A TEMPLATE TO JUMPSTART DIGITAL MICRO PENSION INCLUSION IN AFRICA

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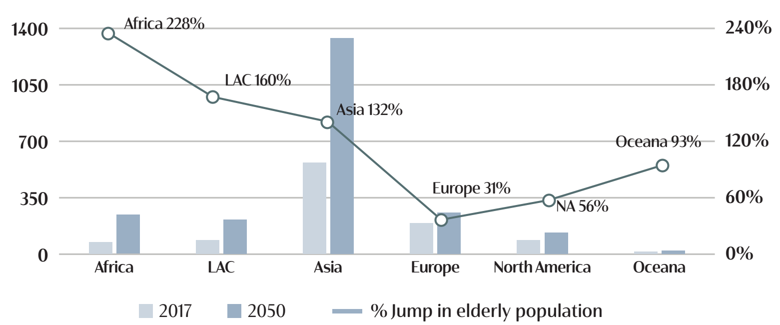
1. CONTEXT AND COMPULSIONS

In most countries, formal pension arrangements were originally designed for and restricted to salaried employees in the public and private sectors. This inadvertently left out roughly 1.8 billion non-salaried self-employed individuals such as farmers, small shopkeepers, self-employed women, daily wage earners, overseas migrants, street vendors, fishermen, contract labour, gig and platform workers, domestic help, and blue-collar workers in small and micro-enterprises.

This gigantic pension coverage gap, coupled with increasing life expectancy and a breakdown in the traditional joint family support structures due to labour mobility, has brought the world to the brink of an old age poverty crisis. Developing countries with predominantly informal labour markets will face particularly dire consequences, with between half and 95 percent of their workers excluded from formal pension arrangements.

According to The World Bank, developing countries are also getting old before they become rich, and at far lower levels of income than most OECD countries. As per the Bank, the transition from "ageing" to "aged" societies is taking only 20 to 25 years in developing economies, compared with 50 to 100 years for the currently older, rich countries. For example, although Africa is the youngest continent today, UN projections in Table 1 below show that Africa will experience the fastest growth in its elderly population — rising from 69 million in 2017 to a whopping 226 million by 2050.

Figure 1: UN Projections of Distribution and Growth of the Elderly



Source: United Nations, World Population Ageing (revised, 2019).

According to the United Nations Population Projections (2019), nearly 1.7 billion of the roughly 2.1 billion projected elderly in the world by 2050 will be living in developing economies in Asia, Africa, and Latin America. If the current pension coverage gap is allowed to persist, the vast majority of these elderly will face the grim prospect of living in extreme poverty for over two decades once they are too old to work. At that point, a tax-funded social pension of even US$2 a day to the future elderly could cost a staggering trillion dollars a year. For these excluded non-salaried workers, and equally for the governments concerned, a vital issue will be the management of longevity risk with the cessation of earnings in old age.

Fiscal transfers to support their future destitute elderly will also force countries to divert funds from other critical areas like infrastructure, health, and education. Intergenerational social transfers to support elderly parents and grandparents will compromise household savings, consumption and investments on children's education and other family needs. Without an urgent and effective policy, regulatory and business response to pension exclusion, poverty among the elderly will rapidly emerge as the dominant cause of increased global poverty.

The looming old age poverty crisis is akin to climate change. Both are global issues that have the potential to significantly impact future generations. They are slow-moving, complex problems that require both long-term thinking and urgent interventions. Additionally, they are interconnected issues that will have a significant impact on economic stability, social welfare, and environmental sustainability. Both issues require collective action by governments, individuals, and institutions worldwide for averting an unsustainable crisis. Ultimately, averting the looming old age poverty crisis will require a commitment to proactive planning, collaboration, and the implementation of effective policies and practices to ensure a secure and dignified retirement for all.

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In this situation, it is crucial that stakeholders find innovative ways of ensuring financial security for all in old age. Most countries will be unable to afford the fiscal and social cost of pension exclusion. The only sustainable policy option for developing nations is to build inclusive mechanisms that encourage and enable young informal sector workers to voluntarily set aside a part of their incomes for their old age. In this process, developing nations should seek to leverage modern developments in ID, technology and behavioural economics, and harness the existing digital financial inclusion ecosystem to make saving for old age simple, easy and affordable for everyone, everywhere.

If even a quarter of the presently excluded informal sector workers began saving a dollar a day for their retirement, they could collectively generate roughly USD15 trillion in new, long-term savings within the next decade. This could in turn have a multi-generational, population-wide impact. A large pool of long-term domestic savings could contribute to economic growth, infrastructure development, and employment across developing economies. If these retirement savings are then invested in climate friendly and ESG compliant businesses, they could also have far-reaching consequences on our ongoing battle with climate change.

Today, several countries across Asia, Africa, and Latin America are actively contemplating or implementing new, contributions-led micro-pension programs aimed at achieving broad-based social protection for their informal workforce.

In-depth feasibility studies by pinBox across a dozen or so countries in Asia and Africa clearly suggest that a large latent demand, coupled with the necessary digital finance ecosystem for comprehensive pension and insurance inclusion already exists. However, it is still not easy for most people to save for their old age or to manage their lifecycle risks.

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In this chapter, we discuss some of the supply-side constraints that usually hinder developing economies from expanding pension coverage to non-salaried workers. We also examine some demand-side barriers that prevent informal sector workers from voluntarily saving for their old age. Section three describes the pinBox digital micro-pension inclusion model and pensionTech, using examples from India, Rwanda, and Kenya, to illustrate how nations in Africa, Asia and Latin America can jump-start more comprehensive pension inclusion by simply leveraging the existing digital public infrastructure and digital finance ecosystem. On a more-or-less variable cost basis.

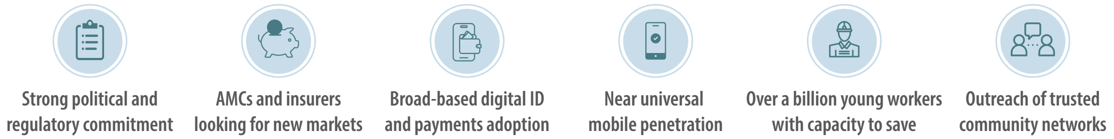
2. THE BUILDING BLOCKS FOR PENSION INCLUSION ALREADY EXIST

Since 2016, pinBox has worked closely with several governments, regulators, and development agencies in Asia and Africa to conduct in-depth micro-pension feasibility studies and to design and help build inclusive, digital micro-pension systems for informal sector workers. Our efforts and research on micro-pension inclusion clearly suggests that most developing economies have already put in place the necessary building blocks for more comprehensive pension inclusion.

Most countries already have a dedicated pension sector regulator, a supportive legal and regulatory framework, and a strong political commitment to expanding pension coverage to employees in micro and small enterprises, and to excluded informal sector workers. Also, most countries already have well-regulated pension funds and insurers, eager to expand their client base. Central banks, financial institutions and aid agencies have collectively helped establish a robust and rapidly expanding digital financial inclusion ecosystem and mobile payments infrastructure[1] that can today enable secure, low-cost transfer of micro savings to regulated asset managers.

[1]It was estimated that by 2021, there were around 1.2 billion people with digital payment accounts in Asia, Africa, and Latin America combined. This number is expected to grow rapidly in the coming years as digital financial services become more widely available and accessible in these regions

Figure 2:
The building blocks for comprehensive pension inclusion and a gigantic unmet pension demand already exists in most developing countries



According to The World Bank, as of 2020, at least 49 countries, many of which are located in Asia, Africa, and Latin America, had already implemented digital national ID systems that are a key enabler of digital financial and pension inclusion, as they can facilitate electronic Know-Your-Customer (eKYC) processes, making it easier for everyday people to open digital payment accounts, and digitally access a range of micro-financial services.

Furthermore, most developing countries already have national-level outreach and service delivery capacity through trusted and committed micro-finance institutions, bank agents, farm cooperatives, gig platforms, NGOs, and community-based organisations. It is feasible for countries to leverage this outreach to deliver financial literacy and knowledge, aggregate retail demand for small-ticket pension and insurance products, and deliver reminders to prompt regular, optimum contributions.

Although the necessary supply-side ecosystem, along with a large latent pensions and insurance demand among young informal sector workers willing and capable of saving clearly exists already, most people find it very difficult to activate a pension account or to efficiently manage their lifecycle risks. To effectively close the pension coverage gap, countries will need to simultaneously address a variety of supply-side barriers as well as demand-side constraints that prevent everyday people from achieving a secure and dignified retirement.

3. SUPPLY-SIDE IMPEDIMENTS AND IMPERATIVES

Over the years, we have observed several supply-side barriers to achieving pension coverage among lower-income informal sector workers, some of which are summarised here. Overcoming these obstacles will necessitate a multi-pronged strategy involving regulators, pension and insurance providers, aid agencies and governments.

a. **Legacy pensionTech Systems and Platforms:** Pension systems in most African, Asian and Latin American countries were originally designed and built to administer mandatory retirement savings of salaried employees in the public and private sectors. Such systems and processes often run on outdated technology or rigid processes with predictable, mandatory contributions that may not be readily capable of administering and delivering voluntary micro-pensions to self-employed individuals with modest incomes and potentially intermittent contributions. Developing countries therefore require a specialised pensionTech platform that is specifically intended for and competent to administer and deliver a voluntary DC micro-pension program based on unique and fully portable individual retirement accounts.

   However, building a proprietary micro-pension administration and delivery technology platform from scratch can be hugely expensive (in terms of both capital costs and mistakes in design) and time consuming. Consultations with key stakeholders strongly suggest the need for a customized and ready-to-deploy pensionTech platform that is capable of administering and digitally delivering voluntary micro-pension and insurance solutions directly to lower-income citizens.

b. **Fragmented Ecosystem:** Although the underlying digital finance ecosystem and infrastructure with digital national IDs, mobile payments, nation-wide third-party outreach and well-regulated pension funds and insurers already exists, this ecosystem is usually fragmented and does not automatically come together to enable non-salaried citizens to save for their old age.

In this situation, a digital micro-pension platform should be capable of using secure APIs as glue to integrate and leverage the existing digital finance ecosystem and infrastructure for micro-pension inclusion. This approach can help minimise start-up and operating costs and also inspire greater public confidence as citizens would interface with the pension system through stable, well known and trusted ecosystem stakeholders.

c. **Pro-rich Finance Sales Models:** Pension funds and insurers traditionally rely either on tax incentives or agents to drive product sales. However, as most low-income households may not be in the taxable income bracket, tax breaks are an ineffective tool for expanding voluntary pension coverage among informal sector workers. Also, as sales incentives are usually linked to the value of contributions, advisors and sales agents naturally focus on higher-income individuals with large disposable incomes living in larger cities. Lower-income individuals with potentially tiny contributions produce very small sales commissions which are unattractive for agents and advisors. Therefore, a sales model predicated on either tax incentives or agents, or both, restricts access, especially for lower-income citizens and those residing in remote rural locations.

In this context, it should be feasible for developing countries to deploy a fully digital micro-pension system with a simple and easy mobile phone interface to democratise access to affordable retirement and insurance solutions. A fully digital, mobile-based model will help countries to instantly provide easy, universal access without relying on expensive intermediaries. The existing outreach of trusted entities such as MFIs, NGOs, gig-employers, and women and farm cooperatives can also be leveraged to deliver financial literacy, and help aggregate retail demand for small-ticket pension and insurance products, especially among their own clients, employees and members, most of whom are self-employed women and youth.

d. **Process Friction**: Most pension and insurance products have complicated features and processes, and rigid product rules that require regular, pre-committed payments — often combined with penalties for missed pension contributions or insurance premiums. For example, India's National Pension System requires a minimum contribution of INR 500 per transaction and hence crowds out the more vulnerable, lower-income workers, and especially those that earn modest daily incomes. Traditional pension and insurance products, including voluntary pension programs are designed for individuals with high incomes and financial literacy, and easy access to agents or financial advisors. In their current form, such products are clearly not suited for the majority of informal sector workers with low financial literacy and modest, irregular (and often daily or seasonal) incomes. Cumbersome KYC and complicated paper-based processes further inhibit voluntary participation, reduce public confidence and increase transaction costs for low-income informal sector workers.

   Achieving mass-scale voluntary retirement savings by informal workers requires simple and flexible product features and rules, combined with an easy and simple digital KYC and account activation process. This would in turn necessitate innovative use of technology for convenient, secure and affordable access by citizens with low irregular incomes and limited prior experience with formal finance. Governments and pension providers would need to specifically focus on sound governance, and on achieving high real returns coupled with low fees and charges to optimise retirement outcomes for subscribers with modest savings capabilities.

e. **Using Mainstream Pension Providers for Micro-pensions**: Some countries have permitted existing pension funds and pension administrators that already manage mandatory occupational pension schemes, to also offer voluntary micro-pension products to informal sector workers. In this situation, each pension fund is required to establish its own administration, governance and distribution capacity. As the existing technology platforms deployed for occupation pensions are often not equipped to deal with intermittent, voluntary contributions by individuals, these vertically integrated pension funds are forced to make large front-end investments into building or procuring proprietary micro-pension platforms, and devote appropriate resources to generic awareness, publicity and financial literacy. This in turn increases their capital costs, fixed overheads and operating expenses, and makes the micro-pension business model difficult to scale and sustain, especially during the initial years of operations.

   Importantly also, although each standalone micro-pension provider is expected to operate as per uniform regulations and guidelines, subscribers of different standalone pension funds may often face very different and non-uniform product rules, service quality and retirement outcomes. A decentralised micro-pension framework involving multiple standalone micro-pension providers also imposes a significant supervision and enforcement burden on the regulator.

   Some countries, such as Rwanda and India have on the other hand successfully addressed these challenges by deploying a central micro-pension administration and delivery platform, and a shared governance and delivery framework, resulting in considerable reduction in costs and charges, and high voluntary coverage outcomes. For example, within four years of its launch, Rwanda's EjoHeza LTSS micro-pension scheme that pinBox designed and helped build and launch, has achieved nearly 3 million voluntary subscribers (half of whom are women). Of them, 2.4 million subscribers are saving regularly and have collectively generated over RwF 50 billion in new long-term savings. India, which launched its National Pension System (NPS) for civil servants in 2004 and extended the same scheme on a voluntary basis to all other citizens in 2009, has achieved roughly 20 million subscribers and an AUM of over USD125 billion.

A centrally administered, national-ID linked digital micro-pension program dramatically reduces both capital and operating costs for sponsors and fund managers, and thus helps lower fees and charges for low-income subscribers. Central administration also enables seamless labor mobility across jobs and locations while allowing governments to directly deliver targeted fiscal incentives, such as matching co-contributions, to encourage mass-scale voluntary participation, sustained contributions and improved retirement outcomes without any risk or leakages.

4. DEMAND-SIDE BARRIERS

Pension inclusion efforts that rely largely on voluntary thrift and self-help by millions of informal sector workers can often achieve suboptimal coverage and/ or persistency outcomes due to a range of demand-side challenges.

For example, a micro-pension program would need to appropriately address the unique needs of people in wide variety of occupations, ranging from farmers, gig-workers, small shopkeepers and blue-collar workers to street vendors, self-employed professionals, domestic help and overseas migrant workers. People in such diverse occupations may have often very different incomes, cash-flows, financial capabilities, and retirement needs. Micro-pension programs would also need to take into account additional constraints such as modest intermittent or seasonal incomes, frequent job and geographical migration, limited experience and comfort with formal financial institutions, and low financial literacy. Also, for most informal sector workers, terms “pension” or “retirement” may not easily resonate, and mass-market voluntary coverage may thus require significant investments in generic promotions and public awareness.

This section outlines some demand-side challenges and constraints that usually prevent lower-income self-employed individuals from voluntarily saving or saving enough for their old age.

a. **Liquidity Considerations**: Insurance penetration in most developing countries stands at less than 2 percent. Low retail insurance uptake adversely impacts voluntary retirement savings in the following ways.

   (i) Uninsured or under-insured households are frequently compelled to use past savings to meet the full cost of any adverse (and often insurable) lifecycle event such as a health shock, accident, death or a crop failure that can cause a sudden income interruption or an expenditure spike. Using savings to pay the full cost of unforeseeable lifecycle risks is not only extremely expensive, it also continuously wipes out past savings;

   (ii) When past savings are insufficient to meet the full cost of a lifecycle risk, individuals are forced to take emergency loans at punitive interest rates. As a result, any future surplus income is then mortgaged in favour of repaying outstanding emergency loans, which further depresses the already limited ability of low-income subscribers to save for their old age consumption needs; and

(iii) Using savings or emergency loans for risk management also produces a high premium on liquidity and makes the prospect of a long-term illiquid retirement savings option unattractive. In fact, even if a person had previously committed to save for old age, she may be forced to frequently demand premature access to her retirement savings for emergencies, or stop future pension contributions, thereby defeating the core purpose of the pension program.

It is not surprising that lower-income households without insurance cover prefer to keep a major share of their surplus incomes in cash or other liquid, informal saving arrangements. In this context, it may be prudent to layer micro-pensions with low-cost group micro-insurance benefits. This would allow households to use insurance (instead of savings and/or credit) for risk management and significantly reduce overall vulnerability levels. This approach could also increase savings capabilities (even without any increase in incomes), help lower-income workers sidestep a debt trap, and make the idea of an illiquid retirement savings option more acceptable.

b. **Affordability Constraints**: Most pension, insurance and savings instruments demand large, pre-committed contributions. This crowds out lower-income individuals, especially those with modest daily, seasonal or otherwise irregular incomes. For example, an Uber driver in India who earns roughly USD500 a month could conceivably save USD50 a month for old age. However, she rarely has USD50 on any given day. It is much easier for her to instead transfer USD2 a day from her day's earnings into her pension account. A flexible micro-pension scheme that allows informal workers to save in line with their own income flows could make retirement savings both affordable and inclusive.

c. **Myopia and Trust Deficit**: Demand-side studies conducted by pinBox across multiple countries clearly indicate that most informal sector workers have negligible experience with formal finance and low levels of trust in mainstream pension funds and insurers. Also, concepts such as "retirement" or "pensions" do not readily resonate with self-employed individuals. Motivating voluntary participation may be even more challenging for developing economies that have a predominantly young workforce — as retirement may appear too distant to most individuals. Effectively addressing the challenges of myopia, low financial literacy and trust may often require a multi-pronged approach including the following.

(i) As public awareness and retirement literacy are akin to a public good, private sector stakeholders by themselves will neither have enough incentives nor budgets for achieving meaningful behavioural change at scale. In this situation, regulators, pension funds, financial inclusion stakeholders and DFIs should collectively contribute towards a retirement literacy war chest. This pool of funds could then be used for developing simple and standardised communication, training and financial literacy tools, and for launching a targeted promotions, publicity and retirement literacy campaign to popularise the digital micro-pension program and reiterate the importance of a secure and dignified old age.

(ii) Micro-pension stakeholders should actively partner with trusted community-based organisations such as cooperatives, NGOs, micro-finance institutions (MFIs) and gig platforms. These partners can deliver in-person financial literacy through group meetings, encourage and assist their clients to voluntarily activate their micro-pension accounts, and serve as an effective channel for periodic reminders for persistency. Importantly, grassroot level entities that citizens regularly interact with and trust can provide a credible "face" to a micro-pension program and help cultivate greater public confidence in both products and product providers.

(iii) A micro-pension administration platform should provide citizens with a simple, transparent and effective complaints filing and resolution mechanism with automated escalation of unresolved grievances. This will mitigate the risk of fraud or malpractices, and further increase public confidence.

(iv) Centrally administered, national-ID linked unique individual pension accounts will allow governments to directly deliver targeted, means-tested or conditional fiscal incentives (of the kind provided by the governments of Rwanda and India) to micro-pension subscribers without the usual attendant risk of leakages. If such incentives are designed well and transparently delivered, they could motivate even younger workers to voluntarily set up micro-pension accounts, encourage persistent and optimum contributions, and top up their modest savings.

d. **Heterogeneity**: The informal sector in developing economies is extremely heterogeneous in terms of occupations, demography and incomes. A significant challenge for a national-level micro-pension system targeting informal sector workers is to help people from different walks of life to easily self-relate to the pension proposition. A useful strategy in this case is to develop segmented, demography, occupations- or channel-based marketing and communications tools. Hence a communications campaign that promotes "pensions for teachers" or "social security for migrant workers" or "retirement solutions for gig workers" may resonate more easily with workers in specific occupations. In parallel, allowing each person to save as per her own capacity and income flows can help customise even a standard micro-pension scheme for each individual citizen.

For certain dominant occupations or distinct occupational categories, it may be desirable to further customise both access and delivery strategies. For example, the pinBox "gift-a-pension" platform for disaggregated domestic workers encourages and enables middle and upper-middle income households to set up a micro-pension account for their home help, and co-contribute to their retirement savings over time. Similarly, it is feasible to "embed" a digital micro-pension solution onto the apps of platform staffing companies to enable gig-workers to set up and manage their micro-pension accounts using the app that they already use every day.

e. **Digital illiteracy**: Mass-market adoption of a digital finance solution usually requires large front-end investments on digital literacy coupled with intensive publicity efforts to motivate millions of individuals to voluntarily download, learn and use a new mobile or web application. This may be challenging given that micro-pension programs usually target a workforce with diverse levels of digital access and literacy.

Countries can sidestep large investment in digital literacy or on promoting new apps by simply leveraging secure open digital platforms such as WhatsApp or USSD (for persons with feature phones and those in remote rural locations with limited bandwidth) to directly deliver a digital micro-pension product into the hands of citizens. A person should be able to use her mobile, and a familiar WhatsApp or USSD interface, to activate a digital micro-pension account within minutes and without elaborate KYC formalities. She should be able to use the same interface to thereafter access account information and statements, regardless of where she lives or works over time. This approach can instantly make a micro-pension solution universally accessible without investments or efforts on building new distribution or delivery infrastructure. This can also help optimise adoption by making saving for old age as easy and simple as sending a message.

f. **Gender Issues**: Globally, women are relatively more vulnerable to old age poverty than men for a variety of reasons. With a relatively higher life expectancy, women will spend more years living alone in old age, face higher expenses on health, and will therefore need much larger retirement accumulations than men. However, most women may not be able to accumulate enough savings for their old age as they are disproportionately more likely to be in informal employment, usually earn less than men in similar occupations, and face frequent work and income interruptions due to childbirth and other family responsibilities. Women are also more financially and digitally excluded and hence tend to save either in cash or informal instruments which causes the real value of their savings to deplete with inflation. Hence, a pension system that is predicated on individual contributions is unlikely to equally benefit women.

In this regard, governments and pension sector stakeholders should actively focus on designing communication tools, products, outreach strategies and processes that make it easy for women to save for retirement. This may include special fiscal incentives for women, and collaborations with NGOs, MFIs and other stakeholders committed to women livelihoods and empowerment. As both mobile ownership and use among women is usually lower, it should be feasible for the field-staff of trusted outreach partners and aggregators, to use their own mobile phones to assist self-employed women with activating and managing their individual micro-pension accounts without compromising on data privacy or security.

5. THE PINBOX DIGITAL MICRO-PENSION MODEL

pinBox is a Singapore and India based social pensionTech committed exclusively to expanding micro-pension coverage to self-employed women and youth. Between 2016 and 2019, the pinBox team developed an enterprise micro-pension platform, and an innovative and non-linear digital model for expanding pension coverage to non-salaried informal sector workers. Importantly, this white-labelled, ISO27001 and ISO9001 certified pensionTech platform was conceptualised, designed and built by a team of pension experts with multiple decades of pension policy and implementation experience in emerging markets.

The pinBox pensionTech platform and model was developed in part on the basis of our team's past experience with helping the Indian government design and launch the National Pension System (1998-2010), delivering micro-pensions to 3 million self-employed women and youth in India (2008-2015), and helping the Rwandan government to design, build and launch Ejo Heza LTSS -- Africa's first government-sponsored digital micro-pension program (2016-18). We have further validated and refined our model and pensionTech through several extensive feasibility studies and new deployments in Asia and Africa.

The pinBox pensionTech design considerations and approach are encapsulated in Table 1.

Table 1: pinBox Model and pensionTech Design Considerations

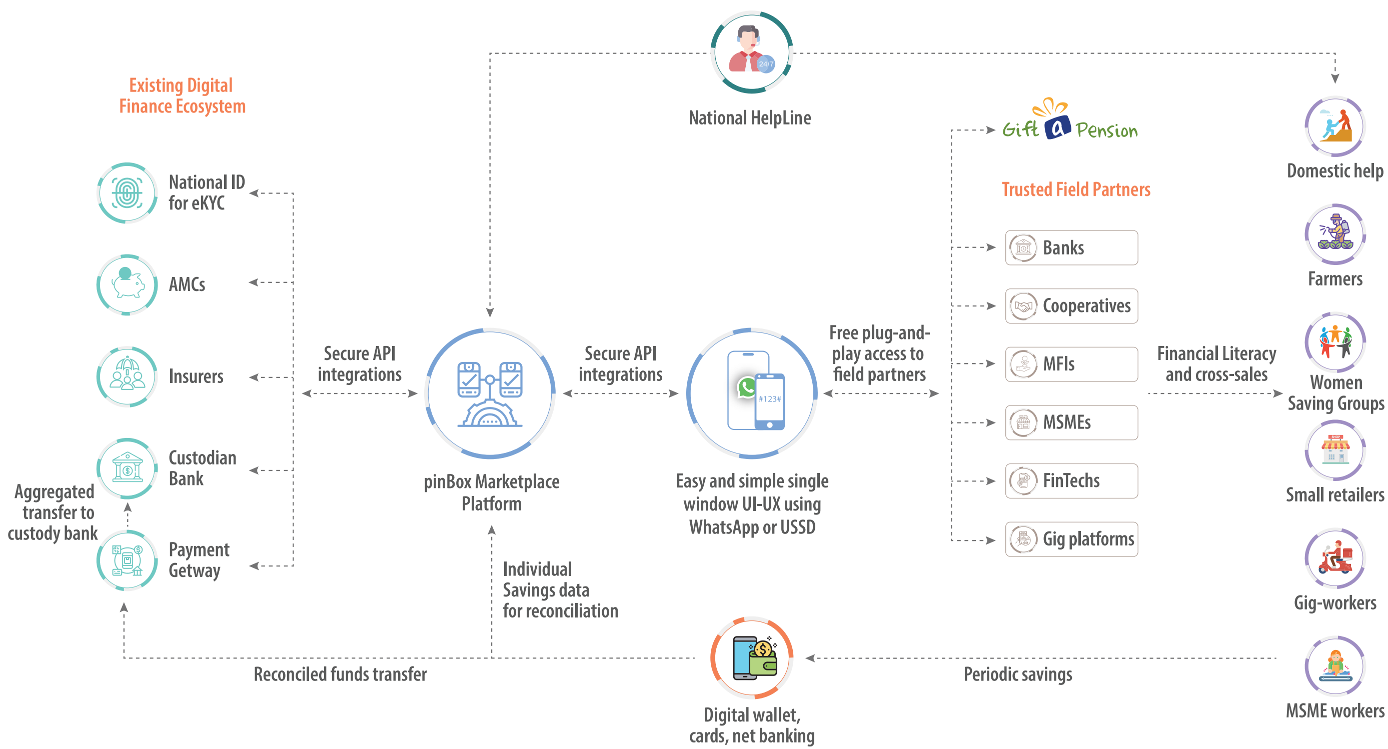
Stakeholder category	What is the problem?	Why is this an important problem?	pinBox approach/ solution
Governments and pension regulators looking to achieve comprehensive pension coverage.	Roughly 90% workers are in the informal sector and not yet saving for old age. Existing pension systems for salaried workers are not equipped to deal with self-employed women and youth.	Unsustainable fiscal cost of a tax-funded social pension for millions of future elderly without pension benefits. Comprehensive pension inclusion could generate a large new pool of long-term savings.	Expert technical assistance and a specialized pensionTech platform that uses the existing digital finance ecosystem to help jumpstart micro-pension inclusion. On a variable cost basis.
Administrators of employer-led pension and superannuation programs for salaried workers	Use legacy IT systems and processes for pension administration and delivery to salaried workers. Also unable to reach or deal with non-salaried workers. High capital cost of building new proprietary pensionTech from scratch.	Face low compliance and governance and high admin costs. Existing subscribers suffer poor services and portability friction. Micro-entrepreneurs and self-employed remain excluded from pension benefits.	Migrate to a modern and nimble pensionTech platform with a simple and user-friendly digital interface. Achieve optimum governance and compliance. And easily reach MSMEs and informal workers.
Pension funds, AMCs and Insurers looking for a sustainable model to deliver small-ticket pension and insurance solutions to low and middle-income (LMI) segments.	Traditional sales models (using agents and/or tax incentives) are too expensive and don't work for LMI segments. Need a new, digital way to reach and service millions of economically active but excluded workers.	The high-income segment market is cluttered. A multi-trillion-dollar demand for small-ticket pension and insurance products remains unmet. Targeting LMI segments aligns business and public policy goals.	Multi-product and omni-channel digital finance marketplace helps aggregate retail demand from LMI segments. Pension funds and insurers deal only with whole-sale assets and aggregated premiums.
Aggregators (banks, MFIs, cooperatives, fintechs, MNOs, gig-platforms) that already reach over a billion self-employed women and youth.	Can be a trusted channel to cross-sell micro-pensions to existing clients/ employees. But often do not wish to invest in new IT capacity. Or service clients/ employees beyond the tenure of the relationship.	Clients and employees not saving for old age face a high risk of extreme old age poverty. A long-term saving solution can grow their product offering, foster long-term client/ employee loyalty and retention, and generate new fee income.	Offer aggregators free plug-and-play access to a digital micro-pension marketplace with portable accounts. Aggregators cross-sell, and deliver reminders and services only till they are connected to clients/ employees.
Over a **billion self-employed women and youth** who can afford to save but are neither eligible for pension benefits nor saving for old age.	Have low knowledge and trust in formal finance, low financial literacy, and modest intermittent incomes. Are inhibited by cumbersome KYC, complex products, rigid rules, and high ticket-sizes.	With increasingly nuclear families, improving longevity and pension exclusion, most self-employed will face extreme old age poverty for over 2 decades. Thrift and self-help are their only options.	Simple products, easy and frictionless digital UI-UX, freedom to save as per own income flows, trusted interface for information and knowledge, and fiscal incentives to supplement modest savings.

A brief description of the principles, rationale, and components of our pensionTech platform and field-tested delivery model, that can today be adopted by any developing country to deliver a voluntary and/ or mandatory retirement savings option to both informal sector and salaried workers, are outlined below.

a. **Leverage the existing DFS ecosystem for pension inclusion**: At a headline level, the pinBox model helps countries leverage the existing digital public infrastructure (DPI) as well as the digital financial services (DFS) ecosystem for expanding pension coverage to informal sector workers. Using existing, stable, and well-regulated institutions inspires greater public confidence as citizens interact with the pension system through well-known and trusted entities. This approach also radically reduces the time-to-market, minimises operational risks, and dramatically reduces both front-end start-up costs and ongoing operating expenses. The experiences of Rwanda, India are Kenya help validate this strategy.

b. **Shared infrastructure for central administration and recordkeeping**: The pinBox model is grounded on the concept of "shared infrastructure". We advocate that governments, pension funds and insurers avoid large investments in building proprietary capacity for scheme administration, recordkeeping, and distribution. This can be achieved by launching a single, nationally uniform micro-pension product (albeit with multiple pension fund managers), setting up a central trust and board of trustees, deploying a central administration and delivery platform with a common custody account, centrally managed communications and retirement literacy interventions, and third-party (non-proprietary) cross-sales and service delivery by a range of trusted field-partners and aggregators. This approach enables product providers to focus on investment returns and makes the small-ticket pension and insurance proposition instantly viable for stakeholders, even with modest fees and charges. This approach has been deployed already in India, Rwanda and Kenya and a similar approach is planned for Bangladesh and the island nations in the Pacific. Figure 2 below presents the pinBox institutional and process architecture with a central administration, governance and delivery framework for a digital micro-pension marketplace.

Figure 2:
pinBox Omni Channel Multi Product Digital Micro Pension Marketplace Architecture



c. **Omni-product, multi-channel digital pension "marketplace"**: In line with our mission of expanding pension coverage to informal workers, pinBox has developed a specialised and ready-to-deploy white-labelled pensionTech platform that can today help any country to more-or-less "switch-on" an inclusive, digital micro-pension program. Within a few months. On a variable cost basis. This pensionTech platform uses secure APIs as "glue" to integrate the existing digital financial inclusion ecosystem (digital national ID, digital payments, custody banks, pension funds and insurers) to help jumpstart the establishment of a national-level digital micro-pension, savings and insurance "marketplace".

d. **Portable individual accounts, familiar user-interface**: The pinBox pensionTech platform is specifically designed to issue and administer individual, defined contribution micro-pension accounts. Any individual anywhere can use her mobile and a simple and familiar USSD, WhatsApp or web interface to access the micro-pension marketplace and to voluntarily activate a digital micro-pension account within minutes, and without elaborate KYC or documentation requirements. As each micro-pension account is uniquely mapped to a subscriber's national ID, it is fully portable and stays with the subscriber, regardless of where she lives or works over time[2].

e. **Save as you earn**: While activating a micro-pension account, each subscriber is free to decide the amount and frequency of her pension contributions. Subscribers can save as per their own savings capability and income-flows, without facing any penalties for missed contributions. Subscribers also have an option to automatically increase future contributions and index them to inflation.

[2] pinBox has already integrated its pensionTech with WhatsApp in India and Kenya. While people with simple feature phones can use a USSD interface to set up and manage their digital micro-pension accounts, our partnership with WhatsApp allows the growing population of citizens with smartphones, who already use WhatsApp, to use this familiar app to securely set up and manage digital micro-pension accounts. This sidesteps the need for such people to download or learn a new app from scratch.

f. **Integrated financial account**: Long-term retirement savings are layered with liquid micro-investments for shorter-term goals (such as children's education or emergencies), and with an insurance basket to cover the cost of income shocks and lifecycle risks. This addresses liquidity needs of subscribers, increases persistency, and reduces the incidence of premature withdrawals from retirement savings. Subscribers can use their mobiles for easy, single-window digital access to an integrated financial solution. For example, in India, we have deployed an integrated solution consisting of the National Pension Scheme (NPS) for retirement, a liquid micro mutual fund option for shorter-term goals and emergencies, and an insurance payout that supplements lost income due to vector or airborne diseases, or hospitalization.

g. **Secure, low-cost digital contributions**: Individuals can use a mobile wallet or any other regulated digital payment instrument to directly remit periodic savings to the scheme custodian bank without any risk or fraud or reconciliation errors. An individual is also free to set up an auto-debit or standing instruction on her bank account or mobile wallet for transferring periodic pension and insurance contributions — which further reduces friction and greatly improves persistency. For example, subscribers in Kenya simply use mPesa or Airtel Money to transmit savings and insurance premiums to their "Fahari" accounts. Similarly, people in India use the Unified Payments Interface (UPI) established by the National Payments Corporation of India (NPCI), to transfer micro-savings directly from their bank accounts to the custody account of large, well-regulated pension funds and mutual funds.

h. **Trusted interface**: The field staff of credible outreach partners (MFIs, women's cooperatives, gig platforms, MSMEs, NGOs and CBOs) that already reach and service self-employed women and youth, enjoy free plug-and-play access to this marketplace. This enables them to offer a regulated pension, savings and insurance solution to their clients, members, or employees without any new investments in technology. They deliver financial literacy, cross-sell the solution to their own clients and employees and deliver periodic reminders to prompt regular contributions. In the process, outreach partners achieve long-term client or employee retention and loyalty, new fee income and a double bottom-line impact. Subscribers can also use their mobiles, an aggregator's field staff, or the scheme helpline to access account information, file claims or withdrawal requests, and obtain speedy resolution of complaints. Micro-pension subscribers are not "tied" to any service provider or employer. Use of trusted intermediaries for micro-pension cross-sales in India resulted in conversion rates of over 55 percent among self-employed women and youth during the model validation phase in 2021-22.

i. **Standard financial literacy and training toolkits**: Simple, field-tested training and financial literacy toolkits, such as films, scripted manuals for conducting group meetings, FAQs, calculators, comic books and other handouts help standardise the process of knowledge delivery by field partner staff, and citizen-level understanding of important concepts, product features and rules. The trained client-facing field-staff of trusted aggregators are usually enrolled as clients for the micro-pension scheme before they are permitted to cross-sell the solution to their customers or members.

j. **Targeted, non-linear digital delivery platforms**: As micro-pension programs target a diverse population, it is desirable to deploy targeted and segmented outreach and access mechanisms that enable voluntary participation by different cohorts. For example, the micro-pension platform can be "embedded" onto gig economy apps to make it even easier for gig and platform workers to set up and manage their micro-pension accounts from the native app they are already using to earn a living. Similarly, the pinBox "Gift-a-Pension™" platform that was launched in India and Kenya, makes it easy for households and micro-employers to assist their domestic help or contract workers to set up a digital micro-pension account. Employers are free to periodically co-contribute to the retirement savings of their employees. Figure 3 below shows the 5 non-linear digital platforms developed by pinBox.

Figure 3: Targeted, non-linear digital delivery platforms

k. **Wholesale model for product providers**: As technology and trusted outreach and delivery partners help "aggregate" the retail demand for small-ticket financial services, governments, pension funds and insurers are not required to invest in building new, proprietary sales and distribution capacity to expand coverage. They do not face millions of small value transactions. They deal only with wholesale, reconciled assets and aggregated premiums. This greatly reduces their capital and operating costs, and results in much lower fees and charges (and hence higher returns/ benefits) for subscribers.

l. **Targeted fiscal incentives**: Unique, centrally administered, national ID-linked micro-pension accounts enable governments to deliver conditional fiscal incentives, such as a matching co-contribution or free insurance (as is the case in Rwanda), directly to each eligible subscriber's account without any risk of error or leakages. This in turn encourages mass-market voluntary coverage, even among younger cohorts who may otherwise resist the idea of long-term retirement savings.

6. ADVANTAGES OF CENTRALLY ADMINISTERED MICRO-PENSIONS

As stated above, most countries have already put in place the foundational building blocks for a secure and inclusive digital micro-pension system. By leveraging the existing DFS ecosystem and using a shared infrastructure strategy, developing economies can launch affordable micro-pension solutions while aligning the incentives of each key stakeholder with the public policy goals of comprehensive pension inclusion.

a. Benefits for Informal Sector Workers

Self-employed, non-salaried individuals can access and activate a simple, portable, and integrated pension, liquid savings, and insurance account with well-regulated financial institutions within a few minutes and without elaborate KYC or documentation formalities. They can use their mobiles and an easy, familiar interface to manage their money and save for their old age as per their income and savings capacity without any penalties.

A national-level micro-pension program of the kind implemented by Rwanda provides identical choices and benefits to each subscriber. Even if the scheme involves multiple pension funds and insurers, subscribers interact with a standard product architecture with identical rules, service quality and retirement outcomes.

A pension system with central record-keeping and administration enables the issuance of unique, national-ID linked, portable individual pension accounts that move with each subscriber through changes in jobs or locations over time. Subscribers are not tied to any aggregator or employer or fund manager. This encourages competition and drives up service quality and returns.

Subscribers do not face differential service quality — they encounter an identical quality of services, regardless of the fund manager selected, as well as uniform timelines and processes for claims and complaints processing and settlement.

b. Benefits for Pension and Insurance Product Providers

Product providers avoid large investments on building proprietary administration, sales, or service delivery capacity. Instead, they leverage the existing outreach of trusted field partners and aggregators for providing easy access to affordable micro financial services.

By promoting micro-pension and insurance inclusion, pension funds and insurers are able to better align their commercial interests and efforts with public policy goals, and better position themselves as socially responsible institutions.

Product providers do not face millions of small-ticket contributions or micro-insurance premiums. They deal only with wholesale assets and aggregated premiums and are therefore able to focus mainly on optimising investment returns and on efficient and speedy insurance claims settlement. Retail demand aggregation makes small-ticket pension and insurance commercially sustainable for mainstream pension funds and insurers. Lower capital and operating costs enable them to levy lower fees and charges on subscribers.

c. Benefits for digital ecosystem players

Digital finance ecosystem and infrastructure firms such as banks, national ID agencies, mobile and digital payment companies, custodians, SMS and email gateways, and social media platforms directly benefit from mass-scale micro-pension inclusion.

Digital payment gateways and mobile payment companies achieve sticky, long-term clients and larger revenues by processing periodic micro-pension contributions over multiple decades. National ID agencies are able to play a meaningful role in comprehensive pension and financial inclusion by enabling a simple and secure eKYC which helps eradicate front-end friction for lower income citizens and enables subscribers to easily verify their ownership of micro-pension accounts and benefits deep in the future.

Offering micro-pension related services can also help DFS ecosystem stakeholders achieve a large base of new customers who were previously underserved by traditional pension providers and insurers.

d. Benefits for Aggregators and Outreach Partners

Aggregators who already reach and service millions of informal sector workers are able to instantly offer a well-regulated pension, investment and insurance solution to their clients, members and employees. In this process, aggregators enjoy long-term client connect and loyalty, new fee income, a competitive advantage over other players, and a double bottom-line impact.

Micro-pension programs also generate valuable data on the savings patterns of subscribers. Such savings behaviour and data can be analysed by retail aggregators to identify new market opportunities and develop new products and services for their clients.

e. Benefits for governments and regulators

Sponsors including governments and regulators can side-step large front-end capital costs and jumpstart pension coverage expansion by leveraging the existing digital finance ecosystem to “switch-on” a digital micro-pension “marketplace” with easy universal access.

A central administration platform enables easy monitoring of implementation and adoption across geographies, occupations and demographic segments to help assess the gap between goals and outcomes. Regulators and policymakers also enjoy real-time access to MIS and dashboards to track subscriber behaviour and accumulations, as well as automated, system-generated process and TAT compliance and exception reports for more effective supervision and enforcement.

A central, common administration platform enables automated complaints tracking, escalation, and reporting, leading to enhanced subscriber protection and confidence. Transactional data can also be used for designing new behavioural interventions such as automated nudges and reminders to prompt adequate and persistent savings.

A central administration platform integrated with a range of payment solutions including mobile wallets and cards facilitates automated, real-time accounting and reconciliation of contributions at a national level and minimizes the risk of fraud or errors.

Centrally issued national-ID linked individual pension accounts also mitigate the risk of duplicate accounts and facilitate targeted delivery of fiscal incentives without leakages.

CASE STUDY: RWANDA'S EJO HEZA LTSS

Rwanda is a young country with three in every four Rwandans aged less than 30 years. Over the years, the Government has demonstrated a strong commitment to sound governance, digital financial inclusion and economic empowerment of citizens. Today, most citizens in both urban and rural locations have easy access to well-regulated banking, credit, insurance and digital payment solutions. All persons aged 16 years and above have a digital, biometrics-based national ID number. Rwanda also has a well-functioning universal health insurance program.

However, and as is the case elsewhere, pension benefits in Rwanda were traditionally restricted to formal sector workers who made up less than 10 percent of its workforce. Retirement savings of the roughly 0.5 million salaried public and private sector employees were administered and managed by the Rwanda Social Security Board (RSSB).

Between 2016 and 2018, pinBox Solutions worked with Access to Finance Rwanda (AFR), the Ministry of Economic Planning and Finance (MINECOFIN) and the RSSB to help design, build, field-test and launch a new, government-sponsored digital micro-pension program. An 8-member pinBox team, along with a digital payments expert from Mastercard, worked closely with the MINECOFIN, AFR, RSSB and a variety of key stakeholders to help develop the legislative, governance, administrative, product and delivery architecture for the "Ejo Heza" Long Term Savings Scheme (LTSS).

By design, Ejo Heza LTSS leveraged Rwanda's existing digital financial inclusion infrastructure and ecosystem to provide convenient, universal access to high quality investment governance, even to citizens with low and irregular incomes, limited experience with formal finance and low financial literacy. This approach helped the government to rapidly launch a national-level micro-pension scheme on a variable cost basis and without significant new capital investments.

Informal sector workers in Rwanda today simply use their national IDs and a USSD interface on their mobile phones to digitally activate their Ejo Heza LTSS accounts with full eKYC within two minutes. Subscribers use mobile wallets to digitally transfer their periodic contributions, as per their own capacity and income flows, directly to the scheme custody bank without any risk of fraud or reconciliation errors. Local government offices, SACCOs, village-level savings groups, micro-finance institutions, bank agents and other community-based organisations help deliver financial literacy and knowledge regarding the scheme and associated benefits, and encourage regular savings. Children below the age of 16 years are also permitted to join the scheme. Accounts of minors are linked to the national ID of their parents and are transferred to the minor subscribers once they obtain their own national ID at age 16.

The central administration platform designed by pinBox provides RSSB and other stakeholders real-time data and MIS on subscriber and intermediary behaviour, and enables efficient monitoring of efforts, outcomes and compliance exceptions.

Ejo Heza LTSS was formally launched in December 2018 and is administered by RSSB. Within the first four years of its launch, roughly 3 million individuals (nearly 50 percent of Rwanda's workforce) have voluntarily opened Ejo Heza LTSS accounts. Half of these subscribers are women and some 2.4 million of these subscribers are actively saving for their retirement. The Scheme has helped generate new aggregate long-term savings of over RwF 50 billion since launch.

Rwanda was the first country to adopt the pinBox digital micro-pension inclusion model. Rwanda is also the first African nation to launch a fully digital national micro-pension scheme based on portable, national-ID linked individual accounts and means-tested conditional fiscal incentives.

For the first three years, Ejo Heza LTSS provided a means-tested fiscal incentives package to encourage voluntary participation and regular, optimum savings. Each subscriber is eligible for a matching contribution of up to RwF 18,000 per year, along with a life insurance cover of RwF 1,000,000 and an insurance cover for last expenses (funeral insurance) of RwF 250,000. The "match" is determined by the Ubudehe (or income) category of each subscriber. By adding a life and funeral insurance cover, the Government has also created broad-based awareness about the role and importance of insurance among a hitherto uninsured population.

The income-based (or means-tested) fiscal incentives package with matching contributions (or tax incentives) and free insurance cover is based on the eligibility criteria and benefits outlined in the table below. By design, all Ejo Heza subscribers, regardless of their income status or age (including children) enjoy an identical value of fiscal incentives while the scheme transparently encourages higher contributions by higher income individuals. All Ejo Heza subscribers who become eligible for the government co-contribution (by saving the minimum specified amount linked to their own Ubudehe category) become automatically eligible also for the free life and last expense insurance for the following year.

Table 2: Ejo Heza LTSS Fiscal Incentives Model

Ubudehe (income) category	Minimum saving (per year) for eligibility	Co-contribution match	Co-contribution Ceiling	Life insurance for the following year	Funeral cover for the following year
Category 1 and 2	RwF 15,000	100%	Upto RwF 18,000	RwF 1,000,000	RwF 250,000
Category 3	RwF 18,000	50%	Upto RwF 18,000	RwF 1,000,000	RwF 250,000
Category 4	RwF 72,000	NA*	NA*	RwF 1,000,000	RwF 250,000

* *Tax incentives in lieu of a matching co-contribution for those in Ubudehe Category 4*

7. PINBOX MICROPENSION INCLUSION ROADMAP TEMPLATE

Achieving mass-market adoption of a voluntary retirement savings solution by self-employed individuals requires strong policy commitment, a conducive legal and regulatory framework, broad-based retail adoption of digital payments, a digital national ID, a large supply of committed field partners, well-regulated pension funds and insurers, and an economically active workforce with capacity to save.

Also, effective implementation of a digital micro-pension program and achieving mass-scale voluntary participation usually involves collaborative actions by a large number of stakeholders that may include government departments, regulators, pension funds and insurers, community-based organisations, digital finance ecosystem players, think-tanks and the media. In order to foster well-coordinated decisions and actions, it is highly recommended that the program sponsor establishes a dedicated "mission-office" for planning, capacity building, stakeholder coordination, implementation management, and for ongoing monitoring and evaluation. Among other things, the mission office should be responsible also for the development and implementation of targeted retirement literacy and coverage expansion campaigns, and for conducting periodic surveys to assess public confidence, understanding and satisfaction.

Over the years, pinBox has developed the following field-tested "template" and a four-stage process that countries should consider following while designing, building, testing, and scaling a voluntary micro-pension program targeting informal sector workers.

Stage One: Feasibility Study, Planning and design

1. Establishment of a Mission Office;
2. Demand-side research involving a survey and/or focused group discussions (FGDs) among individuals with different occupational and demographic profiles to confirm digital literacy, retirement outlook, experience and confidence in formal finance, use of digital payments, and savings capacity;
3. Supply-side assessment involving consultations with the government, financial sector regulators, DFS ecosystem stakeholders, product providers, and potential outreach partners and retail aggregators;
4. Design of an implementation blueprint, including the administration and governance framework, products and product rules, process architecture, segmented outreach and coverage expansion strategy, and a simple digital process architecture;
5. Focused group discussions (FGDs) with specific cohorts to field-test reactions to and acceptance of the proposed product and process architecture;
6. Development of an interactive platform wireframe that clearly demonstrates the user-interface and functionality of pensionTech platform that will ultimately administer and deliver the program to citizens. This wireframe ensures that key stakeholders have very clear visibility and understanding of how the final pensionTech platform will look and operate, and helps mitigate the risk of any expectations mismatch.
7. Design of sustainable commercial incentives for intermediaries and stakeholders; and

8. Design of an effective subscriber protection and monitoring and evaluation framework.

Stage Two: Building the Solution

1. pensionTech platform customisation in line with regulatory requirements, as well as product and tax rules;
2. Platform integrations (using secure APIs) with product and DFS ecosystem partners;
3. Design/ customisation of retirement literacy and training tools and delivery strategies; and
4. Pilot implementation planning workshop with key stakeholders.

Stage Three: Field-testing the Solution

1. Limited scale, controlled rollout with a limited number of outreach partners/ aggregators to field-test communication tools, product features, savings behaviour, digital user-interface (UI), cross-sales strategy, commercial incentives, planned behavioural interventions and overall voluntary adoption and coverage outcomes among specific cohorts;
2. Concurrent monitoring and evaluation along with field-visits by key stakeholders to evaluate field operations and outcomes; and
3. Refinement to communication and training tools and delivery methodology, behavioural interventions, citizen-facing and back-end processes including for collection and reconciliation of contributions, and UI refinements based on the pilot field experience.

Stage Four: Mass-scale Deployment

1. National-level public launch of the field-tested solution and model with a multi-media public awareness, promotions and retirement literacy drive; and
2. Mass-scale coverage expansion with multiple field partners.

8. CONCLUSION

The rapid demographic transition, and the far-reaching consequences of an ageing population is reshaping our world. The ability of a country to motivate millions of informal sector workers with modest intermittent incomes to defer current consumption in favour of their old age needs is a litmus test of the quality of its governance.

Expanding pension coverage to non-salaried individuals is one of the most important, and yet the hardest component of economic reforms as it involves complex questions of political economy, and interlocking considerations spanning finance, labour markets, demography, public finance, macroeconomics, digital infrastructure and behavioural science. For these reasons, voluntary pension inclusion at scale is often not easy to attain. Nevertheless, we are much better placed today than ever before to build more inclusive pension arrangements and to ensure a secure and dignified retirement for all.

In practice however, there is perhaps no other area where success is as important, but as lacking in immediacy. Pension inclusion does not feel urgent. It always seems feasible to let one more year drift by in the status quo. This may be because achieving comprehensive pension coverage appears dishearteningly difficult as the coverage gap is so huge, the magnitude of the tasks involved to succeed appear so large, and the benefits from actions today appear to be so far into the future.

It takes an enlightened polity to recognise impending problems far out into the future, and to effectively address them in time. For most developing countries, there is no other option. After all, the cost of succeeding with pension inclusion will always be tiny compared to the cost of failure.