THE ATLAS OF
Innovation for Economic Stability

fhi360

Atlas- (n) A book of maps or charts.

Innovation- (n) Anything different than standard practice that has the potential for radical social, environmental, or economic impact.

Economic Stability- (n) The ability to meet basic needs and to prosper, even in the face of economic, political, or social volatility.

Acknowledgements

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Stabilizing Jobs and Gigs focuses on work-linked innovations that help both employees and non-standard workers cope with present and future instability. These include several technology-enabled efforts by global brands to encourage worker welfare and labor standards compliance;

▼ **Where you see an innovation listed in bold text, click to go to its profile**

on work-linked innovations that help both employees and non-standard workers cope with present and future instability. Some of these, including **LaborLink** and **Workplace Options, Golden Dreams**, and the **Strategic Partnership for Supply Chain Transformation** are forging new technology-enabled alliances between global brands, local employers, and employees to improve worker wellbeing and strengthen;

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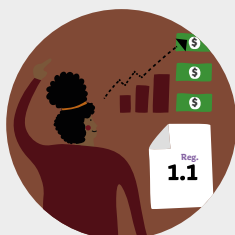
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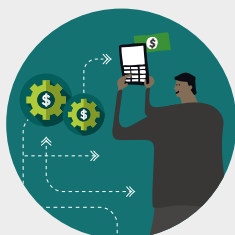
Executive Summary

Building on previous work to define the landscape and key indicators of inclusive economies, in 2017 The Rockefeller Foundation provided support to FHI 360 to engage in a global search to identify policy, program, and technology innovations that promote economic stability for individuals, communities, firms, and countries, with an emphasis on the welfare of poor and vulnerable people worldwide. This Atlas of Innovation for Economic Stability is the output of our global research and crowdsourcing effort.
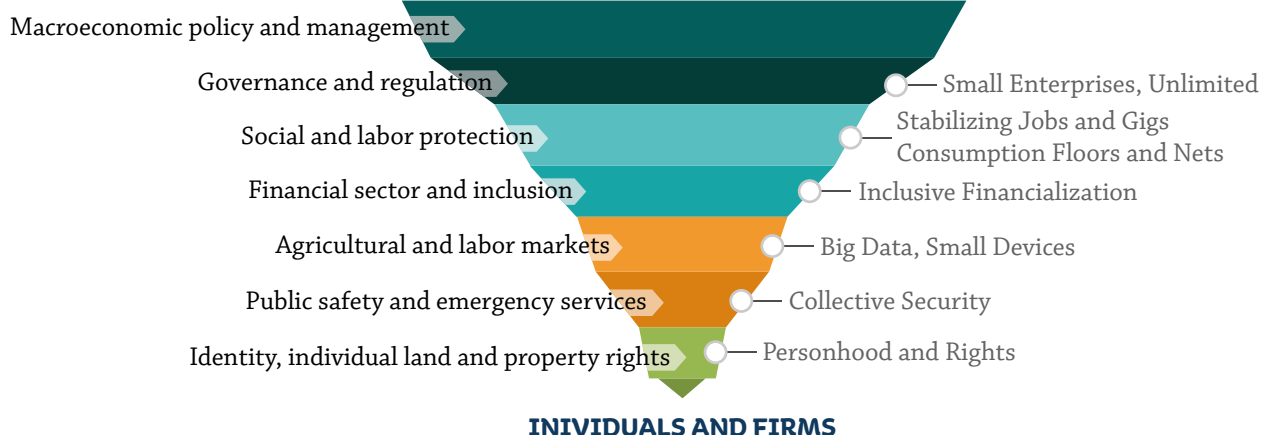
I
Context

A wave of good economic news in 2018 has not fundamentally altered the basic story of a slow and imbalanced economic recovery from the 2008 financial crisis. The aftermath accelerated growth in wealth and income inequality, economic fragility of the middle class across the developed world, and saw little improvement in the livelihoods of most people who live in lower-income countries and work in the informal sector.

In the US and Europe, stagnant or declining real wages and a shift towards non-standard work are now widely recognized as eroding longstanding social bargains, creating a large new class of formerly middle-class workers referred to as the "precariat." Unstable work arrangements introduced over the past 30 years and accelerated by the "gig" and "platform" economies, and predicted large-scale job loss or restructuring resulting from automation and other features of an oncoming "Fourth Industrial Revolution," portend a future of greater volatility in how people work and earn. In high-income OECD countries, this means less certainty about opportunities in the formal job market. For developing countries, it interrupts development trajectories that assumed the growth of mass industrial employment would be a stepping stone to higher incomes.

In this sense, there appears to be a convergence in process in which income earners around the world are likely to face more similar baseline levels of uncertainty and instability. This is the case despite significant progress in reducing poverty in the developing world, rapid growth in many emerging economies, emergence of dynamic technology sectors in India, China, Kenya, Indonesia, and Vietnam, and broad-based global commitment to achieving the Sustainable Development Goals.

II
Framing Economic Stability

For individuals, households, and communities, economic stability is the ability to meet basic needs and to prosper, even in the face of economic, political, or social volatility. Influences on economic stability encompass macroeconomic management, regulatory quality, social safety nets and labor protection, labor and agricultural markets, personal security, and basic rights, including recognition of identity, property, and fair treatment by government. Together these factors comprise a "funnel," depicted in Figure 1, with more macro-factors at the top, meso-factors related to interaction with the market in the middle layers, and more personal micro-influences at the base. Our findings are also presented in order, from top-to-bottom of the funnel.

GOVERNMENT AND SYSTEMS

Macroeconomic policy and management

Governance and regulation — Small Enterprises, Unlimited

Social and labor protection — Stabilizing Jobs and Gigs / Consumption Floors and Nets

Financial sector and inclusion — Inclusive Financialization

Agricultural and labor markets — Big Data, Small Devices

Public safety and emergency services — Collective Security

Identity, individual land and property rights — Personhood and Rights

INIVIDUALS AND FIRMS

When people and firms are supported in all of these dimensions, they have the confidence and predictability required to invest in their own futures, the means of investing at acceptable levels of risk and of capturing the returns on their investments, and economic resilience to shocks and stresses. Access to services and supports across the funnel ultimately helps ensure sufficient stability of income and consumption to allow economic advancement even when confronted with volatility.

Stability-enhancing policies and programs such as retirement and unemployment benefits, labor standards, and crop insurance are traditional hallmarks of more advanced economies. Outside of the European Union, many social protections are linked to employment in the formal sector and tend to develop in middle-income countries as national wealth and formal sector employment rises. In lower- and lower-middle income countries, the vast majority who are own-account and contributing family workers—for example, those engaged in subsistence agriculture or mixed livelihoods—lack access to work-based social and labor protections, and households and communities typically bear the full risk of their economic participation. The current trend towards non-standard work and risk of elimination of formal sector jobs through automation calls into question the viability of existing work-linked social protection mechanisms at several levels of this funnel, and makes the pathway out of extreme instability for lower-income country workers unclear.

Our holistic view of economic stability departs from the common understanding in the global development community, where stability is often treated as a macroeconomic condition or a social outcome of economic prosperity. Many economists value macroeconomic and regulatory predictability but neglect the micro-foundations that allow people to prosper from stability. Stability as a goal may not be exciting enough to attract the attention of donor governments and agencies. And in some contexts, stability is confused with stagnation, framed as an alternative to economic advancement rather than as a critical enabler. Past work supported by the Rockefeller Foundation and our own research suggest that bringing stability out of the "background" and into the center of the global development conversation can improve performance of global efforts to achieve inclusive economic growth.

III
Big Trends Enabling Innovation

In addition to the widespread concerns about volatility in global labor markets and the future of work, we identified two big trends that are expanding the private and public-private provision of services that support of economic stability: the democratization of data access on mobile devices and the trend towards more inclusive financialization. The rapid expansion of **mobile phone technology** in the developing world, including mobile data services on smartphones, and associated technology trends that make advanced data and analytics services available through applications delivered to these smartphones, has opened up a world of innovation across all of the layers of the stability funnel. Extraordinary levels of data power are now being delivered via commercial and non-commercial applications to very poor users in developing countries, and to less poor but financially unstable citizens of the high-income world, in ways that were impossible just a few years ago.

New business models leveraging this technological revolution are also enabled by **financialization**—"the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies."[1] The financial sector has unleashed a great deal of interest, creativity, and capital on the global development agenda, moving beyond microfinance first into mobile payment and lending, often with donor encouragement. *More importantly, the financial sector – often in partnership with global development actors – is actively developing data-driven lending and products to spread financial risk that is traditionally borne entirely by poor individuals, particularly small agricultural producers and firms, but also formal sector workers with unstable incomes worldwide*. The data that formerly "financially invisible" mobile users generate allows banks to more accurately assess risks and more confidently extend new credit and insurance products while preventing over-indebtedness of borrowers.

For the purpose of this work, we define innovation broadly to include "anything different than standard practice that has potential for radical social, environmental, or economic impact."[2]

IV
Innovations for Economic Stability

The Atlas of Innovation for Economic Stability presents 63 examples of how governments, donors, implementing partners, civil society organizations, and entrepreneurs work to deploy these and related technologies and approaches—as well as hybrid models combining old and new approaches—at each level of the stability "funnel." We found strong and diverse innovation "hot spots" in **India**, **Kenya**, and the **U.S.**, with **Indonesia** standing out for the use of data and innovation tools in government, and **Brazil** innovating in public safety-related domains. The majority of innovations we discovered are privately-provided and enabled by mobile technology and data, though we identified several pockets of significant government and donor participation in catalyzing or scaling innovation. Innovations are presented in seven topical chapters with a separate chapter on India.

At the top of the stability funnel, governmental issues dominate. In the area of macroeconomic management—a cornerstone of stability that is not synonymous with innovation—the **Government of Indonesia** is enhancing macroeconomic forecasting with real-time transaction and shipping data to support its inclusive growth agenda.

Innovations that simplify or enable small businesses to cope with their regulatory environments appear in the chapter titled **Small Enterprises, Unlimited**. These include mobile technologies to improve MSME access to legal and regulatory compliance services from **Kenya**, **Uganda**, and **Nigeria**, as well as regulatory reform in **Jordan** to recognize women's home-based businesses, and the use of Human Centered Design to improve business registration processes in **Indonesia**.

Two chapters explore innovations in social and labor protection, which are traditional areas of government leadership. **Consumption Floors and Nets** are targeted, government-driven social protection programs. The Atlas profiles evolving cash transfer systems in **Mexico**, **Ethiopia**, **Indonesia**, the **Dominican Republic**, and **India**. The most innovative of these are incorporating new interfaces with privately-developed digital payment and savings technologies. Experiments with universal basic income in **Finland** and **UNICEF's** global innovation strategy for cash transfers are also explored.

Stabilizing Jobs and Gigs focuses on work-linked innovations that help both employees and non-standard workers cope with present and future instability. These include several technology-enabled efforts by global brands to encourage worker welfare and labor standards compliance; privately-provided worker benefits in **Vietnam** and **China** that extend credit and build worker loyalty; and two novel uses of real-time labor market information to improve skills investment decisions from the **U.S**. Additionally, benefits for domestic and informal sector workers in the **U.S.** and **Peru** are featured. What is notable is the limited role of government in each of these areas—a significant departure from traditional labor protection practices.

In the middle strata of the funnel, we explore new interfaces between livelihoods and the market that enable people and small firms to confidently save and invest in the future, smooth income and consumption, insure against catastrophic risks, and make better production decisions. **Inclusive Financialization** highlights diverse data-driven financial services and platforms that reduce instability, smooth consumption, and build assets for people and firms. These innovations span women's savings in **Tanzania**, data-informed agricultural and livestock insurance in **China**, **India**, **Nepal**, and **Africa-wide**, inclusive digital payment platforms in **Mali**, and agricultural leasing in **Nigeria**, as well as several technologies that provide direct assistance navigating personal finances or smoothing inconsistent income while saving for the future in the **U.S**.

Similarly, innovations featured in **Big Data, Small Devices (Better Livelihoods)** draw on financial technology, but are more focused on advanced uses of data and analytics to improve livelihoods, particularly for subsistence farmers. Integrated, data-powered, and personalized farming or fishing advice, sometimes combined with access to credit, is in operation in **India**, **Indonesia**, **Senegal**, **Uganda**, and **Zimbabwe**, with voice-response services provided to expand access among low-literacy users in **India**. Two **Kenyan** innovations also link farmers to urban markets and assess smallholder creditworthiness.

Closer to the base of the funnel, stability issues become more focused on micro-foundations: access to personal security and rights. **Collective Security** highlights entrepreneurial, citizen- and government-led innovations that address acute gaps in public safety. Peer-to-peer or social models from **Brazil** and **Kenya** are highlighted,

along with technology-enabled improvements in emergency response from **El Salvador** and **Indonesia**. Two innovations specifically focused on women's safety in urban environments, one in the **U.S.** and a rapidly-spreading data-driven model from **India**.

The final topical chapter on **Personhood and Rights** presents innovations that help marginalized groups—women in particular—to assert rights to identity, property, and fair treatment—both through improved policy channels and in private technology-enabled efforts. The Atlas profiles efforts to strengthen women's rights to land, property, livelihoods, and health care enabled by social media and technology in **Burundi**, **India**, **Pakistan**, and throughout **South Asia**; expanding access to formal justice for poor and vulnerable people in **Haiti** and **Bangladesh**; mobile technologies that help citizens hold government to account in providing rights and basic services in **Brazil** and **Cambodia**; and new and novel uses of blockchain-based digital identities for refugees and vulnerable migrants in **Jordan** and throughout **Southeast Asia**.

We reserve a special chapter for **India**, which has emerged in the last decade as the *world's most dynamic lab for stability-enhancing innovations*. The India Stack is a "public good" open data exchange system that combines biometric digital identities, verified payments, and secure storage and signature of digital documents, upon which new entrepreneurial innovation for stability can flourish. Enhanced financial literacy, micro-lending to underserved businesswomen, and advanced services to farmers, in addition to the innovations profiled elsewhere in the Atlas, complement these efforts to build a new digital infrastructure for economic inclusion. If India's public-private experiment is successful bringing hundreds of millions of rural poor into the economic mainstream, the approach will represent an entirely new political economy of economic inclusion.

Throughout the Atlas, we also profile nine diverse individuals and groups of innovators in-depth. They include technology entrepreneurs, local and international NGOs, civil society networks, government initiatives, and multi-stakeholder partnerships from **India** (2), **Indonesia**, **Kenya** (2), **Pakistan**, **Peru**, and the **U.S.**, as well as one global institution (UNICEF). Each shares a commitment to improving stability for individuals and communities. This diversity of innovation origins serves to dispel the notion that innovation and resulting entrepreneurship are driven primarily by "lone wolves:" almost none of these innovators worked alone. The reality is that innovations relevant to this topic often have a "driver"— a committed innovator or small group who drive their vision into reality—but also rely on a spectrum of social and inter-organizational collaboration.

V ┄┄┄┄┄┄ Conclusions and Recommendations

The purpose of the Atlas is to present novel and compelling innovations related to economic stability. Nonetheless, five broader conclusions and recommendations for global development emerged from analysis of and reflection on our findings.

First, economic stability is central to the global development agenda and should be identified and promoted as a cross-cutting enabler.

Economic stability is closely related to many well-established inclusive development objectives, including at least six of the Sustainable Development Goals (SDGs) and more than twenty targets. However, because the concept of stability straddles several disciplines it does not have a coherent or unified constituency, and is often absent from the global development dialogue. Stakeholders in global development can strengthen disciplinary conversations by recognizing economic stability as a natural, cross-cutting

enabler of their development goals. Donors can incorporate stability-related objectives and indicators into programs designed to achieve their own objectives and the SDGs. Government, multilateral, and donor economists can more deliberately prioritize the dimensions of stability that impact household- and firm-level decision-making, while also exploring how to harness new data about private financial and non-financial services uptake to complement assessments of economic performance. Impact investors supporting business models that improve livelihoods can and should also purse income stability alongside income growth as an investment objective and impact measurement.

Second, dynamic approaches to economic stability are needed to keep up with the pace of technology-induced change in the economy.

To cope with accelerated technological change and resulting volatility, new approaches to stability should work to prepare people for a rapidly changing future by creating *adaptive capacity to thrive in rapidly changing conditions as well as greater capacity to anticipate and prepare for change*. Most of the innovations featured here support adaptive capacity, but a Dynamic Resilience approach will also harness artificial intelligence, machine learning, predictive analytics, and other emerging technologies to enhance anticipatory capacity, providing better information about likely futures and products and services that reduce risk.

Third, learn from India as its new public-private political economy of stability innovation emerges.

The India Stack provides an exciting new model for supporting economic stability. Built to facilitate open data interchange and explicitly encouraging entrepreneurial participation, India's emerging digital ecosystem invites a deliberate re-thinking of the appropriate balance between public and private provision and the infrastructure and agreements required to make such a model succeed. Many new and potentially transferrable lessons will emerge from India's experience in promoting competition among entrepreneurs, avoiding the creation of new private monopolies, maintaining open protocols for data access, and establishing clear regulatory frameworks for protection of citizens, their data, and the public interest.

Fourth, global development actors can incorporate stability-enhancing innovation directly into their programming and support new pro-innovation arrangements in partner countries.

Donors and global development actors should also consider how their programs—and the local systems they wish to strengthen—can more directly incorporate the services provided by innovative local and global entrepreneurs. They can also help facilitate the co-creation process by which national governments and local stakeholders find a locally-appropriate balance of public and private initiatives that acknowledges the effectiveness of public-private solutions to key stability challenges. When supporting development of legislation, policy, or programs in relevant areas, they can advocate for effective divisions of labor between public and private efforts, and for attention to local innovation.

Finally, development partners should "layer" innovations into their interventions and adopt a Modular Mindset.

Donors and local and international development partners should also explore how "layering" multiple innovations into their programs can more powerfully support development objectives. A locally-appropriate combination of traditional interventions

and support for uptake or integration of multiple appropriate innovations at different levels of the "funnel"—aligned with local capacities and challenges—is likely to be most effective. Building programs around technologies that implementers do not own or control will require new entrepreneurialism and flexibility in programming and funding approaches and a modular mindset that critically assesses how new and evolving innovations connect with emerging data sources and financial infrastructure.

All of these recommendations rest on the capacity, particularly among poor and vulnerable people, to effectively select and use new innovations which, in-turn, depends on basic and financial literacy, digital access, and critical judgement about the use of services.[3] Ensuring that base-of-pyramid users worldwide can access and use new innovations is likely to remain a central focus of global development practice in the coming decades.

[1] Epstein, Gerald A. Financialization and the World Economy, 2006. Edward Elgar. p. 3.

[2] Jonathan Wong, UN ESCAP, personal communication, 2018.

[3] Lele, Uma, and Sambuddha Goswami, The Fourth Industrial Revolution, Agricultural and Rural Innovation, and Implications for Public Policy and Investments: A Case of India. Agricultural Economics, Volume 48, Issue S1, November 2017 (b), Pages: 87—100.

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Forewords

Foreword from
The Rockefeller Foundation

Does stability matter? This is a reasonable question in response to growing evidence that the lives of poor and vulnerable communities across the world are increasingly characterized by unpredictability and insecurity. There does appear to be an emerging consensus that instability has become an underlying driver of chronic poverty and under-development. Increased volatility in the global economy, climate change, rapid technological changes, and shifting labor and employment trends have left many workers and small businesses in the 21st century without the traditional protections and security they might once have expected. Workers in many OECD economies are now more susceptible to abrupt changes in employment status, health insurance and other benefits traditionally linked to jobs of the past. In the developing world, smallholder farmers struggle to adapt to shifting weather patterns that render traditional farming practices redundant. And around the world, employment is becoming fragmented into contract, temporary and shift work where people struggle to control and predict their weekly earnings.

For some the concept of stability suggests a lack of dynamism, slow change, and even entrenched practices that hold people back. One can certainly paint a picture of 'bad stability'; the deep-rooted grasp of feudalism in rural South Asia, or the ability of brutal authoritarian regimes to endure while impoverishing their citizens. Clearly these are not the "stable" systems we seek. In the context of a rapidly changing world, it is time to focus on the upside of stability.

Stability is about a farmer having the information and confidence to invest in a new crop variety to improve his yields, or a factory worker knowing her shift schedule for the next month so she can estimate her earnings and manage her payments without ruining her credit score, or accumulating expensive debt. It's about having a transparent environment that fosters innovation and risk-taking by young entrepreneurs. When these conditions are absent, as they increasingly are for many vulnerable people across the world, we see the slow and inevitable erosion of opportunity and upward mobility.

When we began to study this, we noticed an abundance of policy, finance and technical innovations in play that enable people to cope with volatile and erratic conditions, asymmetrical information, and a lack of protection. But we also found that these are not being advanced in a coherent and coordinated manner. As we seek to transform systems that lock people in cycles of hardship, we must rally greater attention to the importance of stability as a development goal.

The Atlas of Innovation for Economic Stability is a pioneering effort to curate the most exciting innovations already being implemented across the world, and to give them greater visibility in order to promote discourse and action by governments, donors, non-profits, and impact investors. It is truly exciting to see what has emerged. Both the individual examples as well as the analysis on overall trends and sectors provides a rich base of insight about how, and why, we should put the goal of stability more at the heart of our efforts.

Ashvin Dayal
Associate Vice President & Managing Director, Smart Power

Alyson Wise
Associate Director, Jobs

Foreword from
FHI 360

Advances in technology are changing and disrupting our world. Our challenge is to use the powerful new tools that are transforming our daily lives in ways that expand what is possible in global development. That is why I am delighted by the collaboration between FHI 360 and The Rockefeller Foundation to create this Atlas of Innovation for Economic Stability. It is not only a groundbreaking example of tech for good, it also shows how organizations can work together to support the innovators committed to improving the lives of people around the world.

As a global development organization committed to addressing complex human development challenges, FHI 360 is continuously looking at how we can deliver greater impact. The Atlas features innovations that reflect our organization's strategic priorities and commitments to: using evidence-based and research-driven approaches; supporting new businesses for social impact; employing digital solutions to improve decision-making, enhance efficiencies, and address development challenges at scale; expanding opportunities for meaningful economic participation; and increasing equity in the United States and around the world.

If we are to achieve the Sustainable Development Goals, we will need new approaches, new types of partnerships,

and a new mindset that encourages new actors to come to the table. The Atlas invites readers to think about stability in a holistic way that straddles global development disciplines and looks at the diverse range of factors influencing economic stability, from macroeconomic management to financial inclusion to physical security. It is a unique attempt to visualize all of these factors as an integrated whole. This allows us to see how entrepreneurs and civil society leaders, governments, and development organizations are bringing new products and services to life in order to reach shared development goals.

I have heard the idea of "innovation for stability" derided as an oxymoron. However, this Atlas and the research behind it shows us that stability is not the same as stagnation; rather, it is the solid foundation on which progress is built. My hope is that this Atlas and the thousands of other collaborative efforts to use tech for good will offer new ways of seeing our changing world, and in so doing, create new opportunities for a more inclusive, prosperous, and stable future.

Patrick Fine
CEO, FHI 360

3

Introduction to Innovation for Stability
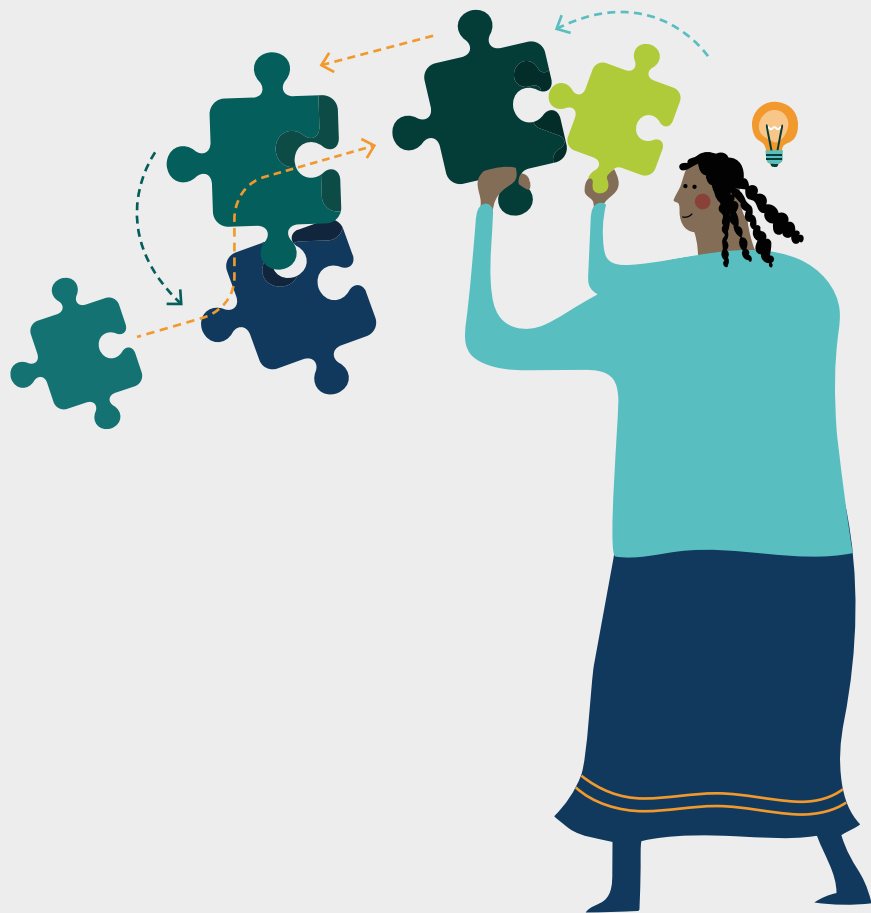
Building on previous work to define the landscape and key indicators of inclusive economies, in 2017 The Rockefeller Foundation provided support to FHI 360 to engage in a global search to landscape innovations that promote economic stability for individuals, communities, firms, and countries, with an emphasis on the welfare of poor and vulnerable people worldwide. This Atlas of Innovation for Economic Stability is the output of a global research and crowdsourcing effort.

3

Introduction to Innovation for Stability

"Economic stability is the ability to meet basic needs and to prosper even in the face of economic, political, or social volatility."

Why are we interested in stability?

At a time when the IMF is projecting bright economic prospects[1] for the global economy and the World Bank is projecting that emerging markets will drive the global economy closer to its full growth potential in 2018[2], it may be easy to forget the continued need for more inclusive economies that deliver economic stability to poor and vulnerable people around the world, both in developing and developed countries. The current wave of economic good news has not fundamentally altered the basic story of a slow and imbalanced economic recovery from the 2008 financial crisis, the aftermath of which accelerated growth in wealth and income inequality, economic fragility of the middle class across the developed world, leaving unchanged the basic precariousness of livelihoods for most people who live in lower- and middle-income countries.

The Financial Diaries, published in 2017, found that many working Americans hold multiple jobs and save diligently, but experience wide month-to-month income swings resulting from inconsistent work schedules, remaining in a state of persistent anxiety. CNN Money summarized that "Americans are desperate for more stability."[3] A 2015 Federal Reserve Survey similarly found that 46% of Americans reported that they did not have enough money to cover a $400 emergency expense.[4] Across OECD countries, incomes of the bottom 10% of the workforce have still not recovered from the 2008 financial crisis, and approximately 8% of workers experience "in-work poverty," with some countries such as Spain and Greece experiencing rates around 14%.[5] Real wages in the UK also fell each year between 2008 and 2014.[6] A 2015 Pew poll also found that 92% of Americans would prefer to have financial stability rather than move up the income ladder.[7] Guy Standing and others refer to the Precariat, "a new socioeconomic class comprising not just those who cannot find a job, but also those who are informally, casually, or otherwise insecurely employed."[8] This represents a fundamental change in orientation from an aspirational economy to one that prioritizes survival, and one particularly challenging to political and social stability in the high-income world.

In this erosion of economic stability, formerly secure workers in high-income countries find themselves experiencing some of the precariousness that many citizens of the developing world experience as a baseline condition in their economic lives. Most individuals in the world do not enjoy the stable employment structures characteristic of the OECD, and a substantial proportion subsist as non-standard or own-account workers in mixed-livelihood activities, rather than in formal, stable employment

Note: references appear in Appendix 3

arrangements. A recent paper by USAID Chief Economist Louise Fox and Upaasna Kaul using data from ILO illustrates that the proportion of wage and salaried (formal sector) workers varies greatly with country income level. In high-income economies, 86% workers are wage and salaried, while in upper-middle income economies this drops to 67%. It is 34% in lower-middle income and 19% in lower income economies.[9] As a result, many are excluded from public social and labor protection systems linked to formal employment to the extent that they are in-place. These situations require own-account and non-standard workers to adopt complex financial coping and risk management strategies to ensure both consumption and business investment.[10] Thus, the challenges to economic security in the U.S. and across OECD countries brings the situation of poor and vulnerable people around the world into alignment.

Yet, paradoxically, throughout much of the developing world, it is a time of great optimism. Between 1999 and 2013, the number of poor people in the developing world fell by half, from 1.7 billion to 766 million.[11] Lower and lower-middle income Ethiopia, Nepal, India, Tanzania, Djibouti, Laos, Cambodia, Myanmar, and Philippines grew by 6.9% or more in 2017. The technology sectors of Kenya, Indonesia, China, and Vietnam advanced significantly in recent years, while both India and China have produced groundbreaking innovation. Broad-based commitment to achieving the Sustainable Development Goals among government, corporate, financial, and entrepreneurial sectors promises more progress in an ambitious integrated development model, despite many big questions about what the world economy will look like in 2030. Nonetheless, as lower-income economies grow and develop, they are experiencing very different performance in achieving inclusive development, as measured by World Economic Forum's Inclusive Development Index[12], and income inequality remains a persistent and growing challenge.

We see three big trends working together to create conditions for economic stability that are relevant to both developed and developing country contexts, and to some extent explaining this paradox. Each of these trends is widely reported, but this reporting is not always explicitly linked to economic stability and may fail to consider the prospects of other convergences on the horizon. They include both a pending crisis and two inexorable trends.

Three Big Trends Shaping Economic Stability

1. The pending crisis of the global future of work

Economic stability has been on the agenda of high-income country policymakers because changes in the labor market wrought by the "third industrial revolution" of information and communications technology and the internet are now impossible to ignore. Since the 1980s, technology-enabled globalization, offshoring of jobs as a prominent feature of industrial organization, increased automation, and flexible and contingent employment arrangements have been on the rise. The recent ascendance of the "platform economy" and resulted blurring of the boundaries between employees and firms is only the latest internet-enabled development in a progression towards non-standard employment structures (also known as casualization) in high- and upper-middle-income economies.[13] These now account for up to a third of the current US labor market and more than half of current job creation[14], and more than half of employment growth in the European Union between 1995 and 2008.[15]

Now a "Fourth Industrial Revolution (FIR)"—centered on industrial and services automation, and artificial intelligence— threatens to radically dislocate global production arrangements, economic development trajectories, employment patterns, and, ultimately, livelihoods across a wider swath of the world's economy. FIR brings high risks of eliminating the jobs of middle-skill and middle-income workers worldwide. According to a seminal 2016 review, 57% of jobs in OECD countries, 47% in U.S., are at risk of automation. The at-risk numbers are higher for developing countries like Ethiopia (85%), Uzbekistan (55%), China (77%) and India (69%)[16], suggesting that these changes will impact economies that aim for industrialization as a pathway to productive transformation. Calls for a new, global social contract from across the policy and development communities to address these oncoming changes are hampered by the lack of certainty about what this future will look like in practice.

2. Democratization of data access on mobile devices: an enabling opportunity

The ubiquity of hand-held digital technology is transforming the ways in which people—and poor and vulnerable people worldwide in particular—obtain services, access information, and connect with others. The number of unique mobile subscribers surpassed five billion in 2017. Today, nearly everyone in the developed world and 62% of the population in low and middle-income countries (LMICs) use mobile devices. By 2020, nearly three billion people worldwide will own smartphones, and the forecast in Africa for 2018 is double that of 2014.[17] GSMA reported that 3.6 billion of the 4.8 billion global mobile subscribers live in LMICs[18], while more than 300 mobile payment services are now operational. There is no doubt that many barriers to accessing the digital economy remain for people living in rural and remote areas with limited coverage, and for the approximately 10% lacking basic service and 30% lacking broadband internet[19], particularly the poorest of the poor. However, there is also a broad consensus that the expansion of mobile telephones and connected internet devices are radically changing the way "people handle money, work, learn and participate in government."[20] As early as 2012, Deloitte and GSMA found that a 10% increase in mobile penetration yielded 4% increase in long-term economic output (total factor productivity or TFP).[21]

As capacity has expanded for use of more powerful mobile devices in lower-income contexts, the deliberate deployment of mobiles for development (M4D) has also advanced in tandem with this growing user base. This coincides with a revolution in the incorporation of big data and analytics into business processes and a global boom in data-driven entrepreneurship, facilitated by the expansion of Software as a Service (SaaS). This lowers the cost of accessing both data and sophisticated analytics to a point at which it can be easily built into commercial and non-commercial applications aimed at even very poor users in developing countries, and to less poor but financially unstable citizens of the high-income world.

These new capabilities have brought about a period of technology-driven innovation in both the public and private sectors. Beyond the expansion of digital payments, key innovations have yielded important gains in stability among, for example, subsistence and small-scale farmers in low income contexts. Those that can access these technologies now have at their disposal extraordinary levels of data power and data-enabled financial products that were impossible only a few years ago. And, in contexts where stable employment is not the norm, access to platform-based work enabled by mobile phones reduces the costs of looking for work—raising and in many cases stabilizing income.

3. Financialization's inclusive reach

New business models leveraging this technological revolution are also enabled by a third factor. Finance is intended to direct capital to its most productive uses and spread the effects of risk among large numbers of people.[22] Relatedly, financialization refers to "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies," and to the period of recent history—since 1980 or so—in which financial innovation has become a source of growth, productivity, and consumption, including in how capital is intermediated or channeled from savers to borrowers.[23] Securitization of mortgages, and bonds to support microfinance institutions, and venture capital investment, among a huge array of other products and services, are manifestations of this trend. In this process, financial markets and technologies have grown to play a larger role than traditional banks in channeling capital to users.[24]

The 2008 global financial crisis tarnished the already mixed reputation of financialization, with mainstream development stakeholders joining many longtime critics. The critique is summarized as follows: "While those who have extra assets to invest enjoy increasing returns, those who cannot join such markets suffer more, enlarging the wealth gap of the entire society."[25] The role of a predatory and weakly-regulated global financial sector is retrospectively blamed for stability-destroying trends including global, regional, and national financial crises, job-destroying private equity investment strategies, high and increasing levels of household debt, commodity price volatility, the primacy of shareholder value over the interests of workers, social stakeholders, and the environment, and expansion of wealth inequality and a "winner-take-all" economy.

Despite many valid criticisms, financialization has also unleashed a great deal of interest, creativity, and capital on achieving the global development agenda. The microfinance industry's development and maturation was an important step in financializing global development, having normalized lending to the very poor as an element of aid and growth strategies, later creating pathways for larger-scale capital market investment in the sector. In the current period, we see both financial innovation for the poor, moving beyond microfinance first into mobile payment and lending and new savings vehicles, often with donor encouragement, and the deployment of significant private capital (broadly *impact investing*) to ventures that create shared value for companies and "base of pyramid" consumers. Impact investing in developing economies has grown into a $114 billion market as of 2017[26], while private equity and venture investing from the middle-income world are also proliferating, supporting new generations of developing country entrepreneurs.

*Most importantly, the global financial sector is now actively developing data-driven analytic, lending and insurance products—often in partnership with global development actors—to spread financial risk that is traditionally borne entirely by poor individuals—*particularly small agricultural producers and firms, but also formal sector workers with unstable incomes—worldwide. More inclusive forms of financialization are emerging in tandem with the access to customers provided by expansion of mobile technology. In a virtuous circle, the data that these formerly "financially invisible" users generate through their digital activities also allows banks to more accurately assess risks and more confidently extend new credit and insurance products, while avoiding over-indebtedness of borrowers.

The impacts of these oncoming and in-process global trends span development disciplines and set the stage for our exploration of economic stability.

II

Process and Opportunity for Action

The starting point for our innovation search is a definition developed for The Rockefeller Foundation by Benner and Pastor which begins with the proposition that a stable economy is one in which "individuals, communities, businesses and governments have a sufficient degree of confidence in the future and an increased ability to predict the outcome of their economic decisions. Individuals, households, communities and enterprises are secure enough to invest in their future.[27] Economic systems are increasingly resilient to shocks and stresses, especially to disruptions with a disproportionate impact on poor or vulnerable communities." They operationalize this definition within three broad areas.

1. Public and private confidence in the future and ability to predict the outcome of economic decisions, good macroeconomic management, and quality of business regulations, particularly those that encourage private sector development;

2. Members of society are able to invest in their future through appropriate financial and insurance products and to live in an environment with adequate property rights, rules-based governance and domestic security, such that those investments can come to fruition;

3. Economic resilience to shocks and stresses through social and labor protection systems, a diverse economy, and public and emergency services that respond effectively to people in need.

This formulation of stability deliberately defines disciplinary boundaries of global development practice, seeking a holistic view of this key dimension of an inclusive economy. The Rockefeller Foundation also encouraged FHI 360 to expand our search beyond the limits of this definition to "look everywhere" for innovations that impact economic stability. The difference between this approach and the standard treatment of "stability" in global development appears in the box below.

FHI 360 expanded the search frame beyond the original definition in two ways reflecting our intention to focus on the interface between new innovations and the lived experience of stability. First, we sought to include innovations that directly promote stability outcomes, particularly those that directly contribute to stability of income, consumption and assets. Second, we sought innovations that address the deeper foundations of stability, with an emphasis on basic personhood and rights (identity). This is because meaningful participation in economic systems continues

Stability and Development Practice

The concept of economic stability as we approach it does not align well with the many disciplines that comprise the global development landscape. Typically "stability" arises in global development conversations either in the context of macroeconomic stability, or with reference to "political and social stability." Even in comprehensive assessments of social protection programs, such as a recent Overseas Development Institute review for DFAT, stability was framed as an upstream (macroeconomic stability and growth) or downstream (social stability) goal, rather than as a household- or community-level objective.[28] It is usually treated as an outcome of other economic growth processes—freedom from macroeconomic crises and destabilizing political events—rather than as a critical factor in the lived experience of people and firms, and one that exerts significant influence on their economic decisions. And in some contexts, stability is confused with stagnation, framed as an alternative to economic advancement rather than a critical enabler.

Domains of Economic Stability

Stability of income, consumption, and assets

Confidence in the future   **Ability to invest**   **Economic resilience**

Legal identity and secure property

to rest upon legal or other forms of formal recognition of individuals' identity and rights, particularly for women and other marginalized groups, and that these are often disregarded even in places with strong contract enforcement and rules-based governance. The resulting model for stability that guided our search is captured in figure 1.
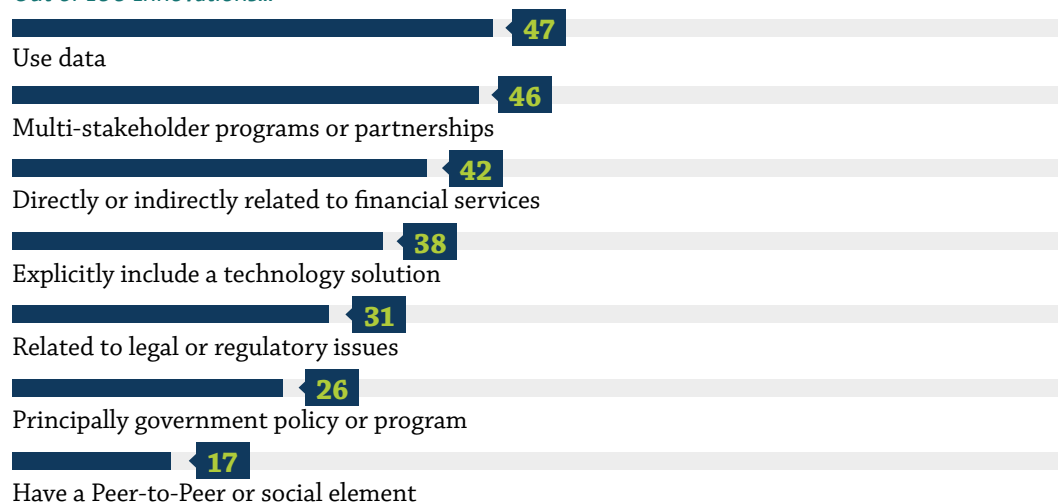
Research Process

An intensive research process followed in which FHI 360, with input from development stakeholders, researched current innovation in livelihoods and resilience, financial inclusion, business environment reform, data and digital development, agriculture, social protection, identities and rights, and refugee issues. In parallel, we conducted a broad call for submissions from the global development community on a dedicated crowdsourcing platform hosted at Crowd360. We also interviewed approximately 40 influential men and women in global development to understand how stability is viewed and whether the concept has resonance across high- middle- and low-income contexts.

General Findings on Innovations

Out of 100 Innovations...

47	Use data
46	Multi-stakeholder programs or partnerships
42	Directly or indirectly related to financial services
38	Explicitly include a technology solution
31	Related to legal or regulatory issues
26	Principally government policy or program
17	Have a Peer-to-Peer or social element

WHAT EXACTLY
do we mean by "innovation?"

Innovation seems to be everywhere in global development, rising from obscurity to widespread practice in the space of a decade. Several donors have launched initiatives and funds to support and promote innovation—including USAID's Global Development Lab and Development Innovation Ventures, the Global Innovation Fund (multi-donor), and Australian DFAT's Innovation X-Change and new Emerging Markets Impact Investment Fund. Donors and other global development stakeholders (e.g. MIT, Mastercard Foundation) increasingly use "innovation challenges" to catalyze new approaches to specific development issues, sponsoring hackathons and startup weekends and evolving private sector innovation methodologies like "lean" and human centered-design into programming. Innovative implementing partners including Mercy Corps, PACT, Oxfam, and FHI 360 have incorporated support for entrepreneur-led innovation initiatives directly into their project structures, or created early stage investment funds to support them.

But what exactly do we mean by innovation?
For the purpose of this work, we adopt a broad definition of innovation as "Anything different than standard practice that has potential for radical social, environmental, or economic impact."[29] This broad definition is consistent with our multi-sectoral research mission, and also with the ultimate goal of mainstreaming high-impact practices into global development programs.

Profit Model	Network	Structure	Process	Product Performance	Product System	Services	Channel	Brand	Customer Engagement
	CONFIGURATION				OFFERING		EXPERIENCE		

Source: https://www.doblin.com/ten-types

It also accommodates more nuanced innovation typologies such as the Doblin 10 Types model, to provide a language for understanding innovations and assessing their significance.[30] In the Doblin model, there are three broad types of innovation, each with several sub-types. Configuration refers to the workings of an enterprise and its business system, and includes common "process" innovations; Offering refers to the performance of the core product or service or multiple ones that compose "robust and scalable systems…fostered through interoperability, modularity, integration, and other ways of [connecting] distinct and disparate offerings." Experience refers to the customer-facing elements of the enterprise or business system, and includes sub-types related to services, distribution channels, and customer engagement. Innovations presented in this Atlas fall into at least one of these categories, many straddle categories, and a few transformative efforts create entirely new interconnected product systems, and related brands and channels, as in the India Stack.

The result of this process was a compendium of over 100 innovation profiles obtained between July and October of 2017, 84 of which had comparable data available for analysis. From these we curated the 73 most compelling innovations to present in this Atlas, with broad geographic and sectoral representation. The Atlas presents 51 brief and 12 in-depth profiles of key innovations, as well as profiles of 9 innovators intended to shed light on the process by which these innovations came about.

Innovations are presented in seven topical chapters while the level of public-private innovation in India merited its own chapter. These are:

Consumption Floors and Nets

Small Enterprises, Unlimited

Stabilizing Jobs and Gigs

Big Data, Small Devices (Better Livelihoods)

Inclusive Financialization

Personhood and Rights

India— Innovation Lab
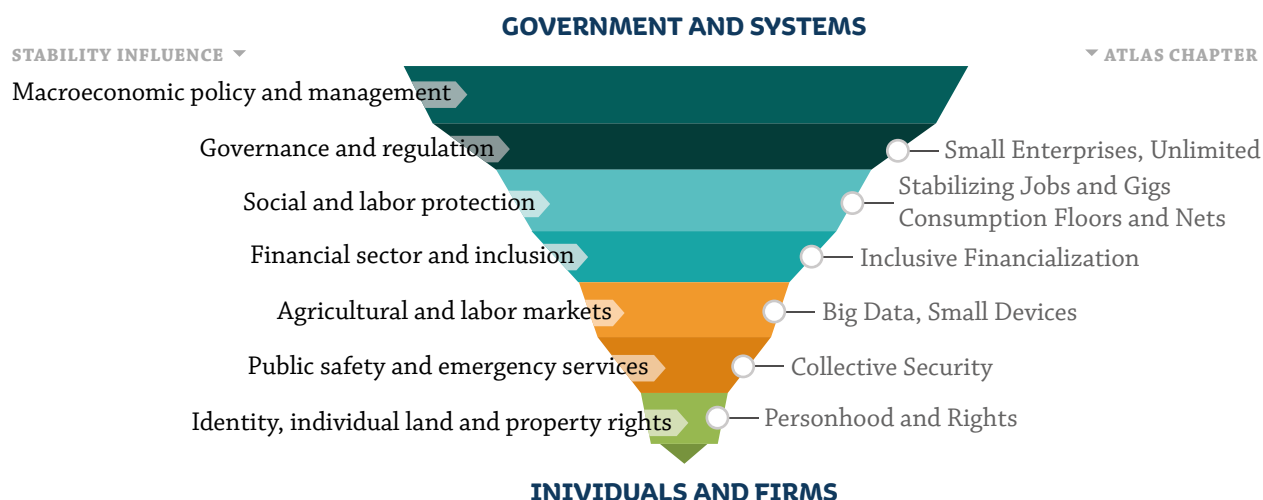
Collective Security

A New Top-to-Bottom Stability Model
In the process of analyzing our findings, the research led us to a more compelling way to present the key influences on economic stability—one that aligns better with the disciplines of global development and encourages structured, holistic thinking. Together, the seven topical areas map to a "funnel" that depicts influences on economic stability at seven nested levels. These encompass macro-, meso- and micro-level stability issues and provide context for the innovations that address each level.[31] Starting from the top of the funnel, higher levels address the broadest transnational (e.g. macroeconomic management) and national (e.g. regulatory, social protection) systems

and policies. Middle layers of the funnel deal with interactions between individuals or firms and markets, including labor, financial, and agricultural markets. At the bottom of the funnel, securing personal resilience through physical security and individual and group rights predominate.

Figure 3: --

Stability "Funnel"

GOVERNMENT AND SYSTEMS

STABILITY INFLUENCE ▼   ▼ ATLAS CHAPTER

Macroeconomic policy and management

Governance and regulation — Small Enterprises, Unlimited

Social and labor protection — Stabilizing Jobs and Gigs / Consumption Floors and Nets

Financial sector and inclusion — Inclusive Financialization

Agricultural and labor markets — Big Data, Small Devices

Public safety and emergency services — Collective Security

Identity, individual land and property rights — Personhood and Rights

INIVIDUALS AND FIRMS

In accordance with our stability model, when people and firms are supported in all of these dimensions, they have the confidence and predictability required to invest in their own futures, the means of investing at acceptable levels of risk and of capturing the returns on their investments, and economic resilience to shocks and stresses. Access to services and supports across the funnel can ultimately help ensure sufficient stability of income and consumption to allow economic advancement even when confronted with volatility. Conversely, deficiencies at any level of the funnel can prevent the benefits of stability at higher levels from reaching individuals, households, and firms. For example, lack of a verified identity often prevents people from accessing social protection programs; lack of access to financial products and services diminishes the benefit of macroeconomic stability for poor and vulnerable people. The remainder of this section provides a review of the major innovations presented in each corresponding chapter.

Innovations by Chapter

At the top of the funnel, governmental issues dominate. The highest level—macroeconomic management—is the domain of ministries of finance, central banks, and multilateral economists. Macroeconomic stability is widely recognized as a cornerstone of all stability efforts. It is not as amenable to entrepreneurial or bottom-up innovation as other dimensions, though the Atlas features cutting-edge work by the **Government of Indonesia** incorporating big data into macroeconomic forecasting.

Governance and regulation disproportionally impact the operators of micro and small businesses who are often poor and/or vulnerable and may lack the skills, time, and resources to navigate these complex systems. Innovations that simplify or enable small businesses to cope with their regulatory environments appear in **Small Enterprises,**

Unlimited (Chapter 4). The Atlas highlights promising regulatory reform efforts around commercial courts in Liberia, use of human-centered design to ease business registration in **Indonesia**, and FHI 360's efforts to lift restrictions on women's home-based businesses in **Jordan**. Entrepreneurs are also providing the services to micro and small businesses, helping them navigate legal and regulatory compliance. **Sauti**, a mobile-based platform from **Kenya**, empowers micro, small, and medium enterprises (MSMEs) to engage in cross-border trade and report corruption, and **Uganda's mSME Garage** provides business guidance and legal services through mobile phones to support business growth. In Nigeria, **Orodata** helps micro-business owners know their rights and regulations, while **DIYLaw** provides a portal for simplified business registration and access to lawyers.

Two sections explore new forms of social and labor protection, which are traditional areas of government leadership. **Stabilizing Jobs and Gigs (Chapter 5)** focuses on work-linked innovations that help both employees and non-standard workers cope with present and future instability. Some of these, including **LaborLink** and **Workplace Options, Golden Dreams**, and the **Strategic Partnership for Supply Chain Transformation** are forging new technology-enabled alliances between global brands, local employers, and employees to improve worker wellbeing and strengthen worker protections. **MicroBenefits** and **MobiVi** focus on privately-provided benefits to workers in Asia, while **Burning Glass** and **Viridis Learning** enable governments and workers in the U.S. alike to make data-driven decisions about their investments in skill development and learning. **Alia** provides a client-funded benefits system for domestic workers who are often self-employed, while the **Pension Match** system in Peru is piloting a system for providing retirement savings to informal workers in small firms. What is notable is the limited role of government in each of these areas—a significant departure from traditional labor protection practices.

Consumption Floor and Nets (Chapter 6) are new forms of targeted social protection. While these broad-based efforts remain government-driven, the most innovative are beginning to incorporate new interfaces with privately-developed technologies, as in the entirely new political economy that is emerging in India through the **India Stack.** The Atlas features ambitious policy and program innovations in which new services are being built atop established cash transfer systems in **Mexico**, **Ethiopia**, and **Indonesia** and the **Dominican Republic**, while India provides a guaranteed annual minimum of paid workdays to rural residents. Less targeted initiatives, including **13th Month Pay** in Latin America, and Finland's experiment with **Universal Basic Income**, are also explored. Finally, the Atlas presents an in-depth report on how **UNICEF** "has adopted a cycle of work and phased activities and tools to support the introduction, expansion and improvement of cash transfer programs," drawing on mobile and financial technology with program examples from **South Africa**, **Iraq,** and **Nepal**, among others.

Innovations corresponding to the middle strata of the funnel deal with new interfaces between the livelihoods of individuals and small firms within the technological and financial system, which relate to their ability to confidently save and invest in the future, smooth income and consumption, insure against catastrophic risks, and make better production decisions. **Inclusive Financialization (Chapter 7)** highlights diverse data-driven financial services and platforms that reduce instability, smooth consumption, and build assets for people and firms. These innovations span savings, data-informed insurance, inclusive digital payment platforms, and leasing, as well

as assistance navigating the financial landscape. **Modelo Peru** is an interoperable national digital payments platform designed by the Peruvian Bankers Association to promote financial inclusion, while **Wave Money** establishes a mobile money platform to advance Myanmar's financial infrastructure. In Tanzania, **MyWORTH** provides financially excluded women with real-time access to group loans through their mobile phones. Illustrating the progress of micro-insurance in reaching previously uninsurable clients, **livestock insurance products for nomadic Yak herders** in China, India, and Nepal reduce risks of catastrophic losses, while IFPRI's **Risk-Contingent Credit** insurance solution automatically offsets small farmers' loan payments when triggered by such risks as natural disasters and drops in crop yields and prices. Mali's **MyAgro** provides small farmers with a scratch card-based credit and payments system for agricultural inputs combined with a bankless savings plan. In Nigeria, **Hello Tractor** helps farmers build productive assets with low-cost financing to purchase tractors and a mobile-based system for leasing them to nearby smallholders. In the U.S., **Even** is a subscription system that analyzes income patterns of employees with variable income, adding or subtracting from their bank balances automatically to smooth consumption and savings. **Digit** uses a predictive algorithm to help customers with variable incomes regularly save small amounts of money, while **Prism** consolidates bill payments for financially vulnerable households.
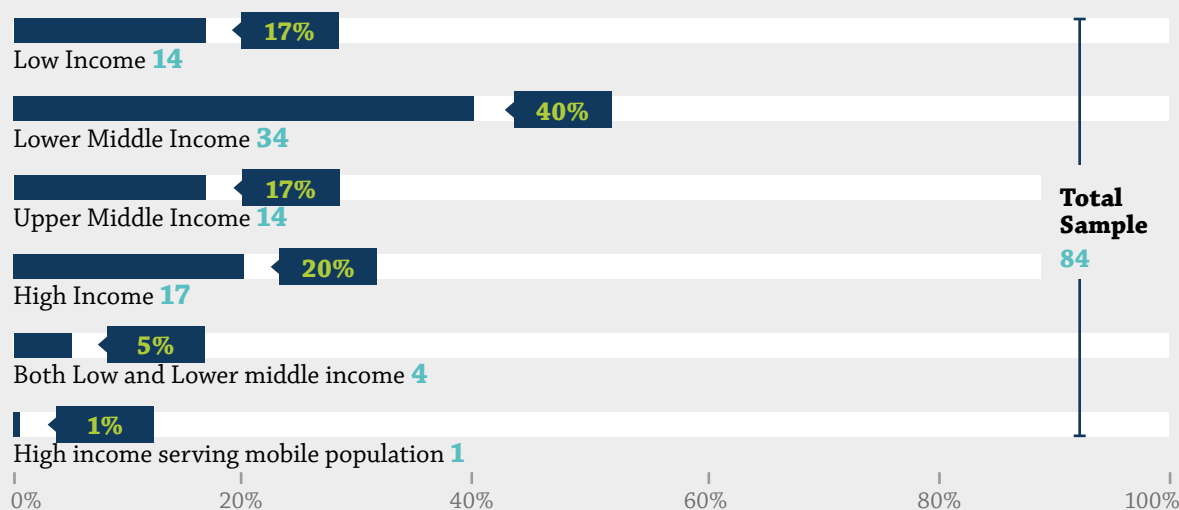
Similarly, innovations featured in **Chapter 8, Big Data, Small Devices (Better Livelihoods)**, draw on financial technology, but are more focused on advanced uses of data and analytics to improve livelihoods, particularly for subsistence farmers. **TCS Pride**, led by IT giant Tata Consultancy Services in India, uses multiple data streams (market, weather, soil, pests, etc.) and predictive analytics to deliver personalized agricultural advice to Indian farmers throughout the planting, growing, harvest, and post-harvest phases. **AgriFin**, spearheaded by **MercyCorps** and partners in Indonesia, Uganda, and Zimbabwe, and enabled by 8villages' LISA application, provide a suite of data products to improve access to agricultural information, validate field conditions for micro-insurance claims, track input distribution, and build credit histories. India's **Avaaj Otalo (Voice4All)** provides similar information via interactive voice response to hard-to-reach farmers, also overcoming both literacy, language, and smartphone penetration barriers. FHI 360's **WISE** application provides these services and information to fisherpeople in Senegal, integrated with mobile-based micro-lending digital payments. Kenya's **Twiga Foods** implemented a mobile-based supply platform linking farmers with urban grocers, consolidating the produce market, minimizing post-harvest losses, and stabilizing markets, while **FarmDrive** pioneered a credit scoring algorithm for smallholder farmers, combining weather information, soil conditions, market access, and satellite imagery and self-reported revenue and expense data.

Closer to the base of the funnel, stability issues become more focused on micro-foundations of economic stability: access to personal security and rights. **Collective Security (Chapter 9)** highlights entrepreneurial, citizen- and government-led innovations that address acute gaps in public safety, particularly in urban areas in middle-income countries. In Brazil, **Fogo Cruzado** and **Onde Tem Teroteio** help Rio de Janiero residents collect real-time reports from citizens and police about gunfire, delivering instant alerts to nearby users. Starting in 2010, police in El Salvador also used the **Wireless Security (Seguridad Inalámbrica)** application to share, map, and analyze data on crimes as they occured. Indonesia's **DARU** draws on Jakarta's open data architecture to improve delivery of firefighting services. Users of Kenya's **Usalama** app can shake their phone to connect with emergency services, their families, and

INNOVATION FINDINGS

Innovation origins by country income level

Low Income **14** — **17%**

Lower Middle Income **34** — **40%**

Upper Middle Income **14** — **17%**

High Income **17** — **20%**

Both Low and Lower middle income **4** — **5%**

High income serving mobile population **1** — **1%**

Total Sample **84**

0%   20%   40%   60%   80%   100%

Middle-income countries account for 57% of the innovations we profiled, but we also found numerous examples in both low and high-income countries. Figure 4 presents the distribution by country income level.

Figure 5: ---

Funding Innovation for Stability

Main Funding Sources
Out of 84 innovations for which any data on funding was available, the primary funding sources are:

28 Donor
20 Government
19 Entrepreneur/ Business
2 Community (CSO/NGO)
3 Social Enterprise/ Non-Profit
12 Have unclear or unknown funding

Number of Funding Sources
Out of 59 innovations for which we have more detailed funder information:

31 One funder
6 Two funders
16 Multiple funders
6 Were not funded
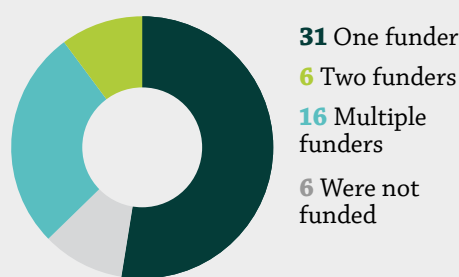
nearby users, and share incident information. Designed for women by women, Chicago-based **WatchMe 911** is a fee-based mobile safety application that harnesses the user's support network for scheduled check-ins and arrival notifications and emergency alerts. South Africa's **CrashDetech** app automatically senses the impact of vehicle collisions, dispatches emergency services to the site, and provides customers' medical information. India's **My SafetiPin** provides a data-driven approach to safety for urban women, building off of neighborhood safety audits to provide advice on safe routes to destinations and a personal safety tracker. My SafetiPin's audit method and resulting data are now used for public safety advocacy in more than 30 cities worldwide and in a global partnership with Uber.

Economic stability must be built on legal or practical recognition of personhood, property, and identity—the deep foundation of all other aspects of stability. The final topical chapter on **Personhood and Rights (Chapter 10)** presents innovations that help marginalized groups—women in particular—to assert these rights, both through improved policy channels and in private efforts using new technologies. Women's rights to land and property are of particular importance. Burundi has undertaken **Women's Land Rights Sensitization**, while the India-based **#PropertyForHer** movement works through an online and offline campaign to overcome socio-cultural barriers to women's property ownership throughout South Asia. In Pakistan, **doctHERS** uses telemedicine to connect female doctors who would otherwise have been unable to practice with female patients who do not have access to medical care due to cultural prohibitions against visiting male doctors, simultaneously fortifying vocational and health rights for women.

In the area of land rights, **Mozambique's Land Law** formally recognizes customary law and good faith occupation in land use claims, reducing conflict and setting the stage for economic development. Launched in 2015, the **Cadasta Foundation's** platform also provides low-cost digital tools for documenting land and resource rights and sharing them for advocacy and infrastructure planning globally. **Village Courts in Bangladesh** and **Free Legal Services in Haiti** offer more traditional approaches to expanding access to justice for poor and vulnerable people. To promote civic technology, Brazil's **DefeZap** collects crowdsourced videos, photos, and text reports of extrajudicial violence allowing favela residents to report abuses and seek justice against perpetrators of state violence. Cambodia's **Transmit** application provides citizens with digital means to register and track complaints to local governments, bringing more transparency and accountability to natural resource, justice, and human rights complaints. Two organizations are also applying blockchain approaches to digital identities: the **Making Cents International/Banqu** partnership in Jordan serves refugees as a foundation of financial inclusion, while **iRespond** uses a biometric identity secured on a blockchain to help protect vulnerable migrants against exploitation and to deliver health services in Southeast Asia.

We reserve a special chapter for **India**, which has emerged in the last decade as the world's most dynamic lab for stability-enhancing innovations. In addition to innovations featured in previous chapters—**Avaaj Otalo**, **Gandhi Rural Employment Act**, **SafetiPin**, and **#PropertyForHer**—**Chapter 11** presents the India Stack, an open data exchange system that combines biometric digital identities (**Aadhaar**), verified payments, secure storage and signature of digital documents, and upon which new entrepreneurial products and services can be easily built. To build the financial literacy required to benefit from these groundbreaking innovations, **MFIN Connect** provides local language education on the use of digital identities, microfinance, and responsible use of credit. We also profile the **PMMY** microbusiness lending program, which proactively identifies and extends loans to small entrepreneurs, seventy-five percent of whom are women, and the **LOOP** application, also in use in Bangladesh, which helps small farmers aggregate their production for better prices and track sales and payments through a digital ledger. India is building "public goods" data systems on which entrepreneurial innovation for stability can flourish. If this public-private experiment is successful bringing hundreds of millions of rural poor into the economic mainstream, the approach will represent an entirely new political economy of economic inclusion.

About the Innovators

Featured innovations were catalyzed by individual entrepreneurs, loosely-affiliated citizen networks, business associations, collaborative initiatives between government and the private sector, multi-stakeholder partnerships including non-governmental organizations (NGOs) and businesses, donor-government partnerships, and venture-backed challenges and competitions.

Throughout the Atlas, we profile nine diverse individuals and groups of innovators in-depth. Each shares a commitment to improving stability for individuals and communities through innovations in technology and the delivery of social and other services. This diversity of innovation origins serves to dispel the notion that innovation and resulting entrepreneurship are driven primarily by "lone wolves." The reality is that innovations relevant to this topic often have a "driver"— a committed innovator or small group of innovators who drive their vision into reality—but also rely on a spectrum of social and inter-organizational collaboration. Increasingly, innovation is shared between initiators and their users in both a bottom-up and top-down manner, as in several peer-to-peer products featured here.

Almost none of the profiled innovators worked alone. **Kalpana Viswanath**, along with her husband, developed MySafetiPin, a unique mobile application to make cities in India safer for women, and **Kamla Bhasin**, the South Asia coordinator of One Billion Rising, led #PropertyForHer, collaborating with several NGOs and civil society groups. A group of **young Kenyan programmers** formed Usalama Tech Group to develop emergency services solutions for victims of crime and road accidents, while two Kenyan women, **Rita Kimani** and **Peris Bosire** founded the start-up FarmDrive after experiencing first-hand the challenges of growing up in smallholder farming communities. In Pakistan, social entrepreneur **Dr. Asher Hasan**, co-founded doctHERS to help bridge the gap in access to healthcare for vulnerable populations that he first witnessed while visiting the country as a child and later as a social entrepreneur.

Institutions are also involved, sometimes with committed leaders driving innovation. **Miguel Arce Tellez** is a Peruvian banker who helped bring together a group of competing Peruvian banks and supporters to develop Modelo Peru to advance financial inclusion. As a leading voice in the future of work conversation in the United States and director of the National Domestic Workers Alliance, **Palak Shah** founded Alia as part of her professional mission of helping disadvantaged workers. **Indonesia's Ministry of National Development Planning (BAPPENAS)** and the **UN's Pulse Lab Jakarta** work together to incorporate new data sources to promote inclusive economic growth. We also profile **UNICEF,** leveraging its two decades of experience with cash transfer programs to strengthen its social protection mission and enhance stability for children and families across the globe.

The remainder of the Atlas presents brief and in-depth profiles of these innovations and innovators, and, in the final chapter, suggests some conclusions and recommendations related to how global development actors can support and enhance economic stability, the innovation process, and the combination of the two. A brief analysis of findings by country income group also appear in Appendix 2.

Small Enterprises, Unlimited

4
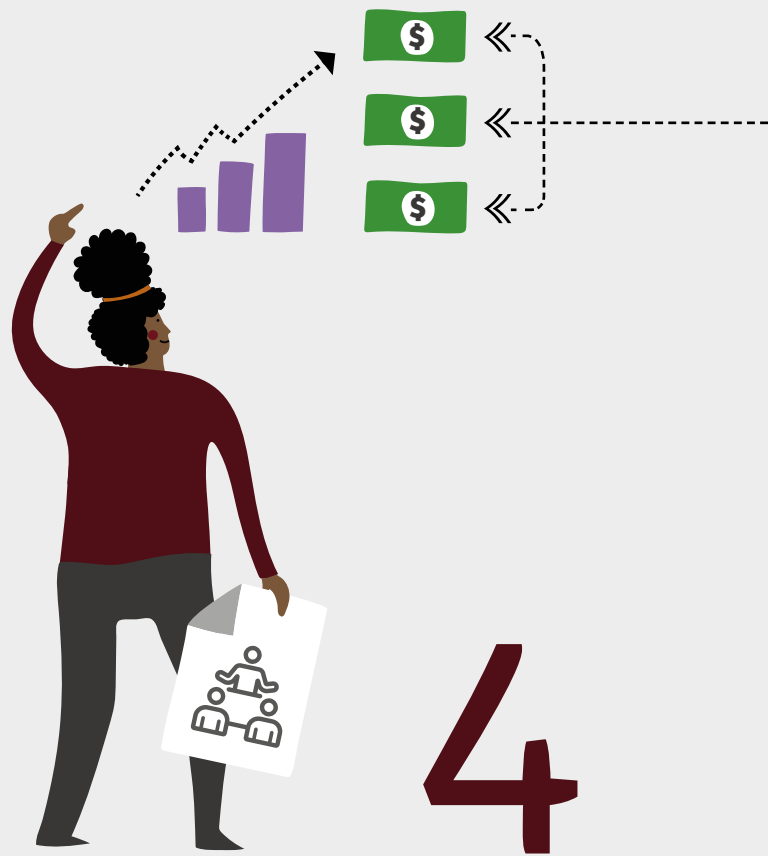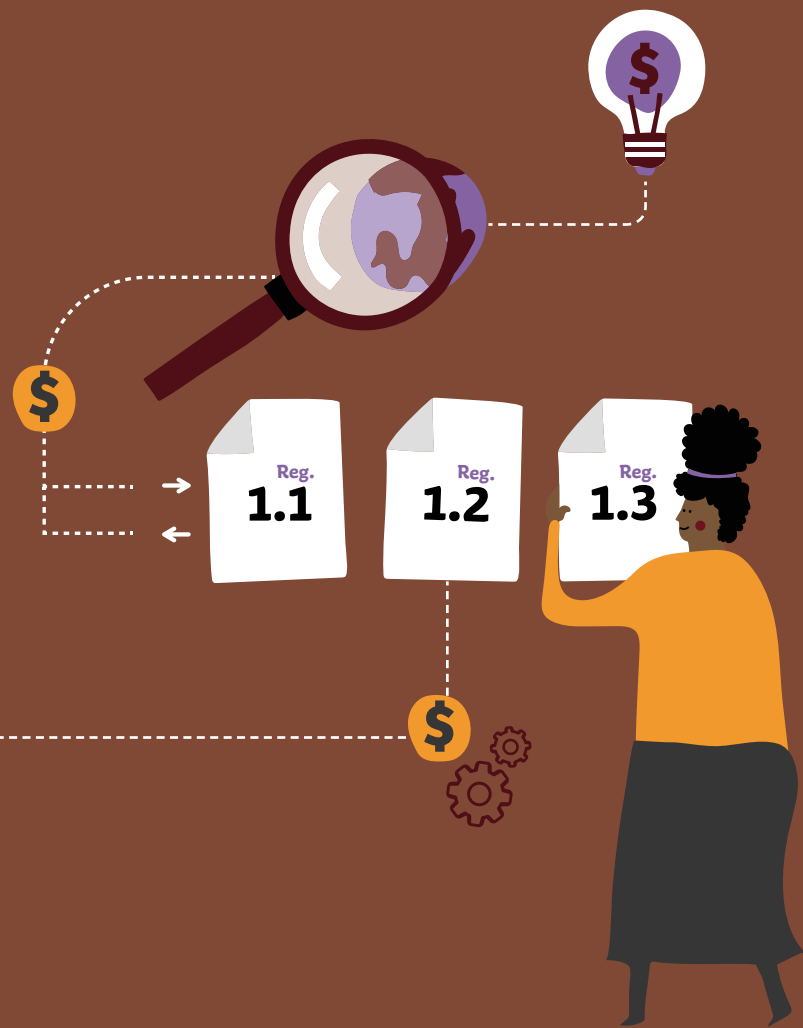
Legal and regulatory compliance and access to contract enforcement comprise a key set of global challenges for micro, small, and medium-sized enterprises (MSMEs). Transparent and predictable regulatory systems that create a rules-based "level playing field" are a near-universal goal of business environment reform a key foundation of economic stability. Yet small enterprises operated by poor and vulnerable people often lack the knowledge, skills, and time to register businesses, navigate regulatory systems, and access the justice system to enforce contracts, even when the overall business environment is improved. Innovators from the public sector are beginning to address these challenges with approaches to streamlining registration processes, commercial court access, and insolvency rules appropriate for small enterprises. Private entrepreneurs are also using technology to improve legal assistance, establish alternative contract enforcement and business dispute resolution systems, and create two-way MSME-focused information products that enable small entrepreneurs to make better choices about business operations, report corruption, improve interactions with government, and strengthen cross-border trade. The Government of Indonesia is also beginning to deploy alternative data sources to provide early warning of disruption in the business environment to improve macroeconomic management.

4.1

Small Enterprises, Unlimited

Orodata (Nigeria) Many SME owners in Nigeria are unaware of their rights and the regulations that govern their industry. The civic technology startup Orodata uses Software-as-a-Service (SaaS) products and cloud-based solutions to simplify and make accessible public data to enable SME owners to make better informed business decisions, and to improve public service delivery by making government at all levels more accountable, transparent, and efficient. By 'democratizing' open data and converting that into simple, interactive and static visualization tools, which include infographics, animations and videos, Orodata grants citizens easy access to information on how to start and operate a business, industry standards and regulations, and the role and responsibilities of governments. In addition to spurring innovation and reducing public corruption, Orodata also provides citizens with detailed analysis on natural disasters, hostile conflicts, and government interventions, as well as an education platform for training citizens on data collection and analysis methods.

mSME Garage (Uganda) Uganda ranked as the most entrepreneurial country in the world in 2015. However, the large majority of the country's small businesses are informal, borne out of necessity, and destined to fail within the first year. mSME Garage seeks to empower micro, small and medium business owners in Uganda with free legal services to support the development and sustainability of their businesses. Basic legal services and business guidance are provided through an interactive online portal, social media, SMS, and WhatsApp messages, as well as direct phone calls and on-the-ground consultations. This helps businesses to register and formalize, increasing their ability to manage legal challenges and generate revenue. The mSME Garage is part of BarefootLaw, which provides legal support and guidance for small businesses in Uganda, and was a runner-up in the HiiL SME Empowerment Innovation Challenge for East and West Africa for 2015.

Sauti (Kenya) Sauti Africa Limited is a mobile-based platform for simplifying access to trade information and promoting social accountability for SMEs engaged in cross-border trade in the East African Community. Sauti, which means 'voice' in Swahili, seeks to enable cross-border enterprises to conduct business legally, safely and profitably, and to exercise their rights as citizens of the EAC. Sauti provides SMEs with customized information on taxes and tariffs, updates on border procedures and other relevant data. The platform also allows traders to document incidences of bribery and harassment in order to enhance evidence-based advocacy, transparency and accountability of cross-border trade transactions for SMEs. Sauti has been awarded a number of grants, including the EAC-GIZ Incubator for Integration and Development in East Africa, the HiiL SME Empowerment Innovation Challenge for East and West Africa, and the D-Prize, which distributes funds for poverty-alleviation interventions in the developing world.

DIYLaw (Nigeria) Outdated registration practices and myriad other legal inefficiencies make Nigeria one of the most difficult countries in the world for doing business. A legal technology startup called DIYLaw was recently founded by three women—two lawyers and one web developer—in Nigeria to provide SMEs improved access to justice and professional and affordable legal services through its one-stop online portal. The portal allows entrepreneurs to register their businesses and access legal documents and other resources, and it also connects them to lawyers for legal services. While not an entirely original business model, DIYLaw is making registration and legal procedures more accessible, professional and transparent for SMEs seeking to do business in Nigeria. DIYLaw is a winner of the 2015 Hague Institute for the Innovation of Law (HiiL) SME Empowerment Innovation Challenge for East and West Africa.

Commercial Courts for MSMEs (Liberia)

As part of its broader efforts to strengthen the country's credit infrastructure, the government of Liberia, with assistance from the World Bank Group and a number of international development agencies, in 2011 established the Commercial Court dedicated to resolving critical debt access and resolution disputes involving micro, small and medium enterprises (MSMEs). The collaborations also led to the establishment of an electronic collateral registry that enables banks to securely lend to individuals and small businesses that lack access to traditional collateral such as land. The registry is an online platform that allows borrowers to register their moveable assets as collateral— such as a motor vehicle, farm equipment, crops, and accounts receivable—in order to access lower-cost loans from commercial banks. These initiatives are being supported by a clutch of other recent legal reforms aimed at promoting credit and investment, particularly for MSMEs and rural-based agricultural enterprises. Since the registry was deployed in 2014, almost 1,300 financial statements relating to $265 million in transactions have been registered, with women-owned enterprises accounting for more than 80% of active registrations.

Human Centered Business Registration Improvement (Indonesia)

To support the Government of Indonesia's entrepreneurship promotion initiatives, the UN's Pulse Lab Jakarta (PLJ) and the Australia Indonesia Partnership for Economic Governance (AIPEG) conducted an innovative experiment in 2016 to understand the experience of entrepreneurs trying to register businesses. "While previous studies on business registration mostly focused on the administrative parts of the system, we wanted to focus on the experience of entrepreneurs as they navigate the business registration process," PLJ reports.

Human-Centered Design—a popular product and service design methodology—starts with developing an experiential understanding of users' tasks and feelings about a process before initiating a service re-design in order to uncover opportunities for improvement both small and large. This "user journey" details the flow of experiences to which an entrepreneur is typically subjected as she or he attempts to navigate the business registration process. PLJ focused on both the entrepreneurs and the front-line civil servants who interact throughout the business registration process.

People and their experiences, rather than bureaucratic processes, are distinguishing features of new innovation methodologies.

PLJ found that the service experience is time consuming, opaque, and requires interaction with multiple government agencies, leading many entrepreneurs to hire intermediaries (brokers or agents) to manage this complexity. Users complained about uncertain timelines, while civil servants reported that they often could not meet citizens' expectations for speedy registration and schedule certainty due to lack of familiarity with new systems. They also found a steep learning curve-- user experience was heavily influenced by how informed people are about the process on both sides.

The process ended with recommendations for new initiatives to incentivize entrepreneurs to register their businesses, enable entrepreneurs to get all information they need to move smoothly through the registration process, ensure that citizens can navigate the process independently of the assistance of front-line staff, and develop a training platform that keeps frontline staff motivated to stay up-to-date on new procedures.

Innovator Profile

Government of Indonesia

Integrating big data into economic management

Indonesia today boasts one of the fastest growing economies worldwide—the largest in Southeast Asia—with an ambitious anti-poverty strategy designed to ensure that the country's rapid growth is socially inclusive. The Government of Indonesia (GOI), keeping pace with the data revolution that is transforming commerce and society, is proactively working to unlock this potential to reshape and boost its economic development efforts. Recognizing that conventional datasets are no longer adequate to maximize government responsiveness, GOI efforts are aimed at becoming a more proactive and anticipatory government, stimulated by more data-driven economic development. Indonesia's Ministry of National Development Planning (BAPPENAS) in particular has seized the

opportunity to use near real-time data to monitor economic development and keep the country's inclusive growth on track.

BAPPENAS, with development planning at the core of its mandate, was among the first institutions within the government to recognize the need for better data to inform rapid policy responses to economic volatility. As a joint initiative of the United Nations and GOI, Pulse Lab Jakarta (PLJ) was established as a data innovation lab in part to test the feasibility of using digital data signals to inform the country's economic strategy and policy decisions, with a view to providing early warnings of economic shocks that could derail inclusive development.

Since the Lab's inception in 2013, directorates from BAPPENAS have been working alongside PLJ's research team to experiment with ways to harness new data from social media, e-commerce, shipping, and other emerging sources, and to overlay these with conventional economic data to create a more complete

picture of the country's inclusive growth performance. In a series of collaborative projects, PLJ has provided the data processing and analytical capabilities, while domain experts within BAPPENAS designed and completed substantive analysis related to Indonesia's development goals. This approach has enabled improved knowledge exchange and information flow, building on complementary skill sets and straightforward discussions on the feasibility of each project. Some of the recent projects have included:

- Monitoring food price dynamics using Twitter data, especially for priority commodities such as rice and beef, to provide early warning of price spikes that can destabilize consumption among poorer Indonesians.

- Monitoring shipping arrivals and departures and e-commerce data as proxies for the conditions of the domestic economy and as an early-warning system for changes in trade patterns that impact Indonesian SMEs.

- Better understanding the relationship between inflation rates and public sentiment of the increase in prices of certain commodities using social media data.

- Analyzing global perceptions of the "Wonderful Indonesia" tourism brand and Indonesia's flagship destinations based on information publicly shared on social networking platforms.

As customary in experimenting with new approaches, these projects are not designed to be finished products, but rather to act as openers for further iterations. For instance, the project using e-commerce data was initially focused on investigating housing price data across provinces to see whether any insights could be gleaned from the comparison. While the team managed to process the data and show the price dynamics, the actual analysis to correlate this to events, shocks or stresses, or other economic indicators was not performed immediately.

These experimental approaches are a starting point for the incorporation of innovative big data solutions into policy. Initial analysis of e-commerce data to understand housing prices sparked new ideas for utilizing the same data to prevent the Government's SDG1-aligned poverty reduction initiatives from being derailed by shocks.

Among a batch of 30 new collaborative project proposals from BAPPENAS for 2018, several include the use of e-commerce data to answer various macroeconomics research questions such as better mapping inter-regional trade intensity and regional trading patterns.

Back to Innovations by Chapter

USAID Jordan Local Enterprise Support Project (LENS) – USAID/FHI 360

Integrating women's home-based businesses into Jordan's economy

Jordan ranks highly for gender equality in human development indicators such as health and education. Yet women's participation rates in the formal labor force are among the lowest regionally. Unable to find employment in the formal sector, many women in rural Jordan run businesses informally from home. However, these home-based businesses (HBBs) have been hindered by zoning restrictions that effectively barred HBBs outside of the Greater Amman Municipality from obtaining business licenses. This forced informality limited their ability to access new markets and financial services, as well as substantially reducing Jordan's tax base.

The USAID Jordan Local Enterprise Support Project (LENS), implemented by FHI 360, began working in 2014 to strengthen the legal status of woman-run HBBs outside of Amman, particularly in underserved communities. The goal was to empower women to grow their businesses and invest more in their local communities, and to demonstrate a model to inform public sector decision-making. To this end, LENS conducted a survey of 4,700 businesses, finding that 23% of businesses are informal and operate from home. To the Ministry of Municipal Affairs (MOMA), LENS presented these results along with comparative models of legally-recognized home-based businesses from around the world, a proposal for regularizing HBBs in Jordan, and, later, a study of the economic impact of such regulation. One issue LENS discovered in this process was that the high cost of compulsory social insurance would significantly erode HBB earnings and discourage business registration. LENS then presented these findings to the Social Security Corporation (SSC) and worked to obtain an exemption.

As a result, MOMA amended the Regulations on Buildings and Zoning for Cities and Villages, which allows HBBs to now legally use residential areas for starting and registering their businesses. In August 2017, the SSC also issued HBBs an exemption from compulsory social security contributions. The regulatory changes allow the HBBs throughout the country to formalize more simply and efficiently, granting them legal status and resulting access to markets and services. The project also trained government and municipal agencies involved in the registration and licensing of HBBs on the new legal framework, procured a high-performance database server for the Companies Control Department (CCD) to improve business registration efficiency, and partnered with the CCD and Ministry of Industry, Trade and Supply to publish a startup guide to help MSEs formalize their businesses.

LENS has also been assisting women in a number of other ways, including Informal Savings and Lending Groups manuals to help facilitate women access to finance and a Women's Economic Empowerment grant targeting women working in non-traditional business sectors—plumbers electricians, and carpenters—with a focus on value-added services.

Female HBB owners working in food production have been targeted as a key area of growth. USAID LENS has provided technical assistance to thousands of HBBs to upgrade food safety standards, product development, production, packaging and transportation, linked HBBs to new markets through the online channels and partnerships with industry groups. LENS also signed an MOU with the supermarket Safeway Jordan to integrate food producers and processors of pickled vegetables and processed dairy products into its supply chains. Through these efforts, the project aims to multiply job opportunities and promote innovation in these communities in a way that is inclusive of women, youth, and other vulnerable populations.

Contract Enforcement for SMEs

An initiative in Peru aims to improve commercial dispute resolution for SMEs

The ability to enforce contracts and resolve disputes efficiently is essential for markets to function properly and to make sustained economic development possible. Robust contract enforcement mechanisms promote a sense of predictability and stability in commercial relationships by guaranteeing businesses and individuals that their contractual rights will be upheld impartially by local courts. This type of confidence, which is necessary for small and medium enterprises to succeed, is often absent in developing economies whose markets may be fragmented and lack formal regulation.

In countries like Peru, which has comprehensive laws to regulate the enforcement of commercial transactions, inefficient, costly and corrupt courts can impede the settlement of contractual disputes, slowing down trade and investment while also stymying innovation and entrepreneurship, making economies less efficient.

To address this need for an effective contract enforcement mechanism in Peru, the state-owned development bank Corporación Financiera de Desarrollo (COFIDE) and the non-profit Innovations for Poverty Action (IPA) partnered in 2017 to pilot and evaluate an online contract enforcement platform mechanism for SMEs. The platform builds on an existing SME services portal and adds a user-driven ratings and penalty mechanism, and employs a randomized evaluation to assess its impact.

The contract enforcement mechanism is being tested in Lima's historic Gamarra district, home to Latin America's largest garment cluster, comprising 20,000 firms, 100,000 workers, and more than $1 billion in annual sales. Previous legal reforms reduced entry barriers for SMEs, which stimulated the creation of small garment firms. However, the measures also increased anonymity and weakened contract enforcement mechanisms, preventing individual firms from growing and specializing. Firms also faced increased competition, reduced profits, underutilized capacity, and a lack of trust in contract law and the institutions responsible for its implementation.

Most of Peru's vast number of SMEs emerged during the rural-to-urban migration waves in the 1960s and 1970s, when soaring mineral prices fueled increasing internal demand and investment. But because the country's governance and regulation capacity did not develop concurrently, most SMEs were channeled to the informal sector, one of the largest in the world. Today, more than nine in ten businesses in Peru are micro, small and medium enterprises (MSMEs), about three quarters of which are informal. Peru's MSMEs produce nearly half of national GDP and employ more than 80% of the workforce.

Peru is one of the fastest growing economies in Latin America. As part of its effort to sustain that momentum, the government is taking steps to expand market access for MSMEs by developing measures to strengthen contractual enforcement mechanisms and build public trust in the country's legal and judiciary systems. A stronger legal environment would increase access to credit and boost productivity and spur innovation. The pilot is ongoing, but if successful, the mechanism could be applied in SME markets in other emerging economies to promote financial inclusion and economic stability for smaller businesses.

5

Stabilizing Jobs & Gigs
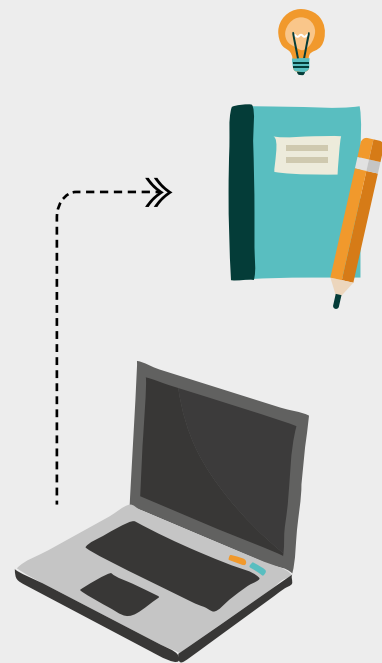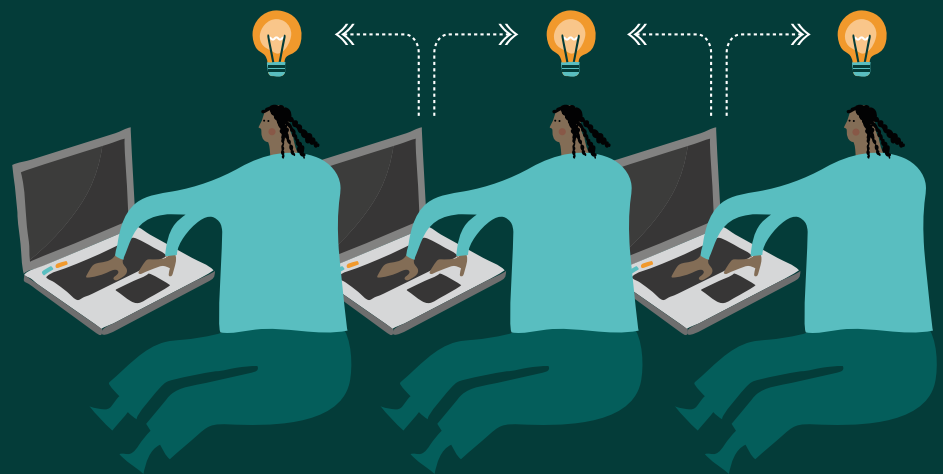
The much-heralded "Fourth Industrial Revolution" promises a new wave of automation that will profoundly disrupt formal employment worldwide. In this context, the nature of work in upper-middle- and high-income economies is becoming less stable due to the long-term trend of casualization or non-standard work arrangements, and the more recent rise of the "platform economy." In lower-income contexts, own-account work has always accounted for a larger share of employment, and new platforms can reduce the friction of finding this work, but technology and management trends cast doubt on future prospects for stable, decent work as we know it. Despite emphasis in the Sustainable Development Goals, globally, the outlines of a new "social contract" around work have not yet emerged in practice, and existing labor protection systems may come under additional stress as formal-sector jobs evolve and platform and other forms of "non-standard work" expand. This section highlights some new tools that are emerging in this very dynamic and uncertain environment to provide greater stability to workers. Innovators are using better labor market data, new options for online training, and new business models for non-traditional retirement savings and benefits for employees and the self-employed alike to create more stable employment situations, inform investment in skills, smooth income, and retain workers. Others are connecting vulnerable refugee populations to jobs and gigs. Numerous technology-enabled multi-stakeholder partnerships are also emerging, using crowd-generated information to complement or supplement traditional workplace regulation.

5.1
Stabilizing Jobs & Gigs

MicroBenefits (China)

CompanyIQ by MicroBenefits China is a proprietary mobile-based application that provides factory workers in China, Vietnam and Mexico access to a range of services including gamified skill-building and career advancement training programs that are fun and which aim to promote upward economic mobility. Additionally, CompanyIQ hosts an interactive social media platform that provides peer-to-peer messaging as well as direct communication between contract factory workers and management. It also provides a company news feed that delivers information on factory policies, timecard logs and payroll, in order to enhance transparency and workers' confidence in their earnings. Increasing employee engagement and satisfaction also creates value for factory management by improving productivity and reducing costly worker turnover rates and the organizational expenses associated with processing employee complaints. CompanyIQ is being used by a number of multinationals including Nike, Gap and Jabil. The app will be made available for workers in Indonesia and the Philippines in 2018.

Burning Glass (USA)

American analytics software company Burning Glass Technologies offers a range of labor market analytics solutions that generate the most detailed and up-to-date insight into the workforce and marketplace to match people with jobs. Powered by its patented artificial intelligence technology and the world's largest database of jobs and skills, Burning Glass uses bots that track millions of online job postings every day from more than 40,000 sources. The company uses a proprietary database language, or taxonomy, that analyzes this and other data to identify the specific skills and qualifications that employers in different sectors and locations are seeking. Burning Glass also tracks and forecasts disruptive changes in the job market, allowing workers to make the most informed and evidence-based decisions for their career. Both faster and more precise than traditional survey-based labor market information, Burning Glass delivers real-time data and innovative planning tools that empower employers, educators and workers to see what the job market looks like today and what it will look like in the future. Burning Glass solutions are used by the U.S. Federal Reserve, state and local government agencies, and hundreds of leading corporate and academic customers.

Strategic Partnerships for Garment Supply Chain Transformation (several)

The Strategic Partnership for Garment Supply Chain Transformation 2016-2020 is an initiative of the Fair Wear Foundation (FWF), CNV Internationaal and Mondiaal FNV, with support from the Dutch Ministry of Foreign Affairs, designed to improve corporate and government policies related to human rights compliance in garment supply chains. The Partnership is developing evidence-based examples drawn from the expertise of labor unions, governments, NGOs and participating brands and factories to demonstrate how fair wages, gender equality and healthy worker-employer relations can benefit all parties. By creating real-world examples of human rights compliance and improved working conditions from actual apparel supply chains, the Partnership aims to provide replicable solutions across the rest of the industry. Participating European garment brands support improvements at the factory-floor level by adapting the way they do business with their suppliers, paving the way for meaningful and sustainable change. Projects are being developed in eight garment-producing countries in Asia (Bangladesh, Cambodia, India, Indonesia, Myanmar, Pakistan and Vietnam) and Africa (Ethiopia).

MobiVi (Vietnam, Laos, Cambodia, Indonesia)

MobiVi is an electronic commerce and transaction processing platform created by the Vietnam-based iCare Benefits to give low- and medium-income factory workers access to essential products and services. Most factory workers in Vietnam do not have a credit card or access to formal financial services. Through iCare's zero-interest installment plan, they can purchase mobile phones and household appliances, vaccinations and other healthcare services, and send their children to school while reducing their reliance on informal lenders and other usurious lending mechanisms. iCare is improving the lives of some 2.5 million workers at the bottom of the economic pyramid in Vietnam, Laos, Cambodia and Indonesia, helping them save time and money. Companies also gain: iCare is improving workplace productivity and reducing worker turnover by incentivizing its benefits; the longer a worker stays with one company, the more products and services they have access to as an iCare member.

Pension Match (Peru)

The Universidad del Pacífico, University of Maryland and Innovations for Poverty Action (IPA), in collaboration with the Pension Fund Administrators Association (AAFP) of Peru is piloting a project and evaluation in Lima at firms with 10 or fewer workers who are not enrolled in the contributory pension system. Its purpose is to test the impact of a pension match scheme (financed by IPA) on enrollment and contributions to pensions among informal workers of small firms. This offers a good opportunity to generate evidence that will inform the government how to design such a program. The transfers, conditional on the worker's personal contributions, aim to incentivize pension savings for workers and reduce future costs for government by enabling individuals to provide for their own needs in old age. The research will assess whether matching interventions for workers in developing countries can effectively increase their pension coverage and their savings for retirement.

Alia (USA)

Developed by the National Domestic Workers Alliance (NDWA), through its Fair Care Labs innovation hub, the technology platform Alia collects small, regular payments from multiple employers to help independent domestic workers in the United States access and afford benefits. The funds are applied toward sick leave, disability, accident and other life-enhancing insurance protections that Fair Care Labs hopes will raise the standard and quality of work for thousands of domestic employees. Alia helps domestic workers to increase control over their work schedules and wages and to manage financially when they fall ill. This not only promotes a healthier, more productive workforce, but also helps cleaners and care workers to better navigate the changing nature of domestic labor. In 2017, NDWA received additional funding to help scale up Alia, from Google's philanthropic arm Google.org as part of its broader Future of Work initiative.

Innovator profiled on p. 40

Golden Dreams (SE Asia)

Developed in 2017 by the Bangkok-based Issara Institute, with support from USAID and the Walmart Foundation, Golden Dreams is a Burmese-language smartphone application that enables current and prospective migrant workers to share information about employers, recruiters and service providers, such as hospitals and NGOs, in both home and destination countries. Golden Dreams also delivers news updates on rights and laws related to migrant workers as well as news from Myanmar, provides a 24-hour hotline to register complaints or seek assistance from the Issara team, and features other review, rating and polling functions designed to empower job seekers and help protect millions of Burmese migrants from the risks of working abroad. Golden Dreams is a free app and available to job seekers, current workers, and their families and communities. It also supports Issara's partnership program with global brands and retailers by allowing worker voices and feedback to be heard by business and to drive better business practices and more ethical supply chains.

RefugeesWork (Austria)

RefugeesWork is an online platform developed by Austrian entrepreneur Dominik Beron that connects job-seeking refugees from conflict-torn countries with businesses in Austria that are hiring. The platform uses a jobs matching algorithm and face-to-face training to provide refugees who have the qualifications and required experience to obtain employment and overcome the disadvantages they face when finding work. It also allows employers to navigate the complex legal environment, providing them with information on policies and subsidies that relate to hiring refugees. By bringing refugees into the labor market, RefugeesWork promotes social integration and economic stability. For businesses, employing refugees can bring financial benefits through the receipt of government subsidies and increased productivity by allowing employers to hire from a larger and more diverse pool of talent. Currently, more than 275 companies and 5,400 refugees are registered on the RefugeesWork platform. The company is in the process of licensing its platform to organizations in other countries (e.g. France).

Alia - Palak Shah

Co-founder

Domestic work is among the fastest growing jobs in the United States, yet cleaners, caregivers and nannies are still close to the bottom of the income scale and remain among the most vulnerable and exploited workers in the country. Domestic workers, who are overwhelmingly female, now comprise what Palak Shah calls "an ignored and forgotten workforce."

Palak is the director of the National Domestic Workers Alliance (NDWA), the leading voice for domestic workers in the country, and is also the social innovations director of NDWA's recently founded innovation hub, Fair Care Labs, where she, along with social entrepreneur Sam Witherbee, created Alia, a tech-driven platform to provide benefits and lift standards for domestic workers (profiled on p. 39). Alia collects payments of $5 per cleaning from employers and aggregates these micro-contributions into a scheme to provide cleaners with a menu of benefits or insurance products or to have the money applied to pay for sick days.

Segments of the domestic workforce are growing at five times the rate of the national job growth, with childcare and homecare jobs expected to be the single largest occupation in the country by 2030, Palak explains. But caring for the elderly and children and cleaning the home, however intimate and vital to the functioning of families and households, remains informal and is not highly regarded by the general public. Moreover, a growing number of the families that employ domestic workers face their own economic pressures, unable to make a living wage. For them, contributing an extra few dollars to their cleaners' benefit fund is out of the question. "It's an uphill battle around even viewing this work, just like any other job that deserves rights and protections and benefits, as real work."

As growing numbers of Americans are forced to work in the informal sector or in the gig economy, the national discussion around 'portable benefits'—benefits provided outside of the traditional employment arrangement that workers can take with them from job to job—is gaining in importance. "Now others are experiencing what's it's always been like for domestic workers in this country," Palak says.

Immigrants, primarily from Spanish-speaking countries south of the U.S. border, make up a disproportionate number of domestic workers. Pressures brought by recent immigration reforms leaves them even more susceptible to exploitation and abuse by their employers, including human trafficking, confiscated passports, and substandard wages. "These people are really living on the edges of the economy," Palak says. "They are really scared and they need work, but the more they are affected by immigration status, they more vulnerable they are."

Google's philanthropic arm is supporting Fair Care Labs to build-out Alia and to embed Google Translate into the platform, to enable Spanish-speaking domestic workers to communicate more effectively about daily work requirements as well as contracts, job descriptions and other agreements. Numerous other agencies are partnering with Fair Care Labs to develop new products and expand its existing ones for the labor force.

"These are the only jobs that are growing, so we have to figure out how to make these jobs good jobs," Palak says, "which makes this a very worthy thing to get involved in."

Viridis Learning

Using big data to connect learners with mid-skill jobs

America's yawning skills gap in its higher-end industries leaves factories and tech firms struggling to find enough homegrown talent to drive their businesses. Meeting the growing demand for labor in the middle-skill market—jobs that require more than a high school education and less than a four-year post-secondary degree—has been an equal challenge. As numerous job postings go unfilled, millions of workers remain unemployed or underemployed, not only for the lack of suitable skills but also because they are unable to connect with the right employers.

To help bridge this divide, an education tech startup called Viridis Learning is pioneering a permanent employment record called the Skill Passport™ that enables new customized career pathways for middle-level workers by matching them with companies looking for qualified candidates. Viridis's cloud-based, SaaS technology platform integrates with existing student information systems, government databases, applicant tracking systems and labor market information via its proprietary Universal Skill Passport™. It connects community college graduates, military veterans, and other underserved populations with local employers who are hiring, thus providing end-to-end data-driven solutions for users and firms. Viridis data about post-graduation employment needs are helping students decide on

careers that align with market demand, and enabling two-year colleges to prepare learners for real opportunities. The information also allows employers to hire more efficiently while cutting recruitment and retention costs.

The Viridis Cloud platform is now used on more than 70 college campuses, mostly in California, Hawaii, New York and Texas, and by a nationwide employer network that includes healthcare providers, technology companies, manufacturers, restaurant chains, and telecommunications firms.

Founded in 2009, Viridis launched in beta mode with about 5,000 people with low or no secondary education, many of whom were formerly incarcerated, before it launched its partnerships with community colleges in 2017. Viridis is now scaling its platform internationally, helping the company to fulfill its vision of expanding the economic mobility of the middle class, closing the global skills gap via integrated campus ecosystems, and leading the development of a 21st century-ready workforce—by connecting more students to more employers with the ease expected in the digital age.

To date, Viridis has raised some $9 million in venture capital through investments from Salesforce Ventures, Thayer Ventures, Lumina Foundation and other funders such as The Bill and Melinda Gates Foundation. Its offices are in Palo Alto, CA and Austin, TX.

Improving worker welfare and corporate compliance through tech-enabled solutions

Contemporary global supply chains are complex and fragmented, with the potential for worker exploitation at numerous points, from unpaid overtime to human trafficking and modernday slavery. Companies are also under intensifying public and legal pressure to ensure that their supply chains are free of forced labor and human trafficking. Laborlink and Labor Solutions by Workplace Options are two mobile-based platforms designed to assess working conditions and enable employees to communicate through peer-to-peer networks and other digital tools while giving international brands and retailers better visibility into their supply chains, which allows them to make more socially responsible sourcing and business decisions.

Laborlink

Mobile-enabled workplace monitoring and employee engagement

Millions of low-wage garment workers endure harsh working conditions and substandard wages only to suffer in silence because they are afraid or unable to convey their concerns outside the workplace. By deploying locally-appropriate mobile-based technology, namely Interactive Voice Response (IVR) or WeChat, Laborlink translates the voices of marginalized workers into actionable analytics to improve their well-being within the workplace. Laborlink also enables international brands and retailers to protect their reputations, and their bottom lines, by allowing them to monitor the work environment on the factory floors where their goods are produced.

With a few strokes of their touch-tone keypad, workers call a phone number given to them (Laborlink calls them back, so workers aren't charged for the call) and answer short multiple-choice surveys that cover their health, safety, wage, and even potential forced labor conditions. The process is designed so that workers can anonymously report through a secure user interface privately and on their own time, without managers listening in, allowing Laborlink to gather sensitive information that might otherwise go unheard. It also delivers training and educational content about workers' rights and local services via SMS or voice recording messages.

Since its founding in 2010, Laborlink has surveyed more than one million workers across 16 countries, collecting some 3.5 million data points to enhance visibility into supply chains, pinpoint high-risk issues, and enhance two-way worker-management communication. Previously housed within non-profit Good World Solutions, Laborlink is now part of ELEVATE, a global professional services firm that specializes in supply chain social, environmental and business performance. Together with ELEVATE, Laborlink aims to incorporate worker engagement tools into the social audit paradigm and to scale worker voice technology to reach millions more workers.

Laborlink data have been used to reduce sexual harassment in India, disclose child labor violations in China, report dangerous work conditions in Bangladesh, empowering companies with the ability to get reliable data on working conditions in their own and their sub-contractors' factories.

In addition to worker grievances, worker satisfaction and employee turnover remain a chief corporate concern, especially in China, which has one of the world's lowest rates of employee engagement. In 2015, Laborlink introduced a two-year pilot project in 14 factories in China to understand why workers leave and what would make them stay. It provided brands and retailers a benchmarking opportunity to track industry trends and compare their factories against their peers, serving as a powerful motivator to improve worker satisfaction, reduce turnover, boost their competitiveness, and prove to their buyers that that they value their workers.

Workplace Options

A digital suite enabling communication and compliance for employee wellbeing

Workplace Options, headquartered in Raleigh, North Carolina, is the world's largest employee wellness and support program provider. It serves 58 million employees in over 90,000 organizations around the world. It offers an array of integrated workforce management services for companies, including employee assistance programs, wellness coaching, customized training and counselling services, to help people to overcome their work-related stress and maximize workplace effectiveness.

A suite of technology products designed by Workplace Options to empower the evolving workforce - *Labor Solutions* - allows workers and companies in any part of the world to communicate 24/7 through traditional phones, text messages, or mobile application services to report and help resolve problems related to compliance, productivity, absenteeism, and other workplace matters. Its Micro-Coaching program uses SMS and app-enabled interactions as well as individualized support to help workers manage their physical, emotional and practical wellbeing, through its international network of qualified providers and professionals. Another program, called WPOConnect, provides companies with a web-based dashboard that can send and receive text messages from the factory floor to field workers to office personnel anywhere in the world. The ubiquity and efficacy of text messages vis-à-vis other forms of mass communication has enabled WPOConnect to expand quickly and efficiently.

Low-wage factory workers in Indonesia are using WPOConnect to receive safety training, pregnancy and dietary advice and other wellbeing-related information. They also are using it to track the compliance of contract factory owners on a range of issues including overtime pay, working conditions, and sexual harassment by providing the workers a way to submit anonymous complaints that bypasses the factory owners and reaches the brand-name corporations whose products they manufacture. A number of multinational brands have made WPOConnect a requirement, with one major manufacturer obliging all of their contract factories to adopt WPOConnect into their workplaces by 2020.

Messages received by WPOConnect's online dashboard are sorted, analyzed, responded to, and stored. With more data at hand, brands and factories can access in real-time the number and nature of messages about any topic. Data from the factories are reported up to the brand, giving them a bird's-eye view of what goes on in their factories, and assurance that their workers are being treated fairly. This information allows the brands to make better business decisions and, ultimately, improve their bottom line while avoiding compliance risks. WPOConnect also helps management retain workers. Elena Fanjul-Debnam, the company's Vice President of Labor Solutions, says that WPOConnect has allowed WPO clients to reduce employee turnover by 44% following long holidays, when late-returning workers are particularly prone to quit their jobs. The program has also enabled employers to get ahead of problems before they occur: WPOConnect-facilitated dialogue between labor and management, according to Fanjul-Debham, has prevented a number of strikes and shortened others.

WPOConnect also includes a remote SMS and app-based survey function as an alternative to traditional workplace audits, which are expensive and often fail to capture worker voice. This allows factories and brands to survey a more diverse selection of workers. If a brand sees something it doesn't like, it can drill down to respond and more effectively manage grievances at the factory level.

With its goal to reduce employee stress and make them more productive in their jobs, Workplace Options services are helping to more directly include workers' voices and build stronger alliances between global workers and global brands.
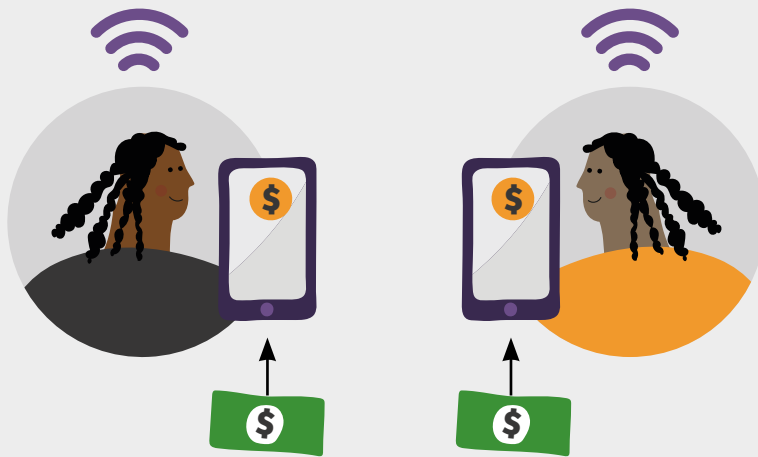
6

Consumption Floors & Nets

While many high-income countries retain strong rights-based welfare benefit systems, middle-income countries often lack the fiscal space for universal entitlements. Their employment structures tend to exclude the neediest who do not qualify for job-based social insurance. Conditional and unconditional cash transfers have been areas of substantial innovation in the past two decades in these contexts, along with ambitious guaranteed work arrangements. These programs provide direct cash assistance to people living in poverty, introducing short-term income and consumption stability in ways that have been positively evaluated to have beneficial longer-term effects on economic status. Owing to rapid changes in developed-country labor markets and anticipated future destabilization from automation, a less mature offshoot is innovation in proposals for a universal basic income, intended to provide a consumption floor in a coming era of human employee reduction particularly in routine jobs most often held by less-skilled workers.

Consumption Floors & Nets
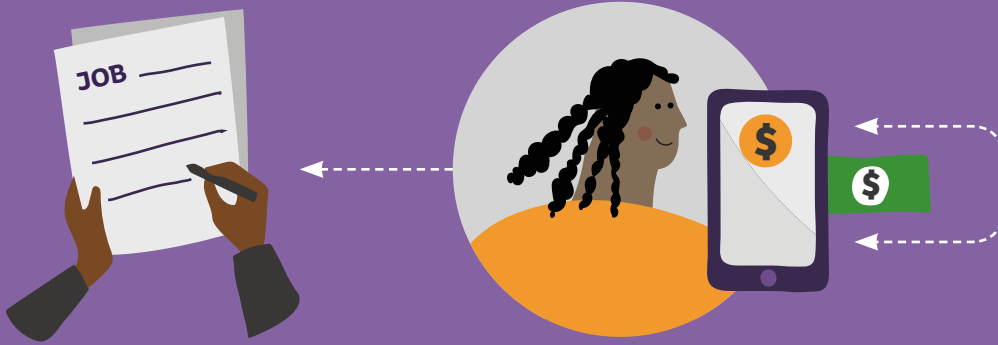
Prospera (Mexico)

Prospera, previously known as Oportunidades, is a conditional cash transfer program that benefits more than 30 million Mexicans in poverty, almost a quarter of the entire population. Every two months, Prospera gives small sums of money to families under the condition that their children attend school and receive vaccinations and regular medical checkups. Prospera's success over the past two decades in improving school enrollment and education levels, health prevention and nutritional status, and reducing income poverty in rural areas has made it one of the most replicated anti-poverty programs in the world. For this reason, UNICEF Mexico piloted Prospera Digital in 2015 to use mobile technologies to promote digital and financial inclusion of Prospera's beneficiaries. Its Comprehensive Financial Inclusion (CFI) program provides a range of services including financial education, savings programs, and access to micro-credit and insurance. The data-driven tools help the government to reduce costs by delivering cash transfers simply through smartphones, and enable beneficiaries, particularly women, to reduce risk by allowing them to receive their transfers more safely and conveniently.

Productive Safety Net (Ethiopia)

The Productive Safety Net Programme (PSNP) in Ethiopia is an initiative of the Government of Ethiopia, World Food Program (WFP) and development partners to help chronically food insecure households increase their long-term resilience to food shortages. Eligible beneficiaries receive monthly cash or food transfers for 5-6 months a year, typically during the lean season. This support smooths consumption, enabling households to meet their basic food requirements without having to sell productive assets and to plan with greater confidence. For households with able-bodied adults, the transfers are contingent upon engagement in labor-intensive public works projects that contribute to more resilient livelihoods for communities, such as rehabilitating natural resources and developing local infrastructure. The PNSP is contributing to improved food security and agricultural productivity, increased asset creation, and greater access to education and health services. The latest phase of the program, supported by the European Development Fund, is designed to increase resilience to shocks, improve food and nutrition security and enhance environmental management.

Gandhi Rural Employment Act (India)

The Mahatma Gandhi National Rural Employment Guarantee Act was initiated by the Government of India in 2005 to reduce rural poverty by guaranteeing 100 days of paid employment per year (increased to 150 days in 2015) to rural households whose adult members volunteer for unskilled manual labor at the statutory minimum wage. The Act provides a social safety net for up to 50 million households of underemployed and mostly impoverished agricultural workers. The basic income improves their purchasing power while the work creates common property assets, such as rural roads and water management works. It also helps men and women find jobs close to home, thereby reducing out-migration to the cities. Additional benefits include the incorporation of the rural poor into the formal banking system, stabilized agricultural production and enhanced gender equality. However, the Act is implemented in a decentralized manner and not all wages disbursed by the government reach their intended recipients; some economists and civil society advocates complain that leakages and corrupt implementation have rendered the Act ineffective.

13th Month Pay (Colombia, Chile, Argentina, Mexico)

The 13th Month Pay is a government-mandated additional month of pay required to be paid by employers to help workers meet the financial demands that typically occur around the end-of-year holiday season. It reduces workers' dependence on credit and other potentially predatory lending mechanisms and provides a stabilizing effect on consumption. The 13th Month Pay is mandatory in a number of countries, primarily in Latin America, and voluntary in several others. It can be paid in a lump sum at the end of the year or in installments.

Universal Basic Income (Finland)

Finland is currently conducting a pilot experiment of universal basic income, a form of social security that pays all citizens a regular sum of money irrespective of their financial situation. A group of 2,000 Finnish adults were randomly selected in December 2016 to be paid a basic monthly income (€650) for a two-year period. The idea is that the income allows recipients to spend less time seeking financial support and more time working or looking for work. Implemented by Kela, Finland's Social Insurance Institution, the purpose of the experiment is to better understand how the social security system could be redesigned to address the changing nature of work, and whether the bureaucracy could be streamlined and simplified to give people a stronger incentive to find jobs.

ProSoli (Dominican Republic)

Progresando con Solidaridad, or ProSoli, is a government-to-person conditional cash transfer (CCT) program in the Dominican Republic. Eligible beneficiaries receive digitized transfers directly into accounts which are tied to debit cards that can be used to purchase food, gas, power, and other goods from authorized vendors. Many of their benefits are subject to conditions, such as sending their children to school and for regular medical checkups. Beneficiaries also meet regularly in larger groups and receive monthly home visits from ProSoli community workers who assist the families in accessing public services, and who provide information about general health and wellness. Beneficiaries also have access to a wide variety of technical and vocational training opportunities. ProSoli has and continues to experiment with interventions to provide beneficiaries with improved financial literacy, access to savings accounts, and access to commercial credit at favorable rates for micro-enterprises.

PKH (Indonesia)

The Government of Indonesia's conditional cash transfer program, Program Keluarga Harapan (PKH or Family Hope Program), provides the country's poorest households with cash, contingent upon their participation in health and education services. Beneficiaries are restricted to households with pregnant or lactating women, or those with young children. PKH is implemented by the Ministry of Social Affairs and has delivered the highest impact per dollar spent among the country's social assistance programs in terms of reducing poverty and inequality. The transfers are enabling families to send their children to school and spend more on health and nutrition services, which has contributed to a substantial reduction in child stunting and malnutrition. In May 2017, the World Bank approved $200 million in financing to expand the PKH program to reach 10 million households, to help the government achieve its accelerated poverty reduction targets and improve the future of children from poor families.

UNICEF

How UNICEF is integrating innovation into its social protection mission

The economic welfare of families is all too often a key determinant in whether a child will survive the first month of life, go to school, be protected, thrive and grow up to reach her or his full potential. Almost half of the 767 million people living below the international poverty line ($1.90 per day) are children below 18 years of age, and they are twice as likely to be living in extreme poverty as adults.[1]

Lack of economic stability and vulnerability to economic shocks may lead to loss in income, driving families to poverty, and robbing them of opportunity, resilience and dignity. These families may be one economic shock away from making unthinkable choices: to remove a child from school, to allow their child to participate in labor, to agree to an early marriage of a daughter. However, poverty and economic vulnerability are all too often intertwined with the discrimination and exclusion that children and families experience as a result of their identities.[2] Poverty extends beyond economic vulnerability and manifests itself in many non-monetary aspects of life such as nutritional deprivation or lack of access to healthcare and child protection services.[3] Therefore, understanding various manifestations of poverty and adopting a holistic approach that could address these economic, social and other forms of poverty is at the heart of UNICEF's approach. UNICEF takes a fundamentally pragmatic approach to the role that social protection can play in realizing children's rights and supports the provision of coordinated and comprehensive responses.

Two decades ago, cash transfers (one of the four components of UNICEF's Social Protection Framework)[4] were a relatively new and innovative social protection component. Documenting experiences, sharing evidence and cultivating south-south knowledge exchange have been key strategies in evolving cash transfers from innovation to mainstream, where today it is a widely applied practice within UNICEF in both development and humanitarian contexts. As of 2015, 82 cash transfers programs were supported by UNICEF in 73 countries.

Learning was anchored and amplified by UNICEF's in-country experience and rigorous and systematic impact evaluations of cash transfer programs in many countries, mainly in Africa. A UNICEF-supported impact evaluation of the Zambian government-funded Child Grant Programme (CGP), which provided grants directly to poor households with children under five years old, found that in addition to eating more meals and being more food secure, families also improved their housing conditions, bought more livestock, bought necessities for children, reduced their debt, and invested in productive activities. Rather than induce dependency, as some feared, the CGP allowed households to become more productive and ultimately increase their total expenditure by an amount greater than the transfer itself.[5]

South Africa's Child Support Grant is the largest cash transfer scheme in Africa, reaching about two thirds of all children under 18 years of age. From a child poverty study there UNICEF gained insights to help understand the many deprivations faced by children, contributing to better targeting of eligible children. They also learned how

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[1] UNICEF and World Bank 2016.

[2] Kabeer, Nalia. 'Leaving no one behind': the challenge of intersecting inequalities. World Social Science Report 2016. In ISSC, IDS and UNESCO (Eds) World Social Science Report 2016. Challenging Inequalities: Pathways to a Just World. Paris: UNESCO Publishing. pp. 55-58.

[3] Lister, Ruth. 2004. Poverty. Cambridge: Polity Press.

[4] UNICEF. 2012. Integrated Social Protection Systems: Enhancing Equity for Children. https://www.unicef.org/socialprotection/framework/.

[5] American Institutes for Research. https://www.air.org/project/impact-evaluation-zambia-s-child-grant-program.

microsimulation and costing techniques could improve the program design.[6]

Experiences like these evolved the discourse from 'Should we do it?' to 'How we can do it better and in more places?' UNICEF distilled a cycle of work and phased activities and tools to support the introduction, expansion and improvement of cash transfer programs.

This pathway to scale was accelerated with the crafting of a Social Protection Framework in 2012 which included cash transfers, and the methodical embedding of these components into the UNICEF DNA within the Strategic Plan 2014-2017[7] and into the organization's current Strategic Plan 2018-2021.

Opportunities to improve continue to emerge. The high penetration of mobile phones paired with financial technology offer new possibilities—and fintech use is rising dramatically (global adoption rates were 16% in 2015, predicted to soon reach 52%)—with high demand seen in markets like China, India, South Africa and Mexico.[8] UNICEF country offices are exploring various digital mechanisms to deliver cash transfers as well as to identify beneficiaries, gather their feedback, and encourage targeted savings such as for educational payments.

In Iraq in 2016, UNICEF started a cash for education initiative to remove financial barriers to schooling for displaced children of families living in informal settlements. Within a year, distribution had evolved

from cash in envelopes to a mobile money transfer. This is more secure, easy to access, less time consuming and a more dignified way of making payments to beneficiaries, who are able to access cash, transfer money to others, make payments and access them from many locations across the country.

In Nepal, UNICEF uses the mobile-solutions platform RapidPro to enhance real-time program monitoring and accountability of the government's Child Grant Program, one of five social cash transfers for the most vulnerable. Households enrolled in the program are polled about the implementation and delivery of the grants, allowing feedback from those in remote areas to inform and improve national policy and implementation at the local level.

For UNICEF, it is clear that access to social security is a human right and a child right. Cash transfers can directly address monetary child poverty and vulnerability, serve as a safety net to protect families from shocks, and can address financial barriers to basic social services, such as education and health, thereby reducing multidimensional child poverty. Cash transfers can also address the financial drivers of child protection outcomes and can impact the inter-generational cycle of poverty and inequity through accumulation of human capital.

UNICEF's perspective is that the overall impacts of a cash transfer program sums to a value that is greater than the transfer size.

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

[7] https://www.unicef.org/strategicplan/files/2013-21-UNICEF_Strategic_Plan-ODS-English.pdf.

[8] EY FinTech Adoption Index 2017. http://www.ey.com/gl/en/industries/financial-services/ey-fintech-adoption-index.
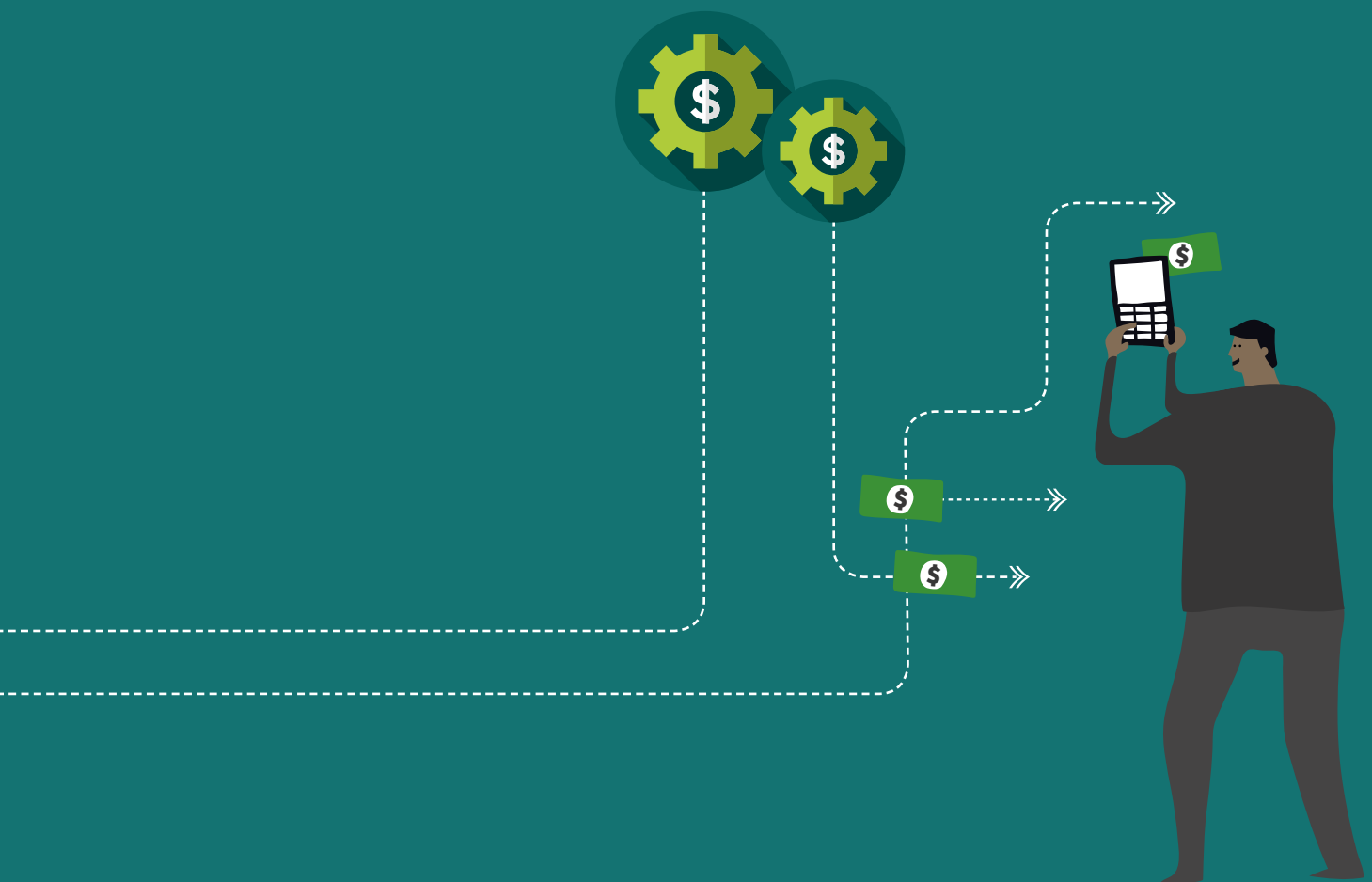
WHERE TO discover new innovations: Cash Transfer Innovations

The Cash Innovation Challenge was organized by a partnership of 15 international NGOs to create a space for the private sector and humanitarian agencies to identify and conceptualize innovative solutions to challenges affecting humanitarian cash transfer programming. Find details on the 2017 challenge at: *https://www.eventbrite.com/e/cash-innovation-challenge-open-data-management-for-humanitarian-cash-tickets-39055494034#.*

7

Inclusive Financialization

Until recently, the mega-trend of financialization of the economy primarily benefited financial institutions, shareholders, and developed-world consumers. Two trends—fintech that relies on mobile technology and big data, and financial inclusion, the logical extension of the maturity and mainstreaming of microfinance—are converging to offer more inclusive financial products that help manage cash flows and risks for customers who only a few years ago could not be reached with these services, or about whose existence and financial habits too little was known to extend profitable lending and insurance products. This means that for the first time, financial actors are developing products to spread financial risk that is traditionally borne entirely by the poor, and in some cases helping them accumulate productive assets as the centerpiece of agricultural businesses. Innovations range from income management and automated savings globally to agricultural and livestock insurance in sub-Saharan Africa and Nepal, and a number of digital payment system. Products span the lowest- to highest-income contexts, though fewer have emerged in the lowest-income economies due to lower mobile phone penetration, smaller market sizes, and nascent data infrastructure. This is changing fast as mobile networks penetrate further into the developing world.

7.1
Inclusive Financialization
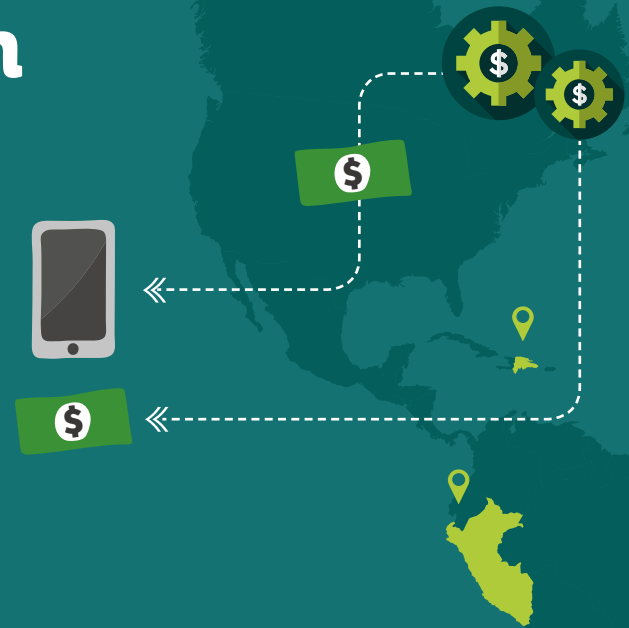
Risk-Contingent Credit (Kenya, India, South Asia, Africa)

The risk-contingent credit (RCC) program is a market-based innovative insurance solution launched in 2016 by the International Food Policy Research Institute (IFPRI), under the Global Resilience Partnership. RCC seeks to mitigate drought-related production risks and provide previously uninsured farmers access to credit. It is a social safety net in the form of an insurance-linked financial product which automatically offsets loan payments that are due to lenders when triggered by such risks as natural disasters and drops in crop yields and prices. RCC uses a satellite-derived drought index to capture underlying risks, integrating key environmental variables—e.g. rainfall, vegetation and soil moisture—via state-of-the-art remote sensors.

Wave Money (Myanmar)

Wave Money is a joint venture between Telenor, Yoma Bank, and Myanmar First Investments (FMI) that provides a convenient, fast and secure way for Myanmar citizens to send and receive money anywhere at any time. Through its agent network of 15,000 Wave Shops nationwide or a mobile phone account, Wave Money provides a platform for banks and microfinance institutions to offer services to those underserved by the country's fledgling financial infrastructure, giving millions of people access to formal financial services, many for the first time. In early 2017, Wave Money signed an agreement with the United Nations Capital Development Fund (UNCDF), supported by the Australian Government's DFAT, to develop digital financial literacy tools to accelerate financial inclusion in Myanmar.

Hello Tractor (Nigeria, Africa)

Hello Tractor is a tractor-sharing mobile platform developed by American entrepreneur Jehiel Oliver with start-up funding from private investors and a grant from USAID, as well as loan guarantees from the Central Bank of Nigeria. HelloTractor enables individuals in Nigeria and elsewhere in Africa to access low-cost financing to purchase small tractors equipped with GPS tracking software, and then rent them out to other smallholder farmers for a modest fee. HelloTractor provides owners with additional income from the rental payments they collect, and farmers who rent the tractor with on-demand, low-cost access to machinery. This dramatically cuts labor time and costs without requiring farmers to have the capital to purchase a tractor themselves. The machines are specifically designed to be smaller and lightweight in order to better navigate the types and sizes of plots owned by smallholder farmers.

MyAgro (Mali)

Many small-scale farmers in Mali live too far from formal banking institutions to make saving money feasible, while important inputs are typically sold in bulk, requiring farmers to purchase them in a single payment. myAgro addresses both of those challenges by using a prepaid scratch card model—similar to buying prepaid mobile minutes—that allows farmers to purchase seed, fertilizer and even specialized trainings incrementally on layaway through a mobile-based platform and a network of vendor partners. Through this bank-less savings scheme, myAgro reduces the consumption volatility for farmers that can arise during pre-planting time when they buy most of their inputs. Since its founding in 2012, myAgro has helped farmers increase their average yields by 50-100% and their net farming income $150-300 per farmer.

MyWORTH (Tanzania)

MyWORTH is an Android and tablet app being piloted in Tanzania with Pact's micro-banking program WORTH. It works as a mobile e-ledger, replacing paper-based savings records and giving previously financially excluded women real-time access to group loans through the convenience of a cell phone. WORTH brings together women in groups of 20-25 to receive financial literacy and numeracy training, learn how to access credit and run a small business, and function as their own micro-banks by pooling savings deposits for members to take out loans when they need them. Developed by Pact with support from Hewlett-Packard Enterprise's Living Progress Challenge, MyWORTH enables members to more smoothly and skillfully participate in savings groups, develop credit histories and strengthen their social networks, enhancing the financial resilience of impoverished communities and individuals and empowering them to withstand the shocks of natural disasters, resettlement and other crises.

Modelo Peru (Peru)

Modelo Perú is a unique collaboration of more than 30 of Peru's financial institutions, telecom companies, government and others to establish a fully interoperable national digital payments platform designed to promote financial inclusion. The platform, known as BiM (Billetera Móvil) allows Peruvian citizens to register and open an electronic money account directly on their phones, including via SMS on non-smartphones most often used by underserved customer segments, and soon at any of the more than 100,000 physical nationwide sales points. Its purpose is to provide digital financial services to populations who previously may not have had access to any financial services. BiM's mobile wallets make use of existing financial infrastructure to facilitate easy deposits and withdrawals and enable individuals to transfer money to others via simple and low-cost SMS messaging—without requiring a preexisting bank account or access to a smartphone. Modelo Perú is led by the Peruvian Bankers Association and is the first such common mobile money platform in the world with a specific focus on financial inclusion.

Innovator profiled on p.54

Innovator Profile

Modelo Perú - BiM
Miguel Arce Tellez

Commercial Director in charge of partner relations, Pagos Digitales Peruanos (PDP)

The Modelo Perú initiative was introduced in 2016 to provide an interoperable nationwide digital payments platform, called BiM (Billetera Móvil), to extend financial services to the over 70% of Peruvians who lack access to the formal financial sector, or approximately 10 million unbanked or underbanked people. It also aims to significantly reduce transaction costs for financial service providers and other businesses through the use of mobile money instead of cash. Led by the Peruvian Bankers Association (ASBANC), Modelo Perú is a collaboration among the country's largest commercial banks and financial institutions, its four telecom companies, and microfinance organizations, most of which already had their own individual Point-of-Sale (POS) networks and electronic wallets to facilitate transactions. Modelo Perú connected these platforms, their agents, ATMs, and bank branches into one network and worked with lawmakers to establish national e-money regulations to best deliver financial services to underbanked Peruvians, especially those in remote areas.

"We are creating this physical network in places where banks don't yet exist," says Miguel Arce Tellez, the Commercial Director of Pagos Digitales Peruanos, the collaborative entity that designed and now manages the BiM platform and which is majority-owned by ASBANC's financial education institute. By expanding its BiM agent network from 5,000 currently to at least 20,000 agents by the end of 2018, in addition to the 40,000 points already connected by its partner banks, Miguel is confident the BiM platform will soon become Peru's largest digital network for cash-in/cash-out and over-the-counter services.

While working at ScotiaBank Peru, Miguel and his colleagues from other banks proposed the idea to the Bankers Association of creating an interoperable nationwide platform available to all Peruvians at any time. With 33 participating institutions, each of which had different visions of how BiM should proceed—with some banks focused on boosting the number of transactions and others more keen on reaching new customers—it took some finessing to get all parties on board. BiM's early successes convinced its skeptics. "When the other banks saw their competitors benefiting from this, they joined."

Now, through social media and word-of-mouth, Modelo Perú is hoping to reach at least five million Peruvians in the next five years, up from the 430,000 who are using the BiM platform now, to enable customers to send money anywhere in the country through a single platform in real-time, which had not been previously available in Peru.

"This is a different way to think than traditional banking," Miguel says. "We are approaching the base of the pyramid with an alternative to cash, but with the goal to do a lot of bigger things in the meantime through the cell phone."

These include increasing the volume of peer-to-peer (P2P) remittances, introducing e-commerce to Peru in partnership with one of the industry's global leaders, and supporting the government in delivering social services to hard-to-reach populations. PDP is also working with local MFIs to create a network of agents who can coach rural populations on how to use the platform. It will also continue to refine its services to reach populations with limited or no mobile network coverage and accelerate uptake outside of urban centers. PDP is now working with Ericcson to allow for BiM transactions to be conducted on the individual banks' own POS systems, which are more familiar to the banks' agents.

The global financial inclusion industry is looking at the Modelo Perú experience as a possible blueprint for other countries that face similar challenges in mobilizing digital financial solutions to reach the unserved and underserved. At present, most of the world's digital payments platforms are owned by an individual company or small group of financial institutions in alliance with a single telecommunications company, meaning that payments are only accepted by account holders of those companies. BiM's interoperability, on the other hand, allows users to conduct all necessary transactions with all financial institutions and other e-money issuers, as well as government, telcos, and large payers and payees in Peru. This makes the experience seamless for both the customer and the financial institutions.

BiM's early growth has been slower than expected, with the number of transactions on the platform well below initial projections and expansion into unbanked and marginalized rural communities hindered by the lack of mobile coverage and the participating banks' preference to first serve their existing, largely urban, client base.

However, through trial and error and the efforts of its many different partners, Modelo Perú's BiM platform is increasingly helping to improve financial inclusion through the creation of the country's first digital payments ecosystem.

WHERE TO discover new innovations: Financial Inclusion Innovation

The Financial Inclusion Challenge is a Wall Street Journal editorial initiative sponsored by The MetLife Foundation to showcase solutions that improve financial access for the poor.

Follow current challenges and view past winners at: *https://financingthefuture.wsj.com/us/financial-inclusion*.

The purpose of the MasterCard Foundation Fund for Rural Prosperity competition is to support businesses to extend financial services to people living in poverty in rural areas in Africa. Follow current challenges and view past winners at: *http://www.frp.org/*.

DataHack for Financial Inclusion (DataHack4FI) is an African innovation competition supported by insight2impact (i2i) that promotes collaborations among finance, tech and data specialists for using data and analytics to design solutions for businesses and extending financial services to underserved communities. Follow current challenges and view past winners at: *http://www.datahack4fi.org*.

Insure My Yaks

A new kind of insurance may protect hard-to-reach nomads against livestock losses

For nomadic herders high in the Himalayas or on the pasturelands of the Tibetan Plateau, livestock are the lifeblood of the economy. So when a violent storm or mountain-dwelling predator claims one of their pack, it can have catastrophic consequences for their livelihoods. Enter Yak Insurance, a modern microfinance mechanism to help highland households manage the climactic risks and natural hazards that threaten their herds.

In the remote, rugged mountains of eastern Nepal, where domestic yaks are vital herd animals kept also for their milk, wool and meat, a community-founded and managed livestock insurance scheme was designed not only to provide relief to herders for livestock losses, but also to help balance the delicate alpine rangeland ecosystem. When left on their own to graze, the young yak calves—as well as baby goats and blue sheep—are easy game for the carnivorous snow leopards, which experts believe number just 300-400 in Nepal. With each loss keenly felt, retaliatory killings against the endangered mountain cats were evident.

Set up through a locally-banked seed fund by the World Wildlife Fund Nepal and University of Zurich in 2005, the insurance scheme is part of the Snow Leopard Conservation Committees program established in the Kangchenjunga Conservation Area—home to Mt. Kangchenjunga, the third highest mountain in the world. Yak-herding families who join the insurance plan contribute a premium of 100-300 Nepalese rupees a year (approx. US$ 1-3) to a local fund. To guard against fraudulent claims, committee members conduct on-site visits to assess the veracity of each claim and decide on the insurance payout, in line with the pre-decided relief amount, for each animal killed. As a locally-initiated program that shares benefits equally among members, it has fostered a feeling of local ownership and helped to stabilize herders' incomes. It has also engendered positive attitudes toward their erstwhile enemies: locals believe that as a result of the program, snow leopard numbers are on the rise.

A number of other livestock insurance models have been launched in the elevated regions of Central and East Asia during the past decade or so to compensate herders for the loss of their grazing beasts to depredation, disease and disaster. However, introducing innovative insurance schemes to skeptical mountain shepherds who have been husbanding their animals the same way for generations has been no easy task. Convincing them to pay insurance premiums is a persistent challenge. Considering that these mountainous areas have poor communication, insurance streamlining is also a challenge in certain areas. Gaming the system by falsely reporting animal deaths—and recirculating photos of dead yaks and sheep—can jeopardize the sustainability of cash-strapped insurance programs. And when the carcass of a calf has been stashed by a snow leopard or completely devoured by scavengers, proper payoffs can be difficult to settle.

Perhaps they could look to northern India for some solutions. To ensure the authenticity of each claim there, a similar social protection and wildlife conservation program set up in Himachal Pradesh by the Nature Conservation Foundation in 2002 requires owners seeking compensation for their killed horses, cattle and yaks to prove they have not sold the meat or that the animal has not died of disease—by taking an oath on the Dalai Lama. Although some beneficiaries object to this practice, they continue to stand by the village-run insurance schemes that are enhancing the prospects for themselves, their large-bodied livestock and the carnivorous predators alike.

Digit, Prism, & Even

A trio of fin-tech tools are helping Americans better manage their money and build their savings

For individuals who struggle to manage their finances and properly save for the future, Digit provides its users a way to sock money away with minimal effort. Headquartered in San Francisco, Digit launched in 2015 to automatically set aside funds in small, incremental amounts for its customers.

A user creates an account, gives Digit access to their checking account, and Digit analyzes the user's spending patterns and income history and uses a predictive algorithm to move small sums of money into an FDIC-insured Digit account. Digit only transfers what the user can afford, at the times they are least likely to miss it. When users need money, they message Digit and the requested funds are transferred back into their checking account.

Digit charges a monthly fee of $2.99 and offers a quarterly Savings Bonus of 1% cash back. By targeting younger individuals who are unable to save money and wouldn't do so on their own, Digit is betting it can get people to trust computers to manage their money so that they don't have to.

A mobile bill pay application called Prism, developed by Prism Money, a Seattle-based startup acquired in 2016 by Handle Financial subsidiary PayNearMe, is providing customers with a single easy-to-use platform through which they can manage all of their bill payments in one place. Users connect their bank accounts and the accounts they use to pay their bills with Prism, which uses Microsoft's secure cloud service, Azure, to store and transmit data. The app then syncs account balances and bills, notifies users when bills are due, and offers them the option to pay those bills directly and immediately or schedule payment for the future. Prism also offers a dashboard that allows its customers to view their account balances alongside their bills, to help them avoid wasteful overdraft or late fees.

Prism, like Digit, is designed to help young Americans and financially vulnerable households manage the complications of paying multiple bills that may be due at scattered intervals. Prism currently serves more than 100,000 customers.

Oakland-based financial health mobile app Even was designed to help people with unpredictable paychecks smooth their income and manage their savings so that they can pay bills today and plan for the future. Even functions as a digital safety net to give hourly and part-time workers a tool to cope with erratic wages and unexpected expenses. It also provides them a subscription-based alternative to high-interest payday loans, overdraft fees and other debt traps that can erode household economic stability.

The Even app connects to an employee's bank accounts and calculates their average monthly income and how widely their paychecks vary, how long they have worked at their jobs, and monthly spending on housing, food transportation, and other basics. Using an algorithm to analyze that data, Even provides real-time estimates of how much the individual can safely spend each month. In the months they earn less, Even allows clients to withdraw their wages ahead of time, loaning them the difference without interest. In times when earnings exceed their monthly average, the app withholds the extra money and applies it to their Even-managed savings account. It then uses that surplus either to cover low-income months or repay no-interest loans that Even automatically extends.

Even charges individual users a at fee of $3 a week. It was initially available only to employees whose work hours and incomes fluctuate from week to week. Services for freelancers and other non-standard workers rolled out in 2016.

These three initiatives—Digit, Prism and Even—are all working to optimize services for their customers, develop business models that can generate a profit, and bring some peace of mind and a little stability to financially stressed Americans.

8
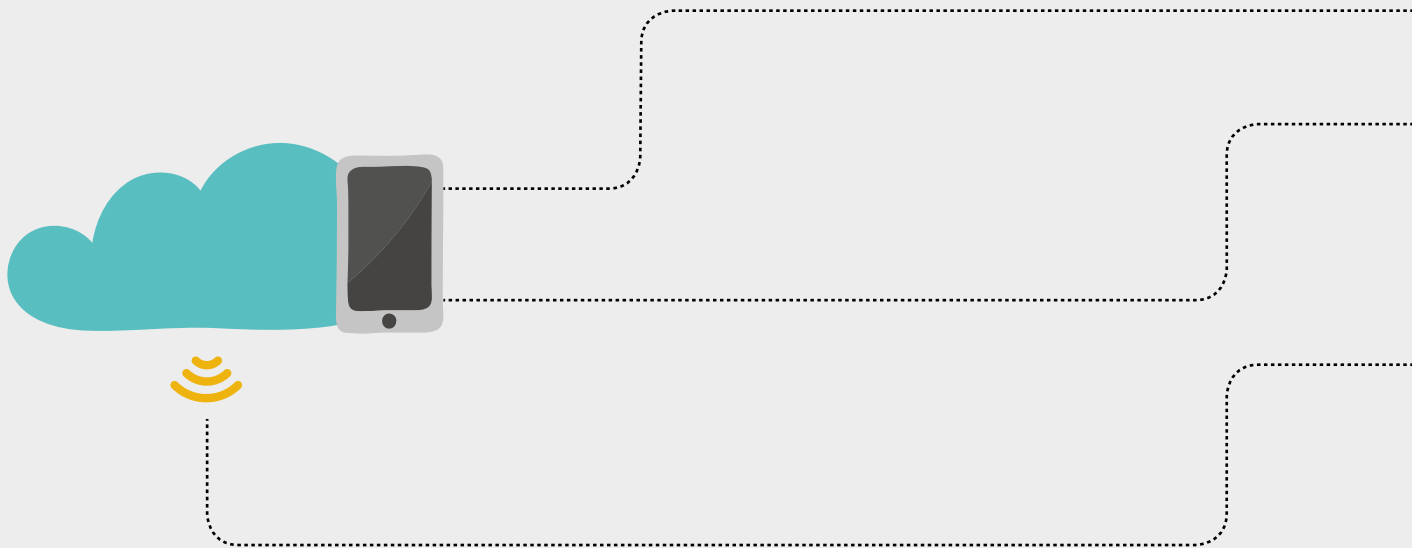
Big Data, Small Devices (Better Livelihoods)
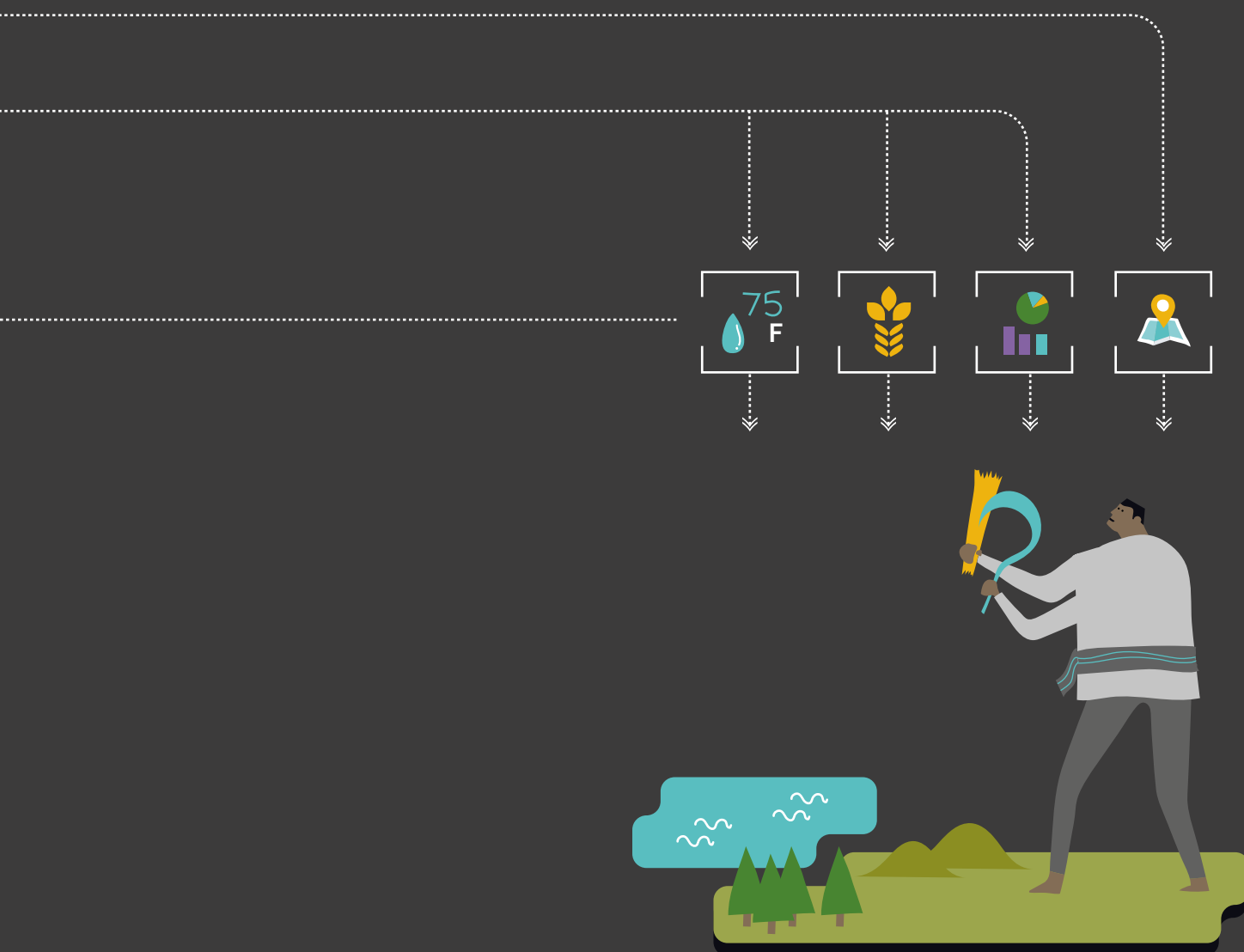
Across the world, the proliferation of mobile devices is profoundly impacting who can receive and benefit from services to support the stabilization of their livelihoods. This trend is driven by the profitable expansion of mobile telephony and low-cost smartphones. At the same time, the revolution in big data and analytics, driven by data scientists and increasingly harnessed by entrepreneurs, enables delivery of information services that put new data in the hands of individuals and communities to support decision-making. Better data about people, their habits, their income and the markets in which they participate, and their environment (e.g. weather and soil) also make agricultural risk easier to manage for producers and easier to assess and insure from the perspective of the finance sector—reducing moral hazard and strengthening confidence among insurers. The use of new data underlies or supports many of innovations in all areas we have identified. But the ability to package multiple layers of top-tier information—including predictive analytics—for use by poor and vulnerable own-account agriculture producers, improve agricultural market coordination to increase incomes and reduce risk, and deliver these services to low-literacy populations are all the groundbreaking areas of current innovation explored in this section.

Big Data, Small Devices
## (Better Livelihoods)
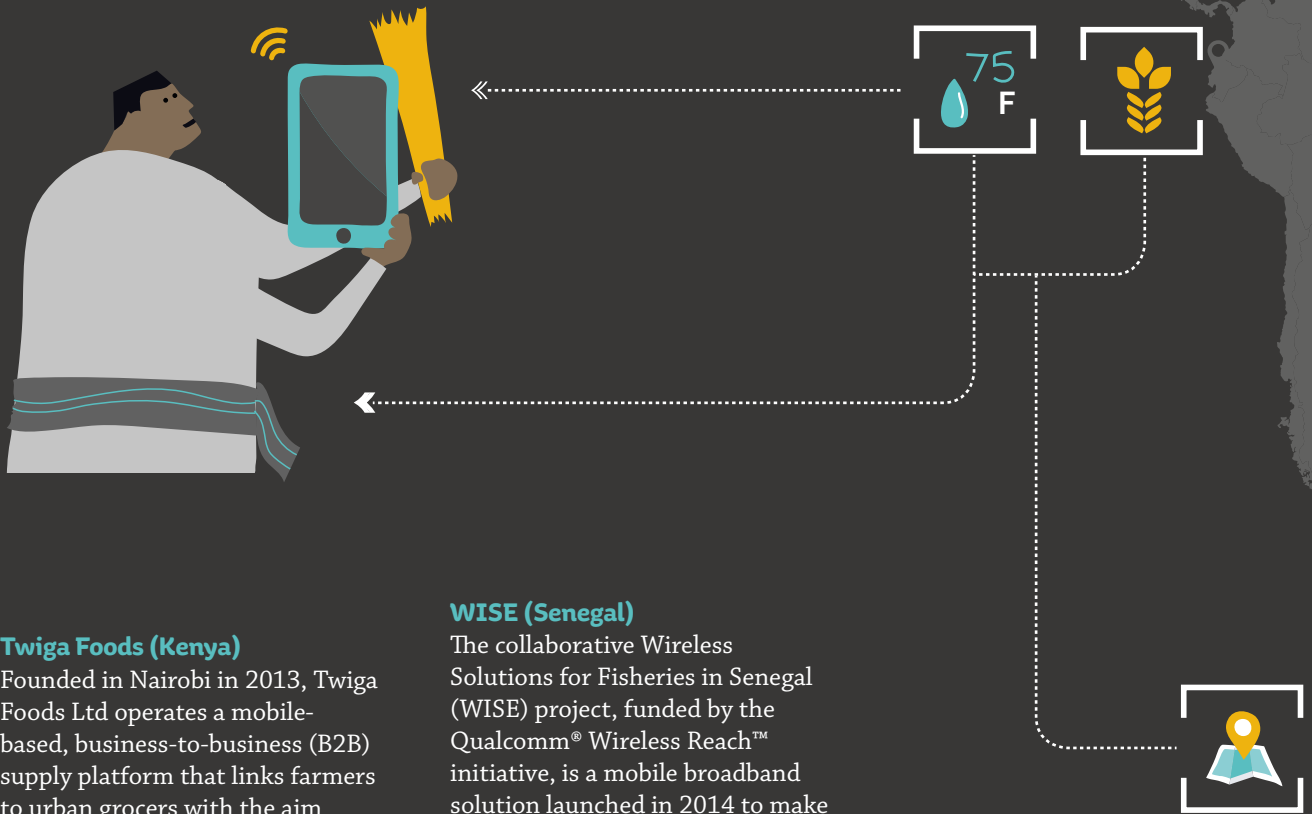
Twiga Foods (Kenya)

Founded in Nairobi in 2013, Twiga Foods Ltd operates a mobile-based, business-to-business (B2B) supply platform that links farmers to urban grocers with the aim of consolidating the fragmented produce market. Farmers alert Twiga through SMS when their produce is ready, and then Twiga picks up and delivers the produce directly to vendors, saving them a trip to the market and eliminating the need for brokers. Twiga not only minimizes post-harvest losses through efficient logistics but also makes markets more stable and predictable, by using its data to create future value profiles of certain commodities to protect farmers against price shocks. Twiga smooths income volatility for farmers, lowers costs for vendors, and provides consumers higher quality staples of known origin. In just a few years, Twiga has become one of Kenya's largest distributors of several basic food staples.

WISE (Senegal)

The collaborative Wireless Solutions for Fisheries in Senegal (WISE) project, funded by the Qualcomm® Wireless Reach™ initiative, is a mobile broadband solution launched in 2014 to make artisanal (small-scale, low-tech, low-capital) fishermen and fish processors more competitive. The WISE project leverages advanced wireless technologies to collect and transmit data on local fish market prices, promote best fishing and processing, health and hygiene practices through its video and text features, and provide fishermen and fish processors access to affordable credit through micro-lending institution partners. The loans can be accessed and transferred into a mobile money account through an Android-based smartphone to invest in their operations or cover their off-season expenditures. Other features include weather updates and ocean state conditions that use GPS to apprise fishermen of the best and

safest times to fish. WISE includes a particular focus on addressing the disadvantages in the fishery value chain faced by women, who comprise the majority of small-scale fish processors, supporting their capacity to use information and communications technology (ICT), economic sustainability, and helping close the gender gap that has kept women from benefiting fully from their participation in the industry. WISE is a collaboration of FHI 360, Qualcomm® Wireless Reach™, the Senegalese Food Security Commission, Intermondes and Tigo-Senegal.
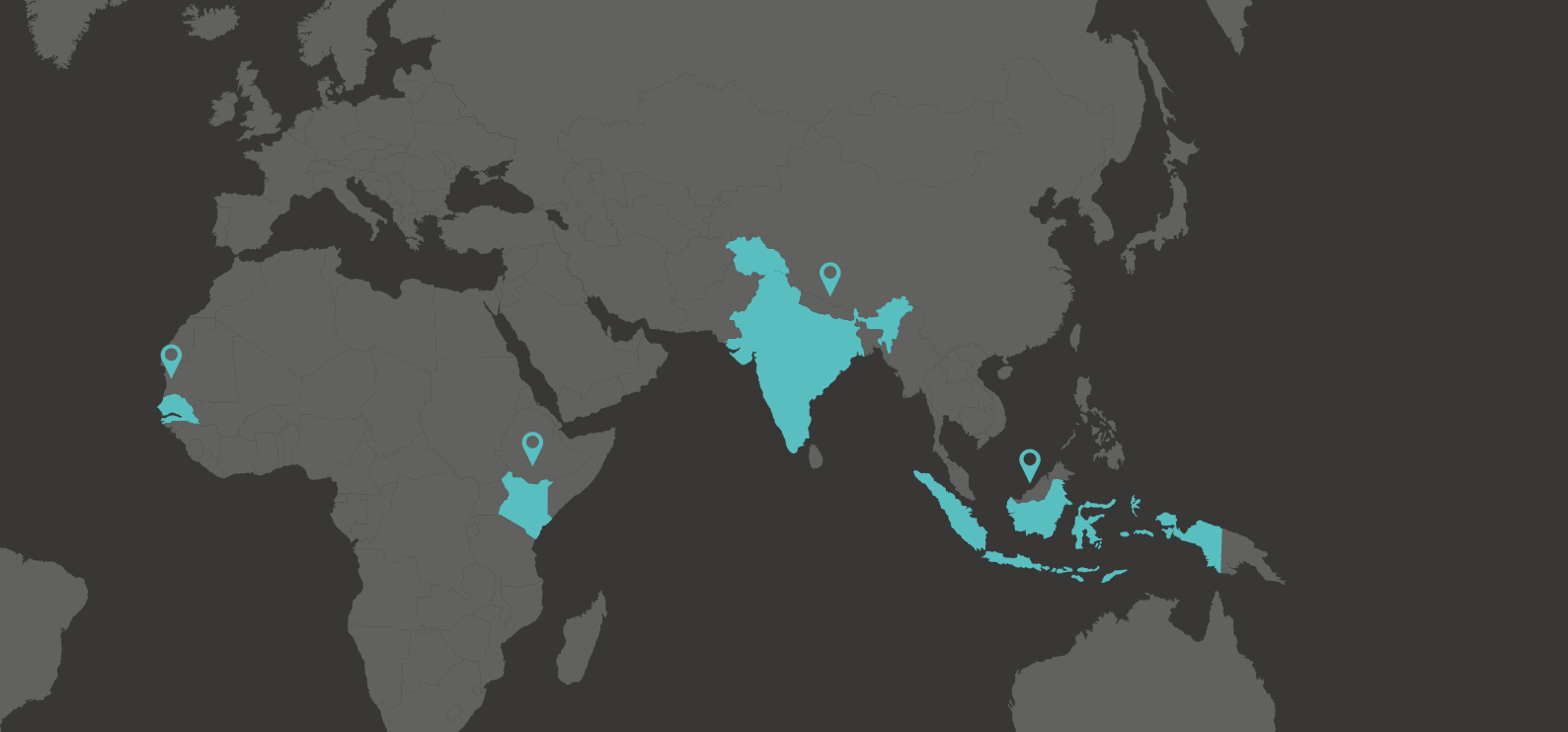
Agri-Fin/LISA (Indonesia)

The Agri-Fin Mobile Program works with the private sector in Indonesia, Uganda, and Zimbabwe to develop demand driven products and services that will increase farmer yields and income. Mercy Corps and its partners utilize affordable mobile data collection applications that enable farmers to monitor crop conditions, validate field conditions for micro-insurance claims resulting from drought or cyclones, and track agricultural input distribution through digital vouchers. Another mobile app called LISA, developed by the Southeast Asian startup 8villages, a Mercy Corps partner, allows farmers to receive agricultural tips, submit their problems to experts, and report data on harvest and post-harvest activities via SMS. Data collected by these mobile apps help financial institutions better understand the risk profile of farmers and help integrate Agri-Fin's services into a single, comprehensive mobile phone-based package. Providing these services through mobile phones has the potential to reach millions of low-income farmers in remote areas, boost productivity and promote greater financial inclusion, which in turn can improve livelihoods and food security at the household and system levels. To date, Agri-Fin Mobile has reached over 1.2 million smallholder farmers.

FarmDrive (Kenya)

Kenyan data analytics startup FarmDrive is an alternative credit scoring model that uses SMS and its own Android application to build detailed credit risk profiles for smallholder farmers. It uses a credit scoring algorithm to aggregate diverse data streams including weather, soil conditions, market access and satellite imagery, and combines that with data input by farmers about revenues and expenses. By analyzing this data, FarmDrive generates credit scores so that risk-averse financial institutions can know whether a farmer is creditworthy. In just a few weeks, farmers can apply for a loan. Increasing access to financing enables farmers to make more productive investments and increase their incomes and savings. FarmDrive also aims to make farming more attractive to young Kenyans, in order to reduce their need to migrate to cities where jobs are scarce, and improve rural food security. The loans are disbursed by the mobile money transfer service M-Pesa. FarmDrive is also working in partnership with Musoni Kenya, a tech-driven MFI, to disburse tailor-made loan products to farmers.

 Innovator profiled on p. 62

Avaaj Otalo (India)

Voice4All, also known as Avaaj Otalo, is an interactive voice application to give small-scale farmers in India the latest information about agriculture markets and allow them to record, browse and respond to questions and answers about farming. It was designed in 2008 as a collaboration between UC Berkeley School of Information, Stanford HCI Group, IBM India Research Laboratory, and Development Support Center, an Indian NGO. Its aim is to deliver digital information through basic smartphones to hard-to-reach farmers and overcome literacy and language barriers. Avaaj Otalo inspired the founding of a partnership between Awaaz. De and KVK-Kheda to provide a similar two-way information platform that offers interactive voice broadcasts between agriculture experts and farmers. Based on local needs, experts send customized information in local language on crop production and livestock husbandry to farmers, who can both listen and respond with questions and feedback, thereby making agricultural interventions more effective for stabilizing livelihoods.

Innovator Profile

FarmDrive -
Rita Kimani and Peris Bosire
FarmDrive co-founders

The large majority of the world's poor live in rural areas and subsist by working on small plots of land. For these households and communities, accessing the necessary inputs, equipment, and finance can be a great struggle, leaving them unable to increase their yields and revenues while trapping them in an unbreakable cycle of poverty and instability.

As young girls raised in smallholder farming communities in Kenya, Rita Kimani and Peris Bosire, experienced first-hand many of these challenges and later dedicated their academic careers to finding a solution. They met on their first day as students at the University of Nairobi and became instant friends and soon-to-be business partners. At university, they further developed their computer science skills and, believing that the lack of agricultural productivity in their communities derived from a lack of capital, resolved to bridge the gap between smallholder farmers and financial service providers.

After graduating in 2014—with First Class Honours—Rita and Peris founded FarmDrive, a start-up that uses mobile phones to build credit for base of pyramid farmers. FarmDrive is an alternative credit scoring model that uses SMS and its own Android application to build detailed credit histories of smallholder farmers for financial institutions, thereby linking the unbanked and underserved to credit while at the same time helping financial service providers to grow their agro-loan portfolios in a cost-effective way. It also allows farmers to track their revenues and expenses. Using this simple mobile technology, advanced analytics and non-traditional data sets (e.g. weather, climate, social interactions,

satellite data) combined with farm-level data, FarmDrive is democratizing lending by offering its products through a free and simple mobile platform, accessible anywhere at any time, and is leveling the financial playing field for men and women by making available loan products and risk assessment tools that do not require asset ownership.

In 2017, Rita Kimani was selected by the United Nations as one of the young leaders to help promote the Sustainable Development Goals (SDGs) among youth. In that capacity, she was an advocate for youth voice in designing programs to help young farmers across Africa. The SDG mantra of "leaving no one behind" has particular resonance with Rita, who feels that agriculture provides young Africans the best opportunity to escape poverty and to achieve the SDGs, particularly given the ways technology and data-driven solutions are changing the way farm work is conducted and managed.

Peris Bosire was exposed to computers at a young age and started writing basic programs while in high school. While at university she interned as a data technician with PricewaterhouseCoopers and later worked as a software engineer in IBM's African research lab. Now, she says, the prevalence of mobile devices across Africa is enabling technology to make a real impact towards greater financial inclusion in rural areas.

Thus, the two smallholder farmers-cum-tech entrepreneurs feel that this is the perfect time to scale: within the next five years they are aiming to extend loans to a half million farmers in Kenya and many more across the continent.

TCS Pride

Improving the agricultural value chain in emerging economies through digital farming

Indian IT giant Tata Consultancy Services Limited (TCS) hopes to improve farmer livelihoods and revolutionize agriculture through digital technologies and partnerships. Its innovative Progressive Rural Integrated Digital Enterprise, or PRIDE™, is powered by TCS's mKRISHI®, a proprietary mobile-based personalized service delivery platform and is being promoted to overcome the inefficiencies in the current agriculture value chain, particularly in emerging economies. The initiative aims to boost agricultural productivity, stimulate local micro-enterprises, and, ultimately, support rural development.

PRIDE connects farmers with partners and agriculture experts and leverages their collective power to promote scientific farming and improve the climactic and market resiliency of farmers. Through mKRISHI's specialized and integrated IT solutions, farmers can access personalized agricultural advice and information in local languages anytime and anywhere on their mobile phones. PRIDE facilitates the development of sustainable, economically viable local ecosystems by using social networks, satellite imagery, Internet of Things, and other digital tools to collect data continuously from the field, aggregate the data, and transmit data securely through the cloud to farmers, banks, and other agricultural stakeholders. Specialized data analytics algorithms process the data, which are used to direct on-the-ground operations. Converting the complete spectrum of agricultural transactions information across the value chain into evidence-based, data-driven interventions helps farmers to remove much of the unpredictability that often prevails in their lives.

During the crop planning phase, past, present and future data on the weather, land and soil, disease and pests, market trends and demand forecasts are used to advise farmers on the best crops for their particular piece of land. The information is captured in the AgriCrol™ (Agricultural Crop Protocol), a state-of-the-art personalized protocol, derived through predictive analytics. Using the AgriCrol™ information as a guide, the farmer can more effectively plan for and respond to climate and market risks. PRIDE then helps farmers achieve economies of scale by consolidating demand for agro-inputs like fertilizer, pesticides, and labor, (making them cheaper), and aggregating land holdings and the supply of produce to markets, facilitating higher returns. At harvest time, PRIDE enables farmers to more fully understand their options for storing, processing and selling their produce. Equipped with more robust real-time information, farmers can minimize their risks, increase their yields, reduce costs, improve market linkages and strengthen their financial resiliency.

TCS estimates that the PRIDE model has contributed to meaningful declines in the use of pesticides and fertilizer, as well as substantial increases in average yields, profitability, compliance with best practices, and rural employment. Revenue opportunities derive from fees paid by farmers or data as a service offered to partners who use the platform. Currently, a million active farmers across 10 states in India are using PRIDE.

There are several innovation challenges promoting big data for agriculture, many of which are localized. Selected examples are presented here. **1)** The Data Driven Farming Prize, supported by Feed the Future, Nesta and other partners, seeks data-driven solutions to be tested in Nepal that can deliver actionable, timely and context-specific information for smallholder farmers to improve gains from agricultural productivity. Follow current challenges and view past winners at: *http://datadrivenfarming. challenges.org/*. **2)** Nesta's Open Data Challenges support data-driven solutions to transform lives in the developing world including a Data Driven Farming Prize in Nepal, challenge prizes for the fish farming sector in Bangladesh and India, and several awards for non-agricultural innovations. Follow current challenges and view past winners at: *http://challengeprizecentre.org/prizes/*.
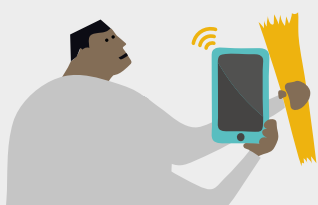
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Collective Security
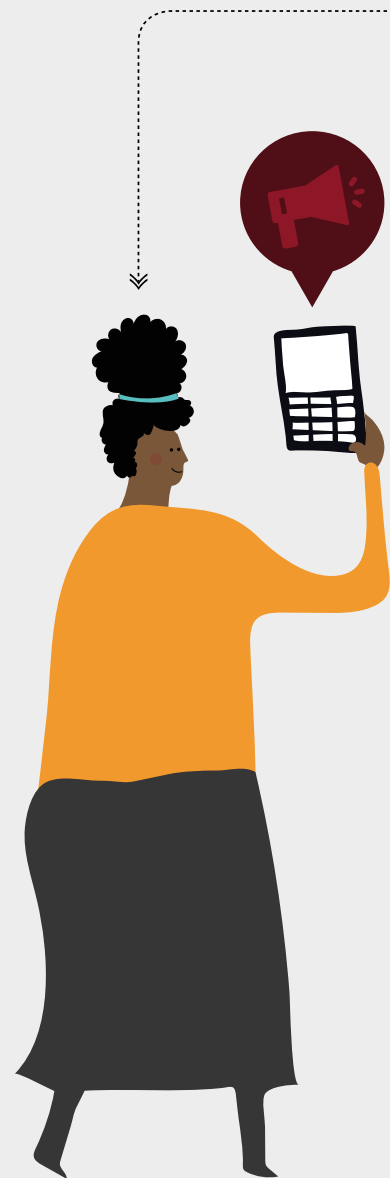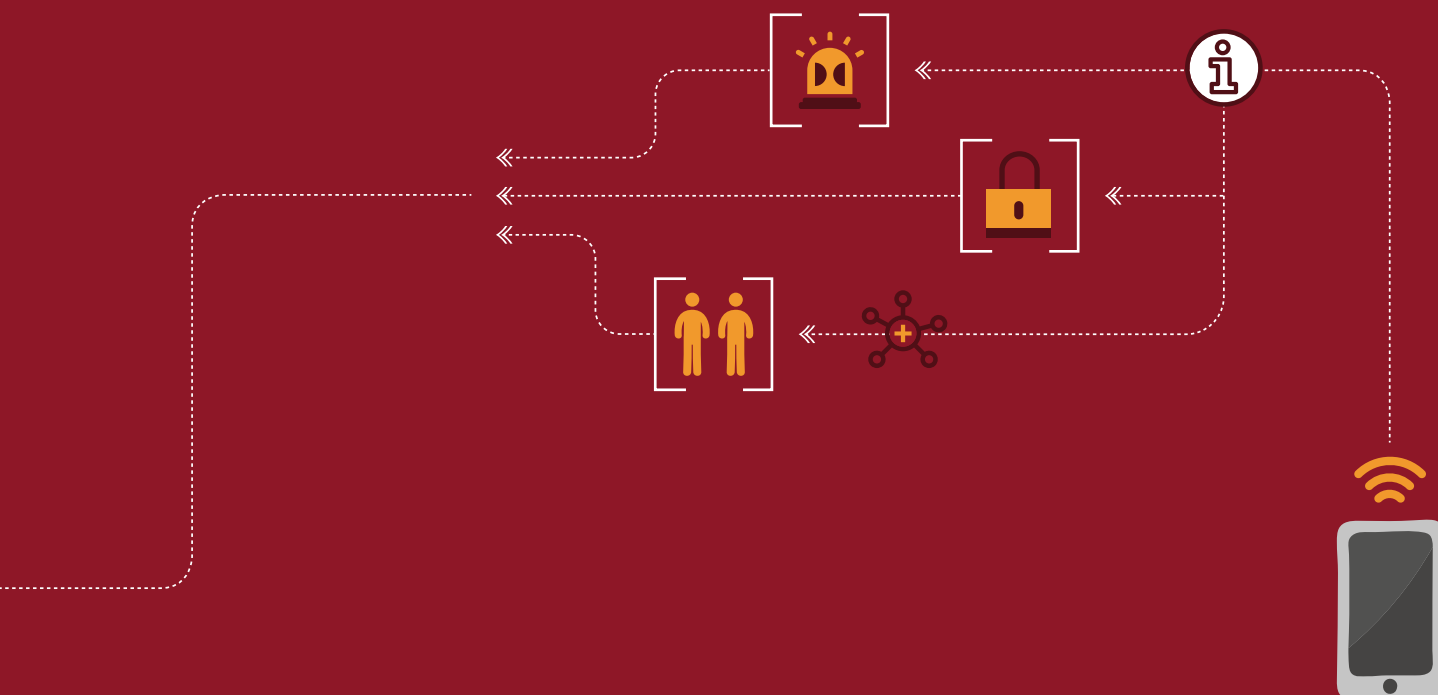
Gaps in basic protection of personal security exist across income contexts, but they are most acute in large urban areas with substantial income gaps in middle-income countries. The combination of rapid urbanization, lack of reliable or professionalized police forces, and the widespread prevalence of violent non-state actors like gangs or drug cartels, creates obstacles to personal security and therefore stability for the people who move through cities, especially pedestrians and those using public or shared transportation. In response, several notable innovations that provide for peer-to-peer reporting and mapping of violent incidents empower people "on the ground" to make real-time personal safety decisions. Some public services are also deploying advanced data and sensor-based approaches to monitor urban violence and streamline or improve emergency services delivery.

9.1

Collective Security

Fogo Cruzado/Onde Tem Teroteio (Brazil)

A pair of collaborative mobile phone apps are helping Rio de Janiero residents avoid stray bullets. Fogo Cruzado (Crossfire) and Onde Tem Tiroteio (Where the Shooting Is), or OTT, collect real-time reports from citizens and police about gunfire in the city and deliver instant alerts to nearby users. The Crossfire application, initially developed by Amnesty International Brazil and a local researcher in 2016, became independent in 2018 with the collaboration of the Update Institute. Fogo collects the information—such as location and duration, injuries and fatalities, and the parties involved, using the GPS on their mobile phones—and converts it into an interactive map of the city delivered on mobile platforms. Alerts sent by the local start-up OTT, through its mobile app as well as Instagram, Twitter and Facebook, also include reports on broader crime incidents and reach some 4.5 million people. The popularity of these apps indicates the local demand for improved personal security. By generating a better picture of gun violence in the city, Fogo and OTT aim to inform more effective public policies to address the problem and protect Rio's citizens from danger.

DARU (Indonesia)

DARU is a software application developed by the Indonesia-based Radya Labs that supports the Jakarta Fire Department to strengthen its delivery of firefighting services. Through a Vehicle Tracking System (VTS) & On-Board Unit application, DARU uses open data from the fire department, such as the location of fire hydrants and nearby fire stations, and then provides the public with data about local fire accidents and the real-time location of fire trucks. Fire accident data is now being inputted manually and firefighting coordinated via analog walkie-talkies, DARU is helping the Jakarta Fire Department to automate and digitize the process, which was tested in 2017 and may be deployed in short time.

CrashDetech (South Africa)

South Africa is one of the world's most dangerous countries in which to drive. To give motorists peace of mind, Johannesburg-based entrepreneur Jaco Gerritis developed CrashDetech, a telematic mobile application that automatically detects the sudden impact of a car crash and reduces emergency response times, and in doing so, saves lives. Using smart drive-detection technology, the mobile phone delivers instant alerts to the CrashDetech emergency contact center, which dispatches the nearest paramedics to the crash location. It also sends them the patient's vital medical information to ensure the most effective treatment. Launched in 2016, CrashDetech aims to expand in a number of African countries and possibly in Central and South America as well.

WatchMe911 (Chicago)

WatchMe911, a fee-based mobile safety application designed 'for women, by women', turns a user's mobile phone into a personal protection device. When a user feels threatened or needs help, a couple of taps of the WatchMe911 icon sends critical information to emergency services and the user's support network. Additional features include a timer that alerts friends and family if the user fails to check in by a specified time, a 'panic' mode that sends text messages and GPS location to the user's network when she feels vulnerable, and a feature that notifies the network upon arrival at a stated destination. WatchMe 911 creator Jill Campbell and her team have also launched a version of the app for use by college students called OnWatch to help reduce incidents of sexual violence and abuse of college-aged women. The apps are available on iPhone and Android devices.

Usalama (Kenya)

Nairobi, like many fast-growing cities, has a high crime rate in some areas. This leaves pedestrians and drivers especially vulnerable to violent attacks and theft, while emergency response rates are low. Usalama Technology Limited developed a 'panic button' mobile app that gives its users a stronger sense of security by connecting them directly to emergency service providers, which improves the efficiency and reaction time of law enforcement and medical personnel. Users activate the panic button by shaking their smartphone three times. The phone immediately sends a distress signal to the nearest police and fire departments, family members and every Usalama user within a 650-foot radius. Users can also share real-time security information and receive alerts when they enter high-crime areas. Usalama currently has more than 5,000 users and is working with a number of private security and rescue companies, emergency facilities, and women's organizations in Kenya to expand its services and reach.

Innovator profiled on p. 68

Mobile Mapping (El Salvador)

Seguridad Inalámbrica (wireless security) was created in 2010 by Qualcomm Inc. and project partners USAID, RTI International and local law enforcement agencies to strengthen tech-driven crime mapping in El Salvador. It used 3G wireless technology to enable law enforcement and municipal authorities in San Salvador to share, map, and analyze data on crimes as they occur. Tigo, a leading telecommunications provider, issued participating police and government officials with smartphones equipped with the Seguridad Inalámbrica application, GPS capabilities, camera and other features that allowed them to send detailed incident reports to the web-based crime database. Local violence prevention services also accessed the database to develop geospatial analysis of crime patterns. Developed with free and open source software, Seguridad Inalámbrica provideed law enforcement with a crime-fighting solution that was affordable and attainable.

Innovator Profile

Usalama -
Marvin Makau and James Chege
Co-founders

A few years ago, Marvin Makau, co-founder and current CFO of Usalama Technology Limited, was riding pillion on the back of a motorcycle on his way to work when the driver crashed into a car. The accident left Marvin lying on the ground with a broken leg and nobody or no means to get him help. There were witnesses, but none knew how to contact a paramedic. "The only reason I was able to access an ambulance," Marvin says, "was because a policeman was nearby."

Around that same time, Marvin's friend was attacked by a group of muggers in broad daylight. They stole his computer and other belongings but left him unharmed. It was an ordeal that Marvin realized many of his friends had experienced and they soon discovered that most accident and crime victims in Kenya have no way to access to security and emergency services. "We saw there was a serious problem and said, how can we solve this?"

Armed with the computer programming skills they learned at university, they developed a mobile platform that connects users to emergency services at the tap of a button, called Usalama or "security" in Swahili. It features a "panic button" that sends a distress call to family and friends

L-R: Marvin Makau, Edwin Ingaji, and James Chege

and also connects victims of crime, road accidents and domestic violence with emergency service providers (See p.67).

Extensive media exposure and grant awards enabled Usalama to grow. It then developed partnerships with entities that "could give our company some credibility," says James Chege, the company's co-founder and marketing director. It has since on-boarded private security firms, residents' associations, emergency service providers, and the Nairobi Women's Hospital gender violence recovery center. It has also recently partnered with Amref Health Africa, the largest health development organization in Africa.

International exposure is helping too. James was invited to Germany to meet with other startups from around the world as well as representatives of global tech companies. Usalama CEO Edwin Ingaji visited the United States to pitch the company to an audience of corporate moguls and other prospective donors. News coverage in CNN and other global media outlets continues to generate publicity for Usalama around the world.

As a subscription-based model, Usalama currently earns only a few hundred dollars a month from the corporate funds and security companies that use the service, but James hopes this figure will rise as the company attracts more users. "We've essentially been surviving on bootstrapping," he says, "offering services like mobile and web app development for clients, and then using the proceeds to work on Usalama."

They hope more grants and investment funding will accelerate the company's growth and "help us move to that next level".

"And then we'll make sure our infrastructure is independent," he says, "to get our own servers where we can host the platform on our own to allow for as much scaling as possible." That includes plans to eventually rollout across Africa and maybe even beyond.

"It's always a good sign to see that your product is growing," says Marvin. "There's so much interest, it shows that we are actually solving a problem."

Safetipin

An app to make cities safer and more inclusive for women

Actual violence and the fear of violence in India's cities affects the everyday lives of women and exacerbates gender inequalities. The migration of increasing numbers of women to the cities in search of employment is reinforcing these problems and creating new challenges for the government, citizens and other stakeholders to protect people in public spaces.

An Indian social enterprise, known as SafetiPin, designed a free map-based mobile app and online platform that uses crowdsourced data on insecurity in urban areas to make cities safer and more inclusive for women. It was co-founded in 2013 by prominent women's rights advocate Kalpana Viswanath, profiled on p. 70, and digital tech entrepreneur Ashish Basu as one of a number of UN-supported initiatives to make cities safer and promote gender equality.

At its core is the safety audit, which measures the safety score of an area based on various parameters including street lighting, security presence and gender diversity. Using GPS location and trained auditors the app, called My SafetiPin, shows the safety score of the user's neighborhood and provides information about the safest routes to a destination. A personal safety tracker feature allows for friends or family to observe a user's location, while another feature uses moving vehicles to capture photographs at night. SafetiPin serves as a digital platform for citizen engagement by generating community interest and enough data to advocate for safer public spaces, and for city authorities to inform better planning and governance. It also provides training programs for companies to address sexual harassment in the workplace and safety principles in public spaces.

Developed with the support of donors and partners including UK Aid, Ford Foundation and The Asia Foundation, SafetiPin has since worked with more than 30 cities in India, Colombia, Indonesia, Kenya and Philippines and is also collecting data in South Africa and Malaysia. It has recently established a global partnership with Uber improve the efficiency of data collection and to expand to more cities around the world.

SafetiPin data are available in various formats including maps, text reports, and digital files which can be used by stakeholders to develop and deploy effective urban planning and monitoring responses, such as mobilizing limited municipal resources for lighting, security, CCTVs, and public transport at night. SafetiPin data collected in Delhi are enabling the municipal police and urban planners to identify areas that are dark, unsafe and require improvement, as well as to measure the safety score of bus stops and terminals. In Bogota and Nairobi, city officials are using the data to identify unsafe areas. The municipal government in Jakarta is using SafetiPin to get feedback from citizens about their safety concerns in the city.

The app derives its name from a method of self-defense traditionally used by women in India, who would commonly carry an open safety pin to jab the open flesh of a would-be attacker. It is also an object that binds fabric together. In the face of rapid and continuing urbanization in India and other developing economies around the world, SafetiPin hopes to make cities smarter and more inclusive by promoting the safety of women and others now and for the future.

9.3

Innovation Profile

Innovator Profile

SafetiPin -
Kalpana Viswanath
Co-founder and CEO of SafetiPin

The creation of a unique mobile app to make cities safer for women in India was the result of an "unlikely meeting of the minds", says SafetiPin co-founder and prominent gender rights researcher Kalpana Viswanath. As head of the advocacy NGO Jagori, meaning 'awaken, women' in Hindi, Kalpana had spent more than a decade working on gender and urban safety in India and several years with the United Nations and local governments helping to design safe city programs in other parts of the world.

In 2013, Kalpana teamed up with her tech-savvy husband, Ashish Basu, a digital education entrepreneur, to launch SafetiPin. Having used safety audit methods in her local advocacy work to make public spaces safer for women, Kalpana felt those tools

should be more widely accessible to the public. So they conceived of a smartphone safety audit app that "everybody can access, and anybody can contribute information to." Initial funding support from UK Aid (DFID) and free advertising in a local newspaper helped them get SafetiPin off the ground before its full-scale launch in Delhi later that year.

SafetiPin's safety audit assesses public spaces based on nine parameters which include street lighting, security, gender diversity, and how safe a person feels in a space. "We wanted to take a qualitative tool and make it more quantitative so that we could begin to measure safety," Kalpana says. "And we felt that by measuring safety, we would be able to push stakeholders to try to improve their safety score.

"We focused clearly on the feeling of safety, because we feel that women especially tend to make choices based on the feeling, not only on hard data."

Within a year, SafetiPin had expanded to eight additional cities in India, through partnerships with NGOs and data collecting support from its users and a network of volunteers who conducted safety audits in low income neighborhoods and other places where people may not have access to smartphones and data are not available, making the data collection and mapping exercises a collective effort. Municipal governments in Bogota and Jakarta liked the app well enough that SafetiPin introduced versions in Spanish and Bahasa. The company then augmented its existing

data with a second app called SafetiPin Nite, which uses smartphones mounted on car windshields to photograph spaces and upload them for backend analysis together with Google Maps and other big data. This allowed SafetiPin to steadily increase the number of audits from about 12,000 to 45,000. Its recent partnership with Uber has enabled SafetiPin to grow even further. In 2016, they introduced My SafetiPin, an upgraded version of the app, and it has now been downloaded more than 80,000 times in more than 20 cities in India and globally. "Now we are able to go to city governments with much more robust data and they're willing to listen to us."

SafetiPin has no ambition "to become a huge multinational organization" and it doesn't plan to charge its users. At the same time, "the app space is very crowded, and people aren't usually very interested in apps which have a social dimension." But Kalpana hopes that collaborating with more cities and forging more partnerships will enable it to expand its data collection activities and at

least begin to generate enough revenue to reduce its reliance on grant funding. "We are happy to expand anywhere. But we are always looking to try to find a local partner when we expand because we find that that is the most sustainable way of working." The municipal governments in Delhi and Bogota have already contracted SafetiPin to conduct additional rounds of mapping while international organizations such as the UN have expressed interest in incorporating the app into their broader public infrastructure improvement programs. The company is also working with universities to develop algorithms and machine learning techniques that can measure safety scores without the data having to be collected and analyzed manually.

Kalpana is confident that SafetiPin can continue to grow and engage more stakeholders and more citizens on the streets to contribute data collectively in order to make cities safer and more inclusive for women and men alike.

10

Personhood & Rights
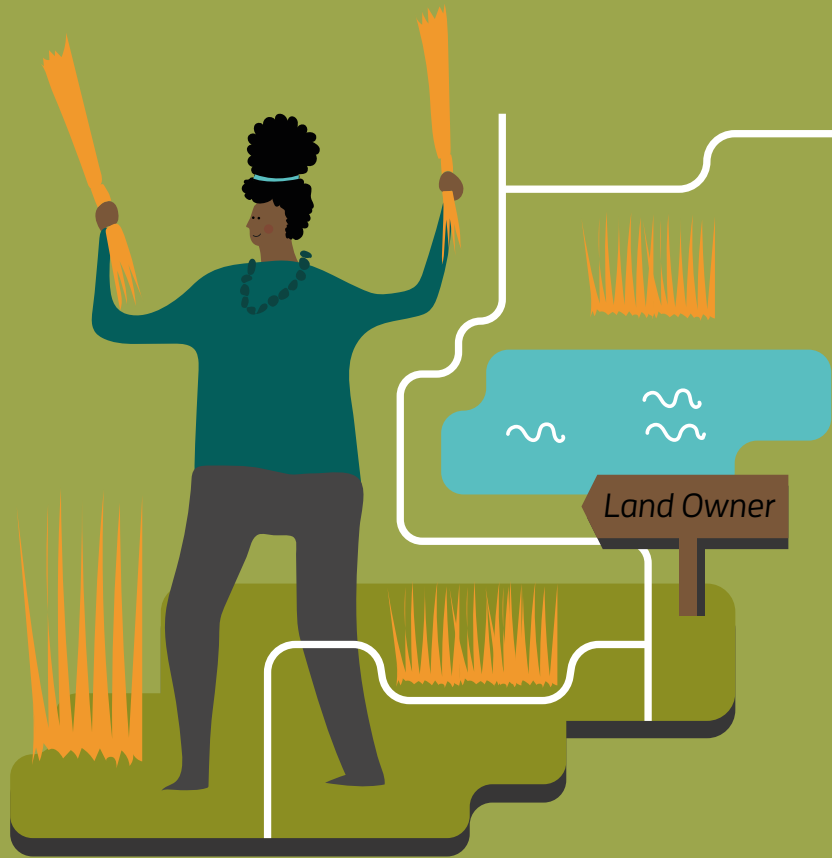
Securing basic rights can be difficult for poor and vulnerable individuals and enterprises in low-income contexts, especially where public institutions are weak. Most other forms of economic stability must be built on the foundation of legal recognition of personhood, property, and contracts, with the fundamental right to legal identity codified in the SDG target 16.9. Recent innovations, both public and private, seek fortify the basic rights of personhood for men and women, often by establishing secure digital identities at scale. Important innovations address women's access to and control of property, documentation and assertion of land rights for marginalized individuals and communities, broadening access to the formal justice system, and ensuring access to health care for women. These developments are critically important in the least stable situations—cases such as forced migration in which refugees may lack verifiable identity, and in post-conflict situations in which conflicts over land ownership can re-awaken conflicts and delay reconciliation.

10.1

Personhood & Rights

Transmit (Cambodia)

Pact developed the mobile application Transmit with a grant from USAID to help Cambodian citizens better communicate and track complaints registered with local governments. The app is linked to a web-hosted public database and allows selected local leaders to voice critical issues—largely related to natural resource management, access to justice and basic human rights—to their local authorities and then follow up on those complaints. By making the documentation, monitoring and analysis of issues raised with local authorities more transparent and accessible, Transmit aims to improve the responsiveness and downward accountability of local government to Cambodian citizens.

Women's Land Rights Sensitization (Burundi)

Under customary law in Burundi, a woman's rights to land ownership is often subject to the superior right of a male family member, inhibiting women from defending their claims in land disputes. The Dutch NGO Stitchting ZOA, with support from the Government of the Netherlands, launched a land tenure registration program in the south of Burundi. Together with the intergovernmental International Development Law Organization (IDLO), they facilitated pilot dialogues in select areas with local authorities, traditional leaders, religious leaders, and men and women from the broader community to discuss the barriers that prevent women from registering to own land as well as potential solutions that protect their rights within the framework of customary law. The pilot raised gender-specific awareness and community consensus, demonstrating that meaningful improvements in the recognition of women's customary and statutory rights to land are possible.

Defe Zap (Brazil)

An online advocacy tool called DefeZap is giving residents in Rio de Janiero's favelas a real-time channel to report abuses and seek justice against perpetrators of state violence. DefeZap is an automatic referral system launched in 2016 by Brazilian NGO Meu Rio (My Rio), with support from the Open Society Foundation, that collects crowdsourced videos, photos and text reports of extrajudicial violence and connects to existing mobile apps, such as Fogo Cruzado (see p. 66). When a notification arrives through its dedicated WhatsApp number, DefeZap's algorithms and a team of investigators process the data and make it public on social networks and its own interactive map feature. The information is used to build a legal claim against the culprits, for journalists to gather information on state violence, and to promote wider police reform. To ease favela residents' fears of reprisals by authorities, DefeZap allows those who report to remain anonymous. At the end of 2017, DefeZap had received about 300 video submissions and used them to launch more than 140 state investigations.

Cadasta (several)

Cadasta Foundation, a nonprofit based in Washington, D.C., was launched in 2015 with funding from DFID and Omidyar Network to meet the growing demand of documenting land and resource rights for those left out of formal land administration systems in emerging economies. Cadasta works to tackle land administration constraints with easy-to-use digital tools and technology designed to help its partners efficiently document, analyze, store, and share critical land and resource rights information—particularly in places where governments are failing in delivering the public good of equitable and affordable land administration. Providing low-cost and easy-to-use digital tools to at-risk communities and individuals enables them to make data-based decisions that can incrementally strengthen their rights to land and resources. It also helps them prepare for and recover from disasters and helps governments plan and deploy services and infrastructure where they are needed. Cadasta Platform is being implemented in India, Cameroon, Dominican Republic, Indonesia, Nigeria, Mozambique, Colombia, Bangladesh, Kenya, Tanzania, Haiti, Nepal, Myanmar, Kosovo, and the United States.

Land Law (Mozambique)

There is no private ownership of land in Mozambique—all land is the property of the State. Following the end of the civil war in the 1990s, the Government of Mozambique appointed an Inter-Ministerial Land Commission which oversaw the drafting of a new Land Policy and Land Law with the objectives of securing the land rights of rural communities while also encouraging investment, agricultural production, and job creation. The law does not confer full ownership, but provides for the right of individuals, communities and entities to obtain long-term or perpetual rights to use and benefit from the land. Communities and individuals can offer proof of their land rights acquired through customary law or good-faith occupation through oral testimony, to overcome the expensive and burdensome obstacles of surveys, registration and titling. However, lack of formal documentation and registration is a disadvantage to prove such land occupancy rights. While the Land Law's recognition of the important role of traditional authorities in land administration has helped reduce conflict among populations returning to rural areas following the civil war, its efficacy in stimulating economic development and stability remain in question, due especially to implementation challenges.

Village Courts (Bangladesh)

The Government of Bangladesh enacted a system of village courts in 2006 to help low-income rural residents to adjudicate small disputes over debt, land, crime, and other minor non-criminal offences. After years of weak implementation and low utilization, the UN Development Program partnered with the government in 2009 to launch the Activating Village Courts in Bangladesh pilot program with a number of local governments. The program trains local officials and court assistants on legal procedures and case record management and conducts activities to increase awareness and use of the courts. Above all, it provides a legal mechanism to resolve disputes between residents, particularly those related to money, land and business. The ability to resolve disputes in this way builds trust in the country's laws and judicial systems, which may encourage marginalized groups such as the poor and women to seek improved access to justice and economic stability through use of the courts.

Legal Aid (Haiti)

The National Legal Aid System project in Haiti was implemented in 2007 to provide free legal assistance to low-income individuals as an innovative solution to the lack of access to justice. It was established by the United Nations Stabilization Mission in Haiti and international NGOs in collaboration with Haitian bar associations. Attorneys from Legal Aid Bureaus (Bureaux d'Assistance Légale) provide clients legal advice, legal representation, and mediation services in alternative dispute resolution cases. Free legal consultations are also offered on a range of non-criminal issues such as civil, labor, and commercial law. The legal aid system's future is in doubt, however, as it is currently funded entirely by international aid; when its two main contributors stopped funding the system in 2012, all bureaus outside the capital shut down. To that end, the Haiti Justice Sector Strengthening Programme, funded by USAID, plans further support to strengthen Legal Aid and improve its operational effectiveness.
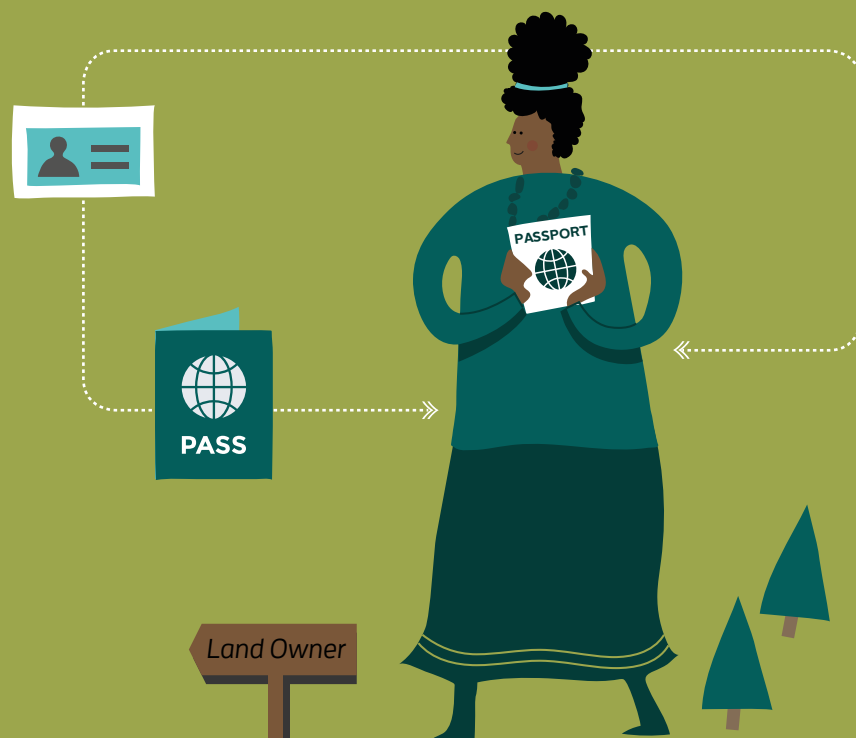
#PropertyForHer -
Kamla Bhasin

Co-founder #PropertyForHer

As a founder of the South Asian feminist network Sangat and the region's coordinator of the global movement One Billion Rising, Kamla Bhasin has dedicated most of the past 45 years working for the empowerment of women and speaking out against what she calls "patriarchal injustice". At the beginning of 2017, Kamla led a high-profile campaign on social media to promote equal property rights for women in South Asia, called #PropertyForHer, bringing together an assorted group of NGOs, civil society networks, trade unions, and others working to overcome the cultural barriers that prevent women from owning land or homes.

Discriminatory socio-cultural norms in much of South Asia determine that property is passed on to sons, primarily through inheritance. "This means I have to get married if I want a roof over my head," Kamla explains, "and then I have to go to an entirely new family, and in most cases also change my name."

Kamla cites academic studies which show that access to even the smallest bit of property improves a woman's financial security and protection from domestic violence. "If a woman is not secure and doesn't have a fallback position, if there's violence, she has nowhere to go." By encouraging families to pass on a part of their assets to the wives or daughters, #PropertyForHer not only aims to make women more economically independent but also "to make them stronger socially, by giving them a sense of belonging to a family."

The campaign included dozens of simple slogans in Hindi, Urdu and English that Kamla and a group of young artists designed and posted in public spaces. A "Tweet-a-thon" in July saw thousands of men and women share their views on Twitter while a campaign on change.org collected nearly 3,000 signatures. Kamla says that much progress has been achieved on gender equality in India over the past several decades. Patriarchal laws are being challenged and increasingly incorporate gender equality principles, nearly all universities offer gender studies programs, and misogyny is increasingly condemned. But she's not ready to attribute any of these accomplishments to #PropertyForHer. "There's so much going on in society for gender equality, that nobody is going to tell me that my slogans had anything to do with families giving their property to their daughters."

With plenty of powerful forces still arrayed against women, the fight for gender equality is far from over. The massive pornography and cosmetics industries that objectify women, as well as popular media like film and other male-centric industries that promote dangerous gender roles and stereotypes all comprise what Kamla refers to as "capitalist patriarchy". The spread of religious fundamentalisms of all kinds also conspire against women's rights. The social media campaign #MeToo demonstrates how extensive sexual abuse and harassment is around the world.

Thousands of groups in India and South Asia continue to confront these forces to promote gender equality. "We just have to go on writing songs, slogans and articles," Kamla says, "to make it an acceptable idea that daughters be considered heirs and can inherit property actually and not only on paper."

doctHERS -
Dr. Asher Hasan

Founder and CEO of Naya Jeevan and co-founder of doctHERS

As a child growing up in the United Kingdom, Asher Hasan made frequent visits to South Asia where he witnessed the widening gulf in access to healthcare and other opportunities for children and other vulnerable populations. Ten years ago, he founded Naya Jeevan, meaning New Life in Sanskrit, a social enterprise dedicated to providing affordable healthcare and micro-health insurance products to low-income and informal workers in Pakistan, particularly female workers and others connected to corporate value chains.

Dr. Asher soon discovered that many of Naya Jeevan's female members were more at ease when dealing with female physicians, especially for reproductive health issues, which led the company to assemble a network of female doctors and nurses. In Pakistan, where roughly 60% of all medical school graduates are women, social constraints have left 75% of them, or some 50,000 women, unable to practice medicine after marriage. "Given the healthcare needs of the country, that's a staggering statistic and a huge loss of human potential," he explains. So he and two former employees from the Naya Jeevan medical team, Dr. Sara Khurram and Dr. Iffat Zafar (who have since left the organization), founded doctHERs to deliver quality healthcare to remote areas while reintegrating female doctors into the workforce. "We have this huge surplus of underutilized human capacity and at the same time we have huge

unmet healthcare needs. doctHERs just links the two using the power of technology while retaining the potency of the human touch."

doctHERs' digital healthcare platform connects remotely-located female doctors who work from home to underserved health consumers, via tablet-equipped intermediaries such as community-based front-line health workers, midwives, and nurses that are trusted, speak the local language, and are technologically savvy enough to connect to the network. Through telemedicine, doctHERs blends 24/7 video consultations via mobile devices with face-to-face care provided by the intermediaries.

Each of doctHERs' virtual clinics is staffed with a nurse patient care coordinator who liaises with a nationwide network of remotely located doctors to provide patients with access to both in-person evaluations and on-demand treatment via HD video consultation. The doctor can access the clinic's diagnostic tools, such as EKG and ultrasound, and can talk directly to patients via a laptop or tablet.

The network currently has 60 clinically active female doctors with another 1,500 waiting to be activated as doctHERs continues to scale through public-private partnerships with government agencies and private companies. One of its largest clients is Unilever which is sponsoring family health and wellness services not only to its direct employees but also to beneficiaries linked to its corporate value chain including micro-retailers and micro-distributors who sell Unilever's goods.

As the first company to make telemedicine commercially viable in Pakistan, doctHERs is pioneering a new approach to providing sustainable and affordable health services to underserved populations while empowering female doctors. "This business has been built by women for women," Dr. Asher explains. "I like to support the work of our senior management team, all of whom are women, from behind the scenes. They are really the ones who deserve all the credit because they're actually making it happen on the ground."

Innovation Profile

Private Initiatives for Secure Digital Identities

Two innovative organizations are deploying blockchain-based digital identities to deliver social, financial, and health services to vulnerable refugees, migrants, and other undocumented or remote populations.

Making Cents International & BanQu
Digital Identities for Syrian Refugees

Since fighting broke out in 2011, more than 1.6 million Syrians have fled to Lebanon and Jordan. In their new environment, they have struggled to develop viable livelihoods due to a variety of reasons—from a lack of assets to unclear labor laws. Among these challenges, the absence of a past ranks high. Due to the lack of cross-border identification mechanisms and the haste of their flight, refugees arrived in their countries of refuge without evidence of educational achievement, verifiable work experience, or credit histories. Absent this information, they have had difficulty obtaining meaningful work or finance, as employers and financial institutions are hindered from assessing their skills or credit-worthiness. Their uncertain future is also a challenge, as potential employers or lenders hesitate to engage with refugees not knowing if they will return home in the next week or year. Worse still, when these refugees return home, they will face the same problem, as they will not be able to communicate their accomplishments while as a refugee.

Digital economic identities present a potential solution to this challenge. Educational certificates, employer references, and credit transactions, verified by the issuer and stored in a personal "digital locker," can provide Syrian refugees with the performance history they need to improve their livelihoods while as refugees, and restart their lives when they return.

Making Cents International and BanQu are currently piloting an initiative to test the concept of economic digital identities for Syrian refugees in Jordan. Making Cents is an international development consultancy that specializes in improving economic
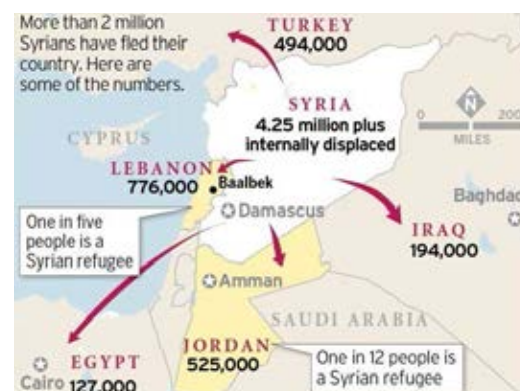
opportunities for vulnerable populations, while BanQu is a technology company that has developed a distributed ledger (blockchain) based digital identity solution. Together, they are working with local microfinance institutions to develop digital economic identities for Syrian refugees. The economic identities will enable Syrians to capture business information and financial transactions on the BanQu platform in a way that is verifiable, portable, and immutable. Because identity information provides credible work and credit histories for lenders, they will facilitate access to loans for refugees upon return to Syria. Likewise, the identities will incentivize repayment of loans in Jordan since the refugees will know that their credit record, whether good or bad, will be communicated to lenders in Syria. The pilot will be implemented through early 2019 with 1,000 Syrians and scaled up to additional refugees and other countries, if it shows promise.

The pilot will include a rigorous evaluation component designed to learn whether the digital identity has an impact on credit availability and repayment. In addition, Making Cents International will measure changes in "hope" among refugees as one way to evaluate whether the creation of an identity—with the specific purpose of helping refugees organize their data and facilitate their return—has an impact on their resilience.

iRespond

Giving identity to invisibles – the over one billion people without formal identity

The inability to positively match a person to their identity is one of the most fundamental barriers to the delivery of humanitarian services. For refugees and other vulnerable people who lack documentation of their births, health history, education, or any record to prove their basic personhood, accessing aid, establishing a life in another country or returning to their country of origin may not be possible.

A Seattle-headquartered technology solutions nonprofit called iRespond has created a proprietary process that combines biometrics with blockchain technology to provide such individuals with a unique identity (UNiD), which enables them to receive healthcare, education and financial services. iRespond's identity solutions capture the body's own signature—namely the unique signature of the iris—and convert that into an encrypted information code comprised of a twelve-character numeric sequence. The files of the encrypted IDs are so small that UNiDs for the entire population of the United States could fit on a single micro USB card.

The iris signature does not change significantly during one's life and, protected by the blockchain, it can never be corrupted or forged. This built-in security system thus prevents duplication or fraud and protects the privacy of every individual's identity. The databases can operate without an internet connection and can be used off the grid and then synched back once in contact with a wireless or other network.

In Thailand, iRespond is now providing identity to stateless persons from Myanmar. Roughly 100,000 people are living as refugees in nine UN-run camps along the Thai-Myanmar border. With the camps slated to close in the coming years, the refugees' futures are yet to be determined. Since late 2017, iRespond has been collaborating with the UN International Organization for Migration and the International Rescue Committee to capture the biometric data of the people living in the camps before they close to provide the identification they will need to gain access to social services from government agencies. Without an official identity, undocumented persons are at greater risk of "disappearing" into the grey economy of commercial sex work or other unregulated domestic and service industries. The IDs can also be taken with them if they return Myanmar or if they resettle in a third country.

iRespond is also working with the Thai government to create identity solutions to reduce human trafficking and slavery of migrant workers, particularly from neighboring countries, including those who work in Thailand's seafood and fishing industry. In Myanmar, iRespond is improving infectious disease delivery and care to at-risk populations and to support anonymous and privacy-protected HIV testing across the country.
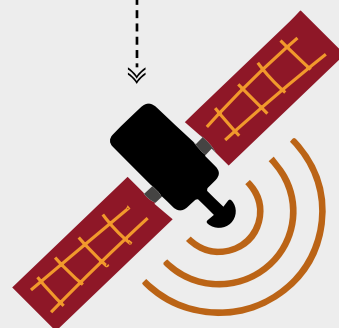
11

India

Innovation
Laboratory

India has been uniquely positioned to deploy innovations in all categories identified by this project drawing on the country's deep technological capabilities and unusual political consensus around digitally-enabled modernization of legal identity, financial inclusion, and social protection. Several additional innovations from India, pertinent to the preceding chapters, are presented here to provide a more complete picture of the depth of the emerging ecosystem. While not without controversy, India's digital initiatives represent the best current example from the middle income world of an emerging political economy in which public digital infrastructure empowers both public and private entrepreneurial initiatives that contribute directly to economic stability and broad-based inclusion.

India - Innovation Laboratory
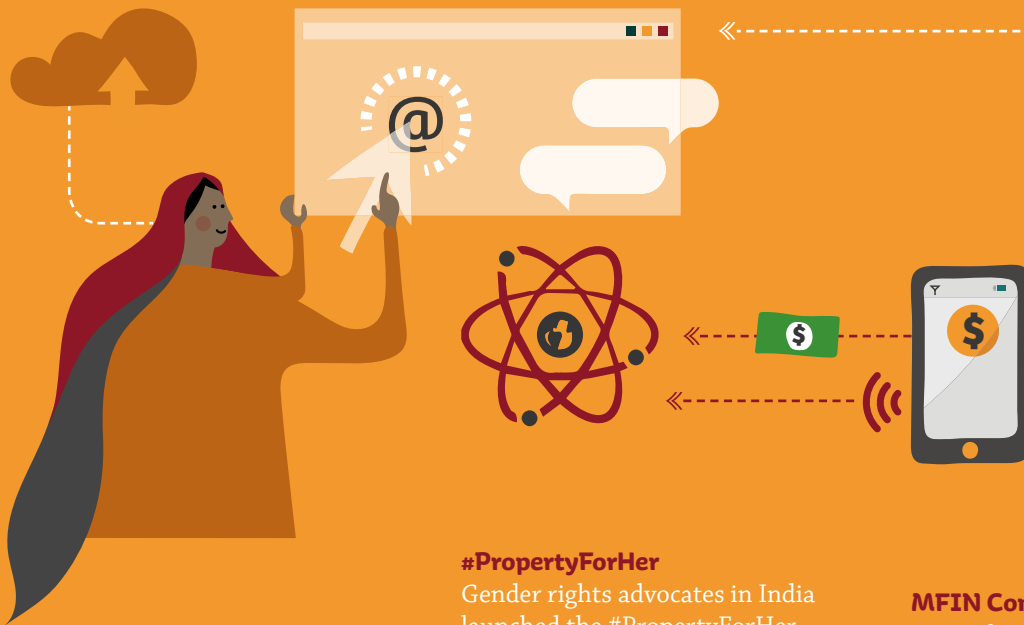
LOOP

Loop is a mobile-based aggregation and transport initiative of Digital Green, a development organization, that saves time and money for small farmers in India and Bangladesh by helping them access local markets and find the best prices for their produce. Farmers achieve economy of scale and better collective bargaining power by aggregating their crops across several smallholder farmers through village-level agricultural extension workers. These aggregators collect produce daily, oversee its transport to and sale at market, and disburse payments to farmers. Loop's integrated technology stack uses an Android application for aggregators to efficiently and transparently record collections, sales, delivery costs and other data in a digital ledger, and send farmers SMS receipts as record of their transactions. The Loop initiative has made it possible for thousands of farmers to access new markets, reduce their transport costs and increase incomes, and free up time for other activities.

#PropertyForHer

Gender rights advocates in India launched the #PropertyForHer social media campaign in mid-2017 with the intention to secure equal property rights for women across South Asia. With messages on Twitter and Facebook and a petition on change.org, #PropertyForHer, backed by ActionAid India, appeals to men to support the property rights of their wives, daughters and sisters and encourages women to demand their rightful share in the ownership and control of property. Several countries in South Asia have laws that guarantee women's property rights, but implementation is often hindered by patriarchal social norms and discriminatory customary laws that force women to give up their claims on ancestral property. Guaranteeing women rights to property can increase their economic independence and, in doing so, can also curb gender-based violence by allowing women to walk away from abusive relationships and build better futures for their children. Several organizations involved with the campaign are incorporating the issue of women's property rights into their existing work.

 Innovator profiled on p. 76

MFIN Connect

Through its newly developed Android application, the Microfinance Institutions Network (MFIN) of India has introduced country's first digital financial literacy tool to teach people about microfinance. MFIN Connect educates clients from under-served communities about how to access loans and avoid the risk of over-indebtedness that can result from informal and unsecure borrowing. The app has different modules available in a number of local languages that incorporate audio-visual modules to coach people how to use an ATM card and their biometric digital ID as well as how to access credit and protect their rights as a borrower. The app's ready reckoner feature enables clients to easily calculate their loan interest rates, repayment schedules and the total amount they will need to pay. Designed to work even in low-connectivity areas, MFIN Connect is providing underbanked Indians with more equitable access to credit as well as the opportunity to achieve greater financial independence and build sustainable livelihoods. MFIN aims to deliver financial services to 100 million people by the year 2020.

Pradhan Mantri Mudra Yojana

The government of India's Micro Units Development and Refinance Agency (MUDRA) Bank was established in 2015 to govern the microfinance sector and benefit small entrepreneurs, who often struggle to access loans and other financial products. The bank's flagship program, Pradhan Mantri Mudra Yojana (PMMY), was set up to bridge this funding gap by extending affordable loans to microbusinesses through public and private banks, MFIs, and non-banking finance companies. The loans are used for non-farm income generating activities including manufacture, transport, trade, and services. In its mission to 'fund the unfunded', the PMMY program proactively identifies and extends loans to small entrepreneurs, including first-time borrowers, to give them the confidence and the capital they need to expand their activities. PMMY has extended more than USD 50 billion in loans to more than 58 million small business owners in India, around three quarters of which are women.

India Stack and DigiLocker

India Stack is a suite of application programming interfaces (APIs) that enables the government and private companies to deploy a presence-less, paperless, and cashless service delivery system while radically transforming India's identification and payment processes. At its foundation is a biometric identification database (Aadhaar) that gives every citizen a unique, permanent, digital ID number linked to their biometric data that allows them to open a bank account instantly and without any physical documentation. In fewer than seven years, 1.1. billion Indians have been issued an ID number after having their fingerprints and retinas scanned and stored in the national biometric database. Users can then link their bank account, ID number, and phone number to create a simplified payments address, to which employers can make easy and direct salary payments through a single interface. The third layer of the stack enables individuals to use their biometrics data and ID number to withdraw cash from their accounts, access credit, and safely send payments to others through their mobile phone. Operating as part of the India Stack platform is the digital repository DigiLocker, a cloud storage space for Indian citizens to securely store, retrieve, and share digital copies of official documents without the need to print or sign paper documents. DigiLocker account holders can access banking services, medical records, and government benefits and assert ownership rights of their business and property. Simple, biometric verification of documents and certificates improves stability for government departments, financial institutions, and private business, and enhances transparency and accountability for users when signing contracts and other important documentation. Privacy and security concerns aside, India Stack and DigiLocker are making impressive advances in bringing millions of previously-unbanked Indian citizens into the formal economy. To scale further will require a tremendous change in the behavior of India's many low-income, digitally-illiterate consumers.

Innovation Lab Profile

Why India?

India has been uniquely positioned to deploy innovations in all categories identified by this project drawing on the country's deep technological capabilities and unusual political consensus around digitally-enabled modernization of civic participation and social protection. This new social infrastructure provides the capacity "to increase the resilience of Indian society to change and propel the country into the 21st century digital economy."[32] While not uncontroversial, this effort represents the best current example from the developing world of an emerging political economy in which public digital infrastructure empowers both public and private entrepreneurial initiatives that contribute directly to economic stability, inclusion, and social protection.

A thorough treatment of India's innovation landscape would require an Atlas of its own, but it is well-documented in recent literature chronicling India's emerging public digital ecosystem. Most notable are advances in rural social and economic inclusion, a number of which are delivered via accessible digital technologies, typically mobile phone-based, and backed by the expansion of basic personhood through digital identities; digitization of land records; new intergovernmental coordination arrangements spanning the national and historically powerful state governments; as well as new forms of public-private partnership with banks and mobile network operators (MNOs) to deliver social benefits digitally. These developments enable lower-waste delivery of social benefits, expansion

of financial services and insurance products on top of newly verified identities, and guaranteed rural employment schemes.

The Aadhaar system is the foundation of the India Stack (p. 83), an open-source project explicitly designed to address several dimensions of social protection in a way that stimulates both public- and private-sector innovation. As Indian software industry think tank iSPIRIT noted: "India Stack is a set of open Application Programming Interfaces (APIs) and systems, setup as a public good, to allow government entities, businesses, startups, and developers to use a unique digital Infrastructure towards presence-less, paperless, and cashless service delivery."[33] These utilities simultaneously—if incompletely—address personal, civic, functional, and entrepreneurial inclusion,[34] and align with SDG targets 16.9 on legal identity and 1.3 on improved social protection.

What is unique is that they do so in a way that structurally allows for nearly limitless innovation by technology entrepreneurs—both social and profit-motivated—and across domains that require identity provision and verification, paperless transactions, and payments infrastructures. The open APIs of the India Stack mean that entrepreneurs—not just large government contractors—can equally draw on critical identity verification services to extend banking, payments, financial, educational, and other services to formerly unreachable or un-servable populations. Because the Aadhaar platform has been built on the principles of openness and vendor neutrality, as it has created an ecosystem that enables a multitude of identity applications to be built on top of it, "allowing service providers to transform service delivery in a number of innovative ways." Not only does technology and vendor neutrality facilitate competition and innovation, but also "prevents possible technology 'lock-in', which can increase costs and flexibility over time."[35]

Illustrating this potential, in 2017, Dalberg Advisors and iSPIRT held the #BuildOnIndiaStack to stimulate innovation from early-stage entrepreneurial ventures offering tech-based solutions leveraging the India Stack platform. The competition, which was co-hosted with Bharat Innovations Fund, Omidyar Network, and Unitus Seed Fund, sought submissions related to "digital lending and supporting activities, such as alternative credit scoring; sector specific affordable digital finance services such as health insurance or education loans; sector specific digital services such as skilling and certification, property registration agreements, patient-centric healthcare management", and other related platforms.[36] From 180 submissions, twelve finalists presenting innovative approaches built on the India Stack for e-governance, healthcare, education, fintech, environment, and agriculture competed for funding (US$12,500/INR 8 lakh), mentorship, coaching, and collaboration.

The system is not without controversy. Legal objections have been raised and are still in adjudication regarding the mandatory use of Aadhaar to access social programs. At a more practical level, use of applications developed on this platform require basic and digital literacy and judgement about the use of digital tools, which creates challenges in reaching India's most vulnerable rural populations.[37] Other critiques of Aadaahar include questions of whether it can improve the distribution

of social protection, especially access and utilization for marginalized sub-groups; that it fails to address Indian states' need to maintain and improve birth registries; the significant geographical variation in uptake across states, with particularly low levels in marginal communities of the Northeast; and the significant transfer of resources to private contractors in launching the system, which raises the possibility of a "Card Cartel."[38] At a more fundamental level, the system has been criticized for representing a shift towards "a level-playing field for state and market alike, where the exclusive conception of client/consumer takes precedence over the inclusive idea of political citizens."[39]

Nevertheless, Aadhaar and the India Stack platform represent an innovative approach to establishing verifiable identities on which an entire public-private ecosystem to support personal and household economic stability is growing.

Several innovation challenges for various themes are offered in India. Selected examples are presented below.

India Innovation Initiative (i3) is jointly promoted by the Confederation of Indian Industry and government agencies to support the development and scaling of homegrown science and technology-driven innovations for commercial and social ventures. Follow current challenges and view past winners at: *http://www.i3.ciiinnovation.in/India-Innovation-Initiative-2017.php*.

The India Innovation Growth Programme (IIGP) offers both the University Challenge and the Open Innovation Challenge, to promote innovation and acceleration of industrial and social solutions developed by the academic and technology communities. Follow current challenges and view past winners at: *http://www.indiainnovates.in/OpenChallenge.aspx*.

12

Conclusions and Recommendations

12

Conclusions and Recommendations

The purpose of this Atlas is to present novel and compelling innovations related to economic stability. Nonetheless, four broader conclusions and recommendations for global development emerged from analysis of and reflection on our findings.

First, economic stability is central to the global development agenda and should be identified and promoted as a cross-cutting enabler.
Part of the mission of this project is to catalyze greater interest in the role of economic stability as central to achieving inclusive growth. Our research and conversations with development influencers found a great deal of latent support for this idea. However, because the concept of stability encompasses several disciplines—macroeconomic management, investment promotion, financial inclusion, MSME-focused regulatory reform, social safety nets, and personhood and rights—it does not have a coherent or unified constituency, and is often absent from these dialogs.

Economic stability as we understand it is an intrinsic goal or a prerequisite of six of the Sustainable Development Goals (SDGs) and more than twenty targets, including ending poverty and hunger, generating sustained and inclusive economic growth and industrialization for all, reducing inequality, and building peaceful and inclusive societies with accountable institutions, among others. However, across the entire SDGs, "stability" appears only once, in target 17.13, and even then only in the context of macroeconomic stability. One senior social policy expert described stability as ever-present but rarely mentioned, like "fish that can't see the water they're swimming in," the exception being among those active in the OECD social policy community and development economists. We found that development economists tend to recognize that stability affects individual and firm-level investment decisions, but many approach stability too much in the aggregate, misunderstand the factors that are considered in these decisions, or make questionable assumptions about the "rationality" of decision-makers.[40] They therefore often neglect the micro-level mechanisms that are the focus of this Atlas, even though nearly half of the indicators in WBG's Doing Business relates to predictability of the business environment—a foundation of stability.

Stakeholders in global development can strengthen a number of disciplinary conversations by recognizing economic stability as a natural, cross-cutting enabler of their better-established development goals, and, based on the evidence presented here, into which a great deal of private investment is currently flowing. While the SDGs are well-established, donors and other stakeholders can incorporate stability-related objectives and indicators into programs designed to achieve these goals. Economists in multilateral institutions and international donors, and those responsible for economic planning and risk assessment, can more deliberately prioritize the dimensions of stability that impact household- and firm-level decision-making, while also exploring

how to incorporate data on the impact of private financial and non-financial services uptake alongside more common indicators of economic performance. Impact investors supporting business models that improve livelihoods can and should purse income stability alongside income growth as an investment objective and impact measurement.

Second, our ideas about economic stability need to become more dynamic to keep up with the pace of technology-induced change in the economy.
It is also very important to think about stability not as the opposite of growth or change, but as the ability to reduce the effects of volatility[41] on the individual, household, firm, community, and country. In light of anticipated disruptions of labor markets driven by relentless technological change, more dynamic approaches to stability should work to prepare people for a rapidly changing future—by creating *adaptive capacity* to thrive in rapidly changing conditions as well as greater *capacity to anticipate and prepare for change*.[42] We call this *Dynamic Resilience*.

Dynamic Resilience strategies should aim to harness financialization, big data, and access via mobile technology to cope with both longstanding and new challenges. The innovations in this Atlas are, by and large, focused on improving the adaptive capacity of individuals and small firms, though a few touch on the anticipatory dimension as well. New data-driven insurance products for farmers help manage future risks to income. Real-time labor market information and training products enhance decision-making with the most current evidence. The Government of Indonesia's use of big data to make macroeconomic forecasting more "real time" enables faster policy adaptation. As new artificial intelligence, machine learning, and predictive analytics methods become more common, so too will technologies that enhance anticipatory capacity, providing better information about likely futures, and spawn new methods of reducing financial risk across the spectrum of non-standard livelihoods.

Putting anticipatory technologies to work for those who need them will rest on the capacity, particularly among poor and vulnerable people, to effectively select and use these tools. This, in-turn, depends on basic literacy, financial literacy, and developing critical judgement about the use of services.[43] Ensuring diffusion of new innovations to base-of-pyramid users worldwide is likely to remain a central focus of global development practice in the coming decades.

Third, learn from India as its new public-private *political economy* of stability innovation emerges.
The proliferation of privately-provided digital services is part of a new political economy of stability that is influenced and shaped by current technology and financial trends. It puts more power into the hands of individual citizens and firms as users, consumers, and buyers, and which replaces some public services with private ones, or enhances stability through a locally-appropriate mix. There are parallel models emerging from Estonia, Peru, and India, but we focus on India given the sheer volume of innovation and the size and complexity its inclusive economy challenges.

India's experience building the India Stack—a set of "public good" platform technologies for identity verification, paperless transactions, and digital payments—to facilitate both publicly-provided social benefits and privately-provided services represents the most complete expression of this new model to date. Built by a team of public and private sector experts and with input from leading technologists, it simultaneously addresses identity, social protection, and financial inclusion. The open-source and open-data interchange system has already stimulated private actors such as Airtel to

launch a build a nationwide private payments bank in 2016 (Airtel Payments Bank), and, in 2017, Dalberg and India's iSPIRIT partnered with prominent investment funds to conduct the Build on India Stack Venture Pitch Competition to "unlock new business models or reach previously underserved new customer segments" leveraging the India Stack platforms.[44] The competition drew 180 submissions from early-stage businesses providing e-governance, healthcare, education, fintech, environment and agriculture services.

This recent experience invokes what Bhatia and Bhabha call entrepreneurial inclusion—building digital ecosystems to promote social and economic inclusion that simultaneously facilitate entrepreneurial innovation without creating new private monopolies.[45] It invites a deliberate re-thinking of assumptions about which services government can and should provide in each country context in light of both capacity and fiscal space, and about how to most effectively facilitate competition among private entrepreneurs to create products and services that support economic stability. Countries adopting or innovating cash transfers, for example, and the organizations that support them, should carefully consider whether they are using open technology and design protocols that encourage companies and entrepreneurs to "piggy back" privately-provided complementary services, and how to regulate these services.

Operationally, this will require strategies for enabling deeper shared value creation for which no clear roadmap currently exists. This entails building better local agreements and protocols for mainstreaming privately-led innovation into national and local systems; improving the interface(s) for coordination and "power sharing" with entrepreneurs and innovators; creating and maintaining open-access data and information structures to ensure that innovation can build on government initiatives, and clear regulatory frameworks for protection of citizens, their data, and the public interest. This is certain to be challenging: even in India, there have been significant political and judicial challenges, and globally few governments agree on the appropriate role of privately-provided innovations in these domains. Nonetheless, many new and potentially transferrable lessons will emerge from India's experience in meeting these challenges.

Fourth, global development actors can incorporate stability-enhancing innovation directly into their programming and support new pro-innovation arrangements in partner countries.

Bilateral and multilateral donors seeking to support inclusive growth should continue to support innovation challenges, competitions, and impact investments to encourage innovators to apply their skills to pressing development problems. In fact, many innovations presented here originated from such processes. Beyond this, donors and global development actors should also consider how their programs—and the local systems they wish to strengthen—can more directly incorporate the services provided by innovative local and global entrepreneurs.

The innovations presented here suggest the potential for more effective public-private partnerships in areas such as agricultural extension services, land titling, labor protection, and public safety, among others. Donors and other supporters can also help facilitate the co-creation process by which national governments and local stakeholders find a locally-appropriate balance of public and private initiatives that acknowledges the effectiveness of public-private solutions to key stability challenges. Environmental and economic resilience efforts, for example, should consider the roles and sustainability of

both public and proprietary technologies, as The Rockefeller Foundation has encouraged through its inventory of and support for Digital Technologies for Resilience (also implemented by FHI 360). Where donors support development of legislation, policy, or programs, in areas relevant to economic stability, they can advocate for effective divisions of labor between public and private efforts, and attention to local innovation.

Finally, development partners should "layer" innovations into their interventions and adopt a modular mindset.

Donors and local and international development partners should also explore how "layering" multiple innovations into program design and delivery can help meet shared development objectives. Because the economic and technological conditions of each intervention locale and target population is different, *a unique combination of traditional capacity building and support for uptake of appropriate technologies is likely to be most effective*. The "stacking" of services pioneered by the Government of India and, to some extent, in Peru, and the current experiments with building services infrastructure atop cash transfer systems, suggest high, if relatively untested, potential.

There is precedent for this approach from the world of commercial information technology systems, in which significant effort is spent diagnosing business problems and deciding which existing technology solutions to deploy and how best to integrate them. Typically, IT systems integration efforts select and implement modular software products that perform specific functions, concentrating efforts on integrating these solutions, and building new modules only where absolutely necessary. This layered approach maximizes the re-use value of innovations and significantly reduces custom software development costs.

In global development contexts, the appropriate mix will be influenced by the availability of tools and innovations that are locally-appropriate or localization-ready, as well as by the digital enabling environment (digital and data services availability and access; telecommunications, energy, and financial infrastructure). But choices should principally be driven by the interaction of local challenges—land titling, financial exclusion, crime and violence—that impact stability at each level of the funnel. This is not an entirely new way to think about program design, but the emphasis on building programs around free-standing technologies that may not be owned or controlled by global development actors will require new entrepreneurialism and flexibility in programming and funding approaches. We can expect that innovations that support economic stability (and other development goals) will become more modular—better able to interconnect with emerging data sources and financial systems—requiring the global development community to also adopt a *modular mindset* in optimizing development programming.

Appendix 1

Learn more about the innovations profiled in the Atlas

INNOVATION	WEBSITE
Small Enterprises, Unlimited	
4.1 Orodata (Nigeria)	*https://www.orodataviz.com/*
4.1 mSME Garage (Uganda)	*http://msmegarage.org/*
4.1 Sauti (Kenya)	*http://sautiafrica.org/*
4.1 DIYLaw (Nigeria)	*https://diylaw.ng/*
4.1 Commercial Courts for MSMEs (Liberia)	*http://judiciary.gov.lr/commercial-court/*
4.1 Human Centered Business Registration Improvement (Indonesia)	*https://www.unglobalpulse.org/jakarta*
4.2 Government of Indonesia—Big Data (Indonesia)	*https://www.unglobalpulse.org/jakarta*
4.3 USAID Jordan LENS (Jordan)	*http://jordanlens.org/*
4.4 Contract Enforcement for SMEs (Peru)	*https://goo.gl/YUEdsp*
Stabilizing Jobs & Gigs	
5.1 MicroBenefits (China)	*https://www.microbenefits.com/*
5.1 Burning Glass (USA)	*https://www.burningglass.com/*
5.1 Strategic Partnerships for Garment Supply Chain Transformation (Various)	*https://goo.gl/X3FM7a*
5.1 RefugeesWork (Austria)	*https://www.refugeeswork.at/*
5.1 Pension Match (Peru)	*https://goo.gl/y61aAv* *http://www.asociacionafp.com.pe/*
5.1 Alia (USA)	*https://www.myalia.org/*
5.1 Golden Dreams (SE Asia)	*https://www.issarainstitute.org/*
5.1 MobiVi (Vietnam, Laos, Cambodia, Indonesia)	*https://icarebenefits.com/*
5.3 Viridis Learning (USA)	*https://www.viridislearning.com/*
5.4 LaborLink (USA, China, Bangladesh)	*http://goodworldsolutions.org/laborlink/*
5.5 Workplace Options (USA, Indonesia, Various)	*https://www.workplaceoptions.com/*

INNOVATION	WEBSITE

Consumption Floors & Nets

6.1	Prospera (Mexico)	*https://www.gob.mx/prospera*
6.1	Productive Safety Net (Ethiopia)	*https://www.wfp.org/content/protective-safety-net-programme-ethiopia*
6.1	Gandhi Rural Employment Act (India)	*http://www.nrega.nic.in/netnrega/home.aspx*
6.1	PKH (Indonesia)	*https://www.kemsos.go.id/program-keluarga-harapan*
6.1	Universal Basic Income (Finland)	*http://www.kela.fi/web/en/basic-income-experiment-2017-2018*
6.1	13th Month Pay (Columbia, Chile, Argentina, Meico)	n/a
6.1	ProSoli (Dominican Republic)	*http://progresandoconsolidaridad.gob.do/*
6.2	UNICEF: integrating innovation (Global)	*https://www.unicef.org*

Inclusive Financialization

7.1	MyAgro (Mali)	*https://www.myagro.org/*
7.1	Risk-Contingent Credit (Various: Kenya, India, South Asia, Africa)	*http://www.globalresiliencepartnership.org/teams/1ifpri-harnessing-power-tech/*
7.1	Wave Money (Myanmar)	*https://www.wavemoney.com.mm/*
7.1	Hello Tractor (Nigeria)	*https://www.hellotractor.com/*
7.1	MyWORTH (Tanzania)	*http://www.pactworld.org/worth-program*
7.2	Modelo Peru (Peru)	*http://mibim.pe/*
7.3	Digit (USA)	*https://digit.co/*
7.3	Prism (USA)	*https://www.prismmoney.com/*
7.4	EVEN (USA)	*https://even.com/*
7.5	Yak Insurance (Nepal, India)	*http://ncf-india.org/projects/people-livestock-and-snow-leopards*

Big Data Small Devices (Better Livelihoods)

8.1	WISE (Qualcomm + FHI 360) (Senegal)	*https://www.fhi360.org/projects/wireless-solutions-fisheries-senegal-wise*
8.1	Twiga Foods (Kenya)	*http://twigafoods.com/#about*
8.1	AgriFin/LISA (Indonesia)	*https://www.mercycorps.org/research-resources/agri-fin-mobile*
8.1	FarmDrive (Kenya)	*https://farmdrive.co.ke/*
8.1	Avaaj Otalo (India)	*https://hci.stanford.edu/research/voice4all/*
8.3	TCS Pride (India)	*https://www.tcs.com/*

INNOVATION	WEBSITE

Collective Security

9.1	Fogo Cruzado (Brazil)	*https://fogocruzado.org.br/*
9.1	Onde Tem Teroteio (Brazil)	*http://ondetemtiroteio.com.br/*
9.1	DARU (Indonesia)	*http://labs.webfoundation.org/daru-firefighting-at-your-fingertips/*
9.1	Crash Detech/Usalama (South Africa)	*www.crashdetech.com*
9.1	WatchMe911 (USA)	*http://www.watchme911.com/*
9.1	Usalama (Kenya)	*www.usalamatechnology.com*
9.1	Seguridad Inaámbrica (Qualcomm, USAID, and RTI) (El Salvador)	*https://www.qualcomm.com/company/wireless-reach/projects/wireless-security*
9.3	My SafetiPin (India, Kenya, Indonesia, Philippines, Colombia)	*http://safetipin.com/*

Personhood & Rights

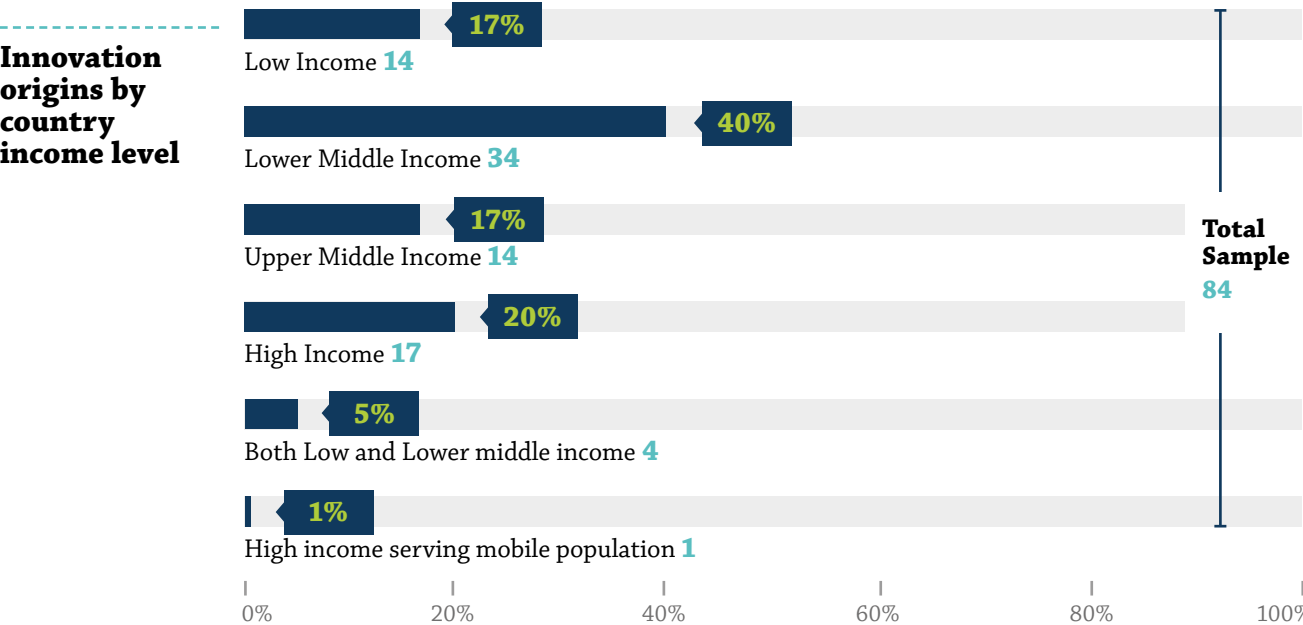|		
10.1	Transmit (PACT) (Cambodia)	*http://www.pactworld.org/country/cambodia*
10.1	Land Law (Mozambique)	n/a
10.1	Women's Land Rights Sensitization (Burundi)	*www.idlo.int/news/highlights/strengthening-womens-customary-rights-land*
10.1	Legal Aid (Haiti)	*https://goo.gl/vU8hjr*
10.1	Village Courts (Bangladesh)	*http://www.villagecourts.org*
10.1	Cadasta (Various)	*http://cadasta.org/platform/*
10.1	DefeZap (Brazil)	*https://www.defezap.org.br/*
10.3	doctHERS (Pakistan)	*http://www.docthers.com/*
10.4	Making Cents International/Banqu (USA, Jordan)	*http://www.makingcents.com/digitalidentitiesforrefugees*
10.5	iRespond (USA, Southeast Asia)	*https://www.irespond.org/*

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11.1	LOOP (India)	*http://www.digitalgreen.org/loop/*
11.1	#PropertyForHer (India)	*https://www.facebook.com/PropertyForHer/*
11.1	MFIN Connect (India)	*http://mfinindia.org/*
11.1	Pradham Mantri Mudra Yojana (PMMY) (India)	*http://www.mudra.org.in/*
11.1	India Stack/DigiLocker (India)	*http://indiastack.org/;* *https://digilocker.gov.in/*

Appendix 2

Findings by Country Income Group

Stability-related needs and challenges vary widely across income contexts. High income (HI), upper-middle income (UMI), lower-middle income (LMI), and low income (LI) countries are in some cases converging and in other cases switching places, challenging established understandings of how to provide stability for citizens. Each context has a very different starting point for the innovation process, defining both the needs and opportunities.

Innovation origins by country income level

Category	Value	Percent
Low Income	14	17%
Lower Middle Income	34	40%
Upper Middle Income	14	17%
High Income	17	20%
Both Low and Lower middle income	4	5%
High income serving mobile population	1	1%

Total Sample 84

Middle-income countries account for 57% of the innovations we profiled, but we also found numerous examples in both low and high-income countries. The figure presents the distribution by country income level.

High Income Countries | We found that the majority of high-income country stabilizing innovations, especially in the U.S., are technology-driven or enabled and largely aimed at more inclusive financialization, and adaptation of skills for employment to a new, more unstable economic reality. These include notable innovations in financial services aimed at expanding credit, consumption smoothing and savings promotion, community investment, targeted education and data-informed skill development, and others, all to help individuals deal with insecure incomes and unstable gigs and jobs. Policy innovation, while badly needed, has been very limited. It is our view that innovations in the developed world, the US in particular, are just beginning to address economic destabilization.

Upper-Middle Income Countries (UMIs) | UMIs in general have a degree of public sector institutional capacity, and the stabilizing innovations we found reflected more public strategies, particularly throughout Latin America. Brazil and Mexico in particular are building more sophisticated financial inclusion infrastructures on the back of cash transfer systems, supported by digital identities and access to low-cost smartphones. While these begin with payments, they are expanding into savings, credit, finance, and other areas. These cash transfer services function as government-funded consumption floors, typically provided to those far outside of stable employment, and represent perhaps the most important innovation of the century. Additional innovations related to cash transfers include promising financial education and microfinance lending in the Dominican Republic, as well as new public savings and pension schemes in Peru.

Some UMIs share significant violence/public security issues with lower-income contexts, and innovative peer-to-peer and crowdsourced data solutions to help residents avoid street violence (collective security) have also arisen in Brazil's urban areas, while Qualcomm supported police in real-time mapping of urban violence in El Salvador using mobile phone reporting. A pilot innovation in Peru is exploring alternate contract dispute resolution and enforcement to accelerate resolution of commercial disputes. Innovation from these middle-income contexts will inform the future of both higher- and lower-income economies and should be carefully observed.

Lower-Middle and Lower-Income Countries | What is most exciting about innovation in LMI and LI contexts, particularly those where subsistence agriculture and fisheries remain vitally important to livelihoods, is the extent to which mobile technology and big data and analytics are delivering financial services and information in ways that were not possible just a few years ago. The most common innovations we found in these contexts do not depend on the prevalence of formal employment relationships. Financialization and big data are being unlocked for own-account producers, especially subsistence and small-scale agricultural producers, supported by digital identities and basic rights and personhood in some cases, across Africa and Asia.

Examples we present in the Atlas include the advent of micro-insurance products for nomadic yak herders in Nepal, India, and the Autonomous Region of Tibet (China), as well as risk-contingent insurance and credit products for African smallholders that deploy advanced meteorological data to determine payouts, making activities insurable that previously had far too much moral hazard. There is also significant expansion of cash transfers in Indonesia, now a world leader in the field, providing a consumption floor and expanded social safety net in an incredibly complex national environment. Other innovations prevalent in low-income contexts substitute for or enhance stabilizing functions of governments—including basic personhood and rights—that governments do not effectively or evenly provide. These are the preconditions or foundations of stability at the most basic level in terms of a sufficiently predictable contract enforcement and regulatory environment that enable individuals and businesses to make economic and investment decisions with confidence.

Rapidly-developing lower-middle income countries with growing formal employment sectors, most notably Vietnam, and Indonesia, have also produced stabilizing innovations in privately-providing benefits commonly linked to employment. One of the most interesting innovations in this space relates to new technology-enabled services that help global brands monitor workplace conditions in their supplier firms, either through interactive voice response (IVR) or multi-channel mobile-based

applications. In this case, a promising new privatized form of workplace labor regulation is emerging. It is noteworthy due to (1) the central role of technology in facilitating both self-reporting by employees and (2) the alliance between brand-owners and workers that emerges as a risk-management imperative of financialization, since labor abuse can threaten brand-shareholder value.

Most compelling is the way that India has incorporated the commercial technology sector into stabilizing policies and into the broader economic governance model as a whole (only Estonia and Peru are currently moving in parallel). While India's technological prowess makes it somewhat unique among LI and LMI countries, India's multi-front experiment with innovation for rural economic transformation is the closest we have found to a new public-private political economy of stability that is relevant to lower-income contexts with adequate technology endowments.

Appendix 3
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