Evaluator's Lessons Learned Series

Initial Lessons Learned on AgResults

Issue 1, August 2017

Suitability of pull mechanisms, market impact, and development impact.

Introduction

Our ongoing evaluations and continuous learning across pilots have generated early insights on the suitability of a pull mechanism approach, pull mechanism design, market impact, and development impact. These early insights are based on AgResults pilots in Kenya, Nigeria, Zambia and Uganda, which aim to incentivize the private sector to invest in creating sustainable, smallholder-oriented markets for beneficial agricultural technologies.

Key Lessons

- Pull mechanisms are appropriate to create market for socially beneficial technologies if the market failures limiting the development of the market can be addressed by private sector; or there are not a multitude of constraints.
- Lack of response by private sector to the pull mechanism incentives is an early indication of the need for early course correction
- The tradeoff between market impact and impact on ultimate beneficiaries needs to be recognized and understood.

- **The Kenya pilot** incentivizes manufacturers and distributors of improved on-farm storage devices to increase sales of these devices to smallholders for storage of grains in maize growing regions of Kenya, with the ultimate objective of improving food security.
- **The Nigeria pilot** incentivizes maize aggregators to increase smallholders' adoption of Aflasafe, a biocontrol agent that mitigates prevalence of cancer-causing aflatoxin in maize, with the ultimate objective of reducing health problems caused by acute and chronic aflatoxin exposure.
- **The Zambia pilot** incentivizes maize millers to sell biofortified pro-Vitamin A (PVA) maize meal, and incentivizes seed companies to sell PVA maize seed, with the ultimate objective of reducing the incidence of Vitamin-A deficiency.
- **The Uganda pilot** incentivizes seed companies to increase the quantity and quality of legume seeds available, with the ultimate objective of achieving the nutrition and income benefits of increased legume production by smallholders.

In all these pilots, the pull mechanism is designed to incentivize a pre-identified set of private sector actors in the technology value chain (manufacturer, distributor, aggregator, processor, or input provider) to invest in achieving pre-defined outcomes. The pull mechanism defines a prize, outcomes which will trigger the prize, conditions on these outcomes, and an objective means for verification of the outcomes. For example, the Kenya on-farm storage pilot provides a prize to storage distributors for the level of storage sales they achieve

(the outcome) on the condition that the sales be made to smallholders within the targeted grain-growing areas. The overarching theory of change across these pilots is based on the premise that the efforts of multiple private sector actors to achieve these outcomes will lead to investments in the development of sustainable and smallholder accessible markets for the technology. In the next section, we discuss initial lessons that we have learned from our ongoing evaluations of the pilots.

Initial Lessons on Suitability of a Pull Mechanism Approach, Market Impact and Development Impact

Lessons Related to the Suitability of a Pull Mechanism Approach

- Pull mechanisms are a suitable tool to address market failures in the provision of a technology when there is a key leverage point to engage private sector actors. The streamlined design of pull mechanisms—specifically the tying of each prize to a single outcome—means that pull mechanisms are limited in the number of points they can effectively leverage. By adjusting the risk/reward calculations for the private sector around that particular leverage point, the pilot can offset key constraints limiting the development of the market. However, practically, this implies that pull mechanisms are not suitable when a multitude of constraints simultaneously undermine development of markets for the technology. For example, the private sector may not be able to influence the enabling environment and policies, which was the case in Zambia where the government purchase program initially favored white maize over PVA maize.
- There must be a potential demand for the technology being promoted, which implies that the technology should be demonstrably beneficial for smallholders, address a key need, and be affordable. There should also be demonstrable evidence that when adopted, the technology will improve smallholder wellbeing. This has been the case with all the AgResults pilots so far.
- There must be potential for the private sector to profitably supply the technology. Otherwise, private sector motivation to invest in developing sustainable markets for the technology will be limited.

Lessons Related to Market Impact

If the prize is well designed, private sector actors will be attracted by the prize structure and the business case of the pilot or of the technology– this response is a sign that the incentives adequately reduce the risks of private sector engagement. If, however, the private sector does not respond – if they do not choose to compete for the prize – this may indicate the need for early course-correction by the pilot as it indicates that implementers' constraints to enter the market are not being adequately addressed, or that the implementer does not have an underlying interest in the market. For example, in Zambia, market actors' lack of investment in the market for PVA maize led to a restructuring of the pilot after Year 1.

Lessons Related to Development Impact

Pull mechanisms that incentivize private sector engagement can have inherent trade-offs between development impact (particularly inclusion of poor and marginalized smallholders) and creation of a sustainable market for the technology, at least in the short run. Private sector actors may not initially target the poorest beneficiaries because these beneficiaries may be less commercially attractive than other customers. In Kenya, for example, the creation of a market for improved on-farm storage devices meets an important need by opening avenues for smallholders to access and learn about these devices. However, the poorest smallholders may not initially be the target of on-farm-storage providers because they have low purchasing power and limited market integration.

Strategic behavior by private sector actors to maximize their own profits may hamper smallholder impact. In Nigeria, for example, participating maize aggregators are rewarded for each metric ton of maize that they procure from smallholders, which creates a financial disincentive for them to apprise smallholders of the health benefits of retaining Aflasafe-treated maize for their own consumption. This reduces the likelihood that smallholders will keep some of the maize for their own consumption. At the same time, our results to date show that altruism and non-financial incentives offset this among some private sector actors. Overall, such strategic behavior needs to be recognized and laid out as an assumption to test in the theory of change.

A lab technician at Chemiphar Uganda tests the quality of seed collected from farmers as part of the AgResults evaluation's seed quality assessment.

Source: Abt Associates Inc.

Pro-vitamin A maize seed is being sold by seed companies participating in the Zambia pilot.

Source: Abt Associates Inc.

Recommended Citation

Mainville, Denise and Tulika Narayan[1] "Initial Lessons on AgResults", Evaluator's Lessons Learned Series, Issue 1, August 2017, AgResults, Abt Associates.

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We welcome questions or comments on this brief. Please send them to Tulika Narayan, the Research Director for the AgResults evaluation, at **Tulika_Narayan@abtassoc.com**.

AgResults Pilot Summaries

Problem	Technology Solution	Solver	Incentive
In **Nigeria**, maize contamination by aflatoxin–a naturally occurring cancer causing toxin–leads to adverse health impacts.	Aflasafe, an effective biocontrol for aflatoxins	Maize aggregators	Fixed payment per ton of Aflasafe-treated maize aggregated by smallholders
In **Kenya**, post-harvest loss of maize and other grains leads to adverse food security outcomes.	Improved on-farm storage	On-farm storage solution providers	Proportional and milestone prizes shared based on sales of total storage capacity
In **Zambia**, vitamin-A deficiency among rural households is prevalent.	Pro-vitamin A maize	Seed companies and maize millers	Per-unit prizes to millers and seed companies for sales above set thresholds of PVA maize seeds and maize meal
In **Uganda**, low income and yields from legume production are common.	Certified, quality legume seeds	Seed companies	Annual prize for sales above minimum threshold
Brucellosis is a costly, highly contagious disease. No vaccine is available which is appropriate for developing country.	Thermostable vaccine (developed by solvers)	Vaccine research labs and companies	Milestone awards, $20 million grand prize to first solver who meets technical requirements, $5 million for first solver who meets additional requirements
In **Vietnam**, there are high greenhouse gas emissions from rice production.	Variable (proposed and/or developed by solvers)	Variable (seed companies, rice exporters)	Prize for technology's yield increase and GHG reduction; prize for smallholder adoption and yield, GHG impacts

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AgResults is a $118 million multilateral initiative incentivizing and rewarding high-impact agricultural innovations that promote global food security, health, and nutrition through the design and implementation of pull mechanism pilots. The AgResults initiative is a partnership between the Australian Government, the Bill & Melinda Gates Foundation, the Government of Canada, the United Kingdom's Department for International Development, the United States Agency for International Development, and the World Bank. **Abt Associates,** in partnership with Denise Mainville Consulting**,** is the external impact evaluator of AgResults. Abt Associates is using rigorous evaluation methods – both quantitative and qualitative – to determine if the AgResults pilots' pull mechanisms achieve their objectives. These briefs summarize our lessons learned, which we are generating on:

- **Suitability of a pull mechanism approach**, focusing on the key conditions under which pull mechanisms can be an effective development tool.
- **Pull mechanism design** and the primary elements to consider, such as the type of prize, choice of targeted solvers, and verification protocols.
- **Market impact** and how to maximize it for pilots that aim to create a market for agricultural technologies.
- **Development impact**, and how to maximize the expected impact on smallholder outcomes, and the interactions with market impact, including potential trade-offs.
- **Cost-effectiveness** of pull mechanism design in achieving development or market impact.
- **Sustainability**, focusing on the private sector's engagement in technology provision beyond the pilot.
- **Evaluating pull mechanisms,** focusing on methodological challenges and recommended approaches in conducting impact evaluations of pull mechanism pilots.

 For more information about AgResults, visit: **http://www.agresults.org**