

Lessons from Scaling Up

Reducing Postharvest Loss Through Mini Cold Storage Technology – *Lessons from India*

The new “Lessons from Practice: Assessing Scalability” report aims to provide specific tools and guidance to World Bank Task Team Leaders (TTLs) and other agricultural development specialists which can assist them in identifying the potential for scaling up small, innovative projects throughout the entire project cycle – from inception through completion. The report, developed in collaboration with the Heller School for Social Policy and Management at Brandeis University, draws on lessons from the experience of the Development Marketplace (DM) in funding small innovation projects and offers strategic advice to agricultural practitioners on assessing the scalability of such projects. This Note is based on a case study from India from the report.

Scaling up effective agricultural development projects is a necessary component in the fight to reduce global poverty. In order to help facilitate efficient and effective scaling up initiatives, however, it is necessary to first identify key lessons and recommendations which can offer streamlined guidance in this process. As part of a continued effort to develop effective guidance on scaling up ARD conducted a case study of the “Waste to Wealth by Incubating Mini Cold Storage Technology Ventures” project in India in order to extract elements from this innovative project which could offer broader lessons and recommendations on scaling up in general. This case study – developed in collaboration with Brandeis University – explored lessons and recommendations from this joint World Bank Development Marketplace – Tiruchirappalli Regional Engineering College/Science and Technology Entrepreneurs Park (TREC-STEP) project, which sought to substantially reduce post-harvest vegetable waste and to increase farmer incomes by enabling small farmer access to Mini Cold Storage Units (MCSUs) specifically designed to meet the needs of small farmers.

Postharvest loss is a critical issue being addressed by agricultural interventions across the globe. Although Cold Storage Units currently exist around India, these units tend to be too cost prohibitive and physically inaccessible for the vast majority of smallholder farmers. As a result of this situation, it is estimated that value loss due to lack of cold storage for small farmers is around 20 to 40% of produce value – translating to between \$300,000 - \$400,000 annually for the five markets targeted by the project. In response to this development gap,

this project introduced MCSUs which are specifically designed for the needs of smallholder farmers. The service delivery method is a form of public private ownership wherein the state government and a nonprofit organization at the regional technical college collaborated to support the emergence of youth entrepreneurs who can sustainably operate the cold storage units and deliver services to small farmers in the different markets.

THEORY OF CHANGE (TOC)

Prioritizing a simple and effective **Theory of Change** (TOC) is a key recommendation highlighted in the Lessons for Scaling up Report. Informing this recommendation is the TOC employed during this project, which emphasized the idea that a key technological innovation, coupled with a novel service delivery method, will have sufficient net benefits to engage farmers, government and trained rural entrepreneurs to run the venture and transform it



Mini cold storage unit at a farmers' market in India
 Photo: ARD



into a viable, sustainable business. At the heart of this TOC was a market level intervention with the dual purpose of (1) improving farmers' incomes and engagement in market activities and (2) addressing the broader national issue of food security through the reduction in food wastage of between 25-40% every day – an estimated collective savings of \$6 billion across the country on an annual basis.

LESSONS FOR SCALING UP

Critical to the success and sustainability of this project, and additional key lessons for scaling up illuminated by this project, is **the need for local legitimacy and ownership**, coupled with **financial viability**. The provision of cold storage is an important element in helping farmers derive more benefit in the supply chain in India, but the successful sustainability of this project relies on the overall buy-in among both smallholder farmers (who can benefit from increased involvement in market activities) and the government (which plays a substantial role in helping these farmers increase their production and incomes through the provision of access to stalls in the market, transportation to the market, price regulation and appropriate advice and extension services). The success of this project – showcased by increases in farmer participation in market activities and decreases in postharvest losses – has created local legitimacy and ownership. However, in order to build on this success, the financial viability must also be validated through the continued engagement of the government in this intervention.

One additional lesson which also incorporates the multiple stakeholders benefitting from this innovation is the need to provide appropriate **incentives** for engagement. This project was very effective in creating appropriate incentives along the value chain. Smallholder farmers were provided with MCSUs – improving the quality of produce while simultaneously reducing transportation costs and other burdens. The local governments were also incentivized by this project through the opportunities to support small farmers, create food security through reductions in postharvest

Project Benefits

- Increase in small farmer income ranging from 9% to 31% due to decreases in postharvest loss
- Reductions in costs of transport due to ability to store vegetables at market from one day to the next
- Increases in overall vegetables arriving at markets
- 56% of the users of the MCSUs are currently women farmers

losses, build political good will and lead a social initiative that has the potential to be scaled up on a national level. Furthermore, training and employment opportunities developed by this program created incentives for rural youth to engage in the project – resulting in both reduced unemployment and increased capacity for at-risk youth.

CONCLUSION

The “Waste to Wealth by Incubating Mini Cold Storage Technology Ventures” project in India was an innovative intervention which provided economic incentives for increased engagement in market activities among rural smallholder farmers while simultaneously addressing the ongoing development challenge of postharvest loss. By introducing a strategic and simple Theory of Change which targeted these components, this project was able to bring together a variety of beneficiaries along the value chain and create appropriate incentives to ensure both economic and social benefits within the project. Furthermore, by highlighting the important role this simple TOC can play in ensuring success when coupled with appropriate incentives – through the creation of local buy-in and ownership among beneficiaries – this project provided essential lessons and recommendations which can benefit the scaling up agenda as a whole.

This ARD Note was prepared by John Mackedon, Gunnar Larson, and Kaisa Antikainen under the guidance of Fionna Douglas, with special thanks to Susan Holcombe and her team at Brandeis University.

