Global Review of Management Information System Practices:
Lessons for China

2019

ABBREVIATIONS

ADB   Asian Development Bank

API   Application Programming Interface

DMIS   *Dibao* Management Information System

EMIS   Education Management Information System

GDP   Gross Domestic Product

GDPR   General Data Protection Regulation

GIS   Geographical Information System

HIAVS   Household Income and Asset Verification System

HMIS   Health Management Information System

ICT   Information and Communication Technology

ID   Identification Document

IMIS   Integrated Management Information System

IMSA   Interim Measures on Social Assistance

ISAS   Integrated Social Assistance Service Information System

LAN   Local Area Network

MCA   Ministry of Civil Affairs

MIS   Management Information System

MoF   Ministry of Finance

NBS   National Bureau of Statistics

SA   Social Assistance

SAIMIS   Social Assistance Integrated Management Information System

SASSA   South Africa's Social Security Agency

SIIAS   Integrated Information System for the Social Assistance

SOCPEN   Social Pension Management Information System

SP   Social Protection

UDB   Unified Database of Beneficiaries

WAN   Wide Area Network

EXECUTIVE SUMMARY

The integration of multiple management information systems can bring about significant gains by ensuring efficient and effective delivery of social assistance programmes. This report aims to contribute ideas for developing an Integrated Management Information System (IMIS) for China's social assistance programmes. The report provides overviews of the MISs in *Dibao* and the Household Income and Asset Verification System (HIAVS), and then systematically reviews the design and use of integrated IMISs in Brazil, Turkey, Indonesia, South Africa and Uruguay to identify lessons for China from international experiences. The report is based on a desk review of China's social assistance literature and broader international literature on IMIS; and on interviews with key informants, including Ministry of Civil Affairs (MCA), UNICEF and researchers with deep understanding of China's social assistance.

Integrating MISs often entails three components:1) setting up functional MISs for each social assistance programme; 2) linking MISs across multiple social assistance programmes; and 3) linking a social assistance IMIS to other government information systems. Social assistance MISs are key for managing beneficiaries, complaints, payments, compliance to rules, and overall reporting. Integrated MISs aim to improve coordination, accountability and transparency across programmes; evidence-based decision-making; beneficiary selection; prevention of fraud; access to broader social services; and the effectiveness and sustainability of social assistance. More functionality can be included in a social assistance IMIS by further linking it to other government platforms, such as the civil registry, national identification registry, disability registry, income tax system, and the government's payments gateway.

Generally, five policy issues and four operational issues need to be addressed to integrate social assistance MISs. The five policy issues are: 1) a legislative and institutional framework to support e-government; 2) national social assistance policies, strategies and legislations with a vision for MIS integration; 3) a governance framework that ensures ownership at the highest level of government; 4) budgets to cover costs of hardware, software, operations, and other expenses; and 5) civil registration and identification to enable data integration. The four operational issues are: 1) operational capacity; 2) hardware; 3) software; and 4) guidelines, standards and frameworks.

Under MCA, China has established the Management Information System (DMIS) and the HIAVS. These are a network of MISs in most regions of China, following the administrative structure of Township, County, Municipality, Province and National levels. A national framework is needed for integrating the MISs. The report highlights the following for integration: 1) ensuring interoperability across multiple MISs across the country; 2) standardization of indicators; 3) ICT infrastructure for connectivity; 4) data privacy and security; 5) human capacity at all MIS operational levels; 6) linkage to national ID and *Hukou* registration; 7) inclusion of multidimensional poverty; 8) linkage to the Strategy of Targeted Poverty Alleviation; 9) strengthening a unified national system for household income and

asset verification; and 10) coordination across urban-rural development, regional development and social assistance programmes.

The five case studies indicate that success in integrating MISs depends on: clearly defined roles and responsibilities of different actors in the design and implementation of an IMIS; a strong political will; a central organisation with requisite mandate to coordinate the design and implementation of an IMIS; a functional e-governance system that can accelerate the implementation of an IMIS; legislation to ensure the longer sustainability of an IMIS; social assistance policy that defines and incorporates the model of integrating MISs; strengthening case management using an IMIS to better address multidimensional poverty through delivery of broader social sector services; budgeting and feasibility assessment; linkage to civil registration and national ID documents; staff operational capacity and functions; hardware needs, upgrades, disaster recovery and security; and decisions on approach for software development.

Agreement on the vision and objectives for an IMIS in China would be needed, as a first step. Whereas China has something akin to an integrated beneficiary registry for *Dibao*, establishing an IMIS for the entire social assistance sector is a much larger objective. This would define the model of integration of different MISs, address some challenges, and take into consideration that local authorities have a lot of implementation responsibilities, including local variations in means testing. Reforms towards IMIS could consist of three components: a single application window that later allows for applications through online platforms (and, if desired by policymakers, potentially later delinks from *Hukou*); greater interoperability and standardisation of local MISs; and stronger linking of MISs to broader social services.

CONTENTS

1. INTRODUCTION

According to the National Bureau of Statistics (NBS), China had a population of 1.395 billion by 2018, making it the world's most populous country[1]. It was also the second largest economy after the United States by gross domestic product (GDP)[2] . Since China began its market reforms in the late 1970s, China lifted 740 million people in rural areas out of poverty from 1978 to 2017, roughly about 19 million people annually, contributing heavily to global poverty reduction initiatives, as illustrated in Figure 1.

Figure 1: Population of poor people in rural China between 1978 and 2017

Declining Poverty Incidences (in Millions)
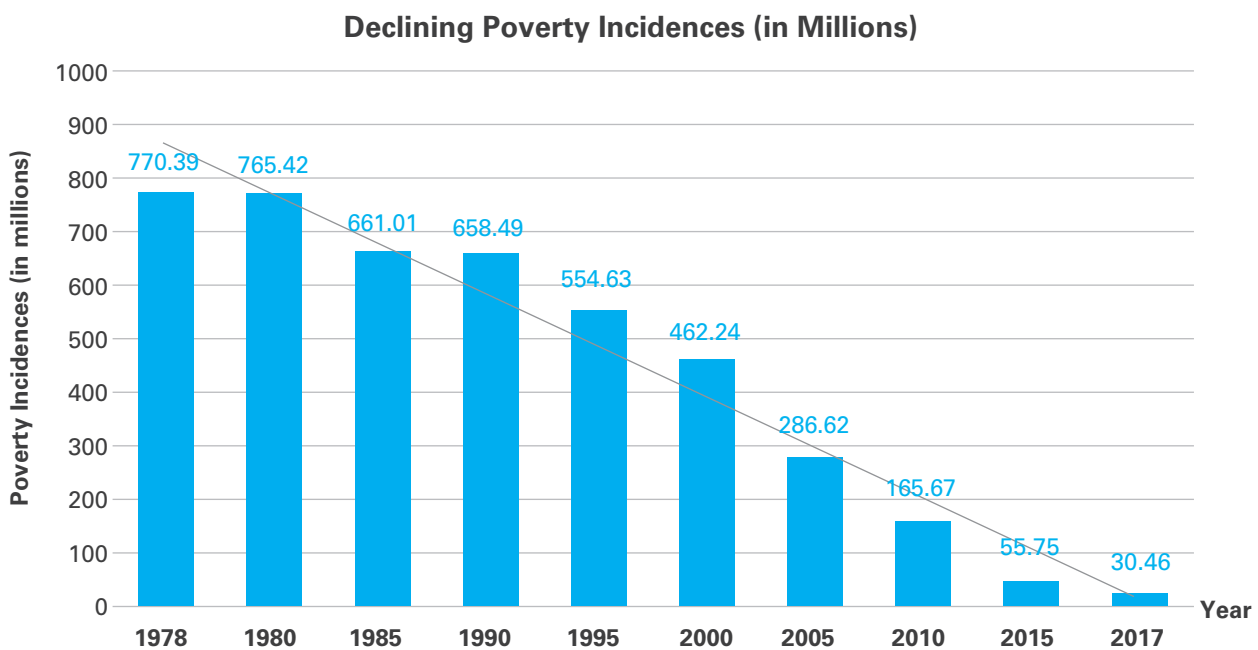
Source: Authors' illustration based on NBS.

China runs one of the world's most comprehensive and complex social assistance systems characterised by: (i) a large number of beneficiaries (more than 60 million by the end of 2017); (ii) a centralised monitoring system; (iii) a devolved governance of social assistance programme implementation; (iv) variation in implementation across provinces and localities[3]; and (v) a strict screening process buttressed by systematic enforcement of programme guidelines.

1— http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm
2— http://statisticstimes.com/economy/projected-world-gdp-ranking.php
3— For instance, there were more than 500 *Dibao* lines in 2017.

According to the *Interim Measures on Social Assistance* (IMSA) governing the Social Assistance (SA) system, China has eight Social Assistance (SA) programmes. The core programmes of the SA system are the minimum livelihood guarantee (or *Dibao*) and assistance to extremely poor families (or *Tekun*) for urban and rural residents. Medical assistance, housing assistance, education assistance and employment assistance are specific programmes that supplement *Dibao* and *Tekun* programmes. As illustrated in Figure 2, the number of *Dibao* beneficiaries has been increasing over the past decades but reached a peak in 2011.[4]

Figure 2: Number of *Dibao* beneficiaries between 1997 and 2017 (millions of people)
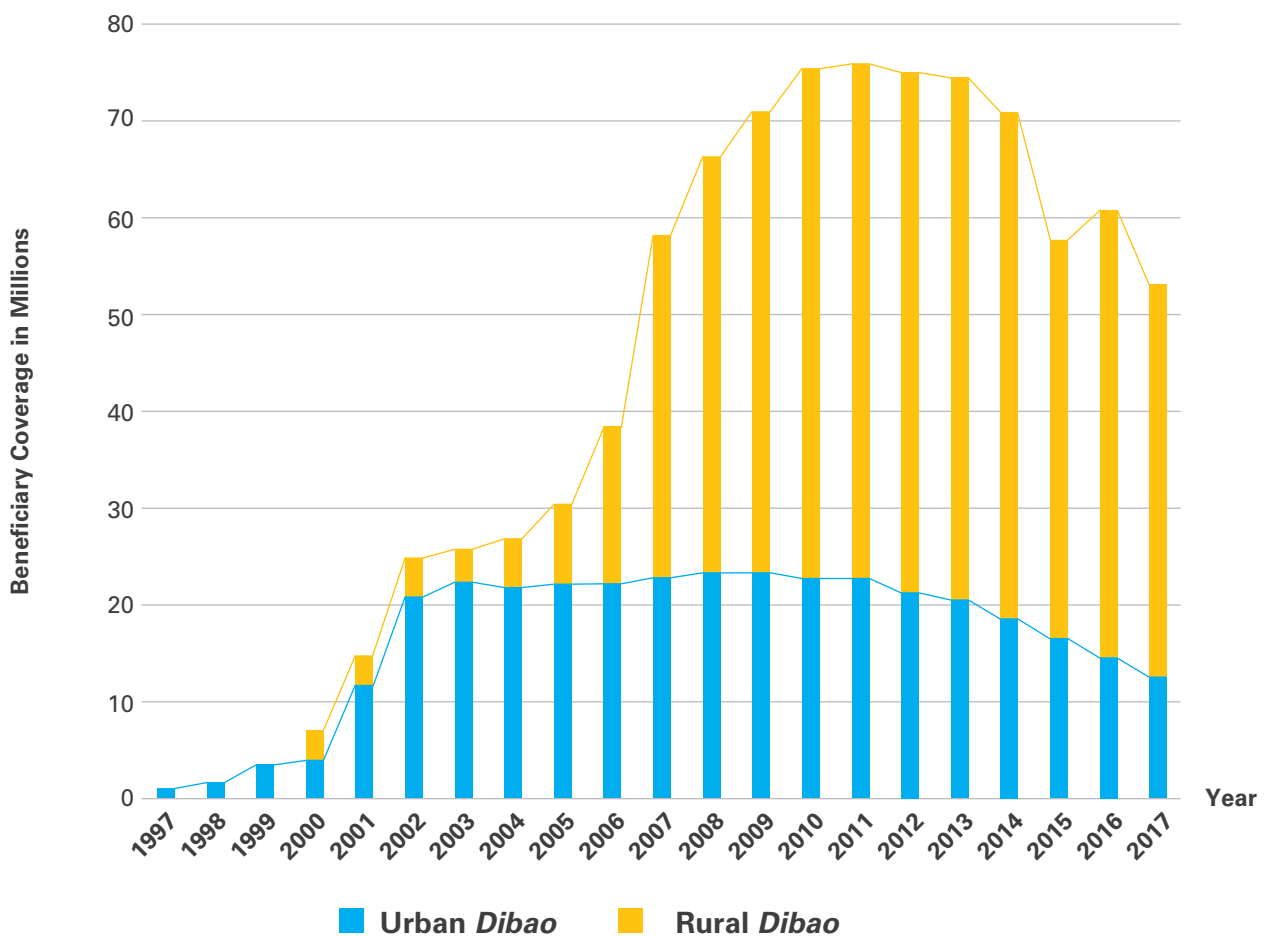
Source: Authors' illustration based on the Statistical Bulletins on the Development of Social Services of the Ministry of Civil Affairs, and Statistical Bulletins on the Development of Civil Affairs.

4— Yao, J. (2017); Xinping, G. (2017)

In order to manage its SA system, the Ministry of Civil Affairs (MCA) has established the *Dibao* Management Information System (DMIS) and the Household Income and Asset Verification System (HIAVS). Building on DMIS and HIAVS, a number of local governments have established their own MISs for managing various social assistance processes. These local SA MISs collect and collate essential information (i.e. personal and family information, income and benefit level information) and transfer it into the national *Dibao* MIS. In terms of infrastructure, a national wide area network (WAN) has been established in most regions of China, linking the administrative structures of Township, County, Municipality, Province, and National levels. However, China faces a number of challenges with existing MISs for its SA system. Key challenges include inconsistency in the information collected due to the differences in operational design of programmes and MIS implementation arrangements. Moreover, data connectivity and transferability at different levels remains a challenge.

This report aims to contribute ideas for developing an Integrated Management Information System (IMIS) for China's social assistance programmes. The report provides an overview of the MIS in China's *Dibao* and HIAVS, and then reviews the design and use of MISs in Brazil, Turkey, Indonesia, South Africa and Uruguay to identify lessons for China drawing on international experiences. The report is based on a desk review of China's SA literature and broader international literature on IMIS; and on interviews with key informants, including MCA, UNICEF and researchers with deep understanding of China's SA landscape. Research for the report was conducted between 1st November 2018 and 31st January 2019.

The remainder of the report is structured into the following sections:

Section 2 provides background information and key definitions.

Section 3 sets out the analytical framework.

Section 4 examines the MIS for: (i) *Dibao*; and (ii) HIAVS. *Dibao* is a social assistance programme, and also, it is used to target other social assistance schemes. HIAVS is essential for improving the accuracy of targeting of social assistance programmes in China.

Section 5 reviews the social assistance MIS in five "case study" countries and distils ideas applicable to China.

Section 6 presents concluding remarks.

2. BACKGROUND AND DEFINITION OF TERMS

Establishing an IMIS for social protection programmes can bring about significant efficiency gains and more effective monitoring of social protection.[5] This often entails weaving together three components: (i) setting up functional (meaning ability of the information to efficiently and effectively support the operational functions of a scheme) MISs for social protection programmes; (ii) linking MISs across multiple social protection programmes; and (iii) expanding the linkages to other government information systems.

Social protection programme MISs support key processes such as: registration of applicants, eligibility assessment of applicants, enrolment of beneficiaries, payments and reconciliations, complaints and grievance management, monitoring (including communication and feedback to beneficiaries) and reporting.

Beyond individual programme MISs, information collected on applicants and beneficiaries that is shared between programmes can build a comprehensive picture of beneficiaries (and other applicants) as well as the performance of the national social protection system.[6]

Moreover, broader linkages to other sector government information systems and registries could unlock greater benefits such as verification of applicants, empowering of beneficiaries by linkage to national payment gateways, and enabling social protection beneficiaries' access to institutionalised complaint and redressal systems.

The following section describes the building blocks and defines terminology associated with each of the three IMIS components, namely, (i) programme MISs; (ii) integrated MISs within social protection; and (iii) linkages to broader information systems beyond the social protection sector.

2.1 Programme management information systems

Programme MISs[7] underpin the effectiveness of social protection programmes by ensuring the high-quality delivery of key operational processes, such as registration, enrolment, payments and grievances.[8] Programme MISs cover many types of social protection programmes: (i) household cash or in-kind transfer schemes targeted at those living in poverty, commonly known as social assistance;

5— Chirchir, R. (2018) and Leite, P. et al (2017)

6— Chirchir, R. and Farooq, S. (2016)

7— In broader ICT discipline, MIS is just one type of information system that facilitates inputs, processing and output of information for managers in an organisation. Other types of information systems include transaction processing systems, decision support systems and executive information systems.

8— Chirchir, R. and Farooq, S. (2016)

(ii) lifecycle tax-financed entitlement programmes for individuals (such as universal social pensions, disability benefits and child benefits); (iii) social insurance programmes, such as health insurance, old age and disability pensions and unemployment insurance; and (iv) pensions for public servants.

The minimum operational functions that should be supported by an effective MIS in a social protection programme are:

- **Registration and assessment:** Selection and registration of beneficiaries.

- **Beneficiary management:** Enrolment of beneficiaries, update of beneficiary information (e.g. changes to recipients/proxies, identification of those to be removed from the programme, etc.).

- **Complaints and grievances:** Management of grievance mechanism, i.e. registration, escalation and resolution of complaints.

- **Payments and disbursements:** Production of lists of those who should receive payments and the level of payment to be given; also reconciliation to determine whether those on the payroll received their entitlements.

- **Conditions and compliance:** Monitoring of compliance with conditions (if applicable), e.g. school enrolment and attendance, immunisation, etc.

- **Monitoring and reporting:** Notification of when different processes have happened or should happen (e.g. when a payment is due or when beneficiaries should exit a scheme); and provision of reports to be used for management and monitoring and feedback/communication back to beneficiaries.

Figure 3: Components of a programme MIS
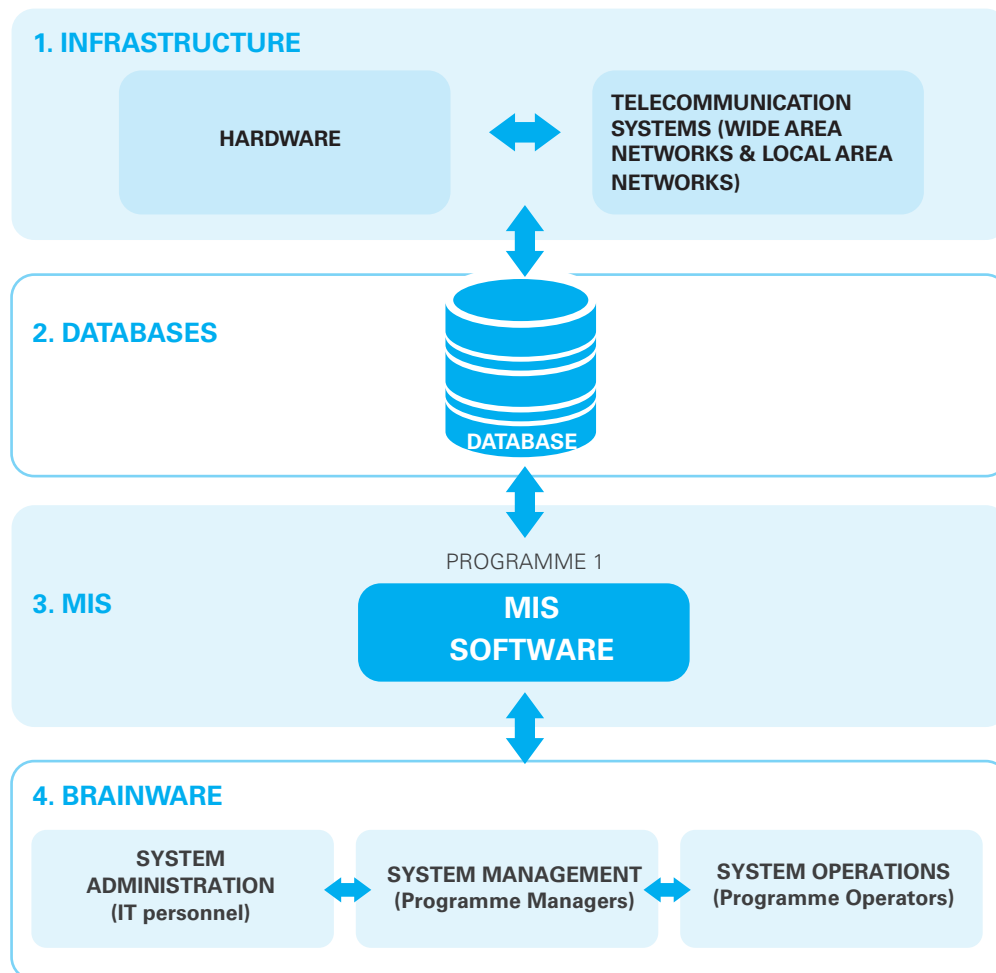
Source: Authors' illustration.

As illustrated in Figure 3, a functional MIS for social protection programmes should have four key components:

- **Hardware and telecommunication systems:** Refers to physical aspects of computers, telecommunication systems as well as other devices. The type of hardware to be procured is dependent on the type of technology deemed relevant for the environment within which the SP programme operates. For a fully electronic SP MIS, the hardware and network infrastructure could range from tablets/phones for data capture, server for hosting of the databases and software and Local Area Networks (LANs) and Wide Area Networks (WANs) for providing access to the MIS within one or across offices over multiple locations.

- **Database:** A database is a system designed to organise, store, and retrieve large amounts of data (Wikipedia, 2019). Examples include proprietary databases, such as Structured Query Language (SQL) Server, Oracle and open source ones such as MySQL and PostgreSQL.

- **MIS application software:** Software applications are special programs that are developed to capture the functional requirements of SP programmes. They could be developed to operate in a number of platforms, e.g. desktops, mobile phones, notebooks and servers. Additionally, software could be built for the web environment. Software applications can be hosted in a number of hardware platforms and often store information in databases.

- **Brainware:** Refers to skilled and competent human resources. It is often forgotten that programme staff play a key role in any MIS design and implementation, as they have to manage all functions and components of the system. If programme staff are not well-trained, or are not adequate in numbers, then MISs will not function efficiently.

A MIS does not need to be fully computerised. However, the more computerised it is, the higher the chance that the system is more transparent, contains more checks-and-balances (i.e. reducing the risk of fraud), and is more efficient. However, a fully computerized systems can be difficult to operate in developing country contexts where staff may not have the required skills, equipment may not be available and power outages may be prevalent. Therefore, choices and trade-offs should be considered when setting up a social protection MIS.

An example of a functional MIS is Uzbekistan's Pension Fund Management Information System, implemented by the Ministry of Finance. The key features of the Pension Fund MIS are described in Box 1.

Box 1: Uzbekistan's Pension Fund Management Information System

The Pension Fund runs a functional MIS that is used at pension offices across Uzbekistan. Even though the labour book (filled by employers) is still manual, once data has been keyed in by inspectors, the other processes such as computation of pension amounts, and production of payrolls are automated. Through a web portal, the payment service provider, Peoples Bank, updates the reconciliation details. Moreover, the Pension Fund MIS also has an alert management system and around 1.6 million out of the 3.2 million beneficiaries with mobile phones get short text messages (SMSs) notifying them when their entitlements are cashed out. The Pension Fund MIS also has a complaints and grievance module complete with a four-digit hotline – 1140 – and linkages to the Office of Prosecutor General, Single Interactive Services Portal (www.my2.gov.uz), President's Virtual Reception and Ministry of Finance complaints portal.

Source: Chirchir, R. (2017) Concept note on establishment of Single Registry in Uzbekistan, Development Pathways, UK.

2.2 Integrated management information system (IMIS) for social protection

An IMIS for social protection manages the flow of information between multiple social protection programmes. It should also be understood as an encompassing term for any comprehensive software platform that is deployed to integrate data and information for efficient management within the social protection sector and beyond. Whereas an MIS is designed for one SP programme, an IMIS links multiple SP programmes to each other to ensure better coordination between social protection programmes, links between beneficiaries and the provision of additional complementary services, and links the planning and monitoring of social protection interventions.

Figure 4: **Components of IMIS**
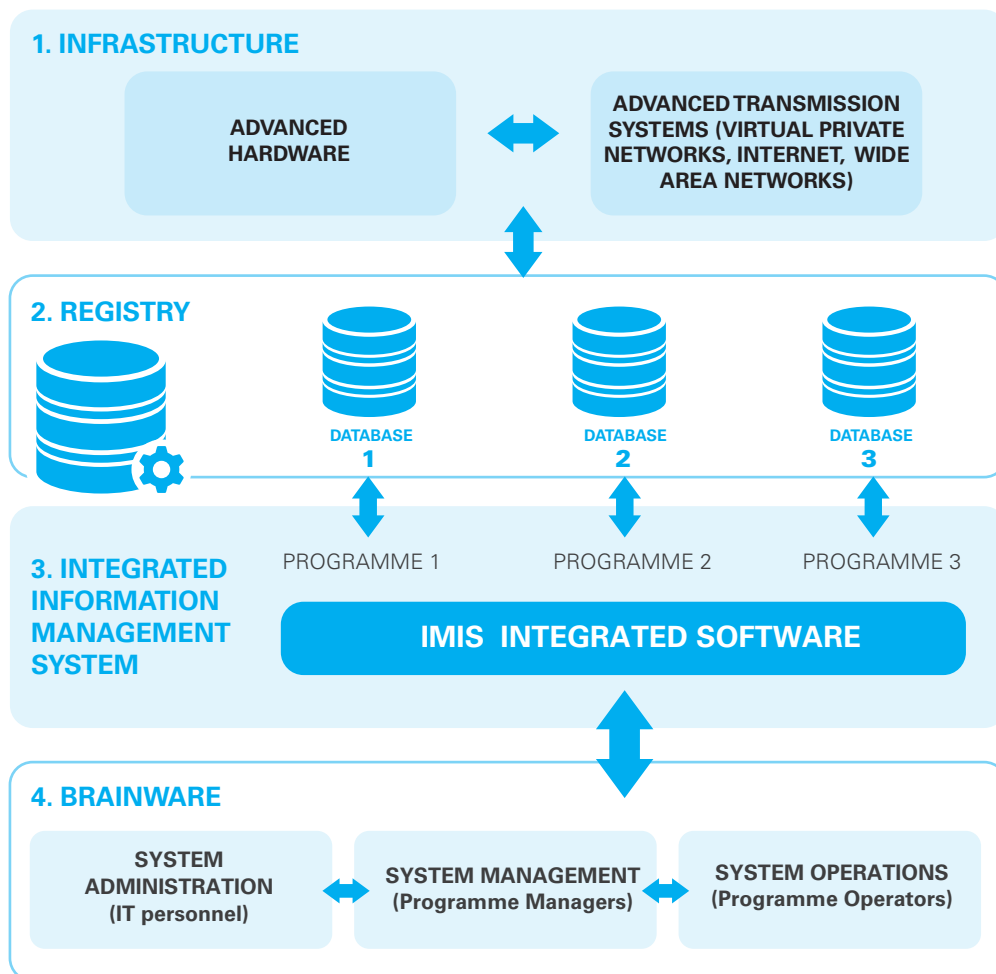
Source: Authors' illustration.

As illustrated in Figure 4, an IMIS for social protection primarily consists of the following components:

- **Registry:** The term registry is only meaningful when we talk about IMIS. The term registry is not used when referring to one SP programme or its MIS. Generally speaking, a registry could be conceived as a consolidation of multiple databases[9] to create a special database managed by dedicated institutions and underpinned by a legal framework - policies, decrees, acts of parliament, etc. - to be systematically[10] used by multiple social protection programmes for limited non-operational functions. For instance, we do not use registries to deliver social protection payments or manage complaints and grievances. But the registry is typically used to keep information about applicants and beneficiaries or both. In reality, the terms registry and database are used interchangeably to mean system for storing and retrieving large amounts of data.

- **IMIS integrated software:** In addition to MIS software for each programme, there is often need for a software for the integration. So, IMIS refers to an application software that enables integration between and among multiple MISs or provides an enabling environment for such systematic linkages. Because the integrated software underpinning an IMIS is meant to be linked to multiple other MISs, it must support interoperability, meaning the capability of one software to exchange information seamlessly with another. As an MIS is linked to a database, an IMIS could be linked to a registry or registries to support its desired functionality. However, IMIS integrated software should only be linked to registries if the IMIS needs to store data. In fact, an IMIS supported by integrated software could virtually link to multiple MISs without the need for a physical registry. IMIS integrated software often incorporates advanced software such as web services and software intermediaries such as application programming interfaces (API).

- **Advanced hardware:** An IMIS requires advanced hardware infrastructure to support its complex inter-programme operations. Such standard hardware includes servers, firewalls, advanced switches and security systems.

- **Advanced transmission systems:** An IMIS requires advanced network infrastructure such as LANs, WANs, reliable Internet and a virtual private network for optimal connectivity to ensure reliable access to information between and among social protection programmes.

- **Brainware:** Besides operational, administration and management staff, IMIS requires additional competencies on research and analysis. In fact, IMIS creates a massive data

---

9— It is not uncommon for registries to be built by consolidating multiple databases (Cadastro Único in Brazil) or be piloted in specific regions with the aim of scaling them up nationally (Unified Beneficiary Registry in Malawi).

10— Systematic usage should not be conflated with ad hoc data sharing, which typically happens to any programme that collects data on beneficiaries or applicants.

resource that requires additional skills to analyse and inform social protection policies. Data sharing protocols must be included in the design of IMIS to ensure data privacy and confidentiality of personal data.

As illustrated in Figure 5, the IMIS landscape principally consists of three pillars:

i. **Registration functions:** This pillar consists of two components: (i) single window, a government office at the local level where people can apply to multiple social protection programmes, submit complaints and obtain information, as well as, potentially, register births, pay taxes, etc.; and (ii) social registry, which acts as a platform used to consolidate registration and targeting efforts principally for household-based social assistance programmes.

ii. **Information management:** This pillar consists of principally MIS or in some cases IMIS depending on the organisational governance structure and social protection programmes. As countries develop, there is a tendency to evolve from household targeted programmes to individual entitlement programmes. Irrespective of the types of programmes (whether household targeted, individual targeted, social insurance or civil service pensions), there would typically be a number of MISs, in any SP landscape, that should ideally be linked for better coordinated information management.

Figure 5: A potential model of IMIS linking social registry and integrated beneficiary registry
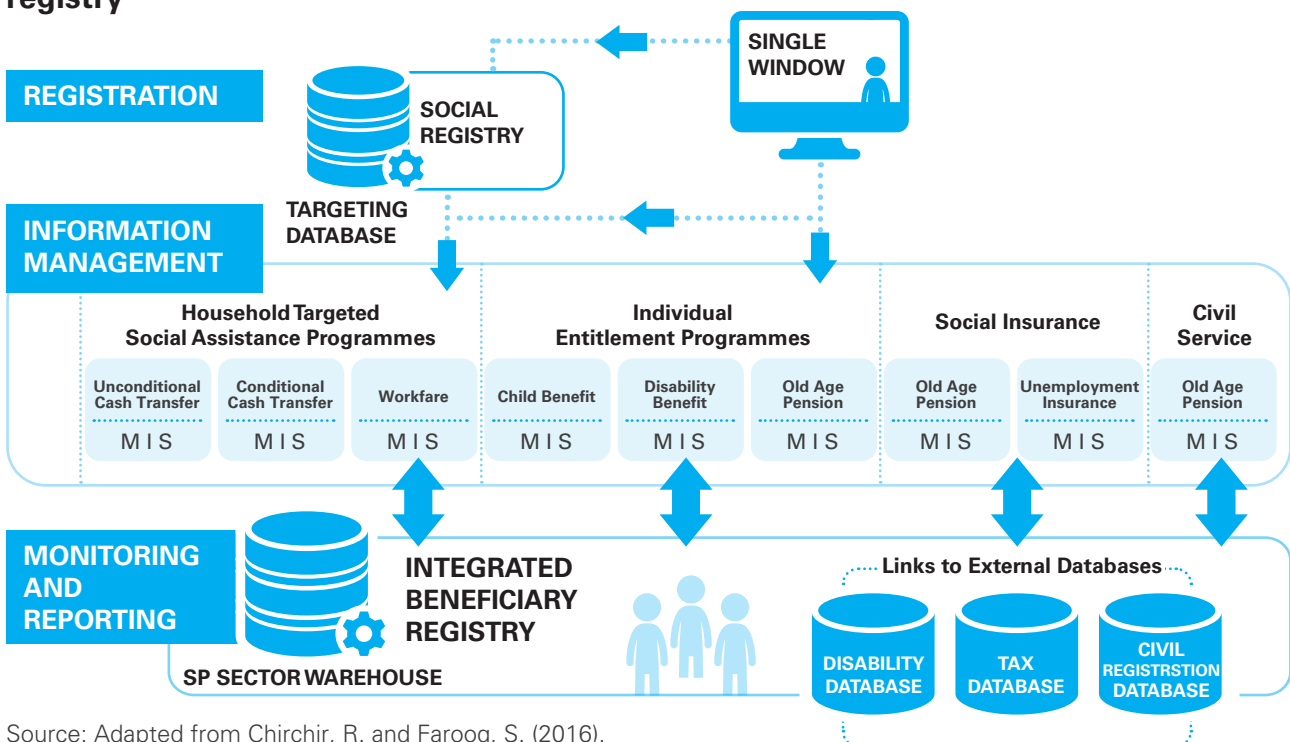
Source: Adapted from Chirchir, R. and Farooq, S. (2016).

iii. Monitoring, reporting and linkages to other sector registries and information systems: This pillar principally consists of the integrated beneficiary registry, which acts a warehouse of information across the social protection sector. It also acts as gateway and nexus of information within social protection and external registries such as disability, tax and civil registration systems.

As illustrated in Figure 5, there are two basic models of integrating information, with each model answering slightly different questions: (i) integrated beneficiary registry; and (ii) social registry. It is possible to blend both models, and there might be other variations depending on constraints and opportunities in each country. The two basic models are:

i. Integrated beneficiary registry information system: This acts as a single point of reference that explains who is receiving what type of assistance, where the assistance is received and when the assistance is transferred. The integrated beneficiary registry is, effectively, a warehouse consolidating information from all types of social protection programmes. It acts as a nexus of information, providing interlinkages between individual programme MISs and other external databases that can be used during targeting and registration, such as the income tax, civil registration and, if applicable, disability databases.[11]

ii. Social registry information system: This helps answer the question: "who is eligible to access which social services?". Social registries are special purpose databases that support outreach, registration and assessment of eligibility for inclusion in social programmes.[12] Social registry information systems act as an interface between citizens on the one hand, and institutions - social registry operators and social programmes - on the other hand. Social registries contain information on applicants, whether or not they are deemed eligible for, or enrolled in, selected social programmes. Social registries can be tailored to the needs of broader social programmes by: (i) adding further criteria to validate the lists provided; and (ii) choosing what percentage of households ranked nationally are to be included as eligible.[13]

Integration of SP information often requires an institutional functional review, governance systems review, and sometimes policy legislation. The commonly cited objectives of integration include:

i. Planning and coordination of the design and operation of social protection programmes: Examples include the review of targeting approaches, data collection approaches (whether on-demand, census or hybrid), the means of validating and verifying information collected, the criteria for assessing eligibility of beneficiaries, communication strategies, payment design parameters, case management processes including the types of cases (complaints,

---

11— WFP (2015)
12— Leitte, P. et al. (2017)
13— Barca, V. (2017)

updates and appeals) and resolution mechanisms; and the programme's logical framework, outcomes, outputs and key performance indicators and the frequency of reporting.

ii. **Increased accountability and transparency across the social protection sector:** IMIS could provide a mechanism for consolidating data across social protection programmes. This provides reports to multiple stakeholders. Importantly, the design of IMIS is normally preceded by standardisation of social protection processes.

iii. **Obtain reliable information for evidence-based decision making:** In context with multiple social protection interventions, IMIS creates a means of consolidating data from multiple programmes informing stakeholders about: beneficiaries enrolled against the government's expansion plan for the national social security system, the number and type of programme each household is benefitting from, the accuracy of beneficiary details, timelines of payments, complaints resolved within established time frames, and consolidated programme costs.

iv. **Improved beneficiary selection for multiple social protection programmes (such as for geographical quotas):** This is a primary reason for establishing social registries. But, other forms of IMIS such as integrated beneficiary registries could also provide useful data for beneficiary selection especially in scenarios where quotas have been set by geographical locations.

v. **Identify and prevent benefit fraud across social protection programmes:** Typically, IMIS are linked to Identification Document (ID) registries and other civil registration systems. So, this enables authentication of social protection programme applicants. Broader functions of IMIS include de-duplication of applicants and ensuring that they receive benefits based on stipulated laws and regulations.

vi. **Gateway to broader social services:** IMIS could provide a mechanism where beneficiaries are linked to additional complementary services, e.g. education, health and pyscho-social support services. Important here are concerns about the use of automated selection mechanisms using algorithms. For example, European governments have endorsed the General Data Protection Regulation (GDPR) which states, in Article 22, that: "the data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her".[14]

vii. **Assess the effectiveness and sustainability of social protection interventions:** With linkages of IMIS to other government databases, such as census and household budget surveys, the social protection sector can determine if they are reaching the target beneficiaries.

14— European Parliament (2016)

2.3 Linkages to broader registries and information systems from other sectors

IMIS could be linked further to broader government platforms and services, such as in health, education and social services, to create "single windows" for services ("one-stop-shops"). Except for a few countries, such as Turkey, Uruguay and Chile, most countries have not done this because: (i) information is typically collected in aggregated form in education and health sectors; and (ii) there is considerable ethical sensitivity in linking social protection systems to health information systems due to data privacy concerns.

Examples of broader government platforms and services that social protection information systems could link to include:

i. **Civil registry:** These databases store information on births, marriages and deaths. For SP programmes with eligibility criteria related to age (e.g. child benefits or old age pensions), birth certificates enable beneficiaries to prove their eligibility.[15] Similarly, digitised death certificates are very useful for pension programmes as it helps identify ineligible beneficiaries who are deceased.

ii. **National identification registry:** International evidence[16] indicates that some form of unique ID for individuals is needed to integrate information across systems. The best practice is to use the existing foundational IDs, such as national IDs, rather than creating extra functional IDs. Foundational IDs are increasingly linked to the social protection systems for verification of the applicant's authenticity.

iii. **Disability registry:** Many countries have agencies responsible to register persons with disabilities (PWDs) and to mainstream support services in partnership with state and non-state actors. It is typical for disability agencies to establish a "disability registry" of PWDs in a country. In an ideal scenario, this registry should be linked to IMIS, and by extension programme MISs, in order to enable social protection schemes to mainstream support to disabled persons.

iv. **Income tax registry:** For SP programmes that depend on income as a criterion for eligibility, a cross reference can be made against the tax database. For instance, South Africa's Social Security Agency (SASSA) runs cross checks of its recipients against the South Africa Revenue System (SARS) database to validate income levels, an important criterion in its means testing.

v. **Payments gateway:** SP programmes in some countries use different service providers to

---

15— ISPA (2017)
16— Barca, V. and Chirchir, R. (2014)

deliver payments. Sometimes multiple programmes deliver payments in the same locations, and at times to the same beneficiaries, so there arises an opportunity to share resources and approaches for payment delivery. A shared payment gateway could facilitate access to different payment mechanisms, and integrate multiple payment service providers. This may be conceptualised as part of the Government services pillar if used by other institutions external to social protection.

3. IMIS ANALYTICAL FRAMEWORK

As illustrated in Figure 6, IMIS is shaped by two broad issues that must be closely coordinated:

i. policy issues; and

ii. operational issues.

The two issues are discussed in the following sections.

Figure 6: Requirements for integration

PILLARS

Policy Requirements

Operational Requirements

REQUIREMENTS

Legislative and institutiaonal framework and broader e-government systems

National social protection policies, strategies

Governance frameworks

Operational capacity (promotion, research, information technology)

Hardware (tablets, desktops, servers etc.)

Software (custom off the shelf solutions, bespokes solutions)

Budgets (hardware, software, operational expenses and long-term expenses)

Foundational Civil Registration Systems

Operational Guideline/Technology Frameworks/Manuals

Source: Chirchir, R. (2018) Concept Note on IMIS.

3.1 Policy issues

Irrespective of the country context, the minimum policy requirements for design and operation of IMIS include:

i. **Legislative and institutional framework supporting broader e-government:** In countries that have adopted coordinated e-government framework, there is a specific Ministry responsible for setting technology standards and putting in place laws on data protection. Such an electronic government legislative framework ensures an enabling environment for IMIS by: (i) creating awareness about the benefits and risks of e-government system, i.e. building digital competence; (ii) setting context specific standards and rules for data exchanges; and (iii) enforcing digital and data protection laws. In an environment of e-government, the aim is to ensure that data is digitised once by each line ministry and then shared with other Ministries and State Agencies using secure automatic links managed by the Ministry of Information and Communication Technology (ICT). When data is shared over automatic data transfer mechanisms, such as APIs and web services, it is important that it is encrypted. The overall aim of any e-government initiative is to ensure efficiency in the delivery of the government services.

ii. **National social protection policies, strategies and legislations spelling out a vision for MIS integration:** As one of the enablers of coordination of social protection in a country, the MIS integration should be clearly spelt out in the national social protection policy, including ideally, high level objectives and the model for integration. As social protection systems mature, these policies should be enacted into laws. For instance, whereas Kenya and Uganda have relied on policies to define their IMIS, Chile established it through legislation, which states rights, obligations and responsibility for the use, access and maintenance of data.

iii. **Governance framework:** Integration projects are large scale and therefore require ownership at the highest level of government. For instance, in Uzbekistan, the Social Protection Registry project is overseen by a cross ministerial committee led by the Ministry of Finance. And, the steering team is supported by technical specialists on ICT and Ministry of Labour and Employment Relations. The steering and technical team shepherd the design and implementation of the IMIS in liaison with contracted suppliers.

iv. **Budget:** The costs of large IMIS projects are sometimes grossly underestimated. To avoid disappointment and wasted finances, the total cost of ownership should be computed in terms of hardware, software, operational expenses (infrastructure, electricity, testing downtime, technology/user training, audit, insurance, etc.) and long-term expenses (replacements, future upgrades or scalability, decommissioning). The feasibility report should set out these costs. Besides the costs of the integrated information systems, the costs of data collection should also be computed.

v. **Foundational civil registration systems:** Internationally, it is recognised that civil registration is an important component for effective data integration within social protection system. Indeed, a number of countries have established or are moving towards establishing foundational unique identification systems as the basis for integrating a number of services, including social protection. However, ID systems are fraught with risks, such as the potential classification of the population, i.e. those who have IDs versus those who do not have identification documents[17]; exclusion of poor segments of the society, further exacerbating poverty if an ID is needed to access social protection benefits; privacy concerns as ID is linked to multiple databases; and adoption of expensive proprietary technologies and high initial set up costs.[18]

3.2 Operational issues

Besides the policy issues, a number of operational pre-requisites must be in place. These include: (i) operational capacity; (ii) hardware; (iii) software; and (iv) guidelines, standards and frameworks.

i. **Operational capacity:** Brainware resources for administration of large registries can be divided into three categories:

a. **Promotion:** Staff resources are required to create visibility, market and brand the data and information resource among all potential stakeholders. They help define data sharing protocols, assist with training national and sub-national programmes on use of the data for policy formulation, document the data in formats that can be understood by users, and update the web portals and other appropriate marketing channels.

b. **Research:** Staff with strong economics, statistics and quantitative research backgrounds are needed to analyse the data. For instance, they can define the Proxy Means Test (PMT formulae, appropriate poverty percentages and other statistical models for data analysis.

c. **Information technology:** Staff resources are required to administer and manage the database and the data centre. They include database administrators, network administrators, systems administrators, system developers and security specialists.

The number of staff required to manage an IMIS will vary from country to country. However, a comprehensive assessment of staff gaps should be undertaken as part of establishing the units responsible for managing the integrated data system.

17— Kidd, S. (2017)

18— Alan Gelb, A. and Clark, J. (2012)

ii. Hardware: The fundamental hardware issue in an integrated data environment is the hosting of the data. Physical data centres or server rooms require regular replacement of hardware, reliable electricity or backup generators, physical security, such as cameras and biometric doors, logical security, such as firewalls, alternative data backup sites in case of disaster, and importantly trained staff to administer it. For these reasons, cloud computing is increasingly attractive to keep data, but it may come with other challenges, such as in terms of transborder data flow.

iii. Software: Besides the standard off the shelf software such as operating systems, the critical decision is on the software solutions for the IMIS. Typically, the decision will be whether to build a bespoke software solution or procure a custom off the shelf (COTS) software solution. Whether a bespoke software solution or a COTS, an iterative prototyping methodology is recommended as an improvement to the traditional "waterfall model" where specifications are fully documented before MIS is developed. Instead, a prototype is built and iterated several times with the users and stakeholders, as illustrated in Figure 7. Based on the feedback, customisation is undertaken before the MIS is implemented. A critical issue for IMIS software is to ensure interoperability, which is typically defined in national ICT standards, and refers to the capability of the software to be linked to other government platforms, services, databases and registries.

Other software components developed as part of the integration data components include the APIs and web services. These APIs enable the integrated social protection data system to link with broader registries and broader social services system.

iv. Operational guidelines, standards and frameworks: For integration to work well, it is important to put in place guidelines, standards and frameworks for: (i) developing the MIS; (ii) system interoperability; and (iii) data quality. These were developed as part of an integrated social protection MIS in Chile, Turkey and Uruguay.

Figure 7: **Methodology for developing an IMIS**

PROCESS

Prototyping

| 1. System Requirements Study | 2. Systems Design | 3. System Development | 4. System Installation | 5. System Maintenancs |

Feedback

| Scoping Team | Design Team | Development Team | Implementation Team | Maintenance Team |

OUTPUTS

| Scoping Report | Design Specifications | System Prototype | System signed off | Warranty |
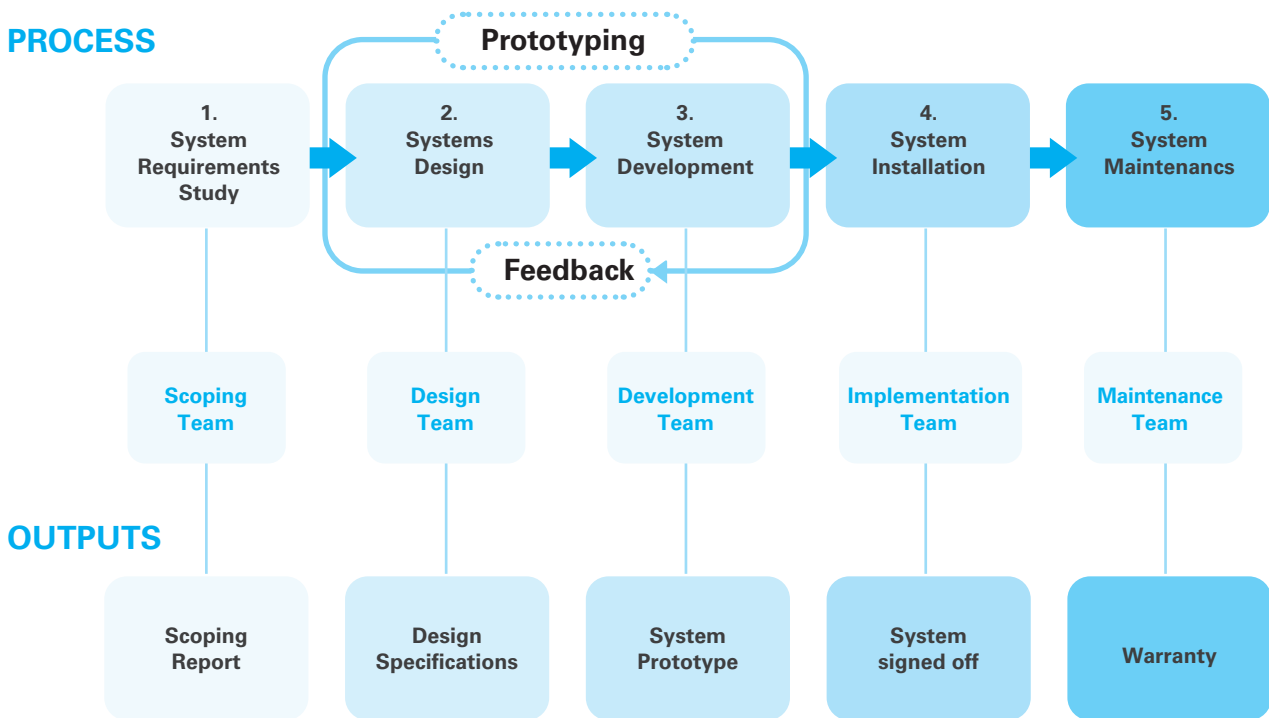
Source: Chirchir, R. (2018) Concept Note on IMIS.

4. SOCIAL ASSISTANCE IMIS IN CHINA

Establishment of an IMIS could present both opportunitiesand challenges. The following introduces China's social assistance landscape, examines the MIS in the *Dibao* and HIAVS, and discusses some opportunities and challenges to establish an IMIS for social assistance.

4.1 Review of China's social assistance landscape

As illustrated in Figure 8, China's social assistance system consists of eight programmes.

Figure 8: **China's social assistance programmes**

PILLAR 1

1. *Dibao* Assistance

2. *Tekun* Assistance

PILLAR 2

3. Housing Assistance

4. Medical Assistance

5. Education Assistance

6. Employment Assistance

PILLAR 3

7. Disaster Assistance

8. Temporary Assistance
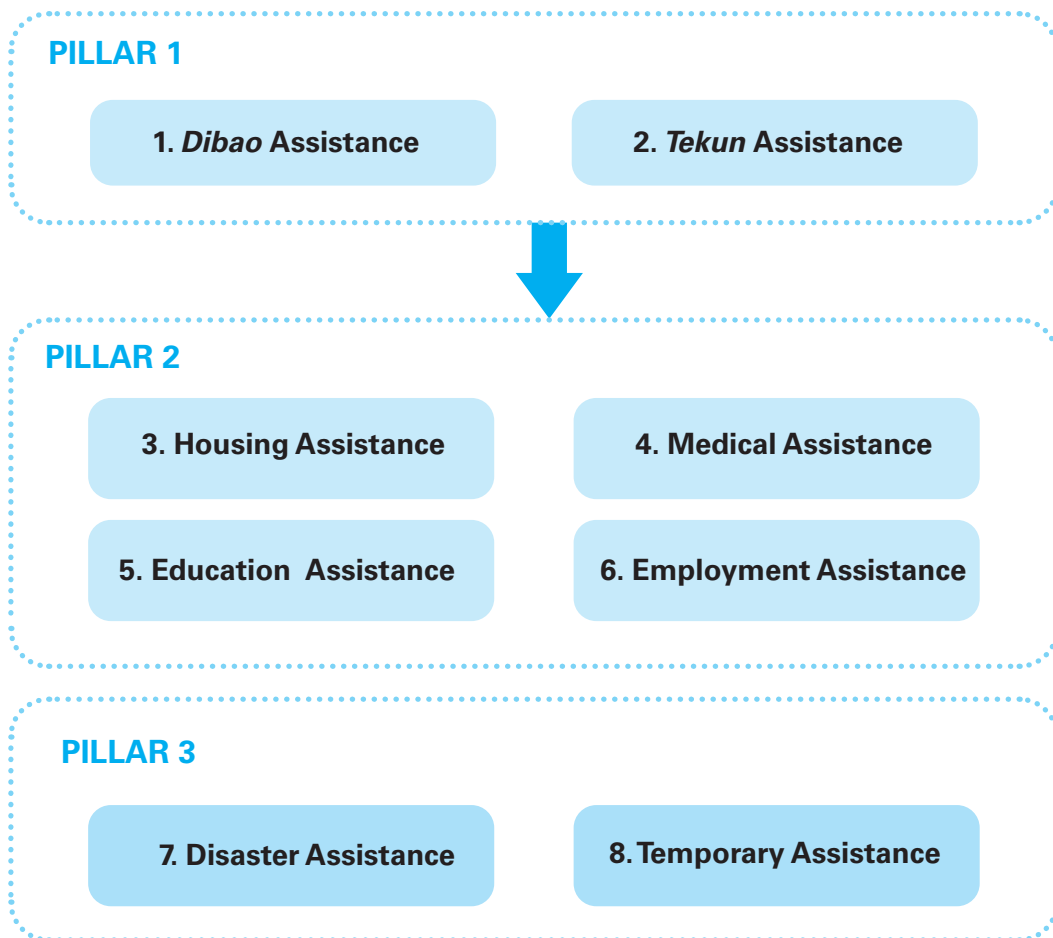
Source: Authors' illustration.

The eight programmes can be grouped into three pillars,[19] namely:

I. **Pillar 1:** regular and predictable cash transfers (or equivalent services) to the poorest and vulnerable in urban and rural areas.

This pillar consists of two programmes:

a. *Dibao* – A means-tested national social assistance programme that provides cash assistance to poor and vulnerable households whose incomes fall below a locally defined *Dibao* poverty line.

b. *Tekun* – A social assistance programme targeted at the vulnerable persons traditionally the Three Nos (*Sanwu*) in the urban areas and the Five Guarantees (*Wubao*) in the rural areas.

II. **Pillar 2:** Specific support (*Zhuanxiang Jiuzhu*) based on *Dibao* and *Tekun*.

This pillar consists of four programmes:

a.Medical assistance: This programme provides the poor access to basic health services.

b.Housing assistance: Housing and urban-rural development departments allocate public rental housing, rental subsides, funds to renovate dilapidated houses in rural areas, and other housing assistance to families with housing difficulties who meet the criteria for assistance.

c.Education assistance: This assistance, administered by the education departments, is targeted at students who are unable to continue schooling because of financial difficulties.

d.Employment assistance: Human resources and social security departments provide such assistance to those who have labour capacity but are unemployed in families receiving subsistence allowance.

III.**Pillar 3:** Temporary assistance or natural disaster assistance.

This pillar consists of two programmes:

a.Disaster assistance: This assistance targets persons affected by natural disasters. It is therefore not limited to recipients of pillar 1 and 2 programmes.

b.Temporary assistance: Temporary assistance is provided to households that meet three conditions: (i) those affected by accidents such as fire, traffic or sudden and critical illness of household members; (ii) those who are beneficiaries of *Dibao* programme but are unable to afford their basic needs because of increase in living expenses; and (iii) those affected by other forms of difficulties defined by the regulations.

19— The term "pillar" is used for purpose of analysing and categorising the social assistance programmes. MCA does not categorise the social assistance into three groupings.

4.2 China's social assistance management information system

In order to manage its social assistance system, MCA established *Dibao* Management Information System and a verification system for income and property information based on a complete personal ID system. As a result, a computerised MIS has been established based on these two systems. Currently, a network of systems has been established in most regions of China, following the administrative structure of Township, County, Municipality, Province and National level. Despite the existence of *Dibao* and HIAVS MIS, there is an overall lack of a national framework for integrating the diverse provincial information systems that have been built. This is compounded by inconsistent data standards and information verification procedures which make it difficult to achieve a smooth national verification information exchange and social assistance system integration.

Figure 9: **China's current information management landscape**
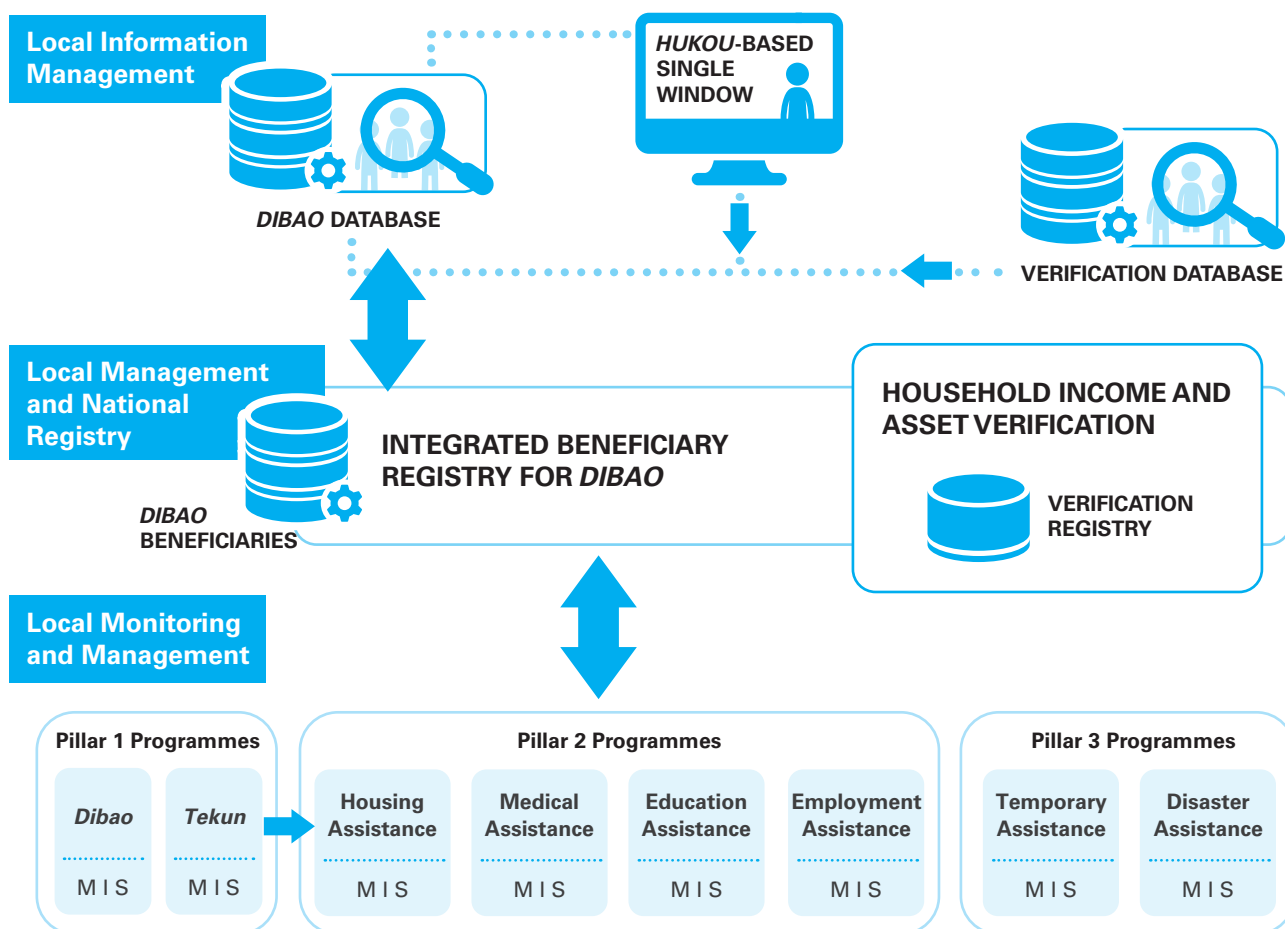
Source: Chirchir, R. and H. Hu (2019). Review of Global Management Information System Practices: Lessons for China. UNICEF, China.

As illustrated in Figure 9, China's SA MIS landscape principally consists of three components:

i. ***Hukou*-based single window:** This is a local administration office for making applications for the core programmes i.e. *Dibao* and *Tekun*. Applicants must submit the application to the administration in their place of *Hukou* registration, which could differ from the applicant's current location of residency. The local administrative office accepts the applicants if they are from that *Hukou* residence, and reviews the application and confirms that it includes relevant supporting documentation.

ii. **Registries:** These are special databases underpinned by appropriate information systems for consolidation of the data on social assistance beneficiaries or providing a mechanism of verifying applicant's household assets and income. Currently, there are principally two registries:

a. **Integrated beneficiary registry for *Dibao*:** Run by MCA, this registry consolidates information on *Dibao* beneficiaries across the country.

b. **Household income and asset verification system (HIAVS).** A HIAVS is used to check the applicants' necessary information from relevant governmental administrations and commercial services based on the applicants' consent, such as household registration administration (to check the family members), tax administration (to check the tax payment), vehicle administration (to check vehicle ownership), employment and social insurance administration (to check employment status and social insurance enrolment), bank, commercial insurance and stock services (to check the saving, insurance purchase and stock trading).

iii. **Management information systems:** These are information systems used to manage the delivery of the social assistance programmes. In China, a number of MISs have been established either at the county, municipal, provincial or national levels for management of the social assistance programmes. A key notable example at the national level is *Dibao* MIS, which is used by MCA to monitor *Dibao* beneficiaries. At the national level, MISs are used for monitoring while at the local level, they are used for operational administration of the social assistance programmes i.e. application, means testing, review, approval and payments.

The detailed analysis of *Dibao* and HIAVS is presented in the following sections.

4.3 Current state of *Dibao* MIS

4.3.1 Background and objectives

The development and implementation of the *Dibao* MIS was concluded in September 2014. *Dibao* MIS was set up with the following two broad objectives:

i. To ensure centralised storage, timely update and dynamic management of data for accurate statistical analysis of social assistance programming nationwide.

ii. To build a comprehensive beneficiary profiles and increase accurate and timely information of *Dibao* programme.

Dibao MIS software and hardware infrastructure were upgraded, and personnel were trained. However, even with the upgrade, the MIS function at the national level is quite basic. In fact, timely data analysis and regular reporting to stakeholders is still a major challenge.

4.3.2 Operational processes

Dibao MIS is used to support *Dibao* operational processes that are set out in Figure 10. Because of decentralised implementation of *Dibao* programme and roles played by different actors, Figure 10 does not explicitly define the architecture – whether electronic, paper-based or hybrid - of *Dibao* MIS implementation at each locality. However, the illustration provides standard operational processes. A detailed drill down of how *Dibao* MIS is implemented at each locality would require a comprehensive assessment, which should be undertaken by MCA as part of the establishment of the IMIS for social assistance.

As illustrated in Figure 10, *Dibao* programme consists of four processes:

i. Application and acceptance: Submission of application and supporting documentation for review before the means test. The process consists of the following sub-processes:

a. The head of the household or nominated agent submits the relevant documents and the proof of identity, income and assets, to the township level government/subdistrict office (street-level) where their household registration (*Hukou*) is located.

b. The township level government/subdistrict office reviews the application documents to determine their completeness.

c. After the review, the township level government/subdistrict office accepts completed forms, and informs the agent or head of household to prepare for the means test.

Figure 10:

Dibao operational processes

01

Application

1

Application submitted with relevant documents to town/subdistrict office where their *Hukou* is located

Head of household/agent

2

Review application documents for completeness

Town government/subdistrict office

3

Accept the complete applications and inform agent/applicant

Town government/subdistrict office

4

Reject incomplete applications and inform agent/applicant to submit required documents

Town government/subdistrict office

10

Approved applications submitted to county/district civil affairs department

Town/district government & resident/village committee

9

Rejected applicants dissatisfied with decision appeal for review

Town/district government & resident/village committee

8

Applicants informed about results of means test and community meeting

Town/district government & resident/village committee

7

Publishing results of the community meeting

Town/district government & resident/village committee & resident reps

6

Community "democratization" meeting to verify applicants

Town/district government & resident/village committee & resident reps

5

Resident/village committee staff conduct means test

Town government/subdistrict office & resident/village committee

02

Means Test

03

Approval

11

Review the results of the means test and community meeting

County/district civil affairs department

12

Conduct a spot check of not less than 30% of the applicants

County/district civil affairs department

13

Publish review results for seven days in town/street and community for seven days

County/district civil affairs department

14

Applicants informed about results of approval

County/district civil affairs department

15

Approved applicants submitted to finance department

County/district civil affairs department

19

Management of funds and reconciliation

County/district finance department

18

Update recipients (exits and add new ones)

County/district civil affairs department

17

Recipients cash out their payments

County/district finance department

16

Payroll is prepared and submitted to the financial institutions

County/district finance department

04

Payments

Source: Chirchir, R. and H. Hu (2019). Review of Global Management Information System Practices: Lessons for China. UNICEF, China.

d. The township level government/subdistrict office rejects incomplete application documents and informs applicants to submit complete documents for another round of review. Only applicants with complete application and supporting documentation are processed for means test.

ii. Means testing: This is the official process of investigating a family's financial status to determine eligibility for the *Dibao* programme. This process consists of six sub-processes:

a. The township level government/subdistrict office in liaison with villager/resident committee organizes the villager/resident committee staff to undertake means test exercise for applicants with complete application processes.

b. The township level government/subdistrict office organises the community validation meeting ("democratic discussion") on the economic condition of the applicant. The exercise is undertaken in partnership with the township level government/subdistrict office cadres, villager/resident committee members and villagers/resident's representatives.

c. The township level government/subdistrict office in collaboration with the village/resident committee and resident representatives publishes the results of the community validation meeting for seven days in the community.

d. The township level government/subdistrict office in collaboration with the village/resident committee informs the applicants about the results of the means test and community validation meeting.

e. If there is any objection, then the applicant is allowed to appeal to the township level government/subdistrict office and village/resident committee who will then organize another round of means test to determine eligibility of the applicant.

f. If there is no objection, the township level government/subdistrict office submits all the documents to the county/district civil affairs department for review and approval.

iii. Verification and approval: The process of reviewing the outcome of the means test and community validation meeting. The outcome of the process is a list of enrolled beneficiaries of *Dibao* programme. The process consists of five sub-processes:

a. The county/district civil affairs department reviews the materials (the results of means test and community validation meeting) submitted by the township level government/subdistrict office.

b. The county/district civil affairs department conducts a spot check for the applicants (not less than 30 per cent of the applicants).

c. After the review and determination of the approval, the county/district civil affairs department publishes results in the town/subdistrict and village/community for 7 days.

d. The county civil affairs department informs applicants about the results of the review and approval process.

e. The county civil affairs department then submits approved beneficiaries to the county/district finance department for payment processing.

iv. Payment and management: This process entails preparation of payment list of beneficiaries, transfer of payments to the financial institutions, update of beneficiary details (exits and inclusion of replacements on payment list), funds management and reconciliation. The process consists of four sub-processes:

a. The county/district finance department prepares the payment list on a monthly/quarterly basis and submits it to the financial institutions.

b. The recipients cash out their payments from the financial institutions, where they hold accounts.

c. The county civil affairs department conducts dynamic management of beneficiary details. This involves exiting those who are no longer meet the eligibility criteria and adding in newly enrolled ones.

d. The county/district finance department undertakes fund management and reconciliation. This entails punishment of those who receive benefit illegitimately including fining, reducing benefits, suspension, etc., and implementation of accountability and administrative procedures on personnel such as punishment for those who are negligent in their duties or are corrupt.

4.3.3 Governance and institutional arrangements

The MCA is the leading body responsible for coordinating the implementation of the social assistance system in China and by extension the *Dibao* MIS. It is responsible for the institutional design, performance evaluation, inspection and supervision of national social assistance policies. On the other hand, the provincial and municipal-level departments of civil affairs are responsible for formulating plans to put in place their specific social assistance in their administrative region.

At the county level, the civil affair bureaus are responsible for reviewing and approving applicant's eligibility criteria, computing transfer value for *Dibao* and coordinating with finance and other departments to ensure that assistance is delivered to the individual banking accounts of recipients.

At the village level, the township level governments and subdistrict offices are responsible for investigating the household financial status and demographic status of applicants and making initial recommendations on eligibility. Villager committees assist with household visits and investigation, neighbourhood visits and assessment for means testing.

At the central government level, the MCA has established the national social assistance ministerial-level joint meeting with participation of 23 departments. At the provincial, municipal and county level respectively, inter-departmental coordination mechanisms have been set up. Different government departments have regular information exchanges, meetings and discussions and coordinate emergency responses.

4.3.4 Architecture and hosting

Dibao MIS is centrally hosted at MCA head offices in Beijing. It consolidates the information management functions of social assistance agencies at the ministry, provincial, municipal, district(county), subdistrict (township), community (village) and other levels. Some provinces such as Zhejiang, have their own MIS for social assistance. A lack of standardization of multiple MIS implementation across provinces can make it harder to implement nationwide social assistance integration. MCA plans to address broader social assistance MIS integration to reap the maximum benefits of IMIS.

4.3.5 Data source and linkages to other databases

Dibao MIS currently assists with management of *Dibao* households' basic information, as collected by local agencies. The data includes the following variables: family profiles and bio information; family income and property information; marital status and disability status of family members living together; and other information required by the government at or above the district or county level as stipulated by the regulations. *Dibao* MIS is linked to the HIAVS.

The information kept in the *Dibao* registry does not contain information from other social assistance programmes. This is because the information for each social assistance application needs to be confirmed and updated manually in most areas. Consequently, the automatic sharing of beneficiaries' information between *Dibao*, *Tekun* and other social assistance programmes has not been established. Although it may be automatically linked at local levels and in some cities, this is generally not common and information is mostly shared manually, and the response often takes 3-5 working days. However, going forward, it might be feasible for local branches of civil affairs to get information of other social assistance programmes by liaising with other local government departments.

4.4 Current state of HIAVS

4.4.1 Background, objectives, institutional and legal framework

Following the institutional reform of the State Council in 2008, MCA and other 10 ministries jointly issued the policy *Measures on Verification of Low Income Urban Households* with the purpose to regulate how to verify the income and property information for social assistance. The MCA then launched pilot programmes in Shanghai, Suzhou, Nanjing and Guangzhou and other 28 cities (districts, counties). Following the pilots, the household income verification system was further strengthened in 2012 by the State Council's *Opinions on Further Strengthening and Improving the Work of Minimum Livelihood Guarantee*, which called for the establishment of verification mechanism across the nation by the end of 12th Five-Year Plan period.

This was further strengthened in 2014 when the IMSA entrusted civil affairs departments with the responsibility of carrying out information verification in social assistance work. The regulations also defined the cooperation and obligation of relevant departments and institutions. Over the past three years, with strong support from various departments and the efforts from various regions, the verification policies have been gradually introduced, the verification institutions have been continuously improved, and the verification platforms have been established. Overall, the rollout of the verification mechanism has achieved remarkable results.

In terms of the implementation of the HIAVS, MCA cooperated with the State Information Centre and software enterprises to set up a "ministerial-level verification pilot platform". The registration of computer software copyright on the basic software verification platform has been established.

4.4.2 Processes, functions and modules

This HIAVS is designed with common functions such as user management, configuration administration, verification service, reporting and analytics. Menu items can be personalized to meet most business requirements, and effectively improve development and management efficiency. The data exchange module is the core of the data sharing and business collaboration tool that is linked to *Dibao*. The module supports information system exchange in multiple forms such as offline, online, text, database and other exchange model. It is also designed with security management functions such as data encryption, process monitoring, ability to connect to multiple systems at different levels and between different regions and ensure safe, efficient and reliable data exchange.

The big data module integrates data processing, mathematical modelling, result analysis and graphic presentation, and has built-in auxiliary decision-making models such as the analysis of characteristics

of low-security population, the prediction of the number of families applying for affordable housing, and the analysis of factors affecting per capita income.

The case of Zhangjiagang City *Dibao* MIS implementation and linkages to the household income and asset verification registry is discussed in Box 2.

> **Box 2: Zhangjiagang City *Dibao* MIS**
>
> Zhangjiagang has built a comprehensive MIS that supports the entire process of data collection, processing and reporting. The MIS aids in decision-making through dashboards and smart reports overlaid with geographic information system functionality, thus supporting China's Strategy of Targeted Poverty Alleviation. The MIS supports two main functions: (i) policy about social assistance programmes; and (ii) targeting social assistance benefits. The social policy enquiry module provides access to information on minimum livelihood guarantee, temporary relief and other relevant social assistance policy documents, thus supporting extension of social policy to each town (subdistrict) and village (community). Targeting module provides an online facility to access the applicants and beneficiaries across the city.

4.5 Key opportunities and challenges for China's IMIS

The review of China's MIS landscape suggests the following opportunities and challenges:

- **Interoperability standards and distributed MIS development:** Considering that there are a number of *Dibao* MISs that have been built across the country, one issue to bear in mind for IMIS agenda is the need to ensure that interoperability standards are put in place. Ideally these guidelines should be aligned with China's broader e-government standards. This will ensure that local *Dibao* MIS can communicate with the central level *Dibao* using appropriate technology platforms.

- **Data formats and variable standardization:** The fact that there are multiple *Dibao* lines and localized implementation mechanisms raises the need to standardize essential information for national reporting by MCA. Arguably, it may not be feasible to provide a complete set of information collected by each implementation of *Dibao* and other social assistance programmes. But what is feasible is agreement on standard indicators or variables to be submitted and the regularity of submission.

- **ICT infrastructure and connectivity:** China's economic and technological power presents a huge opportunity to transform its social assistance system. For IMIS to function well, all regions should promote connectivity through localized development and application of programme MIS, optimization and upgrading of hardware and network infrastructure, and linkages of multiple HIAVSs, to achieve information sharing and nationwide linkages.

- **Data privacy and security standards:** The challenges associated with data privacy and security are exacerbated once IMIS links databases across provinces, cities, districts, counties and towns. There is, therefore, need to implement robust information security technology to ensure that IMIS runs safely. It is recognised that social protection applicants and beneficiaries need protections against violation of privacy, unauthorised data sharing and covert surveillance.[20]

- **Capacity building:** Most IMIS projects do not succeed because policymakers do not pay sufficient attention to capacity development. Training should be strengthened at all operational levels of IMIS, including on verification policies, system management, system operation, system maintenance, data security, and laws and regulations, so as to cultivate a talented team with excellent professional skills, strong safety awareness, and proficiency in emergency treatment and business knowledge.

- **National ID and residency:** The national ID is essential to identify applicants of social assistance and verify their household income. By law, household registration (*Hukou* registration) is required for a national in order to gain a Resident Identity Card. Although the coverage of the digital ID is very high, the applicants for the social assistance programmes are required to register at their place of residence of *Hukou*. This makes it difficult for urban migrants to access social assistance. If HIAVS is integrated into the MIS, and a suitable policy review to support integration is done, it would allow people to apply for social assistance anywhere, and with information exchanged through IMIS, the means test could still be applied.

- **Multi-dimensional poverty:** The current social assistance system of determining eligibility in China depends on monetary deprivation or income poverty. As such, it overlooks: other dimensions of deprivation; populations vulnerable to falling into poverty since poverty is dynamic; and people experiencing social exclusion, such as migrants or people with disabilities. The IMIS can be designed to strengthen measurement and tracking of multidimensional poverty, by collecting and tracking education, health and living conditions, such as electricity, sanitary toilets, safe drinking water, cooking fuel, assets and housing.

20— Carmona, M. (2018)

- **Political goodwill:** The underlying rationale for the Government's Strategy of Targeted Poverty Alleviation is to coordinate poverty alleviation efforts, accurately measure household poverty status, effective project arrangement, responsible use of funds, and adequate deployment of personnel at the local level. An IMIS design and development can leverage on the Strategy of Targeted Poverty Alleviation agenda because it could improve efficiency and coordination of social assistance programmes.

- **National income and asset verification system:** Although MCA recommends that local governments utilize unified framework of the online verification system, there is lack of a national income and asset verification system. Given that some local governments have adopted the recommended framework and customised it to their local contexts, Social Assistance Integrated Management Information System (SAIMIS) should build on these lessons to ensure full implementation.

- **Institutional arrangements and challenges with vertical and horizontal coordination:** Considering that social assistance is implemented by multiple government departments at the central and local levels, there is need to strengthen both vertical and horizontal rural and urban coordination to enhance delivery of overall assistance. This coordination is a prerequisite for the design and development of the IMIS for social assistance. Current coordination challenges include:

  o Uncoordinated urban-rural development and unbalanced regional development leading to structural defects on the overall social assistance system.

  o Fragmentation in delivery of social assistance programmes leading to poor impact on needy population.

  o Inadequate supervision and management leading to inaccurate and ineffective administration of social allowances.

5. GLOBAL PRACTICES AND LESSONS FOR CHINA

The following section discusses the five case study countries. Each case study is analysed to understand its IMIS model and to identify lessons (positive or negative) applicable to establishing an IMIS in China. The analysis is based on the analytical framework in Section 3. The countries were selected based on at least one or more of the following criteria:

    i. Incorporating a multidimensional poverty assessment in the MIS.

    ii. Linking the needs of poor families and children to benefit delivery.

    iii. Having layered functions and systems of social assistance at different levels with good connectivity and integrated MIS.

    iv. Being child and gender sensitive.

5.1 Policy lessons

As stated earlier, integration of MISs in social assistance is a policy issue. Although China has legislations underpinning social assistance, such as the IMSA, which sets out the rules and procedures for its administration and the roles of different actors, there is no prescription on the model or vision for IMIS. It is worth noting that MCA has been promoting the use of the household income and asset verification registry, although full compliance has not been achieved.

5.1.1 Institutional arrangements and e-government systems

The key lesson is that the five case studies have entrenched the IMIS agenda on their legislations and policies, and have clearly set out the roles of different stakeholders.

Key lessons from case studies include:

    i. Institutional roles: In Indonesia, a lack of legislation for governing the Unified Database of Beneficiaries (UDB) has led to tensions between the Office of the Vice President (OVP) and the Ministry of Social Affairs (MoSA). Whereas UDB is the official social registry, MoSA has established a parallel database. According to Sudarno Sumarto (2015), UDB lacks institutional arrangements for determining who is responsible for its management, how it will be staffed and funded, which programmes should use data and how, and who will collect the data and update it. That may explain ownership challenges between OVP and MoSA. In Brazil, different actors, such as the Ministry of Social Development, States, Municipalities and Caixa Bank (a federal bank), play important roles in the dynamic update of its social registry, the Cadastro Único.

ii. **Political will:** Strong political support was provided by Turkey's Ministry of Family and Social Policy (MoFSP) to ensure that Integrated Social Assistance Service Information System (ISAS) succeeded as a tool for delivery of social services.

iii. **Coordination:** A central body is needed to manage IMIS. Such an organisation would coordinate with other actors to ensure horizontal and vertical implementation of IMIS. In South Africa, the Social Pension IMIS (SOCPEN) is still not well integrated, and is plagued by administrative bottlenecks and implementation inefficiencies. As a result, the various elements of the social protection system are not operating seamlessly. In fact, some of the linkages between SOCPEN and other government databases do not happen in real time, resulting in potential fraud. Importantly, the Department of Labour Law and Social Development still have divergent operating standards for their respective programmes and activities despite establishment of SOCPEN.

iv. **Broader e-government systems:** Turkey's ISAS has been successfully implemented partly because of a robust e-government system. Indeed, ISAS integration to 22 public institution databases via web service is evidence of the functionality of other government databases. Many countries that want to build IMIS with capability of cross-checks against other databases are limited by weak e-government systems. Whereas, China has a functional national ID, an assessment must be made to determine the state of the e-government system especially if the objective of IMIS is to support means testing, especially the verification of household income and assets.

5.1.2 Legislative arrangements, social protection policies and strategies

China's interim regulations provides detailed procedures on administration of its social assistance system. These regulations are not legally binding, and China is in the process of establishing social assistance legislation. The regulations do not prescribe the model for integrating data, strategy for implementing it, or roles of different actors in IMIS. This is not an issue for programmes implemented by MCA, such as *Dibao* and *Tekun*, but it could be a challenge for broadening linkages to social assistance schemes implemented by other departments, e.g. education, health, housing, etc.

Lessons from the case studies clearly indicate that legislation, strategies and policies specifically on IMIS are essential. For instance, Brazil's Cadastro Único (Unified Registry) was created in 2001 (by Decree No. 3,877). Similarly, Uruguay put in place requisite legislative framework, such as Law 17.866, Art.9. , to underpin the development of the Integrated Information System for Social Assistance (SIIAS). Chile's social registry IMIS, the "Registro Social de Hogares", was established in 2008 through the Decreto Supremo N.160.[22]

21— http://siias.mides.gub.uy/
22— Barca, V. (2017)

5.1.3 Governance framework

Implementing a large scale IMIS across multiple departments needs a central coordinating agency with requisite political will. Although Uruguay's Sistema de Información Integrada del Área Social (SIIAS, Integrated Social Information System), started in 2006, was initially set up by the Social Security Bank (BPS) and the Ministry of Public Health (MSP), it was formally set up in 2010 at Ministry of Social Development (MIDES), with the responsibility of administering IMIS for social benefits. Turkey's SIAS was developed by a project team led by the MoFSP and included expert staff from the Research and Development Department of the General Directorate of Social Assistance and from the Scientific and Technological Research Council of Turkey.

5.1.4 Models of integration

Different countries can adopt different models of IMIS. Brazil's Cadastro Único was created as a tool for unifying socio-economic identification and characterization of Brazilian families with low income. Similarly, Turkey's ISAS was created to improve social assistance decision-making by making available data on the entire household as opposed to the individual applicant. Thus it provides a gateway for consolidated social assistance services with a systematic procedure for determining eligibility and disbursement. Both Turkey and Brazil established social registries primarily for social assistance schemes, but were progressively expanded to broader social services. Similarly, Indonesia's social registry was primarily designed to centrally manage the selection of the poorest 40 per cent of the population, and is utilised by five national programmes. Whereas Brazil and Turkey have been largely successful with IMIS, Indonesia has faced more challenges and has not progressed into linking broader social services by consolidating data from multiple databases.

Worth noting are several limitations of social registries, especially when used as unified targeting databases, including:
- Some do not hold information on the programmes accessed by beneficiaries, and so are not useful for monitoring; typically, there is unidirectional flow of information from social registry to user programmes.
- Potential beneficiary households who were missed during the registration may be excluded from benefits, because there is effectively one entry point, at one point in time (i.e. one registration process and in some cases one targeting approach).
- Unlike a national census, there are strong incentives for households to falsify information when replying to a Social Registry survey, since they know that their answers will determine their access to programmes.
- Most Social Registries use centrally managed "proxy-means test" approaches for targeting

and determining eligibility, but this comes with some risks of excluding poor households from multiple social sector schemes. For instance, households could be systematically excluded because of: (i) data collection: e.g. low take-up for on-demand systems, biased coverage for census-survey systems, political interference at local level; (ii) data requirements: e.g. lack of an ID card; and (iii) determining eligibility: e.g. if the "proxy-means test" formula does not accurately identify those in need.

Uruguay's SIIAS is more than a social registry and IMIS. It is a platform of social services and a gateway to information, by integrating databases of different institutions. SIIAS enables Uruguay to identify vulnerable households and automatically assign beneficiaries to benefits such as water subsidy, electricity subsidy, etc. By integrating information from different institutions, SIIAS makes it easier for beneficiaries to access social benefits and services. South Africa's model is an advanced integrated beneficiary registry. It is effectively a combination of an advanced programme MIS and integrated beneficiary registry used to administer all the social protection programmes. The advanced integrated beneficiary registry is used to track end to end social protection processes from registration to monitoring.

Integrated beneficiary registries also have limitations, key of which include:

- Accuracy of data is dependent on the proper functionality of the social protection programmes and the programme management information systems linked to it.

- It is dependent on data sharing and update of data dependent on the cooperation of different stakeholders across a number of ministries especially in scenarios where automatic data export may not be feasible.

5.1.5 Scope of IMIS and multi-dimensional poverty

Are there examples of IMIS that are purposely created to address multi-dimensional poverty as is the quest for China? The scope of programmes covered by IMIS is defined by how countries define social assistance, because this is then entrenched in legislation, strategies or policies that create IMIS. Whereas Indonesia's UDB and South Africa's SOCPEN have been primarily used by social assistance, Brazil's Cadastro Único, Chile's SAIIS and Turkey's ISAS extend beyond social services to include social development issues. Advanced IMIS models, such as Turkey's ISAS and Uruguay's SIIAS, were created as gateways enabling needy populations to access services. Strong case management systems and social work systems ensure referrals of social benefit applicants to additional complementary services, such as psycho-social support, health care needs, housing, education, nutrition, etc. Social workers ensure access to services, and do not duplicate functions delivered by other government departments, such as health, education and housing. IMIS provides

a rich resource for planning demand for services and supply by providers. Additionally, the case management system allows for targeted support to different categories of vulnerable groups such as children, pregnant women, and the disabled, to ensure that other non-financial needs are met. Multi-dimensional poverty can be addressed by creating a social assistance IMIS, linking that to other social sectors through IMIS and having a functional case management system. This seems feasible in China but needs to be scoped out how an IMIS with such a broad mandate could work and how it could be progressively established.

5.1.6 Budget

Whereas software and hardware costs are easily computed, the total cost of owning and maintaining IMIS is rarely computed and budgeted for. As stated earlier, hidden costs include operational expenses (infrastructure, electricity, testing downtime, technology/user training, audit, insurance, etc.) and long-term expenses (replacements, future upgrades or scalability, decommissioning). Whereas China may be able to budget and cover the cost of IMIS, considering its economic size, other countries have relied on external support. For instance, Brazil's MDS acquired loans between 2005 and 2010, from the World Bank and the Inter-American Development Bank for strengthening its institutional capacity including the social registry. Similarly, Uruguay received funding from World Bank during the development of its SIIAS. However, South Africa and Turkey did not receive any help from donors.

5.1.7 Foundational civil registration systems

To facilitate linkages between IMIS and other government registries and databases, there is need to have a unique number. The best practice is that this number should be used throughout the life cycle i.e. on birth certificates for children and national IDs for adults. This has been particularly useful for the success of Turkey's IMIS registration. Noteworthy is that Brazil does not have a unique national ID system to use for its IMIS, but instead Caixa Bank creates a unique social identification number for each registered person in the social assistance system, and links multiple sources and registries of personal data through "match keys algorithm" (name, mother's name, birth and codes from some documents).

5.2 Operational lessons

Besides the policy considerations, the key operational lessons include:

5.2.1 Operational capacity

Operational capacity has been an issue in many countries. It is important to have adequately trained staff as part of IMIS implementation and continued operations. For example, Turkey had an adequate and complete internal team that designed and developed the ISAS platform, whereas South Africa's SOCPEN, operating for many years, still faces the challenge of maintaining people with skills to run it, which is particularly an issue because SOCPEN runs on old technology. Other best practices that have been adopted in other countries to address the capacity issues include:

i. Adopting long term vision for capacity development and training.

ii. Identifying, training and retaining sufficient and competent staff, especially at local level.

iii. Defining capacity as critical and budget for it.

iv. Ensuring capacity transfer in consultant contracts, etc.

v. Performing capacity assessment upfront to analyse strengths and weaknesses to be addressed as part of the feasibility analysis.

vi. Developing good practice workshops and sharing within programmes and across social protection sector locally and internationally.

5.2.2 Hardware

One key issue is ensuring that there is proper planning for the growth of data by ensuring that hosting platform for IMIS has adequate storage and processing capacity. In that respect, China has positioned itself to generate and exploit big data and cloud computing. This is complemented by a comprehensive plan from the Chinese government, which specifically promotes the use of big data to support economic growth and enable the transformation of traditional industry sectors.[23] In other countries implementing IMIS, the hosting is typically implemented by a government or private agency. Brazil's Cadastro Único is hosted by Caixa bank while in South Africa, SOCPEN runs on mainframes located at the State Information Technology Agency[24](SITA). In Indonesia, UDB is hosted at data centre in TNP2K, but was in the process of being transitioned to PUSDATIN (Data Centre) at the Ministry of Social Affairs (MOSA).

23— icaew.com/bigdata

24— SITA is the agency of ICT for government to create an enabling ICT environment for government departments to provide electronic services (e-services) to the citizens of South Africa.

5.2.3 Software

In many instances, there is no off-the shelf software product for IMIS. So, many countries develop the software product meeting their needs. In Indonesia and Turkey, special in-house teams are involved in developing the software. Typically, for such projects and for those outsourced, an agile development approach is implemented. This involves developed software in a phased manner with inputs of users at different stages. South Africa runs a largely legacy software that was built based on Australia's Centre link and is currently maintained by SITA.

5.3 Summary of key takeaways from global IMIS review

From the global IMIS review and analysis of case studies, the key takeaways include:

i. **Governance framework:** Governance is extremely crucial in delivery of IMIS. From the outset, it is best defined how the IMIS shall be implemented and roles of different stakeholders. IMIS should be located preferably within an institution with a strong mandate to implement social protection. But, if IMIS is intended to be used for broader social services, it needs to be located in a higher institution responsible for planning and coordination of government services such as Finance or Planning. If roles are not adequately defined, then challenges in coordinating the delivery of IMIS may occur, leading to poor utilisation of IMIS.

ii. **Political will:** A strong political will is necessary for successful implementation of IMIS.

iii. **Coordination:** A central organisation must be established with requisite mandate to coordinate design and implementation of IMIS. Such an organisation could work with others but would be leading on all IMIS activities.

iv. **Broader e-government systems:** A functional e-governance system can accelerate the implementation of IMIS especially desired linkages to broader government registries and information systems.

v. **Legislative framework:** Whereas political good will resolve immediate challenges in the design and implementation of IMIS, longer sustainability of IMIS needs to be entrenched in legislation. In this respect, many countries start by defining the model of IMIS on their policies and strategies, which is subsequently followed by entrenchment in legislation.

vi. **Models of integration:** Considering that IMIS is broadly speaking a policy issue than a technological one, the model of IMIS should be incorporated in the SP policy or defined as part of the SP policy review. The issue is too important to be left to the discretion of the software development companies who may not have an understanding of its vision.

vii. **Multi-dimensional poverty:** IMIS can provide a framework for broadening access to social services to social protection beneficiaries and thus address multi-dimensional poverty. But

this should be underpinned by functional programme MISs and supplemented by case management and referral systems operated by social workers.

viii.Budget: A feasibility assessment must be undertaken with the total costs of setting up IMIS costed. The costs should include both setup and maintenance costs.

ix.Foundational civil registration and ID systems: A unique ID linked to the civil registration documents and national ID documents can provide a basis for effective linkages between IMIS and broader registries and information systems, as exemplified by Turkey and Uruguay. However, Brazil shows that implementation of IMIS can start even without a unique ID system.

x. Staff operational capacity: As part of design and development of IMIS, a staff operational capacity strategy must be developed and implemented. This should clearly set out what functions – especially on software – should be internally managed and what aspects should be outsourced. Depending on the assessment, it might be possible to fully develop IMIS – software – in-house as exemplified by Turkey.

xi.Hardware: Hardware needs should be assessed as part of feasibility study. And, this should address issues such as frequency of upgrades, growth of data, recovery plans in case of disaster and cybersecurity.

xii.Software: Decision should be made on whether to develop the software in-house or whether to outsource it. Irrespective of the approach, agile methodology is a recommended approach for delivering software that meets user requirements. It entails a number of iterations with users. Software interoperability standards must also be established.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

As enumerated in Table 1, China has the main requirements to establish an IMIS for social assistance. Like many of the case study countries, it has an appropriate institutional set-up that currently delivers social assistance programmes, strong political will to eradicate poverty underpinned by Strategy of Targeted Poverty Alleviation, a central Ministry responsible for coordinating delivery of social assistance, and established guidelines - IMSA - that govern the social assistance. Moreover, budgets, operational staff capacity, hardware and software are not of particular concern to China, a country with strong economic and technological base.

Table 1: China's IMIS preparedness

Dimensions	Summary of Assessment	Comments
Institutional framework	**Partially prepared**	Whereas MCA has the institutional mandate to deliver social assistance, supported by IMSA guidelines, a special secretariat or unit responsible for implementation of IMIS would need to be created.
Political will	**Fully prepared**	China's Strategy of Targeted Poverty Alleviation is geared towards broader poverty alleviation, and could be leveraged to underpin IMIS design and implementation.
Coordination	**Partially prepared**	There are some challenges in the coordination of social assistance system in China. Whereas IMIS can assist in coordination, MCA would need to strengthen vertical and horizontal coordination to ensure effective implementation of IMIS.
Broader e-governance system	**Partially prepared**	Although China has technological and economic resources, further assessment is needed to determine whether the e-government system is fully mature to be leveraged during the IMIS development.

Table 1 (cont'd): **China's IMIS preparedness**

Dimensions	Summary of Assessment	Comments
Legislative framework	**Partially prepared**	China has interim regulations on administration of social assistance, including the use of the Household Asset and Income Verification System, but it does not have specific legislations on SA or IMIS. China is in the process of establishing social assistance legislation.
Governance framework	**Partially prepared**	Based on existing regulations, MCA is responsible for the institutional design, performance evaluation, inspection and supervision of national social assistance policies. Further assessment would be required to clarifiy on whether MCA would be responsible for the design and implementation of IMIS, or whether this would be undertaken by another government agency
Model and objectives integration	**Partially prepared**	Although a number of objectives and tentative model of integration have been proposed as part of this research, this would need review and validation by MCA.
Budget	**Fully prepared**	A detailed budget for IMIS must be developed as part of a feasibility study for establishment of IMIS.
Foundational civil registration and ID systems	**Partially prepared**	China has a national ID system with high coverage. Further assessment is needed to determine the state of the civil registration system and broader registries and information systems that should be linked to the proposed IMIS.
Staff operational capacity	**Partially prepared**	This seems likely to be not amajor issue. Staffing levels and additional training requirements would need to be scoped as part of a feasibility study for establishment of IMIS.
Hardware and software	**Partially prepared**	Both should be scoped out as part of a feasibility study for establishment of IMIS.

However, China still needs to address a number of issues in preparation for establishment of IMIS, key of which are described in the following sections.

6.2 Building agreement on vision and objectives for an IMIS in China

Further discussions would need to be undertaken with MCA and other stakeholders to scope out the vision and objectives for IMIS. Clarity on the vision and objectives for IMIS will provide the basis for the model of integration. Whereas China has something akin to integrated beneficiary registry for *Dibao*, establishing an IMIS for the entire social assistance sector is a much larger objective. Whatever model of IMIS is adopted, it must address current challenges which include lack of standardisation in terms of data collected by various MISs across different levels of government. It must also take into consideration the unique design of China's SA system which vests a lot of implementation responsibility to local authorities. This means the model of integration may not be centralised IMIS as implemented in Brazil, Turkey, Uruguay or even South Africa. Importantly, it must allow for variation of means testing, which is unique to China. A China-specific model must be envisioned.
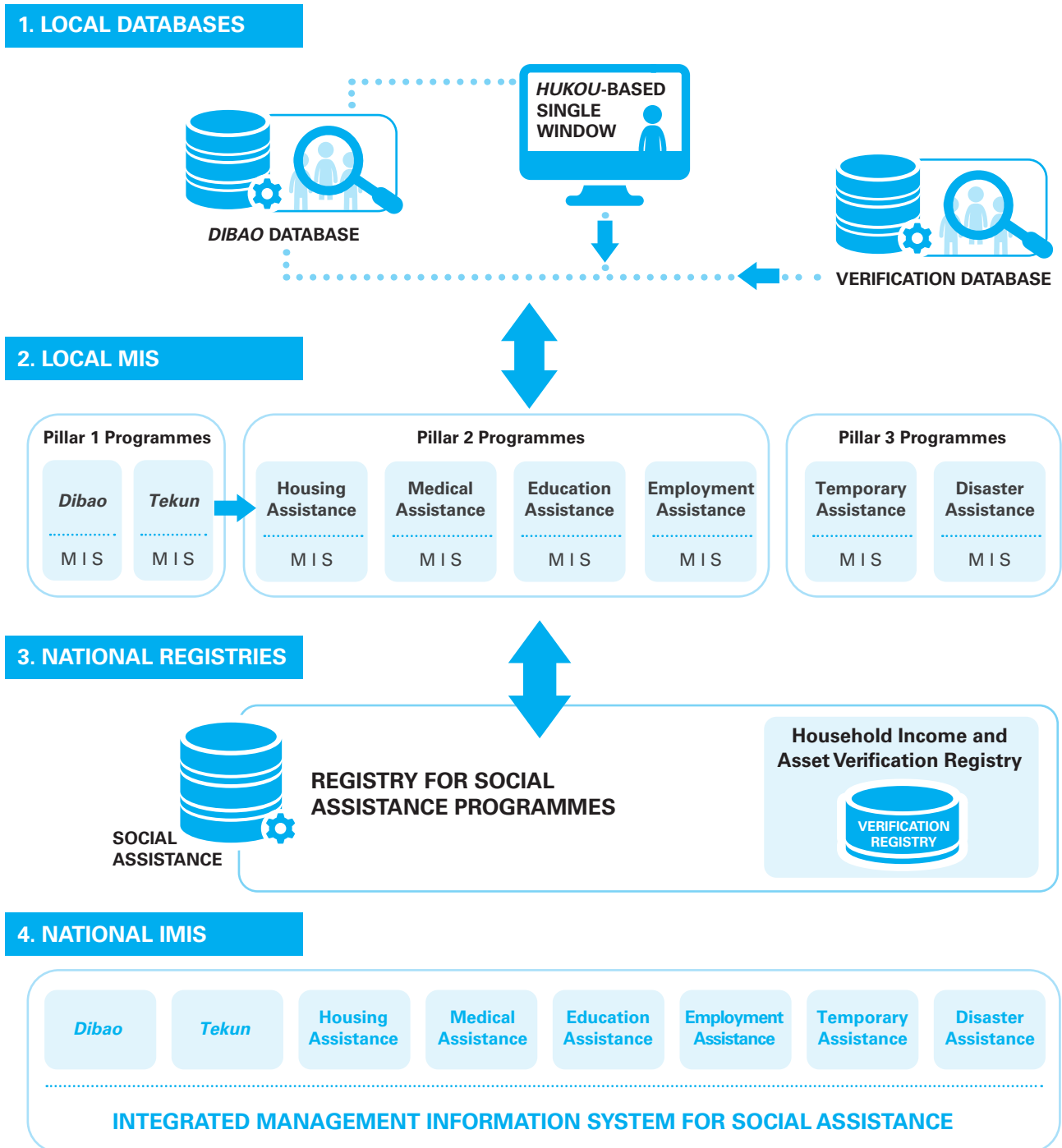
Given the global experiences reviewed, and based on the rapid assessment of China's context, a potential IMIS for China is illustrated in Figure 11.

China's MIS landscape is quite complex. Even in the context of decentralised management of social assistance and the need to coordinate multiple actors and departments, it is possible to establish an IMIS for social assistance in China. Irrespective of the future of the social assistance governance structure – whether social assistance will be implemented by multiple ministries or whether the country moves forward to establish an agency for delivering social assistance, as happens in South Africa - international evidence indicates that an integrated system for information management is important for efficient and effective management of social protection schemes.

As illustrated in Figure 11, an IMIS underpinned by integration of beneficiary details could act as a warehouse of information for all social assistance schemes. It could also act as a gateway linking the applicants to social assistance and broader social services. Such an IMIS would consist of principally three components:

i. *Hukou*-**based single window:** This would continue to act as a local administration office for applications for social assistance. If reformed, then applicants, may get an opportunity to apply through other channels including online platforms. But that is a broad reform issue beyond the social assistance sector.

Figure 11: Proposed IMIS for social assistance

1. LOCAL DATABASES

HUKOU-BASED SINGLE WINDOW

DIBAO DATABASE

VERIFICATION DATABASE

2. LOCAL MIS

Pillar 1 Programmes		Pillar 2 Programmes				Pillar 3 Programmes	
Dibao	*Tekun*	Housing Assistance	Medical Assistance	Education Assistance	Employment Assistance	Temporary Assistance	Disaster Assistance
MIS	MIS	MIS	MIS	MIS	MIS	MIS	MIS

3. NATIONAL REGISTRIES

REGISTRY FOR SOCIAL ASSISTANCE PROGRAMMES

SOCIAL ASSISTANCE

Household Income and Asset Verification Registry

VERIFICATION REGISTRY

4. NATIONAL IMIS

Dibao	*Tekun*	Housing Assistance	Medical Assistance	Education Assistance	Employment Assistance	Temporary Assistance	Disaster Assistance

INTEGRATED MANAGEMENT INFORMATION SYSTEM FOR SOCIAL ASSISTANCE

Source: Authors' illustration.

ii. **Local MIS:** In a country of China's size, and current governance structure of its social assistance system, local MISs shall continue to play an important role in the delivery of social assistance schemes at the local levels. However, what is essential is putting in place standards for its development, ensure they are interoperable and ensuring they collect key essential data for linkages to the national IMIS.

iii. **Social assistance IMIS:** This will be an IMIS interlinking all other MISs of social assistance programmes in China. This IMIS shall also act as gateway for linkages to other external databases and broader social services. The scope, model and functionality of the IMIS would need to further be developed with leadership of MCA and other stakeholders. Importantly, it must be preceded by feasibility study which should address vision, objectives, benefits, budget, users and implementation approach.

The benefits of such an IMIS for social assistance system in China would include:

- **Oversight of programmes:** Although MCA currently consolidates beneficiary information of *Dibao* programme, it does not have a consolidated overview of the entire social assistance system. A SAIMIS would enable MCA to monitor the progress and performance of all social assistance schemes both individually and together.

- **Efficient administration of the social allowances:** SAIMIS would lead to standardisation of the information to be collected despite variation in poverty levels. Importantly, the current HIAVS could be strengthened leading to transparency in means testing and avoidance of elite capture in community-supported targeting processes. This therefore leads to increased transparency, enhanced checks-and-balances and reduced risk of fraud and corruption.

- **Reporting to policy-makers:** MCA and stakeholders – especially MoF – could use information from SAIMIS to report to policy-makers and other relevant bodies on progress with social assistance and broader social protection. SAIMIS could be designed with dashboards supported with GPS functionality leading to provision of outputs and outcomes on key performance indicators.

- **Planning of resources:** Efficient administration means less exclusion and more equitable access by priority households and individuals. From review, it is evident the current manual system used by MCA for computing benefits is prone to errors. Reduction of the errors and elite capture by ensuring that SAIMIS is fully linked to the household income and asset verification registry may lead to a more effective inclusion of priority households and individuals.

- **Tracking multi-dimensional poverty:** The SAIMIS could be used to monitor which benefits are received by each beneficiary, the levels of benefit over time, additional social services and multi-dimensional poverty if indicators such as education, health and living conditions are tracked in addition to household income and assets.

- **Support to broader social services:** SAIMIS could assist in an analysis of the situation of

beneficiaries i.e. those who need continuous support and those who are exiting. Monitoring of those who exit over a period of time or those who are ineligible – assuming the SAIMIS is used to track all applicants - could help devise informed social policies and improve overall social protection system in China. SAIMIS could be designed to support broader social work, which is important for addressing multi-dimensional and child poverty. However, such an initiative must be preceded by establishment of functional programme MISs.

- **Prevention of error, fraud and corruption:** Although China enforces strictly the regulations and punishes applicants and staff who might collude to benefit illegitimately from social assistance system, political elite capture plays a role in both *Dibao* participation and transfer value received.[25] In fact, the accuracy of the means testing - which is part of Strategy of Targeted Poverty Alleviation agenda - could be significantly improved if household social-economic indicators are cross-checked against existing government electronic databases. Furthermore, information in the SAIMIS could be run against the National ID registry, which has a record of individuals and lists citizen's place of residence based on *Hukou*.

- **Programme efficiency and effectiveness:** SAIMIS could enable cross-checks to be made whether beneficiaries enrolled in a programme are on the payment list, and whether the number of beneficiaries scheduled to be paid equals those paid. And, this information would be available for all the social assistance schemes.

- **Monitoring programme implementation:** SAIMIS could support programme monitoring and can provide specific reports that allow monitoring of the selected indicators across social protection programmes.

25— Han, H. and Gao, Q. (2019)

REFERENCES _____

Abraham, Ronald, Elizabeth S. Bennett, Noopur Sen, and Neil Buddy Shah. (2017). State of Aadhaar Report 2016-17. Report. IDinsight.

Alan Gelb, A. and Clark, J. (2012). Identification for Development: The Biometrics Revolution. Centre for Global Development. Paper presented at the International Conference on Implementing Social Programs: Better Process, Better Technology, Better Results, World Bank, Bangalore.

Alatas, V. et al (2014). Targeting the poor: Evidence from a Field Experiment in Indonesia. Impact Evaluation Report 12. International Initiative for Impact Evaluation.

Barca, V. (2017). Integrated Data and Information Management for Social Protection: Social Registries and Integrated Beneficiary Registries. DFAT: Canberra, Australia.

Barca, V. and Chirchir, R. (2014). Single registries and integrated MISs: De-mystifying data and information management concepts. DFAT: Canberra, Australia.

Barca, V. and Chirchir, R. (2014)."Briefing: Integrated data and information management in social protection. DFAT: Canberra, Australia.

Barca, V. and O'Brien, C. (2017). Shock Responsive Social Protection Systems Policy Brief. Oxford Policy Management Limited.

Bartholo, L. (2018). Integration of administrative records for social protection policies: contributions from the Brazilian experience. International Centre for Inclusive Growth, Brasilia.

Browne, E. (2014). Social protection Management Information Systems (MIS) (GSDRC Helpdesk Research Report 1180). Birmingham, UK: GSDRC, University of Birmingham.

Carmona, M. (2018). Is biometric technology in social protection programmes illegal or arbitrary? An analysis of privacy and data protection, International Labour Office, Geneva.

Castañeda, T. and Lindert, K. (2005) Designing and Implementing Household Targeting Systems: Lessons from Latin American and The United States. Social Protection Unit, Human Development Network, The World Bank, Washington D.C., USA.

Chirchir, R. (2018). Concept Note on Integrated and Digital Social Protection Management Information Systems. GIZ (forthcoming).

Chirchir, R. and Farooq, S. (2016). Single Registries and Social Registries: clarifying the terminological confusion.Pathways' Perspective, Issue No. 23, Development Pathways.

Chirchir, R. and Kidd, S. (2011). Good Practice in the Development of Management Information Systems for Social Protection. Helpage International, London.

Direito, D. (2016). The Single Registry as a tool for the coordination of social policies. International Centre for Inclusive Growth, Brasilia.

DSD, SASSA & UNICEF (2016). Removing barriers to accessing Child Grants: Progress in reducing exclusion from South Africa's Child Support Grant. Pretoria: UNICEF South Africa.

European Parliament (2016). General Data Protection Regulation. Official Journal of the European Union, Brussels, Belgium.

Farooq, S. (2017). Integrated Information Management Framework for Malawi National Social Support Programme, Development Pathways, Unpublished.

GIZ. (2017). Single Window Services for Social Protection: Summary of discussion during an international peer-to-peer learning workshop.GIZ, Bohn, Germany.

GIZ. (2016). Single Window Services for Social Protection: Summary of discussion during an international peer-to-peer learning workshop.

Han, H. and Gao, Q. (2019). Community-based welfare targeting and political elite capture: Evidence from rural China. World Development 115 (2019) pp.145–159.

Handayani, S. (2017). Improving the delivery of social protection through ICT: Case studies in Mongolia, Nepal, and Viet Nam. Asian Development Bank, Manila, Philippines.

ILO. (2015). ICROP: Reaching out to rural poor through mobile service units. Geneva.

Inter-Agency Social Protection Assessments Partnerships. (2016). Identification Systems for Social Protection.World Bank, Washington D.C., USA.

International Monetary Fund World Economic Outlook. (October 2020) Projected GDP Ranking. http://statisticstimes.com/economy/projected-world-gdp-ranking.php.

ISSA. (2012). Social Policy Highlight. ISSA, Geneva, Switzerland.

Joseph, D. (2012). An Assessment of the strengths and weaknesses of the South African Social Security Agency in Northern and Western Cape Provinces. Potchefstroom, South Africa. North-West University.

Kidd, S. (2017). Anti-Social Registries: How have they become so popular? Pathways' Perspective, Issue No. 24, Development Pathways.

Kidd, S. (2017). Social exclusion and access to social protection schemes. Journal of Development Effectiveness.

Leite, P. et al. (2017). Social Registries for Social Assistance and Beyond: A Guidance Note & Assessment Tool. World Bank, Washington DC.

Malange, S. N. et al. (2015, May). Methodology for improving Data Quality Management in South African government departments. In IST-Africa Conference, 2015 (pp. 1-8). IEEE.

National Bureau of Statistics of China. China Statistics Yearbook 2018. http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm.

Ochieng, T. (2018). GIS Mapping Strategy for Uganda's Single Registry. Development Pathways, unpublished.

Reddy, T. and Sokomani, A. (2008). Corruptions and Social Grants in South Africa, Monograph 154. Pretoria, South Africa: Institute of Security Studies.

Rohregger, B. and Ebken, C. (2012). Technical Workshop: Development Management Information Systems for Social Protection, Workshop Proceedings. Bonn and Eschborn, Germany: Deutsch Gesellschaft für International Zusammenarbeit (GIZ) GmbH.

Ruggia-Frick, R. (2016). Coordinating social programmes: Analysis of scenarios and implementation approaches based on the ISSA Guidelines on ICT, ISSA, Geneva, Switzerland.

SASSA and UNICEF. (2013). Preventing Exclusion from the Child Support Grant: A Study of Exclusion Errors in Accessing CSG Benefits. Pretoria: UNICEF South Africa.

SMERU. (2011). Rapid Appraisal of the 2011 Data Collection of Social Protection Programs (PPLS 2011). Research report, SMERU Institute: Jakarta.

STRIJDOM, J. DIOP, O & WESTPHAL, T. (2016). Universal disability grants in South Africa [PSU BRIEF].

SUSENAS.Statistics Indonesia. 2015. Retrieved from http://microdata.bps.go.id/mikrodata/index.php/catalog/SUSENAS.

TNP2K. (2018). National Social Protection Strategy. TNP2K, Jakarta, Indonesia.

TRUSHA, R and SOKOMAN, A. (2008). Corruption and social grants in South Africa. Institute for security studies. Monograph 154, November 2008.

World Bank. (2016). Evaluating Tanzania's productive social safety net: targeting performance, beneficiary profile, and other baseline findings (English). Washington, D.C.: World Bank Group.

World Food Programme. (2015). Complementary Initiative Update: In Focus, the Single Registry. Complementarity Initiative Update, June 2015, World Food Programme, Nairobi.

Xinping, G. (2017). Research Study on Social Assistance Structures of P.R. China - main achievements and challenges. EU-China Social Protection Reform Project, European Union and the Government of the People's Republic of China, Beijing, China.

Yao, J. (2017). Optimisation of Social Assistance - Procedures and Eligibility Criteria for Social Assistance Benefits. EU-China Social Protection Reform Project, European Union and the Government of the People's Republic of China, Beijing, China.

APPENDIX: COUNTRY CASE STUDIES

1. Brazil's Cadastro Único

1.1 Introduction

Brazil has a population of 209 million and is an upper middle-income country. Brazil has built a world famous social registry, the Cadastro Único, as a tool for federal social assistance programmes, which were consolidated into the Bolsa Família programme in 2003. It has expanded to more than 27 social development programmes. Broader social services that use Cadastro Único include programmes that grant discount on social security contributions, credit rate reduction programmes, social technologies, infrastructure programmes and social services.[1]

1.2 Background to Cadastro Único

The Cadastro Único, or its full name, the Formulário de Cadastramento Único para Programas Sociais do Governo Federal (Unified Registration Form for Social Programmes of the Federal Government) was created in 2001 by Decree No. 3,877. During the years 2001 and 2002, the government implemented different cash transfers programmes for families with similar income: Programa Bolsa Escola, Auxílio-Gás, Bolsa Alimentação and Programa de Erradicação do Trabalho Infantil (Peti). These programmes had different registration processes to select the beneficiaries, coordination was difficult, and the provision of services was fragmented and inefficient. Due to the fact the information was not unified, some families received many benefits while others in similar situations received no benefit at all.

The Cadastro Único was created in order to focus efforts to reach the public with similar characteristics and needs. At that point, however, there was no specific definition about how to manage the registry. In 2003, with the implementation of the programme Bolsa Família, the Cadastro Único was defined by law as the mechanism to identify the beneficiaries for the programme. Subsequently, the number of families in the social registry increased with the increased quality of information. In 2007, the Cadastro Único became the tool responsible for socio-economic identification and characterization of Brazilian families with low income. It also was the integration instrument of social programmes of the Federal Government.

1— Chirchir, R. (2018)

In 2011, the concepts and criteria for registration were defined by law as the role of the entities involved in the management of Cadastro Único. In the same year, a new version of the system for registration allowed online registration and update. With the improvements in the system, the Cadastro Único is not only the registration tool for Bolsa Família programmes, but every year new social policies use the information on the social registry and now it is an essential tool for the Sistema Único de Assistência Social (SUAS) – Unified Social Assistance System in Brazil. The registry has a strategic function in the Brazilian plan for poverty reduction, Brazil sem Miséria, and assures quality information for the social programs (avoiding multiples registries for the same family, for example) and more integration and efficiency in the provision of services for vulnerable families in the country.

1.3 Programmes supported

The main federal government programmes that use the information on Cadastro Único are:
- Bolsa Família Programme – PBF
- Social Tariff of Electric Energy
- Literate Brazil Programme
- Child Labour Eradication Program – PETI
- Card for the Elderly People
- Sector Plan of Qualification – PlanSeQ
- ProJovem Adolescent
- Housing Programs – Ministry of Cities
- Fee exemption for public biddings

It is worth noting that many other supplementary programmes make use of Cadastro Único.

1.4 Objectives of setting up the social registry

The Cadastro Único is a social registry that identifies the most poor and vulnerable groups in the Brazilian population, profiling information like socioeconomic characteristics, needs and potentialities for different geographical locations. Its main objectives are as follows:
- Identification and characterization of socially vulnerable populations.
- Implementation of a social promotion and protection network that integrates the policies in the locations.
- A tool for planning and implementation of public policies for low income families.
- Development of indicators that reflect the dimensions of poverty and vulnerability in the

locations.

- Consolidation of efforts in order to prioritize the provision of services for vulnerable families.

1.5 Institutional arrangements

Cadastro Único is managed by several institutional actors who perform the following roles:

- Design (questionnaire, systems, data security and protection, internet support, financial support, etc.) is led by the Ministry of Social Development.
- Data collection and entry is decentralised to local governments. Data collection is co-funded by the local and the central governments (using a decentralised management index). Currently the database contains information on the following.
    - o Family characteristics and the address: Family composition, address and domicile characteristics, access to water supply, electricity and sanitation, monthly expenditure, belonging to Traditional and Specific Population Groups, etc.
    - o Characteristics of family components: Schooling, labour market situation, disability, civil documentation, income, etc.
- Data consolidation is run centrally by Caixa bank on a performance-based contract with the Ministry of Social Development. Caixa is responsible for generating a unique "social identification number" for each registered person in the social assistance system.
- Continuous training is organized by the States (regional governments) and the Central Government.

1.6 Data sources and linkages

The families' registration process is done by the local government and it happens in four main steps:

- The low-income families should be identified and mobilized in order to do the registry. The interviewers should be trained, and strategies should be developed to collect the data in different regions of the municipality.
- The interviewers collect the data following the methodology defined by the federal government and fill the forms accurately. The data collection can be done by home interviews, fixed service stations and traveling service stations.
- The data is then inputted into the Cadastro Único System, the family then will be part of the national database.
- Data update: It is very important to guarantee the accuracy of the information and that

Cadastro Único is reflecting the actual situation of low-income families in the country. The data update should happen when the information about the family changes (for example the family composition, address, income, etc.), or in the maximum 24 months after the last interview.

Cadunico is also linked with the payment systems of some of its programmes. Specifically, three programmes have direct access to Cadunico data and use it for payments, through Caixa (Bolsa Família Program, Bolsa Verde Program, Programme Development for Rural Productive Activities). Most other programs access information on demand for targeting and monitoring purposes.

1.7 Lessons

- **Linkages:** Further development needed to enable automatic and online database linkage with user programmes, including web services, database synchronization/import.

- **Lack of common national identification number:** Brazil does not have a unique national ID. In fact, there are multiple sources and registries of personal data. As such linkages between databases are currently made through "match keys algorithm" (name, mother's name, birth and codes from some documents).

- **Connectivity and technology:** Gap in several regions of the country, which makes it difficult to maintain a fully electronic IMIS.

- **Institutional challenges in a decentralised context:** (i) Strengthening roles of states in provision of technical assistance; and (ii) strengthening capacities at municipal level to improve local management.

- **Reducing data collection efforts:** Questionnaire is too bulky, considering that it must be individually filled by each applicant.

2. Turkey's Integrated Social Assistance Service Information System (ISAS)

2.1 Introduction

Turkey with a population of 80 million, is an upper middle-income country. Although its population pales significantly when compared to that of China, Turkey has an advanced IMIS, Integrated Social Assistance Service Information System (ISAS). ISAS is an e-government system that electronically facilitates all steps related to the management of social assistance programmes, including the application, identification of eligibility, disbursement of funds, and auditing. ISAS integrates data from 22 different public institutions and provides 112 web-based services in one easily accessible online portal.[2]

2.2 Background to ISAS

Social assistance in Turkey is managed at the national level by the Social Assistance Directorate General (SADG) within the Ministry of Family and Social Policy (MoFSP). At the local level, it is implemented by 1,000 locally based Social Assistance and Solidarity Foundations (SASFs) under the leadership of the provincial and sub-provincial governors.

Turkey's social assistance system goes back to 1976 when Law 2022 was enacted, which enable the state to provide small monthly benefit payment to the elderly or disabled. But a significant change happened in 1986, when SASFs were established based on Law 2022. This created opportunity for the social assistance to be decentralised. Prior to that, social assistance was managed nationally by the Fund Secretariat General within the Prime Minister's Office and administered locally by the SASFs.

ISAS was launched in 2010 and was finalised in December 2015. It was created with the objectives of transferring all social assistance processes to an electronic platform; establishing a "social welfare" and "poverty" inventory (social registry); and establishing efficient control and monitoring mechanisms to ensure fair distribution of resources.[3] The development of ISAS software components was done in a modular and phased approach between 2011 and 2015.

2— World Bank (2018)

3— Barca, V. (2017)

2.3 Programmes supported by ISAS

The data collected is used to create a social registry that is then used to determine eligibility for a number of social assistance programmes. Since 2010, ISAS has processed 30 million citizens' applications for social assistance and completed 340 million assistance transactions amounting to US$13 billion (equivalent to approximately TL39 billion). Turkey's social expenditure accounted for 1.46 per cent of GDP in 2016. The main social assistance programs supported and managed through ISAS include:

- **Conditional Cash Transfer Services:** Aim to reduce poverty by making welfare programs conditional upon the receivers' actions. The system only transfers the money to persons who meet certain criteria.
- **Social Assistance and Solidarity Foundation Services:** Aim to help needy citizens with in-cash and in-kind assistance for food, clothing, shelter, etc.
- **General Health Insurance Income Test Service:** Aim to determine the income level of households to provide health insurance to those who need it.
- **Widow Assistance Service:** Aim to help widowed citizens with cash support.
- **Disabled and Elderly Assistance Services:** Aim to help disabled and elderly citizens with cash support.
- **Soldier Families Assistance Service:** Aim to help soldiers' families with cash support.
- **Solidarity Foundation Project Services:** Aim to support citizens to start businesses so that their need for social assistance is prevented.

2.4 Objectives of setting up ISAS

ISAS is set up with the following objectives:

- Improve social assistance decision-making by making availing data on entire household as opposed to individual applicant.
- Provide a gateway of consolidating social assistance services with a systematic procedure for determining eligibility and disbursement. Data sharing and consolidation has enabled Turkey to address challenges in service delivery, thus improving efficiency in delivering social programmes.
- Reduce the time and costs related to social assistance provision. Electronic record keeping through ISAS saves the Turkish Government from having to process a huge number of paper documents per month and reduces the average application process from days to minutes.
- Improve information sharing and communication across institutions involved in social assistance. ISAS aims to ensure citizens who are ineligible for one social assistance programme

are referred and recommended with additional services.

- Increase transparency and reduce the duplication of social assistance benefits. Prior to ISAS, the process of delivering social assistance was lengthy and fragmented, as management was distributed over a number of institutions with little coordination.

2.5 Institutional arrangements

Turkey developed in source ISAS. The project was undertaken by a project team within MoFSP and by expert staff from the Research and Development Department of the General Directorate of Social Assistance and from the Scientific and Technological Research Council of Turkey.

ISAS is managed by three institutions with distinct roles:

- **Social Assistance Directorate General of MoFSP:** Implements ISAS, oversees management of the system, and provides hardware maintenance. The core team managing ISAS consists of 12 dedicated staff for database management and six for system management. Both teams are led by engineers who report directly to the IT department head. Centralizing functions related to data collection, scoring, and targeting ensures consistency in social assistance delivery. Furthermore, as a high-level government office, the SADG is more easily and effectively able to coordinate across ministries to achieve data - sharing agreements.
- **TÜBİTAK:** Provides system maintenance related to the software, including the development of new modules. Its team also provides research and development for future products. The TÜBİTAK team has 28 software engineers.
- **The Social Assistance and Solidarity Foundations:** Conduct household visits to verify application information and assess living conditions.

2.6 Data sources and linkages

Whereas many countries struggle with on-demand update of data through secondary means, ISAS is fed with data from 22 different public institutions through 111 different web services. This is supplemented by secondary data collection by local offices responsible for social assistance administration.

Organisations that share data with ISAS include:

- Ministry of Interior, Directorate of Civil Registration and Nationality (civil registry)
- Ministry of Labour and Social Security, Social Security Institution
- Ministry of Labour and Social Security, Public Employment Services
- Ministry of Finance, Turkish Revenue Administration

- Ministry of Family and Social Policies, Social Services and Child Protection Agency
- Ministry of Education
- Ministry of Health
- Ministry of Defence and Ministry of Interior
- Ministry of Environmental and Urban Planning
- Ministry of Agriculture and Rural Affairs
- PTT Bank, Ziraat Bank

2.7 Lessons

Turkey's ISAS is a good example of building an integrated system by interlining multiple other government registries and information using modern technological tools - web services. The key lessons from Turkey's ISAS implementation include:

- **Electronic government platforms:** ISAS has been able to interlink to many other government registries and information systems partly because the electronic government was already in place. In fact, ISAS integration to 22 public institution databases via web service is evidence of the functionality of other government databases.
- **Presence of foundational IDs:** Turkey's comprehensive national ID system has provided a strong unique ID for integration.
- **Security and data exchange protocols:** 110 USB-based tokens that generate new passwords each time they are clicked (based on a crypto algorithm and device and user- specific information).
- **Strong political will:** Strong political support was provided by MoFSP to ensure that ISAS succeeded as a tool for delivery of social services.
- **Available of internal capacity:** Political will and strong leadership supplemented by effective technical management. Turkey has adequate and compete internal team that led the design and development of the ISAS platform.
- **Phased and modular development approach:** MoFSP adopted an incremental, iterative and modular approach to development. This meant that any glitches could be addressed on an ongoing and user-tested basis.
- **Integration of challenges:** Data were in different formats, sometimes on paper, and some institutions did not have the technical know-how to transition to an electronic database.
- **Changes to business rules:** It proved difficult to update the rules and the legislative changes underlying the system in line with software platform.

3. Indonesia's Unified Database of Beneficiaries

3.1 Introduction

Indonesia has a population of 261 million. Although it is a lower-middle income country, Indonesia has established a large social registry - Unified Database of Beneficiaries (UDB). UDB was developed in 2011 with the aim of assessing the wellbeing of the poorest 40 per cent of Indonesia's population (by 2015 this was approximately 25.7 million households or 92.9 million individuals). This is arguably the second largest social registry in the World after Pakistan's Benazir Income Support Program's 27 million households' database. The database contains the names, addresses and information on a range of other demographic variables and has been used to target several social programmes in Indonesia.[4]

3.2 Model of IMIS

Indonesia runs a social registry that was primarily designed with aim of centrally managing the selection of poorest 40 per cent of population. Since its establishment, there are at least 5 national programmes that utilise its data:

- **Jaminan Kesehatan Masyarakat (Kartu Indonesia Sehat (KIS)):** Launched in November 2014 to replace Jamkesmas, the program delivers community health insurance cards to the poorest households to receive free treatment in government hospitals. At inception in 2014, KIS targeted 35 per cent of poorest households. However, this was scaled up to reach bottom poorest 40 per cent of households in 2016.

- **Bantuan Siswa Miskin (Kartu Indonesia Pintar (KIP)):** Provides transfers from central education agencies directly to students or schools once enrolment, attendance and other criteria have been verified. In November 2014, Smart Indonesia Cards (KIP) were launched and distributed to 160,000 children of school going age.

- **Program Keluarga Harapan (PKH):** PKH is a conditional cash transfer providing direct cash benefits conditional on household participation in locally-provided health and education services. It is targeted at the bottom poorest 8 per cent of households.

4— Chirchir, R. (2018)

- **Beras untuk Rumah Tangga Miskin:** Raskin, or rice subsidy programme, with the broad aims of strengthening food security and reducing the financial burden on poor and near-poor households.

- **Bantuan Langsung Sementara Masyarakat (BLSM):** BLSM is a temporary unconditional cash transfer to compensate for the increase in fuel prices. The program is designed to protect the poor and vulnerable households from social-economic risks posed by the changes in national economic policies. A family welfare card Kartu Keluarga Sejahtera (KKS) was issued to the beneficiaries of BLSM (the poorest 25 per cent of households).

3.3 Institutional arrangements

UDB is managed by TNP2K (technical unit supported with funding from government of Australia), and the special unit is called UPSPK (Unit Penetapan Sasaran Penanggulangan Kemiskinan or Unit for Targeting and Poverty Reduction). The functions of the TNP2K's UDB unit were fourfold: (i) provide UDB data to line ministries; (ii) provide technical assistance on data use to local governments; (iii) generate M&E/reports on data utilization; and (iv) maintain website portal. To deliver on these functions, UPSPK is staffed by a team consisting of one data and dissemination officer, one infrastructure and security specialist, one GIS Specialist, two On-Demand Application Officers, one Administrator and two Senior Programmers.

However, in 2016 the UDB was in the process of being transitioned to PUSDATIN (Data Centre) at the Ministry of Social Affairs (MOSA). This is part of the implementation of a legislative requirement (Law Number 13) which vests the responsibility for the collection and maintenance of data on poor households with MOSA. A task force consisting of the Ministry of Human Development and Culture, TNP2K and MOSA to steer the transition process has been established.

At MOSA, PUSDATIN is managed by 37 staff, nine of which are on MOSA's employment structure. 12 staff members are technicians, three are statisticians, one is an expert who handles maintenance of the data centre, while the rest are general staff. MOSA plans to deploy more expertise to manage PUSDATIN. MOSA also plans to develop a comprehensive capacity development strategy to ensure that PUSDATIN has full capacity to (i) ensure the security and administration of the UDB; and (ii) to provide analysis of the UDB data to stakeholders.

3.4 Data sources and linkages

The main data source for Indonesia's UDB is the data collected by the UDB questionnaire which is administered through census every four years. This has become the only source of data for poverty

targeting in the country. Currently, the UDB is not actively linked with any other government databases, though efforts are now in place for linkage with the NIK. Currently, Indonesia is also reviewing the MISs of its core social assistance schemes with the aim of enhancing them - to fully manage and coordinate core operational processes. The strategy will also entail integration with the UDB given that its data will be dynamically updated in the future.

3.5 Lessons

As a social registry that is centrally managed and updated primarily through the census process of data collection, Indonesia's UDB faces many challenges:

i. **Institutional arrangements:** Indonesia is the country reflecting the tensions between two institutions, Office of the Vice President and MoSA for the control of the social registry. Whereas UDB is official social registry, MoSA has established a parallel database complete with data, hosted at PUSDATIN, its data centre. The existence of two large databases causes confusion over which should be used for selection of MoSA programmes.

ii. **Exclusion errors:** The means of pre-selecting the poorest 40 per cent of households underpins exclusion errors in the UDB.

iii. **Costs:** One-off census registrations have cost US$60 million in 2011 and US$100 million in 2015.

iv. **Update of the data:** Even when implementing agencies and user programmes update their beneficiaries' data, these changes are not fed back into the UDB. This challenge may be resolved in the future with the planned piloting of the dynamic update using on-demand process.

v. **Legislation:** Lack of formal institutional arrangements and MoUs with individual programme implementers and other government bodies mean that data exchange is managed on an ad-hoc basis and is not systematic.

vi. **Linkages:** There is no automatic link to its national ID registry (NIK) as well as programme MISs. And, the programme MIS does not provide information to UDB, when they update. Although there has been pilot of the on-demand update, it is not yet clear whether that has addressed the data update issues.

vii. **Resources:** Developing UDB required a lot of work and extensive capacity (technical, administrative and financial). Indonesia therefore had to obtain some donor support for UDB set up.

viii. **Census and ethical issues:** UDB data was collected in 2011 and 2015 by BPS, its statistical agency. So, there are ethical questions on whether BPS should continue collecting data

for poor households while concurrently delivering its core mandate of collecting and publishing government statistics.

ix. **Difficulties in the implementation of official guidelines:** Many times, households considered non-poor were removed from the pre-lists by enumerators or community leaders. Besides, many poor families were not informed during enumeration leading to exclusion errors. (Bah & al, 2015).

x. **Data exchange with programmes is not automated:** UDB provides information on beneficiaries to programmes and districts via CDs, which are sent by post (Chirchir & Shez, 2016). However, well Social Registries and IMIS should be electronically linked to MIS in order to optimize its effectiveness, as pointed out by Chirchir & Shez (2016).

xi. **Lack of formal institutional arrangements and adequate legislative framework for UDB:** According to Sudarno Sumarto, 2015, UDB lacks formal institutional arrangement for determining who is responsible for its management, how it will be staffed and funded, which programmes should use data and how, and who will collect the data and update it, that may explain ownership challenges between Office of the President and MoSA.

4. South Africa's Integrated Social Pension Integrated Management Information System

4.1 Introduction

The Republic of South Africa is an upper-middle income nation[5] and one of the wealthiest countries in Sub-Saharan Africa. Despite such accomplished feats, South Africa is faced with high levels of inequality with a Gini coefficient at 0.65 and an approximated poverty rate of 15.9 per cent.[6] Abolishing the oppressive apartheid system led to the planning of a future devoid of injustices experienced in the past. One of the realizations the post-apartheid regime in 1994 had was the need for reforms in the area of social assistance, more specifically to "recognize access to social assistance as a constitutional right".[7] While SOCPEN information management system was instituted in the 1930s,[8] this case study addresses the use of SOCPEN in the post-apartheid era in South Africa. Currently, SOCPEN processes over 17 million social assistance grants,[9] accounting for 3.5 per cent of the country's GDP.

4.2 Background to South African Social Security Agency (SASSA) and SOCPEN

According to Barca and Chirchir (2014), the effective integration of programs across government programs necessitates all involved parties "to identify relevant stakeholders and formalise their roles and responsibilities", which can be done "through legally binding agreements, carefully designed incentives and mutually agreed terms of reference" (p. 32). Pursuing such concerted efforts, Department of Social Development (DSD) enacted the South African Social Security Act No.9 of 2004.[10] The Act was centered on the institutionalization of the South African Social Security Agency (SASSA)

5— http://data.worldbank.org/?locations=XT-ZA

6— The poverty line is defined at US$1.90 a day as set by the World Bank. http://www.worldbank.org/en/country/southafrica/overview

7— Reddy and Sokomani, p. 10

8— Barca, V., & Chirchir, R,. (2014). Single Registries and integrated MISs: De-mystifying data and information management concepts. Barton, Australia: Commonwealth of Australia.

9— SOCPEN FACT SHEET: 30th April 2017.

10— www.sassa.gov.za

as a centralized body for the "administration and payment of social assistance" and to "establish a compliance and fraud mechanism to ensure that the integrity of social security is obtained".[11] More importantly, SASSA was formed to reduce fragmentation and inconsistency within the previous system, particularly in the areas of benefit levels and eligibility criteria for social grants, which were decided by nine different regions and disbursed by different paymasters.[12]

The process of improving the cohesion of South Africa's social security system was based on Australia's Centrelink (Joseph, p.59). Centrelink merged a quarter of federal social security and employment organizations and their functions to construct one independent agency with the intention of reducing "welfare fraud" (Reddy and Sokomani, p.52). Using this model, South Africa integrated "provincial social assistance functions effected through a Service Agreement" that was signed by "national and provincial departments" (Joseph, p.58). DSD planned to support the SASSA and its office until it was able to operate independently (Joseph, p.58). A subsequent measure taken to improve coherence was reviving the old SOCPEN system from the apartheid regime, which was conceived to be the most efficient way to "carry the volume of transactions without any noticeable problems" (Joseph, p.3). The SOCPEN Management Information System is the current core of operations of SASSA, which operates under the auspice of DSD.

4.3 Model of IMIS

SASSA manages the majority of the social grants in South Africa through SOCPEN. SOCPEN MIS provides support in the application process, administration, and delivery of programming. As of April 2017, more than 17 million social grants were paid to over 10.5 million recipients[13] (out of a total estimated population of 57 million people). The following social grants are under the ambit of SOCPEN:

- **Elderly:**
  o Old Age Grant: Targeted at individuals 60 years of age and above and reaches over 3.3 million recipients.
  o War Veterans Grant: Paid out to just 175 Second World War veterans.
- **People with disability:**
  o Disability Grant: For individuals between 18 and 59 years of age. Applicants must provide a medical assessment report confirming their disability. Coverage stands at just over 1.2

11— http://www.sassa.gov.za/index.php/about-us/sassa-legislation?download=9:sassa-act-2004

12— STRIJDOM, J. DIOP, O &WESTPHAL, T. (2016) Universal disability grants in South Africa [PSU BRIEF] http://www.socialsecurityextension.org/gimi/gess/RessourcePDF.do?ressource.ressourceId=53944

13— A person may be paid more than one grant. For instance, one adult recipient may receive more than a child support grant. Additionally, grant-in-aid support may be provided to recipients of the grant for older persons, disability grant or war veteran's grant, if they need full-time care due to physical or medical disability.

million while according to its latest census in 2011, 2.87 million people in South Africa lives with a disability.[14]

- o Care Dependency Grant (children): For children below 18 years of age who have a disability. Applicants must provide a medical assessment report confirming their disability. Coverage is just under 150,000.

- **Children:**
  - o Child Support Grant: The largest grant and is targeted at children below 18 years of age. Currently, it reaches over 12 million children (approximately two thirds of the children in-country).
  - o Foster Child Grant: Given to children with special care requirements. Currently, it reaches just under 450,000 children. The only grant in South Africa that is not means tested.

- **Supplementary programs:**
  - o Social Relief of Distress Grant: Temporary provision of assistance for people in calamitous situations who cannot meet their own or their families' most basic needs. Issued monthly for a maximum of three months. A three-month extension may be granted in exceptional cases.
  - o Grant in aid: Paid as a top-up grant to those receiving other grants. Applicant must be in receipt of an Old Age Grant, Disability Grant or a War Veteran's Grant who need full-time attendance by another person. Currently, it benefits more than 165,000 people.

4.4 Objectives of setting up the IMIS

From the onset, SASSA was created to administer the social protection programs comprised the social grants. Integrating the social protection programming aimed at:

- Improving management and administration of social security.
- Ensuring an effective and cost-efficient administration.
- Building a customer focused institution, with special attention paid to contact points.
- Ensuring enhanced financial accountability through client management systems (back office function).
- Better grant review and maintenance systems.
- Enhancing fraud prevention strategies. (Rohregger and Ebken, pp. 27-28)

14— STRIJDOM, J. DIOP, O & WESTPHAL, T. (2016) Universal disability grants in South Africa [PSU BRIEF] http://www.socialsecurityextension.org/gimi/gess/RessourcePDF.do?ressource.ressourceId=53944

SOCPEN MIS's specifically acts as a tool supporting the delivery of the social security programmes. So, specific objectives of SOCPEN include:

- Supporting grant operations and interface with other government MIS databases in real-time for cross-checking data.
- Collating and gathering data about beneficiaries (i.e. name, address, age, income, disability status).
- Efficient tracking of application forms and letters sent by recipients.
- Monitoring beneficiaries' eligibility and their poverty status.
- Producing grant payment schedules aligned with provinces and tenders.
- Preventing the administration of fraudulent grants.[15]

4.5 Institutional arrangements

The major government institutions working with SOCPEN MIS is SASSA, which is buttressed by the DSD. As previously stated, the enactment of the South African Social Security Agency Act of 2004 created SASSA, and it gathers, updates, and administers all aspects of delivering social security to a nation-wide database of beneficiaries. Therefore, it's important to recognize that one of the core responsibilities of DSD is the "management and oversight over social security, encompassing social assistance and social insurance policies".[16] On the other hand, the mandate of SASSA is "to ensure the provision of comprehensive social security services against vulnerability and poverty within the constitutional and legislative framework".[17]

SASSA's purpose is to coordinate across government ministries and programming to execute its mandate. In furtherance of this mandate, SASSA has set up interfaces for data exchange with the Department of Home Affairs (DHA)[18] and PERSAL, and the government pay-roll system (Barca & Chirchir, 2014). Furthermore, SASSA has signed MoUs with other ministries and government structures to increase coordination within their functions. For instance, SASSA signed a MoU with the DHA to speed up the issuance of IDs, refugee permits or birth certificates for those who are using alternative documents aiming to decrease the waiting time for ID documents and ensure uninterrupted receipt of the grant (DSD, SASSA & UNICEF, 2016).[19]

15—This information was gleaned from Barca and Chirchir (2014) case study on SOCPEN.

16—Department of Social Development- Core Functions. (n.d.). Retrieved from http://www.dsd.gov.za/index.php?option=com_content&task=view&id=31&Itemid=54

17— Our Mandate and Objetives- SASSA. (n.d.): http://www.sassa.gov.za/index.php/about-us/our-mandate-and-objectives

18— Based on the literature review, it is not clear to what extent the cross-checking with DHA is done through online interfaces with the population registry or through information requests forwarded on a case-by-case basis (GIZ, 2016).

19— DSD, SASSA & UNICEF. (2016). Removing barriers to accessing Child Grants: Progress in reducing exclusion from South Africa's Child Support Grant. Pretoria: UNICEF South Africa.

4.6 Data sources for the database and linkages

As mentioned earlier, SOCPEN is the primary database that contains information on all beneficiaries across the listed seven social assistance programs.[20] SOCPEN runs on mainframes located at the State Information Technology Agency[21](SITA). Its enterprise database, Adabas (adaptable database system), manages more than 2,300 concurrent users and has a register of more than 17 million beneficiaries.

SOCPEN is linked to the following databases:

- Department of Home Affairs (to determine the status of beneficiaries): As part of the application process, SASSA verifies an applicant's identity with the DHA, and is also informed of a person's death to proceed with grant cancellation (DSD, SASSA & UNICEF, 2016).

- Government payroll system –PERSAL: To prevent the inclusion of active civil servants as beneficiaries of grants. Through different cross checking during more than 40,000 ineligible beneficiaries were removed from SOCPEN in 2017. Nevertheless, this strategy may result in the exclusion of people who were only temporarily employed and/or employed on short-term contracts with the state, including short-term job opportunities such as the Expanded Public Works Programme. The PERSAL system does not distinguish between such cases, and applicants are excluded on these grounds.[22]

- LURITS (The Department of Basic Education's learner database): It appears that there is a regular exchange of information between both entities, however, strengthening this relationship would allow SASSA to identify children left behind.

- Unemployment Insurance Fund (UIF).

- Government Employees Pension Fund (GEPF).

- PERSOL (Payroll system of the Défense force).

- National Treasury (to verify the banking details of beneficiaries).

- Special investigations unit (to identify fraudulent grants).

There is also a link between SOCPEN and LIVELINK, a document management system that scans and manages letters sent to grant recipients.[23] In addition, there are a few other MISs which support SASSA operations, including financial and human resource management, call centres and geographic information tracking system.

20— There is no certainty regarding the integration of the Social Relief of Distress Grant (the 8th social grant managed by SASSA) into SOCPEN MIS. During a Portfolio Committee meeting in October 2015, a representative from SASSA said that "work is underway to develop a system, aligned to SOCPEN, which will assist with reporting on social relief of distress." Retrieved at https://pmg.org.za/tabled-committee-report/2550/

21— SITA is the agency of ICT for government to create an enabling ICT environment for government departments to provide electronic services (e-services) to the citizens of South Africa.

22— SASSA & UNICEF. (2013). Preventing Exclusion from the Child Support Grant: A Study of Exclusion Errors in Accessing CSG Benefits. Pretoria: UNICEF South Africa.

23— Barca, V. and Chirchir, R. (2014). Single Registries and integrated MISs: De-mystifying data and information management concepts. Barton, Australia: Commonwealth of Australia.

4.7 Lessons

Arguably, SOCPEN can be considered a well-functioning IMIS. It has been in place for several years while coping with a considerable increase of beneficiaries, moreover, successfully integrating with other sources of information to cross check data while introducing technologic developments (i.e. including biometric parameters for registration) and therefore reduce chances of fraud.

But, overall, SOCPEN is faced by the following challenges:

- **Institutional challenges**
  - o Coordination: The system is still fragmented, plagued by administrative bottlenecks and implementation inefficiencies. As a result, the various elements of the social protection system are not operating seamlessly. In fact, some of the linkages between SOCPEN and other government databases are not in real time, resulting in potential fraud.
  - o Even though SOCPEN is an advanced integrated beneficiary registry for the listed six social assistance programmes in South Africa, the Department of Labour Law and Social Development still have divergent operating standards for their respective programs and activities (GIZ, 2012).

- **Technical challenges**
  - o Capacity limitations: SOCPEN cannot track and locate physical files of the more than 20 million beneficiaries.
  - o SASSA grants systems do not interface with the South African Revenue Services' (SARS) Income Tax system (GIZ, 2012), which makes income verification and profiling of beneficiaries harder. But strengthen inter-departmental relationships through information sharing with institutional actors goes further than preventing fraud, it can allow the identification of exclusion errors.
  - o There is further potential of integration, for example better coordination between SASSA and the Department of Health would allow the identification of beneficiaries (disabled persons and pregnant women, whom children will be beneficiaries of CSG). This option has been already identified, as the recommendation of linking the Department of Health's MomConnect programme –which uses mobile SMS to register pregnant women across the country– with SASSA, to send information on the CSG and other social assistance benefits is included in the report made by DSD, SASSA and UNICEF in 2016.
  - o As NISIS (National Integrated Social Information System) is still in progress, it is not clear if South Africa will be able to manage an integration between SOCPEN (the integrated beneficiary registry focused on the individuals that benefit from social assistance) and NISIS, which will provide valuable information about household conditions (more like a social registry focused in household's characteristics).

- **Security challenges**
  - o Identifying fraud: Fake documents are often obtained from Health and Home Affairs departments, which entail "doctors taking bribes to falsely certify that someone had a disability in order to be eligible for a disability grant" (Ancer 2005). Anti-corruption efforts within the DSD are inadequate if administrative weaknesses in other departments are not sufficiently addressed. An interface should therefore be established between the databases of the different departments to ensure improved detection of anomalies – a point that the SIU also highlights.[24]

- **Capacity challenges**
  - o Staffing: Maintaining people with skills to run SOCPEN.

24— Reddy, T. and Sokoman, A. (2008) Corruption and social grants in South Africa. Institute for security studies. Monograph 154, November 2008.

5. Uruguay's Integrated Information System for the Social Assistance (SIIAS)

5.1 Introduction

Uruguay stands out in Latin America and the Caribbean in terms of size of the social protection investments. In fact, Uruguay has achieved remarkable poverty reduction outcomes through a combination of social assistance and social insurance programmes targeted across the life cycle programmes with different objectives (medication subsidies, child grants, near universal old age pensions, etc.), increased access to public services with higher coverage for the poorest (including ECD), and highly progressive fiscal reform. Uruguay spends 25 per cent of its GDP on social programmes.[25] Uruguay's Integrated Information System (SIIAS), that won an award for excellence in public management, goes beyond a registry and includes a comprehensive IMIS (Integrated Information System for Social Assistance). SIIAS not only underpins cash transfer programme operations but also incorporates a high-level case management system/full panel statistical database, and consolidates information for the Social Sector (education, health, labour, social security, food subsidies, etc.). SIIAS contains information on 3.2 million beneficiaries (in a country of 3.4 million) and links to 57 programmes from 16 public institutions.

5.2 Background to SIIAS

SIIAS is underpinned by a strong legal framework (Law 17.866, Art.9).[26] In fact, one of the objectives of the law establishing the Ministry of Social Development (MIDES) is to design, organize and operate a social information system with relevant indicators that support adequate targeting of social policies and programmes. The journey to the development of SIIAS started in 2006, when the Social Security Bank (BPS) and the Ministry of Public Health (MSP) were vested with the responsibility of designing and implementing an integrated social information system to be used as a strategic tool in the design social policies. Since then the SIIAS has grown from strength to strength until 2010 when it was formally set up at Ministry of Social Development (MIDES), an entity legally responsible for administration of the computer system that integrates information on social benefits.

In March 13, 2012, an inter-ministerial framework was set up between MIDES and other institutions including MIDES, BPS, MSP, MTSS, MVOTMA, MEC, CODICEN, ASSE and INAU. Thereafter, a

---

25— http://blogs.worldbank.org/governance/uruguay-s-award-winning-innovations-social-protection
26— http://siias.mides.gub.uy/

number of other organisations were linked to SIIAS based on the approval of the Technical Steering Committee. SIIAS is operated in accordance with the amendments of Law 18,331 on the Protection of Personal Data and Habeas Data (regulated by Decree No. 414/2009). That data protection law sets out the principles for use of data in terms of legality, accuracy, purpose, data security, confidentiality and responsibility.

5.3 Model of IMIS

SIIAS is a platform of social services and a gateway of information. On one hand, it is IMIS that links applicants of social services to the services, which functions as a social registry. But, on the other hand, it consolidates information about beneficiaries across the social protection sector, therefore functioning as an integrated beneficiary registry. Additionally, it also consolidates information on boarder social services and provides rich reporting and analytical tool.

5.4 Objectives of IMIS

SIIAS was established to address the following objectives:

i. **Improve the targeting of social programmes:** The data on potential beneficiaries is registered into SIIAS. Importantly, it integrates with existing databases of different institutions, and helps target services to needs.

ii. **Simply the processes to select beneficiaries:** SIIAS enables the Government to identify vulnerable households and automatically assign beneficiaries to benefits such as water subsidy, electricity subsidy, etc.

iii. **Improve access to social programmes:** By integrating information from different institutions, SIIAS makes it easier for beneficiaries to access social benefits and services.

iv. **Provide decision-makers and civil society with information:** SIIAS enables policy-makers, NGOs, and researchers to get a clear picture of the supply of and demand for social assistance in Uruguay. Data on vulnerable persons is analysed in the form of dashboard and GPS format. SIIAS also helps policy-makers anticipate the needs of beneficiaries over time, optimizing the social protection system by accompanying the life cycle of individuals, and better accounting for risks and intergenerational factors.

v. **Establish standards for institutional coordination and information exchange:** SIIAS improves and standardizes data processing in social service institutions.

5.5 Institutional arrangements

Since 2010, the SIIAS is managed by a division of the National Directorate of Evaluation and Monitoring (DINEM) of the Ministry of Social Development (MIDES). However, it is strategically led by a Technical Steering Committee, which is consisting of the following:

- Division Coordinator
- Assistant in research and data quality
- Coordinator of the Information Analysis System
- Information Analysis System Advisor
- Service integration and data extraction
- Geo-reference Specialist

SIAS is linked to the 32 organisations.

5.6 Data sources for the databases and linkages

The programmes supported by SIIAS include:

- **Education Programmes:** Consolidate information on ECD, primary, secondary and technical education levels of Uruguayan public education.
- **Disability Programmes:** Programmes targeted at the disabled persons.
- **Cash Transfer Programmes:** These are programs that provide regular cash transfer to beneficiaries and include family allowances, and cash transfer of vulnerable households that need energy and water.
- **Work and Employment:** A list of participants in social and labour programmes and users of health institutions who have active status in BPS. Uruguay Trabaja is aimed at people who are between 18 and 64 years old who are in a situation of socio-economic vulnerability, without contributions in BPS for a formal job for more than two years and have an educational level lower than the Basic Cycle.
- **BPS Grants:** BPS beneficiaries access the following benefits:
  o Unemployment Subsidy: A monthly allowance for workers who become unemployed against his/her will.
  o Subsidy due to Illness: A benefit for being an active worker who for medical reasons is unable to work (due to illness or work accident).
  o Subsidy for Maternity: A maternity or paternity subsidy. The subsidy replaces the salary. In the case of the pregnant woman, it covers 98 days of leave (pre- and post-partum).

- **Retirements and Pensions:** Social insurance programmes integrated into the SIIAS include:
  - o Retirement Benefits
  - o Pensions for Death
  - o Disability Pension
  - o Old-age Pension (BPS): A monthly non-contributory benefit for being older than 70
  - o Assistance to the Elderly (Equity Plan-MIDES): People between 65 and 70 years old can receive a subsidy for integrating vulnerable households and lack resources to cover their basic needs.

- **Comprehensive Care:** MIDES and INAU manage programs that use the proximity technique to carry out an integrated approach to assessment of people, households or families in situations of social vulnerability.
  - o Benefits to pregnant women and children under 4 years: The program is aimed at pregnant women and / or girls and boys under 4 years of age who present social and / or health vulnerability. It provides technical support, support materials and facilitates access to other social benefits.
  - o Cercanías: A programme co-managed by MIDES and INAU that serves families in situations of social vulnerability with a strategy of proximity that includes accompaniment in goals related to the dimensions of identity, family care, health, education, work and access to social benefits.
  - o Young People in Network (JER): This program is managed from the INJU. It has technicians who work in the exercise of the rights of young people who are between 14 and 24 years old and are disconnected from the educational system or from formal work.
  - o Comprehensive Management of Public Security (GISC-over): The program seeks to reduce crime and violence in the neighbourhoods of the sectional 5, 19 and 15 in Montevideo and the perception of insecurity, focusing on young people between 13 and 18 years.
  - o Street Children Programme: MIDES is in charge of centres that provide food, lodging and a multidisciplinary approach for people in street situations.
  - o INAU Street Program: Persons who are up to 17 years of age who are in a street and / or extreme street situation can access the INAU response system that covers three types of intervention: recruitment, follow-up and attention in centres (time partial or total).

- **Health and Food:** Registration systems about services or health and food programs that provide information.
  - o Chronic Illness Support Programme: The Chronic Illness Support Programme (PAEC) of the National Food Institute is aimed at people in a situation of socio-economic vulnerability

and provides a monthly transfer (Card) for the purchase of food and nutritional advice.

o National Dining System: The National Dining System (SNC) of the INDA has several types of benefits: lunch, or lunch or Wellness Ticket.

o National Food Nutritional Risk Plan: The National Nutritional Risk Food Plan (NARAP) of the INDA is aimed at pregnant or lactating women as well as under 18 years old who have or are at risk of malnutrition.

o Coverage by FONASA: Beneficiaries are active employees who meet at least 13 daily wages and a minimum of PCBs, liabilities (retired or pensioners) and their family nucleus (children under 18 or older with disabilities, spouses or partners who do not have their own right).

o Department of Medical-Surgical Specialties (DeMeQui-OASIS): Aimed at children under 14 years of private activity employees who provide remunerated services to third parties who do not access SNIS because they are carriers of congenital diseases with or without malformations and emerging pathologies of perinatal risk.

o Maternal Plan and Children's Plan (OASIS): Assistance orders for comprehensive care to pregnant women or mothers with new-borns up to 45 days.

• **Housing Solutions:** Information on housing solutions (temporary and transitory) stored in the SIIAS. It includes:

o Habitational Solutions for Retirees and Pensioners

o Unique Registry of Housing Beneficiaries (RUBV)

o Attention Programs for People in Street Situations: monthly the list of people who make use of the housing centre in which food, lodging and multidisciplinary approach are provided such as health care and recovery of social networks.

5.7 Lessons

Uruguay is truly an example of how IMIS can be successfully linked to a country's social protection and broader social services system. Key lessons include:

i. **Multi-agency team:** It is evident that multi-agency team – with right political support - is needed to put in place such an integrated system both a platform of services, gateway of information and engine for provision of social services.

ii. Legislative framework: Unlike many developing countries that start of integration agenda from a weak policy position, Uruguay put in place requisite legislative framework that underpinned the development of SIIAS. Law 17.866, Art.9[27] is a case in point.

iii. Accessibility: Transparency of massive data for decision making. SIIAS is accessible to both institutions and individuals, who can request a record of benefits received.

iv. Value for money: The total cost for the design and implementation of SIIAS amounted to US$3.4 million. Considering that many simple MISs cost up to US$1 million, Uruguay certainly got value for money.

v. Protection of personal data: Uruguay has a data protection law. Although the communication of personal and sensitive data to the SIIAS by its members does not require the informed consent of data subjects, online users and researchers (sign a confidentiality agreement with MIDES).

27— http://siias.mides.gub.uy/

联合国儿童基金会

携手为儿童