

SEP 22-26

AIM for Scale

AI Weather Training Program

FROM GENERATE TO USE:

An example of making forecasts actionable for farmers

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Examples from Precision Development (PxD)



Global non-profit organization serving 39M+ users in five countries in Africa and Asia



Support national and state-level governments to build, operate, assess, improve, and sustainably scale and integrate digital ag services

Ethiopia

Agricultural Transformation Institute
Ministry of Agriculture

India

Ministry of Agriculture and Farmer Welfare
Odisha Dept of Agriculture & Farmers Empowerment
Coffee Board of India

Kenya

Kenya Agricultural & Livestock Research Org
Ministry of Agriculture & Livestock Development

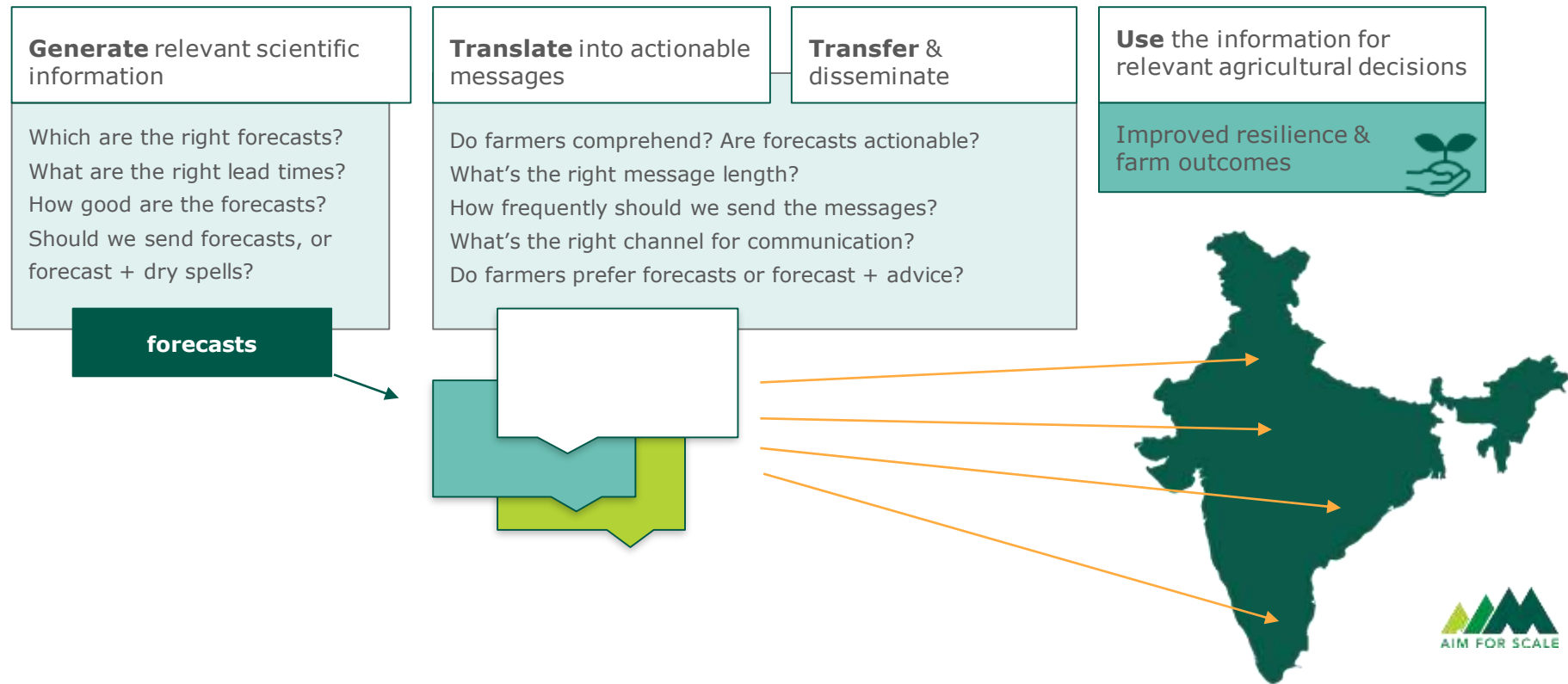
Nigeria

Federal Ministry of Agriculture & Food Security

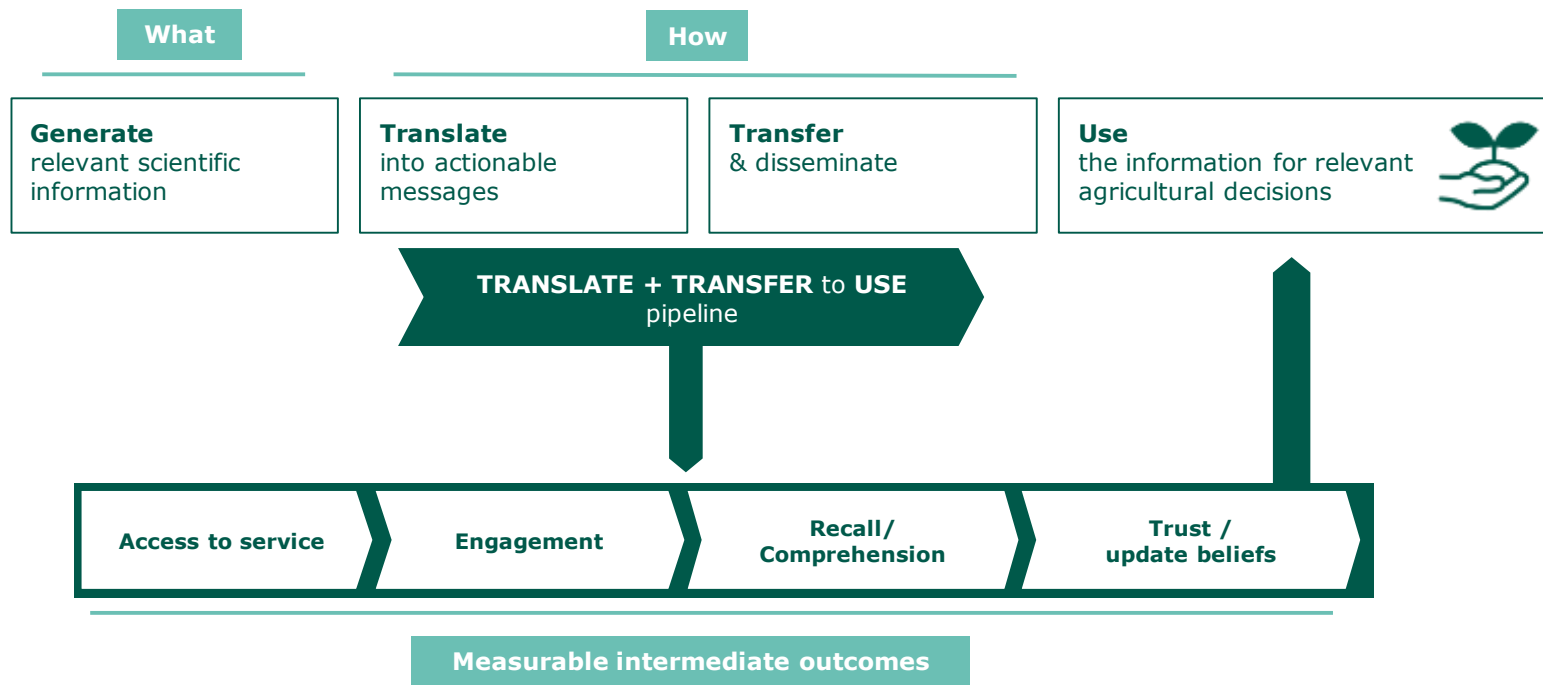
Pakistan

Agriculture Department, Government of Punjab

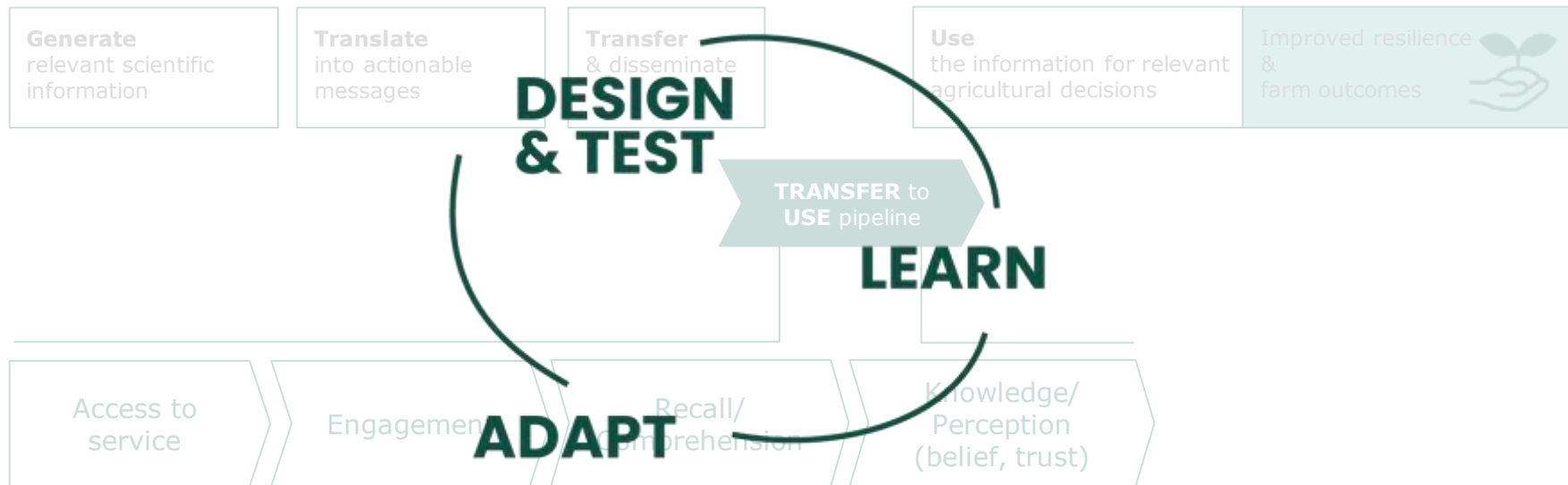
Deep-dive: Dissemination of Monsoon Onset Forecasts to 39 million farmers in India in 2025



Theory of Change: Farmer-focussed impact-based forecast service



Theory of Change: Digital information services



Why design testing?

01 | Agricultural or climate information can be difficult to communicate precisely

02 | Small design tweaks matter

03 | Farmer reactions are context-specific

The 2024 monsoon rainfall (Jun-Sept) in India is expected to be above normal (106% of average $\pm$ 5% error).

Too technical

Latest forecast: The monsoon seasonal rainfall in India this Kharif season is expected to be 6% above normal.

Less information, but farmers can understand

Methods for testing message variations



USER TESTING

Observational sessions, rapid feedback, message testing, focus groups

Quick insights from a small group before wider rollout



USER FEEDBACK

Hear directly from farmers about what's working and what's confusing.

Helps spot usability issues or gaps in understanding



A/B TESTING

Compare two (or more) versions with real users to see what works better.

Generates clear, actionable evidence

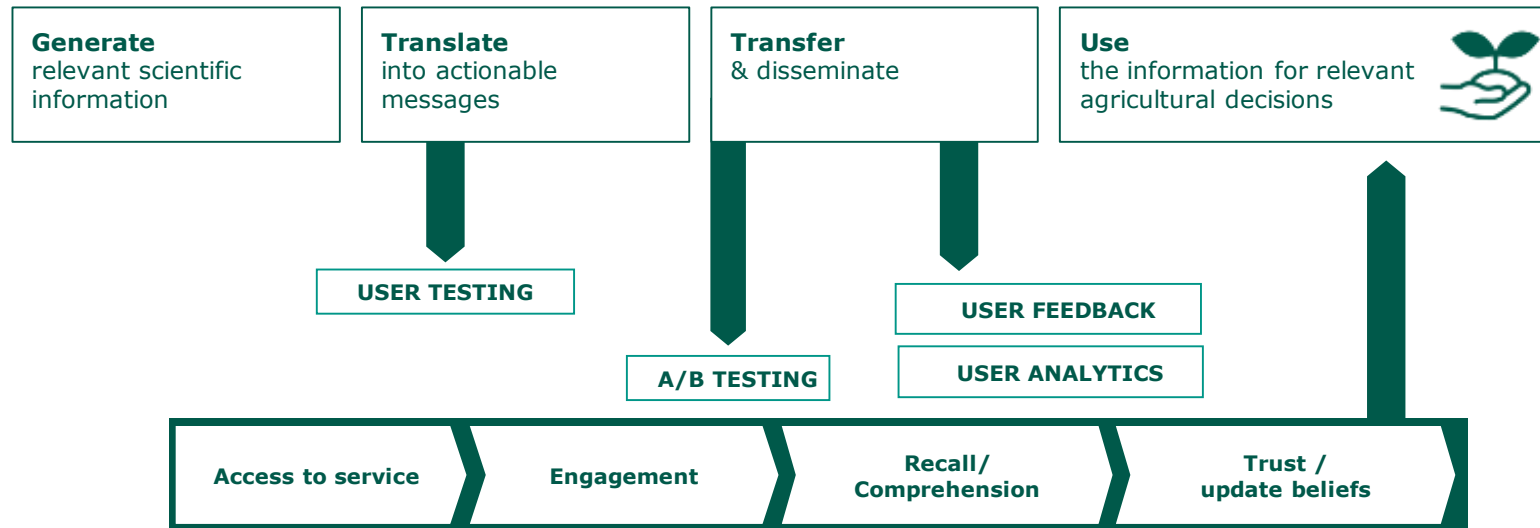


USER ANALYTICS

Track user behavior in the system (e.g., open rates, clicks, response times).

Uncover trends and drop-off points

Theory of Change: Farmer-focussed impact-based forecast service



Example: Message development

When was the arrival of continuous rainy season?

June 8: 1 farmer

June 15-16: 4 farmers

July 10: 2 farmers

When would you sow your field?

June 18-25: 4 farmers

July 10-16: 3 farmers

Even with perfect information, farmers' beliefs about optimal practices and decision process vary!

May

20 	21 	22 	23 	24 	25 	26 
27 	28 	29 	30 	31 		

June

					1 	2 
3 	4 	5 	6 	7 	8 	9 
10 	11 	12 	13 	14 	15 	16 
17 	18 	19 	20 	21 	22 	23 
24 	25 	26 	27 	28 	29 	30 

July

		1	2 	3 	4 	5 
6 	7 	8 	9 	10 	11 	12 
13 	14 	15 	16 	17 	18 	19 
20 	21 	22 	23 	24 	25 	26 
27 	28 	29 	30 	31 		

Access

Example Questions

- SMS vs IVR vs WhatsApp
- Push messages vs. on-demand service
- Targeting extension agents, agro-dealers and/or engaged users
- Promotional messages to build awareness

Promotional messages can help build awareness about the service

The Ministry of Agriculture will send SMS updates from this number about when the rainy season is likely to arrive in your locality this year.

Pick up rate

47%
(9,67,981 were attempted)

Listening rate

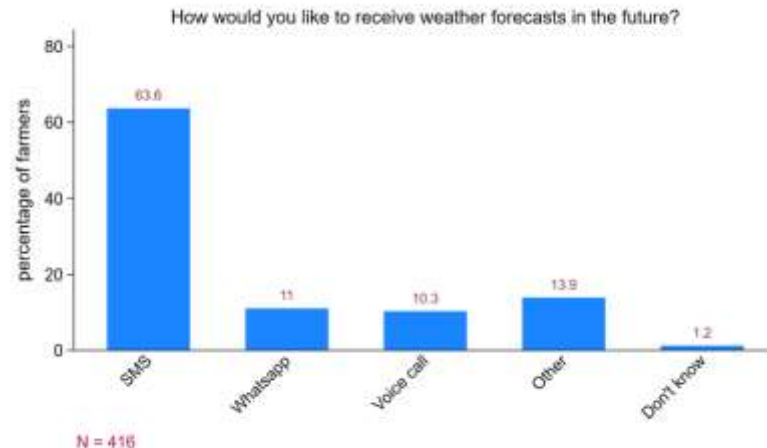
53%
(N = 4,51,264)



Some delivery channels offer more richness of data than others

Farmer choices on delivery channels can be extremely context - specific

Even though a large proportion of farmers own smartphones, most in this context still preferred to receive advice through SMS (a more familiar channel)



Engagement

Example Questions

- Frequency of forecast updates
- Message length
- Voice of narrator

40-60% could recall this

27-44% could recall this

New weather information for farmers: 4 June 2025

In your locality, after 17 June, the possibility of a continuous rainy season arriving is medium. (65%, meaning 65 in 100)

New weather information for farmers: 4 June 2025

In your locality, from 10 June to 24 June, the possibility of a continuous rainy season arriving is highest. (65%, meaning 65 in 100)

Before 10 June, the possibility of a continuous rainy season arriving is very low. (5%, meaning 5 in 100)

After 24 June, the possibility of a continuous rainy season arriving is low. (30%, meaning 30 in 100)

Recall/Comprehension

Example questions

- Annotations about how to interpret forecasts
- Probabilistic vs. deterministic forecasts
- Forecasts only vs. Forecasts + associated advice
- Message Repetition



Monsoon onset can mean different things: Some farmers consider the first wet spell as monsoon onset; others consider the first wet spell without a subsequent dry spell as monsoon onset.

Communicating probabilities is tricky

- Farmers misinterpreted the percentages to mean rainfall quantity rather than likelihood of onset
- Adding qualitative indicators helps
- Adding ratios also helps

43-55% recall receiving a message about weather forecasts on their phones

Perception/Trust

Example questions

- Lead time for forecasted events
- Accuracy of forecasts
- Mitigation messages in cases of wrong forecasts



Farmers seem to mistrust forecast information that conflicts drastically with their priors. For example, if their experience-based prior is that monsoon onset is around June 15th, they tend to disregard/devalue most information about the probability of onset in May.

In your sub-district, the chance of monsoon onset is 1% in the next two weeks (up to May 28). In the following two weeks (from May 29 - June 11), the chance of monsoon onset is 23%.

Farmers think information has value when probabilities are higher

Communicating risk is important

Please remember forecasts are not guarantees, for example, an 80% chance of rain in the time between two dates means it's very likely to rain in that period, but there is still a small chance the rain will come earlier or later.

Key Messages

01

Design choices matter — Small tweaks can have big impacts

Even minor changes in wording, timing, or delivery can shift engagement and behavior significantly.

02

Our priors can be wrong — Test, don't guess

What “should” work doesn’t always; Experiment and co-designing with farmers helps identify what actually works

03

Existing systems can be leveraged for learning

Administrative data, existing systems like extension workers and call centers can allow rapid data collection and learning

04

Platform, backend and monitoring systems need a lot of attention!

Sustainability of data-driven learning depends on the capabilities of backend and monitoring systems