

Can digital payments help countries adapt to climate change?

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At a business seminar in Ghana, a woman helps her colleague search for answers on her mobile phone. Credit: Christian Yakubu, CC BY-SA 4.0, via [Wikimedia Commons](#)

For thousands of farmers in the Philippines, climate change is a direct threat to their livelihoods.

Increased temperatures and erratic rainfall patterns are already contributing to reduced yields of staple crops like maize and sugarcane. Extreme weather events such as typhoons are expected to disproportionately impact the agricultural sector, affecting productivity, driving up prices and putting more people at risk of hunger. Adapting to climate change is a pressing challenge for the government in the Philippines.

While the obstacles are daunting, a powerful tool to help [vulnerable groups](#) such as farmers overcome some of these impacts may already be widely available—mobile phones. During the COVID-19 pandemic, low-income Filipinos received [cash transfers](#) from the government through mobile money accounts.

Through similar mechanisms, mobile money and [digital payments](#) can be used by governments to provide instant financial assistance to people affected by disasters related to climate change. Mobile money can also provide access to insurance products to help farmers mitigate the worst effects of climate change-driven events. And by connecting first-time users to financial institutions, the tool also contributes to a range of positive development outcomes including expanded access to credit.

Many developing nations, including the Philippines, have drafted National Adaptation Plans as part of their participation in the Paris Agreement. Very few of these documents, however, contain mention of digital payments. This is despite a significant body of evidence pointing to the benefits of digital payments infrastructure for climate change adaptation.

To address this gap, we initiated a [research project](#) with the goal of understanding some of these linkages to help governments prioritize and incentivize the uptake of these technologies.

We found that digital payment systems can help individuals adapt to climate change through two pathways: a reduction in the vulnerability of individuals to the impacts of climate change and an increase in their readiness to respond to them.

Digital payments reduce vulnerability

Vulnerable groups have the most to gain from advances in digital payments. Notably, digital payments lower transaction costs for sending and receiving money. This allows for an increase in the [financial support](#) a person can receive from friends and family after a disruption to their income due to a climate change-driven event. These person-to-person transfers can allow families to get through difficult situations without compromising how much they are able to spend on essentials such as food.

Digital payments also allow increased access to risk-mitigation instruments already offered by governments and the private sector. For example, digital transfers offer instant access to insurance payouts that protect against events such as crop loss, powerfully reducing their fragility. They also bring vulnerable residents closer to financial institutions, improving their financial literacy, savings and access to credit. And they help bridge the gender gap by allowing women to gain access to [bank accounts](#), mobile technology, financial literacy and credit.

Digital payments improve readiness

By offering governments a way to improve their ability to respond to climate change-driven disasters, digital payments can enhance early warning systems, improve delivery of social protection mechanisms and increase the efficiency of institutions.

Government-to-person payments can allow for humanitarian aid to reach people instantly, which is critical in building resilience. What's more, this mechanism can be coupled with advances in forecasting to allow for aid to reach people ahead of a disaster. Using forecast-based finance has been shown to vastly improve outcomes for recipients.

Government institutions also function more effectively when they use digital payments, which directly impact their ability to respond to climate-related shocks. Such payments have been linked with increased public transparency and reduced corruption; they can also help expand opportunities for data collection and sharing, and shrink transaction costs.

As governments tackle the prerequisites to support more robust digital payment capacity, they invest in broader uptake of complementary systems such as digital IDs and wallets. These digital systems then expand the government's capacity to deliver social protection through dynamic registries, improving both responsiveness and readiness.

To better understand the connections between digital payments and climate change adaptation, our team conducted five detailed case studies in countries including the Philippines, Bangladesh, Ghana, Colombia and Rwanda. Some examples of these linkages are detailed below.

Social protection programs in the Philippines

The Philippines' long-running social protection program, the Pantawid Pamilyang Pilipino Program (4Ps) has reached more than five million poor families. The program has contributed to national poverty reduction, but has fallen short of ambitions.

Notably, the 4Ps is still highly reliant on the use of physical cash and cash cards, leading to difficulties reaching households in remote areas.

The expansion of digital payments can offer a method to reduce some of these transaction costs and allow the program to reach more people.

During the COVID-19 pandemic, the Philippines successfully used digital transfers through their [Social Amelioration Program](#) to provide immediate cash to 9 million households. Those beneficiaries, 91% of whom did not have a bank account at the start of the program, also gained access to [financial institutions](#). Extending digital payments to disbursement of [social protection](#) payments can help vulnerable populations respond to shocks created by natural events.

Index insurance in Colombia and Ghana

By 2050, the number of people in Colombia affected by floods is forecast to triple, and storms will disrupt the lives of 60% more people. In Ghana, where 70% of the population are smallholder farmers, droughts are projected to threaten rain-fed crops. To combat some of these risks and address the needs of vulnerable farmers, both countries have turned to an increasingly popular tool, launching new insurance products that better respond to climate change.

Index insurance can provide farmers with quick payouts when they experience crop loss, but when payments are made in cash or require a trip to a bank, many recipients experience long time delays. Integrating such technologies with instant digital payments can help reduce adverse impacts of climate change-driven phenomena such as crop failures.

Digital governance in Rwanda and Bangladesh

Rwanda and Bangladesh both have widely integrated digital payments to enhance their efficiency in delivering government services. Rwanda's Irembo program, which offers digital access for more than 100

government services, emerged through a public–private partnership launched in 2017. Building the system meant investing in digital literacy training across Rwanda, a process that will help the country grow digital payments across sectors even beyond Irembo.

Similarly, the Digital Bangladesh program envisions a fully digitized economy and incorporates projected climate events into its resiliency planning. Combined with the Smart Bangladesh 2041 initiative, the promotion of 5G internet, smartphone penetration, digital payment capacity and high-speed internet access have been prioritized nationwide. Bangladesh has so far digitized an estimated 50% of its government services, with plans to reach 100%.

These initiatives all create essential foundations for expanding digital payments into climate change adaptation strategies. While many countries have taken significant strides in improving the uptake of digital payments, progress toward this objective has been incomplete—especially in emerging economies.

From our research in different parts of the world, it is increasingly clear that digital payments offer several important pathways to accomplish the goals of reducing vulnerability for affected communities and increasing governments' readiness to respond to impacts from climate change.

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