kenya Open Data, mobilizing support and understanding of the initiative within government and among key stakeholders such as journalists, developers and civil society. Illustrative activities include: (1) promoting and marketing Kenya Open Data within government and to external audiences such as journalists, civil society and the general public; (2) educating government and public audiences about various tools and resources related to Open Data; championing a dialogue around the use of Kenya Open Data for the public good; (3) building new connections between government departments and public data users; (4) monitoring and responding to requests from the public for new or improved data; and (5) using information about demand to target efforts for finding and releasing new data.

### **International Outreach**

This paper calls upon the Kenyan government to document and share its experiences with Open Data as part of its contribution to advancing Open Government in other countries. Given Kenya's regional influence, particularly working to provide guidance and support to countries such as Nigeria, Tanzania, Uganda and Ghana, which have expressed in moving towards opening up their datasets would be highly strategic. One recommended outlet would be hosting an international conference on Kenya Open Data, providing further exposure to the concept of Open Data, allowing other countries to benefit from lessons learned.

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