



2025 ANNUAL IMPACT REPORT



Built on Evidence, Delivered at Scale

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The core mission of PxD has always been to create impact at scale.

2025 was a transformative year for PxD. It was a year of unprecedented growth, as **we delivered evidence-based innovations to 46.4 million farmers** through our programs in India, Kenya, Ethiopia, and Nigeria. It was also a year of innovation, when advances in artificial intelligence (AI) moved from promise to delivery—helping translate complex climate and agronomic signals into information that millions of farmers can actually use.

Key highlights from 2025 include:

In India, we delivered AI-powered weather forecasts to 39 million farmers through public systems, with the government assuming the ongoing delivery costs.

In Kenya, we launched a partnership with the Kenyan Government and TomorrowNow to strengthen farmer feedback loops within a wide-reaching agricultural advisory service.

In Nigeria, we launched a new partnership with the government to deliver timely, actionable digital advice to farmers at scale.

We piloted and tested an AI-enabled agronomy assistant (PaddyAI) to help our teams deliver more personalized advisory in easy-to-understand voice messages in local languages, at scale.

In Ethiopia, we embedded a Project Management Unit within the Ministry of Agriculture to support the implementation of the country's Digital Agriculture Roadmap and ensure that evidence remains at the core of decision-making.

Lastly, we released PxD's Experiment Registry. The registry is a compilation of our insights from ten years of rigorous testing of improvements to our services, and we have made it public so that teams across the sector can learn what improvements worked, and why.



I'm deeply grateful to our teams, partners, and funders who have made this work possible. In 2026, we are celebrating PxD's 10th anniversary. It is a time to recognise our shared stewardship. It is an opportunity to reflect together on what we've learned, and to recommit to our mission: helping governments and partners deliver scalable, evidence-based innovations that millions of smallholder farmers can use to improve their lives.

With appreciation,

Niriksha Shetty

Chief Executive Officer

Impact in Numbers



46.4 million
Total users
served in 2025



12:1 – 19:1
Benefit:cost ratio¹



\$0.58
Average cost per
user per year²

precisondev.org/impact

1. Estimated from PxD's flagship Ama Krushi program in Odisha, India.

2. Since PxD's inception, including graduated users, and including all costs.



The PxD Approach:

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Bridging Science and Delivery

How do we work?

DELIVER

We build services and deliver them directly to farmers, with the intention that governments will own and sustain the services in the long term.

IMPROVE

We work with governments that run existing digital services to apply rigorous experimentation and data-driven learning, to improve the impact of these services.

ADVISE

We provide strategic and operational advice to governments on their digital agriculture services, by embedding our evidence and implementation know-how into national strategies.



Underpinning these three models is a “learning engine” that focuses on identifying effective interventions, testing delivery capabilities, and advocating for changes in the enabling environment to drive effective and impactful service delivery at scale.



Key elements of our approach

Farmer-centered design

Scientific advances in agriculture translate into impact when information about these advances is built around farmers' needs and is delivered in timely and accessible ways. PxD applies rigorous economic and behavioral insights to ensure that our services align with how farmers interpret risk and make agricultural decisions. We identify what information matters to farmers, how it should be communicated, and which channels are most effective.

Government-embedded systems

Rather than selling tools or running standalone programs, PxD establishes long-term government partnerships to embed services within national delivery systems. We support governments to design new services and strengthen existing ones through co-design, technical assistance, and capacity building. We also run Project Management Units (PMUs) to facilitate alignment among government priorities, donor funding, and solution providers, to deliver effective, scalable national programs.

Iterative experimentation

PxD uses continuous learning and iteration as core elements in designing for the scale and impact of our services. Instead of separating design from evaluation, we treat delivery as a continuous learning cycle—by combining qualitative scoping, rapid experimentation, and ongoing adaptation as we scale our services. Across contexts, PxD has conducted almost one hundred A/B tests to optimize content, timing, and delivery channels. We believe upstream outcomes—like farmer comprehension, trust, and engagement—are what enable downstream impact.

This third element connects and elevates the first two. By complementing longer-term impact evaluations, our approach generates practical, decision-relevant evidence on how our services influence farmers' decisions—which we share as a public good.





PxD's Approach in Practice

Scaling AI-powered weather forecasts to 39 million farmers in India

In monsoon-dependent farming systems, the timing of planting is one of the most consequential decisions that farmers face, with early or delayed sowing carrying substantial risks. Forecasts with 15–30 days' lead time allow farmers not only to adjust planting dates but also to make broader decisions about crop choice, land allocation, and input use.

In 2025, working with India's Ministry of Agriculture and Farmers' Welfare (MoA&FW), PxD supported the delivery of AI-enabled monsoon-onset forecasts to 39 million farmers across 13 states

through government SMS and voice systems. The forecasts—produced by the University of Chicago's Human-Centered Weather Forecasts (HCWF) Initiative, using open-access AI-based models that were benchmarked against historical Indian weather observation data—substantially outperformed conventional traditional baselines.

PxD led the message-design process in collaboration with the Development Innovation Lab, using an iterative “test - learn - adapt” approach that rigorously compared several variations of wording and format to improve the coherence of these probabilistic forecasts and farmers' comprehension of the forecasts. Key findings include (i) farmers preferred qualitative probability terms (e.g., “high/medium/low chance”) alongside numbers,

A photograph of a man with dark hair, wearing a light green button-down shirt, standing in a lush green field. He is holding a black smartphone in his hands and looking directly at the camera. The background shows a line of trees under a clear sky.

Arvindkumar Haridas has farmed for 15 years, working 2.5 acres of land together with his uncle and brother. He grows paddy in the Kharif season and wheat and mustard in the Rabi season.

“The message that came from the Ministry of Agriculture said: there will be continuous rainfall before 24th June in your area, with high chances. We farmed according to it. We prepared the nursery of grains. After preparing the nursery, we planted rupa. Accordingly, it rained continuously. According to it, there is 30 to 35 quintal of grain in 1 acre.”

(ii) farmers better understood probabilities when they were expressed as ratios (e.g., “20%, meaning 20 in 100”), and (iii) farmers favored shorter, less technical messages using familiar language such as “continuous rainy season.” Without a rigorous design process, the message would likely have remained scientifically accurate but difficult for farmers to interpret and use.

True to our grounding principles, wherever possible, we implemented these efforts in partnership with government systems rather than building parallel structures. Public registries were used to target messages, which reduced our farmer-acquisition costs. Farmer-friendly messages were disseminated

through existing government channels such as the m-Kisan SMS platform and the Government of Odisha’s Krishi Samrudhi voice platform. The program was monitored through government call centers, where staff were repurposed and trained to conduct structured surveys—which both strengthened public capacity and established a sustainable, government-led pathway for delivery and learning.

In the long term, we are excited about the potential to deliver timely, localized, and agriculturally relevant, AI-enabled weather forecasts through government systems to as many as 250 million farmers, by building on our existing partnerships in Ethiopia, Kenya, Nigeria, and beyond.



Parasnath Tiwari is a farmer from Madhya Pradesh who received the AI forecast via SMS. His account describes how the accuracy of the forecast has changed how he plans to make agricultural decisions in the future.

“Before this, I mostly relied on my own experience and local knowledge to know when the monsoon would arrive. The forecast about the arrival of the monsoon was accurate ... I have increased trust in the forecast, and I will rely on the information shared by scientists in the future.”

Ten years of learning:

PxD published its [Experiment Registry](#)—a publicly accessible repository catalog of over 80 experimental trials conducted across our programs since 2016. The Registry documents experiments that range from simple A/B tests, comparing different versions of our services, to large-scale randomized controlled trials that measure the overall impact of receiving PxD’s digital advisory. It covers work conducted across Kenya, India, Ethiopia, Rwanda, and several other countries, including trials run in partnership with organizations such as One Acre Fund, the Ethiopian Agricultural Transformation Institute, and the Government of Odisha.

The Registry reflects [a decade of experimental learning](#) about what makes digital advisory services effective for smallholder farmers—and what does not. A key finding from reviewing the full body of evidence is that digital advisory consistently works: 13 of 15 trials with a pure control group that received

no digital advice found clear positive effects on farmer knowledge, practice adoption, or productivity outcomes. The evidence also shows that services are most impactful when they respond to urgent, real needs—such as weather shocks or pest outbreaks—and when design improvements address observable barriers that farmers face, such as language, digital literacy, or call navigation, instead of relying solely on theories about behavioral preferences.

By releasing the Registry openly, PxD is contributing to a broader evidence base for the sector. As more organizations build digital services for farmers and other low-income populations, shared documentation of what has and hasn’t worked can reduce duplicated effort and accelerate learning across the ecosystem. The Registry is searchable and filterable, and will continue to be updated as new trials are completed.

ID	Start date	Experiment type	Location	Research tags	Status
3314	2019	Other	India, Odisha, India	Message timing and frequency, Service design	Completed
3289	2017	Impact Evaluation	Gujarat, India, India	Input recommendations, Service design, Soil fertility	Completed
3122	2022	Other	Gujarat, India, India	Agricultural management advice, Input recommendations, Service design, Soil fertility	Completed
1864	2024	Impact Evaluation	India	Application technology, Message framing, Social learning, Weather information	Ongoing

+ PaddyAI—Artificial Intelligence versus Human Engagement: A Comparison for IVR Advisories

+ Leaf Color Chart Distribution Pilot

3122 2022 Other Gujarat, India, India Agricultural management advice, Input recommendations, Service design, Soil fertility Completed

Launching a new partnership in Nigeria

In 2025, PxD launched its newest program—the development of a Digital Precision Agricultural Extension (DPAE) platform for smallholder farmers in Nigeria, in collaboration with the Nigerian Federal Ministry of Agriculture and Food Security (FMAFS) and Federal Ministry of Environment (FMoE), the World Bank-financed Agro-Climatic Resilience in Semi-Arid Landscapes project (ACReSAL), and the World Bank Gender Innovation Lab (GIL). The objective of this platform is to improve the lives of farmers in northern Nigeria by increasing the farmers' access to agricultural extension services, their ability to adapt to climate change, and their adoption of climate-resilient agricultural practices.

In October, PxD began piloting the DPAE platform for the 2025–26 dry season (October–March), by delivering digital advice on six crops to roughly

10,000 farmers across eight northern states. Farmers receive one to two weekly voice calls in Hausa, tailored to their crops and locations and aligned with the agricultural calendar, and can also access the same content on demand via an inbound hotline. Early engagement is strong, with a 74% average pick-up rate and an 84% average listening rate. The pilot also entails experimental learning through an A/B test that measures how farmer engagement differs when identical messages are recorded by narrators of different genders. Building on early results, PxD plans to expand the DPAE platform for the April–October 2026 rainy season, to reach at least 100,000 farmers with services for additional crops, states, and languages. In parallel, PxD is exploring partnerships with government, research, and delivery partners—including the Nigeria Meteorological Agency, the



Nigerian Hydrological Services Agency, the Nigeria Institute of Soil Science, Innovative Solutions for Decision Agriculture, and Extension Africa—to broaden the platform’s scope to include services such as weather forecasts, flood and drought alerts, and soil information, and to support wider field outreach. Over the longer term, PxD and FMAFS’s Extension Department are also exploring pathways for deeper institutionalization of the DPAE platform within the national extension system—including capacity building and transition options—so that the platform can be sustained and operated effectively at scale.

This launch marks PxD’s entry into a high-potential market of more than 200 million people, and establishes a foundation for a sustained partnership with the government and local institutions. With the right enabling conditions, the DPAE platform has the potential to scale into a nationwide digital extension service that reaches millions of farmers over time.

Data-driven, iterative improvements to a digital advisory service reaching millions of farmers in Kenya

In late September 2025, PxD, the Kenya Agricultural and Livestock Research Organization (KALRO), and TomorrowNow launched a partnership to strengthen climate-smart, sustainable agriculture in Kenya—combining TomorrowNow’s weather intelligence, KALRO’s digital delivery systems and national leadership, and PxD’s evidence-based learning that improves advisory design through measurement and experimentation—to strengthen climate-smart, sustainable agriculture in Kenya. Building on services that already reach more than 5 million farmers, the work will focus on making digital advice more responsive to farmer needs and more effective over time.

With support from the Gates Foundation, the partners will prioritize four linked workstreams over the coming seasons: strengthening and scaling farmer feedback loops; embedding agile experimentation to refine service design; expanding data-driven systems for iterative learning; and developing pathways for replication across other institutions in Kenya’s National Agricultural Research Systems, with the aim of generating improvements that can scale within Kenya and inform similar efforts elsewhere.

Strategic Advice that Shapes National Systems

Focused Institutionalization of Digital Agriculture Advisory Services (FI-DAAS) in Ethiopia

From 2019 to 2024, PxD has partnered with Ethiopia's Ministry of Agriculture (MoA), Ethiopia's Agricultural Transformation Institute (ATI), and Digital Green (DG) to develop, deploy, and improve a suite of digital agriculture advisory tools within parts of the national extension system through the Digital Agriculture Advisory Services (DAAS) project. In 2025, with support from the Gates Foundation, PxD—with DG—led a 12-month effort dedicated to strengthening institutional ownership of the DAAS-created digital tools. This included mapping end-to-end product responsibilities within the MoA, aligning tasks at federal, regional, and local levels, refining standard operating procedures, and supporting the integration of digital advisory activities into ongoing processes. This phase marked an important transition in our role—from building and improving digital services in partnership with the government to helping the government take independent responsibility for these services.



"The AI technicians in our area support us a lot in taking care of our cows' health and providing breeding services. They care for our cows wholeheartedly [...] once a cow is ready for insemination, they act quickly. If the cow is inseminated on time, we get a calf and milk. But if it's delayed, we face a big loss. They always come promptly to provide AI (artificial insemination) services. It's through their support that we've been able to multiply our cows."

Desta Bafe — Haycie Kebele, Lemo Woreda, Hadiya Zone

"[...] I am a mother of two children. Very recently with AI and AI tech's support I got one calf. From the income I get from selling milk, I save, I built a house, I buy clothes for my kids. I am also able to feed butter and ayib [Ethiopian cheese] to my family. My life has improved."

Debitu Abute — Lemo Woreda



Establishing long-term coordination through Ethiopia's Digital Agriculture Roadmap PMU



In June 2025, PxD established a PMU embedded within the MoA to support the government in coordinating the implementation of Ethiopia's Digital Agriculture Roadmap (DAR). The DAR—launched by the MoA in early 2025—charts an exciting path for Ethiopia to make significant investments in digital agriculture from 2025 to 2032 to drive agricultural transformation and improve the lives and livelihoods of tens of millions of

smallholder farmers. However, at the time of the DAR's launch, no unit within Ethiopia's MoA had the capacity or mandate to take the DAR from strategy to implementation.

At the request of the MoA and with support from the Gates Foundation, PxD formed the DAR-PMU to run for the initial two years (March 2025–February 2027) to provide the MoA and its partners with the coordination support they need to implement the DAR. The DAR-PMU operates with staff from both PxD and the MoA, and has support from the ATI, the Boston Consulting Group, and other partners, to accelerate the DAR implementation, with two main workstreams: (i) to kickstart the implementation of



The MOU was signed by PxD CEO Niriksha Shetty and His Excellency Dr. Girma Amente, the Minister of Agriculture for Ethiopia.



the 12 priority DAR use cases and initiatives (e.g., digital advisory, timely weather information, access to finance and insurance); and (ii) to support the establishment of a permanent Digital Agriculture Unit (DAU) to own the DAR in the long term. The DAR-PMU works to build a larger platform to coordinate digital agriculture investments, align partners, and support structured decision-making for the digital services that the MoA chooses to sustain and strengthen.

Key achievements of the DAR-PMU in 2025 include:

- Hosting co-creation workshops with key stakeholders from the government, the private sector, and development partners to socialize the PMU and get alignment around its key objectives;
- Developing implementation guidelines for the DAR ecosystem;
- Creating a digital solutions registry dashboard to help the MoA centralize data and monitor progress across solutions, identify gaps, and support evidence-based decision-making;
- Developing business cases for all 12 of the use cases and initiatives that have been prioritized for Phase 1 of the DAR implementation, to help crowd in investment;
- Developing a formal proposal for the establishment of the DAU for long-term governance of the DAR; and working with the MoA reform team to incorporate the unit in the MoA's new structure;
- Coordinating existing and potential funders of digital agriculture implementation through large multi-stakeholder Funders' Circles and one-on-one meetings with individual funders, to understand their priorities and existing investments, and to accelerate the crowding in of investment.

Through this work, PxD serves as a trusted advisor to the Government of Ethiopia, by drawing on both PxD's technical expertise and its objective rigor to advise the government on the implementation of a broad spectrum of digital agriculture investments.

Supporting India's National Digital Agriculture Ecosystem

PxD continues to embed a PMU within India's MoA&FW to support the Ministry's capacity to design, govern, and scale digital and AI-enabled agriculture initiatives. Building on Year 1 foundations, Year 2 focused on moving priority initiatives from planning into implementation—improving coordination across departments and partners, operationalizing delivery-ready systems, and embedding governance, safeguards, and interoperability across emerging platforms and digital public infrastructure (DPI).

A major contribution of the PMU this year was its work with key partners, like the EkStep Foundation and the Center for Open Societal Systems, to launch BharatVistaar—an interoperable, multilayered digital platform that takes AI-powered advisory to farmers. This work included establishing governance, aligning partners, integrating the farmer-facing interface, and conducting rapid user testing, to support a formal launch by MoA&FW on February 17, 2026. Other notable achievements of the PMU this year include:

1. continuing to facilitate the “AI Cell” at the MoA&FW as the central steering mechanism for all AI-related initiatives within the Ministry;
2. re-tooling existing infrastructure, namely a farmer hotline called the Kisan Call Center, to collect structured feedback on the MoA&FW's various digital initiatives and to build direct feedback loops with farmers;
3. supporting the validation, scale-up, and long-term sustainability of key MoA&FW initiatives, including pest surveillance systems; and
4. proactively identifying synergies between the MoA&FW and state agricultural department priorities, to support infrastructure procurement, alignment, and integration across solutions, and cross-learning opportunities.

Looking ahead, at the request of the MoA&FW, the PMU has been extended to continue for an additional two years, and will be prioritising the institutionalization and scaling of innovations within the MoA&FW, continued policy support, and deeper centre–state integration to sustain DPI at scale.





Next-generation Impact: Delivering Personalized Advice to Farmers using Generative AI

Amidst the rapid revolution happening in AI, we have been working to develop the next generation of PxP services to improve farmers' lives, by bringing the power of AI to farmers' fingertips. In 2025, we began developing PaddyAI, an AI Assistant that helps our agronomists create and deliver hyper-customized farming advice at scale. Although PxP has already reached more than 45 million farmers without AI, using simple channels like voice and SMS messages that are already accessible to virtually all farmers, much of the advice has been relatively static information constrained by human capacity. Our objective with PaddyAI was to increase the quality and potential impact of the advice we deliver, while keeping delivery simple and accessible for farmers.

First, PaddyAI allows us to dramatically improve the quality of the advice delivered to farmers by increasing customization by orders of magnitude. PaddyAI works as an intelligent

assistant for PxD's agronomists; the combination generates timely, hyper-customized advice based on agronomist knowledge and individual farmer characteristics. PaddyAI can rapidly incorporate real-time data and produce the many customized, translated versions of each message needed for thousands of targeted farmer segments; this task would be impossible for agronomists to do manually, without increasing costs. A process that once took months could now take mere days to develop quality hyper-customized advice for a huge, diverse population of tens of millions of farmers across an entire agricultural season!

Second, PaddyAI ensures accessible delivery of this advice by leveraging the same easy-to-use, low-tech channels like voice and SMS that farmers are already used to. Instead of replacing these existing channels with a direct-to-farmer chatbot that requires each farmer to have a smartphone, PaddyAI translates advice into local languages

and creates messages for delivery via any dissemination channel, including SMS, voice, chatbots, or apps. Critically, PaddyAI allows farmers to access this advice without a smartphone or an extension worker—which the majority of farmers in Africa and South Asia don't have.

In 2025, PxD piloted PaddyAI to provide 57,592 smallholder coffee farmers in Karnataka, India with actionable and timely advice translated into Kannada. Building on this pilot in 2026, PxD plans to expand AI-powered advice across multiple crops and geographies, and to expand the types of information offered. Key priorities for the future include integrating hyper-local information like weather, pest alerts, soil conditions; expanding to other local languages in India and Africa; scaling geographically (potentially starting with Nigeria); and adding real-time intelligence to our existing inbound voice hotline, so that farmers can call at any time and get AI-supported responses on demand.



Innovation Priorities: Climate Resilience

Climate is central to why PxD's work matters

The smallholder farmers we serve are highly exposed to variability and are least able to absorb shocks. Evidence from Odisha underscores this—during weather shocks, farmers receiving digital advisory harvested up to 9% more compared to farmers not receiving the advisory, and had a 21% reduction in severe crop loss. Weather information is also the most requested topic across our services; impacts are often greatest during acute, unpredictable events. As variability intensifies, we

are investing in how to communicate uncertain information—probabilistic forecasts and pest-risk alerts—in ways that support real-time decision-making. We are also investing in a complementary set of levers that help farmers adapt and stay profitable: accelerating the adoption of climate-resilient seeds by tackling awareness and last-mile availability through dealer channels; scaling simple tools like Leaf Color Charts (LCCs) to optimize the use of fertilizers (cutting costs and reducing emissions are co-benefits); and expanding access to resilience-building assets, such as water tanks, through innovative financing models. Our guiding principle remains simple: Climate-smart practices must deliver clear value for farmers.





Scaling the adoption of stress-tolerant seeds

A new generation of climate-resilient seeds is emerging, yet learning barriers on both the supply and demand sides slow their adoption and impact. In 2025, PxD launched a randomized controlled trial (RCT) that focused on leveraging existing agro-dealer supply chains—free trial seed bags and simple promotional materials were complemented by targeted advisory messages—to encourage farmer experimentation, inform dealer stocking decisions, and improve the availability and adoption of wilt-resistant chickpea seeds in Gujarat, India. In 2026, endline data will assess dealer stocking behavior, sales, and farmer demand, thus generating evidence for a scalable, low-cost approach to catalyze supply-side shifts that can be replicated for other climate-resilient technologies.



Optimizing the use of fertilizers

In 2025, PxD advanced our input-efficiency work by rigorously testing scalable models to promote LCCs—an inexpensive tool that helps farmers match nitrogen application to crop needs in real time. Better fertilizer decisions can reduce spending on wasted input in areas of fertilizer overuse, while maintaining or improving yields, with the reduction of climate-change emissions as a co-benefit. Building on promising results with cotton farmers, we launched a randomized controlled trial with rice farmers to test how training plus different incentive designs affect sustained LCC adoption. In 2026, we will complete endline data collection (adoption, yields, and production costs) to identify the causal impacts of LCCs on farmer productivity and profits, and to gain insights on cost-effective pathways to scale.



Looking ahead: Scaling financing for water tanks to dairy farmers in Kenya

In 2026–27, PxD will accelerate the scale-up of water-tank financing for dairy farmers in Kenya through Asset-Collateralized Loans, thereby enabling more households to invest in durable on-farm water storage using the tank itself as collateral. Experimental evidence shows that access to water tanks improves drought resilience, increases milk production and sales, and strengthens household welfare, in the face of climate change. With support from the Weiss Asset Management Foundation, we will expand to additional Savings and Credit Cooperative Societies (SACCOs) and aim to reach more than 75,000 farmers, by focusing on what it takes to move from a promising pilot to a sustainable lending product. PxD's technical assistance helps SACCOs to overcome the initial barrier when they experiment with new innovations and build the systems needed for them to fully own, maintain, and scale these innovations in the long term—we are helping Kenyan dairy farmers to access durable assets to boost their climate resilience and household welfare.



What We're Doing in 2026

A Snapshot

Expand AI-enabled weather forecasts across India and Ethiopia to reach more than 50 million farmers

Expand PaddyAI across multiple crops and geographies

Expand the DPAE platform to reach at least 100,000 farmers in the April–October 2026 rainy season

Deepen government and funder investment in the DAR in Ethiopia, and the PMU in India

Strengthen and scale farmer feedback loops to improve digital climate advisory services with KALRO/TomorrowNow in Kenya



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