FARMER REGISTRIES AND SOCIAL PROTECTION INFORMATION SYSTEMS

Harnessing interoperability to improve outcomes for rural populations

Food and Agriculture Organization of the United Nations

giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

ACKNOWLEDGEMENTS

CONTENTS

INTRODUCTION

1

WHY IS IT CRUCIAL TO TACKLE RURAL POVERTY?

While urban poverty has taken centre-stage in the aftermath of COVID-19[1], rural areas were at least equally affected via knock-on effects (**FAO, 2022**).

More importantly, the vast majority of people living in poverty live in rural areas (**World Poverty Clock; World Bank, 2022**a[2]). Many of these people are family farmers[3] and small-scale food producers, who depend at least partly on agriculture, fisheries, and/or forestry for food and income, and are facing extensive barriers to accessing resources, markets and services (**FAO, 2017a**, 2017b).

If broader definitions of poverty – ones that include non-monetary aspects of deprivation – are used, the composition of the poor tilts even further towards rural areas (**FAO and OPHI, 2022**). This is compounded by the volatility of rural incomes, persistent food insecurity and malnutrition, and the pervasive and increasing exposure to natural hazards – including the medium and long-term effects of climate change on the sustainability of rural livelihoods.

Confronting rural poverty and deprivation – and, thus, progressing towards Sustainable Development Goals (SDGs) 1 and 2 – **requires differentiated strategies**, tailored to local realities and to the very diverse livelihoods and needs of those who are often lumped together as 'rural poor' (**FAO, 2016**a).

Confronting rural poverty and deprivation also requires a multi-sectoral and coherent approach that cuts across traditional boundaries, which treat 'agricultural policies' as entirely separate from 'social and economic policies' (**FAO, 2016**a; **FAO, 2017**a; **FAO and ILO, 2021**). At the heart of this is the sustainable expansion of social protection coverage, adequacy and comprehensiveness for rural populations – as per the **USP 2030** vision (Global Partnership for Universal Social Protection, 2022) – across the pillars of social assistance, social insurance and labour market policies. Similarly, extending social protection to rural populations requires catering to people's specific profiles, risks and vulnerabilities, while explicitly addressing the bottlenecks and barriers they face in accessing protection.

---

1 See, e.g. Roelen, Archibald and Lowe (2021).
2 Recent estimates show that "81 percent of people living in extreme poverty live in rural areas, with significant regional variation in the share of the extreme poor who live in rural areas, ranging from 43 percent in Latin America and the Caribbean to 87 percent in South Asia" (World Bank, 2022a).
3 "Family Farming (which includes all family-based agricultural activities) is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour" (FAO, 2013).

HOW DOES THIS PAPER CONTRIBUTE?

This paper contributes to the thinking and practice around one particular way in which coherence between agricultural and social policies can be achieved, leveraging the extensive progress that has been made in the information systems that support the design, delivery, coordination and monitoring of policies and programmes across both agricultural and social sectors.

In recent years, the social protection sector has made great strides in strengthening registries and information systems, in an effort to expand and improve the delivery of benefits and services to the diverse target populations it seeks to serve (**Barca and Chirchir, 2020**; **Leite et al., 2017**).

At the same time, agriculture and allied sectors are increasingly making strategic use of digital technologies, data and digitally-enabled business models to transform agrifood systems (**World Bank, 2021**; **CTA, 2019**), as a means of achieving food security and nutrition, as well as climate adaptation goals. One tool is the increasing use of **farmer registries – as well as registries of those working in sectors such as fisheries and forestry –** for supporting the development and delivery of tailored and differentiated policies to small-scale food producers and vulnerable rural populations.

While these (and other) sectors have mostly pursued policies and programmes based on their respective information systems, the COVID-19 crisis has demonstrated the potential of data exchange between systems. As governments sought to massively scale up emergency responses to protect people from the impacts of the crisis, countries with accurate and up-to-date social protection information systems were able to mount the fastest responses with the greatest coverage, especially when those systems were interoperable within, and beyond, the sector, often facilitated by foundational digital IDs (**Beazley, Marzi and Steller, 2021**; **Lowe, McCord and Beazley, 2021**; **World Bank, 2022**b).

This paper builds on recent experiences across a range of countries to highlight how the two information systems serving the agricultural and social protection sectors can 'speak' to each other to maximise mutual benefits and enable better support to smallholder farmers and other groups. The paper sets out to explore:

- How the design of standalone farmer registries can be useful to social protection information systems and vice-versa
- When and how farmer registries and social protection information systems can be integrated and embedded in a broader, interoperable digital information ecosystem

Ultimately, the public policy goal is for the data that each contains to be leveraged to improve the identification, coordination, delivery and monitoring of agricultural and social policies focusing on smallholder farmers.

KEY CONCEPTS
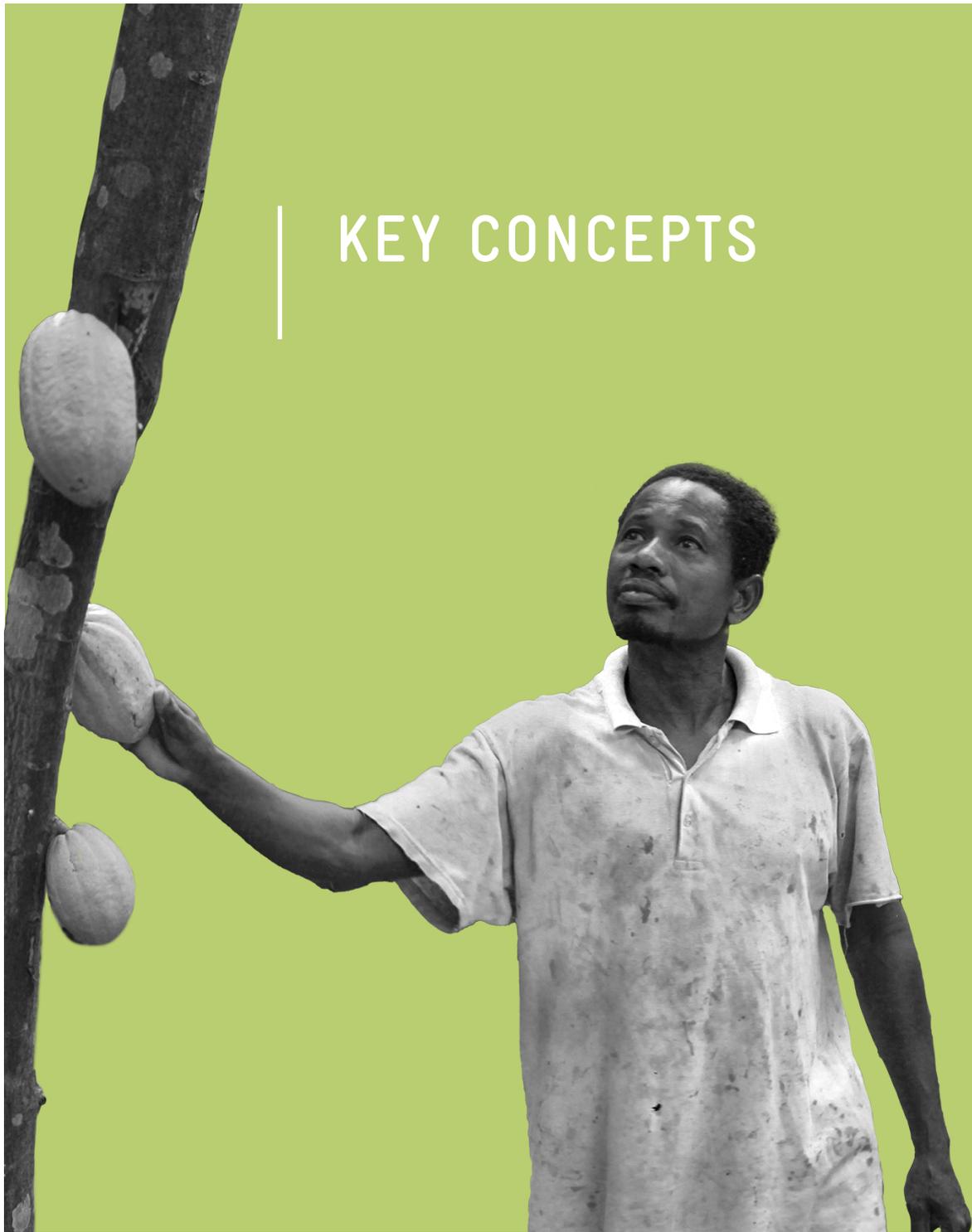
2

WHAT ARE FARMER REGISTRIES?[4]

Farmer registries are electronic registries, usually developed and managed by government stakeholders in the agriculture sector (e.g. ministries of agriculture), with data on farm holdings and farm holders. They support informed decision-making and policies, providing administrative, not statistical (i.e. census or sample-based), information on 'who does what and where' in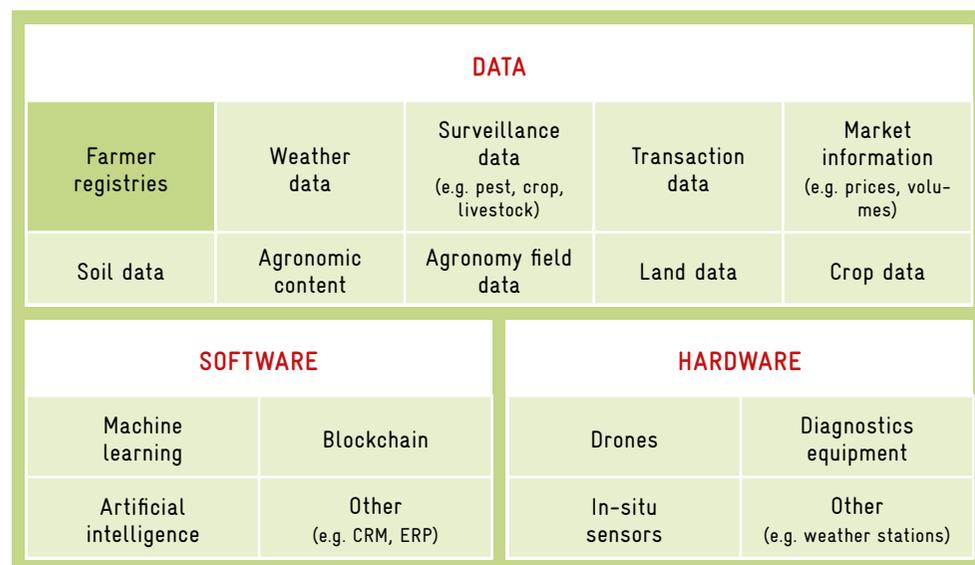 the agriculture sector[5]. Farmer registries are one among the several digital building blocks serving the agricultural sector, as showcased in Figure 1.

FIGURE 1. DIGITAL BUILDING BLOCKS FOR AGRICULTURE, INCLUDING FARMER REGISTRIES

DATA				
Farmer registries	Weather data	Surveillance data (e.g. pest, crop, livestock)	Transaction data	Market information (e.g. prices, volumes)
Soil data	Agronomic content	Agronomy field data	Land data	Crop data

SOFTWARE		HARDWARE	
Machine learning	Blockchain	Drones	Diagnostics equipment
Artificial intelligence	Other (e.g. CRM, ERP)	In-situ sensors	Other (e.g. weather stations)

Source: **CTA (2019)**

How are they typically set up? There are significant differences across countries in terms of the design and, thus, characteristics of farmer registries, however, they have certain things in common:

- **Function:** Farmer registries support the design of differentiated and tailored agricultural policies and access to government programmes, such as agricultural extension services, inputs, subsidies, credit, market access, and cooperative/agribusiness services. While they bestow visibility and recognition on farmers via their registration, they also offer a 'one-stop-shop' for ease of access to a wide range of benefits.

- **Type of data collected and managed:** This ranges widely, but may include[6]:

  — Demographic and basic socio-economic data on farmers and their households: (e.g. age, education, occupation/livelihood, disability status, income, etc.)

  — Land and livestock holding data: for example, land parcel ownership, rental and use; permits/access rights (e.g. for fishing); animal/livestock ownership; machinery ownership; access to irrigation; information on land degradation, crop condition monitoring and yield forecasting (e.g. via satellite imagery, where possible)

What design choices may differ across countries? Depending on a countries' digital and e-government ecosystem, historical evolution and agricultural policies (among other factors), farmer registries may be set up in different ways, mediating the outcomes that they are able to achieve, as design choices modify the credibility and quality of the data collected. Key differences may include:

- **Focus**: All farmers versus just smallholder and/or family farmers; including or excluding fisherfolk, foresters, workers in the extractive sector; including or excluding landless farmers or those working on communal lands, etc.

- **Coverage:** Linked to above, percentage of the rural/farmer population de facto covered

- **Type of data collected:** Minimal in some cases, extensive in others

- **Use of satellite technology/integrated spatial data and link to digitised land cadastral data:** From no use to extensive use

- **Interoperability with other government databases:** From not at all to extensive

---

- **How data are collected and updated**: Whether self-reported continuous and on-demand or collected as a once-off exercise using a door-to-door approach; frequency of data collection, etc.

- **Support of eligibility determination and management of entitlements:** Sometimes managed separately and sometimes integrated as a module within the farmer registry itself

- **How data are analysed/used:** For example, whether the registry analyses the data to generate any segmentation into different farmer categories, including any differences in how these are operationalised (e.g. different thresholds and definitions of family farming), etc.

Key examples: Possibly the most evolved is the information system supporting Europe's Common Agricultural Policy (CAP), including a Farm Structure Survey register looking at individual's 'agricultural holdings' and their characteristics, a CAP Beneficiary Registry, and a Farm Accountancy Data Network (FADN), which monitors the income and business activities of large farms (**FAO, 2018**). Several other examples are discussed in the boxes in this document.

WHAT ARE SOCIAL PROTECTION INFORMATION SYSTEMS?

Social protection information systems serve the design, delivery and monitoring of social protection benefits and services – especially social assistance and social insurance. They comprise a range of registries and tailored software applications that perform different, complementary functions along the social protection delivery chain – from registration and eligibility determination through to enrolment, payment/delivery, and beneficiary management (**Lindert et al., 2020**) (for a full overview, see **Barca and Chirchir, 2020** and **Leite et al., 2017**). Their key components, often reinforced via interoperability with other government databases, are summarised in Table 1.

TABLE 1 – DIFFERENT FUNCTIONS PLAYED BY SOCIAL REGISTRIES AND BENEFICIARY REGISTRIES

	SERVING ONE PROGRAMME	SERVING MULTIPLE PROGRAMMES
MANAGING DATA ON CURRENT BENEFICIARIES	**Beneficiary registries** (hinging on so-called **programme management information systems [MISs]**) manage data on beneficiaries and benefits to support programme management and implementation (e.g. payments, case management, conditionalities monitoring, and grievance redress). Beneficiary registries maintain information only on the beneficiaries of specific programmes – social assistance or social insurance, for example.	**Integrated beneficiary registries** operate as data warehouses that collect information from different social programmes (across social assistance and social insurance), allowing for monitoring and the coordination of 'who receives what benefits'. They can help to identify overlaps, gaps and duplications across multiple programmes, while also supporting the consolidation of other functions along the delivery chain (e.g. payments).
MANAGING DATA ON POTENTIAL BENEFICIARIES	**Social registries** support processes of outreach, intake, and registration, and the assessment of needs and conditions to determine potential eligibility, *for one or multiple social programmes*, serving as platforms that can potentially support access to multiple benefits and services that can extend well beyond the sphere of social assistance. Assessment usually takes into account measures of (household and individual) socioeconomic status or categorical factors, or a combination of both. In terms of population covered, social registries contain information on all registrants, whether or not they are deemed eligible for, or are enrolled in, a particular social programme.	

Source: Adapted from **Barca and Beazley (2019)** and **Barca and Chirchir (2020)**, based on **Barca (2018)** and **Leite et al. (2017)**. Note: this table presents core typologies; large variations also exist within these.

How are they typically set up? There are significant differences across countries in terms of the range of functions and how registries are prioritised in their design, and, thus, their characteristics, which affect the outcomes they are able to achieve[7]. However, the following can be summarised:

- **Function:** They support the design, delivery and monitoring of a wide range of social protection programmes, via the digitisation of key functions along the delivery chain, with an ultimate focus on reducing poverty and vulnerability nationwide (see Table 1 for more differences in function). Importantly, country information systems vary widely: some countries may offer a range of different programme-specific MISs, alongside a social registry serving multiple programmes and an integrated beneficiary registry; others may only have one or two digitised programme MISs and nothing more.

- **Type of data collected and managed:** *Social registries* typically contain socio-economic data on all potential beneficiaries and their households. Exact data collected varies (depending on user programmes' eligibility criteria), but may encompass roster household composition information; geospatial identifying information; self-reported and/or verified information on income; the education, employment, disability and health status of each individual; information on housing (e.g. type of housing material, connection to water, electricity, and so forth) and assets (e.g. vehicle, land, livestock, etc.). *(Integrated) beneficiary registries* often only retain the data required to deliver benefits and services to eligible beneficiaries.

What design choices may differ across countries?

- **Focus:** Anyone in need versus specific population groups (e.g. only those pre-classified as poor); those who are potentially eligible (social registries) versus current beneficiaries (beneficiary registries), etc.

- **Coverage:** Varies widely (also depending on function), from lower than 5% to almost 100% coverage of the population; partly achieved via data-sharing across government databases.

- **Type/amount of data collected/stored:** Varies widely, from minimal to extensive, depending on function, policy/operational choices and uses (see above).

- **How data are collected and updated:** The two most frequent approaches to data collection are: on-demand registration, which relies on households going to an office, or accessing an application/website, to apply, and 'census-style' door-to door registration, which entails all or selected households in an area being interviewed at selected intervals. These both offer significant advantages and disadvantages (see **Barca and Hebbar, 2020** for a full list), including in terms of data currency.

- **Interoperability and data sharing:** Varies widely, from not at all to extensive data sharing across government databases (usually tax, civil registry, land ownership, disability status, etc.), usually enabled by a unique identifier and by strong data protection legal frameworks.

Key examples: Two of the most well-known examples of integrated social protection information systems serving low and middle-income countries are Chile's Social Information registry (**Digital Convergence Initiative, 2022**a) and Turkey's Integrated Social Assistance System (**MoSFP and World Bank, 2018**).

---

7 A great infographic summary of this can be found here.

WHAT ARE THE LINKAGES BETWEEN THE TWO?
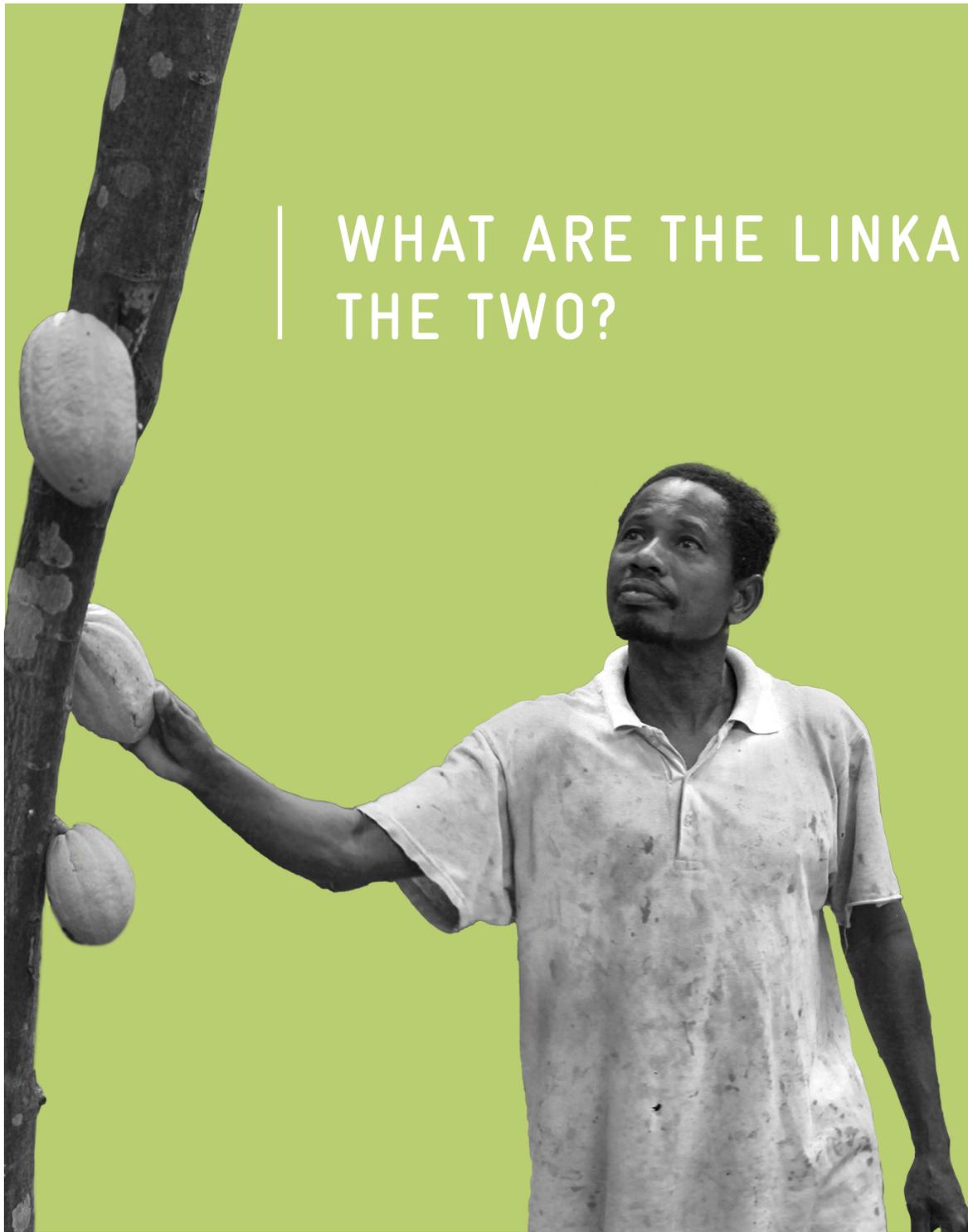
3

Many benefits can be reaped if better integration – via interoperability or other forms of ad-hoc data-sharing – is sought between the information systems serving the social protection and agricultural sectors. The overall framing for this section is presented in Figure 2.

FIGURE 2. VISUALISING THE POTENTIAL LINKS BETWEEN FARMER REGISTRIES AND SOCIAL PROTECTION INFORMATION SYSTEMS
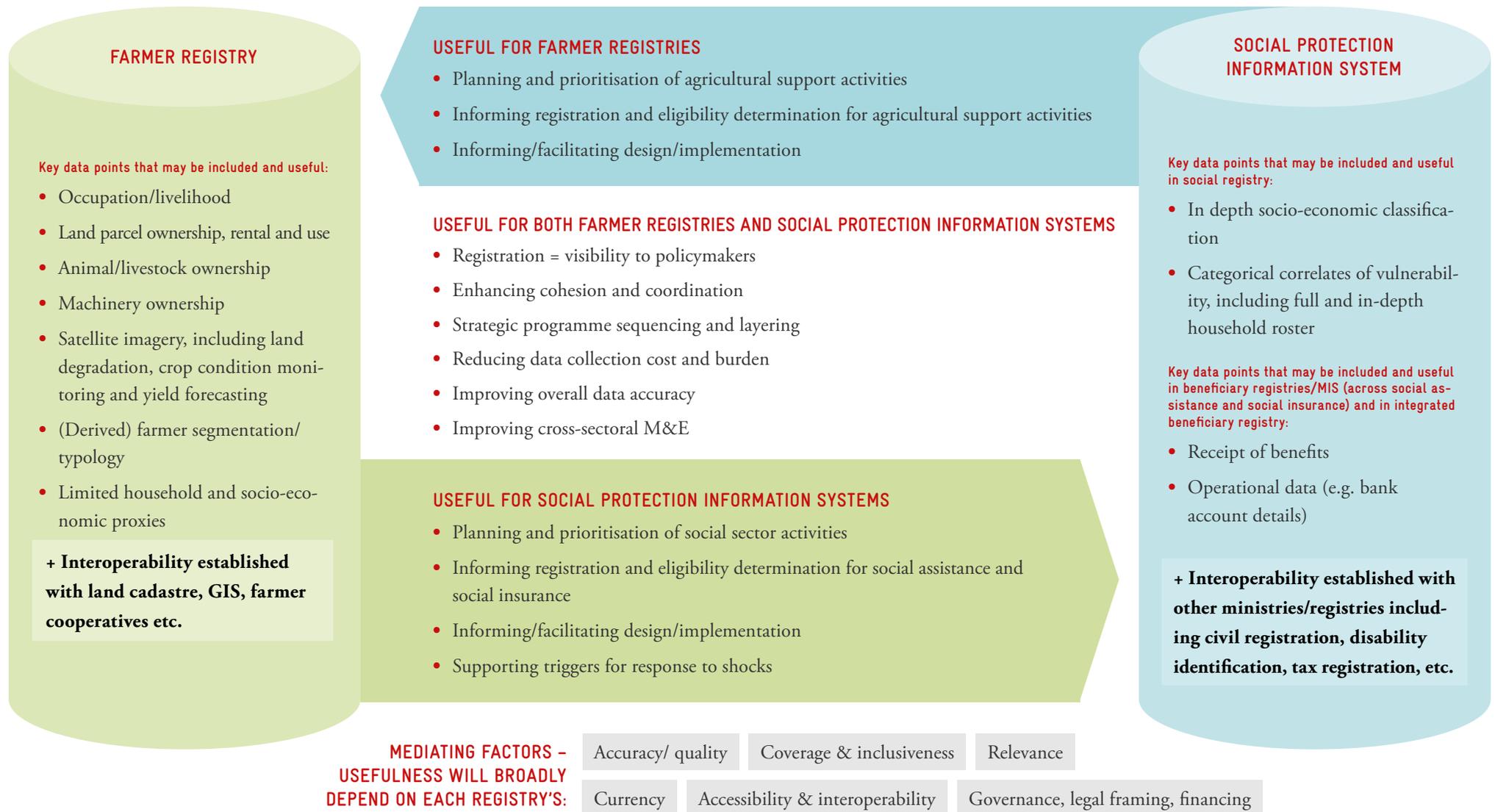
FARMER REGISTRY

Key data points that may be included and useful:

- Occupation/livelihood
- Land parcel ownership, rental and use
- Animal/livestock ownership
- Machinery ownership
- Satellite imagery, including land degradation, crop condition monitoring and yield forecasting
- (Derived) farmer segmentation/ typology
- Limited household and socio-economic proxies

+ Interoperability established with land cadastre, GIS, farmer cooperatives etc.

USEFUL FOR FARMER REGISTRIES

- Planning and prioritisation of agricultural support activities
- Informing registration and eligibility determination for agricultural support activities
- Informing/facilitating design/implementation

USEFUL FOR BOTH FARMER REGISTRIES AND SOCIAL PROTECTION INFORMATION SYSTEMS

- Registration = visibility to policymakers
- Enhancing cohesion and coordination
- Strategic programme sequencing and layering
- Reducing data collection cost and burden
- Improving overall data accuracy
- Improving cross-sectoral M&E

USEFUL FOR SOCIAL PROTECTION INFORMATION SYSTEMS

- Planning and prioritisation of social sector activities
- Informing registration and eligibility determination for social assistance and social insurance
- Informing/facilitating design/implementation
- Supporting triggers for response to shocks

SOCIAL PROTECTION INFORMATION SYSTEM

Key data points that may be included and useful in social registry:

- In depth socio-economic classification
- Categorical correlates of vulnerability, including full and in-depth household roster

Key data points that may be included and useful in beneficiary registries/MIS (across social assistance and social insurance) and in integrated beneficiary registry:

- Receipt of benefits
- Operational data (e.g. bank account details)

+ Interoperability established with other ministries/registries including civil registration, disability identification, tax registration, etc.

MEDIATING FACTORS –
USEFULNESS WILL BROADLY
DEPEND ON EACH REGISTRY'S:

| Accuracy/ quality | Coverage & inclusiveness | Relevance |
| Currency | Accessibility & interoperability | Governance, legal framing, financing |

WHAT IS THE VALUE OF OVERALL COORDINATION ACROSS THE TWO SYSTEMS?

There are specific advantages to data flowing from the farmer registry to the social protection information system, and vice versa. **Some of the key potential benefits cut across both – and go beyond the sharing of data alone:**

- **Registration leading to visibility to policymakers:** If things are invisible in the data, they will be invisible in policy and planning.

- **Increasing policy coherence and coordination across the two sectors, thanks to strategic engagement with each other's systems and processes (e.g. for registration), as well as with the data that ultimately informs each sector's decision making:** This may include mutual discussions on the key indicators/variables that enable specific needs to be addressed across different vulnerable groups in rural areas, planning based on a more complete understanding of the rural employment dynamics, the prioritisation of criteria for eligibility, and defining strategies for the joint monitoring of common desirable outcomes.

- **Strategic sequencing and layering of programmes across both sectors, while avoiding duplication:** This could include developing a 'package' of coordinated interventions (sometimes referred to as 'cash+'), with a view to fostering synergies between the productive and social protection dimensions in rural areas (see also **FAO, 2016**a, **2016**b and Box 2).

- **Where data are shared across sectoral registries, a reduction in the cost and burden of data collection – for governments as well as users:** According to the 'ask only once' principle increasingly being adopted in many countries where e-government is more advanced, each sector would become a 'data holder' for key variables under its competence, while pulling data from the other sector's registry on an ad-hoc basis, rather than duplicating data collection (for an example, see Box 4).

- **Improving overall data accuracy/quality as well as enhancing accountability and transparency:** The more data are used and shared by different stakeholders (while respecting data protection and privacy best practices), the more opportunities there are to validate the data and ensure their accuracy and quality, while also jointly investing in the infrastructure required for citizens to provide meaningful feedback and grievances.

- **Improving cross-sectoral M&E:** Linked administrative data from the two systems can be used to better understand the socio-economic impacts of different programmes, conduct more disaggregated analysis of coverage, and assess factors causing non-take up of benefits, etc.

Box 1. Lebanon's participatory process for the design of its farmer registry

While farmers and farm workers, as well as fishers, are among the poorest and most vulnerable population groups in Lebanon, they remain largely excluded from existing national social protection schemes (both social insurance and assistance schemes). Farmers/fishers are not legally recognised under the labour laws and basic verified information on farmers and their land cover, land use, geographic location, and associated information is not available. The informal status of these populations partially explains their limited access to social protection, specifically when it comes to their participation in the National Social Security Fund (NSSF). Farmers and fishers are also largely excluded from the national social safety net system, the National Poverty Targeting Programme, due to challenges in identifying and reaching the rural poor.

With the objective of extending the coverage and reach of social protection benefits to rural populations, the Ministry of Agriculture (MoA), in close collaboration with the Food and Agriculture Organization (FAO) and in consultation with the Ministry of Social Affairs (MoSA), has developed a national Farmers Registry (FR), which includes, among other things, a targeting module for vulnerable farming households (the module allows the classification of registered households based on a multi-dimensional index for rural poverty, tailored to the Lebanese context). In the absence of a national social registry or broader social protection information system in Lebanon, the FR sub-registry for vulnerable farming households, by effectively and systematically identifying farmers and fishers in need (according to their livelihoods and socioeconomic characteristics), complements the MoSA's existing social assistance beneficiary registries and contributes to enhancing this population group's access to social safety nets. Furthermore, in creating a legally recognised list of farmers, farm workers, and fishers, the FR is also the first stepping-stone towards including these groups in the NSSF, and/or specific agricultural social insurance schemes for Lebanon.

Source: El Khalil, 2022; **Socialprotection.org webinar (FAO, 2018)**

Box 2. Brazil's Family Farming Registry and its linkages with Cadastro Único

Brazil has had a Family Farming Register, the DAP (Declaração de Aptidão ao Pronaf) since 1996, which was put in place to implement the National Programme to Strengthen Family Farming (PRONAF). This is being replaced by a Cadastro de Agricultura Familiar (CAF), with similar functions. The DAP registration system relies on a wide network of agents who provide technical assistance to rural workers and family farmer organisations. Registration makes family farms eligible to apply for a wide range of agricultural and social protection policies, including: (1) access to rural credit at preferential rates and to agricultural insurance schemes; (2) extension services and access to markets; and (3) social assistance programmes.

Notably, the objective of targeting extremely poor farmers in rural areas was not possible to achieve relying on the DAP database alone. Data on these categories are mainly acquired through the linkage with the Cadastro Único social registry, which was established in 2001 as the basis for the implementation of Brazil's Zero Hunger Programme in 2003 and Brazil Without Extreme Poverty Strategy in 2011. The crossing of databases allows the determination of eligibility for a 'package' of coordinated interventions, with a view to fostering synergies between the productive and the social protection sectors.

Complementary to this is the interoperability established between Brazil's National Social Security Institute and these data sources (e.g. including land tax databases and land registries), which allows small land owners to prove a reduced contributory time (15 years) to qualify for age-based retirement for rural workers – with some entitled to claim a subsidised 'special social insurance' status (introduced in 1992 and enabling significant expansion of coverage).

Source: FAO internal webinar (De Campos, 2017); **Duarte Barbosa (2011)**

WHAT ARE THE BENEFITS OF DATA FLOWING FROM THE SOCIAL PROTECTION INFORMATION SYSTEM TO THE FARMER REGISTRY?

Social protection information systems contain data that is critically useful to the programming of agricultural ministries directed at rural development and addressing rural poverty and vulnerability: Rather than collecting such data from scratch on an ad-hoc basis, information can be pulled and leveraged to support the design and delivery of interventions. In particular, and especially where a unique identifier across data systems can be established (see section 3.4), these data could be useful for:

- **Planning and prioritisation of agricultural support activities:** Administrative data from social protection information systems can help to inform an understanding of rural poverty and vulnerability, enabling the strategic segmentation of 'farmers' and other populations living off agricultural activities in order to tailor policies to their specific needs.

- **Informing registration and eligibility determination for agricultural support activities:** Socio-economic data from social registries can be very useful to complement typical variables within farmer registries to support the determination of eligibility for different programmes – providing additional variables while avoiding duplication in data collection (see Box 3). Piggybacking on beneficiary data from specific social protection programmes could also be an option. This was done in Lesotho, where child grant recipients (selected leveraging data from the National Information System for Social Assistance [NISSA]) were eligible for a range of complementary benefits and services with a productive inclusion focus (see **Pace et al., 2021**).

- **Informing/facilitating design and implementation:** Social protection data and information systems can support further design choices, such as the determination of tailored benefit levels, and facilitate implementation (e.g. piggybacking on existing payments/voucher management systems).

Box 3. Chile: Leveraging data from its social protection information system to enhance rural development programming

Chile has an advanced social protection information system (Registro de Información Social, known as RIS), which has been expanding and evolving since 2011. It currently covers 98% of the country's population, performs social registry (Registro Social de Hogares) and integrated beneficiary registry functions, and has extensive interoperability with other government information systems (e.g. the National Disability Register, Income Tax Payment Register and Civil Registration, among others).

The Social Information Registry establishes which institutions can access what data, based on the agreements signed between the Ministry and its institutional partners. As of 2019, one of these key partners is the Ministry of Agriculture, in particular its National Institute for Agricultural Development (INDAP), which aims to promote the economic, social and technological development of small farmers, rural populations, and its organisations, in order to raise their business, organisational and commercial capacity. The INDAP pulls social protection data from the RIS to inform eligibility for its 18 different programmes, linking data to its farmer registry. The combination of the two datasets enables:

- Support for the determination of eligibility for INDAP programmes via the social registry's socio-economic classification (belonging to the most vulnerable 70% of population): These data are complemented – and sometimes corrected (e.g. in case of appeals, incongruences, etc.) – via INDAP's own Productive Characterisation Survey, which layers further productive vulnerability criteria to help establish eligibility.
- Strategic segmentation of farmers into different groups, to better design programmes that respond to their needs: The three key categories are: micro-producers (subsistence farming primarily for self-consumption), family farmers and small entrepreneurs.
- Steps are being taken towards more coherent policymaking across sectors, e.g. via the Integrated Beneficiary Registry function and being aware of who is receiving which benefits.

Sources: Acosta (2022); **INDAP (2018)**; INDAP **website**; and **Beazley (2022)**, based on **webinar** by Digital Convergence Initiative (2022b)

WHAT ARE THE BENEFITS OF DATA FLOWING FROM THE FARMER REGISTRY TO THE SOCIAL PROTECTION INFORMATION SYSTEM?

Compared to any registry in the social protection sector, farmer registries are designed to contain a wide range of variables relating to land and agricultural asset ownership and use, among many other things. They also sometimes offer integration and interoperability with cadastral and satellite imagery data (potentially with information on land degradation, crop monitoring, etc.). The benefits of being able to draw on this rich dataset for the social protection sector are clear and include the following:

- **Planning and prioritisation of social sector activities:** Farmer registry data can be leveraged for a more nuanced understanding of rural vulnerability and productive characterisations, designing policies and programmes that address these in a more differentiated manner – including via a more strategic approach to productive inclusion.

- **Informing registration and eligibility determination for social assistance and social insurance:** This could be achieved, for example, via the pre-population of select data and/or the validation of data collected (while aiming to avoid duplication):

  — In some cases, *this integration could even lead to the automatic triggering of eligibility for select groups of farmers* – a notable example coming from Karnataka, India, (discussed in Box 4).

  — When it comes to social insurance, *farmer registries could play a critical role in terms of guaranteeing 'registration' and the formalisation of previously informal farmers, as well as granting access to preferential (subsidised) treatment.* For example, Lebanon's newly created Farmer Registry aims to provide a legally recognised list of farmers who could be enrolled in a tailored social insurance regime (see Box 1). In Argentina, registration in the ReNAF (Registro Nacional de Agricultores Familiares) gives beneficiaries access to health insurance coverage and pensions. In Brazil, it helps determine eligibility for a subsidised 'special social insurance' regime (Box 2), with a similar use in Uruguay.

Box 4. Proactive and automatic eligibility for farmers: The case of Kutumba in Karnataka (India)

In India, **Kutumba** is a social protection information system set up by the Government of Karnataka (a pioneer State in e-governance), to extend social protection to the most vulnerable and marginalised, while overcoming the challenges of low awareness, high administrative burden, and limited fiscal space. It has broad coverage (55 million individuals, nearly 80% of the State's population) and is highly interoperable with a range of other government databases and their information systems, thanks to shared data standards and a clear data governance structure, underpinned by a strong identification system at the individual level (Aadhaar) and the household level (Kutumba ID).

Of particular relevance to this brief is its integration with the **FRUITS (Farmer Registration and Unified Beneficiary Information System)** farmer registry, described as a web-based software system that provides an "inventory of farmers, land and benefits extended to them" – as well as with **Bhoomi**, a digitised land registration system focusing on land rights, tenancy and crops. Thanks to this data sharing, coordination across agricultural and social policy is enhanced by ensuring:

° A one-stop-shop to apply for any government benefit/service (without people having to apply multiple times for different schemes)

° Access by each sector to the other's comprehensive, up-to-date and high-quality data – including benefiting from broader interoperability with, for example, the Civil Registration system, which has data on births and deaths

° Integration and streamlining of other key functions beyond registration, e.g. payment of benefits via the State Direct Benefits Transfer Portal, grievances via an integrated public grievance redressal system

° An overview of who is receiving what across sectors, via Kutumba's Integrated Beneficiary Registry function – to address gaps and duplications

Another of Kutumba's notable achievements has been the automatic granting of social protection benefits to select categories of the population, without the need for them to even apply. As an important example, farmer registry data – in conjunction with other information systems sharing data with Kutumba, such as the Scholarship portal – were used to determine the automatic eligibility of farmers' children for scholarships. All children from farming households studying in grades 8–10 (girls only) or above (both boys and girls) were eligible for annual scholarships. In fiscal year 2022/23, scholarships were granted to 605,514 students[8]. Importantly, such significant levels of digitisation are supported via Citizen Service Centres at the village level, offering access to digital services to any citizen in need.

Source: **Hebbar (2022)**, based on **webinar** by R. Chawla and K. Annapurna (Digital Convergence Initiative, 2022c)

- **Informing/facilitating design and implementation:** Similar to the opposite data flow above.

- **Supporting preparedness for, and response to, shocks (via more adaptive and shock responsive programming):** Several such experiences were recorded during COVID-19 (see Box 5), showcasing the potential for farmer registry data (or data deriving from other agricultural registries it shares data with) to:

  — Support planning and decision-making around shock preparedness and resilience-building activities

  — Inform and trigger shock responses that are better tailored and targeted to the diverse livelihoods of rural populations e.g. providing last-resort insurance functions to address specific crop failures, etc.[9]

Box 5. COVID-19 experiences exchanging data for better response to shocks

- In **Peru**, the Bono Rural cash transfer for small agricultural producers, delivered via the Ministry for Development and Social Inclusion, was targeted by crossing data between the country's social registry (Sistema de Focalización de Hogares, SISFOH) and the Ministry of Agriculture.

- In **Panama**, the so-called 'Plan Agro Solidario' (Agricultural Solidarity Programme) – piloted during the pandemic, and expanded since to over 100,000 beneficiaries – leveraged strategic sharing of data across sectors: data from the Ministry of Social Development's Programa Red de Oportunidades registry was used to identify indigenous rural women for productive inclusion programmes to improve food security outcomes.

- In **Belize**, all female farmers registered in the Belize Agriculture Information Management System (BAIMS), as well as male farmers with small land-holdings, were granted access to financial support during the pandemic (via a pre-paid debit card).

Sources: **Berner and Van Hemelryck (2020)**; **Rolon et al. (2022)**
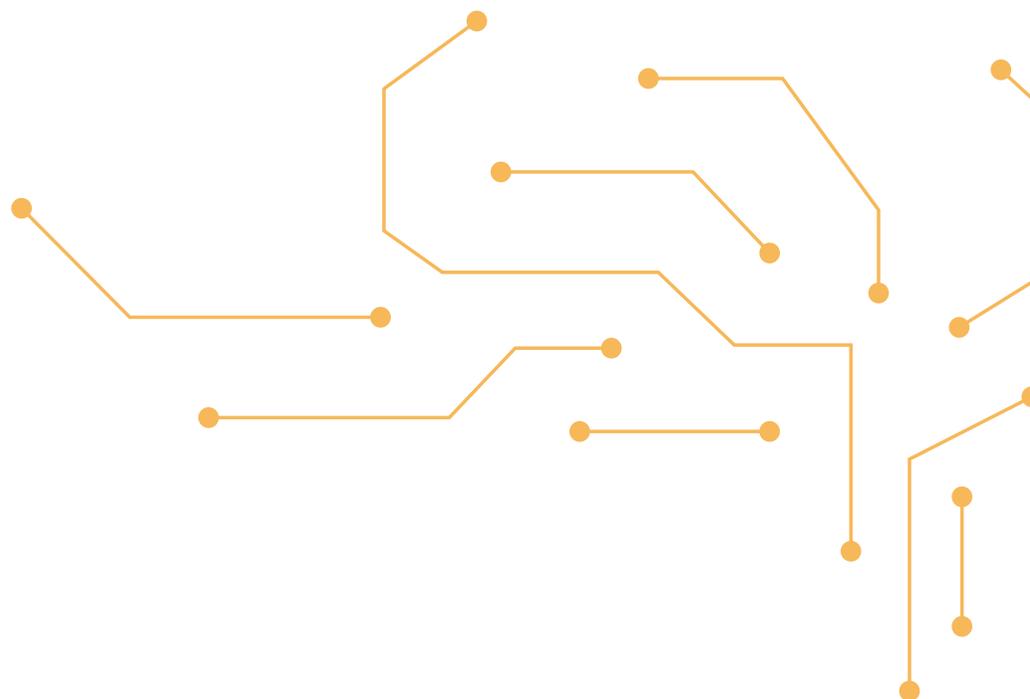
WHAT FACTORS MEDIATE THESE BENEFITS AND THE OPERATIONAL CHALLENGES AND RISKS?

Listing the potential benefits of the integration and exchange of data is easy, yet reaping those benefits, while mitigating emerging risks, can be very complex for countries – especially when they are in the early stages of development of either of the two registries/information systems.

Farmer registries and social protection information systems come in different shapes and sizes, as briefly touched upon in Section 2 on 'Key concepts'. The design and implementation features of each – and across the broader e-government ecosystem – largely influence how the benefits of integration and data exchange can be reaped. **Key factors that are likely to mediate outcomes include the following** (as represented in Figure 2):

- **Accuracy/quality:** Accurate, quality data is essential for one ministry (e.g. the ministry managing the social registry) to trust and use data from the other (e.g. the ministry managing the farmer registry).

- **Coverage and inclusiveness:** For policies and programmes with universally leaning ambitions, data that only partially cover desired populations – or cover these in a biased way (e.g. under-representing those who face the highest barriers to access) – will not be useful[10]. For example, farmer registries that only include landed farmers will be less able to inform policies to expand social protection to other rural populations such as farm labourers, sharecroppers, seasonal workers, etc.

- **Data relevance:** Depending on the variables collected and managed by each system, these may be less or more useful for the other sector's purposes.

- **Currency:** Data collected by both social protection information systems (e.g. poverty, assets) and farmer registries (e.g. crops grown, area under cultivation) are dynamic, yet data informing registries across sectors are often collected relatively statically (i.e. not on-demand).

- **Accessibility and interoperability:** De facto accessibility and the interoperability of data – and the extent to which these span across government data systems – depends on many factors: the coverage and strength of unique digital identifiers, as well as the existence of common data standards and application programming interfaces (APIs), data sharing agreements, and memoranda of understanding (MoU), to name a few[11].

- **Governance, legal framing, financing:** The strength of privacy and data protection legislation will critically mediate potential risks. Similarly, lack of inter-ministerial governance arrangements and incentives to retain control over data may hinder integration that is otherwise feasible from a technical perspective (see Box 6). More broadly, government-wide digitisation strategies (or the lack thereof) can present powerful enablers (or barriers) to such convergence efforts.

---

10 For reflections on the inclusiveness of information systems serving the social protection sector in terms of gender and disability see Barca et al. (2021).

11 For a broader overview, see work by the Digital Convergence Initiative.

Box 6. Technical feasibility, implementation and management of registries in Zambia

In Zambia, the farmer registry is known as the Integrated Agriculture Management Information System (ZIAMIS), an e-subsidy platform for the Fertiliser Input Support Programme (FISP), which was initially developed by FAO in 2013 and subsequently became government-owned, covering more than 1.8 million farmers. ZIAMIS consists of different modules that enable separate functions:

° Farmer/beneficiary registration module: supports a clear smallholder farmer registration process including community listing, eligibility analysis and enrolment, beneficiary registry management

° E-voucher and entitlement management module: supports cash transfer payments, e-voucher management and input distribution, redeeming reports

° Food security and nutrition monitoring module: includes commodity price monitoring, land preparation, crop management and post-harvest season

° E-extension and agriculture advisory module: enables scheduled SMS-based advisory services to farmers

Using the same source code as ZIAMIS, and building on the experience developing the system (as well as the complementary Food Security Monitoring Information System [FSMS]), the Zambia Integrated Social Protection Information System (ZISPIS) was developed as a gateway to enhance administration, planning, coordination, transparency and accountability in the management of the country's social cash transfer programme (and, initially, beyond). While the information systems have different business process 'owners' – the Ministry of Agriculture on one side and the Ministry of Community Development and Social Services (MCDSS) on the other – the administration of each platform is run by the Smart Zambia Institute (SZI). This level of coherence in design means that interoperability between the systems is easy to achieve from a technical feasibility standpoint. However, de facto, data are not yet shared between the systems, contributing to the possible duplication of functions and strategic fragmentation. The reasons for this are linked to broader political economy aspects, including insufficiently cohesive policies and planning across sectors and inter-institutional competition (within government and within key supporting partners).

Source: Mphatso (2022); KII with M. Mphatso

As with all e-government and information technology type initiatives, attention needs to be paid to the 'human' aspects that ultimately determine their success or failure, both in terms of intended users (government staff across all levels of administration and across sectors) and intended beneficiaries. Key questions will include: What is in it for the beneficiaries, and the government? How does the system interact with their behaviours and incentives? How can it avoid crystalizing current inequities? Abiding by the **Principles for Digital Development** in their creation is an important, yet insufficient, first step.
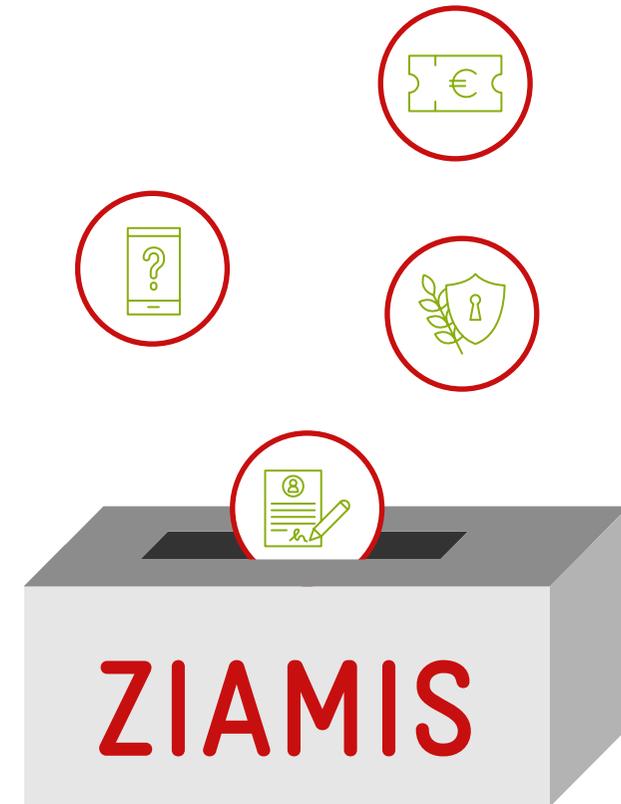
CONCLUSIONS

4

While it is beyond the scope of this paper to set out detailed actions and processes to enhance coordination and data sharing across information systems, the **following considerations** emerge from this initial review (KIIs; FAO, 2017; FAO, 2022 discussion):

- There are **multiple ways in which more strategic engagement and sharing of data and information** across social protection information systems and farmer registries (and their broader information systems) **can enhance outcomes for each sector**. However, these do not happen automatically and **need to be intentionally pursued**. This document suggests what kinds of links could be pursued and why this could be a fruitful investment – yet country specificities will determine the extent to which benefits can be reaped.

- **The objective of 'integration' should not be consolidation with one 'huge' database serving all functions across sectors.** Rather, the goal should be to ensure that different registries that play different functions are integrated and interoperable – in other words, able to 'speak to each other' – to pursue common (or even different) objectives.

- **One of the key functions that often drives data-sharing across sectors is support for the determination of eligibility. However, neither information system should dictate eligibility for the other sector**, but merely provide the data, which can be used to inform eligibility decisions based on each sectoral programme's targeting criteria. There are good reasons why different programmes target different population groups. Data from the other sector can be used to complement sectoral data, not replace it. In fact, processes should be in place to validate – and potentially redress – the data received from the other sector, as is the case in Chile (e.g. where the socioeconomic classification does not reflect de facto productive vulnerability). Still, some convergence in the definition of poverty and vulnerability across sectors would be an important joint step to take.

- **Being 'seen' in the data is a first crucial step to being 'seen' in policies and programmes.** The more nuanced the understanding of the complexity and diversity of rural livelihoods within administrative (not just survey) data, the more sectors will be able to cater to those different needs. For example, there is growing evidence, especially from Latin America, of countries leveraging linkages across registries to expand subsidised social insurance regimes.

- **However, any process of 'classification** – in this case codifying the complexity of rural agricultural and social practices into data that can be used to accurately inform complex policy decisions such as targeting – **can inadvertently reinforce existing inequalities and vulnerabilities**, sometimes hiding the informal, marginalised existence of those for whom they are primarily designed to support. **It is, thus, fundamental that information systems across both sectors mitigate emerging risks, for example, by:**

  — **Retaining sufficient granularity and flexibility to move beyond a focus on landholding farmers alone**, to address the needs of farm workers, landless tenants, communities/households that rely on collective land, joint ownership arrangements and non-farming agricultural practices (fisherfolk, forest dwellers) – among other things. Positively, this is already current practice in many countries – for example, across Mercosur[12] in Latin America[13].

  — **Avoiding reinforcement of gender-based disparities** will be critical, for example, via the registration of the male 'household head' as the owner/holder. Once again, best practice on this is being set in the Mercosur region.

  — Being informed and iteratively adapted based on consensus around registration processes and eligibility criteria, guaranteeing the legitimacy and success of the eligibility determination process via the **participation of farmer representatives and organisations, as well as adequate mechanisms for grievances and appeals** (FAO, 2017b), are also important.

- **Registries and information systems are the means, not the end – what matters is their use** to inform more nuanced policy and decision making. This also means that integration is not just about data sharing. It is about broader policy and programme planning across sectors and the continuous involvement of the respective ministries and civil society counterparts.

- **The political economy of data – and data sharing – needs to be addressed explicitly.** There can be reservations to the idea of having 'single'/'unified' registries, including from

---

12 Mercosur is the Southern Common Market. Member countries are Argentina, Brazil, Paraguay, Uruguay and Venezuela. Associated countries are are Bolivia, Chile, Colombia, Ecuador, Guyana, Peru and Suriname.
13 See, for example, MERCOSUR/GMC/RES No. 25/07.

agricultural trade unions concerned with the risk of farmer registries being subsumed by these – thus, losing their important functions. Once again, integration should not be about all functions being supported by one single registry, but different registries playing complementary roles within a larger, interoperable, digital ecosystem.

Ultimately, opportunities for further work on these topics are plenty, building on the experiences of countries across the globe, and have been maturing in recent years – offering considerable space for South-South learning and exchange. The framing and considerations within this paper are just a starting point for country-specific discussions and diagnostic exercises, bringing sectors together to more proactively engage in the design and development of each other's registries and information systems, and to establish the potential benefits and risks to data sharing. Some initial questions to help guide this process are listed in Box 7.

The guiding questions in Box 7 will hopefully set the initial stepping-stones for deeper conversations across the social and agricultural sectors in the years to come.


Box 7. Guiding questions for further cross-sectoral engagement and data sharing

° What are the policy objectives and functions of data collected by different information systems and registries across the two sectors? Are there any opportunities for mutual benefits, as per the points discussed in Section 3 and visualised in Figure 2? Are any converging objectives articulated in a joint vision (embedded in policy, strategy or law) that can be drawn on to support the push for coordinated action?

° Across the existing registries and information systems:

 − What is the target population and the population effectively covered (i.e., who is included and excluded in the data)? To what extent do target populations overlap?
 − What are the variables collected? What opportunities exist for harmonising them and reducing collection costs (while reaping other benefits) via a common data model?
 − What are the existing interoperability/data-sharing agreements?
 − How accurate and up-to-date is the data collected? To what extent do external users trust the data, and what measures are needed to bolster the data's trustworthiness?
 − Who are the key stakeholders whose buy-in is necessary and which stakeholders need to be involved in decision-making and coordination (across all levels of government and civil society)?

° How can these information systems better inform each other in terms of:

 − Supporting the design and delivery/implementation of the respective sectoral programmes and activities?
 − Generating analysis and evidence for policy-making, to inform medium-term planning and prioritisation and for more cohesive approaches across sectors?
 − Strengthening the toolbox for '**adaptive**' and **shock-responsive** social protection, ensuring resilience building and response to shocks that is tailored to the reality of rural populations?

° How can data sharing be operationalised in terms of human resources, business processes, unique identifiers and integration approaches (e.g. data standards, APIs, data warehouse approaches, point-to-point integration, etc.)?[14]

---

14 See the Universal Social Protection Digital Convergence Initiative for resources and examples.

REFERENCES
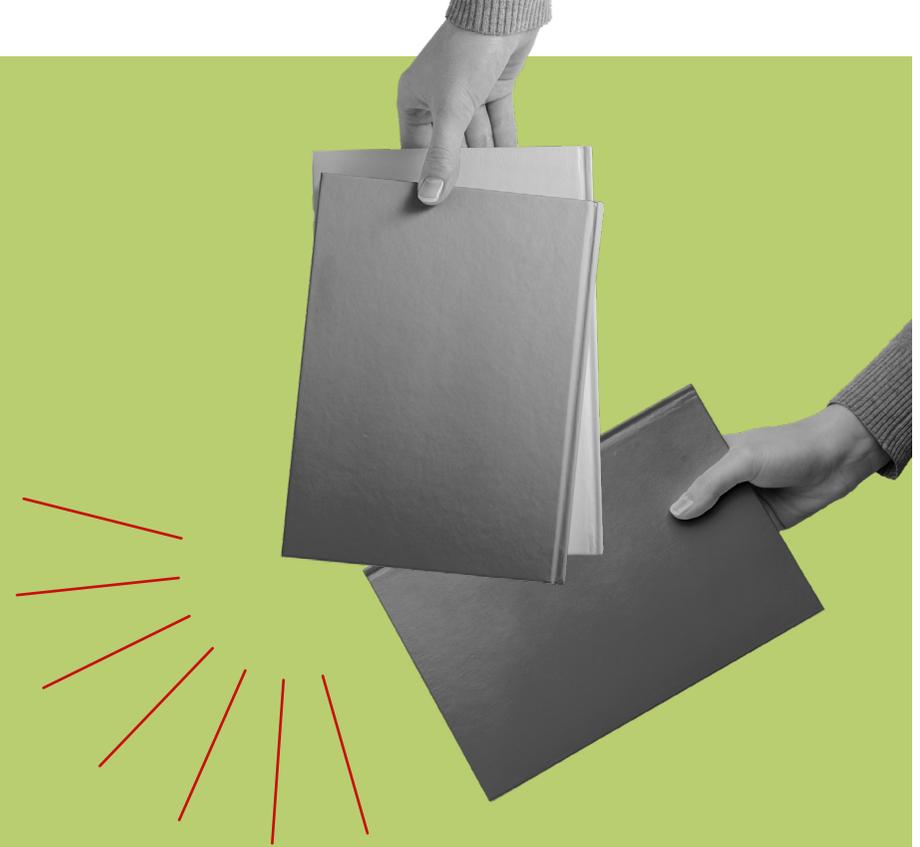
5

REFERENCES

- Acosta, Sebastián, *Anclaje de las políticas públicas: Conceptos y criterios jurídicos de la agricultura familiar,* Presented at the Sesión temática sobre la utilización del concepto de agricultura familiar en las políticas públicas, organized by FAO, 4 July 2022

- Barca, V., *Integrating data and information management for social protection: social registries and integrated beneficiary registries*, Department of Foreign Affairs and Trade (DFAT), Canberra, 2018

- Barca, V. and Beazley, R., *Building on government systems for shock preparedness and response: the role of social assistance data and information systems*, Department of Foreign Affairs and Trade (DFAT), Canberra, 2019

- Barca, V. and Chirchir, R., *Building an integrated and digital social protection information system*, GIZ, Bonn, 2020

- Barca, V. and Hebbar, M., *On-demand and up-to-date? Dynamic inclusion and data updating for social assistance*, GIZ, Bonn, 2020

- Barca, V., Hebbar, M., Cote, A., Schoemaker, E., Enfield, S., Holmes, R. and Wylde, E., *Inclusive information systems for social protection: intentionally integrating gender and disability*, Social Protection Approaches to COVID-19 (SPACE), 2021

- Beazley, R., Marzi, M. and Steller, R., *Drivers of timely and large-scale cash responses to COVID-19: what does the data say?*, Social Protection Approaches to COVID-19 (SPACE), 2021

- Berner, H. and Van Hemelryck, T., *Sistemas de información social y registros de destinatarios de la protección social no contributiva en América Latina: avances y desafíos frente al COVID-19*, CEPAL, 2020

- CTA, *The digitalisation of African agriculture report, 2018–2019*, Technical Centre for Agricultural and Rural Cooperation (CTA), the Netherlands, 2019

- De Campos, *Family farming regitries as a tool for rural poverty reduction strategies: Brazil Family Farm and Social Protection registries*, 2017

- Digital Convergence Initiative, *Chile's social information registry*, Talking Interoperability, Learning Brief, 2022a, **https://sp-convergence.org/wp-content/uploads/2022/08/DCI_Learning-Brief_Chile.pdf**

- Digital Convergence Initiative, *Integrated Social Information Registry of Chile: your information, your benefits*, [Webinar], Talking Interoperability, Dialogue Series, Session 4, 14 July 2022b, **https://www.youtube.com/watch?v=NbaZYqf97qE**

- Digital Convergence Initiative, *Talking interoperability – Karnataka State, India*, [Webinar], Talking Interoperability, Dialogue Series 1, 15 March 2022c, **https://www.youtube.com/watch?v=ZUuJBZusdWc**

- Duarte Barbosa, E., *The Rural Social Insurance Programme – Brazil*, International Labour Organization (ILO), 2011

- El Khalil, Soraya, *Strengthening farmer & social registries: The case of Lebanon*, Inception workshop on Strengthening Farmer and Social Registries, organized by FAO, 13 July 2022

- FAO, *International year of family farming 2014*, Master Plan, Food and Agriculture Organization, Rome, 2013

- FAO, *Strengthening coherence between agriculture and social protection to combat poverty and hunger in Africa: framework for analysis and action*, Food and Agriculture Organization, 2016a

- FAO, *Cash+: FAO's approach*, Food and Agriculture Organization, 2016a

- FAO, *FAO social protection framework: promoting rural development for all*, Food and Agriculture Organization, Rome, 2017a

- FAO, *Family farming registries as a tool for rural poverty reduction strategies – 1 – SP3 Thematic Meeting – June 13, 2017*, Food and Agriculture Organization, Rome, 2017b

- FAO, *Farmers' registry – a tool in support of small scale agriculture and rural poverty reduction*, [Webinar and Blog], Food and Agriculture Organization, Rome, 2018

- FAO, *Assessing the impacts of the COVID-19 pandemic on the livelihoods of rural people: a review of the evidence,* Food and Agriculture Organization, Rome, 2022

- FAO and ILO, *Extending social protection to rural populations: perspectives for a common FAO and ILO approach*, Food and Agriculture Organization and International Labour Organization, 2021

- FAO and OPHI, *Measuring rural poverty with a multidimensional approach: the Rural Multidimensional Poverty Index*, FAO Statistical Development Series, No. 19, Food and Agriculture Organization, Rome, and Oxford Poverty and Human Development Initiative, Oxford, 2022

- Global Partnership for Universal Social Protection, *USP 2030*, [Website], Global Partnership for Universal Social Protection to Achieve the Sustainable Development Goals (USP2030), World Bank and International Labour Organization, 2022

- Hebbar M., *Talking interoperability: "Kutumba: breaking data silos for inclusive social protection"*. A Dialogue Series for Advancing Interoperability in the Social Protection Sector, 2022

- INDAP, *Estudio Línea Base: Claves para construir una mejor gestión de INDAP*, 2018, **https://www.indap.gob. cl/noticias/estudio-linea-base-claves-para-construir- una-mejor-gestion-de-indap**

- Leite, P., George, T., Sun, C., Jones, T., and Lindert, K., *Social registries for social assistance and beyond*, Social Protection & Labor Discussion Paper No. 1704, World Bank, Washington, DC, 2017

- Lindert, K., Karippacheril, T. G., Caillava, I. R., and Chávez, K. N. (eds), *Sourcebook on the foundations of social protection delivery systems*, World Bank, Washington, DC, 2020

- Lowe, C., McCord, A., and Beazley, R., *National cash transfer responses to COVID-19*, Working Paper 610, Overseas Development Institute (ODI), 2021

- Mphatso, Mtendere, *Experiences in farmer and social registers in Zambia*, Inception workshop on Strengthening Farmer and Social Registries, organized by FAO, 13 July 2022

- MoSFP and World Bank, *Turkey's integrated social assistance system*, World Bank and Ministry of Family and Social Policies (MoSFP), 2018

- Pace, N., Daidone, S., Bhalla, G. and Prifti, E., *Evaluation of Lesotho's Child Grants Programme (CGP) and Sustainable Poverty Reduction through Income, Nutrition and Access to Government Services (SPRINGS) project*, Food and Agriculture Organization (FAO), Rome and United Nations Children's Fund (UNICEF), 2021

- Roelen, K., Archibald, E. and Lowe, C., *Covid-19: crisis as opportunity for urban cash transfers?*, Working Paper 609, Overseas Development Institute, 2021, **https://cdn. odi.org/media/documents/ODI_Urban_cash_trans- fer_final_BnD1aaz.pdf**

- Rolon, C., Burattini, B., Sato, L, Thives, V., Wagner, L., Figueiredo, N., Rénique, A. and Mireles, M., *Respuesta de protección social al COVID-19 en el ámbito rural de América Latina y el Caribe: Doble inclusión social y económica*, Policy Research Brief 82, International Policy Centre for Inclusive Growth (IPC-IG), 2022

- World Bank, *What's cooking: digital transformation of the Agrifood system*, Agriculture and Food Series, World Bank, Washington, DC, 2021

- World Bank, *Poverty and shared prosperity 2022: correcting course*, World Bank Group, Washington, DC, 2022a

- World Bank, *The role of digital in the COVID-19 social assistance response*, World Bank, Washington, DC, 2022b

- World Data Lab, *World poverty clock*, [Online], 2022, **https://worldpoverty.io/about** (accessed 20 November 2022)

IMPRINT

Published by:

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices:

Bonn and Eschborn

Address:

Friedrich-Ebert-Allee 32 + 36   Dag-Hammerskjöld-Weg 1-5
53113 Bonn / Germany   65760 Eschborn / Germany
T +49 228 44 60 - 0   T +49 61 96 79 - 0
F +49 228 44 60 - 17 66   F +49 61 96 79 - 11 15
E info@giz.de
I www.giz.de

Programme/project description:

Farmer registries and social protection information systems – Harnessing interoperability to
improve outcomes for rural populations

Required citation:

Barca, V. and Hebbar, M. 2023. *Farmer registries and social protection information systems: Harnessing interoperability to improve outcomes for rural populations.* FAO and GIZ, Rome and Bonn.

© FAO and GIZ, 2023

Coordination:

Dominique Leska

Editing:

Susan Sellars

Layout / Illustrations:

SCHUMACHER
Brand + Interaction Design GmbH
schumacher-design.de

URL links:

Responsibility for the content of external websites linked in this publication always lies with
their respective publishers.GIZ and FAO partners expressly dissociates itself from such content.

Responsible for the content:

Ralf Radermacher (GIZ) Bonn
Alejandro Grinspun (FAO) Rome
February 2023

The views expressed in this publication are those of the author and do not necessarily reflect
the views and policies of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
GmbH and Food and Agriculture Organization of the United Nations (FAO) or its Board of
Governors or the governments they represent.

On behalf of

Federal Ministry
for Economic Cooperation
and Development