



Open Data for Smart City and Urban Development

Cases of Open Data Production
and Use in the Global South

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by All Bong

Introduction

Increasing use of open data worldwide facilitates a variety of activities that include government transparency, citizen-government engagement and enhanced delivery of public services. Open data has proven useful even in the global South where progress can often be inhibited by socioeconomic factors. In such places, open data enables governments, international non-governmental organizations (NGOs), and local public and private leaders to innovate and create. This suggests that the global South offers a plethora of experiences for all open data practitioners to draw upon. Events such as the International Open Data Conference (IODC) and organisations such as the Open Data for Development network (OD4D) provide a home for open data practitioners from the global South. Such forums provide opportunities for networking among peers (rather than across a North-South divide) and showcasing of the work being done (as well as continuing needs) in countries such as South Africa, Nepal, and Sierra Leone.

This report examines cases from the global South and how best to enable the creation of peer-to-peer knowledge networks to aid work being done regionally. We conclude with recommendations for expansion of the OD4D community and its role in the future of open data.

Smart Cities, Civic Technology, and Urban Development

Past research has shown the potential for development through Open Data in the global South (Keserú & Chan, 2017). But the open data community can still benefit from strengthening its work on urban developmental problems taking place in countries in the global South. Smart cities represent a key strategic focus. In the global North, smart city discourse incorporates open data (Kitchin, 2014) and ideas of collaboration to improve municipal services. Schaffers et. al (2011) describe the digital technologies and urban sensors that generate geo-spatial open data as offering a number of benefits to cities that include “dramatically decreas[ing] the development costs while accelerating the learning curve for operating smart cities.” (ibid, p. 435)

Smart city discourse and marketing has spread to the global South over the past decade. Smart city projects in Asia and South America are also highly concentrated (Zubizarreta, Seravalli, & Arrizabalaga, 2016) in the largest urban centres. However, most smart city approaches in the South are rooted in property development (Watson, 2014) strategies that exploit potential growth markets through the creation of special economic zones and other incentives for foreign direct investment. These smart city approaches often are focused on capital investment and incentives for the private sector (Muggah, 2014).

At the same time, urban centres in the global South face significant challenges around development, planning, and engagement. Open data provides a key mechanism through which democratic engagement can be enacted at a time when there is increasing conflict and civil action (Watson, 2012) around who has a “right to the city” in the global South. As a developmental tool, open data holds the potential to support a variety of stakeholders in improving transparency of outcomes, involving the public in planning processes, and creating projects that improve municipal governance.

To develop an understanding of the potential for open data to integrate with urban smart city development processes in the global South, it is important to examine current cases of open data production/usage and whether or not they compliment existing governmental practices. In this report we highlight a number of cases of open data collaboration between governments and civil society actors and the infomediary role civil society actors play in supporting their respective open data communities.



by Angelo Moleele

Methods

Our methods test whether the success of open data has been an isolated phenomena. A survey was delivered (see Appendix I) to assess respondent perceptions of open data use in urban areas of the global South and solicit anecdotes of innovative use cases of open data. Written structured interviews were conducted with 15 respondents across 11 telephone interviews and one written survey. Where possible, a representative from an NGO and a municipal government representative were interviewed in the same city. Four municipal governments and seven NGOs from eight cities across Asia, Africa, and South America were sampled. Cities included Ougadougou, Burkina Faso; Accra, Ghana; Freetown, Sierra Leone; Cape Town, South Africa; Dhaka, Bangladesh; Kathmandu, Nepal; Buenos Aires, Argentina; and, Montevideo, Uruguay. Cases were selected through desk research while interviewees were selected and contacted via OD4D's network of regional leads. A list of respondents can be found in Appendix II.

Cases

In the following section we provide brief descriptions of eight cases of open data use and production and the challenges faced in each context. These cases were compiled from the OD4D regional network and contacts within cities from across the African, Asian, and South American continents. Key observations from interviews are presented to highlight some of the conditions and constraints around open data's use for urban development.

Africa

Ouagadougou, Burkina Faso

Burkina Faso's National Agency for the Promotion of ICT (ANPTIC) initiated the Burkina Open Data Initiative (BODI) in 2015 (ANPTIC, 2015). The country built a multi-level community of civil society, NGOs and government organizations under the initiative. Its national data portal (Open Data Burkina Faso, n.d.) established in 2013 with the support from ODI and the World Bank (School of Data, 2016) contains datasets, a pilot project on education data, and an engagement platform for citizens to share ideas on open data reuse with the government (CIRDO, n.d.). A right to information decree passed in 2015 strengthens the sharing and reuse of data (Conseil national de la transition, 2015).

At the ground level, Burkina Faso faces serious power shortages (Moner-Girona et. al., 2016) resulting in frequent load shedding problems. These include in the capital city Ouagadougou where approximately 40 percent of urban areas have access to power while a total of 3 percent have access to power nationwide (World Bank, 2017). A partnership between Open Burkina (a civil society organisation), the Société nationale d'électricité du Burkina Faso (SONABEL) (the country's national electricity company), and Open Burkina (an Open Knowledge International Group) is developing a mobile service to help citizens adapt to chronic power outages. This involves notifying affected residents of load shedding schedules (via mobile applications {apps} and short message service {SMS} notifications) to enable them to adapt their personal schedules (Idriss, 2017). The use of sensors installed in homes to collect data on power grid performance represents a use of open data (load shedding schedules) that provides a smart service to citizens and encourages community adaptation and resilience to power outages.

This approach is evident in Open Burkina’s approach to smart cities, whereby the project can be framed as a smart city project,

“we are trying to make the citizen interactive, in order to help plan and deliver...service delivery for them. We are trying to see how the citizen can be part of the response. How they can react. How they can participate to the planning and delivery of some services. And we think that, that is a key element of the smart cities.”

(Open Burkina respondent).

Accra, Ghana

In 2012, Ghana initiated its Ghana Open Data Initiative (GODI) with support from the Open Government Partnership (AIMS, 2017). The National Information and Technology Agency of Ghana funds, maintains, and manages the portal (Government of Ghana, n.d.) with the cooperation of many other national organizations (World Wide Web Foundation, 2015). TransGov (n.d.), a private sector project building upon GODI, began by creating apps to collect open data. It too has been supported by GODI as well as the OD4D’s peer-to-peer knowledge sharing networks. Through web and mobile platforms, TransGov aims to connect citizens with governments by providing a platform for them to contribute geospatially referenced data. In turn, municipal government use such data to visualise local infrastructure problems and provide better service. The current mobile application crowdsources infrastructure issues and enables residents of Accra to engage local government authorities with greater ease and efficiency.

One interview respondent from the Ghana Open Data Initiative expressed strong hope for open data to be used for smart city development in Ghana when they said:

“I see smart city as the systematic integration of ICTs and technologies into cities, citizen-centric, with better quality services, and with more sustainable environment. Smart cities can be a part of the transition to a knowledge economy. Open data can be used to solve most of the problems.”

(Ghana Open Data Initiative respondent)

At the same time, the respondent highlighted the uncertainty that remains in IT infrastructure development projects that receive external funding (in this case the eTransform project) (World Bank, 2013). Availability of funding has remained a constraint on open data usage, he said:

“Starting from nothing, we thought it was good to have 8000 downloads in a month, especially as we didn’t have the resources to do a public campaign. However, things got low because funding was trapped.”

(Ghana Open Data Initiative respondent)

The theme of resource constraints was an expected finding across cases, as we will see in the cases that we continue with in this report.

Freetown, Sierra Leone

Freetown hosts open data programs such as a data literacy boot camp that builds capacity of local communities to generate and use open data through different tools and platforms. Freetown’s open data is shared through a national government portal (Open Data Sierra Leone, n.d.) which was developed and managed by Code for Sierra Leone. It is also an example of the potential of the civic technology sector to support government service delivery.

Code for Sierra Leone has also engaged in creating ecosystems of innovation between communities involved in the bootcamp. MWASH (<https://mwash.codeforsierre Leone.org/>) and Know Your City (<https://knowyourcity-91f64.firebaseio.com/>) are two award winning projects from the bootcamp. They focus on mapping different facilities (including water sanitation points, health centres, food, shelter and more) in Freetown using android apps (d|Bootcamp: <http://freetown.dbootcamp.org/ideas-and-projects/>) to provide status updates on them for citizens and government officials.

Despite these successes, the potential for open data to influence urban development remains limited by the resources and capacities of local institutions. One respondent from Freetown summarized this idea succinctly when he said:

“As cool and fancy as smart cities is—we still have a long way to go. Data collection and processing is the biggest bottleneck that exists.”

(Code4SierraLeone respondent).

When reflecting on urban issues and smart cities, the respondent highlighted infrastructure issues that lack resolution. He noted that digital divides between telecommunications infrastructure and the smartphone market continue to limit the ability for local residents to make full use of more complex, bandwidth-heavy mobile apps.

“The majority of people at the bottom—most have smartphones. But they can’t handle the kind of processing/apps we want. And data bandwidth.”

(Code4SierraLeone respondent).

Cape Town, South Africa

South Africa boasts multiple open data portals and data visualisation platforms at the national and city levels (Ferreira, 2017). In this case, we focus on Cape Town as an example of an advanced municipal open data case study. Initiated in 2014 (Diphoko, 2018), Cape Town’s open data portal co-exists alongside a set of e-services that include load shedding notification and water maps (<https://citymaps.capetown.gov.za/waterviewer/>). All are very important urban resilience use cases given the region’s current water and energy stresses. In their current release (<https://odp-cctegis.opendata.arcgis.com/>) based on the ArcGIS Online platform, the city has also provided an open data portal with data visualisation functionality.

A city official from Cape Town emphasised their role as a facilitator. He said the city’s focus was on providing data and convening events such as hackathons to promote the local economy. In particular, he said:

“If we do a theme like tourism, because tourism is around September, January when it’s warm, my role as a facilitator...I don’t own any data. So we ask the tourism department, we ask them if they would like to collaborate in a hackathon and supply data. Then they organise the event. We connect the dots.”

(City of Cape Town respondent)

Notably, Cape Town was experiencing significant drought during the time of this interview. The respondent noted that open data was already being used in a resilience context. He said:

“The City of Cape Town is going through a water crisis. Drought. It’s testing city resilience. One of the things that has happened is requests coming through for data on water consumption, dam levels. It has become the most popular datasets on our portal. We’ve seen a few visualizations, calculators, web tools. I imagine there is a lot more happening with our consumption data.”

(City of Cape Town respondent)

The civil society community in Cape Town includes a civic technology organisation called OpenUp that builds tools and provides training on data management and analysis. It also acts as an infomediary by creating apps that track and aggregate sources of data for public consumption. These include the Open Gazettes South Africa (<https://opengazettes.org.za/>) website which brings together all government gazettes at provincial and national levels into a single archive. Despite being an NGO, OpenUp provides support to government through contract-ed projects. It led the development of vulekamali (<https://vulekamali.gov.za/>), an open budget portal funded by the National Treasury of South Africa.

by Zoë Reeve



Asia

Dhaka, Bangladesh

Dhaka, the capital of Bangladesh, is one of the densest cities of the world (The Daily Star, 2017; United Nations, 2016). In order to build urban resilience, a variety of different open data projects are being carried out by both government and non-government organizations. To initiate this kind of environment, the government of Bangladesh initiated its data sharing program through an open data portal (<http://data.gov.bd/dataset>) launched in 2016. Other organizations such as Save the Children and the International Federation of Red Cross and Red Crescent societies are using crowdsourced spatial data to increase urban resilience while also engaging and educating local communities.

The government's open data portal was created under the Access to Information (<http://a2i.pmo.gov.bd/>) programme. This portal contains data from 35 ministries and associated agencies. Projects outside of government also exist to supplement geospatial data on the OpenStreetMap (OSM) platform. For example, Save the Children's Kolorob project (Sweeting, 2015) provides slum dwellers in Dhaka information on local facilities and services available to them. Using the OSM as its platform, the project mapped basic infrastructure, building footprints, and local facilities in six of Dhaka's districts. The Integration of this data into an Android app gave local residents access to information on local clinics such as opening and closing times, costs, services provided, and their location (Hoque, 2017). Notably, this was done with very little base data to work from—road networks had to be mapped by a group of trained volunteers.

Dhaka's OSM mapping efforts have been sustained by other organizations and funders through the years with each contributing to the same continuous OSM dataset. Considering the significant gaps and challenges to data collection, OSM-based interventions such as Kolorob are considered vital to supporting local data infrastructure. Interviewees remained confident that smart cities rely on the availability of information, "to us, a smart city is a city where information is open and available for every citizen, use info with minimum cost and time" (Save the Children respondent). Information then leads to better understanding of the built environment, and better decision-making by citizens themselves, "through open data, the community is getting...at least people know what their vulnerability [to natural hazards] is now. If you want to rent a building, you click the building and you know its vulnerability" (Independent respondent).

Kathmandu, Nepal

Kathmandu is the largest city in Nepal and its capital city. Nepal plays host to a variety of projects and programs that promote the production and use of open data. The Kathmandu Living Labs, a civic technology organisation, is one such example that promotes creation and use of open data for different government sectors and levels as well as NGOs.

A 2015 earthquake spurred a more focused government strategy. In response to it, a government data collection and open data drive was initiated to help evaluate damage, inform emergency management planning, and support future development planning (Rohaidi, 2017). Realizing the importance and potential of open data, the National Information Commission of Nepal submitted an open government data proposal through its national action plan in 2017 (Rohaidi, 2017). The country also has established its Right to Information law (<https://www.moic.gov.np/upload/documents/right-to-information-act.pdf>) in 2007 for the initiation of open government. Though a government portal is still not available at the time of this report, the national government has shared numerous datasets through collaboration with a private initiative called 'Open Nepal' (<http://data.opennepal.net/>). In addition, a variety of governmental programs use and create open data to build resilience and aid in the development of the country.

Kathmandu Living Labs (KLL, <http://www.kathmandulivinglabs.org/>) is an example of one such program. KLL is a living technology group in Nepal that utilizes open data and community based participation. The lab was initiated in 2012 through a World Bank project on open cities advanced by the global youth community to improve training on open data tools and technologies. The lab aims to provide technical solutions to government, NGOs and international organizations to aid in the development of programs to map and collect using open platforms at the municipal level (Gilmour, 2016). Currently KLL is involved with a number of projects which involve crowdsourced mapping to aid development work by local governments. The organisation was quick to emphasise that challenges remain in simply creating the data even with the OSM platform,

“There is a challenge in creating the map itself. To undertake that task is not easy. We also have to train a lot of people. Just putting a few points [on the map] is easy, but there are deep geographic questions... There are different levels of learning required. We don't have very strong geographic courses in universities.”

(Kathmandu Living Lab respondent)



by Pravash_raj

To address some of these issues, the KLL provides training to its volunteer mappers,

“We give them ideas about geographic thinking...when you look at surface of the earth, you see variety of things. What does that mean? What do the geographic objects that are interesting to map, data processing, what does mapping mean?”

(Kathmandu Living Lab respondent)

As suggested by the respondent, the generation of open data remains more than a simple task of data collection. Creating accurate geospatial data requires skills grounded in mapping, GIS, and geography—skills which may be difficult to come by in a purely crowdsourced model of open data production.

South America

Buenos Aires, Argentina

Buenos Aires, known as smart city case study, includes a city portal with a variety of different citizen services (Pacheco, 2017). One example includes the BA Elige program (<https://baelige.buenosaires.gob.ar/>) that consists of a platform where citizens can share ideas around how to improve urban development and the policies that govern it (Herrero, 2017). Winning ideas from the platform will be selected for implementation by the city and openly used on the municipal website. At the same time, the Buenos Aires open government decree in 2012 led to the permanent establish of an open data portal (based on CKAN) (Fumega, 2014).

Respondents from the city government talked about techniques they used to support community use of open data. One of them commented that:

“We are evangelising people—you have to do a lot of meetups, hackathons—we have to spend a lot of money in those places. Show them how transparency works abroad.”

(City of Buenos Aires respondents)

Open data, open government, and smart cities fall within the same institutional structure in Buenos Aires. This all municipal strategy enables the intertwining of transparency, data sharing, and engagement in all aspects of the open data work being done. It also keeps urban development and smart city ideas within administrative orbit of each other. A notable user of open data was the city government itself. Respondents noted intentions for use such as creating a commercial opportunities map (also using some private datasets from taxi drivers).

Despite the success of Buenos Aires’ open data programme, respondents felt that open data indices and the current advice they were receiving remain insufficient for measuring impact. City respondents stated there remains a big need to understand open data through peer exchange and indices at a more substantial level. As one said:

“We have that chance with some countries and other cities visiting us. We need the real information. We need to know how they manage these issues in real life, not on paper.”

(City of Buenos Aires respondent).

In particular, Buenos Aires respondents wanted more than just simple measures of website downloads and social media interaction metrics.

Montevideo, Uruguay

Montevideo has an open data portal also linked with a smart city program. The government open data portal includes public datasets along with many other services that citizens have free access too. Other projects and platforms which use open data to share information exist as well. These include Atuservicio (<https://atuservicio.msp.gub.uy/>), a health system information portal developed by DATA Uruguay (<https://www.datauy.org/>), a local civic technology organisation. Urban development applications from DATA Uruguay include apps that deliver information on recycling and the collection of service request data using the Open311 data standard. Notably, for DATA Uruguay smart city development was intrinsically tied to open data. One respondent said:

“Smart cities needs to have more about open services and open data. Allowing civil society organisations, business etcetera to build on that digital infrastructure. I need to have access to that data to allow me to create services and platforms and solutions.”

(DATA Uruguay respondent)

With a national FOI law passed in 2008 , Uruguay became capable of establishing an open data policy (Bramley, 2013). In 2010, this new open data policy resulted in a new web portal (<http://www.montevideo.gub.uy/institucional/montevideo-abierto/datos-abiertos>) where open data, open services, and free software was shared with citizens. The portal also contains governmental data for the City of Montevideo and makes it easy to find and access. One emphasis of the policy is a renewed emphasis on technological advancement to improve municipal service provision to citizens and the private sector (“Evolution and perspectives of smart cities”, 2015).

The municipal app and the services it provides solve specific urban problems Montevideo faces. For example, corruption can be stemmed through the sharing of information about budget and government policies. Such data also provides the basis for apps with useful information about transport, tourism, investment, or municipal service delivery of essentials such as water, electricity, and trash. All of these use open data as their foundation (Scrollini, 2014).

Open Montevideo provides the umbrella for the City of Montevideo’s open data and open government work. One respondent noted that Open Montevideo relies on four fundamental principles. These include: 1. Open Data; 2. Open Services; 3. Free Software; and, 4. Open Knowledge. For this respondent, each of these principles involves:

“Encouraging the publication of institution data; publishing services that enable third parties to interact with applications developed in the City Hall; encouraging the use of open source software for internal development; and, communicating our experiences.”

(City of Montevideo respondent)

by Thomás Jorquera Serpúlveda



Observations and Discussion

The discussion section of this report focuses on respondent input from each of the previous case studies. It also relies upon observations from recent networking events including the International Open Data Conference (IODC) 2018 and the Open Cities Summit 2018.

OpenStreetMap and volunteerism

Both our Dhaka and Kathmandu case studies use OSM as a data collection platform. That may be because of the low capacity to develop national spatial data infrastructures in two locations which both require government owned map data. Neither the Survey of Bangladesh (Government of Bangladesh) or the Survey Department (Ministry of Land Management, Cooperatives and Poverty Alleviation, Government of Nepal) are available as open data. Given these limitations, project implementers in Dhaka and Kathmandu found OSM to be the obvious choice for starting a crowdsourced effort to map geospatial data of important infrastructure.

OSM possesses a number of unique characteristics that make it ideal in such situations. For example, it is open source, free, and acts as a free geospatial data storage platform. As long as users are willing to follow conventions, OSM will continue to be convenient. Civic technology and nonprofit organisations operating in low data capacity environments reap significant benefits. OSM reduces the costs incurred by hosting data, programming new geoweb platforms and interfaces to accept data inputs, hiring and training specialised labour, and troubleshooting other technical problems. With these barriers removed, local organisations can focus their efforts on addressing civic problems through the collection and output of data.

The use of OSM to collect and store geospatial data is not without its own risks. While OSM is free, the company itself relies on donations and institutional support. OSM's use may also increase the resilience of government data collection by providing data storage. This may result in a lack of capacity building in the short term where governments becoming reliant upon OSM at the expense of their own national statistical and spatial data programmes. Reliance on external platforms to produce open data may also result in an outsourcing of responsibility and control over issues such as data visualisation and how to set coordinate systems. Those working with OSM in regions with low digital literacy or low incomes may also find it hard to initiate crowdsourced efforts.

Both the Dhaka and Kathmandu cases have been able to create large amounts of data through organised data collection campaigns. The costs are incurred to

train and compensate volunteers. Respondents in both Dhaka's Kolorob Project and Kathmandu Living Labs reported a lack of available and educated volunteers. Those that were trained in data collection were difficult to keep enrolled in their programmes (potentially due to low incentives to participate). This means that despite the success of these campaigns initially, a great deal of uncertainty exists in whether they will be able to continue to collect the same level of data.

Simple training workshops and organised campaigns by these organisations have helped to increase the availability of open geospatial data from scenarios of zero data availability. Their sustainability in the long run depends on continued support from international organisations that have the resources to provide incentives for these projects to continue.

Infomediary roles and international connections

In addition to platforms such as OSM, NGOs exerted considerable influence on the open data work examined in each of our case studies. The aforementioned cases in Dhaka and Kathmandu were instances of NGOs working to create mapping of local infrastructure while possessing almost zero resources or capacity. Often this work involved the training of a labour force of volunteers in data collection using GPS receivers and maps. Such organisations often formed the nuclei of local open data work as they established connections with governments to obtain data, educational institutions (a local university in the case of Dhaka) for volunteers, and international organisations for funding. These connections enable them to achieve the goals of collecting, distributing, and analysing open data in ways that benefit their own community and urban development processes.

Our cases suggest civil society could also be expanded to increase the capacity of governments and NGOs working in open data. Organisations such as DATA Uruguay, Code for Sierra Leone and OpenUp provided direct developer support to their respective governments by building portals that structured and visualised open data. In cases with lower capacity such as Freetown, Code for Sierra Leone has taken on the responsibility of directly managing the national open data portal. This collaboration between local civic technology organisations and governments are unprecedented and may result from a lack of government interest in this work.

Networking opportunities also abound in our limited sample of cases. Some organisations were engaged in global North-South exchanges, such as Open Burkina's involvement in the ODI's Open Data Leaders network. Others received funding from philanthropic institutions and international organisations such as the Bill and Melinda Gates Foundation. Membership in additional



by Annie Spratt

regional and global networks may depend on the type of work in which the NGO engages. For example, Code for Sierra Leone, a civic technology organisation, maintains links to journalism organisations such as HackHackers (an activist data journalism network) and the International Centre for Journalists (an international non profit organisation leading the International Journalists' Network). Such relationships allow organisations like Code for Sierra Leone to open up avenues of support beyond the open data community.

Direct linkages and knowledge exchanges between organisations also occur at regional levels. One respondent from Open Burkina reported that they got the inspiration for their project from a fellow civil society organisation in Senegal. This type of knowledge sharing can induce peer learning opportunities for civil society organisations. Indeed, our respondent from Code for Sierra Leone explicitly stated a preference for South-South knowledge sharing and collaboration. He felt North-South collaboration served only to inform long term objectives.



by Dimitri Bang

Cities as hubs for open data

This report focused on in the global South. Yet we did not find any urban-rural networks or collaboration involving open data. This means open data interventions are likely best administered in urban environments where local civic technology organisations have access to governmental resources, higher skilled labour from educational institutions, and international organisations. Even seemingly trivial considerations such as an adequate supplies of electricity may not be guaranteed in the rural areas of many developing countries.

In recent years, cities have been touted as centres of innovation and democratic participation. This may make them more effective at solving problems than national governments (Barber, 2013). International organisations have already begun re-orienting towards urban development in efforts such as the 2016 United Nations (UN) Habitat III New Urban Agenda. The recent IODCs have also put emphasis on particular themes such as climate change and open government. In the realm of climate change, cities have already made their own pledges to reduce emissions (World Bank Group, 2015), separate from the decisions of national governments, with networks such as C40 emblematic of this collaboration. In the realm of open government, cities have been involved in the OGP network through the OGP Subnational Program (renamed to the OGP Local Program).

City-city collaboration on open government may come to define the field. They have already extended into networks such as the United Cities and Local Governments (UCLG) and Federación Española de Municipios y Provincias (FEMP). This has resulted in the establishment of a Community of Practices on Transparency and Accountability, led by FEMP and under the auspices of OGP and UN Habitat. Increased city-city collaboration holds the potential to link networks and ensure that progress (on issues such as transparency or climate change) will be linked to the open data community as a global community of practice.

Networking recommendations

Based on respondent input and case study research, a number of recommendations can be made for the future of open data networking.

1. Ensure sustainability in institutions and services that support open data activities. Cities have already been identified as hubs for innovation. This extends to open data in both the global North and the global South. Networks, such as Iniciativa Latinoamericana por los Datos Abiertos (ILDA), have solidified the support of civil society organisations. Other regions have different types of support networks, such as the Africa Open Data Network and the Asia Open Data Network, but may need additional funding and technical support to become regional anchors for civil society. Institutions and networks that play a supportive role in the open data community may include domain-specific networks, networks of mappers (such as OSM national chapters), and programmer communities. These networks provide open data practitioners with tools (e.g., guidelines, data platforms, software libraries) in leveraging open data that should be considered keystones of the open data community.

2. Establish peer learning networks regionally and internationally across the global South. Peer learning is needed to ensure open data solutions are technically and culturally appropriate. A key point of conversation at the recent Open Cities Summit included the reminder to be mindful of off-the-shelf (open data) solutions that include public private partnerships (PPP). Often, it can be difficult to ensure they remain relevant to local communities. This can be especially difficult when trying to include two different cultures in a single solution. Smaller scale, regional level networks may be more appropriate to produce quality open data solutions.

Creating connections across institutions can extend to the work of civil society organisations themselves. A number of civil society open data organisations provide support to open data practitioners through guidelines and ‘Do-It-Yourself’ toolkits. Connecting support outputs across the open data community (e.g. guides, checklists, toolkits, webinars) within a comprehensive package for cities may enable improved knowledge dissemination overall.

3. Link open data across city priorities. Cities have a multitude of priorities and commitments. Open data remains a common denominator across many of these. Clear arguments and suggested actions to link city open data initiatives to other domains may incentivise increased policy harmonisation and coordination within municipal government. This will allow cities to take better advantage of their open data programmes and orient them towards specific outcomes.



by Elliott Reyna

Appendix I

Method

A survey was created to assess to assess perceptions and solicit anecdotes from each of the respondents chosen to take part in this study. Where telephone interviews were not possible to collect survey data, respondents were given the option of providing written responses to the same set of questions. All but one respondent took part in a telephone interview, for a total of 11 telephone interviews and one written survey response.

Cities were chosen from Asia, Africa, and South America to ensure adequate regional sampling across the global South. Desk research was conducted to find potential cities to sample using a few specific criteria. These included the existence of:

1. Municipal-level open data;
2. Smart city initiatives;
3. Non-governmental organisations engaged in open data.

Potential cities were further narrowed by having interviewees selected and contacted via OD4D's network of regional leads. Four municipal governments and seven NGOs from eight cities across Asia, Africa, and South America were sampled as noted in the report. Some organisations provided multiple respondents (hence the larger number of respondents) and one independent individual interviewed. These included Ougadougou, Burkina Faso; Accra, Ghana; Freetown, Sierra Leone; Cape Town, South Africa; Dhaka, Bangladesh; Kathmandu, Nepal; Buenos Aires, Argentina; and, Montevideo, Uruguay. Cases were selected through further desk research while interviewees were selected and contacted via OD4D's network of regional leads. (A list of respondents can be found in Appendix II.)



by Random Institute

Survey

The survey questions included four categories each with four or more open-answer questions. In particular, the survey consisted of demographic questions, open data questions, evaluative questions, and questions on respondents existing networks. The questions are reproduced below by section.

Demographic Questions

Please describe your position and organization

Please describe [x] project

How much does the project cost?

Are you affiliated with any other projects/organizations relevant to the project?

Does your project/programme have any other partner organizations/developers?

How do you define smart cities or urban resilience? What do smart cities mean to you? What does urban resilience mean to you?

Are there other applications/uses for this data?

Are there other applications for this project? / What are the broader applications of this project?

Open Data Questions

Is open data connected or an integral part of your smart city or urban resilience project?

OR

Is your open data programme connected to your smart city/urban resilience programme(s)?

Where does the open data come from?

Do you see citizen contribution as a form of engagement?

Who funds the open data programme?

What tools and technology do you use?

Evaluative Questions

What challenges have you faced in development of the project?

Do you consider this a successful program? How would you define success?

Do you see gaps in your capacity (e.g. resources, labour, expertise, funding)?

What gaps in capacity do you see in city government? National government?

Existing Networks Questions

Is there any liaison or network among the relevant local projects? What are the challenges/opportunities for such networking?

Do you participate in any local, regional, or international networks related to: open data, smart cities, urban resilience

We are hoping to convene an initial network of cities in the global South, to promote south-south knowledge sharing. Would you be interested in participating in this network?

Appendix II

List of respondents:

| City | Organisation | Sector | Number of respondents |
|---------------------|--|-------------|-----------------------|
| Burkina Faso | | | |
| Ouagadougou | Open Burkina | NGO | 1 |
| Ghana | | | |
| Accra | National Information Technology Agency, Ministry of Communications | Government | 2 |
| Accra | TransGov | Private | 1 |
| Sierra Leone | | | |
| Freetown | Code for Sierra Leone | NGO | 1 |
| South Africa | | | |
| Cape Town | Open Up | NGO | 1 |
| Cape Town | City of Cape Town | Government | 1 |
| Bangladesh | | | |
| Dhaka | Consultant | Independent | 1 |
| Dhaka | Save the Children | NGO | 1 |
| Nepal | | | |
| Kathmandu | Kathmandu Living Labs | NGO | 1 |
| Argentina | | | |
| Buenos Aires | City of Buenos Aires | Government | 3 |
| Uruguay | | | |
| Montevideo | DATA Uruguay | NGO | 1 |
| Montevideo | City of Montevideo | Government | 1 |

Appendix III | References

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