Data for Development in Nepal

March 2021

Nepal's data landscape

report

Contents

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The D4D Program aims to improve the sharing and use of data as evidence for development. Implemented by The Asia Foundation in partnership with Development Initiatives with funding from UK Aid, the D4D Program supports a range of local organisations to conduct innovative technical initiatives, research studies and engagement activities aimed at growing the demand for, supply of and use of data. Through this the D4D Program works to strengthen a functional, inclusive, and locally led data ecosystem in Nepal.

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Abbreviations

AMIS	Agricultural Management Information System
BIPAD	Building Information Platform Against Disaster
CAPI	Computer-assisted personal interviewing
CBS	Central Bureau of Statistics
CoPoMIS	Cooperative and Poverty-related Management Information System
CRVS	Civil registration and vital statistics
DHIS2	District Health Information Software 2
DHS	Demographic and Health Survey
DRM	Disaster risk management
D4D	Data for Development in Nepal
EmMIS	Employment Management Information System
FCDO	Foreign, Commonwealth and Development Office (UK)
HFS	Health Facility Survey
HLMIS	Health Logistics Management Information System
HMIS	Health Management Information System
IEMIS	Integrated Education Management Information System
IFMIS	Integrated Financial Management Information System
MICS	Multiple Indicator Cluster Survey
MoF	Ministry of Finance
NEC	National Economic Census
NGO	Non-governmental organisation
NHPC	National Housing and Population Census
NIDSC	National Identity Smart Card
NLSS	National Living Standards Survey
NPC	National Planning Commission
NSCA	National Sample Census of Agriculture
NSO	National Statistics Office
PFM	Public financial management
PLMBIS	Provincial Line Ministry Budget Information System

SDG	Sustainable Development Goal
SuTRA	Subnational Treasury Regulatory Application
VR	Vital registration
USAID	United States Agency for International Development

Executive summary

This report is part of a data landscaping exercise conducted under the Data for Development (D4D) in Nepal Programme, Phase II. It includes a diagnostic of the current state of national data infrastructures and recommendations for the further development of Nepal's national statistical system under federalism.

Nepal's 2015 constitution is an ambitious and aspirational undertaking to create representative and accountable institutions across 7 provinces and 753 local governments. Establishing evidence-informed decision-making in these spheres of government is a necessary undertaking, yet it represents a substantial challenge at the same time. Four-fifths (80%) of Nepal's population live in rural areas now governed by 460 rural municipalities. For constitutional change to be successful it is these bodies, just as much as their richer counterparts in the metropolitan cities, that need to be empowered in the governance, management, production and use of data.

Before 2015 Nepal's national statistical system was a highly centralised, top-down administration relying to a large extent on a variety of sample surveys and the decennial population and household census. Post 2015, the federal government requires a new statistical system where responsibilities, particularly around administrative data, are shared across spheres of government.

Key findings

- Many local governments, particularly rural municipalities, lack the resources and capacity to meet the responsibilities thrust on them by the constitution and the Local Government Operations Act
  - Most local governments, particularly rural municipalities, lack both the technical and human capacity to collect and use data.
  - A culture of evidence-informed decision-making driven by established norms of data sharing is missing in all spheres of government.
  - Most data gathering at local level is done for the purpose of upward reporting, and not for local use.
  - Administrative systems suffer from poor data quality as they are not extensively used by local government and the incentive to improve quality is therefore lacking.

- Traditional national data governance frameworks need adaptation to accommodate the new constitution
  - The National Strategy for the Development of Statistics lacks clear plans to build capacity and strengthen administrative data systems.

  - There is no clear data governance framework for balancing the demands of local autonomy and centralised control.
  - The Central Bureau of Statistics lacks the political authority to have full oversight, effectively lead and drive standards across all departments in a new federal statistical system.
  - Continued reliance on small sample surveys will provide CBS with national and provincial statistics but will fail to meet the needs of local government.
  - Statistical and administrative support systems that have historically existed at district level play a critical role in the maintenance of sub-national data infrastructures. Abolishing these will have a negative effect on implementing the constitution

- The key challenge for information systems is to make them usable by local government.

  - Data on services and logistics is fed into the Health Management Information System by over 90% of health facilities (including primary health care) but little use is made of the data at the local level.
  - The Education Management Information System is a notable example of appropriate technology (a spreadsheet-based approach) gaining widespread usage.
  - Paper-based civil registration that is still common in many wards is cumbersome to manage, particularly if there are ambitions to combine the registration of births with the issuance of a national identity number.
  - A number of public financial management systems are deployed, over 5,000 government officers have been trained, but many local governments are only using them for mandatory, upward reporting and not for local management.

Introduction

Assessing Nepal's data landscape

Nepal's 2015 federal constitution has major implications for the way in which data is collected and used across all spheres of government. Can pre-2015 strategies and infrastructures meet this challenge, or is there a need for a fresh approach?

The Data for Development (D4D) in Nepal Programme, Phase II aims to support data driven policymaking through demand-driven activities that align with government needs and plans. As the new federal structure of Nepal delegates important functions, such as policymaking, planning and data production, to provincial and local governments, it is critical to support the development of strong local data and information ecosystems. To inform the development of this programme, it is important to first understand the dynamics, features and stakeholders of Nepal's existing data ecosystems.

The report outlines the findings from a study of Nepal's federal, provincial and local data ecosystems. The data ecosystem includes the governance frameworks, institutions and systems involved in the production, sharing and use of official and non-official data. It also covers the different data and information producers, intermediaries and users, the flows of data and information and relations between them, and the roles they fulfil in the data and information value chain.

The report is designed to inform entry points for strategic efforts by the D4D programme to strengthen Nepal's data ecosystem.

Approach

The Constitution of Nepal (2015) decentralised power by establishing a federalised governance system with 7 provinces and 753 local governments. One of the biggest challenges facing these new governments in implementing the new constitution is meeting the needs of Nepal's rural majority (constituting 80% of the population, or 23 million people)[1] and of its newly empowered local government structures. Considering this, this study looks primarily at rural, local government offices and facilities, to gauge if they possess the data capacities to successfully deliver on their wide array of mandates, demands and needs. The data capacities of urban municipalities, provinces and the federal government is also assessed.

The study focuses on the core data systems forming the foundational building blocks of Nepal's national statistical system. These include civil registration and vital statistics (CRVS), public financial management (PFM), health, education, economy, agriculture and disaster risk management (DRM).[2]

Key questions asked during the research include:

- What did the data ecosystem look like before 2015 and what changes have taken place since then?
- What major data systems exist in Nepal (such as censuses, surveys, administrative data, registers, geographic information system (GIS), vital statistics)?
- To what extent are these data systems operational?
- What data responsibilities and needs do subnational governments, particularly local governments, have?
- What are the current capacities of subnational governments, particularly of local governments, to produce, manage, use and create their own data?
- What are the main challenges that are preventing subnational governments, particularly local governments, from producing and using data?
- What work is being done and what major investments are being made to strengthen the capacities of data systems in Nepal (such as building software, training staff, updating methodology)?

To produce analysis and recommendations, this study adopted a mixed-methods research approach of desk research and key informant interviews.[3]

Previous literature on the data landscape

Nepal's data ecosystem has been the focus of previous reports. The most recent and comprehensive assessment was the December 2019 edition of the *Nepal Development Update* by the World Bank.[4] The report highlights that bolstering data production has been the primary focus of development partner intervention in Nepal, but this has been at the expense of data use, sharing and coordination. Despite this, the "dearth of local-level data" is acknowledged alongside the need for production to increase in particular areas.

Other narratives highlighted by the report include: the need for coordination between the tiers of government and development partners alike; the role of the Central Bureau of Statistics (CBS) at the heart of the statistical system being challenged by factors such as federalism and the data revolution; and the data capacity gaps between different local governments.

This study builds on the report's conclusions by exploring further the data dynamics of local governments and the relationship between CBS and Nepal's post-constitutional national statistical system.

The constitution of Nepal

The enactment of the Constitution of Nepal 2015 paved the way for the country's transition to cooperative federalism from a century-old, centralised government system.[5] The aim was to address the previous system's most severe challenges, namely, the concentration of political and economic power, the lack of opportunity for citizens and minority groups to participate in decision-making, and uneven development across different parts of the country.
This section highlights significant features of the constitution and key developments since 2015 and touches on how they relate to data.

Changes in subnational government

The Constitution of Nepal (2015) established three spheres of government: the federal, provincial and local.[6] The federal government has exclusive powers relating to 35 areas (see Table 1 for a selection of these). In terms of data, it is responsible for central statistics and data for national planning.

Table 1: Federal powers that relate to the national statistical system

Federal sphere	Central statistics, planning, finance, trade, social security, poverty alleviation, telecommunications, infrastructure (large-scale electricity, railways and national highways), central education (universities), health and national environment management

In the previous system, the subnational government was composed of 5 developmental regions, 14 administrative zones and 75 districts. Districts were divided into village development committees and municipalities.[7] The constitution created 7 provinces (by grouping together previous districts), 77 districts and 753 local governments.

The constitution stipulates that the provinces have exclusive powers relating to 21 areas, while local governments have exclusive powers relating to 22 areas (see Table 2). In terms of data, the provincial governments are responsible for provincial statistics, and the local governments are responsible for collecting local statistics and collecting and managing local records.

In addition to this, all spheres of governments preside over their exclusive functions as well as a range of functions shared between tiers (such as concurrent powers between the federation and provinces) (see Table 2 for a selection of concurrent powers).

Table 2: Provincial, local and concurrent powers

Government sphere	Powers and jurisdiction
Provincial	Provincial statistics, land registration fees and vehicle taxes, economy (industrialisation, business and intra-state trade), infrastructure (state electricity and highways), higher education, health services, management of land records, agriculture
Federal and provincial	Poverty alleviation, social security, economy (industrialisation), employment, population management, family affairs (such as transfer of property, persons on the verge of extinction), state-boundary environmental management, DRM
Local	Collection of local statistics (including unemployment), collection and management of local records, local development plans and projects, local taxes (wealth tax, house rent tax, land and building registration fee, advertisement tax, business tax, land tax (land revenue)), education (primary and secondary), basic health, care for older people and persons with disabilities, local infrastructure, agriculture, local DRM
Federal, provincial and local	CRVS, national ID, education, health, agriculture, social security, poverty alleviation, infrastructure (water and electricity), DRM

After having been a significant layer of the state's administration for over a century, the constitution formally reduced the role of districts. However, in section 17, "Local Executive", it created district assemblies, district coordination committees and district courts. District assemblies provide "coordination and essential management among the Rural Municipalities and Municipalities [local governments]", for example, and district coordination committees "execute all tasks to be carried out on behalf of the District Assemblies".[8]

The constitution did not give any explicit responsibilities on data to district institutions, but it did outline that district assemblies should "carry out monitoring so as to maintain balance in development and construction works [as dictated by provincial law]" – and it is likely that monitoring activities will either incorporate data collection directly, and/or produce materials that data can be extracted from.

Key developments to the national statistical system

The Statistics Act and Central Bureau of Statistics

The Statistics Act of 1958 established CBS, which is the leading body within Nepal's national statistical system.[9] It operates under the National Planning Commission (NPC) and is reportedly afforded limited autonomy, although on occasion it is known to exercise some agency. CBS is a large organisation: its central office is made up of 3 divisions and 15 sections and it employs around 500 staff. The bureau also operates 33 branch statistical offices spread across all 7 provinces.[10]

Interviewees report that CBS oversees its traditional remit with competence, and that for the most part manages to produce fairly accurate statistics and to publish them in a timely manner. For example, despite the coronavirus pandemic, CBS has already made good progress preparing for Census 2021, and stakeholders expect the data to be of a good standard and to be published on time (see the section called 'Demography'). Moreover, CBS continually modernises the methods it uses to capture traditional data. For instance, whenever possible it uses technology to collect and process data, such as internet-enabled tablets loaded with software such as CSPro and the computer-assisted personal interviewing system.[11]

As a result of Nepal's transition to federalism, CBS cannot regularly produce data about and for all 753 local governments.[12] Producing statistics that are disaggregated to this level, and incorporating such a wide variety of factors, requires very large sample sizes and complex questionnaires which are too expensive to regularly finance. Hence, different sources of data have to fill the gaps, and the most obvious and strongest option is for the administrative data systems of the local governments to perform these roles.

In light of this, a new Statistics Bill has been tabled in parliament. In its current drafting the bill empowers the National Statistics Council to "formulate short-term, mid-term and long-term plans and policies related to statistics."[13] The role of CBS, renamed the National Statistics Office (NSO), is to "prepare drafts of statistics policy and strategy and present them before the Council".[14]

The National Statistics Council was established in 1988 to help coordinate statistical production across a number of decentralised and non-standardised statistics-producing agencies.[15] Its focus on integration has been broadened to encompass all statistical activities. Meeting sporadically (at least once a year) it is a committee that includes 14 ministry secretaries in its membership of 22. Placing such an unwieldy bureaucracy at the head of the statistical system does not augur well for the agile changes needed to deliver statistics to all tiers of government.

For example, interviewees pointed out that at present while CBS can legally access administrative data systems, it does not have the authority to exert its influence over them, even when it would be appropriate to do so. The bill maintains this status quo: the NSO can access management information systems but does not have oversight of the indicators or the methods used to collect the data needed for comparable reporting (that is, for national statistics).[16]

The Statistics Bill is under parliamentary discussion and is widely expected to be passed during the 2020/21 winter parliamentary session. However, there is less certainty about the timings now, as parliament may not resume in time following the coronavirus pandemic, and if it does it is likely that the priority the Statistics Bill is given will be reduced.

Stakeholders in Nepal are also concerned about clauses in the bill "which go against the ethos of open data".[17] However, this issue is outside of the primary remit of this report.
Moreover, it is important to highlight that the Ministry of Federal Affairs and General Administration, which regularly works with subnational spheres of government on a range of areas, does not have a concrete mandate to work with them on data.[18]

The Local Government Operations Act

The Local Government Operations Act (2017) provides a "strong legal foundation to institutionalise legislative, executive and quasi-judicial practice of local governments".[19] In other words, the act stipulates several arrangements related to rights, authorities, duties and responsibilities of local governments in a number of areas. The act also builds on the constitution and allocates numerous data responsibilities to local governments. The Statistics Bill delegates the NSO to "assist in the development of statistics systems of provinces and local levels."[20] This wording appears to recognise the autonomy of subnational government, while the bill at the same time mandates the NSO to "make available to the Government of Nepal, provincial governments and local levels statistics necessary for formulating programmes as well as determining policies."[21]

The core areas this report focuses on are also primary features of the Local Government Operations Act. The act makes provisions for vital registration (VR), PFM, education, health, employment and agriculture. On VR, for example, local governments should manage the data, whereas for agriculture they should monitor programmes, and for employment they should collect and process data. For a more complete breakdown of the data-related elements of the act see Appendix 15.3.

National Strategy for the Development of Statistics

CBS published a Consolidated National Statistics Plan in 2001.[22] Sixteen years later in 2017 it published Nepal's first National Strategy for the Development of Statistics.[23] The mission as stated in the strategy is to "develop a system for producing, managing and supplying quality statistics for policies related to equitable development and prosperity in accordance with [the] federal governing system", and the plan to achieve it is set out in three broad strategic objectives:

- "To develop a statistical system in line with the federal structure by establishing coordination among federal, provincial and local governments of Nepal involved in statistical activities".
- "To manage regular supply of statistics by producing reliable and quality data for the evidence-based policy formulation, development management and addressing the demand of users".
- "To bring about institutional strengthening through legal and procedural improvements for the management of statistical functions".

Interviewees report that many stakeholders felt that the final document was too general. They pointed out that an earlier draft had tackled in some detail the challenges of developing administrative data systems at the local level and maintaining standards across disparate systems.

Financing subnational government

This subsection outlines the relevant aspects of the different fiscal arrangements and conditions of the different spheres of government, to provide a more holistic understanding of the contexts in which provincial and local governments report, use, manage and create data.

Revenue

All spheres of government are permitted to generate revenues through the use of taxes within their exclusive competencies, which can be set independently of other government spheres.[24] A more detailed breakdown of revenue generation powers for the different spheres of governments as set out by the constitution is as follows:

- Schedule Five allows the federation to decide the rates of, and collect customs, excise-duty, value-added tax, corporate income tax, individual income tax, remuneration tax, passport fees, visa fees, tourism fees and other service fees and penalty charges.
- Schedule Six allows provinces to decide the rates of and collect vehicle tax, entertainment tax, advertisement tax, tourism tax and agro-income tax. It also permits them to share revenue through house and land registration, service fees and penalty charges.
- Schedule Eight allows local governments to decide the rates of and collect property tax, house rent tax and share tax revenues through vehicle tax, advertisement tax, business tax, land tax, entertainment tax and tourism fees. It also permits them to generate revenue through other service fees and penalty charges.

The results of a 2019 study by International Alert show that provincial and local governments "suffer from a shortfall of sustainable and self-sufficient revenues for both recurrent and development expenditure, [and that this is] an issue [which] is not likely to be solved soon".[25]

Central funding

Given their low tax revenues, the majority of subnational governments depend on central funding. Provincial and local governments receive budget from revenue sharing and grants such as fiscal equalisation grants, conditional grants and sharing of natural resource royalties from the federal government, which is becoming increasingly efficient at making the transfers.[26] The provincial and local governments also receive complementary and special grants administered by the NPC. The levels of funding allocated are based on recommendations made by the National Natural Resources and Fiscal Commission that, in turn, should be informed by a range of data such as poverty estimates and demographic statistics.[27]

Budget decision-making

Sub-section 59, the "Exercise of financial powers", of Part 5 of the constitution, "Structure of State and distribution of Power", does permit subnational governments degrees of autonomy over their budgets.[28,29]

- "[State] and Local level shall make laws, make annual budget, decisions, formulate and implement policies and plans on any matters related to financial powers within their respective jurisdictions".
- And "[state] and Local level shall make budget of their respective levels, and the time for submission of budget by the State and Local level shall be as provided for in the Federal law".

In practice, subnational governments draft their budgets and then submit them to the federal government for approval. Provinces should use the Provincial Line Ministry Budget Information System (PLMBIS) whereas local governments should use the Subnational Treasury Regulatory Application (SuTRA).[30] Stakeholders note that the central management of PLMBIS and SuTRA

software seems to limit the local and provincial governments' sovereignty over decisions on financial matters, planning and policy.

Political implications

Autonomy

Part 5 of the constitution, as previously outlined, affords subnational governments powers over numerous areas.[31] The scale of the autonomy is unprecedented in the country's history.[32] Part 20 of the constitution dictates that "the relations between the Federation, States, and Local level shall be based on the principles of cooperation, co-existence and coordination".

Notwithstanding this, there is some general discussion among commentators about the extent of subnational government's sovereignty in certain areas. With some going as far to say that in a few instances the system in Nepal comes close to centralised federalism.[33] One line of argument says that *much of* state and local power can only be exercised based on federal law. Therefore, in some areas the authority in determining public policies at all levels necessarily comes back to the federal government. Or, simply put, there are some things the provinces and local governments can only do based on federal law.[34]

In relation to data though, strong centralised authority has mostly been absent, as five years into federalisation and subnational governments are acting independently. Not least, provinces conduct their own surveys and censuses, a few local governments have attempted to institute their own information systems, and the federal government is struggling to get subnational entities to use some of their central systems.[35]

In a few instances, the federal government has administered conditional grants as a way to exert its influence indirectly, if it is having trouble implementing a particular policy. For example, schools only receive certain funding if they submit data. Therefore, provincial and local governments pursuing their own independent data ecosystems is playing out against a creeping tendency of the federal sphere to explore different ways of exerting its authority, in certain areas related to data.

Fiscal federalism

Fiscal federalism in Nepal has had some successes.[36] For example, the federal government has demonstrated its commitment to the principle by transferring large amounts of its revenue to subnational governments. In 2018/19 fiscal transfers equalled 40% of the federal government's revenue, and in 2019/20 this figure rose to 48%.[37] In addition to this, some studies have found that the government is becoming more efficient in performing its economic stabilisation/fiscal equalisation functions, and that to some extent this is causing the fiscal disparities among the provincial and local governments to fall.

At the same time, fiscal federalism in Nepal is marked by some problems. For example, the methods the National Natural Resources and Fiscal Commission uses to calculate allocations are still new and not yet fully settled, and local governments' reliance on fiscal transfers may

constrain their political autonomy. Furthermore, after receiving grants some local governments face a shortage of funds, whereas others have an excess. It seems likely that to augment this the commission's technical capability and political strength needs to be robust.

National development planning

In Nepal, the constitution is the foundation for national development policy, as policies are formed based on the provisions it makes.[38] The NPC – headed by the Prime Minister – formulates national visions, periodic plans and policies for development under the direction of the National Development Council.[39]

The NPC published the 15th Plan (2019/20–2023/24) in 2019. The primary concerns this addresses are comprehensive socioeconomic transformation, high economic growth, just distribution and redistribution of resources across levels of government, achieving middle-income status by 2030, and the eventual transformation of Nepal into a "socialist-oriented welfare state with a prosperous economy and social justice".[40,41] In simple terms, though, this mainly constitutes the ongoing management of the transition to federalism and the strengthening of the private sector. In relation to data, the 15th plan prioritises bolstering data infrastructures and developing the data aspects of PFM and DRM (see Table 3 for more examples of data-related commitments).[42]

Table 3: Examples of data-related commitments in the 15th Development Plan (2019)

Area	Commitment
Data infrastructure	Develop government data centre
Data infrastructure	Adopt and interconnect electronic systems to modernise the public service
PFM	Develop taxpayer information management system
PFM	Adopt latest update of accounting system
PFM	Develop taxpayer information management system
DRM	Develop institutional systems at federal, provincial and local spheres by formulating plans for all types of disaster management
Geography (potentially DRM, agriculture, environment and more)	Prepare a multipurpose geographical information system
Economy	Install 'one door' software for business registration

Subnational development factors

In this section, key developmental variables such as infrastructure, human resources and governance, which directly influence subnational governments' ability to report, use, manage and create data, are analysed.

Physical infrastructure

Local governments must have connections to electricity and the internet to operate the core administrative data systems, as most of them are web-based. Proxies are used here to gauge electricity and internet connectivity as there are no up-to-date and reliable numbers for the percentages of local governments connected to or using either amenities.[43]

Electricity

In Nepal, 95.8% of the urban population has access to electricity, and 90% of households are connected to the national grid (in Kathmandu, this rises to 100%).[44,45] Meanwhile 93.5% of the rural population has access to electricity, and 67% of households are connected to the national grid.[46] In the Terai region, 90.1% of households are connected to the national grid, while 55.5% are in the hill region and 36.1% are in mountain areas (in the latter two areas it is not uncommon for households to make use of mini-grid systems though: 21.5% in the hill region and 40.1% in the mountain areas).[47]

If a similar pattern holds in the case of local governments, it can be deduced that there is variation across the country, and that urban local governments in the Terai region are likely to be connected to electricity and the national grid, whereas rural governments in the mountains or hills are less likely to be connected to electricity and more likely to depend on generators. There are some anomalies.[48]

Internet

It is difficult to draw accurate conclusions about internet use in Nepal as the different data sources available paint a confused picture. For example, in 2017, 21% of Nepal's population used the internet according to the World Bank. In 2018 the Nepal Telecommunication Authority estimated 65% and in 2019 75%. Yet in 2019 CBS estimated 50%.[49] The discrepancies in the data from the World Bank, Nepal Telecommunication Authority and CBS are most likely caused by methodological variations. Notwithstanding this, it can be said that there is a common trend across the patchwork of available sources which shows that internet use is increasing.[50]

As demand for the internet grows, the country's supporting infrastructure will need strengthening. In terms of secure internet servers per 1 million people, Nepal has an average of 189 (2019), compared with 443 in other lower middle-income countries. For download and upload speeds, the Speedtest Global Index ranks Nepal 127th of 140 countries.[51] And, while the Nepal Telecommunication Authority reports that 4G is now available in all of the country's 77 districts (in Nepal, using mobile data is the most common way to access the internet[52]), the claim is disputed by consumer rights activist groups who argue "consumers are not being able to feel the difference between 3G and 4G except in core areas [and mobile] data charges are now comparatively higher".[53]

If these identified trends hold in the cases of local governments, it is possible to say that on the one hand it is very likely local government's use of internet is rising, yet, on the other hand, that is also likely their use continues to be disrupted by technical and practical constraints (such as slows speeds and higher prices). The Government of Nepal has recognised the need to strengthen core internet infrastructure. As a result, the Nepal Electricity Authority mobilised the Rural Telecommunication Development Fund to increase the coverage of broadband internet "in localities, health institutions and community schools" across Nepal.[54]

Technical and human ICT capacity

Up-to-date statistics on the coverage of ICT equipment and ICT officials for the provinces, local governments, schools and health facilities are not readily available. Therefore, accounts given by interviewees are used to provide the bulk of the evidence. Note that some figures on health facilities will be available soon because CBS is conducting a new Service Provision Assessment Survey (see the section called 'Health' for more details).

Provinces

Interviewees report that the provinces' spending on ICT has risen over the last five years, and that they are now endowed with relatively good ICT equipment and other related infrastructure, "as compared to the early days''. Also, despite having very limited staff in general, provinces tend to have IT officials who operate a mixture of spreadsheets and dedicated software when handling information for core systems.

Local governments and facilities

Interviewees paint a mixed picture of local governments' ICT capacities. On the one hand, some report that "ICT infrastructure is good now and we [local government] have assigned ICT officers", adding "every year there is improvement and addition" (although, on the whole, ICT personnel are not familiar with sectoral subject matter – specialised knowledge about health, education). On the other hand, interviews report that many local governments still use paper-based administrative systems and do not employ ICT officers.

Interviewees report that the vast majority of local governments have seen year-on-year increases in their budgets, yet how much of this is invested in ICT is unknown. See Table 4 for the most

recent data on health facilities as taken from the Health Facility Survey (HFS), completed in 2015.[55]

The most recent data on primary schools with internet is from 2012. This shows that at the time 1% of Nepal's primary schools were connected to the internet and 6% had a regular supply of electricity. Interviewees say the situation has markedly improved, although some primary schools still lack connection.

The data on schools and health facilities shown here does not represent the current situation, but is included to provide reference points on rates of connection and variations between facility types.

Table 4: Health facilities with internet and electricity, and health facilities with internet and electricity by geographic area (2015)

Facility type	Computer with internet	Regular electricity
Zonal and above hospitals	89.8%	100%
District hospitals	76.3%	94.7%
Primary healthcare centres	36.4%	73.2%
Health posts	0.04%	42.1%
Urban health centres	0%	23.7%
Area	–	–
Mountain	3.8%	68.5%
Hill	10.4%	53.25%
Terai	15.2%	36.5%

Governance

At present many of the governments in the provincial and local spheres suffer a number of governance shortfalls. Widespread challenges are reported to include "corruption and conflicts of interests", a general lack of "plans and strategic thinking to use public resources", "narrow and exclusionary" developmental focuses, and low levels of data literacy among sectoral officials (which, in turn, impacts subnational governments' interest in, and ability to report, use, manage and create data).[56]

Observers have noted that the federal government is "increasingly neglecting the policymaking [and law-making] powers of province governments". And posit that "such a mindset has created a chaotic relationship between state and federal ministries".[57]

Demography

Census

In Nepal, the National Housing and Population Census (NHPC) has strong foundations. Having conducted it 11 times, CBS has proved that it has the experience and technical capacity needed to deliver.[58] Moreover, NHPCs consistently receive high levels of funding from the government, indicating they are valued at the most senior levels of federal government.

CBS uses NHPCs as baselines from which to design key surveys. Notably, Census 2011 was used to design the sampling frame of the Demographic and Health Survey (DHS) (2016) and the enumeration areas of the Multiple Indicator Cluster Survey (MICS) (2014).[59]

The 2011 Census

Census 2011 contains demographic data that received mixed feedback from stakeholders. On the one hand, the high levels of disaggregation were praised by some. For the most part the data is disaggregated to district level, and for a few indicators it is disaggregated all the way to municipality level (but only for 52 municipalities).[60] On the other hand, interviewees highlight that many stakeholders have reservations about the accuracy of some of the information, for example, that certain population counts were too high in a few rural areas.

Regardless, Census 2011 is still one of the most widely used sets of data in Nepal. Federal ministries and the provinces frequently refer to it during planning processes and policymaking, and in some cases local governments also reference it.

CBS managed the delivery of Census 2011 and the Ministry of Finance (MoF) provided a significant proportion of the finance for it. It was supported by the UN Population Fund, UN Women, Japan International Cooperation Agency, UN Development Programme, Danish International Development Agency and the US Census Bureau. Preparatory work began in 2008, fieldwork took place in 2009 and the data was published in 2012.[61]

The 2021 Census

Preparations for Census 2021 are ongoing and have been completed successfully so far. For example, the Cabinet has already approved the questionnaire following a successful pilot census completed by CBS.[62] Activities conducted during the pilot included “census awareness seminars, discussions, interactions and capacity building training at the state and district level”.[63] Furthermore, with a view to aiding the coordination of data collection, CBS has also drafted plans to establish district-level census coordination committees and similar offices in four local governments.[64]

Reportedly, the coronavirus pandemic has caused minimal setbacks, and is unlikely to cause any major disruptions (at the time of writing, mid-October 2020). This has been aided by adaptive policies; for example, enumerator training is continuing online. [65]

Certain data will be available disaggregated to the local level.

Civil registration and vital statistics

The federal Department of National ID and Civil Registration is the main entity responsible for the day-to-day management of the national VR system.[66,67] It is housed in the Ministry of Home Affairs and maintains the system's central server, disseminates the data and provides technical support and capacity building to local entities.[68] A VR Steering and Technical Committee guides VR's national management.[69] It is operational and meets regularly, and mainly focuses on legal and technical issues.

VR data is an important source of intercensal information that, compared with most other non-traditional sources in the ecosystem, is highly demanded by actors from all spheres of government. For example, the federal government uses VR data to guide its allocations of grants to local spheres, and many provinces analyse VR data for planning purposes.[70]

However, the utility of the data is undermined as the rates of birth and death registration in Nepal are relatively low. Moreover, there are numerous challenges on the road to complete VR. For example, there is a need to increase most people's knowledge about it and their interest in it,[71] notably the majority of citizens and many local governments.[72]

In response to the shortfalls the Government of Nepal is redesigning how VR functions in the local sphere with support from the Asian Development Bank and the World Bank, following numerous interventions that have mostly been piecemeal compared with the scale of the challenge and have not produced sizeable affects.[73] However, this latest work is in its infancy and the government has not made any serious commitments in light of it yet (October 2020).

A significant change in the financial structure of VR is set to occur in 2021, as the substantial funding that the World Bank provides is set to significantly fall when the Strengthening Systems for Social Protection and Civil Registration Project finishes. As a result the strengthening of the VR system will depend more heavily on government funding. Interviewees report that the government can manage the cost in the medium-term.

Registration of births

The right to birth registration is enshrined in Nepali law by the Act Relating to Children (2018).[74] However, the present rate of birth registration is unknown. Government officials were unable to provide an exact number in 2020 and summarised that "the rate of birth registration reporting is [below target] and not as expected".[75] The most recent figures for the birth registration rate are from between 2014 and 2016 and estimate that it was between 56 and 76%.[76]

When a child is born, a parent(s) or guardian(s) registers their birth at a ward office free of charge.[77,78] The information ward offices collect includes the name, date of birth, sex, caste, weight at birth, place of birth (such as hospital, home), permanent address of the child, if there was an attendant at birth, the number of children born alive and the names, ages, citizenship and educational levels of both parents.[79]

Ward offices usually have a dedicated member of staff to conduct the registration and to plug the data directly into the electronic system.[80] However, compared with the volume of work, they tend to have very limited human resources (especially technical manpower) and lack basic technical equipment such as computers.[81] In some cases, ward offices operate without electricity and internet connection, and manually send their VR data to the local governments for them to enter into the electronic system. Notwithstanding this, interviewees report that the locality of ward offices is one of the strengths of the current system.

Registration of deaths

The most recent data available estimates that the rate of death registration is approximately 75%. Again, the source is multiple surveys dated between 2014 and 2016. And, again, when asked about it a government interviewee responded, “the rate of death registration reporting is [below target] and not as expected”.[82]

Like births, ward offices register deaths and enter the data directly into the system. Or, if needed, manually send it to municipal offices. Note that information on cause(s) of death is collected if possible (it is taken from the death certificate, which is a requirement to complete if the death occurred in a facility).[83]

National identity

In Nepal, the legal foundations for a comprehensive electronic-based national identity system are strong. Article 51 of the constitution pledges that an “integrated national identity management information system” will be created, and that it will be linked to the services that the state provides.[84] The government recommitted to this ambition by reiterating the objective to eventually implement such a system in the “E-Governance Master Plan (2015-2019)”.[85]

Half a decade after the constitution and Nepal does operate a National Identity Smart Card (NIDSC).[86] The Department of National ID and Civil Registration is responsible for developing it and maintains the system’s central server.

Any Nepali citizen aged 16 or older and/or in possession of the older Nepali Citizenship Card is eligible for a NIDSC.[87] The NIDSC contains biometric and demographic information including a unique ID number, photo, personal information,[88] iris data and finger and thumb prints.[89] It can be used by holders for national and personal identity, as a voter ID card, social security card and as a property record.[90]

So far, the early development and distribution of the NIDSC has been relatively speedy. At the time of writing (October 2020), 1 million bearers have received their NIDSC. After mass printing began in November 2018, around 117,000 cards were distributed as part of a pilot distribution

project in early 2019 (funded by the Asian Development Bank).[91] However, with Nepal's population just tipping above 28 million, there remains a long way to go before everyone has one. Furthermore, planned distribution in 2020 has been severely disrupted by the coronavirus pandemic, and its restart has been postponed until 2021.

The government works with the multinational for-profit company, IDEMIA, on NIDSC. Following on the 2019 pilot distribution project during which IDEMIA operated 66 enrolment centres and captured the photo, personal information and fingerprints of the 117,000 enrolees,[92] it will next disperse a further 20 million cards.

Linking vital registration and national identity

The Government of Nepal is of the stance that VR and NIDSC need to be treated as "sub-systems of one big system that provides legal Identity".[93] For this reason, the government has begun to attempt to link VR and national ID together, with the ultimate goal of creating a system where the unique ID a child receives at birth is automatically converted into a national ID at an appropriate age. However, as things stand, VR and NIDSC are only loosely linked in a conceptual sense and there is inadequate stakeholder cooperation and coordination. Therefore, they are so far not connected.[94]

Public financial management

In Nepal, the overall management of information systems relating to PFM is the responsibility of the MoF.[95] The MoF's Financial Comptroller General Office maintains the servers for all the major PFM software in operation in the country, and it is staffed by a competent technical team made up of trained IT personnel.[96]

To date, there is limited vertical and horizontal connection within and between the PFM information systems in operation. According to one interviewee "it's a bunch of different software which are hard to coordinate". To make the systems interoperable the MoF is developing an electronic Integrated Financial Management Information System (IFMIS).[97] However, interviewees report this is not operational yet, and a comprehensive strategy needs to be drafted and implemented to properly guide this work: "a new PFM strategy is needed to wrangle everything together".

This report focuses on the core PFM information systems deployed in federal, provincial and municipal spheres. In reality, the core systems are often operated in conjunction with other supporting systems. The mixture of supporting systems depends on the sector and sphere of government in question.

Federal Line Ministry Budgetary Information System

The MoF's Budget and Programme Division manages the web-based Line Ministry Budgetary Information System (LMBIS).[98] The division has the budget, trained manpower, infrastructure and equipment needed to perform the function. On top of this, other departments in the MoF also support the division.

LMBIS is deployed in the federal sphere to capture the budgets and work plans of ministries, departments and agencies.[99] However, LMBIS is not yet fully used. For example, despite containing useful tools such as automatic budgetary approval, most ministries, departments and agencies still perform the task manually.[100]

The World Bank has funded multiple aspects of LMBIS in the past. For example, under the Integrated Public Financial Management Reform Project (2018–2019), it purchased the enterprise database for LMBIS, its licence and security features, in addition to the software it uses for revenue forecasting.[101]

Provincial Line Ministry Budget and Information System

The PLMBIS tracks all the facets of the province's programming, planning and budgeting.[102] It is managed by a province's Ministry of Economic Affairs and Planning. However, to make

modifications and/or addition the provinces have to make requests to the Financial Comptroller General Office (as the office maintains PLMBIS central software).[103]

Interviewees report that PLMBIS is used satisfactorily. In part this is because the office has provided training for PLMBIS users and will continue to do so.[104] And, not least, because the way the constitution is worded in this particular instance facilitates top-down directives (note point two):

> "Exercise of financial powers:
>
> (1) The Federation, State and Local level shall make laws, make annual budget, decisions, formulate and implement policies and plans on any matters related to financial powers within their respective jurisdictions.
>
> (2) The Federation may so make necessary policies, standards and laws on any of the matters enumerated in the Concurrent List and other areas of financial powers as to be applicable also to the States".[105]

Local Subnational Treasury Regulatory Application

SuTRA is a simple software tool designed especially for use by local governments, to track budget formulation, disbursement, expenditure and accounting.[106,107] It was first developed in 2017 and by February 2020 it was installed in 741 municipalities and was operational in 44% of these.

There are a host of interrelated challenges which explain the remaining gap:

- A lack of legislative, monitoring and technical support from the federal government and provincial governments to guide local governments.
- The many local governments that are continuing to persist with older reporting mechanisms.[108]
- Practical obstacles like a lack of training and unreliable power supplies and internet connectivity.

A significant number of the local governments that use SuTRA input incomplete data into it. Taking the half-yearly review of the 2019/20 budget as an opportunity to address this, ex-Finance Minister Khatiwada explained, “even after repeated correspondence, [there] are local levels that have not entered all financial transactions regularly, [this] aspect of financial discipline is weak”.[109] Interviewees emphasised that the most difficult obstacle here is political: “it's about transparency, they don’t want to expose themselves”.

In reality, the state of reporting into SuTRA means it is difficult to obtain accurate details of local-level financial information. In fact, more comments made by the ex-finance minister indicate that the situation has worsened, “it has become very challenging to make a detailed analysis of the actual expenditure details of the amount transferred at the local level”.[110] Notwithstanding this, the federal government and the provincial governments reportedly use SuTRA data to make decisions about municipalities’ grant allocations and to track disbursement. Theoretically, local governments should use the data to inform planning, although interviewees state that for the most part this does not happen.[111]

Efforts are being made to strengthen reporting to SuTRA. For example, the Financial Comptroller General Office is continually trying to provide the “necessary technical assistance, [training] and capacity building programs'' for local governments (although this has not been sufficient). And the MoF recently implemented a policy which makes a local government’s receipt of certain grants (such as the Ministry of Federal Affairs and General Administration) conditionally based on their diligent reporting to SuTRA.[112]

In opposition to the prevailing narrative, some local governments have tried to deploy their own more advanced budget management software.[113] The local governments in question did this as the central control of SuTRA meant they could not make the additions to it that they wanted. The alternative systems that were developed were more robust and included features like printing out receipts. However, interviewees report that the government stopped the operation of alternatives to SuTRA and reiterated that all local governments must use the platform.

A number of donors are involved in the continued development and roll-out of SuTRA. Most significantly, the United States Agency for International Development (USAID), the UK Foreign, Commonwealth and Development Office (FCDO) and the European Commission. For example, USAID established a SuTRA technical help desk in the Financial Comptroller General Office and has already delivered training to more than 5,000 users in local governments (and a number of district treasury control offices) and will continue to do so.[114] Meanwhile the FCDO says it will continue its work on SuTRA by starting to work with “leaders at the different spheres of government” to explore how the tool can be used to directly tackle corruption. [115]

Health

National surveys

Demographic and Health Survey

The 2016 DHS is the fifth survey of its kind in Nepal. It contains health information about fertility, family planning, child feeding practices, nutrition, adult and childhood mortality and attitudes to HIV and AIDS.[116] Data for different indicators is disaggregated by age, gender, ecological region, development region, province, wealth quintile and/or urban/rural area.

DHS was guided by the Ministry of Health and Population, funded by USAID, and implemented by New Era (a well-established Nepali private research firm).[117] CBS was not involved other than by helping to design the sample.[118]

The implementation of DHS 2020 is ongoing. New Era is managing its delivery again and to improve the efficiency and accuracy of data collection it is using the computer-assisted personal interview data collection system.[119]

Multiple Indicator Cluster Survey

The 2014 MICS is the fifth of its kind in Nepal.[120] It contains data on numerous areas related to health, such as child mortality, nutritional status, early childhood development, reproductive health, HIV and AIDS, tobacco and alcohol use. Data for different indicators is disaggregated by age, gender, wealth index, education level, urban/rural and/or five development regions.[121]

CBS implemented MICS and UNICEF provided technical and financial support. The data was collected using paper-based methods, and a data entry team continuously entered it into the computer system (using CSPro).[122]

CBS is now processing the final data from Nepal's sixth round of MICS 2019. To date, a summary brief has been released containing data for a select number of indicators.[123] At the request of the government the final data will include more indicators than that of its predecessors. Yet, MICS 2019 data will only be disaggregated to the provincial sphere. UNICEF supported in areas such as providing tablets and recruiting enumerators.[124]

Recently, Province 5 approached UNICEF to tentatively enquire about conducting its own MICS. As of the time of writing (October 2020), this work has not been formally proposed.

Health Facility Survey and Service Provision Assessment Survey

The 2015 HFS is the "first comprehensive national-level HFS in Nepal".[125] It contains information on "the availability of basic and essential health care services and the readiness of health facilities to provide quality services to clients". The data for the different indicators is disaggregated by facility type (such as public and private, health posts and hospital), 3 geo-ecological regions and/or 14 districts (those affected by the 2015 earthquake).

The Ministry of Health and Population guided its delivery, New Era implemented the process, and USAID, the FCDO, World Health Organization and UN Population Fund provided funding and/or technical support. CBS was not involved.

Work on the Service Provision Assessment survey 2020 – a HFS without elements from DHS – is ongoing, and fieldwork is scheduled to end in January 2021. New Era is implementing the technical, administrative and logistical aspects of the survey.[126]

Facility-based administrative systems

Health Management Information System

The Integrated Health Information Section in the Department of Health Services manages Nepal's Health Management Information System (HMIS). It operates the system through the District Health Information Software 2 (DHIS2) and maintains its central server.[127] The system does permit some independent downstream control for the provincial and local governments and health facilities to make use of, and interviewees report that it is well managed.

The HMIS collects data on aspects of all of the services that local government health facilities provide,[128] and the rate of regular reporting into the HMIS by facilities is estimated to be as high as 85%. Furthermore, the majority of these facilities submit their data directly into DHIS2 at the point of service.[129] The remaining gaps can mostly be explained by governance challenges, a lack of human resources and shortages of technical infrastructure and equipment.

The Department of Health Services does work to strengthen the system. It provides HMIS training for some public health workers and conducts "data quality assessments, data audits, and data reviews" of facilities annually to ensure that the data reported is of satisfactory quality.[130] It is supported with the former by donors. For example, the World Bank provided DHIS2 training to all relevant provincial offices between July 2018 and July 2019 under its Health Sector Management Reform Program-for-Results Project.[131] And UNICEF provided DHIS2 training for health workers from 26 facilities in May 2019 under its general Country Programme Action Plan (2018–2022).[132]

Interviewees highlight that in general the capacity-building efforts administered by the government and donors alike have tended to focus on the reporting of provincial and local entities, and that data governance and facilities are often neglected.

Private health facilities lag behind government facilities in nearly every aspect of HMIS usage. Interviewees explain that compared with government facilities, the average reporting rate for

private facilities is significantly lower.[133] However, such claims cannot be formally validated, as an analysis of private facilities' reporting has not been completed.[134] When private facilities do report to HMIS most still use printed forms (9.3). Government and donor-led capacity-building efforts have mostly excluded actors in the private sector.

Health Logistics Management Information System

The Logistics Management Section in the Department of Health Services manages Nepal's web-based Health Logistics Management Information System (HLMIS).[135] The HLMIS monitors the supply, consumption and stock levels of selected essential drugs and commodities for government health facilitates.

It is not possible to comment on the exact reporting rate of the web-based system, as the most recent statistics are from HFS 2015, and the web-based system was established in 2017 (it was developed from a paper-based system, which was set up in 2006). Yet, it can be said that the overall rate of reporting by government facilities into the HLMIS is high historically. Data from HFS 2015 shows that five years ago 94% of government facilities regularly compiled a paper-based HLMIS report.[136]

USAID is a key and long-time supporter of the development of Nepal's HLMIS. Back in 2006 USAID provided the department with the initial financial and technical support needed to get HLMIS off the ground, and in 2017, as part of the US$2.19 million Health for Life Logistics Project (itself a part of the larger Health for Life programme), it helped to build the management capacity of the Logistics Management Section, supported the section's decentralisation and assisted with the installation of the web-based HLMIS in government facilities in selected areas.[137]

Use of health data by local government

Interviewees report that while many local governments and facilities have the capacity to report data into the HMIS (DHIS2) and the HLMIS, they do not possess similar capacities to use the data that the systems produce. Reportedly, the issues that reoccur countrywide include governance challenges (such as difficulties with policymaking and plan design), a short supply of data analysis skills and a general lack of staff training.

An online dashboard that displays data for major indicators disaggregated in accordance with the needs of users has been operational since 2017.

Local governments cannot use the health data from DHS, MICS or HFS, as none of it is disaggregated to the local level.

Education

National surveys

MICS 2014 contains data on a number of education-related issues, such as literacy rates, indexes for school readiness, primary and secondary school participation rates and non-formal education participation rates.[138] Data for different indicators is disaggregated by age, gender, wealth index, education level, urban/rural area and/or five development regions.[139] When published the full MICS 2019 data will contain indicators similar to those in MICS 2014, but only a select amount of the data has been published to date (October 2020).[140]

DHS 2016 contains education information about attainment and attendance (such as years of schooling, primary school, secondary school) from samples of people aged 6 and older.[141] Data is disaggregated by gender, *province*, wealth quintile and/or urban/rural area depending on the indicator. New data will be made available when DHS 2020 is published.[142]

CBS is currently undertaking Nepal's fourth National Living Standards Survey (NLSS-IV) which is set to collect key data on education: "with the last NLSS now about a decade old, it is timely that a new survey is being conducted".[143] NLSS-IV was supposed to be completed in 2019-2020, however on 20 March 2020 CBS and the World Bank jointly "decided to pause the ongoing field operations of the NLSS-IV due to the COVID-19 situation [until further notice]". No further announcements have been made as of yet (October 2020).[144]

School-based administrative systems

The Centre for Education and Human Resource Development in the Ministry of Education, Science and Technology manages Nepal's spreadsheet-based web-accessible Integrated Education Management Information System (IEMIS) on a national basis. The centre centrally manages the server and software, and interviewees report that it is resourced with "quality technical equipment and well-trained staff". A Thematic Technical Working Group co-led by the ministry and UNICEF guides the overarching development of the IEMIS.[145]

The IEMIS collects a range of data from primary and secondary schools. This includes data on teachers, non-teaching staff and physical infrastructure, as well as individual students' attendance, the scholarships and/or grants that they receive and exam results in grades five and eight. The IEMIS uses a system of unique student ID numbers to track students from year to year.

All the data is directly input into the IEMIS at the facility level, and, standing at 92%, the rate of regular reporting by government schools is excellent.[146] If a school lacks electricity, internet

and/or hardware, they upload their data using facilities at nearby schools, resource centres or local government education offices.

The high rate of reporting owes its success to a number of variables. Primarily, it is because of the robust simplicity of its design and financial incentives (some of the central grants that schools receive from local governments are based on them uploading IEMIS data).[147] Additionally, the IEMIS allows local governments to closely monitor schools' reporting in real time, and if it is close to a submission deadline the IEMIS automatically provides local governments with a list of schools in their jurisdiction that are yet to upload their data (local governments then encourage schools to submit the data on time).[148]

The deployment and uptake of the IEMIS was rapid; the Ministry of Education, Science and Technology initially laid out the plan to make the transition from the previous Education Management Information System to the new IEMIS in its School Sector Development Plan 2016-2023, and, as previously stated, nine of ten government schools in Nepal now report into the system. There are still multiple areas which require attention.

Firstly, the use of IEMIS data is mainly concentrated in the federal government and provinces. Yet, simply by using a unique login code, all schools, local governments and education development coordination units (district) can access relevant IEMIS data.[149]

Secondly, the IEMIS is centrally controlled and the federal government decides what data it collects. This combined with some critical data gaps, for example the National Examination Board's exams at grades 10 and 12, has led to a few well-resourced mostly urban local governments beginning to develop their own systems.[150] Interviewees report that it is very likely the Government of Nepal will oppose this and will strongly encourage local governments to use the IEMIS.

Thirdly, the IEMIS is heavily supported by donor investments. For example, the European Commission provides finance for it through its budgetary support for the government's School Sector Development Plan (2016–2023), and in the past USAID has made significant investments into the system through its National Early Grade Reading Program and Reading for All Program.[151,152] The government will need to ensure stable financing is available for the IEMIS.

Economy

National accounts

The National Accounts are the main source of data which report the overall macroeconomic situations of the nation and its provinces. Its core features are GDP, the Production Index and the Producer Price Index. The data is easily accessible through the CBS website via the dashboard or in report or fact sheet format.

The National Accounts are a well-instituted part of CBS, and the bureau is more than capable of presiding over it and producing reliable data, as reported by interviewees. Statistics are calculated in-house using data that is primarily collected through quarterly surveys of selected manufacturing establishments.[153]

National economic censuses and surveys

National Economic Census

The National Economic Census (NEC) 2018 was the first of its kind to be completed in Nepal. It listed business establishments and captured numerous other key information.[154]

The NEC received positive feedback from members of the business community and many other readers. Stakeholders identified the high levels of disaggregation in the data as its strongest asset: disaggregation is by location (national, provincial, district),[155] sector, business type and sex and/or occupation, depending on the specific data.

In spite of the general positivity though, NEC data is of limited use to local governments.

The Government of Nepal fully funded the NEC and CBS led on its delivery, indicating that it was considered a national priority. The NPC, various other ministries and committees, and the Japan International Cooperation Agency provided further facilitation and support.[156] The data was collected between April and June 2018 primarily using paper-based methods, and digital technology was used in a few select areas such as Kathmandu Metropolitan City.

Industrial surveys

A lot of data is collected in Nepal through surveying business sectors: for example, the National Floriculture Survey,[157] National Fishery Survey,[158] National Poultry Survey,[159] Commercial Coffee Survey,[160] Commercial Tea Survey,[161] Economic Survey[162] and the Agriculture Sample Survey. Many of these, such as the first four listed, have recently been collected for the first time

and therefore represent new sources of data in Nepal.[163] Yet, due to the levels of disaggregation (usually down to the district) they are of limited use to local governments.

CBS announced that it was going to conduct an "industrial census/survey" (or, the "Industrial Survey 2076") in 2019/20[164] to give a national snapshot of "all large and small industrial establishments". However, as of October 2020 the data has not been published, and very little information is available about the survey other than that it is reportedly being implemented.

Household surveys

Different types of economic data are collected in most household surveys conducted in Nepal, for example, those discussed in the section called 'Health' (such as DHS[165]).[166]

Key household surveys that contain economic data which have not been mentioned so far in this report are the National Labour Force Survey and the Annual Household Survey.

The most recent National Labour Force Survey was collected in 2017/18 and contains data on formal and informal employment, disaggregated by sector, province, gender, locality (urban/rural) and age.[167] CBS led on delivering it and the International Labour Organization provided substantial support. Notably, it was the first large-scale national household survey conducted by CBS that was entirely paperless.[168]

CBS is currently producing key data relating to poverty in the NLSS[169] (for more information on the NLSS see the subsection 'National surveys').

Registers and management information systems

Land Records Management Information System

The web-based Land Records Information Management System is maintained by the Department of Land Management and Records in the Ministry of Land Management, Cooperatives and Poverty Alleviation. The system is one of the most technologically advanced core systems in operation in Nepal. For example, the primary server for the system is housed at the Government Integrated Data Centre and the data is backed-up daily. Moreover, the system's remote databases are connected to the centre's server through a secure and fast intranet link.[170]

The system records the ownership of houses, land and buildings, in addition to changes in ownership, an assets value, revenue and transaction numbers, witnesses' signatures, digital photos of owners and other supporting documents.[171]

As of October 2020 the Land Records Information Management System is already used by 108 of the federal government's land registration offices, which enter the data into the system at the point of service on an ad hoc basis. The government plans to install the software in the 18 remaining offices by the end of 2020/21.[172] Interviewees highlight the development of ICT infrastructure, the recruitment of skilled manpower, effective coordination, good guidance and the provision of quality training as factors that have all contributed to the success.[173]

Interviewees outline that the remaining challenges with the system are that it is not fully deployed yet, and that some of the land registration offices where it is are understaffed and have intermittent internet connectivity and inappropriate infrastructure (such as some land registration offices buildings that cannot easily house ICT equipment). Furthermore, interviewees flag the federal government's lack of awareness about the data from the system is contributing to it not being used yet.[174]

Local governments do not have a role in the system, and they must send a formal request letter to the Department of Land Management and Records if they want to access any data that is not already publicly available.

As of yet, the federal government has not produced an electronic tool for local governments to assist them as they collect local land records.

Employment Management Information System

At present the government is leading a substantial drive to develop and deploy a comprehensive web-based Employment Management Information System (EmMIS).[175] The EmMIS is centrally managed by a project management unit in the Ministry of Labour, Employment and Social Security, and is installed in all 753 employment service centres. The data can be directly input into the EmMIS by a centre onsite if it has the means to, but if a centre wants to make an adjustment it has to make a request to the project management unit. To date, the rates of reporting, the general completeness of the data being reported, and the extent of downstream demand for adjustments are unknown.

The EmMIS records employment opportunities and tracks the registration of people who are unemployed or job seekers (including a person's profile, such as knowledge, skills and experience), and their referrals, placements and outcomes (including temporary employment activities).[176] The EmMIS has a number of other features, for example, it calculates estimates on the demand and supply aspects of the labour market, and monitors stakeholder grievances.

Government entities can access data through a web-portal (a public webpage displaying information is being developed), but as the system is so new and the majority of investments have been concentrated on system development and deployment, there has not yet been the time or support needed for the demand for the data to grow.

The bulk of the work is being carried out under sub-component 1b of the World Bank's Youth Employment Transformation Initiative Project (2019–2024). Examples of activities in sub-component 1b include the "identification and support of design enhancements (including interoperability with relevant systems), hardware and software procurement and [the] strengthening [of] the unemployment and jobseeker registration".[177]

Cooperative and Poverty-related Management Information System

As of 2019 there were 34 thousand cooperatives in Nepal, involving over 6.3 million small farmers, artisans, labourers and consumers. The government views the cooperative movement

as a mechanism which promises to promote non-exploitative economic relations and growth in the country.

The Cooperative and Poverty-related Management Information System (CoPoMIS) was established in 2015 by the Ministry of Land Management, Cooperatives and Poverty Alleviation as a part of efforts to modernise the cooperative sector. In the same year, the management of the CoPoMIS was handed over to the Department of Cooperatives, where it is still centrally controlled.

The reporting rates of cooperatives into the CoPoMIS are unknown, though theoretically cooperatives in all spheres (including districts) are supposed to enter data directly into the CoPoMIS. The system collects their registration information, operation and financial details, demands for training, complaints, applications for mergers and audit reports.[178]

Interviewees report that there is a need to build the capacity of actors in all spheres of government to use the data from the CoPoMIS which is enabled by the relevant ministries, departments and agencies (such as the Ministry of Land Management, Cooperatives and Poverty Alleviation and the National Cooperative Development Board) having either full or partial access to the data (the public can access limited CoPoMIS data through the internet).

The government continues to support and make investments into the ongoing development of the CoPoMIS. For example, the Department of Cooperatives' Cooperatives Information Unit supports the subnational regulatory bodies of cooperatives on the CoPoMIS, and in mid-2020 the MoF allocated funds to "update, maintain, upgrade and technically service the CoPoMIS".

Agriculture

National censuses and surveys

National Sample Census of Agriculture

The National Sample Census of Agriculture (NSCA) is a well-established activity, largely funded by the government and managed by CBS.[179] The NSCA is conducted at decennial intervals immediately after the NHPC.[180]

The Seventh NSCA (NSCA 7) is scheduled to take place in 2021.[181] The "main objective is to produce detailed information about the structure of the agricultural system of Nepal" such as agricultural land and establishments. But it will also capture information on major crop production (including crop rotation and types), forms of land tenure (such as rented for production, rented for mortgage), and sources of irrigation, among other things. Significantly, it will contain data disaggregated to the local level.

The MoF has already allocated resources to CBS for it to prepare for NSCA 7, and, as of October 2020, work on it has progressed significantly. For example, steering, technical and other thematic committees have already been formed, household and community questionnaires are being worked on, computer-assisted personal interviewing training is ongoing (with technical assistance from the Food and Agriculture Organization) and designing the sample and the preparation of the pilot census are scheduled to be conducted in early 2021.[182]

CBS has stated that it is unlikely that NSCA 7 will be delayed because of coronavirus, but, if it is, the likely cause will be financial constraints arising from the economic costs of the pandemic and/or a delay in completing the NHPC.

National Economic Census

Records of agricultural establishments were captured in Nepal's first NEC in 2018, after the government designated agriculture as "the major economic sector in the national economy" earlier in the same year.[183] However, the NEC is of limited use for local governments, as the data it includes on agricultural establishments is disaggregated to the district level.

Interviewees say that the data on agricultural establishments is set to be captured in every NEC, to complement and support data from the NSCA in addition to fulfilling other functions.

Agricultural Administrative Data Systems

Agricultural Management Information Systems

The Department of Agriculture's Project Management Unit is still operating what remains of an Agricultural Management Information System (AMIS).[184] It is scheduled to be fully shut down in December 2020 five years after being implemented as part of the World Bank-funded Building Resilience to Climate-Related Hazards project.[185] As summarised by an interviewee: "AMIS, which is supposed to be the only agriculture MIS [management information system] in Nepal, will completely stop imminently".

The AMIS was designed to capture and disseminate data on crops, livestock, pests and diseases as well as agricultural-meteorological and agriculture-relevant hydrological-meteorological factors.

Interviewees report that for a time, stakeholders thought that the government may implement a stripped-back AMIS to collect limited data on crops, livestock, pests and diseases. However, the structure of the AMIS is irreconcilable with the new requirements of federal, provincial and local governments, therefore even the reduced version will not go ahead.

Interviewees confirm that the government does want to re-establish an AMIS in the Ministry of Agriculture and Livestock Development that is configured with the constitution but highlight that this is a long way off. Challenges include the absence of improved coordination between federal, provincial and local governments that the system would depend on, generally low institutional capacities of offices in the local sphere (including shortfalls in infrastructure and trained staff) and, not least, low levels of digital literacy among farmers.

Seed Management Information System

The Ministry of Agriculture and Livestock Development is developing a Seed Management Information System, which is centrally managed by the ministry's Seed Quality Control Centre. [186] [187] At present, the system is very basic (the software enables limited information on selected seeds and private suppliers to be collected and displayed publicly); it also contains limited data (as of October 2020, it only contained information on five companies); and very few farmers know about it, can access it or possess the know-how needed to use it. With a view to overcoming the latter two challenges, the ministry has decided that it will begin to prioritise the orientation of stakeholders with the system.

The Seed Management Information System is designed to produce information disaggregated by national, provincial and district spheres, thus even when it is fully operationalised local governments will not be able to view information from it for their areas.

Remote sensing of agricultural land

In recent months, the International Centre for Integrated Mountain Development – a Kathmandu-based regional intergovernmental knowledge and learning centre, of which the

Government of Nepal is a founding member and a core supporter[188] – has been working with the Ministry of Agriculture and Livestock Development on remote sensing of agriculture land to estimate crop production.[189] Interviewees report that some data on selected crops will be released by the end of December 2020.

Disaster risk management

Nepal is at risk from a number of geological, hydro-meteorological and human-induced hazards, namely, floods, droughts, earthquakes and landslides. Priority area I of the Sendai Framework for Disaster Risk Reduction 2015-2030 emphasises the importance of the management of information and data for the success of DRM in Nepal.

Building Information Platform Against Disaster

In keeping with the sentiments of the framework, the Ministry of Home Affairs established a comprehensive and integrated web-based Building Information Platform Against Disaster (BIPAD), which on a national basis is managed by the National Disaster Risk Reduction and Management Authority.[190]

BIPAD is a repository of disaster information on all DRM cycles for local, provincial and federal governments, and is composed of six modules: dashboard, incident, real-time damage and loss, profile and risk information. In addition to this, BIPAD software is designed to deploy independent platforms for 753 local governments, 7 provincial governments and the federal government. This allows each independent government entity to embed certain data on risks, hazards and vulnerability that are only relevant to it, and to store its own documents in the system. All BIPAD data is accessible for all spheres of government via the system's frontend.

After being deployed in February 2019, BIPAD is still developing. Variables that stakeholders flag as in need of attention are data gaps, the use of English language in the backend of the software and its technical complexity.[191] Moreover, whereas BIPAD data is being used by the federal government, the provincial and local governments are yet to use it. The programme has trained IT officers in the local sphere who have little understanding of DRM and so uptake has been slow. The capacity to use BIPAD thus varies between municipalities, with some, especially those in rural areas, having comparatively lower thresholds.[192] Provincial governments have slightly better capacities than their local counterparts, but the geographic areas they are tasked with managing are larger.

DRR Portal

The Government established the DRR Portal after the earthquakes of 2015; at present this is managed by the National Emergency Operation Centre. As it is, the DRR Portal allows users from federal, provincial and district governments to collect, analyse and disseminate information including incident reports (loss and damage), news, relief programmes and social media engagements.

Challenges that face the DRR Portal are discrepancies in data formats between various spheres of government (for example, the mechanism to update the incident reports is inconsistent) and the

software's general lack of usability (for example, the lack of real-time data, the use of English language, weak forecasting and early warnings capabilities, and a cluttered interface which is difficult to navigate easily). Additionally, the DRR Portal is not well instituted in many district emergency operation centres, which face issues with financing and shortages of skilled human resources.

Linking BIPAD and DRR Portal

The DRR Portal does feed limited amounts of information into BIPAD, however efforts to link the two systems more closely have not been made so far.

Non-official data

At present, the non-government data actors in Nepal that are not major donors mainly consist of actors from Nepali civil society, such as domestic non-governmental organisations (NGOs) and social enterprises. In addition to this, small-and-medium-sized international NGOs are also operational. There are signs from government and businesses alike that in the future the private sector could also become more prominent in the production and management of data (such as through knowledge-based industry).[193]

National Knowledge Park

In the information and communications section of the budget speech for 2019/20, ex-Finance Minister Khatiwada announced that a National Knowledge Park will be established to promote IT-based industries, to develop a knowledge-based economy, and to generate employment opportunities.[194] The promise was reiterated in the budget of 2020/21.[195] However, neither of the commitments were accompanied by a proposed timeline, and a few Nepali news reports have cast doubt on the likelihood that the park will be built, while others report that the start of construction has been brought forward.[196] As things stand, construction on the park is yet to begin, and details of the project beyond those given in the MoF's budgets are sparse.

Think tanks

The potential ability of non-government think tanks to "promote evidence-based discussions and provide important feedback for policymakers to make effective decisions" in Nepal's new federal system has been picked up by some news media.[197] There are a few private institutions in Nepal which do engage critically, however the sector is not in a position to make significant contributions to the data ecosystem yet. This is because active think tanks are almost exclusively concentrated in Kathmandu, tend to have modest resources at their disposal (such as small operating budgets and few staff), and usually operate independently from one another and so miss out on the possible gains that collaboration brings.

To realise the potential benefits of think tanks the government would need to support them both financially and organisationally (such as by promoting collaborations and resource sharing). But as embedded political loyalties have been a trapping of many think tanks in Nepal since they first started to emerge in the 1950s, it is essential that if the government were to support the sector that it remains strictly non-partisan in doing so. Furthermore, the think tanks themselves should be similarly non-partisan.

The government formed the Policy Research Academy (a government think tank) in September 2018. It is a permanent body within the Prime Minister's Office. One of its mandates is to develop relationships with and bolster the capacities of universities and private research institutions.

However, whether the academy will form partnerships and promote research in a non-partisan way is unknown.[198]

Open data and citizen-generated data

In Nepal, the concepts of open data and citizen-generated data have become somewhat popular among selective groups of stakeholders (especially in pockets of international NGOs, NGOs, social enterprises and businesses that are usually concentrated in urban areas).

For example, a number of NGOs practise the idea of open data, many of whom interact as members of the Open Nepal network. For example, Bikas Udhyami, a Nepali social innovation hub, operates the Nepal in Data open data and statistics portal and Open Knowledge Nepal, a local chapter of Open Knowledge, operates Open Data Nepal. Both platforms present data extracted from government archives.[199]

Additionally, there are a number of NGOs which operate citizen-generated data platforms, or that have used citizen-generated data to inform studies to great effect. For example, COCAP ("a national network of 43 peace and human rights non-governmental organizations from 29 different districts of Nepal") operates the web-based NepalMonitor platform, which allows citizens to share human rights and security-related incidents. And, during the 2018 monsoon, SmartPhones4Water Nepal in partnership with 154 citizen scientists generated 6,656 precipitation measurements with low-cost gauges constructed from repurposed soda bottles, concrete and rulers.[200]

There is potential for these spaces of non-official data to greatly add to Nepal's data landscape; Nepal in Data, Open Data Nepal and Nepal Monitor Platform are navigable platforms which contain useful information that is kept up to date, and an "ex-post quality assessment review determined that [the SmartPhones4Water Nepal project] had helped fill the precipitation data gaps in the country and signified the potential of citizen generated data in other data-scarce regions".

Earthquakes in 2015

In the immediate aftermath of the earthquakes in 2015 there was a flurry of data-related activities undertaken by small and medium-sized domestic and international NGOs. For example, in collaboration with the Humanitarian OpenStreetMap Team, Kathmandu Living Labs produced a tool that used aerial imagery to create real-time georeferenced data about features like streets, roads and buildings and displayed the information in a 3D digital map (local residents could input more detailed information).[201] And to help understand the movement of people, Flowminder (a Swedish NGO) and WorldPop (a UK-based research organisation) analysed call detail records (data from mobile phone users). The long-term operation of these tools is always doubtful though, due to the causal relationship between funding streams and the occurrence of disasters.

Key findings

Federal government

Five years into federalism and the data landscape in the federal government in Nepal is developing. Highlights are that the key ministries employ trained officials who are data literate, have good quality infrastructure and equipment, have sufficient budgets, have developed electronic information systems for the vast majority of core areas, and are successfully overseeing the rapid digitisation of land records.[202]

However, there remain some significant challenges.

CBS is well adept at its traditional role as the producer of national censuses and surveys. However, CBS has not taken the more hands-on approach to subnational administrative data that federalism requires it to, and without the NSO being created it is unlikely it will be able to execute the mandate.[203]

Continued reliance on small sample surveys will provide CBS with national and provincial statistics but will fail to meet the needs of local government.

Yet, as CBS (or, perhaps eventually the NSO) is Nepal's authority when it comes to statistics and data, it needs to help to standardise the data that local governments upwardly report and ensure its quality, in addition to assisting autonomous provincial and local governments with the management of their data needs. This involves helping to design methodologies and building local governments' capacities when it comes to the governmental and technical aspects of data.

CBS lacks the political authority and human capacity to fully lead a new federal statistical system.

In the next few years, the World Bank is set to pull its funding from key areas. For example, it is ending its major investments into VR and the AMIS in 2021. This will create major funding gaps. Interviewees report that while the government will take over VR, it has not been able to commit to funding AMIS after 2021. As a result, there will only be very small amounts of agricultural administrative data collected in Nepal into the foreseeable future.

Alongside agriculture, the condition of VR on the national scale is also concerning. The federal government is acting by working with donors to redesign a system especially for Nepal's federal structure and to build the capacities of subnational offices. Interviewees report that low rates of VR are also linked to indifferent attitudes towards it held by officials and citizens alike, therefore future programmes will also have to address these factors.

Despite there being electronic systems, they are not all fully operational at this level yet. For example, the Line Ministry Budget and Information System is deployed throughout the federal sphere and includes a function to automatically approve budgets, but ministries still perform this manually. Closing these gaps will ensure the system operates as efficiently as possible.

Administrative systems suffer from poor data quality as they do not reach local government in any substantial deployment.

Unfortunately, despite recent consultations and revisions, Nepal lacks a properly robust national statistics strategy to pull all of this, and more, together.[204]

The National Strategy for the Development of Statistics lacks clear plans to build capacity and strengthen administrative data systems.

Provincial government

It seems that the provinces do operate the core federal systems. Moreover, some are particularly well instituted, for example the Provincial Line Ministry Budget and Information System and the IEMIS. Some provinces are also going beyond this and pursuing more of their own data. For instance, Province 5 recently approached UNICEF with a request to complete its own MICS. Such activity is highly promising.

However, provinces suffer from budget shortfalls and consequently data capacities are usually low.[205] Furthermore, long-term vision can be absent as staff turnover in senior positions is relatively high.

Arguably though, the need for the provinces to act is less pressing than that of local governments. Unlike local governments, the provinces can make use of large amounts of CBS survey data. Additionally, if local governments beneath them improve reporting, then the provinces can make use of the data being created in that sphere as well.

Traditional sample surveys will meet many of the needs of provincial planning.

District coordination

Under the constitution district coordination committees hold a solitary obligation relating to data, “to carry out monitoring so as to maintain balance in development and construction works [as dictated by provincial law]”. Evidence suggests that they are performing this function. For example, district-level economic census coordination committees assisted with data collection for the 2018 economic census, and will assist with data collection for Census 2021. In addition to this, district emergency operation centres input data into the DRR Portal.

As districts perform broader functions, they also need to access data to inform their decision-making. For example, district treasury control offices use LMBIS to distribute central funding to local governments. As things stand, district-level offices do have access to some relevant systems

when appropriate and it is not uncommon for CBS surveys and censuses to be disaggregated to this level.

The constitution allows for the continued existence of district-level data infrastructures provided that provincial law defines their responsibilities.

Local government

The core data systems that all local governments should manage, report data into and/or use data from consist of:

- Birth and death registration and national ID card registration
- Subnational Treasury Regulatory App (SuTRA)
- Health Management Information System and Health Logistics Management Information System
- Integrated Education Management Information Systems (IEMIS)
- Building Information Platform Against Disaster (BIPAD)

To meet the aspirations of the federal system, local governments in Nepal must become their own data actors. This does not just mean reporting upwards and using that data though. It also means producing their own data particular to their area. Put simply, being a data actor means a local government taking some ownership over aspects of the data systems that it operates.[206]

The need for this is made even more urgent as very few sources of CBS data contain information disaggregated to this level.

After five years of federalism, a few local governments have started to become data actors. This type of action is confined to a small number of local governments and is not widespread. Instead, the majority of local governments just fulfil their duty to report data upwards, and as none of the core systems have a 100% reporting rate, this is not always complete.[207]

Most data gathering at local level is done for the purpose of upward reporting, and not for local use.

General obstacles which prevent local governments from managing their data more independently and from reporting are a low level of interest in data, a negative perception of the systems (driven by the belief that they are top-down enterprises[208]) and a shortfall in or the absence of autonomous self-governance (such as a propensity to act independently and proactively, including the capacity to design and implement policies and plans). In addition, they suffer from staff shortages, limited or no in-house data skills, a lack of infrastructure, small budgets and limited guidance.

Given the size of the challenge it is unsurprising that many of the relatively new local governments are overwhelmed when it comes to data. For this reason, it is encouraging that the majority of them report year-on-year increases in their budget and technical capacities. However, it is important that local governments invest in data. Effective investment will require help from the federal sphere to support subnational capacity building (to collect their own data, for

example), alongside its continued effort to develop systems (such as standards, software and hardware).

Some local governments are already finding their feet as data actors. For example, a few local governments have conducted their own surveys, have developed and deployed their own versions of SuTRA, and are starting to develop their own versions of IEMIS as well.[209]

A key motive driving the development of the administrative systems is that the federally managed core systems in question do not work for the advanced needs of some local governments. For example, the systems contain data gaps and technological shortfalls (such as no printouts), and the software set-ups are rigid and centrally controlled (that is, where local governments cannot remotely and autonomously add their own modules and indicators).[210]

However, the federal government is opposed to local governments implementing their own core systems and managed to close down any alternatives to SuTRA that emerged and is expected to try to do the same should IEMIS-like tools appear.[211]

There is no clear data governance framework for balancing the demands of local autonomy and centralised control.

This is not to say parts of the federal government have not understood the need for the autonomy of local government when it comes to data. The comparatively newer BIPAD does, in design at least, permit a greater level of downstream user control (for instance local governments can embed their own subsystem), as does DHIS2. At the same time, interviewees highlight that while BIPAD represents an improvement it remains primarily in the design phase.

The problem that the federal government has to manage as local governments become more demanding with these systems is the contradiction between the overtly top-down process of designing (such as ensuring they collect the information it needs) and installing them, and the simultaneous need for local governments to feel enough ownership over them to adapt them, to have the capacities to do this, and for the software to be adaptable enough to permit this.

If the federal sphere does not provide core systems with sufficient downstream control an inequality will open up, as not all local governments in Nepal will be able to develop their own electronic systems.

Local governments only have very limited data on key economic areas, as the information systems in the local sphere relating to the economy are new, and before this there were only very basic systems in operation.[212] Hence, there is an urgent need to continue the roll-out and strengthening of the EmMIS and the CoPoMIS.

Nepal's VR system needs strengthening. Local governments and ward offices beneath them perform an integral role in the system, but as things stand they are battling to deliver satisfactorily. Interviewees report, on the one hand, that local governments operate with inadequate human and financial resources, and on the other, that local governments either do not prioritise VR, do focus on it yet lack experience and know-how, or are negligent of it. This indicates that the challenges pertaining to VR at this level can be complex, and that in many

places they go beyond simple deficits in ICT equipment or numbers of dedicated staff and have more to do with its governance (such as prioritisation, policy design and planning).

Ward-level birth registration is critical for the improvement of CRVS coverage.

Much of the discussion so far has been about electronic data systems. The reasons for this are that all the core data systems in operation in Nepal are primarily electronic, and that it is clearly the government's intention to fully digitise them as quickly as possible. However, this neglects the fact that a relatively significant proportion of local governments still report data using paper forms.[213]

Although not unheard of in urban areas, the continued operation of manual systems is most common in rural areas, as challenges with basic infrastructure make electronic reporting difficult. For example, inappropriate buildings/offices (such as too small); irregular/unstable electricity supplies; slow, weak and (relatively) expensive mobile internet connections; inadequate amounts of ICT equipment; and very few trained personnel.[214] With careful design the continued improvement of the financial equalisation aspects of fiscal federalism should contribute to this easing.[215]

The need for the 460 rural local governments in Nepal to become data actors is accentuated due to the extent Nepal's geography, population density and socioeconomic dynamics vary from place to place. This means that centrally managed data systems will struggle to cover the range of factors the autonomous entities contend with while governing (such as types of industries, tax structures and natural hazards).

Most local governments, particularly rural municipalities, lack both the technical and human capacity to collect and use data.

The 293 urban local governments tend to be more advanced in terms of data than their rural counterparts, and while this is not true across the board, it is certainly applicable to Kathmandu. Moreover, interviewees report that compared with rural local governments there are some urban local governments that have larger per capita budgets even with more people to provide services for (mostly due to higher tax revenues). This seemingly leads to a greater degree of autonomy from the federal sphere, as they are less dependent on central finance (such as conditional loans). However, some of this resource and autonomy (and enthusiasm) has been invested into projects that the federal sphere has then closed down. Hence, the central government needs to create systems which, while seeing that these local actors maintain their reporting duties, also permits local-level action to play out where it is promising to.

Data use

All the spheres of government need to strengthen their capacities to make data-informed decisions. This observation is repeated time and again across relevant literature, to the extent it is very hard to find any literature which argues the opposite. Likewise, all the stakeholders interviewed for this study, regardless of which type of organisation they represent, expressed similar sentiments.

A culture of evidence-informed decision-making driven by established norms of data sharing is missing in all spheres of government.

Different spheres have to deal with different challenges. For example, federal offices employ trained data officials, whereas this is less common in the provinces and less so again in the local sphere. There are also variations within the spheres of government. For instance, while the Ministry of Health and Population has a steady stream of data to refer to (census, household and facility surveys, HMIS, HLMIS), the Ministry of Agriculture and Livestock Development relies on a patchwork of less detailed sources (sample census, industry surveys), therefore the former has access to more data for it to use.

Cultivating a culture that recognises the importance of evidence-informed decision-making and therefore stimulates the demand for more and better data is core to data and statistics playing its rightful role in constitutional development.

Recommendations

Federal statistics

The scale of the aforementioned challenges requires a new approach to the development of national data infrastructures and the production of statistics that are of use not only to the federal and provincial spheres, but to local government as well. What is needed is a federal statistical system that respects the aspirations of the constitution and meets the needs of all planners and decision-makers.

With the exception of the 10-yearly census most statistics produced by the CBS are derived from surveys. Sample sizes allow data from household surveys to be disaggregated geographically by province but no further:[216] The cost of increasing sample sizes to produce municipal statistics is beyond exorbitant.

These statistics will continue to play an important role in national development planning, and as a quality check for other data sources, but producing the information needed for all spheres of government to operate is going to require major improvements in the deployment of existing administrative systems and registries.

This is a mammoth task. Firstly because most local governments lack the capacity to maintain the range of systems required. Secondly because the constitution gives them, in many instances, the right to choose both what systems to use and what data to share.

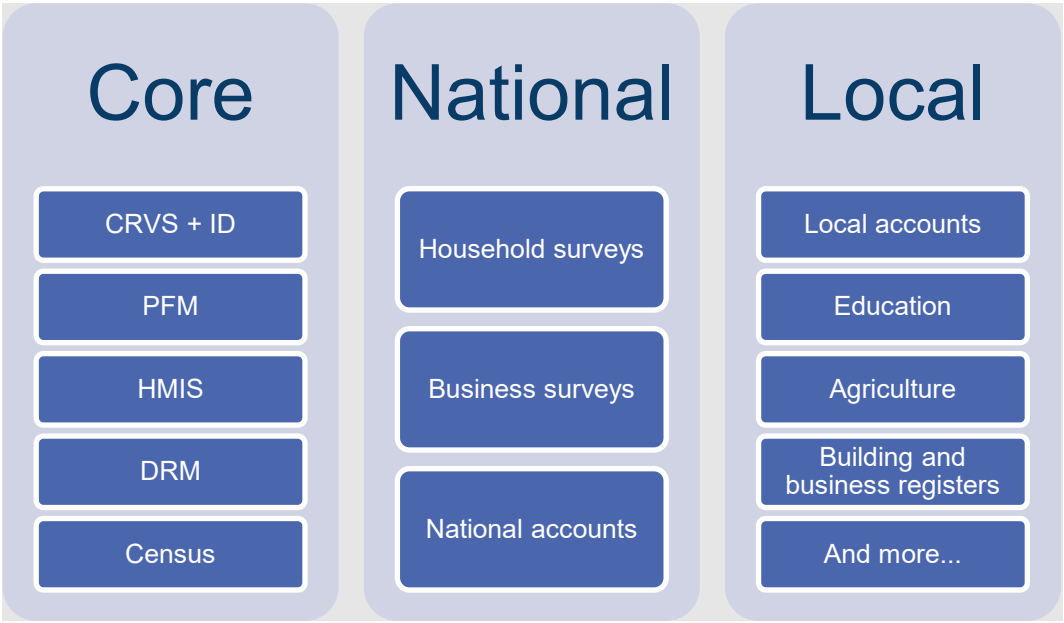
The constitution[217] assign powers and responsibilities across the three spheres of government. Civil registration, health, agriculture and disaster management, for example, are delegated to all three, while basic and secondary education are the responsibility of local government.

The Local Government Operations Act is more specific in detailing a range of data collection and record-keeping responsibilities for local government.[218] Some of these are essential for national systems, such as the registration of births – which is critical for the constitution's aspiration to develop an integrated national identity management information system.[219] Many of the responsibilities, such as maintaining a building register, a business register and local tax records, cover data that is only relevant locally. Others, such as public financial management, contain a mix: data on how finances received from central government are budgeted for and spent must be reported upwards while much of the detail of day-to-day accounting is of little use outside local government.

A pragmatic approach to bridging these needs is a federal statistical system that consists of three layers.

- A core consisting of the systems critical to the integrated functioning of all spheres of government and whose use is mandatory.
- A federal layer, built on surveys and administrative systems used at national and provincial level, that can meet many national planning needs and global reporting commitments.
- A local layer where local government collects and processes data for its own use, sharing only those indicators of relevance to the monitoring of national and global development plans.

Figure 1. Three tiers of a federal statistics system



Notes: CRVS: civil registration and vital statistics; DRM: disaster risk management; HMIS: health management information system; ID: identification; PFM: public financial management.

Keeping the number of core systems to a minimum, and focusing investments and capacity building on these systems, has the short-to-medium term benefit of building a solid foundation on which other systems can be added as the data ecosystem matures. If all 460 rural municipalities can, over the next few years, build on a successful 2021 census and deliver on improved birth registration, fiscal accountability on federal financing, performance data from all health facilities and active sharing of data relating to disaster risk reduction and management, the trajectory of constitutional change will have been secured.

Local capacity

Four-fifths (80%) of the population of Nepal live in areas under the administration of 460 rural municipalities. While many of these are fiercely proud of both the autonomy and democracy that the constitution has delivered for them, they are equally challenged by a lack of resources and capacity to handle data. Some particular challenges are:

- There is no culture of data use and evidence-informed decision-making.

- As a result levels of data literacy are low and investment in data is not seen as a priority.
- Internet access is weak in many areas.
- Technical infrastructure and capacity is patchy.
- Where ICT personnel are available they are not familiar with the sectoral subject matter, and where sectoral officials are present they may not be familiar with the information system.
- Capacity building normally takes place in vertical sectors and technical and training resources are rarely shared across government.[220]
- The Ministry of Federal Affairs and General Administration has no mandate to deal with data and the CBS has no mandate to deal with local government.

Dealing with these challenges is critical if local government is to develop. For each sector to tackle these problems separately will be a mammoth, expensive project. The following, four-part, cost-effective approach is proposed.

Firstly, a **cross-sectoral campaign** geared to building a culture of data use, recognising the importance of evidence-informed decision-making, improving data literacy in general and stimulating data demand would increase the possibility of a common approach being adopted across government. This may not be part of the Ministry of Federal Affairs and General Administration's brief but it is well positioned, with support from the CBS, to lead an effort like this aimed at all producers and users of data, both official and non-official.

Secondly, building on the work of the Local Government Community Development Programme, and now the Provincial and Local Government Support Programme, each local government should employ an IT officer whose job is to maintain the **ICT infrastructure** for all departments. They should be responsible for the technical maintenance of all information systems used, **but not** for the content,[221] which should be the responsibility of departmental subject matter experts.

Thirdly, local government officials responsible for public financial management, civil registration and vital statistics, health, education, disaster risk management and the like should be trained and empowered to be **responsible for the content** – both collection and use – of their respective information systems.

Fourthly, the pre-constitution national statistical system relied, top-down, on district statisticians[222] and line ministry district offices[223] managing the core administrative systems. The continued existence of these infrastructures poses a paradox. On the one hand, given that the constitution has abolished district government, they are seen to be an attempt by central government to undermine local autonomy. On the other, from a purely technical point of view, national data infrastructures depend on them.

Under the constitution District Assemblies, each supported by a **District Coordination Committee**, are bottom-up, representative institutions empowered to:

- coordinate among the rural municipalities and municipalities and provinces within the district
- **carry out monitoring** so as maintain balance in development and construction works

- maintain coordination among the federal and provincial government offices and village council and municipality within the district
- perform other tasks as provided for in the provincial law.

It should therefore be possible to repurpose the technical resources currently deployed at district level to support both the district assemblies **and** their local government constituents. Under this arrangement, each district coordination committee systems support unit would provide assistance to, on average, 10 local governments. Moving these services up to provincial level will result in each department being required to support nearly 100 local governments. Even if provincial governments have the financial, technical and human capacity to deliver this service, they would be hard pressed to deliver efficient support to such a large client base.

Prioritising core systems

As the diagnostic report clearly illustrates, simultaneously meeting all the responsibilities laid out in the Local Government Operations Act will be a tall order for many municipalities. Similarly for both central government and its development partners, finding the resources to deliver on all systems at the same time is unrealistic. By concentrating on just five systems through focused investment and support ,it should be possible to build a solid foundation for local data infrastructures to grow and for local democracy to become accustomed to evidence-informed decision-making.

Preparations for the **2021 census** appear to be in a healthy position and a successful exercise is predicted. There is a great opportunity for the results of the census to be turned around as quickly as possible and shared with local government, with support on how they can be used. The census will represent a baseline for many local government activities and should be promoted as widely as can be.

Despite the training of some 5,000 officials (and exaggerated claims of success) it appears that many local governments are doing the absolute minimum in their use of the Sub-national Treasury Regulatory Application (**SuTRA**). The reasons for this are more likely to be political and bureaucratic rather than technical. A clearer distinction between what is absolutely required to manage and account for central funding, and what is needed for efficient local administration, is likely to produce better results. Given the scale of central funding received by local government, it is critical that SuTRA is seen as a mutually beneficial system and not a top-down imposition (as it appears to be now).

Establishing a fully functional national identity management system, with its many beneficial spin-offs, is a key aspiration of the constitution.[224] Getting **birth registration** from around 75% closer to 100% should be the first objective. Firstly, investment in digital data capture will be key to this. Costly paper-based processes should be phased out as mobile data collection becomes more cost effective. Secondly, a ward-level education campaign supporting registration officials and their communities to recognise the benefits of vital registration should reap results.

The **health management information system (DHIS-2)** platform is robust and in widespread use. Three investment opportunities should be prioritised to further strengthen it: extending digital data capture to as many health facilities as possible, incentivising private health facilities to

report (in return for access to all local data) and encouraging use of the data by local government planners and auditors.

While constitutionally not a core system, the **Integrated Education Management Information System** (IEMIS) is also worthy of prioritisation because of its successes in deploying to an impressive number of schools in rural as well as urban areas. It is worth noting that the likely reason for its success is the robust simplicity of its design: internet-linked Excel spreadsheets that can be managed offline and shared when possible. The big challenge is to stimulate the active use of IEMIS data by local governments that are constitutionally responsible for developing primary and secondary education. It is this use that will drive improvements in the coverage and accuracy of its data.

Nepal has had, and will likely continue to have, more than its fair share of disasters caused by natural hazards. **Disaster risk management**, perhaps most importantly in remote under-resourced mountainous localities, is thus a priority. The existing Disaster Risk Reduction Portal is a robust, if incomplete, system. The new Building Information Platform Against Disaster (BIPAD) system is more comprehensive and more elegantly designed but, despite its aspirations, is difficult to deploy in under-resourced municipalities. It is hopefully not too late for the best of both systems to be integrated into a solution that will work for all communities.

Improving administrative systems

Government departments in all spheres clearly need a range of management information systems beyond the core already mentioned. These, for the most part, already exist at national level and can now be rolled out with little difficulty to the provincial sphere, but have always, even before 2015, faced challenges in being deployed throughout the country.

Improving local capacity, both technical and human, as discussed earlier, is an obvious part solution.

The constitution has, however, added a further complication in that in many instances local governments now have the right to choose what systems to use and what data to share. From a data integrity point of view this is disruptive: it makes sense for everyone to use the same system. However, needs do differ between, for example, metropolitan and rural municipalities.

The reason for local governments making their own choices is more likely to lie in their dissatisfaction with existing systems: either in their complexity or lack of flexibility to be fitted in to local needs. This is, at heart, a design problem. The adoption success of the IEMIS compared with the deployment challenges faced by the new BIPAD illustrate this. Smart-looking systems that are optimised for use in Kathmandu and rely on complex architectures, innovative technologies and constant bandwidth are likely to be outperformed by robust, low-technology solutions when deployed in the local sphere.

Within a federated landscape, centrally maintained systems need to compete for the approval of local governments. They can do so by better understanding the needs of their users and adapting to appropriate levels of both technology and content. Administrative systems will flourish best

through a two-pronged approach: a bottom-up improvement of local infrastructure and capacity and a top-down lightening of the technical overheads required by central systems.

A national indicator framework

Nepal, like every country, has a need for a coherent, comparable set of federal statistics to plan, manage and monitor its national development plans and the Sustainable Development Goals (SDGs). The superset of information systems currently in use by local governments produce a wide range of disparate and incomplete data that poses a challenge to the CBS. The CBS does not have the mandate to specify what information systems government should use, but it should have the authority, on behalf of the government, to specify what data is required and, in a world of limited resources, which should be prioritised.

If, for example, the government agrees that meeting SDG target 2.4 on sustainable food production is a key priority, the CBS requires monitoring data on the proportion of agricultural area under productive and sustainable agriculture. Local government should provide this irrespective of its means of collection and the CBS should be able to sense check this local administrative data against the more highly aggregated survey data.

A national indicator framework, coordinated and managed by the CBS, would define all data needs[225] independent of their means of collection. It would provide standard definitions and methodologies for all indicators. It would provide a single, integrated resource for government-wide agreement on target monitoring.

These standards do, for the most part, exist in a variety of policy documents and technical manuals. Integrating them into a single framework would create the glue that a federal statistical system needs for a coherent approach.

Data leadership

The more federated a system, the greater the challenges of coordination and control. This applies as much to data and statistics as it does to any other function of government.

For the CBS to fulfil its responsibilities in this regard, its leadership of the federal statistical system, fully supported by the National Statistical Council, needs to be properly recognised. This should involve it being provided with both the legal and political authority to coordinate, lead (which does not mean dictate) and support data collection and statistical production across all spheres of government. Such a role goes far beyond its traditional responsibilities, recognised symbolically in the proposal to rename it the National Statistics Office. It would therefore require greater investment in an enlarged cohort of professional business analysts and statisticians, and greater political authority for its leadership to be respected across government.

The CBS will need to move beyond its traditional roles of data collection and statistical production. The nurturing of provincial leadership, district coordination and local capacity will require both entrepreneurial initiative and political authority.

Unfortunately, the current draft of the Statistics Bill fails to deliver this. It has the CBS supporting the National Statistical Council, rather than the other way around.[226] A disempowered national statistics office that continually needs to seek approval from a large and unwieldy committee is not the most agile solution for meeting the challenges it faces. Both the timetable and content of the new Statistics Bill appear to be in flux and there is hopefully still an opportunity to influence its outcome.

In addition to a new Statistics Act, the National Strategy for the Development of Statistics (NSDS) is a key instrument for the development of national statistics. It is unfortunate that the final 2019 document has apparently dropped a lot of the detail contained in an earlier draft. The function of the NSDS is to outline strategy, not tactics, but in its current form it offers a suite of generic solutions that do not reflect the specific challenges it recognises. It is thus open to a traditional, conservative interpretation that will hamper the institutional innovation that is needed to manage federal statistics. An accompanying road map addendum could be a solution to adding a clearer set of objectives.

Nepal's ambitious constitution reflects the democratic aspirations of all its people and the institutions that serve them. The path towards a federal statistical system is not primarily a technological challenge, but one of institutional development implemented through purposeful leadership.

Appendix 1: Status of existing information systems

Table showing all systems referred to in this diagnostic, with their current state of deployment (administrative data systems) or disaggregation (censuses and surveys). Note, the subheading 'partial' refers to a system that is not deployed in all its targeted institutions, and/or one in which not all its components are used.

Sector	Type	Systems	Federal deployment			Provincial deployment			Local deployment		
			Planned/available	**Actual use**		**Planned/available**	**Actual use**		**Planned/available**	**Actual use**	
				Partial	Full		Partial	Full		Partial	Full
CRVS +ID	Admin	Vital registration									
	Register	National ID Card									
	Census	National Population and Housing Census									
PFM	Admin	Integrated Financial Information Management System									
	Admin	Line Ministry Budget and Information System									

Sector	Type	Systems	Federal deployment			Provincial deployment			Local deployment		
			Planned/available	Actual use		Planned/available	Actual use		Planned/available	Actual use	
				Partial	Full		Partial	Full		Partial	Full
	Admin	Provincial Line Ministry Budget and Information System									
	Admin	Subnational Treasury Regulatory Application									
Health	Admin	Health Management Information System									
	Admin	Health Logistics Management Information System									
	Survey	Health Facility Survey (pre-2015)									
Education	Admin	Integrated Education Management Information System									
Economy	Multiple	National Accounts									
	Census	National Economic Census (2018)									
	Survey	Economic Survey									

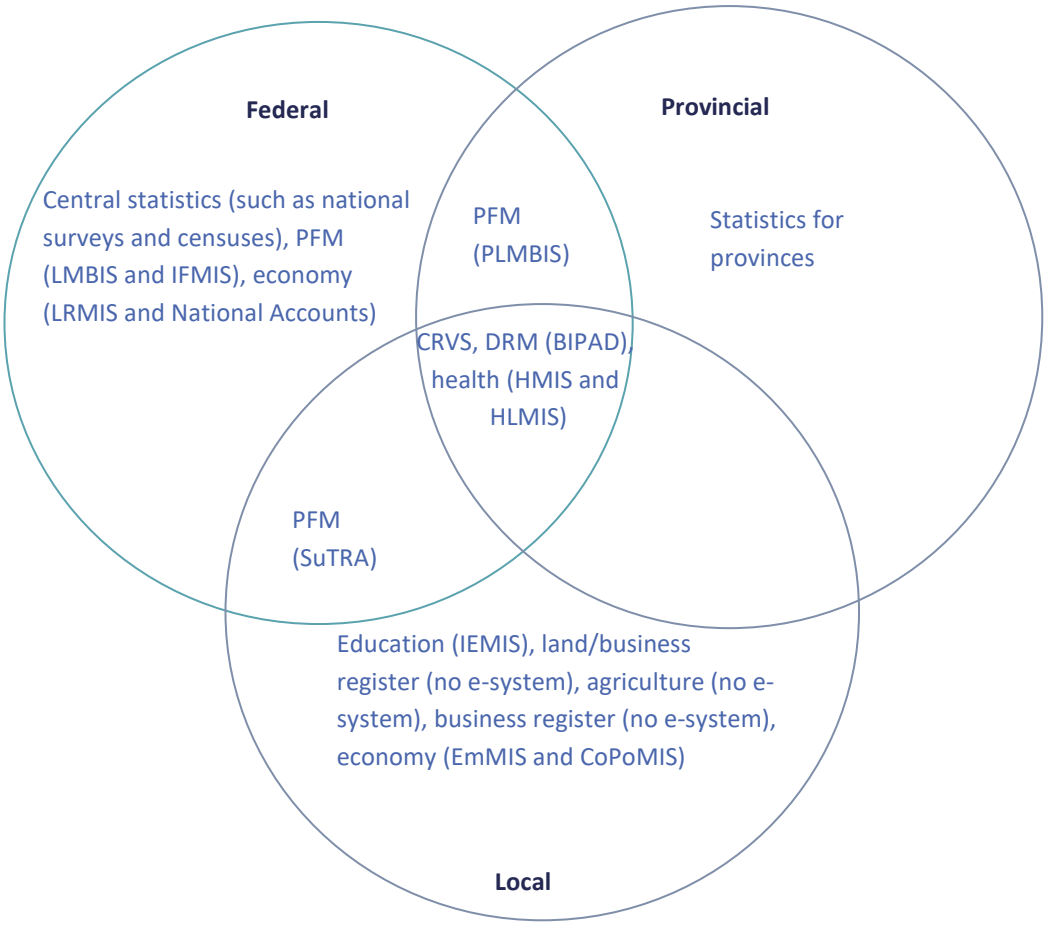
Sector	Type	Systems	Federal deployment			Provincial deployment			Local deployment		
			Planned/available	Actual use		Planned/available	Actual use		Planned/available	Actual use	
				Partial	Full		Partial	Full		Partial	Full
	Survey	National Labour Force Survey									
	Survey	Annual Household Survey (no information)									
	Admin	Land Record Management Information System									
	Admin	Employment Management Information System									
	Admin	Cooperatives and Poverty-related Information Management System									
Agriculture	Admin	Agricultural Management Information System (discontinued)									
	Admin	Seed Management Information System									

Sector	Type	Systems	Federal deployment			Provincial deployment			Local deployment		
			Planned/available	Actual use		Planned/available	Actual use		Planned/available	Actual use	
				Partial	Full		Partial	Full		Partial	Full
	Census	National Sample Census of Agriculture (pre-2015)									
DRM	Admin	DRR Portal									
	Admin	Building Information Platform Against Disasters									
Multiple	Survey	Multiple Indicator Cluster Survey (2019)									
	Survey	Demographic Health Survey (2016)									
	Survey	Agricultural Sample Survey									
	Survey	National Floriculture Survey									
	Survey	National Fishery Survey									
	Survey	National Poultry Survey									
	Survey	Commercial Coffee Survey									

Sector	Type	Systems	Federal deployment			Provincial deployment			Local deployment		
			Planned/available	**Actual use**		**Planned/available**	**Actual use**		**Planned/available**	**Actual use**	
				Partial	Full		Partial	Full		Partial	Full
	Survey	Commercial Tea Survey									

Appendix 2: Delegation of systems

Venn diagram showing the distribution of responsibilities for data systems between the different spheres of government as per the constitution and the Local Government Operations Act.



Appendix 3: Local Government Operations Act – data components

Table showing municipal data responsibilities in the Local Government Operations Act (2017).

Sector	Municipal responsibility
Agriculture	Operating, monitoring and regulating programmes on agriculture and livestock market information, infrastructure construction of market and village market, small irrigation construction and so on
Building Register	Maintaining records of heritage of historical, archaeological, cultural and religious importance, ancient memorial, public and community building, public, unregistered land
Business Register	Promoting and maintaining records of industries and businesses
CRVS	Managing records and registration of births, deaths, marriages, divorces, migration and family data
Development	Formulating, implementing, monitoring and evaluating plans and projects necessary for economic, social, cultural, environmental, technological and infrastructure development
Education	Managing all aspects of basic and secondary education
Employment	Establishing data collection, processing and information systems for employed and unemployed labour force
Health	Operating and promoting basic health, reproductive health and nutrition services; establishing and operating hospitals and other health institutions
Household Register	Maintaining records of private houses and households; certifying homes; certifying personal details
Land Register	Cadastral mapping of local land and plot boundaries; distributing land ownership registration certificates and managing records
PFM	Budgeting and accounting
Revenue	Collecting property tax, house rent tax, house registration fee, vehicle tax, service charge, tourism fee, advertisement tax, business tax, land tax
Water, sanitation and hygiene*	Formulating, implementing, monitoring, evaluating and regulating policies, laws, standards and plans related to local drinking water, sanitation and waste management at local level

Sector	Municipal responsibility
Welfare case management*	Updating records of older citizens, people with disabilities and physical challenges; distributing identity cards; managing and distributing social security and benefits

*Not featured in this report.

Appendix 4: Summary of interviews conducted

Interviews were conducted with representatives from the organisations listed here. Note that Development Initiatives usually conducted one interview with one representative per organisation, but on a few occasions the same representative was interviewed twice, or two representatives from one organisation were both interviewed once.

Federal government

- CBS
- Centre for Education and Human Resource Development
- Department of Health Services
- Department of Land Management and Records
- Department of Transport Management
- Office of Chief Minister and Council of Ministers
- Ministry of Industry, Tourism, Forest and Environment
- National Information and Technology Centre
- Nepal Administrative Staff College
- Public Service Commission

Provincial government

- Province 2 Ministry of Industry, Tourism, Forest and Environment

Local government

- Bheriganga
- Birendranagar
- Birgunj
- Chakra
- Dakneshwori
- Dolpo
- Ghorahi
- Kotahimai
- Pyuthan
- Sunachahari
- Gaupalika
- Thawang
- Tribeni

Intergovernmental

- UNICEF

- UN Women
- USAID
- World Bank

Notes

[1] World Bank, 2019. Rural population (% of total population) – Nepal, https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=NP (accessed 15 September 2020); Samir KC., 2020, Internal Migration in Nepal. https://link.springer.com/chapter/10.1007%2F978-3-030-44010-7_13

[2] This is the major system(s) in each key area only. For example, in education the Integrated Education Management Information System (IEMIS) and in health the District Health Information Software 2 (DHIS2). Note other systems do operate in each area, and local governments do not have to use those used in this report.

[3] Interviews were held with 28 people from government agencies and development organisations. Research took place between September and October 2020. For a full list of interviewees please see Appendix 15.4.

[4] The World Bank defines the data ecosystem as the cycle of data production, sharing and use: World Bank, 2019. Nepal Development Update, December 2019: Envisioning a Future Data Ecosystem in Federal Nepal. https://openknowledge.worldbank.org/handle/10986/32891

[5] "Nepal's federal system is built on the understanding that the discrimination, marginalisation and exclusion of minority groups, and the prime source of conflict, emanated from the 'centralised' and 'unitary' system of governance". Bhusal T., 2019. Nepal Federalist Ambiguities. https://blogs.lse.ac.uk/southasia/2019/03/13/long-read-nepals-federalist-ambiguities. Note that Nepal did exercise a decentralisation policy for a period before the interim constitution of 2006. Kandel S., 2019. Federalism: History, Practice and Impact in Nepal. www.researchgate.net/publication/338375950_federalism_history_practice_and_impact_in_nepal

[6] Village institutions, municipalities and district assemblies are under the local level. Constitute Project, 2015. Nepal 2015, www.constituteproject.org/constitution/Nepal_2015?lang=en

[7] Government of Nepal, 2018. Administrative Divisions Map, https://web.archive.org/web/20180902222224/http://cbs.gov.np/image/data/Gis_Maps/General/Administrative%20Divisions.gif (accessed 9 September 2020) and Ministry of Agriculture and Livestock Development, no date. List of Village Development Committees prior to restructuring, http://mofald.gov.np/vdc (accessed 9 September 2020).

[8] "The function, duties and powers of the District Assembly are to (a) coordinate among the Village Municipalities and Municipalities and Provinces within the District, (b) carry out monitoring so as maintain balance in development and construction works, (c) maintain coordination among the Federal and Provincial government offices and Village Council and Municipality within the district, (d) perform other tasks as provided for in the Provincial law". "Head of every Village executive and Mayor of every Municipal executive within the district shall be members in the District Assembly". District coordination committees replaced the old district development committees; they act as the executive arm for a district assembly. Constitute Project, 2015. Nepal 2015. www.constituteproject.org/constitution/Nepal_2015?lang=en

[9] The Statistics Act 1958 has been amended eight times since then (five times before 1975), most recently in 2010. Nepal Law Commission, 2015. Statistics Act, 2015 (1958). www.lawcommission.gov.np/en/archives/category/documents/prevailing-law/statutes-acts/statistics-act-2015-1958

[10] Branch statistical offices have very little autonomy and mainly work on central office directives. CBS, no date. Statistics Offices, https://cbs.gov.np/statistical-office-locations (accessed 13 September 2020).

[11] Computer-assisted personal interviewing (CAPI) was developed by The DHS Program with the mobile version of CSPro. The CSPro software was developed jointly by the U.S. Census Bureau, Serpro S.A., and The DHS Program. In November 2020, the UN Population Fund and UK government donated IT equipment worth US$609,873 (72 million rupees) to CBS. This consists of 2,250 tablets with power-banks and accessories, 35 laptops, 47 desktop computers, 5 mobile workstations, a server, 3 high resolution printers and relevant software licenses. MyRepublica, 2020. UNFPA and UK government handover IT equipment to Nepal's CBS. https://myrepublica.nagariknetwork.com/news/unfpa-and-uk-government-handover-it-equipment-to-nepal-s-central-bureau-of-statistics

[12] World Bank, 2019. Nepal Development Update, December 2019: Envisioning a Future Data Ecosystem in Federal Nepal. https://openknowledge.worldbank.org/handle/10986/32891

[13] Unofficial translation of the Statistics Bill. Section 17(1)(a).

[14] Unofficial translation of the Statistics Bill. Section 19(1)(a).

[15] 2009 note on the National Statistical Council held by the UN Statistics Division. https://unstats.un.org/unsd/dnss/docViewer.aspx?docID=2376

[16] Unofficial translation of the Statistics Bill. Section 27.

[17] For example, if passed it will mean data and statistics cannot be collected without the permission of the NSO (without guarantee), and that data and statistics which are generated will need to be certified from NSO before being published (penalty for not doing so will be a fine of up to 40,000 rupees and/or a year in prison).

[18] Note that despite the lack of mandate, the Ministry of Federal Affairs and General Administration does occasionally engage with local sphere data issues. For example, it "issued guidelines for creating profiles of socioeconomic and demographic indicators by the local governments [survey of 115 local governments showed that approximately 60 percent of the local governments interviewed had already completed the profiling exercise]".

[19] SJVN Arun-3 Power Development Company, 2017. Local Government Operations Act, 2074, https://sapdc.com.np/page/local-government-operation-act-2074 (accessed 2 September 2020).

[20] Unofficial translation of the Statistics Bill, Section 19(1)(j).

[21] Unofficial translation of the Statistics Bill, Section 19(1)(d).

[22] As this was published 15 years before the new constitution was published, no details are given on it here. Nepal in Data, 2018. A Compendium of the National Statistical System of Nepal. https://nepalindata.com/resource/a-compendium-of-national-statistical-system-of-nepal

[23] Nepal in Data, 2018. A Compendium of the National Statistical System of Nepal. https://nepalindata.com/resource/a-compendium-of-national-statistical-system-of-nepal

[24] "State and Local level may impose taxes on matters falling within their respective jurisdiction and collect revenue from these sources. Provided that provisions relating to the imposition of taxes and collection of revenue on matters that fall within the Concurrent List and on matters that are not included in the List of any level shall be as determined by the Government of Nepal". Constitute Project, 2015. Nepal 2015. www.constituteproject.org/constitution/Nepal_2015?lang=en

[25] International Alert, 2019. Fiscal federalism. www.international-alert.org/publications/federalism-in-nepal-fiscal-federalism-initial-implementation

[26] In other terms, general purpose transfers (unconditional grants to subnational governments; includes block grants for health, education and so on and discretionary grants to be decided by local governments) and specific purpose transfers (grants for achieving certain policy objectives, matching grant and non-matching) and performance-based grants (grants based on results). The District Treasury Controller Office transfers conditional grants to local governments' consolidated funds; the federally controlled Line Management Budgetary Information System dictates the amounts.

[27] The National Natural Resources and Fiscal Commission (NNRFC), is a permanent constitutional body responsible for the grant design in Nepal. It "provides annual recommendations to the MoF on the revenue and resource sharing model, as per the National Natural Resources and Fiscal Commission Act, (2017) and the Intergovernmental Fiscal Arrangement Act (2017)". Government of Nepal, no date. National Natural Resources and Fiscal Commission, www.nnrfc.gov.np (accessed 1 September 2020).

[28] Constitute Project, 2015. Nepal 2015. www.constituteproject.org/constitution/Nepal_2015?lang=en

[29] The federal government enacted the Financial Procedures and Fiscal Accountability Act in 2019. This contains detailed provisions on the management of consolidated and other government funds, budget formulation, budget release, accounting, reporting procedures, internal control, audit and other relevant activities of financial administration for maintaining macroeconomic stability through transparent, result-oriented and accountable financial management. The act directs governments to formulate and execute financial procedures in line with it.

[30] For more information see the section called 'Public financial management'.

[31] Constitute Project, 2015. Nepal 2015, www.constituteproject.org/constitution/Nepal_2015?lang=en

[32] Bhusal T., 2019. Nepal Federalist Ambiguities, https://blogs.lse.ac.uk/southasia/2019/03/13/long-read-nepals-federalist-ambiguities

[33] Bhusal T., 2019. Nepal Federalist Ambiguities, https://blogs.lse.ac.uk/southasia/2019/03/13/long-read-nepals-federalist-ambiguities

[34] Part 20 of the constitution (2015) also allows for direct federal intervention in subnational affairs, on conditions that are arguably open to interpretation, and thus, in theory at least, favour the powerful federal sphere. "The Government of Nepal may, pursuant to this Constitution and the Federal Law, give necessary directions to any State Council of Ministers on matters of national importance and on matters to be coordinated between the States, and it shall be the duty of the concerned State Council of Ministers to abide by such directions". And, "the Government of Nepal may, directly or through the State Government, render necessary assistance to, and give necessary directives to, any Village Executive or Municipal Executive, pursuant to this Constitution and the Federal law. It shall be the duty of the Village Executive or

Municipal Executive to abide by such directives".

[35] For more information see multiple places in the sections 'Demography' up to 'Disaster risk management'.

[36] Theoretically, fiscal federalism allows a federal government to support economic stability and just distribution of income through fiscal equalisation; however, for it to work, subnational governments must have sufficient authority over budgets.

[37] Although this trend could also be interpreted as being driven by the increasingly desperate fiscal conditions of many subnational entities. Note that the statistic for 2019/20 is a projection. International Alert, 2019. Fiscal federalism. www.international-alert.org/publications/federalism-in-nepal-fiscal-federalism-initial-implementation

[38] Limbu P., 2019. Development Policy Process in Nepal: A Critical Analysis. www.nepjol.info/index.php/irjms/article/view/27886

[39] The NPC also assesses resource needs, identifies sources of funding, allocates budget for socioeconomic development, and is a hub for scholars, members of the private sector and civil society and development partners to engage in relevant discourse.

[40] NPC, no date. Periodic Plans, https://npc.gov.np/en/category/periodic_plans (accessed 15 September 2020).

[41] Periodic plans, including the 15th version, are drafted by the NPC, approved by the National Development Council and implemented by the cabinet. Local governments are not consulted in any significant manner as the NPC consults stakeholders and actors at the federal level and in the seven provinces. Limbu P., 2019. Development Policy Process in Nepal: A Critical Analysis. www.nepjol.info/index.php/irjms/article/view/27886

[42] The article concludes that the development policy process is centralised, top-down and not a compatible process to the federal structure of Nepal. The solution is to reform this old practice through an inclusive, bottom-up approach and deconstruction of centralisation to ensure multi-dimensional meaningful participation and ownership by stakeholders at all levels. Limbu P., 2019. Development Policy Process in Nepal: A Critical Analysis. www.nepjol.info/index.php/irjms/article/view/27886

[43] A survey cited in a World Bank publication reports that of 115 urban and rural local governments surveyed, 48 offices lack internet access or electricity via the national grid or generators. However, the validity of the data is uncertain as the date of survey and citation of the original source are not provided. World Bank, 2019. Nepal Development Update, December 2019: Envisioning a Future Data Ecosystem in Federal Nepal. https://openknowledge.worldbank.org/handle/10986/32891

[44] World Bank, no date. Access to electricity, urban (% of population), https://data.worldbank.org/indicator/EG.ELC.ACCS.UR.ZS?view= (accessed 11 October 2020) and ESMAP, World Bank Group and SREP, 2019. Nepal: Beyond Connections. Energy Access Diagnostic Report Based on the Multi-Tier Framework. https://energydata.info/dataset/e4526938-1f13-45b2-b4f4-467fbb02b722/resource/35124cc5-0ebf-49c7-b7df-ec7fc961eb1d/download/mtf-energy-access-country-diagnostic-report_nepal-9.2019.pdf

[45] This has rapidly increased over the last three years, as in 2017 93.9% of the total population had access to electricity, of which 71.7% of households were connected to the national grid. International Household Survey Network, 2019. Multi-Tier Framework for Measuring Energy Access 2017, https://catalog.ihsn.org/index.php/catalog/8412

[46] ESMAP, World Bank Group and SREP, 2019. Nepal: Beyond Connections. Energy Access Diagnostic Report Based on the Multi-Tier Framework. https://energydata.info/dataset/e4526938-1f13-45b2-b4f4-467fbb02b722/resource/35124cc5-0ebf-49c7-b7df-ec7fc961eb1d/download/mtf-energy-access-country-diagnostic-report_nepal-9.2019.pdf

[47] International Household Survey Network, 2019. Multi-Tier Framework for Measuring Energy Access 2017. https://catalog.ihsn.org/index.php/catalog/8412

[48] For example, the Kalyanpur Health Post, in the mountainous and hilly Bagmati Province, has had a stable electricity supply since 2017. Federal Ministry for Economic Cooperation and Development, 2018. Bringing the Power of Digital Data to Rural Nepal. http://health.bmz.de/events/In_focus/bringing_power_digital_data_rural_nepal/index.html

[49] World Bank, no date. Individuals Using The Internet (% of the population) Nepal, https://data.worldbank.org/indicator/IT.NET.USER.ZS?view=chart&locations=NP (accessed 13 September 2020); CollegeNP, 2020. Internet Users in Nepal 21.9 Million, www.collegenp.com/technology/internet-users-in-nepal-219-million; Nepal Institute of Research and Communications, no date. Health and nutrition, www.nepalcomms.org/health-and-nutrition (accessed 5 September 2020).

[50] Nepal also has a "high digital adoption index relative to the countries with a similar level of economic development". World Bank, 2019. Nepal Development Update, December 2019: Envisioning a Future Data Ecosystem in Federal Nepal. https://openknowledge.worldbank.org/handle/10986/32891

[51] In South Asia, Nepal is ahead of India (placed 128th), Bangladesh (131) and Afghanistan (139) and trails behind the Maldives (61), Sri Lanka (87) and Pakistan (118). According to the report, the upload speed in Nepal was measured at 7.21 mbps compared with the global average of 11.32 mbps. Nepal's average mobile broadband download speed is 12.43 mbps. Kathmandu Post, 2020. Nepal placed 127th among 140 countries for internet speed.

https://kathmandupost.com/29/2020/02/22/nepal-placed-127th-among-140-countries-for-internet-speed

[52] In Nepal there are 16,519,987 mobile internet users and 5,394,081 fixed and wireless internet users. Mobile internet accounts for 75% of users, and fixed and wireless internet 25%. CollegeNP, 2020. Internet Users in Nepal - 21.9 Million. www.collegenp.com/technology/internet-users-in-nepal-219-million

[53] Kathmandu Post, 2020. Nepal placed 127th among 140 countries for internet speed. https://kathmandupost.com/29/2020/02/22/nepal-placed-127th-among-140-countries-for-internet-speed

[54] Kathmandu Post, 2020. Nepal placed 127th among 140 countries for internet speed. https://kathmandupost.com/29/2020/02/22/nepal-placed-127th-among-140-countries-for-internet-speed

[55] World Bank, 2017. Nepal Health Facility Survey 2015. https://microdata.worldbank.org/index.php/catalog/2785/related-materials

[56] International Alert, 2019. Fiscal federalism. www.international-alert.org/publications/federalism-in-nepal-fiscal-federalism-initial-implementation

[57] Bhusal T., 2019. Nepal Federalist Ambiguities. https://blogs.lse.ac.uk/southasia/2019/03/13/long-read-nepals-federalist-ambiguities

[58] Census 2021 will be Nepal's 12th. CBS, 2015. Nepal – National Population and Housing Census 2011, marks 100 years of census taking in Nepal. https://nada.cbs.gov.np/index.php/catalog/54

[59] DHS Program, no date. Publications Summary. https://microdata.worldbank.org/index.php/catalog/2785/related-materials; UNICEF, 2016. Nepal 2014 MICS Final Report Released, https://mics.unicef.org/news_entries/41/nepal-2014-mics-final-report-released

[60] CBS, 2015. Nepal – National Population and Housing Census 2011, marks 100 years of census taking in Nepal. https://nada.cbs.gov.np/index.php/catalog/54

[61] Digital and paper methods will be used to collect the data. The National Census 2011 Citizens Observation Committee was responsible for overseeing fieldwork conducted by 31,000 enumerators, under 80 district census officers. CBS, 2015. Nepal – National Population and Housing Census 2011, marks 100 years of census taking in Nepal. https://nada.cbs.gov.np/index.php/catalog/54

[62] The MoF made released finances for Census 2021 in its two most recent budgets.

[63] Key informant interview II with UN Women.

[64] CBS, no date. Census 2021, https://censusnepal.cbs.gov.np/Home/Content/8b61d4c8-6e8d-41b0-a4cd-c951e0fb9da3/page/introduction (accessed 25 September 2020).

[65] CBS, no date. Census 2021, https://censusnepal.cbs.gov.np/Home/Content/8b61d4c8-6e8d-41b0-a4cd-c951e0fb9da3/page/introduction (accessed 25 September 2020).

[66] The term 'vital registration' is widely used by the Government of Nepal, rather than the globally more common 'civil registration'.

[67] Note that the Department of National ID and Civil Registration (DNIDCR) houses a Central MIS Division.

[68] The Ministry of Federal Affairs and General Administration and the Ministry of Health and Population collaborate with the DNIDCR for inter-agency cooperation at the local level. Get in the Picture, no date. Nepal, https://getinthepicture.org/country/nepal (accessed 22 September 2020).

[69] VRSTC was established in 2014 to oversee the systems development during its formative years. It consists of representatives from DNIDCR, the Ministries of Home Affairs, FAGA, and Health and Population, and CBS. Get in the Picture, no date. Nepal, https://getinthepicture.org/country/nepal (accessed 22 September 2020).

[70] DNIDCR's website also hosts a dashboard showing basic numbers which members of the public can access.

[71] "and a mire of legal complexities". Get in the Picture, no date. Nepal, https://getinthepicture.org/country/nepal (accessed 22 September 2020).

[72] As birth registration in Nepal is necessary for many different administrative processes, including school attendance and access to certain cash grants for vulnerable families, interest should gradually grow.

[73] Also, a Registrar, Director General of the Department will be created in DNIDCR to produce guidelines and procedures and appoint local registrars in municipalities to oversee the daily operation of ward offices.

[74] Nepal Law Commission, 2018. Act Relating to Children Chapter 2 Rights of the Child. www.lawcommission.gov.np/en/archives/20901

[75] Interview with Public Service Commission.

[76] Get in the Picture, no date. Nepal, https://getinthepicture.org/country/nepal (accessed 22 September 2020).

[77] The law says a birth should be registered within 35 days of the child being born.

[78] There are 6,684 wards in Nepal. International Foundation for Electoral Systems, 2017. Elections in Nepal: 2017 Local

Elections. www.ifes.org/faqs/elections-nepal-2017-local-elections

[79] UNICEF, 2018. Status of Civil Registration and Vital Statistics in South Asia Countries. www.unicef.org/rosa/reports/status-civil-registration-and-vital-statistics-south-asia-countries

[80] They are employed by the federal government.

[81] This translates to poor digital literacy. The challenges are usually exacerbated in remote locations where weak infrastructure and patchy internet connectivity are more common.

[82] Get in the Picture, no date. Nepal, https://getinthepicture.org/country/nepal (accessed 22 September 2020).

[83] UNICEF, 2018. Status of Civil Registration and Vital Statistics in South Asia Countries. www.unicef.org/rosa/reports/status-civil-registration-and-vital-statistics-south-asia-countries

[84] Constitute Project, 2015. Nepal 2015. https://www.constituteproject.org/constitution/Nepal_2015?lang=en

[85] Government of Nepal, 2014. E-Government Master Plan. https://docplayer.net/64242691-E-governance-master-plan-egmp.html

[86] The previous National ID Card Management Centre was established in July 2011 and was in the Ministry of Home Affairs. It merged with the Ministry of Federal Affairs and General Administration's Department of Civil Registration to create DNIDCR.

[87] The National Identity Card replaced the Nepalese Citizenship Card.

[88] Family name, given name, address, father's name, mother's name.

[89] Non-resident Nepalese and foreign citizens' access is provisioned for by law.

[90] In addition banking transactions and as a record for security management. http://nidmc.gov.np/demo1/en/faqs/

[91] Broadly speaking, the NIDSC system is financially reliant on donor support.

[92] A phased approach to the distribution of NIDSCs was initially planned, but was abandoned in favour of a continuous effort. IDEMIA, no date. A multipurpose biometric e-ID for Nepal, www.idemia.com/multi-purpose-biometric-eid-nepal (accessed 28 September 2020).

[93] Civil Registration System & its Linkage to National ID in Nepal. https://sustainabledevelopment.un.org/content/unosd/documents/4253Session%205-3%20Bhagawan%20Aryal.pdf

[94] The government views VR as the bedrock of national ID, where boosting the rate of birth registration is critical. Department of Civil Registration, no date. Civil Registration System & its Linkage to National ID in Nepal. https://sustainabledevelopment.un.org/content/unosd/documents/4253Session%205-3%20Bhagawan%20Aryal.pdf

[95] MoF is a large ministry composed of eight divisions, two departments, two central offices and one training centre. It includes the Administrative Division, Revenue Management Division, Financial Sector Management & Cooperation Coordination Division (which monitors and supervises state-owned enterprises and helps implement privatisation policy and programmes), and Planning, Monitoring and Evaluation Division, as well as the Financial Comptroller General Office, Public Debt Management Office, and the Public Finance Management Training Centre. MoF, no date. Present Organisational Overview, www.mof.gov.np/en/organisational-overview-67.html (accessed 25 September 2020).

[96] It is overseeing security upgrades to each system, which are planned to be completed in the first half of 2021.

[97] Interviewees in this study confirmed that an interoperable electronic IFMIS is not fully functional or operational. However, evidence shows that some form of an IFMIS has been operational in Nepal for a while. For example, documents suggest that AusAID, the Danish International Development Agency, FCDO and the Norwegian Agency for Development Cooperation funded an upgrading of an IFMIS between 2011 and 2015 (no further details are provided). Further, in 2017 the Government hired Nepal-based Team Consult PVT LTD to complete a thorough upgrading and overhaul of IFMIS. ODI, 2013. Operational risk assessment of PFM in Nepal: a review of challenges and opportunities. www.odi.org/publications/7832-operational-risk-assessment-public-financial-management-nepal-review-challenges-opportunities; Team Consult Pvt. Ltd, no date. Completed Projects, www.teamconsultnp.com/completedprojects.html (accessed 1 October 2020).

[98] The version now in operation is the culmination of many developments from its first deployment back in 2007. Ministry of Women, Children and Social Welfare, no date. Experiences of Implementing Gender Responsive Budget (GRB) in Nepal. www.unescap.org/sites/default/files/11.%20Nepal.pdf

[99] Users enter the system via unique user IDs and passwords. To upload data, they click on dedicated modules (tabs) which correspond with the different types of data that LMBIS collects. For example, to submit a budget, the user clicks on the 'budget data entry' tab, and then its sub-tab 'prepared proposed budget'. Scribd, 2018. LMBIS Entry Procedure and LMBIS Registration Form. www.scribd.com/document/377334042/LMBIS-Entry-Procedure-and-LMBIS-Registration-Form

[100] Ministry of Health and Population, 2019. Business Plan. https://mohp.gov.np/eng/images/Business-Plan--MOHP--Final.pdf

[101] World Bank, 2020. Integrated Public Financial Management Reform Project. https://projects.worldbank.org/en/projects-operations/project-detail/P164783?lang=en

[102] To develop PLMBIS further, it has been flagged that a "consolidated mechanism" to track expenditure needs to be added.

[103] Note that in 2019 the government cited a glitch in PLMBIS software as the reason for missing data under a Ministry of Physical Infrastructure Development project. However, the validity of this claim is contested. Government of Nepal, no date. Hello CM, http://hellocm.gandaki.gov.np (accessed 3 October 2020).

[104] International Monetary Fund, 2020. Nepal 2020 Article IV Consultation – press release, staff report and statement by the Executive Director for Nepal. www.elibrary.imf.org/view/IMF002/28952-9781513539751/28952-9781513539751/28952-9781513539751_A001.xml?redirect=true

[105] Constitute Project, 2015. Nepal 2015, https://www.constituteproject.org/constitution/Nepal_2015?lang=en

[106] SuTRA was based on a federal information system that the Ministry of Health and Population and National Reconstruction Authority use called TABUCS. This records budgeting and planning, accounting, reporting and monitoring of the implementation of internal and external audit reports.

[107] Local governments submit budgets on annually, and accounts daily.

[108] Others use Excel. And if a municipality cannot enter data directly into the electronic system it submits it on paper to the Financial Comptroller General Office or a provincial equivalent, depending on its unique policy.

[109] ABC Nepal, 2020. Half Yearly Review of Budget from Finance Minister Khatiwada. https://www.abcnepal.tv/posts/116701

[110] ABC Nepal, 2020. Half Yearly Review of Budget from Finance Minister Khatiwada. https://www.abcnepal.tv/posts/116701

[111] SuTRA allows local governments to immediately access the information relevant to their area.

[112] However, anything short of amending the constitution means overcoming the challenges will always depend on the consensus of local governments. The Ministry of Federal Affairs and General Administration has instituted the Provincial and Local Governance Support Program which will support the promotion of SuTRA.

[113] These are mostly well-resourced and in Kathmandu.

[114] Note USAID also did some work on TABUCS with the National Reconstruction Authority. Information is from interviewees.

[115] Foreign, Commonwealth and Development Office (UK), 2019. Annual Review – Improving Public Financial Management and Accountability in Nepal, http://iati.dfid.gov.uk/iati_documents/53007914.odt

[116] DHS Program, no date. Publications Summary. https://microdata.worldbank.org/index.php/catalog/2785/related-materials

[117] As is the case in many DHS Program activities globally, ICF International provided technical assistance.

[118] Enumerators collected data between 19 June 2016 and 31January 2017, from a sample of 11,040 households (actual response), using the computer assisted personal interview data collection system.

[119] DHS Program, 2020. Nepal: Standard DHS, 2020, https://dhsprogram.com/methodology/survey/survey-display-585.cfm (accessed 20 September 2020).

[120] UNICEF, 2016. Nepal 2014 MICS Final Report Released. https://mics.unicef.org/news_entries/41/nepal-2014-mics-final-report-released

[121] Note that the data matches pre-2015 state structure, hence 'development regions'.

[122] Enumerators collected data from a sample of 12,405 households (actual response) between February and June 2014. Data was collected by 15 teams each of 6 people (including three female interviewers). UNICEF, 2016. Nepal 2014 MICS Final Report Released. https://mics.unicef.org/news_entries/41/nepal-2014-mics-final-report-released

[123] Nepal Institute of Research and Communications, no date. Health and nutrition, www.nepalcomms.org/health-and-nutrition (accessed 5 September 2020).

[124] Mostly experienced enumerators used tablets to collect data from a sample of 12,800 households between July and November 2019. Data collection in some rural areas was delayed due to adverse weather conditions. CBS is responsible for the tablets, but they are UNICEF property. Tablets are connected simultaneously to separate CBS and UNICEF servers. Information is from interviewees.

[125] HFS 2015 is the first of its kind to combine "the components of the Service Provision Assessment survey of the Demographic and Health Surveys (DHS) Program". It measured the progress made during the second Nepal Health Sector Programme (NHSP-II) (2010-2015) and provided a baseline for the Nepal Health Sector Strategy (NHSS) 2016-2021. The sample for HFS 2015 consisted of 963 formal health facilities, and enumerators collected data between April and November using tablets and a range of software (such as CAPI and CARE). Data was collected in two phases due to the 25 April earthquake: phase 1 began on 20 April and was halted on 25 April, and phase 2 ran from 4 June to 5 November.

World Bank, 2017. Nepal Health Facility Survey, 2015. https://microdata.worldbank.org/index.php/catalog/2785/related-materials

[126] Enumerators began to collect data using CAPI from a sample of 1666 facilities in September 2020. DHS Program, 2020. Nepal: Service Provision Assessment Survey, 2020, https://dhsprogram.com/what-we-do/survey/survey-display-561.cfm (accessed 3 October 2020).

[127] "Inside the premise, there is a backup server as well. There is a risk of having both servers - live server and backup server- inside the premise. If there is any incident such as fire, all the data may be lost".

[128] Plus, identification of the person served, provisional diagnosis, services given, and outcome continuity of treatment.

[129] This is from a point in 2017 where HMIS e-reporting was only instituted in 30% of GHFs nationally. In the same year, the Department of Health Services committed to improving "online data entry mechanisms in all districts and hospitals and to gradually extending online data entry to below districts level health facilities". Department of Health Services, 2018. Annual Report. https://dohs.gov.np/wp-content/uploads/2019/07/DoHS-Annual-Report-FY-2074-75-date-22-Ashad-2076-for-web-1.pdf

[130] Filling the remaining gap depends on strengthening stable electricity supplies and/or internet connections. In some exceptional circumstances, local governments also operate in similar conditions, hence even manual reporting becomes problematic. If a facility still collects data manually, it does so by filling in HMIS form 9.3 (if hospital, forms 9.4 and 9.5) and sending it to local government offices, where it is plugged into DHIS2.

[131] World Bank, 2020. Nepal Health Sector Management Reform Program. https://projects.worldbank.org/en/projects-operations/project-detail/P160207

[132] UNICEF, 2018. Country Programme Action Plan 2018-2022. www.unicef.org/nepal/reports/country-programme-action-plan-2018-2022

[133] Despite it being law that the submission of data to HMIS is a condition for the annual renewal of their licenses.

[134] The Ministry of Health and Population operates a national register of private facilities and their unique IDs but it is not fully updated.

[135] Ministry of Health and Population, no date. Logistics Management Section, www.mohp.gov.np/eng/about-us/department-of-health/management-division/logistics-management-section (accessed 4 October 2020).

[136] World Bank, 2017. Nepal Health Facility Survey, 2015. https://microdata.worldbank.org/index.php/catalog/2785/related-materials

[137] USAID, 2017. Health for Life (H4L) Logistics Project, www.usaid.gov/nepal/fact-sheets/health-life-h4l-logistics-project (accessed 5 October 2020) and USAID, 2017. Request for Information – Nepal Health Systems Strengthening Project, www.usaid.gov/nepal/partnership-opportunities/rfi-367-17-0002-request-information-nepal-health-systems-strengthening-project (accessed 5 October 2020).

[138] UNICEF, 2016. Nepal 2014 MICS Final Report Released. https://mics.unicef.org/news_entries/41/nepal-2014-mics-final-report-released

[139] Data matches pre-2015 state structure.

[140] Nepal Institute of Research and Communications, no date. Health and nutrition, www.nepalcomms.org/health-and-nutrition (accessed 5 September 2020).

[141] DHS Program, no date. Publications Summary. https://microdata.worldbank.org/index.php/catalog/2785/related-materials

[142] DHS Program, 2020. Nepal: Standard DHS, 2020, https://dhsprogram.com/methodology/survey/survey-display-585.cfm (accessed 20 September 2020).

[143] World Bank, 2019. Implementation of the Nepal Living Standards Survey 2019/20 (NLSS- IV). https://wbgeconsult2.worldbank.org/wbgect/download?uuid=ae1de6bb-b8d1-48e1-8066-83b8b303a7e1#:~:text=The%20Central%20Bureau%20of%20Statistics,new%20survey%20is%20being%20conducted

[144] Nepal Development Research Institute, 2020. NLSS-IV Fieldwork Notice. www.ndri.org.np/for-job-seeker/nlss

[145] This meets biannually.

[146] In the old system, schools sent memory sticks to districts for them to enter the data, now schools log in to the IEMIS using a unique username and password and drop their digital files directly into it (IEMIS web portal https://IEMIS.doe.gov.np, accessed 15 September 2020). Private schools also report the data regularly, but a separate detailed analysis has not been done.

[147] This does lead to some problems with inaccurate reporting – "often fake data has been reported to get federal grants".

[148] Education development coordination units, which operate directly under the federal government, support clusters of local governments with technical issues relating to IEMIS.

[149] The Department of Education highlights the pressing need to build the capacity of schools and local governments to use IEMIS data. And, while there is still a general need to boost capacities, that federal institutions use aggregated data to create national plans (for instance, the Education Development and Coordination Unit, a federal level office, uses data to train and deploy school teachers), and provinces regularly monitor and analyse local data.

[150] The IEMIS is not interoperable with other data systems; a separate disconnected system handles financial data, and it does not collect any information on universities.

[151] ReliefWeb, 2017. EU extends support of EUR 61.4 million to boost Nepal's education sector. https://reliefweb.int/report/nepal/eu-extends-support-eur-614-million-boost-nepals-education-sector; European Commission, 2020. Commission Implementing Decision. https://ec.europa.eu/international-partnerships/system/files/aap-nepal-2020-6301_en.pdf

[152] USAID, 2017. Education Program, www.usaid.gov/nepal/fact-sheets/education-program (accessed 14 October 2020); USAID, 2019. Reading for All, www.usaid.gov/nepal/fact-sheets/reading-all (accessed 14 October 2020).

[153] CBS also uses data extracted from selected administrative records and financial documents to make the calculations.

[154] "It was the first Economic Census in Nepal as a complete count of all establishments". CBS, 2018. Preliminary Results of National Economic Census 2018. https://cbs.gov.np/wp-content/upLoads/2018/12/NEC2018-Preliminary-Results-National-Report-No.1-complete-set-final-rev6-180916.pdf. Note the national population and housing census has some numbers on employment and more.

[155] Published data does not include local-level disaggregation.

[156] The committees included the Economic Census Steering Committee, Technical Committee, Joint Coordinating Committee and District Economic Census Coordination Committees.

[157] Government of Nepal, 2017. National Floriculture Survey. https://nada.cbs.gov.np/index.php/catalog/70

[158] Government of Nepal, 2017. National Fishery Survey. https://nada.cbs.gov.np/index.php/catalog/84

[159] Government of Nepal, 2017. National Poultry Survey. https://nada.cbs.gov.np/index.php/catalog/72

[160] Examples of indicators included: founder/family member, managerial/executive staff, technical staff, productive staff, number of permanent males/females, annual salary, man days of males/females, average wages/day of males/females. CBS led and government financed. Data collected from 1 December 2018 to 31 March 2019 using a paper-based method. Government of Nepal, 2019. Commercial Coffee Survey.

[161] Same indicators, lead organisation and financing organisation as the Commercial Coffee Survey. Other technical and financial support by the National Tea and Coffee Development Board (in affiliation with Ministry of Agriculture and Livestock Development). Data collected from 15 May to 15 June 2018 using paper and/or computer-based collection methods. The listing form was based on CAPI whereas the main survey questionnaire was paper based. Government of Nepal, 2018. National Commercial Tea Survey. https://nada.cbs.gov.np/index.php/catalog/95

[162] The MoF conducts the Economic Survey annually. The most recent version (2019/20) does not detail the economic impact of the coronavirus because it only includes data collected before March 2020 (despite being published in May 2020). MyRepublica, 2020. Economic survey with outdated data gives false narrative of an economy hit hard by coronavirus. https://myrepublica.nagariknetwork.com/news/economic-survey-with-outdated-data-gives-false-narrative-of-economy-hard-hit-by-coronavirus

[163] The first Domestic Tourism Survey is also ongoing.

[164] CBS, no date. Surveys and Censuses, https://cbs.gov.np/survey-census (accessed 21 September 2020).

[165] DHS 2016 contains data on occupations and employment.

[166] CBS also produces a statistical pocketbook that contains various economic data organised by sector and themes.

[167] The last one before this was completed in 2008. CBS, 2017/18. Labour Force Survey. https://cbs.gov.np/wp-content/upLoads/2019/05/Nepal-Labour-Force-Survey-2017_18-Report.pdf

[168] The survey was conducted from July 2017 to June 2018.

[169] World Bank, 2019. Implementation of the Nepal Living Standards Survey 2019/20 (NLSS- IV). https://wbgeconsult2.worldbank.org/wbgect/download?uuid=ae1de6bb-b8d1-48e1-8066-83b8b303a7e1#:~:text=The%20Central%20Bureau%20of%20Statistics,new%20survey%20is%20being%20conducted

[170] LRMIS also automatically calculates the rates of registration fees, capital gains taxes and service fees for land registration offices and allows details of land across the country in the name of a single person to be easily traced.

[171] It also logs the times of application, verification and approval for each registration/transfer.

[172] The Department of Land Management and Records keeps a register of land registration offices which already operate a Land Records Information Management System: http://dolrm.gov.np/office/118/content/131 (accessed 15 September 2020).

[173] The LRMIS was originally developed under the government's Information and Communication Technology

Development Project in 2009 with grant assistance from the Asian Development Bank. (https://www.adb.org/sites/default/files/project-document/65050/40544-nep-tcr.pdf) It was initially installed in a group of 16 land registration offices in 2015.

[174] Also, in opposition to the problem of too much central control as found with many of the core systems, once a Land Records Information Management System is installed in a land registration office it is not possible for the Department of Land Reform and Management to adjust it directly from the centre.

[175] The EeMIS is being developed from a pre-existing 'Jobs Portal'. Its objectives loosely align with the Prime Minister's Employment Program (reportedly the EmMIS will provide data to monitor progress).

[176] As well as collecting primary data, the EeMIS also "aggregates information from other relevant sources" and is "interoperable with all relevant databases such as the SSA database".

[177] The Youth Employment Transformation Initiative Project started in April 2020 and will support three components: component 1 will strengthen the employment promotion systems and services. The World Bank is investing US$44.5 million on the whole of component 1, and disbursements until 2025. World Bank, 2019. Nepal: Youth Employment Transformation Initiative Project, www.worldbank.org/en/news/loans-credits/2019/09/12/youth-employment-transformation-initiative-project

[178] Federal, provincial and local governments can all provide cooperatives with usernames and passwords to operate the software.

[179] The National Planning Commission and Steering and Technical Committees all assist in the delivery of an NSCA as well.

[180] "The sampling frame used for the agriculture census is basically derived from the household schedule of the National Population and Housing Census 2011 which contains information about the holdings of agricultural land and livestock and is virtually a livestock census as well. CBS does not trust the Ministry of Agriculture and Livestock Development annual data much as they do not have proper research methodology".

[181] The NSCA was first taken in 1961/62; since then rounds have been held in 1971/72, 1981/82, 1991/92, 2001/02 and 2011/12.

[182] MoF, 2019. Budget Speech of Fiscal Year 2019/20. https://mof.gov.np/en/2019/06/19/news/news/1754

[183] CBS, 2020. Establishment based Statistics as supplementary to Agriculture statistics. www.fao.org/3/ca7870en/ca7870en.pdf

[184] For background information see: World Agricultural Meteorological Information Service, no date. Nepal Integrated Agro-Met Advisory Bulletin, www.wamis.org/countries/nepal.php (accessed 15 September 2020). The Ministry of Agriculture and Livestock Development was reformed in 2018 and is made up of seven divisions; administrative, agricultural development, food security and food technology, planning and development cooperation coordination, agriculture and livestock business promotion, livestock and fisheries development, and livestock health. Ministry of Agriculture and Livestock Development, no date. Organisation, www.moald.gov.np/page/organisation (accessed 15 September 2020).

[185] An AMIS website was started in 2015 and attempted to develop it into a full AMIS in 2017/18 but proved unsuccessful. A system of SMS alerts to provide weather data to farmers introduced as another part of the project will continue. However, very few of the farmers that Regmi et al surveyed knew about the SMS alert.

[186] Agrilinks, 2020. USAID Supports Nepal's Seed Systems to Go Digital: Connecting Farmers and Seed Suppliers during and beyond the COVID-19 Crisis, https://www.agrilinks.org/post/usaid-supports-nepals-seed-systems-go-digital-connecting-farmers-and-seed-suppliers-during-and (Accessed 1 September 2020)

[187] International Maize and Wheat Improvement Center, 2020. Seed systems in Nepal are going digital, https://www.cimmyt.org/news/seed-systems-in-nepal-are-going-digital/#:~:text=The%20Digitally%20Enabled%20Seed%20Information,linkages%20for%20Nepal's%20seed%20system.&text=The%20larger%20goal%20of%20DESIS,in%20Nepal%20in%20early%202020. (Accessed 1 September 2020)

[188] The Government of Nepal contributes core support to the International Centre for Integrated Mountain Development (the National Planning Commission is the designated nodal agency).

[189] "Traditionally, the key sources [of sensors for agricultural statistics] were satellite sensors and airborne instruments. The latter are typically used to create large ortho-imagery coverages with a high level of spatial detail (that is, at a resolution higher than 1 m) for topographic mapping, or in the generation of land tenure or rural cadastres". "These layers [ortho-imagery] can be used to assist manual digitization, such as in delineating agricultural parcel boundaries or infrastructure". Global Strategy to Improve Agricultural and Rural Statistics, 2017. Handbook on remote sensing for agricultural statistics. https://gsars.org/en/handbook-on-remote-sensing-for-agricultural-statistics

[190] The National Disaster Risk Reduction and Management Authority came into being in 2019 after previously operating under a different name, originally having been legislated for in 2017.

[191] On data gaps, it has been noted that "some of the missing data can be incorporated into the existing modules of BIPAD, [but] it is still unclear whether new modules should be developed for some datasets". English is used for details in

the field name of the forms in the backend, for example. In terms of complexity, the number of frontend and backend features and modules has been highlighted as problematic.

[192] As, for example, they are more likely to lack disaster management procedures and disaster dedicated teams.

[193] Many businesses across Nepal do demand government data. Many also collect their own data, and tend to share it with peers. However, in general private actors are not well placed to make robust contributions to Nepal's data landscape just yet; many businesses report that they possess limited levels of data literacy (one study found many did not realise they collected data in their activities, "businesses might say that we don't produce data, but we forgot to realise that the daily billing that happens is data") and do not regularly use data to inform decisions.

[194] Ministry of Finance, 2019. Budget Speech of Fiscal Year 2019/20. https://mof.gov.np/en/2019/06/19/news/news/1754

[195] Techsansar, 2020. What's in for Science and Technology at Nepal's Fiscal Budget 2077/078. https://techsansar.com/tech-news/science-technology-nepal-fiscal-budget-2077-078

[196] Tech Sathi, 2020 Nepal Budget 2077/78: What's in it for Information Technology? https://techsathi.com/budget-2077-78-highlights; Nepal 24 Hour, 2020. Online News Websites To Get Public Welfare Ads. https://nepal24hours.com/online-news-websites-to-get-public-welfare-ads

[197] Kathmandu Post, 2019. State of Think Tanks in Nepal. https://risingnepaldaily.com/opinion/state-of-think-tanks-in-nepal

[198] Kathmandu Post, 2018. Think tank formed to counsel government. https://kathmandupost.com/national/2018/09/23/think-tank-formed-to-counsel-government

[199] Bikas Udhyami, no date. Nepal in Data, https://nepalindata.com (accessed 1 September 2020); Open Knowledge Nepal, no date. Open Data Nepal, https://opendatanepal.com (accessed 1 September 2020).

[200] Collective Campaign for Peace, no date. Nepal Monitor Platform, https://nepalmonitor.org/about (accessed 1 September 2020) and Davids JC., et al, 2019. Soda Bottle Science – Citizen Science Monsoon Precipitation Monitoring in Nepal. www.frontiersin.org/articles/10.3389/feart.2019.00046/full#:~:text=During%20the%202018%20monsoon%20(May,bottles%2C%20concrete%2C%20and%20rulers

[201] World Bank, 2019. Nepal Development Update, December 2019: Envisioning a Future Data Ecosystem in Federal Nepal. https://openknowledge.worldbank.org/handle/10986/32891 and Poiani TH., Dos Santos Rocha R., Degrossi LC., and Porto De Albuquerque J., 2016. Potential of Collaborative Mapping for Disaster Relief: A Case Study of OpenStreetMap in the Nepal Earthquake 2015, https://ieeexplore.ieee.org/document/7427206

[202] For more information see the sections from 'Demography' up to 'Agriculture'.

[203] Note that the Ministry of Federal Affairs and General Administrative is also yet to offer any significant support to local governments on this, although it does not have a mandate to work on data with local governments.

[204] See the section called 'The Constitution of Nepal'.

[205] The Provincial and Local Governance Support Program has drafted plans to create federal "resource centres" to feed information into the provinces. If completed provinces would receive data without spending much themselves, but this is "five years away" (interviewee). Avoiding central-level control over the data being produced by resource centres will be important for provinces' data autonomy.

[206] Local governments should also engage with local communities and civil society organisations to explore non-official data opportunities in their area.

[207] See the sections 'Demography' up to 'Disaster risk management'.

[208] Which they are, to a certain extent.

[209] See the sections called 'Demography' and 'Education'.

[210] See the sections 'Demography' up to 'Disaster risk management'.

[211] See the sections called 'Demography' and 'Education'.

[212] See the section called 'Economy'.

[213] Conversely, SuTRA, DHIS2 and the electronic IEMIS are all widely used at local level, and CoPoMIS and EmMIS have been deployed as well.

[214] See the sections 'The Constitution of Nepal' up to 'Disaster risk management'.

[215] See the 'Introduction'.

[216] Estimated district-level disaggregations are also possible in certain circumstances.

[217] Schedules 5–9 of the 2015 constitution.

[218] Unofficial translation of the act provided by The Asia Foundation.

[219] Section 51.f.7 of the 2015 constitution.

[220] The Nepal Administrative Staff College is making impressive progress in building cross-sectoral capacity but the scale of the challenge remains daunting.

[221] For example, IT officers have been expected to manage systems such as disaster risk management without any experience of the meaning of the content.

[222] The CBS maintained 33 statistics offices across the 75 districts.

[223] Including civil registration and vital statistics, health, education, agriculture and public financial management.

[224] Section 51.f.7 of the 2015 constitution.

[225] In a number of countries, including Nepal, SDG monitoring – particularly upstream reporting to global institutions – has tended to become the driver of national indicators rather than the SDGs being integrated into national development plans. The SDG focus on the monitoring of targets often overlooks the data needed to meet the goals. Monitoring maternal mortality is one thing, while managing the data needed to drive the services that will reduce mortality is another.

[226] Unofficial translation of the Statistics Bill, sections 17 and 19.