



April 2017

Nepal's emerging data revolution

background paper

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Introduction

Development Initiatives (DI) works at a global, regional and national level to ensure that development decisions are underpinned by sound data and evidence, and so contribute towards improved development outcomes and poverty reduction.

Since 2011 and in collaboration with various partners, we have been working to contribute to wider efforts to improve the **production, sharing and use** of data for sustainable development in Nepal. Our focus has been to support the development of the information ecosystem needed to enable **data-informed decision-making and accountability**. We have worked with local partners to engage non-state actors and government on this agenda in particular through our support to the [Open Nepal](#) initiative. Alongside this, DI has supported local partners with funding and expertise on various **technical, research and engagement** efforts.

In these five years, the wider development data and information landscape in Nepal has evolved significantly. Important progress has been made in the production, sharing and use of data for development. However, despite important technical, research and engagement advances, there is still a long way to go before access and use of data for decision-making and accountability are widespread. Technical advances include improvements in digital data collection, the opening of official datasets, and the development of data sharing and e-governance platforms. There is also progress in understanding the contextual challenges for data sharing and use and in piloting interventions to address these. There is, importantly, growing interest from government and civil society in the agenda for better production, sharing and use of data, whether that agenda is termed 'open development', 'open data', 'access to information', 'evidence for development' or brought together under the broader umbrella of 'the **data revolution for sustainable development**' as we do in this paper. Nepal's nascent and dynamic community of data enthusiasts has played an important role in this progress.

Over the past five years DI has had the privilege of engaging with many of these actors and in many of these developments. This paper shares some of our observations on the current state of production, sharing and use of data for sustainable development in Nepal. We hope this will help inform the work of practitioners and supporters.

The data revolution for sustainable development

The past few years have seen a growing focus on data as a key driver of sustainable development. Internationally, the data revolution has emerged as a key paradigm encapsulating many of our priorities around the production, sharing and use of data to drive and monitor sustainable development, in particular in the context of the Sustainable Development Goals (SDGs).¹ The need for the production, sharing and use of high quality data from a variety of sources by a wide range of actors has been recognised as a critical component of evidence-based decision-making and accountability for

development efforts. Increased use of data as evidence is seen to contribute to a better understanding of development problems and to the design of better targeted, more effective interventions.

Box 1: Measuring the Sustainable Development Goals in Nepal

Data is seen to play a catalytic role in both meeting and monitoring the ambitious SDGs. A key question is how countries will measure progress against the SDGs. In 2015, Nepal's National Planning Commission published a preliminary report on the SDGs following an internal process of thematic reviews.² The report identified key indicators to measure the goals, determined baselines and set tentative targets for each indicator. This process took place before the disastrous 2015 earthquakes and 2016 fuel blockade – both of which are likely to have impacted on the country's development indicators. The baselines and targets now need to be revised accordingly. As of early 2017, the UN Development Programme (UNDP) is supporting this process and helping the Commission to align the national monitoring and evaluation guidelines³ with the SDG framework. This process is bringing to light the many gaps in the availability of high-quality and timely data needed for effective SDG monitoring. Nepal has volunteered to present a national review of its SDG progress at the July 2017 High-Level Political Forum.

The context for Nepal's data revolution

Table 1: Key human development indicators for Nepal

Population size	28.1 million	GDP (2011 PPP)	US\$60.4 million
Urban population	18%	GNI (2011 PPP) per capita	US\$2,311.3
Life expectancy at birth	69.6 years	Inequality – Gini coefficient	32.8
Median age	23.1 years	% of population living below \$1.25 a day	23.7%
Adult literacy rate	57.4% of population	% of population in multidimensional poverty	41.4%
Internet use	15.4% of population	Net official development assistance received	4.5% of GNI
Mobile phone subscriptions	82.5 per 100 people	Remittances inflows	28.8% of GDP

Source: 2015 UN Human Development Report⁴

Notes: GDP: gross domestic product; GNI: gross national income

Nepal's political, legal, economic, social and technical landscape presents a complex environment for interventions aimed at improving the production, sharing and use of data. One important factor is political instability, manifested by frequent changes in government (23 since the introduction of democracy in 1990⁵), following the decade-long internal conflict that ended in 2006 and the continued political and civil unrest, most recently following the abrupt promulgation of the long-awaited Constitution of Nepal in 2015. In this context, political parties and leaders have often focused on tactical considerations, leaving issues of government transparency, citizen engagement and public accountability relatively unaddressed in political discourse.⁶ The quick succession of administrations often leaves little time for progress to be made on campaign promises and initiatives to improve governance are often short-lived. Democracy is relatively recent in Nepal, while

formalised practices of downward government accountability, supported by transparency and access to data and information, are also just developing. In May 2017 the first local elections in 20 years are due to take place. The long-standing absence of elected officials at this level has limited the space for democratic processes of accountability and civic participation, potentially increasing corruption risks.⁷

In legal terms, public access to government information in Nepal has been established since 2007 through the Right to Information Act. However, there has been relatively limited use of the right by the public⁸ and the impact on data sharing has also been limited. Observers highlight several reasons for the low number of information requests, including inadequate public awareness of the right,⁹ limited public understanding of how to request information, and the low number of information officers appointed in public bodies despite the requirement under the law.¹⁰ The widespread culture of secrecy within government bureaucracy is often mentioned by local experts as another barrier.¹¹

There are a number of other legal instruments that support the production, sharing and use of information, for example the Local Self Governance Act 1999, which mandates each of Nepal's 75 district development committees to have an information and record centre for collecting and maintaining local information. In the absence of locally elected government officials, the service delivery and local administration supported by this act has not always been effective.¹²

In the context of the strong focus that international actors often place on technology and innovation in the data revolution, it is important to highlight some key constraints around infrastructure and data/information access. For example, until recent interventions by the incumbent government to challenge corruption in the electricity sector, load shedding was a daily occurrence.¹³ Internet speeds and internet penetration have been growing at a fast pace over the past five years; however, many households are still without either internet connection or mobile phone reception.¹⁴ There is a high level of inequality in access to digital data sources resulting from the inconsistencies of internet penetration, together with the social exclusion experienced by some castes, ethnicities and geographically remote populations. Even where communities have access to data, the low level of digital literacy among parts of Nepal's population limits the production of meaningful information or action from that data. This points to a potential information divide between communities, and data interventions need to be carefully managed to ensure they are inclusive so that this divide does not grow further.

The development data ecosystem

A wide range of official and non-government data is required for evidence-based decision-making and accountability efforts at national and local levels, from policy-making to implementation and monitoring and evaluation of the effectiveness of development interventions. Those involved in these processes and their interactions form a dynamic ecosystem of stakeholders, including government officials, civil society, media, private sector and academia. Each has their own needs, interests and capacities to produce, share and use data, and each conducts actions that will impact the potential of others within the ecosystem to access and use data. For the sake of brevity, we describe the key actors here as government, civil society and the private sector.

Government

As with all countries, the government is the most important supplier and user of data for sustainable development. Notwithstanding the importance of new sources and producers of data, the role of government, and in particular the national statistics office as the leader of an inclusive national statistics system, should be central to the production of sustainable data for development.¹⁵

Within the Nepal government various bodies play an important role. The national statistics office – the [Central Bureau of Statistics](#) (CBS) – is the key government body responsible for generating and disseminating data for development planning and policy making. The CBS sits under the National Planning Commission and has a mandate for overseeing the relatively decentralised national statistics system. Other government bodies playing an important role in Nepal's data ecosystem include the Central Bank – [The Nepal Rastra Bank](#), which produces economic and financial statistics, the [Ministry of Finance](#), which generates the country's budget data, and the [National Reconstruction Authority](#), which since the 2015 earthquakes has been an important collector and user of humanitarian data. In addition, Nepal's sector line ministries are active producers and users of data, in particular the [Ministry of Health](#), [Ministry of Agricultural Development](#), [Ministry of Education](#) and the [Ministry of Federal Affairs and Local Development](#).

Local experts view the frequent government changes and slow bureaucracy as having impacted on the pace of innovation and change. While key innovations such as e-governance platforms, digitised management information systems, and digitised population surveys have begun to be implemented, there have so far been only few champions for newer concepts such as open data, citizen-generated data and big data.¹⁶ The level of technical and data literacy in government varies considerably, as does the willingness of bureaucrats to challenge the status quo and foster accountability. Although

rare, there are some important champions for improved sharing and use of data in government. The current Minister of Health has demonstrated strong leadership in building transparent data systems within the health sector, most notably through the [Smart Health](#) initiative; and the Chief Commissioner of the National Information Commission has commenced the development of a National Open Data Action Plan for the government. There has also been growing interest from some within government in formally joining the Open Government Partnership.¹⁷

Civil society

With over 39,750 registered Nepali non-governmental organisations (NGOs) in Nepal and 250 registered international NGOs,¹⁸ civil society has the potential to be very influential in using and supplying data for sustainable development. The intentions, effectiveness and impact of civil society organisations vary significantly between groups, making it difficult to make general observations about this diverse sector. However, in terms of supply, data generated by civil society organisations is, at present, not considered an official source of data and often discounted as unreliable by government. In terms of understanding the level and nature of data use, there is limited evidence on how data is being used by local civil society groups in programmatic planning, advocacy and accountability. Anecdotal evidence is mixed, with some organisations pioneering innovative data interventions while for many other local organisations, a specific focus on the role of data in driving and monitoring sustainable development is a fairly new approach.

However, a small but enthusiastic community of data advocates has emerged in Nepal over the past five years.¹⁹ These advocates work to share data to support evidence-based decisions and accountability – and many interact as part of the [Open Nepal](#) network. Open Nepal was set up in 2013 by a group of stakeholders interested in the role that data could have on driving Nepal's development, including [Young Innovations](#), [Freedom Forum](#), [NGO Federation of Nepal](#) and [DI](#). It has since developed an online knowledge hub and conducted various technical, research and engagement projects to further the development data agenda. There are several other organisations actively working in this space, including [Accountability Lab](#), [Local Interventions Group](#), [Open Knowledge Nepal](#), [Kathmandu Living Labs](#), [Code for Nepal](#) and [Bikas Udhyaami](#), who are supporting better production, sharing and use of data through their own initiatives as well as via pilot projects with the government.

These groups also conduct regular events to raise awareness of open data and issues around the data revolution, for example annual Open Data Day events that attract hundreds of participants each year as well as periodic hackathons, 'mapathons', data boot camps, talk programmes, workshops and themed weeks of events such as Open Nepal Week and Open Access Week. Longer-term financial sustainability is, however, a challenge for these platforms and organisations, and has had implications on their ability to build alliances across civil society and with government.

Private sector and media

There has been some involvement by technology, telecoms and media sector companies in areas related to data for development. For example, in 2015 telecoms provider [Ncell](#) shared anonymised mobile operator data with analysts Flowminder, enabling population movements to be tracked following the 2015 earthquake.²⁰

Some actors in Nepal's growing technology and software industry have arguably played a particularly important role in driving innovation and new approaches in the data field, acting as advocates and convenors, advancing their own projects and ideas as well as providing outsourcing services to national and international actors. [Young Innovations](#) for example have been a longstanding developer of data publishing and access tools, including those known and used by development actors globally and in other developing countries. These include [Development Check](#), and IATI data publishing and use tools [AidStream](#) and [d-portal](#). Another private firm active in the data field is [Rooster Logic](#), which has developed custom [data collection tools](#), run [a programme](#) to empower adolescent girls with data enumeration skills and is active in the [FOSS Nepal](#) community that focuses on free/open source software.

Another important private sector actor is the media, particularly print and online media. This is an important channel for accountability and the past five years have seen some growth in the media's use of data and evidence in reporting. While investigative data journalism is still relatively rare, basic use of graphs and data visualisations are now commonplace in Nepal's printed media. Examples include private research firm [FACTS Nepal](#)'s data visualisations which are regularly reproduced by print media and infographics blog [Graph Nepal](#). Organisations like the [Center for Data Journalism](#) and [Center for Investigative Journalism](#) are supporting the growth of data use in Nepal's media.

Development partners

In addition to the government, civil society and the private sector, international actors are playing an important role in Nepal's development data ecosystem. Nepal has been an aid recipient country since 1951 and official assistance plays a pivotal role in Nepal's development processes, averaging at around 20% of the national budget over the past five years.²¹ Donors and other development partners have been an important source of financing, technical support and encouragement for larger-scale initiatives to improve data production, sharing and use. Recent examples include GIZ support for upgrades to management information systems in the health sector (Box 2), the US\$150 million World Bank loan for a new civil registration and vital statistics system (Box 3), and UK Department for International Development (DFID) support for a government programme to improve the use of evidence for development decision-making.

Box 2: Data production, sharing and use in Nepal's health sector

Nepal's Health Management Information System (HMIS) was set up in 1994 to gather and store data from every health facility in the country so the government could track almost 900 health indicators. Today the HMIS collects 5,000 variables from nearly 5,000 public and private facilities. The HMIS is manually populated through paper-based data collection by medical and community front-line workers. Data is collected monthly – including in the remote and difficult-to-access areas where health workers have to travel for several days to submit their data to the nearest district health office. There the data is manually typed into the HMIS, a resource-intensive process that is potentially prone to errors. The GIZ funded [Support to the Health Sector Programme](#) is supporting the government to digitise the HMIS. A major step has been migrating HMIS to the open-source software DHIS2. The DHIS2-based HMIS has been rolled out to all 75 districts in Nepal; however, the system is only digitalised down to district level. GIZ is supporting the Ministry of Health in introducing e-reporting from facility level in three districts, which allows for disaggregated 'live' data. DFID is supporting this in two other districts. The new system will enable health facilities to submit their data online rather than in hard copy. DHIS2 also supports the analysis and visualisation of data – internal dashboards are already used by the Ministry, but are yet to be made publicly accessible.

Another positive step in the health sector is the establishment of the [Smart Health](#) unit in the Ministry of Health. This aims to integrate the different initiatives related to e-health and make available data on the services offered by health institutions and the availability of health staff as well as data that will enable performance tracking of key health agencies and public hospitals.

The production, sharing and use of data

Production of data in Nepal

Data in Nepal is produced by a wide range of actors, including government institutions, development partners, civil society organisations and the private sector. The government is the largest producer of data, and the official source of data for development planning, decision-making and accountability. Table 2 is not a comprehensive list but summarises some of the core development datasets produced by the government.

Table 2: Government data producers (adapted from Malla, 2013)²²

Government	Data produced*
Central Bureau of Statistics/CBS	10-yearly population census (2011) and agricultural census (2011), 5-yearly census of manufacturing establishments (2011) and periodic surveys, including Nepal Living Standards Survey (2010), Nepal Labour Force Survey (2008), Nepal Vegetable Survey (2010), Nepal Multiple Cluster Indicator Survey (2010)
Nepal Rastra Bank	Compiles economic statistics including Consumer Price Index, Wholesale Price Index, external merchandise trade, other current and capital transactions
Ministry of Federal Affairs and Local Development	Compiles data on vital events under Department of Civil Registration, and on local government spending
Ministry of Finance	Compiles data on revenue and expenditures, including national budget and official development assistance
Ministry of Health	Conducts Demographic and Health Survey (DHS) every 5 years, most recently in 2011. Compiles health service statistics annually
Ministry of Education	Compiles data on student enrolment, teachers and schools
Ministry of Agricultural Development	Compiles data on production, area and yields of cereals and horticultural crops as well as livestock and livestock products
Ministry of Cooperatives and Poverty Alleviation	Has piloted a national household survey in 25 districts to identify levels of poverty
Ministry of Home Affairs	Is piloting a biometric national ID card scheme, surveying 110,000 people by 2017

Note: *Dates provided for the latest available surveys.

While all of Nepal's 27 ministries have digitised their day-to-day operations, and about half of Nepal's 7,000 government offices are now reported to be computerised, paper-based systems of data collection and management are still common.²³ For example, civic identification systems such as civil registration and citizenship card schemes are paper-based, highly decentralised and there is no central digitised database consolidating the data (see Box 3). These paper-based systems result in a high margin for error, often have lower coverage, and limit the potential use of the data. However, digitised processes of data collection and management are becoming more common as government bodies are increasingly employing management information systems.

The data produced through official surveys ranges in quality. The frequency of official survey implementation largely depends on the availability of donor funding and so survey data can quickly become out of date. There is some duplication between surveys and the administrative data collected by the ministries, and numerous inconsistencies in the data. For example, the enrolment rate of students varies between survey data and administrative data, and the Department of Customs, Nepal Rastra Bank and Trade Promotion Center report different figures for the level of external trade. According to the CBS, these inconsistencies owe to the differences in concept, definition, classification, methodology and reference period used by different government organisations.²⁴

Box 3: Counting people to make people count

Although there are various government efforts that could produce disaggregated population data critical for decision-making to leave no one behind – for example by the Department of Civil Registration, the Ministry of Home Affairs' citizenship card scheme, the Electoral Commission's election register²⁵ and the national ID scheme²⁶ – these efforts have been fragmented and suffered from limited coverage. The lack of unique identifiers in the data means that population data cannot be compared between one scheme and the next. The current civil registration system is paper-based and is not backed by a centralised database, limiting the potential use of the data. Coverage is poor – it is estimated that only 42% of births are registered.²⁷ This impacts on the accuracy of vital statistics, which has knock-on effects for other government programmes and planning. One such programme is the Social Protection Programme and the payment of social security allowances. The poor data on beneficiaries is seen to create potential for corruption, payment duplications and fraud due to the high instance of ghost beneficiaries, and likely under coverage of around 30–40% of eligible beneficiaries. In 2017 the government of Nepal received a loan from the World Bank to strengthen its civil registration systems and to create a national population register with unique IDs for every person.²⁸ This could help communication across the government's various management information systems and the effective tracking of population trends, as well as more effective targeting and inclusion of Nepal's social protection schemes.

To improve the production of official economic, demographic, social, cultural and environmental data the CBS has drafted a national strategy for the development of statistics. This is planned to raise awareness of the role of official statistics in development, better mobilise national funding and technical partners, and improve the quality and dissemination of the data. The strategy is due to be published in early 2017, but the challenge will be in ensuring it is effectively implemented (see Box 3).

Sharing of data in Nepal

There are limited official mechanisms for the public sharing of data produced by government. The data that is shared is usually published in hard copy as tables or analysis in reports, or embedded in websites as web-text or in downloadable PDFs. Sometimes data is only available in printed format in the ministry library. However, there has been a growing trend in producing CDs that contain tabulated data. For example, the CBS disseminates its data through CDs, which can be purchased from the government offices.²⁹ Data is rarely shared in open machine-readable formats (such as Excel, CSV or XML),³⁰ and so the ease of its use for analysis is restricted.³¹ A notable exception is the [Aid Management Platform](#) that shares data on official development assistance in Excel format. Where data is available on websites, it can often have a very short online lifespan. For example, in 2014 the then prime minister announced that the government would [publish online](#) any government expense of over NPR 5000 (roughly US\$50), which it continues to do, but for just three days. It is also common for webpages to stop working or to remain under construction for long periods, and several data transparency initiatives implemented by government are no longer sharing data, for example the Population Atlas set up by the CBS in 2015.³²

Under the 2007 Right to Information Act, citizens have the right to request non-sensitive data and information from government. However, this process has proved bureaucratic and time-consuming. Wherever possible, non-state actors tend to obtain government datasets through informal routes such as personal contacts in the ministries.³³ Within ministries, data is typically shared only in response to requests – there is no digitised centralised system for proactive internal data sharing. While there is a centralised [Official Government Portal](#) initiated by the National Information Technology Center, its information is limited as reportedly there has been minimal cooperation between the ministries to populate it. As yet there is no centralised government open data portal that publicly shares data in a format that enables easy access.

There are numerous technical reasons that present barriers to data sharing, for example, the lack of digitised systems in government, lack of technical skills in government to open up data and the lack of adequate internet infrastructure in large parts of the country – where radio and community sign boards are the most common channels for disseminating information. However, political, bureaucratic and cultural issues arguably present the greatest barriers to data sharing. Certain datasets are considered to be too politically sensitive and are not shared, for example data is rarely disaggregated by caste or ethnicity. This is partly due to a concern by government officials that the data quality and collection methodologies could be brought into question if shared, and partly to concerns over how the data could be used. In addition, low levels of articulated demand

for data from civil society and the private sector means there is little incentive for the government to share its data.³⁴ There are also valid concerns around data privacy and how to share data responsibly as there are currently no formal government regulations to guide this. In one recent case, the Ministry of Federal Affairs and Local Development published online the personal details of all the beneficiaries of the Earthquake Housing Reconstruction Project, including their name, location, gender, payment serial number and citizenship card number. As this report goes to print those personal details are still publicly available online.

Despite these challenges, over the past five years there has been progress in the sharing of government data online. For example, CBS and the National Planning Commission have shared data on population, human development, per capita income, adult literacy and life expectancy through their national archives, maps and visualisations.³⁵ Some of this data is subnationally disaggregated to the district level and the [online platform](#) has functionality that allows these to be downloaded in Excel format. Other government initiatives set up to share data include the [National Emergency Operations Center](#) which provides data during emergencies; the Department of Hydrology's [flood forecasting project](#) which shares data from its network of river gauges; the Department of Environment's [air quality monitoring](#) project which shares real-time data from five monitoring stations, and the [Prime Minister's Disaster Relief Fund](#) which for five months after the April 2015 earthquake shared details of financial inflows and expenses in Excel format. Institutional buy-in towards such initiatives is important so that in an environment of high staff turnover they are continued beyond the time of their bureaucrat championing.

Civil society and the private sector are also taking steps to share both their own data and the data from government. The first non-government initiative to do this was Open Nepal in 2013 with the [Open Nepal Data Portal](#). Since then other civil society open data platforms have gradually appeared, such as NepalMap.org and NepalInData.com. Table 3 outlines some examples of data sharing.

Table 3: Examples of data sharing in Nepal

Name	Description
Central Bureau of Statistics/CBS – National Data Archive ³⁶	Through its web-based central data catalogue the CBS shares information about 45 official surveys it has conducted, including survey questions and analytical reports in PDF or Word format. In theory licensed data can be obtained on 17 of these surveys through the website, however, at the time of writing the functionality for this has not worked for several months.
Ministry of Finance – Aid Management Platform ³⁷	The Ministry of Finance shares aid data from Nepal's development partners, including financial data on commitments and disbursements and project data such as sector and dates. This can be visualised on the online dashboard or downloaded in Excel format.
Office of Company Registrar – Company Database ³⁸	The Office of Company Registrar shares basic data on Nepal's registered companies, including company name, age and the district in which it is located. This is shared in both in CSV and XML format.
Public Procurement and Monitoring Office – Public Contracting Portal ³⁹	The Public Procurement and Monitoring Office is conducting a pilot as part of the Open Contracting Partnership to share information on public contracts. This will include contract value, contractors, contracting agencies, contract status and more. The portal is under construction.
Open Nepal – Open Data Portal ⁴⁰	Open Nepal's Open Data Portal shares data from both state and non-state actors in an open format on a wide range of topics. Often this data has been scraped from PDF documents.
Code for Nepal – NepalMap ⁴¹	NepalMap shares government data on topics such as literacy levels, school attendance, home ownership and construction materials, disaggregated by district and village. Data is visualised on a map and shared in a range of open formats.
Young Innovations – Earthquake Transparency Portal ⁴²	The Earthquake Transparency Portal shares data in an International Aid Transparency Initiative (IATI)-compliant format on international and national financial flows targeted for relief and reconstruction activities.
Kathmandu Metropolitan City – Transparency and Citizen Participation Forum ⁴³	The Transparency and Citizen Participation Forum shares data related to Kathmandu Ward 7, including budget, projects and demographic data. This can be downloaded in Excel format. Young Innovations played an important role in this effort, too.
Kathmandu Living Labs – QuakeMap ⁴⁴	In the days and weeks after the earthquake, QuakeMap shared data relevant to the relief and recovery operations following the 2015 earthquakes.

Box 4: Open Data in Nepal

A series of international assessments of open data in Nepal have been conducted over the past few years, including the [Open Data Index](#) and the [Open Data Barometer](#). These have broadly pointed towards relatively limited levels of open data availability in Nepal. In 2014 a research project coordinated by the [Open Data in Developing Countries](#) programme set out to explore the emerging impacts of open data in Nepal.⁴⁵ The general lack of open data was quickly discovered and the project changed tack to better understand the political, legal, socioeconomic and technical challenges to open data in Nepal. Three years on and many of the contextual challenges outlined in the original research remain – if anything they have been exacerbated by the 2015 earthquake, fuel blockade and two further changes of government. But there has been some notable progress made on open data, around emerging government support. For example, the former honourable member of the National Planning Commission, Swarnim Wagle, highlighted the value of open data to Nepal while speaking at an international conference in 2015;⁴⁶ former member of parliament and current Health Minister Gagan Thapa initiated a project with civil society leaders and Young Innovations to open up data of Kathmandu Ward 7;⁴⁷ and Open Data Day 2016 saw Nepal's first government panel debate on open data⁴⁸ with participation from several key agencies along with civil society groups demonstrating the value of open data following the 2015 earthquakes. Of particular note is the lead taken by the National Information Commission with support from the UN Department of Economic and Social Affairs (UNDESA) and local civil society in drafting a national action plan on open government data. Although Nepal's 2015 ranking in the Global Open Data Index indicates slight progress from previous years,⁴⁹ it will be some time before this growth in political will translates into more open data. Key challenges to be overcome include developing open data skills and infrastructure in government, overcoming an internal culture of 'data hoarding', articulating demand for data better and demonstrating responsible use. In this, Nepali open data specialists from outside government can play a key role in supporting and encouraging public agencies.⁵⁰

Use of data in Nepal

To date, there have been only limited efforts to systematically understand levels of data use in Nepal by government, civil society and the private sector. As part of future efforts in the context of the data revolution, filling this knowledge gap would be an important step. However, it is clear that data use in both decision-making and accountability could be significantly enhanced, in particular to more systematically inform development decision-making and policy debates.

The limitations in the production and sharing of data impact negatively on the potential for its use. In many instances, data that meets the needs of decision-makers and accountability actors is not available: data is not disaggregated, there are significant data gaps, it is not timely and different datasets lack interoperability because there are no joined-up standards. For example, there are at least three versions of official place names for Nepal's local-level administrative units, or village development committees, including the CBS codes (used by the HMIS), the High Level Commission on Information Technology codes (used by Office for the Coordination of Humanitarian Affairs), and the Department of Survey codes.⁵¹ The data that is available is not shared in a usable format, so data users must either extract data from PDF files using specialised software (which is often hindered by the widespread use of non-unicode fonts⁵²), or they have to manually retype the data into a computer programme.

However, while the status of data production and sharing limits the potential for use, the reasons for limited data use extend beyond these constraints. Barriers to the effective use of data also include the widespread lack of data analysis skills in the workforce, the lack of awareness of the value that using data can have for decision-making and accountability, and the lack of existing practices of data use to inform future efforts.⁵³

Exacerbating these constraints is the lack of incentives to encourage the workforce to use data for decision-making.⁵⁴ In government there is often no strong mandate from the leadership for their staff to use data, so officials do not feel obliged to work with data or learn the skills to do so. In addition, some government officials consider themselves as data aggregators and quality controllers rather than data users, which is also restricting their use of data. This low expectation for data use also applies outside government.

Despite this there are growing examples of effective use of data, both inside and outside government (See Box 5). For example, it has helped to improve Nepal's crop production and the coverage of immunisation programmes, reduce nutrition inequalities, enable early flood warnings and ensure the availability of medicines in areas of need. This demonstrates just how important data is for supporting effective development at the local level.⁵⁵

Box 5: Documenting Data Use in Nepal

Overall, the evidence base for demand and use of data by different development stakeholders in Nepal remains limited.⁵⁶ In DI's work with Open Nepal, we took a case study approach to understanding data use, and to raising the profile of data users and their needs. This included **examples from non-government actors** such as:

- WaterAid Nepal's [use of budget data](#) to develop guidance and advocacy measures aimed at building support for better allocation of resources to Nepal's water and sanitation sector;
- Open Knowledge Nepal's [efforts to open and use budget data](#) as part of efforts to improve government transparency;
- CAHURAST's [work to empower citizen monitoring and data collection](#) on local development projects;
- Save the Children's [use of joined-up data](#) to improve the targeting of health and nutrition funding in Nepal;

as well as a series of **examples from within government**, such as:

- The [use of foreign aid data](#) by the Ministry of Finance to manage the inflow and allocation of external resources;
- The government's [use of agricultural data](#) to improve food security interventions;
- The Department of Health's [use of disease control](#) and [medical supply](#) data to improve healthcare; and
- The Department of Hydrology and Meteorology's [monitoring of real-time data on rainfall and river water levels](#) to assess the risk of floods and landslides.

Overall, these show that professionals in and outside of government are important users of data to drive decision-making and accountability. Key challenges they face include the lack of availability of disaggregated local data and of up-to-date survey data. Access to official data is limited especially for non-government users, and where it can be accessed, non-open, and non-machine readable formats often hinder use. Inconsistent internet and electricity availability, limited computer facilities and data analysis capacity are other important obstacles to overcome to support increased data use.

Developing a stronger culture of data use across all development stakeholders is therefore an important priority in Nepal's emerging data revolution.

Box 6: Data use following the 2015 earthquakes

The devastating earthquakes of 2015 left nearly 9000 people dead, 20,000 injured and hundreds of thousands homeless across 14 districts of Nepal. The role of government, humanitarian actors and the local data community in producing, sharing and using data became a critical feature of the humanitarian response. In the immediate aftermath, the absence of data sharing was problematic; for example, the data from the 2014 Multi-Cluster Indicator Survey was not publicly available to support humanitarian actors, and some state security agencies were criticised for failing to use the data available to them in their response. It was reported that the army and police arrived at disaster sites without a supporting stock of demographic, topographic or social data that would have been available from government surveys and administrative records.⁵⁷ In the weeks after the earthquake, to assess the damage in the affected villages, humanitarian needs assessments were carried out by multiple international, national and local agencies. The UN estimate that field data collection for 70 assessments took place simultaneously between 4 to 10 May 2015, reportedly without coordination. This has led to claims of assessment-fatigue from the populations being assessed.⁵⁸ The government also assessed needs by gathering data from local government officials on households, infrastructure and victims. Yet reportedly as many as 100,000 more households than listed in the 2011 National Census applied for relief.⁵⁹ Persistent claims about ploys to misappropriate state funds by pseudo-victims halted government payments, delaying support to earthquake victims until a new full census on the affected districts had been completed by the CBS.⁶⁰ Through this new process, mobile data technology was used to collect 6.6 million photos of 750,000 houses and 3.6 million people in 90 days.⁶¹

Complementing these efforts, Nepal's community of data activists demonstrated rapid production and innovative uses of data following the earthquakes. Within 48 hours of the first earthquake Kathmandu Living Labs had created an interactive set of maps and were populating them through social media and crowd-sourced reports of the damage to help humanitarian responders begin their planning and coordination efforts.⁶² Local Interventions Group and Accountability Lab started work on a longitudinal survey to collect community feedback data for the [Inter-agency Common Feedback Project](#), and Young Innovations set up a system called the [Earthquake Response Transparency Portal](#) to track the US\$3.5 billion of aid pledged for relief and reconstruction activities, both of which have been used by humanitarian actors and the National Reconstruction Authority in their relief and rebuilding efforts.

Figure 1: A timeline of the data revolution in Nepal with specific focus on open data



Future directions in Nepal's data revolution

Globally, the term 'data revolution for sustainable development' has been increasingly used to describe the transformational change needed in data production, sharing and use to inform decision-making and accountability in support of the SDGs. In Nepal, while the term has not yet been broadly adopted by national or local actors, interest and attention on the role of data in development planning, monitoring, decision-making, governance and accountability is growing and important advances have been made over the past five years (see timeline in Figure 1).

In the realisation of Nepal's data revolution, there is significant potential to harness new technology, and to engage the energy and capacities of a wider range of data producers and users. At the same time, persistent challenges remain to availability and accessibility of the timely and disaggregated data needed to ensure that no one is left behind. It is therefore critical that the data revolution empowers public authorities to sustainably produce and share high-quality and disaggregated data. Inter alia, this implies a move from survey-based data collection to robust civil registration, vital statistics and broader administrative data systems. Donor investments into government data capacity such as the World Bank loan for the new civil registration and vital statistics system, and technical support for the forthcoming national statistics development strategy will be important foundations to support Nepal's emerging data revolution.

However, to build a sustainable culture of data use to support development efforts in Nepal, wider buy-in and contributions are needed from government, civil society and private sector actors. It is in this context that the emerging, vibrant community of data enthusiasts in Nepal that we describe here can make an important contribution. This community is already demonstrating leadership in some key areas, and has increasingly been conducting data interventions in response to local needs. If supported with the right funding, opportunities for learning and skills development, diverse actors across this community can make an important contribution in an inclusive national statistics system. Such a collaborative ecosystem of official and non-official actors would harness the potential of all data producers, intermediaries and users of data to support sustainable development in Nepal.

Collaborating with Nepali actors and development partners, DI's approach has been to support local leadership in **growing the demand for data, improving its supply, and supporting data use**. Based on this experience, we present the following directions to consider as actors in and outside government work to realise the data revolution in Nepal. We focus on the areas in which Nepal's nascent community of data enthusiasts – spanning civil society, private sector and government champions – is already making important contributions and should be supported to expand their efforts.

Increasing demand and building political will for data production, sharing and use.

In this area, the community has already demonstrated leadership in raising awareness and engaging public sector champions in open data efforts. Key to future advances in this area is demonstrating to producers and potential users the value of data, focusing on the impact that its use can have on specific development issues. These efforts need to be informed by detailed understanding of the current behaviours of decision-making and accountability actors; a clear view of the challenges faced in producing, sharing and using data; and a better understanding of the incentives and disincentives to data use. Dialogue between data producers, intermediaries and users can help ensure perspectives and needs are shared and understood. Developing this dialogue into collaboration between official and non-official actors requires persistent and constructive engagement efforts. Continued efforts to identify and support champions within government can help generate the space for interaction and support the institutionalisation of these relationships.

Improving the production and systematic sharing of high quality data.

Here too, the community has begun to make important contributions, including the development of Nepal's first open data portal. Key to future work in this area is developing a systematic understanding of the data needed by national and local actors to facilitate evidence-based policy-making, programme design, implementation and accountability; identifying what high-quality, disaggregated and timely data is available; and diagnosing the gaps in data production and sharing. The involvement of data users in the design of initiatives to improve data production and sharing can help ensure that their needs are addressed. Technical collaboration between data producers is key to ensuring that data systems and datasets are interoperable, non-duplicative and satisfy official quality standards. Systematic sharing of data, both in and outside government, can be supported through the participatory development of policy and technical solutions. This could include efforts such as a centralised, sustainable government open data portal that incorporates the important lessons learnt locally and in other countries.

Supporting the use of data for development decision-making and accountability and building a culture of data use.

Here, Nepal's community of data enthusiasts has demonstrated initial successes through a series of pilot interventions. Going forward, their role in this area is critical and should build on a strong understanding of the challenges preventing national and local actors using data in their efforts. A suite of practical interventions can then be developed to address these barriers, for example, training programmes to build data skills, open-source tools to support analysis and its application, the provision of technical infrastructure to support data access, and the design of incentives structures to reward data use. In addition, the use of new non-traditional types of data can be trialled, for example big data and citizen-generated data, and the capacity of intermediaries such as journalists built to better facilitate the translation of data into information for the wider population.

Acknowledgements

This report was authored by Louisa Dennison and Pavitra Rana. We would like to thank the many people we have worked with over the past five years and whose leadership and insight we have been privileged to learn from. We would especially like to thank the following people for their feedback during the development of this paper: Nikesh Balami, Bibhusan Bista, Pranav Budhathoki, Kuber Chalise, Sudhamshu Dahal, Sunil Dhungana, Arun Karki, Sazal Sthapit and Quincy Wiele.

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