



**WP/20/198**

# IMF Working Paper

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Beyond the COVID-19 Crisis: A Framework for Sustainable  
Government-To-Person Mobile Money Transfers

by Sonja Davidovic, Soheib Nunhuck, Delphine Prady, Herve Tourpe

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I N T E R N A T I O N A L M O N E T A R Y F U N D

**IMF Working Paper**

Fiscal Affairs Department, Information Technology Department

**Beyond the COVID-19 Crisis: A Framework for Sustainable Government-To-Person Mobile Money Transfers**

**Prepared by Sonja Davidovic, Soheib Nunhuck, Delphine Prady, Herve Tourpe<sup>1</sup>**

Authorized for distribution by Ed Anderson

September 2020

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**Abstract**

During the 2020 pandemic, the majority of countries have provided income support to households at an unprecedented speed and scale. Social distancing measures and the large penetration of mobile phones in emerging markets and developing economies (EMDEs) have encouraged government-to-person (G2P) transfers through mobile platforms. This paper presents a comprehensive framework for sustainable money solutions in support of social assistance. The framework consists of eight building blocks that may help policymakers i) take stock and assess emergency fixes taken to scale up mobile money in a crisis context and ii) develop sustainable long-term solutions for mobile G2P transfers.

JEL Classification Numbers: E42, O3, H53,

Keywords: money, mobile money, social assistance, social protection system

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<sup>1</sup> The authors are grateful for the useful contributions from Digital Disruptions consulting company (Amitabh Saxena, Maria Clara Rezende), and comments from IMF staff, including Boele Bonthuis, Corinne Delechat, Diane Kostroch, Lusine Lusinyan, Tara Lyer, Stephen Maurer, Tao Sun, Hector Carcel Villanova, Arina Viseth. The framework also draws on work from organizations, including the GSM Association (GSMA), UNCDR, Association for Financial Inclusion (AFI), and several WBG groups such as the Consultative Group to Assist the Poor (CGAP) and the WBG and Gates Association's G2Px.

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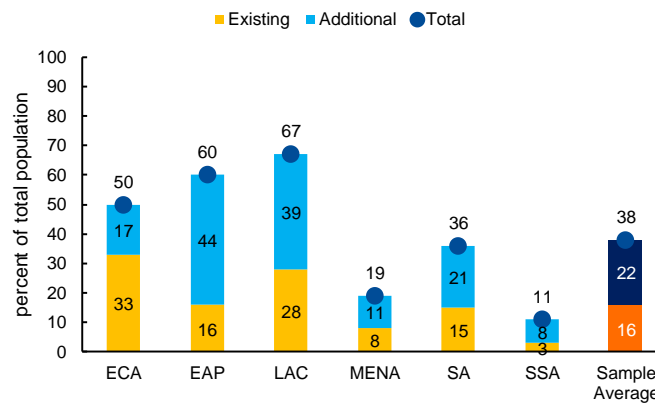
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## I. BACKGROUND

### A. Scaling Up Government to Person (G2P) Social Transfers During a Crisis Like No Other

**As the COVID-19 crisis unfolds, countries across the world have promptly expanded their social protection systems to provide support to workers and households.** On average, countries have spent an additional 1 percent of GDP to flex up pre-existing social programs—insurance, assistance and labor market-related—and introduced new ones.<sup>2</sup> Additional fiscal outlays have mainly financed the expansion of social assistance systems to cover over 1.8 billion people worldwide (Gentilini et al. 2020). Countries most often chose G2P monetary transfers, representing about 51 percent of all social measures planned and/or implemented, with a population coverage that has more than doubled to 38 percent on average over 5 months only (Figure 1).

**Figure 1: Existing, Additional and Total Population Coverage of Monetary Transfers During COVID-19**



Source: Gentilini et al, 2020.

Note: Sample of 57 countries. EAP: East Asia and Pacific; ECA: Europe and Central Asia; LAC: Latin America and Caribbean; MENA: Middle East and North Africa; SA: South Asia; SSA: Sub-Saharan Africa.

**Scalability and reachability of G2P transfers are essential as the COVID-19 crisis requires governments to cast safety nets much more broadly than in conventional shock-response.** The pandemic and containment measures are impacting all economic sectors, generating large negative income shocks across the board and proportionately more so at the bottom half of the income distribution (Figure 2) and among informal business owners.<sup>3</sup> Many countries have combined different forms of benefit programs—monetary and in-kind, digital and analog, old and new—to broaden their support to households with little or no previous links to social protection systems and maximize their reach.

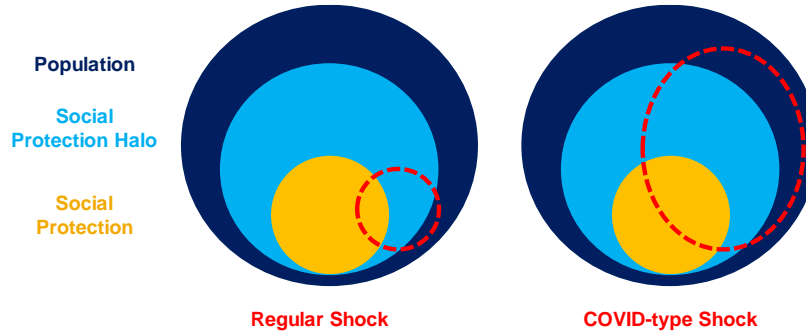
**The rapid expansion of G2P transfers bears several risks, from duplication and high administrative costs, to the risk of undermining existing, well-functioning social programs if they are improperly repurposed for COVID-19 response efforts.** For instance, the Philippines government decided to roll out an Emergency Subsidy Program targeting 75 percent of its population and automatically enrolling beneficiaries of their flagship conditional cash transfer program—Pamilyang Pilipino Program. However, some confusion over the transparency of rules and unclear

<sup>2</sup> For a comparison of the magnitude of fiscal support between the COVID crisis and the Great Financial Crisis in selected countries, see McKinsey (June 2020) [“The 10 trillion rescue: how governments can deliver impact”](#).

<sup>3</sup> In countries with very high prevalence of informality (Ayana Aga, Jolevski, Muzi. 2020), the informal business is very often the sole source of income for the owner’s family, with about 45 percent of businesses making USD 2 or less per day.

communication, combined with changes to the original program's selection and delivery modalities, created social discontent (Fischer, 2020). Therefore, countries that have invested in building scalable and shock-responsive social safety nets are in better shape to face COVID-type crises.

**Figure 2. Population in need of support after a COVID-type shock**



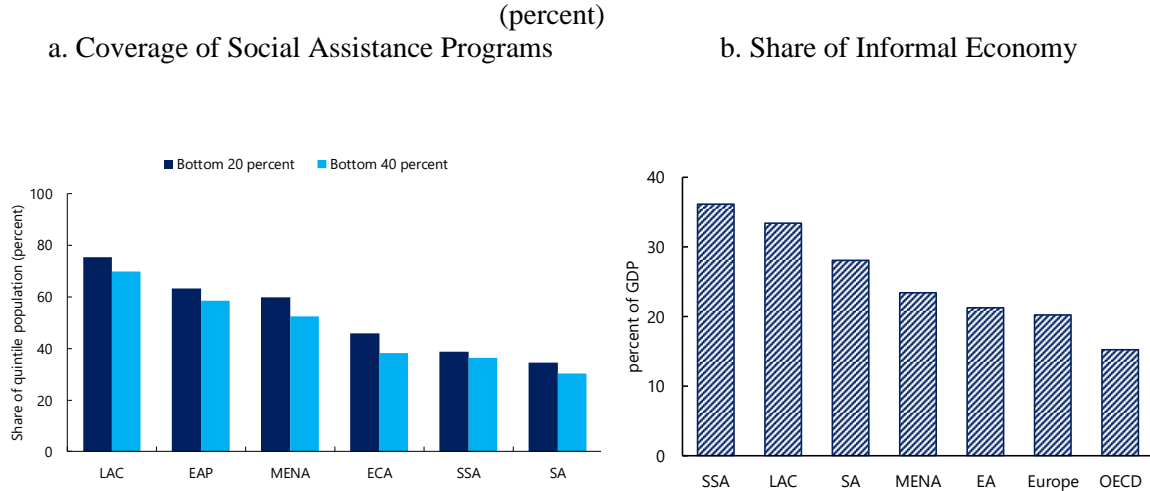
Source: Authors on [Barca and Beazley \(2019\)](#).

Note: Zones in red-dashed ovals represent new people in need of (additional) support after a shock. Social protection halo refers to households whose welfare conditions are close to social programs' eligibility thresholds, making them vulnerable to income shocks and likely to become eligible for support systems.

**Many EMDEs must build on weak and patchy social protection systems, and often lack crucial information to further expand them.** Often, existing social programs have low coverage at the bottom of the income distribution, i.e., percentage of bottom income quintile population receiving social protection benefits/support, and provide insufficient benefits (Figure 3a). Informality further compounds these structural weaknesses (Figure 3b) because targeting public support based on means requires verifiable information on employment and income. This type of data is typically only available for workers in the formal sector that are officially registered as employees or self-employed and potentially liable for payment of income and social security taxes. The lack of such data for informal workers therefore restricts the ability of governments to effectively target resources to most affected households. Even in the formal sector of the economy support channels have limited ability to provide liquidity to employers (through loans or grants) so that they can pay their employees throughout the crisis.<sup>4</sup>

<sup>4</sup> Advanced economies also face important challenges in providing timely and adequate support to hard hit workers and households, particularly to gig workers, self-employed and independent contractors. Insufficient administrative capacity and complex enrollment processes have led to important delays in the face of massive simultaneous requests for unemployment and social assistance benefits. For example, in March 2020, the UK Department for Work and Pensions had moved more than 10,000 staff to deal with claims and was recruiting more to reduce delays in ID verification and process the 950,000 applications received in one week compared to a normal flow of about 100,000 applicants in any given two-week period.

**Figure 3: Coverage of Social Assistance Programs and Share of Informal Economy, by Income Group and Region**



Source: World Bank Aspire data and [Medina and Schneider \(2018\)](#).

Note: EAP: East Asia and Pacific; ECA: Europe and Central Asia; LAC: Latin America and Caribbean; MENA: Middle East and North Africa; SA: South Asia; SSA: Sub-Saharan Africa. Figure 3a excludes high-income countries (World Bank classification).

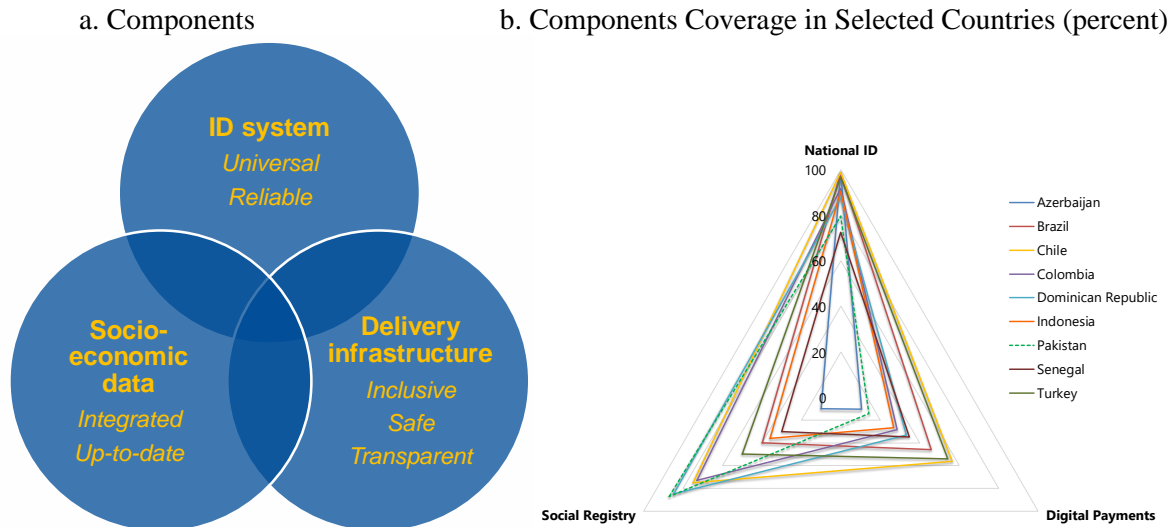
## B. The Importance of Basic Delivery Components

**Governments' ability to reach workers and households with lifeline support differs vastly across countries depending on the availability of basic delivery components.**<sup>5</sup> Three key integrated elements are at the core of the delivery of broad and adequate income support: a universal identification (ID) system, socioeconomic data on households, and a mode of benefit delivery (Figure 4 a). Not all countries have such a trinity ready to roll out emergency lifeline support, leading to unavoidable prioritization across competing objectives in the short run, i.e., broad population coverage of lifeline support, fiscal sustainability, and virus containment. In this respect, a simple taxonomy of countries can be described with respect to the expansion-readiness of their social assistance measures (Figure 4 b):

- **Ready.** Countries with wide prior coverage for two of the three elements are ready to leverage their delivery infrastructure and provide support at scale. For instance, Pakistan has a robust national ID system and a social registry covering 87 percent of its population; over the past decade, India has integrated its universal biometric ID system, Aadhaar, with bank accounts and social programs;
- **In-between.** Countries with some patchy assets. For instance, 75 percent of the Philippines population is covered by its social registry, but a reliable ID system is lacking, and bank coverage is limited;<sup>6</sup> Bangladesh and Togo have high mobile money penetration but no robust ID system;
- **Not started.** Mainly very low-income countries with a narrow or no safety net and only rudimentary delivery platforms (e.g., Haiti, Lao PDR).

<sup>5</sup> See IMF 2020 Special Series Notes on Covid-19 [“Reaching Households in Emerging and Developing Economies: Citizen ID, Socioeconomic Data, and Digital Delivery”](#).

<sup>6</sup> The Philippines is in the process of developing its digital national identification system starting with 5 million individuals by end of 2020. Since bank coverage is limited, the implementation of the system will require utilization of low-cost touchpoints such as bank agents.

**Figure 4. Basic Trinity of Population Reachability**

Source: Authors and [Leite et al. \(2017\)](#), World Bank Global Findex.

Note: In Figure 4 b, “digital payments” refers to the share of population aged 15 and above who reports having made a digital payment—through mobile money, debit/credit card, mobile phone, or the internet—in the past year.

**Countries have put in place emergency fixes to overcome delivery infrastructure weaknesses, with G2P mobile transfers being key to governments’ response, especially in high informality contexts.** Governments are leveraging the high penetration of mobile phones and mobile accounts<sup>7</sup> relative to bank access points, to rapidly scale up their monetary support to workers and households (Figure 5 a, b). Mobile money<sup>8</sup> is a key platform to reach informal business owners who tend to have a higher usage of mobile money than the average population (World Bank Group, 2020b).<sup>9</sup> Mobile networks can be used to achieve multiple objectives: i) disseminate crucial information, ii) help collect key household and individual data in order to better target support, and iii) provide a platform to deliver money:

- In Brazil, the temporary *Auxilio Emergencial* targeted mainly at informal and own-account workers is delivered through mobile money accounts, with citizens registering via a website or an app. Eligible workers are given the option to open a mobile savings account at one state-owned bank which provides basic functionality;
- In Togo, the authorities have introduced a new cashless transfer program, Novissi, targeting adult workers in the informal economy impacted by the lockdown measures—e.g., moto taxi drivers. Beneficiaries are identified through their voter IDs which has broader coverage than national IDs.<sup>10</sup> Transfers are then made through mobile money, with a top-up for women recipients, and digital payments are further encouraged—e.g., for utility bills—to avoid handling cash;

<sup>7</sup> Globally, there are 228 mobile money agents (the small retailers where customers can deposit or withdraw cash in and out of mobile accounts, buy phone airtime cards, etc.) per 100,000 adults compared to only 11 banks and 33 ATMs.

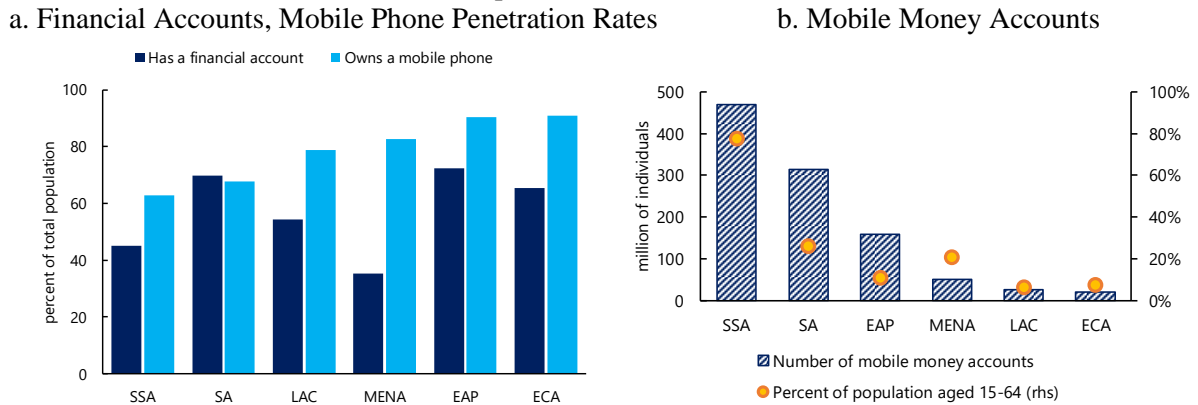
<sup>8</sup> Mobile money is here defined as digital medium of exchange and store of value using mobile money accounts, which are typically offered by a mobile network operator (MNO) or another entity in partnership with an MNO (Chabra and Das, 2019).

<sup>9</sup> World Bank survey data for nine cities in four African countries (Mozambique, Somalia, Zambia and Zimbabwe) shows that between 20 percent (in Nampula, Mozambique) and 82 percent (in Mogadishu, Somalia) of informal businesses use mobile money in their operations, and that in Mozambique, twice as many informal business owners use mobile money as the average population as measured by Findex.

<sup>10</sup> The Financial Action Task Force (FATF) recently promoted a simplified, risk-based approach to use “trustworthy digital identity [...] to identify people remotely for both onboarding and conducting transactions” (FATF, 2020a).

- In Peru, informal workers eligible for the *Bono Independiente* scheme receive a code and a link to access a simplified mobile banking system through SMS when they do not have a bank account;
- Nigeria partnered with mobile network operators to identify vulnerable informal workers in urban areas through airtime purchase patterns.

**Figure 5: Coverage of Financial Account, Mobile Phone Ownership and Mobile Money Account, by Region - 2019**  
(percent and million)



Source: [CGD \(2020\)](#) and [GSMA \(2020\)](#).

Note: EAP: East Asia and Pacific; ECA: Europe and Central Asia; LAC: Latin America and Caribbean; MENA: Middle East and North Africa; SA: South Asia; SSA: Sub-Saharan Africa.

### C. Strong G2P Mobile Transfers for Strong Social Protection Systems

**G2P mobile transfers present many advantages relative to other forms of governmental transfers (Table 1), all the more in the context of social distancing.** About 20 percent of developing countries use cash for social benefits payments, often because their financial ecosystems remain underdeveloped. However, in-person cash provision presents many logistic (transportation, security, payment dates), health, and individual challenges (e.g., costs to beneficiaries to receive payments at a scheduled time and place) that G2P mobile transfers can help overcome. For instance, in Niger, program recipients receiving cash had to travel approximately 2 km (one way), or about half an hour, to receive the transfer, while the group receiving transfers via mobile money had to travel less than 0.5 km (less than 10 minutes) (Aker et al. 2016). Mobile transfer platforms can serve as foundation to promote strong social protection systems that provide equitable and effective coverage for the poor and those who are vulnerable to poverty. G2P mobile transfers can support inclusive growth (i.e., by bringing financial accounts to the unbanked, both for the purpose of savings and building credit history, empowering women financially, and helping small and medium enterprises grow within the formal sector) and efficient government operations (i.e., by providing support more rapidly while avoiding leakages through more transparent and efficient management of public resources).<sup>11</sup>

<sup>11</sup> For a discussion on the importance of digital solutions for public finance management see IMF Special Series Notes on COVID-19 [“Enhancing Digital Solutions to Implement Emergency Responses”](#) and [“Digital Solutions for Direct Cash Transfers in Emergencies”](#).



**Table 1. Channels to deliver G2P payments<sup>12</sup>**

Format	How/Where to receive	Where to save	How/Where to use	Pros	Cons	Examples
<b>Cash</b>	Post office, Agents, Bank	Home	Anywhere	Simple, trust	Leakage risk, theft, human interaction	India, Ecuador
<b>Money Order</b>	Post office, Bank	Home	Can only be cashed-out	Authentication, no bank account	Same as cash	Tunisia
<b>Cash Card</b>	Post office, ATM	Home	Can only be cashed-out	Authentication, no bank account	Same as cash	Brazil, Philippines
<b>Bank Account</b>	Bank, ATM	Bank Account	ATM, debit card, checks	Secure, no human interaction	Need bank account	USA, Peru, Colombia
<b>Mobile Payment</b>	Remotely	Mobile	Merchants and agents	See I.C	Need mobile phone, digital literacy	Uganda, Kenya, Zimbabwe, Jordan

Source: G2Px

**G2P mobile transfers should be supported by a comprehensive and sustainable ecosystem to fully exploit their advantages.** As countries transition from emergency measures to normal operational mode, quick fixes implemented to scale up lifeline programs must be revisited and strengthened in support of stronger social protection systems and strategic national goals like inclusive growth. Emphasis should be on strengthening the scalability of social protection systems, incorporating shock-responsive design features,<sup>13</sup> and limiting program exclusion errors from the outset in a fiscally sustainable manner (progressive universalism).<sup>14</sup> G2P mobile transfers cannot provide adequate solutions to all social protection challenges and they must complement other types of support programs—e.g., in-cash or food distribution systems.<sup>15</sup> But they can play a key role within stronger social protection systems, provided governments are aware of and follow a few design and implementation steps. In the following section, these steps are detailed within a comprehensive framework that will help governments make the most of G2P mobile transfers.

## II. AN END-TO-END FRAMEWORK TO GUIDE EVOLUTION OF MOBILE G2P PAYMENTS

**A holistic framework, based on past G2P and mobile payment experiences, can inform short-term measures taken in context of the pandemic crisis, to ensure they are sustainable, mitigate risks, and allow iterative improvements.** This section describes a framework to enable a sustainable G2P monetary transfer via mobile payment (“mobile G2P”) program.<sup>16</sup> It is composed of eight building blocks (Figure 6) that help stakeholders assess the country’s readiness in implementing mobile G2P along key enablers (Figure 8). These enablers are explained in detail in Appendix 1,

<sup>12</sup> G2Px provides further insights on the market aspects to consider when choosing emergency social assistance payment options (G2Px, 2020d).

<sup>13</sup> E.g., built-in triggers that can adapt a program to an emergency context to ensure delivery continuity such as transforming free school-meal programs into cash transfers for the family or in-house food distribution.

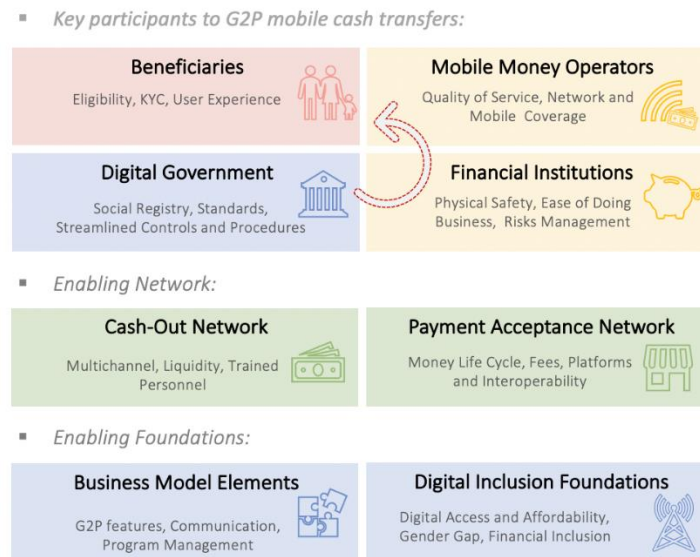
<sup>14</sup> For instance, in [Namibia](#), the government put in place a new monetary transfer for all adult informal workers and unemployed, explicitly excluding out formal workers and recipients of existing social protection programs. In one week, 579,000 SMS applications were received out of 739,000 adults expected to be eligible.

<sup>15</sup> In 2015-2016, during the Ebola crisis, only 7 percent of all unconditional cash transfers implemented to provide lifeline supports in Sierra-Leone and Liberia were mobile transfers, despite the overwhelming incentive to use digital rather than cash distribution to contain the virus ([Dumas et al. 2017](#)). A largely inadequate mobile ecosystem—weak infrastructure, lack of awareness among beneficiaries and operational challenges—prevented the use of mobile transfers at scale.

<sup>16</sup> The framework builds on the work done by many organizations, including the GSM Association (GSMA), Association for Financial Inclusion (AFI), and several WBG’s groups such as the Consultative Group to Assist the Poor (CGAP) and the WBG and Gates Association’s G2Px. It also incorporates the authors’ original research in association with Digital Disruptions consulting company. Appendix 2 presents the G2Px’s work on the different options for the payment of social assistance benefits. The framework in this paper focuses on the mobile payment option.

which describes various implementation paths to increase the maturity level depending on the country's existing conditions.

**Figure 6: Eight "building blocks" for a sustainable Mobile G2P Framework**



Source: Authors.

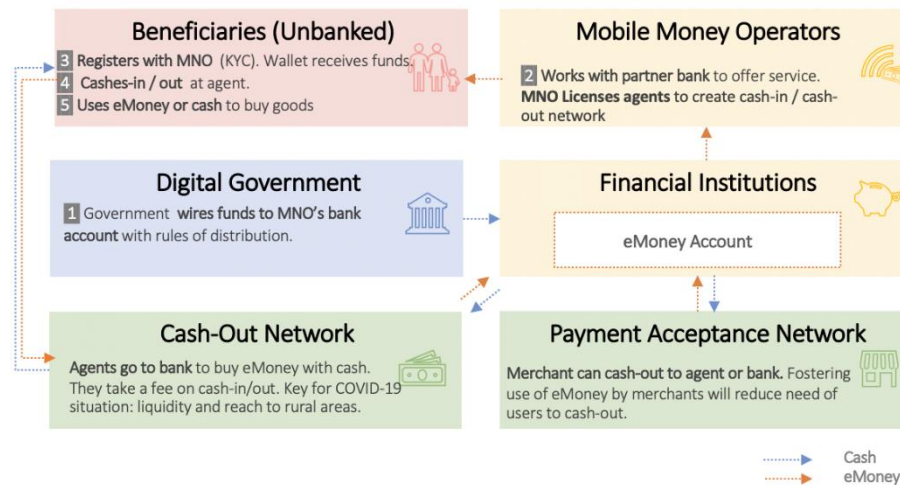
**The building blocks reflect the end-to-end money flow in a mobile G2P ecosystem. A government introducing a new G2P mobile money program to reach both banked and unbanked individuals will often follow the steps presented in Figure 7:**

1. The government selects one or multiple mobile money operators (MMOs) such as mobile network operators (MNOs, e.g., Orange), commercial banks, or fintech firms, which offer mobile money in the country;
2. Existing national databases or MMO data are used to select applicants who meet the program's eligibility criteria;<sup>17</sup>
3. The government wires the money to the bank partnering with the MMOs and shares the identity of eligible recipients;
4. Banks convert these funds into mobile money;
5. MMOs organize information and outreach campaigns to help beneficiaries apply through an established Know-Your-Customer (KYC) process using the identity scheme agreed with the government;
6. Recipients are given a mobile wallet containing the amount of mobile cash distributed by the government.<sup>18</sup>

<sup>17</sup> For instance, in Nigeria, the authorities are collaborating with mobile network operators to identify vulnerable informal workers in urban areas through their purchase pattern of airtime. Beyond MMO's data, other "proxy registries" can be leveraged to identify workers in the informal economy, such as: i) company/individuals registries held by informal business unions or associations, ii) utility bills, iii) invoices of sales by wholesalers, iv) local governments' registries of poor households and local informal businesses.

<sup>18</sup> A mobile wallet is either a mobile app, or a code to access a remote application via SMS or Unstructured Supplementary Service Data (USSD) – see Box 2

**Figure 7: How G2P mobile cash typically flows from government to the unbanked and other participants**



Sources: Digital Disruptions, GSMA, Orange Money, Authors.

From there, mobile wallet owners can either cash-out the money, typically through a local agent partnering with the MMO, use it directly to pay utility bills or purchase goods and services at merchants (person to business (P2B) payment) who accept mobile money. The latter scenario supports social distancing in the COVID-19 context. The framework will show the required infrastructure to facilitate P2B mobile payments. The rest of the paper describes key enablers supporting such programs.

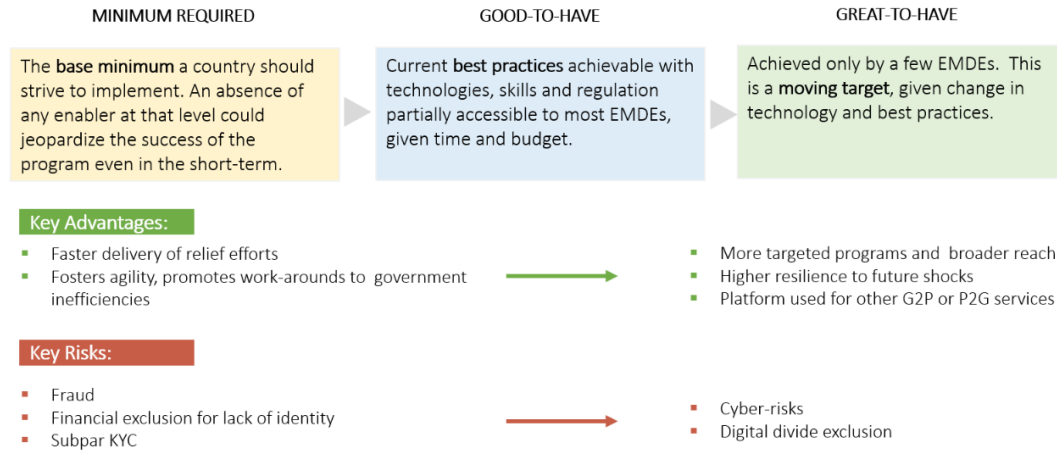
**A clear understanding of the role and risks of each of the eight interdependent building blocks is critical for a successful mobile G2P program.** The eight building blocks are designed to signal to policymakers and regulators where and how to adapt their country's regulatory framework in support of G2P mobile transfers. Each building block plays a specific role in the success of a mobile G2P program. If any of these blocks is not properly managed or designed, the program may face serious risks. For example, failing to properly design and regulate the role of financial institutions and mobile money operators (MMOs) may diminish the trust that unbanked individuals have in mobile cash. Likewise, if policymakers fail to properly incentivize acceptance of mobile money within a sufficiently large merchant network, beneficiaries would all exchange their mobile money for cash. This would potentially create long lines at cash-out agent offices, violate social distancing measures, and increase individual costs to receive the benefit.

**Policymakers should approach the key enablers as minimum conditions for different maturity levels of their mobile G2P program and plan iterative improvements.** As countries have been forced to deliver monetary assistance under time pressure, those with a mature mobile money ecosystem in place (e.g., Kenya, Tanzania, China) have been able to react faster and more effectively (Rutkowski and others, 2020). However, many countries have been able to transfer mobile cash despite the low maturity levels of their mobile ecosystem, suggesting some key enablers are within reach of many EMDEs. This paper presents three maturity stages (Figure 8 and Figure 9) that countries can achieve for each key enabler:

1. Having the “minimum required” enablers can place the mobile G2P program on an easier improvement trajectory;
2. Adding “good-to-have” enablers further allows G2P programs to reach broader segments of a better identified population, to limit certain risks, and to achieve economies of scale;

- Finally, “great-to-have” enablers are moving targets (as technology and adoption patterns change), but represent the current state of the art, today better illustrated by M-Pesa in Kenya, WeChat Pay and Alipay in China.

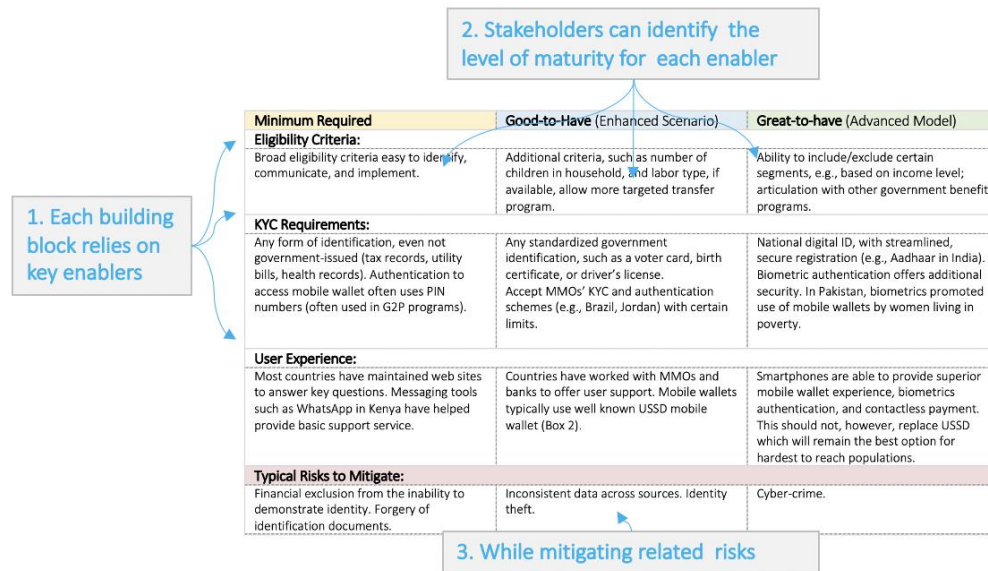
**Figure 8: Each of the eight building blocks relies on key "enablers" that support various degrees of mobile ecosystem’s maturity.**



Source: Authors.

**Risks are correlated to the level of maturity of each building block, and always exist even when “great-to-have” enablers are in place.** While low-maturity levels face well-known risks such as fraud, corruption, or human mistakes, higher maturity levels also carry risks, sometimes new, such as cyber-fraud or digital privacy, that must be mitigated (section III and Appendix 1).

**Figure 9: The framework maturity table (Appendix I) helps stakeholders to identify their current situation, as well as possible evolution strategies.**



Source: Authors.

## A. Building Block 1: Beneficiaries

**This framework promotes a user-centric approach that places beneficiaries at the center of each of the building blocks.** The design of G2P cash programs must answer three important questions: Who is eligible? How do they prove their identity? How to maximize adoption by beneficiaries? These three “enablers” are informed by previous G2P experiences in different countries, and by measures introduced during the pandemic crisis:

- **Eligibility Criteria.** These must rely on information broadly available across the population in order to minimize inclusion and exclusion errors. Criteria must further be as transparent as possible in order to minimize applicants’ rejection probability, and as simple as possible—e.g., basic demographic characteristics such as age, gender, household composition, or geographical targeting—in the crisis context.<sup>19</sup> Finally, designing exclusion criteria may be easier than inclusion criteria if the risk of exclusion of many households in need of support is high. The success of the *Keluarga Harapan* program in Indonesia in 2017 was based on precise data from the Ministry of Social Affairs for mobile money transfers to pregnant and lactating mothers, infants, elderly and people with disabilities (Sri Sulastri, 2019). Likewise, India communicated exclusion criteria for its transfer program during COVID-19 clearly, such as specific professions or individuals paying personal income tax.<sup>20</sup> Absence of reliable citizen registries might force policymakers to make difficult trade-offs<sup>21</sup> or to use alternate data source (see building block 2).
- **KYC Requirements.** These specify which proof of identity – such as voter card, national ID card, health coverage ID – and proof of address are needed to register for a program. This enabler also describes how to access or spend the mobile money after registration – PIN number, password, biometric data, etc. Some central banks have also opted to reduce KYC requirements for small payments to ease the onboarding of the unbanked and undocumented population (e.g., Colombia and Ghana). The Financial Action Task Force (FATF) provided guidance on digital onboarding and simplified customer due diligence in context of COVID-19, to maintain a high degree of vigilance against fraud while promoting the use of alternate digital KYC mechanisms (FATF, 2020a).
- **User Experience.** As illustrated in Figure 10, a successful program adoption requires the population to understand the beneficiary’s journey every step of the way, from registration to use of money. In past G2P program rollouts, some governments have not paid sufficient attention to the user experience—leading to mixed results, including the lack of improvement in financial inclusion (Baur-Yazbeck and others, 2019).

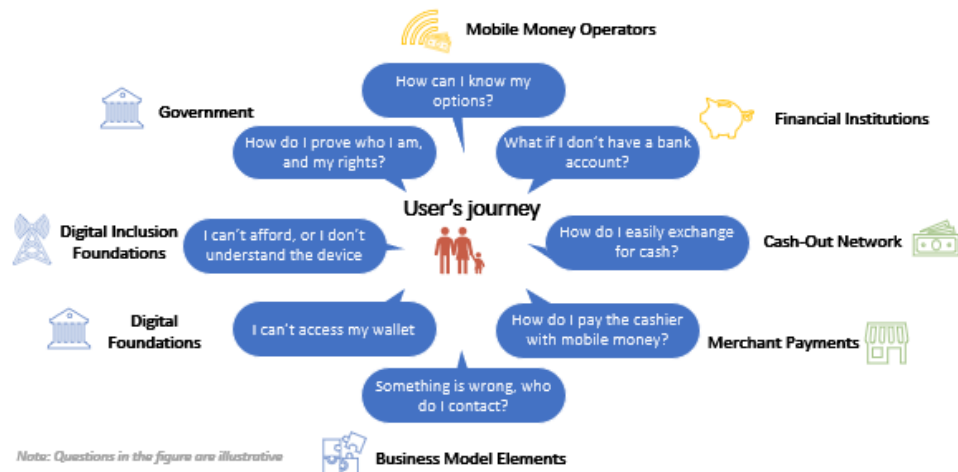
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<sup>19</sup> Recourse mechanisms should be in place to limit errors.

<sup>20</sup> See Scheme Exclusion under <https://pmkisan.gov.in>

<sup>21</sup> See IMF Special Series Notes on COVID-19 “[Enhancing Digital Solutions to Implement Emergency Responses](#)” and “[Digital Solutions for Direct Cash Transfers in Emergencies](#)”.

**Figure 10: Designing the Mobile G2P program around the beneficiaries' experience is a key success element**



Source: Staff

## B. Building Block 2: Digital Government<sup>22</sup>

Many EMDEs are finding ways around missing reliable and broad socioeconomic data—especially in the informal sector—and not shock-responsive Public Finance Management (PFM) systems in the crisis context.<sup>13</sup> Countries with more complete socioeconomic information can target households in need of support more precisely. They may also have access to advanced technologies such as digital identification, data analytics, or fraud detection technologies to cope with the sheer volume of public funds being remitted. Even imperfect data and technology can be used to ensure that payments are made in a timely, secure and transparent manner and are adequately controlled and reported. Close collaboration and data sharing mechanisms across public agencies and with private partners such as MNOs can help mitigate the lack of accurate or universal government data on households, especially in the informal sector.

Steps can be taken to ensure inclusion of individuals in need while limiting PFM risks along the following enablers:

- Social Registry.** If no reliable database exists, or data is only available for a narrow share of the population, individuals should be able to apply and provide simple information, ideally through digital platforms. This information can then be used to enroll eligible individuals into support programs. For instance, in Jordan, eligible households to an emergency cash transfer program have been identified through the *Takaful* program social register. The *Takaful* platform introduced important enhancements in cash transfer delivery systems including online registration, automatic data verification, improved targeting methodology, beneficiary enrollment sessions to open digital accounts, payments through basic bank accounts or e-wallets, and a robust grievance and redress mechanism. The scope of households eligible for emergency assistance expanded beyond *Takaful* recipients. The recipients' online enrollment was increased further during the pandemic, with beneficiaries allowed to open a mobile wallet or connect their bank account for direct cash transfer (G2Px, 2020a). Other types of identification of people in need can complement patchy social registries, e.g., community-based referrals. In Rwanda, for

<sup>22</sup> See also IMF Spring 2018 Fiscal Monitor, Chapter 2 “[Digital Government](#)”.

instance, the *Ubudehe* “grassroots network” was leveraged to identify most impacted households in urban areas and peri-urban areas of Kigali (IMF Staff Report, 2020).

- **Standards and Open Architecture.** This refers to the technology supporting the end-to-end framework and the implementation of mobile money platforms involved in the program. In Peru, authorities were able to rapidly transfer money through the country’s BiM (*Billetera Móvil*) mobile money platform, which is opened to financial institutions, MNOs, and fintech firms. The development of standards (Box 1) helps accelerate the deployment of open mobile money platforms and related digital financial services and fosters compatibility with card payment schemes and other payment systems (GSMA, 2020).
- **Streamlined controls and effective procedures.** Existing procedures and controls of some countries’ core PFM systems are not designed to deal with emergencies such as COVID-19 and may introduce complexities and delays incompatible with urgent actions. This enabler explores how countries are modifying or temporarily adjusting existing systems, procedures, and treatment capacities in order to promote a transparent and effective emergency response (Una and others, 2020b).

### **Box 1: Emerging Standards and Open Architectures for Mobile Payment**

#### **GSMA Mobile Money API**

The GSMA and the mobile money industry created a communication standard for key mobile money use cases, including domestic and international remittance, merchant payments, bill payments, and interoperability of mobile money accounts across financial institutions. According to GSMA, this Application Programming Interface (API) enables faster implementation and reduces total cost of ownership in three ways: rapid partner on-boarding, ease of support and maintenance, and raising the capability of the industry as a whole.

The API is designed to be used by any stakeholder in the mobile money industry, which can facilitate integration between mobile money providers, e.g., MMOs, banks, merchants, application developers, and other actors. This standard accelerates countries' mobile payment projects by offering technology best practices, such as RESTful architectural principles to allow scalability, JSON data format and ISO international standards for better interoperability, and virtualization of payment functions to facilitate implementations and upgrades. The API also provides best practice security recommendations.

#### **Mojaloop**

Mojaloop was developed in 2017 by the Gates Foundation in cooperation with fintech developers within the so-called Level One Project (1LP). The goal is to make digital financial services more inclusive and more accessible to the world’s poorest population. Mojaloop is a publicly available open-source code for creating digital payment platforms, offering key functions, including (i) a push payment model with same day settlement and notification from payer to payee; (ii) interoperability between all mobile money actors, such as financial institutions and regulated non-traditional financial service providers; (iii) adherence to international standards (e.g. payment data standards ISO 20022); (iv) system-wide fraud and security protection; and (v) proportional identity and KYC implementation based on country's needs, level of transactions and services provided.

In 2018, Orange and MTN announced a joint venture called Mowali, an implementation of Mojaloop, to enable interoperable payments across Africa. Mowali should facilitate financial flows between mobile money users across service providers and countries and could benefit G2P programs. The partnership should bring together over 100 million mobile money accounts and operations in 22 of sub-Saharan Africa’s 46 markets.

### C. Building Block 3: Mobile Money Operators

**G2P mobile payments rely on a robust and effective collaboration between the government and MMOs.** MMOs are entities allowed to issue electronic money to customers with or without a bank account, via mobile wallets (Box 2). In many countries the service is offered by MNOs, who already have a strong presence for basic voice and data services. When non-banks are sufficiently regulated to provide financial services, as is often the case in Southeast Asia and Africa, they can help accelerate G2P programs. For example, GCash, a Philippine fintech company, was able to rapidly respond to the government’s call to enable mobile transfer of G2P payments, by leveraging their existing platform and network. Wave Money in Myanmar has greatly facilitated G2P mobile payments, while providing additional digital and financial assistance to users. Other non-bank tech companies, like GrabPay in Malaysia, have been central to the success and speed of government cash transfers.

**MMOs often provide payment capabilities previously non-existent in EMDEs, including payment networks or payment rails.** In Kenya, M-Pesa was born on the back of Safaricom’s telecommunication network to enable a new form of payment. In Nigeria and Uganda, the fintech company Interswitch provides the payment rail for merchants and individuals. Compared to banks, MNOs and fintech firms also tend to have more mature mobile services, higher customer trust, and better user experience. MNOs also often provide broader agent networks compared to banks (GSMA, 2019). These advantages have fueled the success of mobile money in many countries, particularly in Africa (M-Pesa in Kenya, Tigo Cash in Tanzania, or fintech firms Paga in Nigeria and Yoco in South Africa) and Asia (Tencent and Alipay in China). In South Asia, mobile money has recently gained traction with an annual growth of 46 percent, the highest across all regions (Chhabra and Das, 2019).

Some of the key elements to consider when selecting and collaborating with regulated MMOs include:

- **Quality of Service.** While many MMOs provide sufficient digital financial services, they may not all qualify for an effective G2P partnership. Governments may clarify the expected level of services, as well as the required risk management and reporting requirements. Tigo, an MNO which provides mobile money services in Paraguay and Tanzania, owes its success to high quality services designed for maximum user adoption (Appendix 1.C). Partnering with fintech firms that develop products with well-designed user experience have led to successful adoption of G2P programs in Southeast Asia.
- **Agent Network Coverage.** This includes the availability of agents – typically small, local retail stores – in urban and rural areas and the quality of service they provide. Non-retail stores – basically independent individuals setting up a temporary stand and acting as agents – also play a key role in some markets. Such coverage is essential when online onboarding and remote support are not available, as these agents are the “face” of the service.
- **Mobile Coverage.** It is key that the MNOs’ partners have adequate and reliable mobile coverage (at least 2G, and when feasible 3G) across the country, particularly in harder-to-reach rural areas, to avoid excluding large swaths of population in need—i.e., widening the “digital divide” (building block 8). To overcome the lack of adequate coverage in regions where such services would be commercially unviable for private providers, Zambia issued new policies, changing digital payment fees structure to boost MMOs’ coverage of such areas (Baur-Yazbeck, 2019).
- **Mobile Money Regulatory Requirements:** MNOs need to ensure that the full equivalent of the outstanding mobile money issued is invested in safe liquid assets such as commercial bank deposits and low-risk government securities through regulated financial institutions via trust or



escrow accounts. Most countries have adopted regulatory requirements for MMOs to safeguard consumer funds (GSMA, 2016).

### **Box 2: How USSD Mobile Wallets Work**

In a majority of EMDEs, mobile services are accessible through a technology called Unstructured Supplementary Service Data (USSD). Created in 1994, USSD provides text-only services, including financial services, that users can access by dialing a short code on their phone. For example, customers from Orange Money in Liberia would dial \*144# to check their mobile wallet balance. Like SMS, USSD works on standard phones and smartphones without the need to install any app, and a subscription to mobile data is not required. USSD services are therefore very cost effective and popular, albeit not very user friendly. The application-less service means that a mobile wallet can become available in the entire country, for every customer of the service provider, the moment it is deployed on the network.

The pictures below show how a user would interact with a mobile wallet, before sending mobile money to another person (P2P) or a merchant (P2B):



Source: GSMA

It is important for regulators to note that USSD infrastructure is typically owned and operated by mobile network operators (MNOs). But mobile wallets can also be offered by third-party mobile money operators (MMOs), which are typically banks. In several countries, MMOs have complained about being barred from accessing USSD by dominant MNOs (CGAP, 2014). In the crisis context, it would be important for policymakers to eliminate this concern in order to accelerate mobile wallet deployment at a low cost.

## **D. Building Block 4: Financial Institutions**

**Financial institutions will receive funds directly from the government, and place them in a mobile money account for participants such as MMOs, cash-out agents, and merchants (Figure 7).** Countries usually have at least one regulated financial institution with connection to the government's Treasury.

Governments looking to establish or strengthen their collaboration with participating financial institutions or identify alternative options such as MMO services may consider the following key enablers of building block 4.

- **Branches and ATM Safety.** G2P beneficiaries are likely to go to the bank or automatic teller machines (ATM) to exchange their government-issued mobile money against cash even in countries where mobile payments are widely accepted (Kenya, Tanzania).<sup>23</sup> During the pandemic, some governments have set social distancing measures that banks have to implement and which makes it harder—and sometimes more dangerous—to cash out G2P mobile payments (e.g., long queue and wait at scarce cash out points). A combined policy of easing mobile payments and multiplying and diversifying certified cash-out agents is therefore key to a safe and inclusive G2P mobile transfer (see building block 5).
- **Ease of Doing Business and Trust.** It is important to assess the ability of participating financial institutions to interact with the population effectively. Customer trust, ease of doing business, user support and internet presence are important success factors. Pakistan’s central bank requested that banks open their call centers 24/7 for customer support, in order to reduce physical visits and to assist with basic operations. In Colombia, some banks are looking to use a simplified KYC requirement to provide a mobile wallet to unbanked beneficiaries (G2Px, 2020c).
- **Risks Management.** Participating financial institutions are accountable for the integrity, security and privacy of financial and accounting information, as well as fraud prevention such as AML/CFT, and robust Know-Your-Customer (KYC) schemes. This enabler also applies to building block 3 for MMOs. In order to facilitate the on-boarding of new beneficiaries and to foster mobile payments, the Bank of Ghana authorized mobile money users to use their existing KYC-protected accounts to register for the program.<sup>24</sup>

### E. Building Block 5: Cash-out Network

**Cash-in / cash-out (CICO) networks play a key role for G2P cash transfer programs to allow beneficiaries to exchange mobile money for physical cash safely.** Studies have shown that the majority of beneficiaries withdraw 100 percent of their payment at once (McKee, Kaffenberger, Zimmerman, 2015). In traditional banking (building block 4), CICO locations include direct channels such as banks branches, ATMs, and indirect channels such as retail outlets, supermarkets, and pharmacies.<sup>25</sup> These indirect channels are also used by MNOs with a CICO network of their own or managed by a separate agent network.

The following key enablers should be considered when assessing the readiness of a country’s CICO network, in context of G2P programs:

- **Delivery Channel Mix:** It is important to aim for diversified and dense delivery channels with reach in remote/rural areas. Traditional channels such as bank branches and ATMs, and governments' direct channels such as post-offices and local agencies should be complemented by mobile money agents with broad outreach range in EMDEs. Indeed, these networks have on average twenty times more reach than bank branches (GSMA, 2019). Some governments have incentivized participants to operate in regions with low return on investment. For example, Kenya introduced a tiered fees approach to promote better services in underserved regions of the country during the pandemic (McKay and Mdluli, 2020).

<sup>23</sup> Roessler et al. (2019) studied in Tanzania how providing free phones to women mattered for financial access, but other than for remittances, physical cash was preferred to mobile money. It is worth noting that acceptance of mobile money was higher for literate participants, highlighting the need for clear and simple communication (Building Block 7).

<sup>24</sup> Bank of Ghana Press Release, March 18, 2020 - <https://www.bog.gov.gh/wp-content/uploads/2020/03/MPC-Press-Release-March-2020-3.pdf>

<sup>25</sup> While the fee structure of the indirect channels is not treated in this building block, stakeholders should remain aware of its importance. More information on fee structure is provided in building block 6.

- **Liquidity Management.** Projecting estimated cash-out volumes, enlisting support of banks and third parties such as agent network managers and preventing crowd formation have been essential during the pandemic. Ecuador doubled the number of cash-out access points during the pandemic crisis, and established payment dates based on beneficiaries' ID last digits (LLYC, 2020), while Peru used a geolocation system to direct beneficiaries to specific places at a given time (G2Px, 2020b).
- **Trained Personnel.** Except for ATM withdrawals, beneficiaries may be interacting with staff who should ideally be trained and knowledgeable about the program, undergo regular audits, and provide adequate customer service. Beyond G2P programs, many EMDEs have introduced initiatives to improve digital and financial literacy. Such resources could be coordinated to include CICO agents.

### F. Building Block 6: Payment Acceptance Network

**A large merchant network as well as the involvement of other public and private actors could further encourage beneficiaries to opt for mobile payments when possible, thus reducing cash out.** Businesses should be involved in the design of the program to limit cash out of G2P payments. Digitization of payment has become a reality in many countries, with more value circulating in the mobile money system than leaving the system for the first time in 2019—setting the stage for a broader acceptance by the population to use and save mobile money (GSMA, 2019). In 2018, to cope with cash shortage, the central bank of Zimbabwe, the main mobile operator Econet Wireless and Mastercard partnered to enable merchants to accept Ecocash mobile money in stores already equipped with card readers. This allowed over 3,800 merchants to be paid easily with mobile money. Such public-private partnership is key to reduce the use of cash.

The following key enablers could facilitate the integration of the recipients of transactions in the mobile G2P framework, setting the stage for longer term benefits from mobile money:

- **Mobile Money Life Cycle.** A full digital payment ecosystem must ease the flow of mobile money across government (G), people (P) and businesses (B). In the near term, many countries are typically focusing on G2P and P2B payments. Appendix 1 describes advanced models where P2G, B2G and B2B payment strengthen a comprehensive digital payment economy (see section IV).
- **Fee Structure.** A popular measure during the COVID-19 crisis has been the temporary reduction or elimination of mobile money payment fees (both for consumers and merchants).<sup>26</sup> For example the mobile industry of Ghana worked with the central bank to implement free mobile service transactions to promote mobile payments. Similar private sectors and central banks collaboration in Kenya (Airtel), Uganda (Airtel, MTN), Rwanda (most banks and MNOs), have facilitated the use of mobile money during the pandemic. Heavier taxation of mobile transactions relative to other financial transactions—e.g., via the banking system—may prove regressive and have unintended consequences (GSMA, 2020c).<sup>27</sup>
- **Payment Platforms and Interoperability.** In many countries, mobile money development has been hindered by interoperability issues between banks, mobile wallets and various payment schemes. Mobile money actors and governments are increasingly collaborating on improving

<sup>26</sup> The reduction and elimination of charges has taken many forms, from central banks eliminating transaction taxes for person-to-person mobile transfers, or taxes paid by merchants on mobile money transactions, to MMOs agreeing to temporarily reduce their charges.

<sup>27</sup> In 2018, a new tax on mobile transactions in Uganda led to street protests. The tax was seen as overwhelmingly impacting the poorer in the country who don't have access to banks. In a few months, P2P values fell by over 50 percent, in favor of cash.

interoperability of mobile payments.<sup>28</sup> Prior to the pandemic, the central bank of Philippines implemented the National Retail Payment System (NRPS), a regulatory framework that requires interoperability among payment service providers, not only banks but also non-bank e-money issuers. This greatly facilitated the participation of MMOs to the country's PESONet and InstaPay automated clearing houses.

### G. Building Block 7: Business Model Elements

**A mobile G2P program could benefit from industry best practices for digital solutions.** The business model of any product covers not only customer experience and solution advantages, but also the distribution channels, marketing strategy, change management, risk management, technology upgrade, and strategic partnerships. When correctly executed with a long-term view, these partnerships can result in a more sustainable and impactful service. The various elements of a robust business model are typically interdependent, and a single “broken link” in the chain (e.g., poor fraud controls, technology downtime, a confusing process to open an account, etc.) can impair an otherwise well-designed product.

Of the many key enablers that define this building block, three are particularly important to ensure sustainable success beyond the short-term objectives of income assistance:

- **Program Features.** Setting clear and measurable parameters enables better performance tracking and reduces confusion. Examples of program features include eligibility criteria, the transfer amount, frequency, applicable conditions and the overall duration. Some countries have considered conditioning some features to certain behaviors, e.g., COVID-19 testing, using a portion of the money to make mobile payments, etc.
- **Effective and Frequent Communication.** Clear, simple and well publicized communication is critical to the success of any product. Togo prioritized targeting women in its Novissi G2P program and communicated clearly and simply via ads and social media. The effective communication and product management attracted twice as many women as men to the cash transfer scheme.<sup>29</sup>
- **Program Management.** A G2P Program can be managed like any other major complex product. Clear definition of roles and responsibilities across building blocks, reporting processes, continuous improvement, and controlled deadlines and budget are basic expectations for product management.

### H. Building Block 8: Digital Inclusion Foundation

**The digitalization of payment can leave behind large shares of vulnerable populations** (Zimmerman, 2016). Households most impacted by the pandemic are often the hardest to reach with technology physically, economically, culturally (e.g., women have relatively lower access to communication devices),<sup>30</sup> or from a literacy standpoint. Close coordination with other government agencies, technology, telecommunication, and fintech companies may help bridge the digital gap that threatens to leave the most vulnerable segments behind (Davidovic and others, 2019). This building block involves different stakeholders and is an essential element of a successful mobile G2P program implementation. This building block can also support other development goals, including several of the UN's Sustainable Development Goals such as lowering poverty, bridging the gender gap and

<sup>28</sup> The GSMA Mobile Money API and Gates Foundation's Mojaloop, described in Box 1, are often seen as foundational projects for the future of interoperable payment in developing countries (Martins, 2020)

<sup>29</sup> The government frequently updates all data on its website: <https://novissi.gouv.tg/en/>

<sup>30</sup> On average, women are 10 percent less likely to own a mobile phone (Iskenderian, 2020) with affordability being the most significant barrier to women's mobile phone ownership (Lindsey and Wilson, 2019).

reducing inequality. Certain regions such as sub-Saharan Africa are more exposed than others to the risk of digital exclusion, despite recent progress (IMF, 2020).

Digital and financial inclusion is a multidimensional and evolving topic that spans beyond the scope of this paper. Still, three key enablers could help policymakers improve the reach of mobile G2P to remote or poor populations:

- Digital Access and Affordability.** To benefit from mobile G2P, individuals need reliable electricity, affordable, sufficient connectivity, and connected devices, such as a computer or a mobile phone. They also need the required knowledge to use the technology, and the financial literacy to maximize the benefits of a digital wallet ownership. Alper and Miktus (2019) proposed an Enhanced Digital Access Index (EDAI) to help measure the ability for the population to access digital services (Appendix 4 and Figure 11). Countries have mandated service providers to reduce electricity and connectivity fees (Malaysia, Panama), strengthen availability and resilience (Vietnam, Chile, Argentina, Qatar), and explored new ways to provide connectivity.<sup>31</sup>

**Figure 7: Progress in digital access in sub-Saharan Africa (measured by EDAI) remains hindered by high costs, and lags in remote areas.**



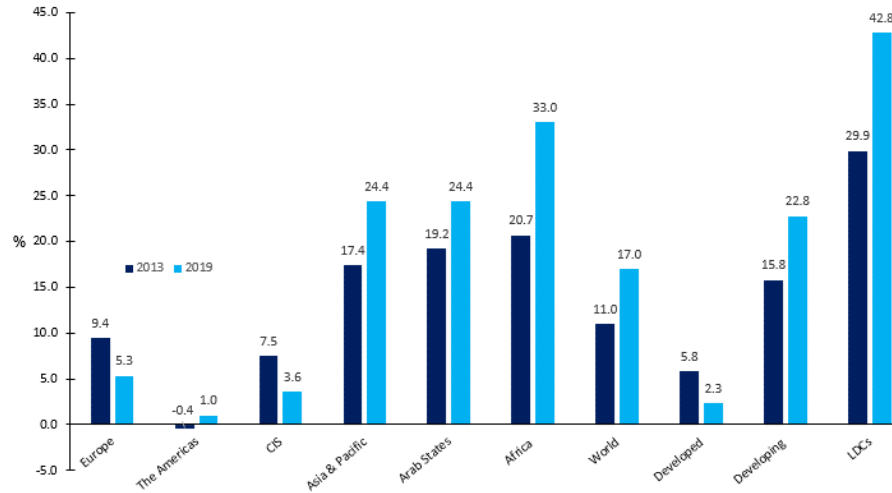
Source: Alper and Miktus (2019).

- Gender Gap.** Over the past seven years, the digital divide between men and women in EMDEs has widened (Figure 12), which is especially challenging when women represent a majority of both the informal sector and of caregiving communities, particularly impacted by COVID-19 (Zimmerman, May, Kellison. 2020). EMDEs should recognize the widening technology gap not only between women and men (ITU, 2019), but also with migrants, internally displaced people or persons with disabilities (UN, 2020), and design accessibility of mobile G2P accordingly.<sup>32</sup> In February 2020, as part of its anti-poverty program *Ehsaas Kafaalat*, Pakistan started to distribute free smartphones and biometrically protected bank accounts to seven million poor women, significantly facilitating access to government money in a secure manner.

<sup>31</sup> Notably, in March 2020 South Africa allowed the use of a new spectrum called TV Whitespace for the roll-out of affordable or free data services, particularly in rural and remote areas (ICASA, 2020).

<sup>32</sup> This enabler can benefit from the work of the Zimmerman, May, and Kellison (2020) and other actors who promote the D3 Framework (Digitize, Direct, Design) to enhance women's economic empowerment through cash transfers.

**Figure 8: Over the past 7 years, the internet user gender gap has widened in EMDEs**



Source: ITU.

Note: ITU estimate. The gender gap represents the difference between the internet user penetration rates for males and females relative to rate for males, expressed as a percentage.

### III. LIMITATIONS AND RISKS

**The potential of G2P for mobile cash transfers is considerable, but challenges and constraints can limit their effectiveness.** While the enablers of the mobile G2P framework described in this paper can help tackle key challenges of establishing a mobile G2P payment program under pressure, there are larger constraints and limits that warrant more attention. Some challenges are structural such as the lack of adequate infrastructure (including electricity and connectivity) or insufficient digital literacy, while others are inherent to the introduction of digital technology for the transfer of value such as cyber risks, fraud, and lack of adequate regulation. While structural issue will take time and resources to address, technology related cyber risks, and digital fraud need to be tackled imminently. Policymakers and regulators should ensure that risks are identified, managed and mitigated to the extent possible to build trust in G2P programs. It is important to ensure that the risks of accelerating mobile money, including cyber-risks and digital fraud, do not outweigh the benefits. For instance, since most mobile transfers still rely on at least one bank for their custody or escrow account they could be more sensitive to financial sector shocks if the MNO's partner bank is affected. Conventional social assistance transfers, on the other hand, could be covered under the deposit insurance scheme if applicable.

**Countries may have varying levels of challenges, from infrastructure development to available fiscal space, requiring a different approach and responses.** EDMEs with inadequate infrastructure, from electricity to payment rails, have relied on private-public partnerships with MNOs and fintech firms (e.g., Interswitch in Nigeria). Building block 8 also presents the merits of inter-agency collaboration on their digital connectivity initiatives to the timeline of G2P programs. With increased deregulation and liberalization of telecommunication market, countries across the globe have explored public-private partnerships, which have gained popularity across the world and particularly in EDMEs (PPP Knowledge Lab, 2020). While such partnerships are important, effective procurement policies and transparent project documentation should aim to mitigate the risks of working with the private sector such as cost-overruns and corruption.

### A. Cyber-Security and Digital Fraud

**Given the significant volume of funds and the sensitive nature of beneficiary data, cybersecurity is one of the key risks related to G2P platforms.** Cybersecurity risks threaten the confidentiality, integrity, and availability of institutional data, applications, processes and citizens' information. For government agencies and institutions, the leakage or misuse of beneficiary data or other consumer fraud could have serious reputational consequences and result in a durable loss of trust. Cybersecurity risks threaten various levels of digital systems (software and hardware) and are often exacerbated during crises like the COVID-19 pandemic.

**A thorough understanding of cybersecurity and digital fraud risks can help policymakers hold mobile G2P program stakeholders accountable for establishing a robust and secure G2P system.** Each of the eight building blocks requires its own governance of cyber and digital fraud risks, from the implementation of standard protection of infrastructure, applications, networks, to strengthening capacity in information security. Sharing knowledge and collaborating through inter-agency IT taskforces have allowed many LIDCs to achieve cyber resilience objectives within a short period of time (Una and others, 2020). Likewise, stakeholders should develop Business Continuity Plans to demonstrate shock-responsiveness and guard against cyberattacks related to remote work (Leonovich, 2020). These plans should identify core business processes and provide alternatives to sustain operations during emergencies.

### B. Regulatory Concerns

**A regulatory environment fostering G2P service providers' participation should ensure consumer protection, financial integrity, and financial stability.** Many countries may not have adapted their regulatory and policy framework to allow the participation of non-financial service providers in payment systems, to address financial integrity issues or data privacy. As discussed above, the COVID-19 pandemic has prompted policymakers to reduce the regulatory compliance burden on mobile money issued by telecom or fintech firms. Their customers are often not as protected by regulation as those of regulated financial institutions.

**Policymakers can protect financial integrity by remaining vigilant to emerging financial crime related to the pandemic, while taking advantage of the flexibility provided into the FATF's risk-based approach** (Financial Action Task Force, 2020a, 2020b). This flexibility is particularly relevant for countries that do not have reliable identity or socio-economic data registries. The authorities should require that service providers ensure their services protect customer data, comply with pertinent AML/CFT standards, and are easy to use. In the long run, policymakers should aspire for international agreements on data privacy, cybersecurity, digital identification, cross-border digital currencies, and regulation (Sahay and others, 2020). Ongoing collaboration among regulators and service providers enables continuous alignment on potential risk assessment and ensure a risk-based AML/CFT approach (AFI, 2020). International collaboration and knowledge exchange such as Interpol's assistance through ENACT for police in Africa to adopt proactive strategies to combat organized crime threats, facilitate information exchange, and enhance investigative skills are welcome developments (Interpol, 2020).

## IV. POSSIBLE EVOLUTIONS OF MOBILE G2P PLATFORMS

**The framework introduces key elements at each maturity level of implementation of a mobile G2P payment system aspiring to become sustainable and lay the groundwork for robust social safety net.** Figure 8 shows that some ideal scenarios may be accessible to some countries, under certain conditions. While out of scope of this paper, the exploration of possible futures and evolutions of mobile money may better inform current trends for mobile G2P payment.

**In the long run, governments could take a broad approach and consider the whole digital government ecosystem.** Mobile frameworks put in place or expanded to support households at unprecedented scale could cover additional stakeholders, unlock additional use cases, and diversify access channels through interoperable arrangements if the goal is to promote a cash-lite digital economy in the medium-term. An appropriate digital infrastructure would serve as the backbone of this digital economy, including interoperable retail payment systems, digital identity, and digital data storage hubs (AFI, 2020). This ecosystem has the potential to increase the degree of formalization, improve transparency, and introduce efficiency gains. In a fully integrated digital ecosystem, mobile money disbursed to beneficiaries (G2P) could flow to peers (P2P), other businesses (P2B and G2B) and find its way back to the government in form of taxes (P2G and B2G). Creating more frictionless domestic revenue mobilization, strengthening administrative systems and fostering a formal economy with digital technologies are especially important when debt loads are high and fiscal space is low.

**Some countries are exploring central bank digital currency (CBDC) to expedite social assistance in the wake of public health emergencies, such as COVID-19, or natural disasters.** Although out of scope of this paper, it is important to acknowledge the potential impact of retail CBDC on G2P payments in the long-term. One of the motivations for issuing retail CBDC is the development of payment rail for social transfers on behalf of the government. For example, the “Sand Dollar” project in the Bahamas is designed to give residents easier access to financial services and government assistance following natural disasters in light of potential damages to the to the financial infrastructure or limited availability of cash. The goal is to enable the entire population’s access to digital payments services in order to reduce the size of unrecorded economic activities that take place in the informal sector and to fully include micro, small and medium-sized businesses in the digital space (CBB, 2019). The government expects this CBDC ecosystem to improve tax administration and to increase the efficiency of government spending (CBB, 2019).

**Emerging technologies will play a more important role in the future of government social assistance.** As illustrated in Appendix 3, current technologies are instrumental for a well-functioning mobile G2P program. As countries advance their level of digitalization and begin integrating emerging technologies into their ecosystem in line with the great-to have state (Appendix 1), government assistance programs have the potential to become more efficient and effective. China is working towards establishing nationwide connectivity and digitizing social security systems using blockchain technology, artificial intelligence, big data and the 5G network (Huillet, 2020). Blockchain-enabled data reporting systems, for example, is expected to improve and accelerate a transparent data exchange across government agencies, enterprises, institutions, grass-roots mass organizations and social organizations, which could improve the availability of data required for more targeted social assistance. Likewise, machine learning could support government in preempting fraud, predicting consumer needs, and reducing waste.

**Future digital payment ecosystems are likely to amplify any risks and limitations.** With the introduction of new technologies into the payment ecosystem, infrastructure requirements will increase in scope, the management of cyber risks and digital fraud will become more complex and demands on regulators and supervisors will become more sophisticated. New rules will be required to regulate data collection, secure data storage, and validate that machine learning algorithms embedded in the system do not include inappropriate machine learning biases.<sup>33</sup> Policymakers should explore how they can use emerging technologies to mitigate new risks such as using AI/ML applications for fraud detection, compliance monitoring or cyber security. Close collaboration among national,

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<sup>33</sup> Machine learning bias occurs when an algorithm produces results that are unequal with differences in gender, geolocation, race or other distinctions due to erroneous assumptions in the underlying algorithm or flawed training data sets



regional and international stakeholders will be fundamental to build capacity and knowledge regarding cybersecurity, financial integrity, and identify required resources.

## V. CONCLUSION

**As the COVID-19 crisis unfolds, many EMDEs have ramped up mobile money platforms to provide income support at an unprecedented scale.** Leveraging the high penetration of mobile phones and mobile accounts relative to banks' access points, governments have expanded or introduced mobile money transfers to reach millions of workers and households that would have otherwise remained beyond reach, particularly in the informal economy.

**Analyzing past country initiatives that built social safety nets around mobile transfers, and recent emergency responses, the paper introduces a comprehensive framework to build sustainable G2P mobile programs.** Using stylized facts such as data from existing mobile cash transfer efforts, and insights gained from previous G2P and mobile payment initiatives in EMDEs, the paper deduced the conditions for a successful G2P mobile program and any associated risks in the form of a comprehensive framework. Divided into eight building blocks, this framework describes the required ecosystem to fully exploit the advantages of G2P mobile money transfers. The eight building blocks are designed to guide policymakers and regulators in iteratively adapting their country's regulatory framework, scale up their infrastructure or choosing the right collaboration partners in support of G2P mobile transfers.

**In the longer run, the framework can help policymakers develop stronger social protection systems and contribute to their strategic development goals.** Together with other programs, mobile transfer platforms can be at the core of stronger social safety nets, allowing for adequate and effective coverage of vulnerable households and workers. Beyond safety nets, G2P mobile transfers can further contribute to inclusive growth by bringing financial accounts to the unbanked, empowering women financially, and helping small and medium enterprises grow within the formal sector. It can also help increase the transparency and efficiency of public resource management.

**Regardless of the country maturity level, any G2P solution will introduce risks and reveal constraints that need to be mitigated and managed.** Risks will become even more prominent as digitalization progresses and countries introduce more sophisticated technologies into the digital cash ecosystem. Governments should remain cognizant of potential new risks that present themselves as they mature their mobile cash transfer programs. Some risks such as cyber security require immediate attention while others such as regulation to protect data privacy or mitigate fraud and the violation of financial integrity standards call for a concerted governments effort over the medium-term.

### Glossary

API	Application Programming Interfaces
CICO	Cash-in / Cash-out agents, enabling mobile money users to exchange electronic money for cash, and vice-versa.
EMDEs	Emerging markets and developing economies
G2P, P2G, P2P, P2B, B2B, B2P	Transactions or actions involving a government (G), a person (P) and/or a Business (B) such as a merchant.
JSON	JavaScript Object Notation. Lightweight format for storing and transporting data.
MMO	Mobile Money Operators
MNO	Mobile Network Operators, also known as telecommunication networks
LIC	Low Income Countries
REST, RESTful	Representational State Transfer. Software architectural style that defines a set of constraints to be used for creating Web services.

## References

- Alliance for Affordable Internet (A4AI). 2019. "[The 2019 Affordability Report](#)". Washington DC: Web Foundation
- Alliance for Financial Inclusion (AFI). 2020. "[Policy Framework for Leveraging Digital Financial Services to Respond to Global Emergencies – Case of COVID-19](#)"
- Ayana Aga, Jolevski, Muzi. 2020. "[Insights from enterprise surveys: Including the informal economy in policy responses to COVID-19](#)". World Bank Blog.
- Baur-Yazbeck, C. Kilfoil, I. Botea. 2019. "[The Future of G2P Payments: Expanding Customer Choice in Zambia](#)"
- Baur-Yazbeck 2019. "[A New Generation of Government-to-Person Payments Is Emerging](#)" Consultative Group to Assist the Poor (CGAP) Blog
- Central Bank of Bahamas (CBB). 2019. "[Project Sand Dollar: A Bahamas Payments System Modernisation Initiative](#)"
- CGAP. 2014. "[Mobile Payments Infrastructure Access and Its Regulation: USSD](#)"
  - . 2015. "[DaviPlata: Taking Mobile G2P Payments to Scale in Colombia](#)"
  - . 2020. "[Digital Cash Transfers in Times of COVID-19: Opportunities and Considerations for Women’s Inclusion and Empowerment](#)".
- Chabra, and Das. 2019. "[Mobile Money Spreads to Asia](#)". IMF Blog.
- Chamberlin, Kellison, Klugman, Zimmerman. 2019. "[Enhancing Women’s Economic Empowerment Through Digital Cash Transfers - Digitize/Direct/Design: The D3 Criteria](#)"
- Chen, Chaozhen. 2020. "Presentation: Bahamas – Project Sand Dollar." Central Bank of the Bahamas. Webinar on Central Bank Digital Currencies, Central Bank of Barbados.
- Davidovic, Loukoianova, Sullivan, Tourpe. 2019. "[Strategy for Fintech Applications in the Pacific Island Countries](#)". IMF, Asia and Pacific Department Paper No. 19/14.
- De Mello, Ter-Minassian. 2020. "[Digitalisation Challenges and Opportunities for Subnational Governments](#)", *OECD Working Papers on Fiscal Federalism*, No. 31. OECD Publishing, Paris
- Financial Action Task Force (FATF). 2020a. "[Statement by the FATF President: COVID-19 and measures to combat illicit financing](#)".
  - . 2020b. "[Guidance on Digital ID](#)".
- G2Px. 2020a. "[COVID-19 G2P Cash-Transfer Payments - Country Brief: JORDAN](#)"
  - . 2020b. "[COVID-19 G2P Cash-Transfer Payments - Country Brief: PERU](#)"
  - . 2020c. "[COVID-19 G2P Cash-Transfer Payments - Country Brief: COLOMBIA](#)"
  - . 2020d. "[Key Considerations and Policy Options for Emergency Social Assistance Payments](#)"
- Gentilini, Almenfi, Orton, Dale. 2020. "[Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures](#)". World Bank, Washington DC.
- Georgieva. 2020. "[Confronting the Crisis: Priorities for the Global Economy](#)"
- Global System for Mobile Communications (GSMA). 2016. "[Safeguarding Mobile Money: How Providers and Regulators Can Ensure that Customer Funds are Protected](#)".
  - . 2020a. "[State of the Industry Report on Mobile Money 2019](#)".
  - . 2020b. "[Why is there a need for GSMA Mobile Money API Specification? A comparison with other industry standards](#)".
  - . 2020c. "[Mobile money recommendations to central banks in response to COVID-19](#)"

- . 2020d. "[The causes and consequences of mobile money taxation: An examination of mobile money transaction taxes in sub-Saharan Africa](#)"
- Hernandez, Kim. 2020. "[Agent Networks: Vital to COVID-19 Response, in Need of Support](#)", CGAP Blog.
  - Huillet, 2020. "[China's Communist Party Eyes Blockchain for 'Decentralizing' Social Services](#)". Cointelegraph.
  - Sahay, Eriksson von Allmen, Lahreche, Khera, Ogawa, Bazarbash, Beaton. 2020. "[The Promise of Fintech: Financial Inclusion in the Post COVID-19 Era](#)". IMF, Monetary and Capital Market Department Paper No. 20/09
  - Independent Communications Authority of South Africa (ICASA), 2020. "[ICASA Engages with Licensees to Open Their Services to All South Africans as the Country Fights the Scourge of the Covid-19 Pandemic](#)".
  - International Monetary Fund (IMF). 2020a. Financial Access Survey (FAS) Database.
  - . 2020b. "[Chapter 3. Digitalization in Sub-Saharan Africa](#)". Regional Economic Outlook. Prepared by Abdychchev, Cangul, Diouf, Esham, Gupta, Li, Mitra, Miyajima, Ongley, Ouattara, Ouedraogo, Sharma, Simione, Tapsoba, and Tesfaye Woldemichael.
  - . 2020c. "[Rwanda: Request for Disbursement Under the Rapid Credit Facility-Press Release; Staff Report; and Statement by the Executive Director for Rwanda](#)". IMF Country Report No. 20/207
  - International Criminal Police Organization (INTERPOL). 2020. "[Mobile money and organized crime in Africa](#)".
  - International Telecommunications Union (ITU). 2019. "[Measuring Digital Development. Facts and Figures](#)"
  - Klapper, Singer. 2017. "[The Opportunities and Challenges of Digitizing Government-to-Person Payments](#)". *World Bank Research Observer*. Volume 32, Issue 2.
  - Lindsay, Wilson. 2019. "[Affordability: How Mobile Operators Can Improve the Affordability of their Services for Women to Help Close the Mobile Gender Gap](#)". GSMA Blog
  - Leonovich, 2020. "[Pandemic Preparedness for Financial Institutions](#)". IMF, Monetary and Capital Markets, Special Series on COVID-19.
  - LLorenteyCuenca (LLYC). 2020. "[Ecuador: Navigating the COVID- 19 Crisis and Outlook](#)". Technical Note.
  - Martins. 2020. "[Interconnecting Mobile Money Providers: Why is Interoperability Testing so Important?](#)". GSMA Blog.
  - McKay, Mdluli, Chebii, Malu. 2020. "[The Future of Government-to-Person \(G2P\) Payments: Innovating for Customer Choice in Kenya](#)". CGAP and FSD Kenya.
  - McKay, Mdluli. 2020. "[Kenya's Expansion of G2P Becomes Lifeline During COVID-19 Crisis](#)". CGAP Blog.
  - McKee, Kaffenberger, Zimmerman. 2015. "[Doing Digital Finance Right: The Case or Stronger Mitigation of Customer Risks](#)". *CGAP Focus Note* No. 103
  - Ministère des Postes, de l'Économie Numérique et des Innovations Technologiques (MPENIT). 2020. "[Novissi, le programme de revenu universel de solidarité au Togo.](#)"
  - Organization for Economic Cooperation and Development (OECD). 2014. "[Recommendation of the Council on Digital Government Strategies](#)".
  - Prady. 2020. "[Reaching Households in Emerging and Developing Economies: Citizen ID, Socioeconomic Data, Digital Delivery](#)". IMF Special Series on Fiscal Policies to Respond to COVID-19.

- Roessler, Carroll, Jahari, Kilama, Myamba, Nielson. 2019. “[Mobile Phone Ownership and the Uptake and Usage of Digital Financial Services by Women in an Emerging Economy: Evidence from a Field Experiment in Tanzania.](#)”
- Rutkowski, Garcia Mora, Bull, Guermazi, Grown. March. 2020. “[Responding to crisis with digital payments for social protection: Short-term measures with long-term benefits](#)”. World Bank Group Blog.
- Sri Sulastri. 2019. “[Deepening financial inclusion through cash transfers: The case of PKH in Indonesia](#)”. MicroSave Consulting Blog.
- United Nations (UN). 2020. “[Report of the Secretary General: Roadmap for Digital Cooperation](#)”
- Una, Allen, Pattanayak, Suc. 2020. “[Digital Solutions for Direct Cash Transfers in Emergencies](#)”. IMF Special Series on Fiscal Policies to Respond to COVID-19.
- Una, van Eden, Singh, Bardella, Verma. 2020. “[Enhancing Digital Solutions to Implement Emergency Responses](#)”. IMF Special Series on Fiscal Policies to Respond to COVID-19.
- Zimmerman, Baur. 2016. “[Understanding How Consumer Risks in Digital Social Payments Can Erode Their Financial Inclusion Potential](#)”. CGAP Brief. World Bank Other Operational Studies 24568. World Bank, Washington DC
- Zimmerman, May, Kellison. 2020. “[Digital Cash Transfers in the Time of COVID-19: Opportunities and Considerations for Women's Inclusion and Empowerment](#)”. World Bank: Washington DC

## APPENDIX 1: KEY ENABLERS MATURITY MAP

This section details key enablers at each maturity stage across the eight building blocks of a Mobile G2P framework. Policymakers can use this maturity map to (1) identify where their country is currently situated, and (2) discuss options for developing the next evolution along each enabler. The framework is *descriptive*, not *prescriptive*: it provides guidance for countries to self-assess their current maturity stage but does not explicitly chart out a course of action or decision.

### A. Beneficiaries

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Eligibility Criteria:</b> Broad eligibility criteria easy to identify, communicate, and implement.	Additional criteria, such as number of children in household, and labor type, if available, allow more targeted transfer program.	Ability to include/exclude certain segments, e.g., based on income level; articulation with other government benefit programs.
<b>KYC Requirements:</b> Any form of identification, even not government-issued (tax records, utility bills, health records). Authentication to access mobile wallet often uses PIN numbers (often used in G2P programs).	Any standardized government identification, such as a voter card, birth certificate, or driver's license. Accept MMOs' KYC and authentication schemes (e.g., Brazil, Jordan) with certain limits.	National digital ID, with streamlined, secure registration (e.g., Aadhaar in India). Biometric authentication offers additional security. In Pakistan, biometrics promoted use of mobile wallets by women living in poverty.
<b>User Experience:</b> Most countries have maintained web sites to answer key questions. Messaging tools such as WhatsApp in Kenya have helped provide basic support service.	Countries have worked with MMOs and banks to offer user support. Mobile wallets typically use well known USSD mobile wallet (Box 2).	Smartphones are able to provide superior mobile wallet experience, biometrics authentication, and contactless payment. This should not, however, replace USSD which will remain the best option for hardest to reach populations.
<b>Typical Risks to Mitigate:</b> Financial exclusion from the inability to demonstrate identity. Forgery of identification documents.	Inconsistent data across sources. Identity theft.	Cyber-crime.
<b>A Country's Journey:</b> In 2011, the government of <b>Uganda</b> implemented a social cash transfer scheme called SAGE (Social Assistance Grants for Empowerment), to help tackle chronic poverty in the country. Two types of eligibility criteria were used: the first one was an index based on demographic indicators (for so-called 'Vulnerable Households' which were low-income and which lacked labor capacity), while the second was geared towards senior citizens, and thus strictly used age as a factor. The amount and frequency were the same for both: 25,000 Ugandan shillings (about USD 10 at that time) per month paid every two months. Over the course of 4 years, the pilot program reached about 125,000 households and about 560,000 individuals. In terms of registration, information was gathered from households and entered in a MIS database via a census-style registration system. Beneficiaries were provided a SAGE 'program card' (embedded with a SIM card from MTN, the country's largest mobile network operator); they could withdraw funds by going to a designated pay point with the card and providing identification.		

### B. Government Digital Tools

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Social Registry:</b> Use existing registries, complemented with online self-registration and community-based identification of people in need (e.g., local authorities).	Require additional KYC requirements. Avoid duplicates and "ghosts" by leveraging other databases (e.g., other benefit programs, social security, tax administration, utilities, school, NGOs, and MNOs databases).	Up-to-date and integrated socioeconomic data that allows fully automated validation of self-enrolled individuals by cross-checking reliable internal and external databases. See Appendix 3 for useful technologies.
<b>Standards and Open Architecture:</b> Assuming data exists – some countries share program data (sometimes just an	G2P and beneficiaries' data is accessible programmatically and securely across	An open architecture supporting any G2P cash program is used securely, allowing

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
Excel file shared through secure channels) with governments employees authorized to identify program recipients, or to audit/manage risks.	public agencies, and with external partners such as MMOs, via APIs, boosting operational effectiveness and reducing human mistakes.	the private sector, such as fintech, research agencies, third parties to provide additional services. See also Box 1.
<b>Streamlined controls and effective procedures</b> Identify sources of inefficiencies and overcomplicated processes, procedures and workflows that would delay G2P program.	Eliminate unnecessary steps, decisions, intermediaries to improve G2P program delivery. Mitigate risks of such simplification with data collection and reporting from all framework participants.	<i>Predictive</i> analysis can improve performance (e.g., a segment more likely to withdraw on a certain day to improve liquidity management) or reduce risks (e.g., agent transaction patterns that flag suspicious activity) by suggesting key actions to take.
<b>Typical Risks to Mitigate:</b> Some individuals may opt out to avoid paying taxes, and risk being excluded. Corruption of intermediaries.	Inconsistent data across sources. Privacy leaks may reduce trust in G2P program. Some people may be missed, others may be paid more than once.	Cyber-crime. Biased algorithms.
<b>A Country's Journey:</b> In 2014, the Catholic Relief Services began exploring more sophisticated electronic voucher schemes for vulnerable populations in North-East <b>Nigeria</b> . The NGO had initially been using paper vouchers, but these were subject to fraud and duplication. In 2016, it launched a Cash and Assets Transfer (CAT) Management Platform. This includes both back-end software, such as a web-based management system, Android-based apps for vendors or money agents, and data analysis tools, as well as hardware such as Near-Field Communications Technology (NFC), biometric scanners, and smart cards. Once beneficiaries are registered on the platform by field agents (along with biometrics), they are provided a smart card. Through the platform, the cash transfers are pushed to the smart card on a monthly basis (roughly USD 5 to 6), and the beneficiaries have dozens of local vendors they can use the card with (the vendors are also signed up by the implementing partner). The program has supported roughly 83,000 beneficiaries and involved over 180 vendors. Studies found that this tech-driven approach greatly reduced fraud and increased satisfaction among both beneficiaries and vendors as compared to a direct cash payout.		

### C. Mobile Money Operators (MMOs)

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Quality of Services:</b> Partnership with one mobile money operator with proven ability to deliver mobile money to a large segment of population. Account opening is straightforward and free.	Data about subscribers and usage can be obtained from MMOs, preferably automatically via secure APIs. MMO can provide additional financial services accessible with G2P money (e.g., savings account).	Beneficiaries can select their MMOs, which are interoperable, allowing to move funds between mobile wallets and with bank accounts.
<b>Agent Networks Coverage:</b> Agents offer cash-out services in rural areas. They should have access to liquidity. They help first-time users navigate basic USSD menus.	Agents conduct basic KYC and offer account-opening services. Services is available late and on weekends to flatten peak hours crowd curves. Answer basic questions about G2P program on behalf of government.	Experienced and dense agent network is available in remote rural areas. Good liquidity management. Agents can answer more questions on the G2P program. MMOs can explain basic financial services such as saving accounts.
<b>Mobile Coverage:</b> 2G and 3G mobile coverage is available in majority of the country.	Service is reliable and affordable.	Available to remote areas such as mountainous regions, small islands, or low-density areas. Affordable or subsidized for poorest population. <sup>34</sup>
<b>Typical Risks to Mitigate:</b> Population hard-to-reach physically, economically, culturally (e.g., women,	Data privacy. Liquidity.	Financial and digital literacy may limit effectiveness of program

<sup>34</sup> In February 2020, [Pakistan started to distribute](#) free smartphone and biometrically-protected bank account to seven million poor women.

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
older population) may not have access to digital payment. Inadequate regulatory rules.		
<b>A Country's Journey:</b> After a slower-than-expected uptake in the initial years, <b>Tanzania</b> private telecom provider Tigo deployed in 2010 a mobile wallet to 12 million users (about half of its based of voice and data subscribers), many of whom never had access to financial services before. Its success relies on compelling services to customers, real-time account activation, cash advance services (through a local bank), international remittances to other mobile money operators in neighboring countries. Tigo offers user-friendly merchant payments using mobile money integrated with Mastercard's Masterpass QR-based service. It also counts over 150,000 agents, many of which are in the rural areas, where it tends to dominate over larger rival Vodacom private company. Agents are recruited on strict criteria, cross-referenced, provided financial education, and actively managed to ensure high quality customer service. Tigo also works with multiple bank partners and "superagents" to ensure agent training, brand and marketing collateral, and liquidity services, including cash delivery. As of 2019, Tigo Pesa contributed nearly a third of overall earnings for Tigo Tanzania, estimated at roughly USD 40 million.		

## D. Financial Institutions

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Branches and ATM Safety:</b> Partnership bank(s) capable of partnering with MNOs to provide mobile money. The bank(s) should have reasonable ATM coverage in both urban and some rural areas, and effective liquidity management. For all 3 phases, social distancing should be mandated.		
Partnership bank(s) capable of partnering with MNOs to provide mobile money. The bank(s) should have reasonable ATM coverage in both urban and some rural areas, and effective liquidity management. For all 3 phases, social distancing should be mandated.	Branches are available in some rural areas and have flexible operating hours to avoid large crowds. G2P partnership is open with all banks in the country which comply with governments' criteria. Most operations other than cash-out are done over the internet or telephone.	ATMs are functional and liquidity and appointments are managed via predictive analytics and other automation technologies to avoid long lines. Personnel at branches is well trained and can provide G2P and financial advice to customers. Services are supported by interoperable platforms with MNOs.
<b>Ease of Doing Business, Trust:</b> Brand is recognized by many beneficiaries, and is not distrusted (e.g., does not have reputation for fraud). Note: this is less an issue when beneficiaries interface with MMOs instead of banks.		
Brand is recognized by many beneficiaries, and is not distrusted (e.g., does not have reputation for fraud). Note: this is less an issue when beneficiaries interface with MMOs instead of banks.	Brand is recognized and trusted by most beneficiaries. Customers feel comfortable interacting with branch staff and obtaining information.	Brands of participating banks are strong; recognized by the majority of the population and trusted to provide high quality of service, including internationally.
<b>Risks Management:</b> Participating bank adheres to basic internal controls, such as to detect, prevent, and correct threats, particularly financial fraud.		
Participating bank adheres to basic internal controls, such as to detect, prevent, and correct threats, particularly financial fraud.	Enhanced controls in place, such as best practices in accounting system access controls, standardized financial documentation, separation of duties, reasonable AML/CFT/KYC controls. Peru improved its processes to avoid losing fund when cash is not withdrawn by the intended beneficiary, or not at all (G2Px, 2020b).	Robust internal controls in place, including frequent risk assessment and pro-active risk monitoring (e.g., early-detection systems). Strong AML/CFT/KYC controls.
<b>Typical Risks to Mitigate:</b> Corruption, fraud. Liquidity. Waste of funds when beneficiary is deceased or doesn't access account. Lack of experience in G2P mobile money management.		
Corruption, fraud. Liquidity. Waste of funds when beneficiary is deceased or doesn't access account. Lack of experience in G2P mobile money management.	Difficulty to control compliance. Clear and quasi-real time reporting on G2P money flows.	Cyber-readiness of banks' technology, processes and personnel.
<b>A Country's Journey:</b> Several of <b>Peru's</b> largest banks – Banco Credito de Peru (BCP), BBVA, Scotiabank, and Interbank – created the ASBANC committee to promote a low-cost banking service for unbanked and underserved population in the country, supported by an interoperable platform and any bank would be eligible to join the scheme. Policymakers enabled non-banks to issue electronic money in 2012, allowing for broader financial services participation. The fully interoperable national mobile money platform, called BIM is now supported by financial institutions, the government, and telecommunication companies to serve the unbanked and underbanked. The product allows any customer to open a paperless account, on any mobile network, and with any one of the 34 member banks participating in the consortium. As of December 2019, it registered 1.3 million transaction per month, and the government is extending its COVID-19 stimulus through the platform to old and new beneficiaries (Rutkowski and others, 2020).		



## E. Cash-out Network

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<p><b>Delivery Channel Mix:</b> Most countries already have many channels of distribution (banks, ATMs, post offices, cash-out agents). At minimum, government-owned channels such as agencies and post offices are staffed to cope with emergency disbursement.</p>	<p>Countries are coordinating or regulating efforts across delivery channels to minimize long lines, and better manage liquidity.</p>	<p>Large share of cashless economic transactions with people needing and/or wanting less and less cash to conduct everyday purchases/payments. Malaysia uses the popular GrabPay mobile wallet to transfer cash to citizens. 70% spent their money to pay GrabPay merchants without cashing-out.</p>
<p><b>Liquidity Management:</b> Financial institutions and government-owned channels maintain adequate cash reserves to meet demand for cash withdrawals.</p>	<p>Coordination across channels, communication to beneficiaries, scheduling of time slots are used to lower the risk of long lines and of liquidity issues (e.g. Peru).</p>	<p>Merchant acceptance of mobile money greatly reduces the need to cash-out, which simplifies the issue of liquidity.</p>
<p><b>Trained Personnel:</b> Countries have tried to adequately train personnel at the main access points to answer G2P program questions and provide basic redress mechanisms in case of disputes. Even in advanced economies, this can be difficult in times of crisis due to massive flows of applications and demands.</p>	<p>All personnel across participating channels should be trained adequately. Internal checks are in place for government personnel who typically do not handle cash.</p>	<p>Well design products (including mobile apps, updated web sites, SMS alerts, etc.) limit the need for people to interact with cash-out personnel. Still, advanced and unscheduled internal controls will limit bad service, fraud or surcharges.</p>
<p><b>Typical Risks to Mitigate:</b> Corruption. Manual mistakes. Subpar services. Liquidity.</p>	<p>Liquidity. Unregulated access to cash-out point.</p>	<p>Low-digital literacy may limit the effectiveness of some technology solutions.</p>
<p><b>A Country's Journey:</b> In <b>Colombia</b>, private bank Banco Davivienda created the Daviplata mobile platform in 2011 in response to a government call to disburse money to lower-income households in a cost-effective manner. An essential component of the success was sufficient cash-out points managed by the parent bank. To complement its 600 branches and 1,600 ATM network, the bank leveraged 5,000 stores access points (2.5 times more access points than its direct channels). Moreover, this growth specifically targeted underserved communities: within 3 years, the banking agents covered over 700 new municipalities in the country that were previously not served by the branches and ATMs, demonstrating that mixed channels of delivery are essential (CGAP, 2015).</p>		

## F. Payment Acceptance Network:

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<p><b>Mobile Money Life Cycle:</b> Some "essential" businesses, such as those providing water and electricity, food (grocery), and medicine (pharmacy) – are registered as merchants and accept mobile money to provide P2B services.</p>	<p>Wider merchant acceptance. Some government services also accept mobile money, paving the way to P2G payment (e.g., taxes, public transportation, schools)</p>	<p>Most micro and small businesses, including informal ones, are registered. These include local market vendors, taxi drivers, bars and restaurants, and (small) convenience stores. Businesses can use the same platforms to transact among themselves (B2B and with the government (B2G)).</p>
<p><b>Fee Structure:</b> For essential services, countries have waived fees for registration and transactions, and lowered charges for 'essential' merchants, for a fixed period.</p>	<p>Countries have waived charges for customers and lowered or waived for small-value transactions (e.g., under \$10) across a wide range of merchants for a fixed period of time.</p>	<p>Fees are applied more strategically to aim for specific, localized goals (e.g., Kenya applied tier fees to encourage MNOs to provide services in underserved regions). Taxation of mobile transactions should aim at avoiding creating arbitrage (GSMA, 2020c)</p>

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Payment Platforms and Interoperability:</b>		
A merchant registered under a certain mobile money scheme can accept payments from a beneficiary from any other mobile money scheme (i.e., one-to-many).	A merchant registered under any mobile money scheme can accept beneficiary payments from any other mobile money scheme (i.e., many -to-many).	A merchant registered under any payment (mobile money or bank) scheme can accept beneficiary payments from any other payment scheme (i.e., many-to-many and across schemes).
<b>Typical Risks to Mitigate:</b>		
...	...	...
<b>A Country's Journey:</b>		
<p>In June 2018, Econet Wireless, <b>Zimbabwe's</b> leading mobile operator, launched a merchant payments business through its mobile money platform, EcoCash. Because of the persistent shortages of physical cash in the country, the country's central bank has strongly promoted moving towards a cash-lite economy. The Ecocash Business Wallet is a separate mobile money wallet for businesses that allows for greater transaction limit amounts compared to an individual wallet (up to roughly two to three times, depending on the size of business) and is covered by insurance. All businesses, both formal and informal, are eligible, and additional services include payroll services and supplier payments. Customers would dial a separate USSD shortcode to access the service, which allows it to work on a 2G handset. EcoNet has also developed a smartphone app, owing to the growing population with smartphone devices. Currently, there is no interoperability with other mobile money schemes (although EcoNet owns most of the mobile money market). In 2018, EcoNet also enabled consumers to pay with card-based schemes through Mastercard's Masterpass QR services, available at roughly 3,800 merchants, either with their smartphone or feature phone. However, integration with bank-based Point-of-Sale terminals have not yet occurred. .</p>		

## G. Business Model Elements

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<b>Program Features:</b>		
Some countries have opted for a minimal one-time, unconditional electronic transfer for easily identifiable beneficiary segment.	In many cases, transfer amounts are fixed and occur with a set frequency and last over a period of and defined period of time.	Transfer amounts vary by beneficiary segment (e.g., employment type, gender, age) using up-to-date data. Duration is tied to measurable impacts, market conditions and crisis context supported by trustable data.
<b>Effective and Frequent Communication:</b>		
Countries have usually the key features relatively well documented through their websites and media: beneficiary eligibility, documents and requirements (including conditions), transfer amount and frequency, and how, where, and how quickly the funds will be transferred.	Additional financial education and marketing collateral developed, including at key cash-out access points. Basic customer support by USSD to check balances and last transactions.	Marketing and customer support are available in local languages of the beneficiaries and local authorities. Extensive customer support to address customer queries and resolve disputes.
<b>Program Management:</b>		
Ensure basic processes, procedures, and reporting, along financial, operations and technology functions, are in place across all stakeholders: government, bank, MNO, and any intermediaries (such as technology vendors or marketing agencies) for effective transfer.	Consider tactics for overall effectiveness of programs and risk reduction (e.g., vetted stakeholders, ensuring sufficient liquidity in specific areas of country). Develop and control deadlines and budgets.	To optimize performance, continuously align overall objectives of stakeholders, frequently share operational data and best practices, recommend adjustments in business model elements, pro-actively identify and mitigate risks to overall program.
<b>Typical Risks to Mitigate:</b>		
...	...	...
<b>A Country's Journey:</b>		
<p>In 2019, <b>Togo</b> began a digital National Identification Program (National ID) for Togolese citizens and non-citizen residents. This includes even those who do not have birth certificates. After obtaining biometrics to ensure that each individual is counted only once, a card is provided as proof of ID and enables people to apply for all government and financial services, among others. Furthermore, the Togolese government is also establishing "e-KYC" to facilitate the ability for public and private sector entities to verify identity digitally, rather than rely on verification of a physical document by personnel. At the core is a central registry that holds the data of all of its 7 million plus citizens and residents. More recently, in response to COVID-19, the government launched a G2P program called Novissi. The core product features include a monthly transfer of 10,500 CFA (about USD 18) for men and 12,250 CFA (about USD21) for women, and close to USD 35 for motorbike taxi drivers. The Togolese government has also provided clear communication in terms of eligibility requirements (e.g., being 18 years of age, both citizens and residents are eligible), ID requirements (e.g., a voter card is</p>		

sufficient) and encouraging beneficiaries to make payments electronically where possible. Registration is by simple USSD code across all networks (\*#855), and, conveniently, is the same toll-free number for general customer inquiries (855), making it easier for beneficiaries to remember.

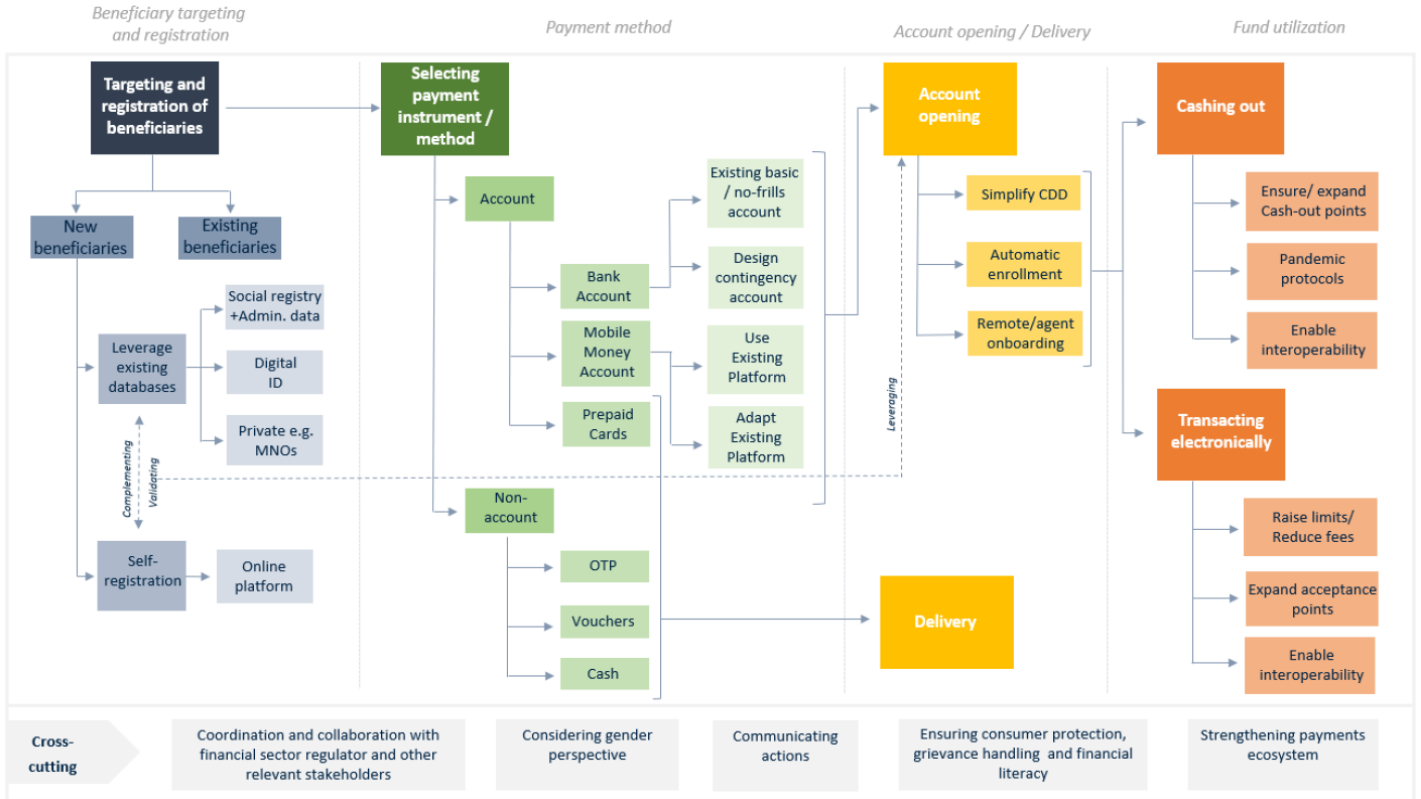
## H. Digital Inclusion Foundations

The three enablers below are out of reach and out of scope for a G2P Program. However, close coordination with stakeholders of these goals is important to (i) further define and prioritize the business model (building block 7) and policy and regulation (building block 8), and (ii) coordinate work with other government agencies to maximize the impact of mobile G2P payments, and (iii) boost the impact of mobile platforms beyond G2P (see section II).

Minimum Required	Good-to-Have (Enhanced Scenario)	Great-to-have (Advanced Model)
<p><b>Digital Access and Affordability:</b> Working with MMOs' data and government agencies in charge of infrastructure and digital inclusion, G2P program managers are able to identify where mobile G2P is and is not implementable in the short term and adapt the program accordingly.</p>	<p>Many countries rapidly mandated internet and energy providers to ensure availability and affordability of services during the pandemic (Panama, Argentina, Chile, Malaysia, Vietnam, Qatar)</p>	<p>All countries suffer from some level of domestic digital divide, due to affordability, internet and electricity coverage or education. The Enhance Digital Access Index (Alper and Miktus, 2019) described in Appendix 3 in one of the tools available to measure and reduce digital divide.</p>
<p><b>Gender Gap</b> Stakeholders should assess the possible negative impact of digital payment for women in EMDEs, given that (i) they represent a large portion of the informal sector, and (ii) digital divide between genders has been widening in the past 7 years (ITU). Also, at a minimum, countries should collect gender-disaggregated information on the G2P program for future improvement.</p>	<p>Programs designed to address gender gaps can have long-term benefits for women's empowerment (WBG, 2020b). The opposite is unfortunately true. In Togo and Pakistan, mobile G2P have explicitly targeted impoverished women.</p>	<p>The D3 framework (Digitize, Direct, Design) from Chamberlin, Kellison, Klugman, Zimmerman (2019) can serve to design mobile G2P for women's economic empowerment.</p>
<p><b>Typical Risks to Mitigate:</b> Digital exclusion of the population hardest to reach physically, economically, and to literacy perspective. Gender gap in financial access.</p>		







**APPENDIX 2: G2Px's KEY CONSIDERATIONS AND OPTIONS IN DESIGNING A G2P SOCIAL ASSISTANCE PAYMENT SOLUTION**

The framework presented in the paper focuses on the "Mobile Money Account" component of the G2Px framework, illustrated below (G2Px, 2020d).



### APPENDIX 3: COMMON TECHNOLOGIES INVOLVED

The framework can help understand the role of specific technologies for each building block. It should be noted that most of these technologies already exist and are being used in almost all countries. Understanding where and when to use this expertise, in order to maximize the impacts and to minimize the risks of G2P mobile payment is key to accelerate the maturity of such a mobile environment.

<p><b>Databases:</b> monitor transactions and beneficiaries (e.g., Digital ID)</p> <p><b>APIs:</b> interoperability with gov services, and transparency of cash transfer</p> <p><b>AI:</b> fraud detection <b>RPA:</b> automate payment</p> <p><b>Chatbots:</b> managing beneficiaries' calls</p> <p><b>SMS:</b> notify beneficiaries</p>	 Gov	<p><b>USSD, SMS:</b> interact with low bandwidth phones</p> <p><b>SIM Kit:</b> SIM-based eWallet</p> <p><b>Big Data, AI:</b> determine users' profile</p> <p><b>AI, APIs:</b> eKYC and AML/CFT functions</p>	 MNO	
<p><b>Feature or smart phone</b></p> <p><b>QR Code, NFC:</b> touchless P2P and P2B</p> <p><b>Biometrics:</b> proof-of-identity</p> <p><b>eWallet app</b> to hold eMoney and for P2P and P2B</p>	 Unbanked	<p><b>Secure Cloud:</b> provide Bank-as-a-Service</p> <p><b>APIs:</b> interoperability with partners, MNOs, other digital financial services</p> <p><b>AI, APIs:</b> eKYC and AML/CFT functions</p>	 Bank	
<p><b>Feature or smart phone</b></p> <p><b>USSD, SMS:</b> interact with clients</p>		 Agents		
<p><b>USSD, SMS:</b> interact with customer</p> <p><b>QR Code, IoT, NFC and RFID:</b> touchless payment</p>		<p><b>eWallet app:</b> B2P</p> <p><b>mPos:</b> mobile device that functions as credit/debit card readers</p>		 Merchants

Source: Authors.

#### APPENDIX 4: VARIABLES USED IN THE ENHANCED DIGITAL ACCESS INDEX (EDAI)

As defined in Alper and Miktus (2019) and further refined in the IMF's REO Chapter 3 (IMF, 2020), the EDAI is composed of variables selected for their representation of digital connectivity across countries.<sup>35</sup>

Definition	Source
<b>Affordability</b>	
Fixed (wired)-broadband monthly subscription refers to the monthly charge for fixed (wired)-broadband internet service (i.e., any dedicated connection to the internet at speeds equal to, or greater than, 256 kbit/s) (% GNI per capita).	ICT
Mobile-cellular prepaid price of a short-message service (SMS) refers to the price of sending a message from a mobile-cellular telephone with a prepaid subscription to a mobile-cellular number of a competing network (% GNI per capita).	ICT
The price per minute of a peak rate call from a mobile cellular prepaid telephone to a mobile cellular subscriber of another (competing) network. Taxes should be included. If not included, it should be specified in a note including the applicable tax rate. (% GNI per capita).	ICT
Mobile-cellular prepaid connection charge is the initial, one-time charge for a new prepaid mobile-cellular subscription (but not refundable deposits); usually corresponds to the price of a subscriber identity module (SIM) card, but may include other fees (% GNI per capita).	ICT
Price of the plan, in local currency, mobile-broadband USB/dongle-based prepaid tariffs with 1GB volume of data (% GNI per capita).	ICT
<b>Infrastructure</b>	
Fixed-telephone subscriptions 100 inhabitants	ICT
Mobile-cellular subscriptions per 100 inhabitants	ICT
Percentage of population covered by mobile-cellular network refers to the percentage of inhabitants within range of a mobile-cellular signal, irrespective of whether or not they are subscribers or users. Calculated by dividing the number of inhabitants within range of a mobile-cellular signal by the total population and multiplying by 100.	ICT
Percentage of the population covered by at least a 3G mobile network refers to the percentage of inhabitants that are within range of at least a 3G mobile-cellular signal, irrespective of whether or not they are subscribers. Calculated by dividing the number of inhabitants covered by at least a 3G mobile-cellular signal by the total population and multiplying by 100.	ICT
Percentage of population covered by at least an LTE/WiMAX mobile network refers to the percentage of inhabitants that live within range of LTE/LTE-Advanced, mobile WiMAX/Wireless MAN or other more advanced mobile-cellular networks, irrespective of whether or not they are subscribers. Calculated by dividing the number of inhabitants covered by the mentioned mobile-cellular technologies by the total population and multiplying by 100.	ICT
<b>Internet Usage</b>	
Active mobile-broadband subscriptions per 100 inhabitants.	ICT
Fixed broadband subscribers divided by population and multiplied by 100.	ICT
Internet users (% population) can include both estimates and survey data corresponding to the proportion of individuals using the internet, based on national households surveys. The number should reflect the country's total population or at least individuals of 5 years and older.	ICT
<b>Knowledge</b>	
Adult literacy is measured as the percentage of people aged 15 years and above who can both read and write a short simple statement on their everyday life.	UNESCO (UIS)
Expected years of schooling is the total number of years of schooling that a child of a certain age can expect to receive, assuming the probability of his or her being in school at any particular age is equal to the current enrolment ratio age.	UNESCO (UIS)
Mean years of schooling provides the average number of years of education completed by a country's adult population (25 years and older), excluding years spent repeating grades.	UNESCO (UIS)
Gross enrolment ratio is measured as the total number of students enrolled at the primary, secondary and tertiary level, regardless of age, as a percentage of the population of school age for that level.	UNESCO (UIS)
<b>Quality</b>	
Fixed (wired)-broadband speed; in Mbit/s refers to the advertised maximum theoretical download speed; and not speeds; guaranteed to users associated with a fixed (wired)-broadband internet monthly subscription.	ICT
International Internet bandwidth per Internet user (bit/s).	ICT
Advertised maximum theoretical download speed; speeds not guaranteed to users associated with a 1GB USB/dongle-based postpaid plan.	ICT

<sup>35</sup> Note (IMF, 2020): Variables were selected based on the following criterion: at least one observation for each variable is available during one of the previous three years leading up to the year for which the index is being calculated. When a given economy has more than one observation for a given variable, the latest data point is selected. The variable "Percentage of the population covered by at least an LTE/WiMAX mobile network" was dropped for 2010 as LTE/WiMAX was still an emerging technology. The indicators are aggregated using the Adjusted Mazziotta-Pareto Index (AMPI) methodology.