Success Factors for Commercializing Agricultural Research

Lessons from Feed the Future Partnering for Innovation

- A Companion Guide for Project Managers -
ABOUT FEED THE FUTURE PARTNERING FOR INNOVATION

Feed the Future Partnering for Innovation is a USAID-funded program that helps the private sector to scale and market agricultural technologies for smallholder farmers through investing in technology commercialization and knowledge exchange. The program also facilitates partnerships between USAID Missions and the private sector and provides business acceleration tools and services.

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Purpose

This guide is a companion piece to the publication, *Success Factors for Commercializing Agricultural Research: Lessons Learned from Feed the Future Partnering for Innovation*. It is intended to provide insight and advice specifically for project managers responsible for projects that commercialize publicly funded agricultural research to benefit smallholder farmers. This is also relevant to the US government’s Global Food Security Research Strategy, which identifies commercialization as an important pathway for technology transfer. Although it will have the most impact when read alongside the full report, this companion piece can be read as a standalone document.

Feed the Future Partnering for Innovation is a United States Agency for International Development (USAID)-funded program that provides incentive-based grants to de-risk the upfront investments that are necessary to scale and market agricultural innovations for smallholder farmers. The program works toward this goal through partnerships with the private sector, which to date number 50 in total.

Introduction

This companion guide identifies points from *Success Factors for Commercializing Agricultural Research: Lessons Learned from Feed the Future Partnering for Innovation* that are particularly relevant for project managers who work on commercialization projects, engage the private sector, or support technology/product development. It begins with a brief overview of why companies participate in donor-funded commercialization projects, followed by the main points for project managers to consider in relation to each of the eight success factors identified in the main report, and ending with recommendations and key takeaways based on the eight success factors. For a more complete explanation of the recommendations and success factors, please refer to the full report.

A Brief Summary of the Full Report

**Purpose and Methodology**

The report is the result of a qualitative study across eight Partnering for Innovation private-sector partners that are commercializing publicly funded agricultural research to benefit smallholder farmers. Interviews were conducted with 19 researchers, company representatives, and others involved in the eight partnerships, as well as with five external experts.

The focus of the report is on the hand-off and interaction between research institutions and companies during the commercialization process. The report starts at the point at which a research institution has completed the research, a technology or innovation is ready for commercialization, and a company has decided to commercialize it. The purpose of the report is to share lessons learned and spark further discussion and research about commercializing innovative agricultural products, services, and technologies.

**The Eight Success Factors**
Based primarily on lessons learned across the eight Partnering for Innovation partners, the report lays out eight success factors, in no particular order, for commercializing publicly funded research to benefit smallholder farmers:

1. Clearly define the role and funding of research institutions.
2. Address intellectual property from the beginning.
3. Ensure quality control.
4. Recognize that research is just one part of research and development (R&D). The development aspect also takes considerable time and resources.
5. View the smallholder farmer as a customer.
6. Appreciate the motivation of the researcher.
7. Value relationships and networking.
8. Involve the private sector in research early on.

Conclusion and Recommendations

The report concludes with a discussion of cross-cutting lessons learned around the common challenges the eight partners face, the role donors and host governments play, and recommendations for donors and leaders of research institutions.

The four cross-cutting lessons learned are:

1. Companies should play the leading role in commercialization.
2. Donor and/or host government funding plays an important role in commercialization to benefit smallholder farmers.
3. There is often a communication barrier between researchers and company representatives.
4. Commercialization is an ongoing process that requires a long-term view.

The five recommendations are listed below:

1. Develop structures and procedures to engage with the private sector on research early and at a strategic level.
2. Ensure that any donor funding allows for co-creation and co-development.
3. Strengthen linkages between research institutions, companies, and broader agricultural development programs with complementary interests.
4. Support the development and use of intermediaries to bridge the gap between researchers and businesses.
5. Design programs that recognize the financial and time-horizon realities of commercialization.

Donor-funded Commercialization Projects from a Company Perspective

For companies, participating in donor-funded commercialization projects brings several benefits:

- **Financing:** Donor funding helps a firm to test or enter markets, and can “crowd in” commercial investors and other sources of financing. It can help to offset additional development costs associated with producing and marketing a product in smallholder markets. It can be particularly important in countries with less developed financial markets, where bank loans and private investment can be more difficult to obtain. In the case of Partnering for Innovation, such funding
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is commonly used for business operations such as purchasing new equipment that allows for more efficient production, and developing and implementing marketing strategies.

- **Broaden professional networks**: Donors and their implementing partners can be excellent intermediaries for connecting businesses with other businesses, academic/research institutions, nongovernmental organizations (NGOs), government agencies, and other stakeholders that can help to advance the business.

- **Knowledge exchange and technical assistance**: Companies can learn from the experiences of others working in their sector. Donor funding can support use of consultants or other experts to provide technical assistance or training to individual companies or groups of companies. For example, Partnering for Innovation provided “acceleration services” that enabled firms to better understand their customer segments, streamline their internal processes for added cost-savings, and ultimately reach more smallholder farmers.

- **Coaching or mentoring support**: Donor-funded projects can help to coach or mentor companies that try to reach smallholder farmer markets – helping them to think through solutions to challenges and connecting them to other resources when appropriate. Partnering for Innovation brought its development expertise to private-sector partners by working directly with them to fine-tune their farmer outreach strategies in monthly, weekly, and even daily formal and informal check-ins.

**Points to Consider for Project Managers Commercializing Research**

This section offers some points to consider for each of the eight success factors for commercializing agricultural research (see the full report for more information).

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**Success Factor #1: Clearly define the role and funding of research institutions.**

It is important to determine the role the research institution will play in the commercialization process (licensor, consultant, supplier/service provider, etc.) and how that role will be supported financially (project funding, fee-for-service, royalties, etc.).

**Points to consider:**

- When considering applications for potential funding, look carefully at the role proposed for the research institution in the commercialization process – is it appropriate given the capacity of the research institution and company? Is it mutually agreeable? Is it clearly understood? Is it short term or long term?

- Similarly, look carefully at the funding arrangement – how will the research institution’s work be funded? If a longer-term role is envisioned (one that will extend beyond the project term), how will its role be supported?

- If companies are leading the project, recognize that they are accustomed to engaging with other organizations as suppliers or clients/customers rather than as sub-grantees. Research institutions are generally used to engaging with donors. Some coaching/facilitation may be needed to ensure clear expectations.
Success Factor #2: Address intellectual property from the beginning.

There are three aspects to consider in regard to intellectual property: a) ownership of the research itself (public domain or owned by the research institution), b) protection of the company’s own proprietary information, and c) implications for further research or development work.

Points to Consider:

- Confirm that the research institution and company have addressed intellectual property issues and that both are clear on the conclusions and implications. Recognize that there can be differing levels of experience with intellectual property among the involved parties. It can be helpful for the project manager to play the role of a neutral facilitator role to make sure both parties ask the right questions and address issues as needed.
- Make sure that the company has engaged with the appropriate office at the research institution (such as the team responsible for intellectual property, technology transfer and/or legal agreements). Researchers themselves are not always fully aware of the applicable policies.
- Talk to the company about their intellectual property concerns, particularly if the research institution is likely to be exposed to the company’s proprietary information. This aspect is not always considered until issues arise.
- Ensure that companies and research institutions have discussed issues such as ownership of future work based on the original innovation, implications for the researcher’s continued work on the topic, and any limitations on publications.

Success Factor #3: Ensure quality control.

During the technology transfer process, companies may need technical assistance with quality control and/or regulatory compliance. Research institutions may also incorporate quality requirements as a condition of licensing agreements.

Points to Consider:

- Does the company have the capacity to produce a quality product and/or the willingness to invest in building this capacity?
- What kind of technical assistance (if any) will the company require to produce a quality product? Does the research institution have the capability to provide this assistance?
- Does the research institution have any concerns about quality? If so, what can be done to address those concerns?
- Are any regulatory approvals required? If so, who is required to obtain those approvals (research institution or company)? Project managers (particularly on the donor side) can help a company or research institution navigate this area.
Success Factor #4: Recognize that research is just one part of R&D. The development aspect also takes considerable time and resources.

Research institutions often have limited awareness of the work companies do to bring a product to market – including building a facility, designing and setting up the production process, building a supply chain, establishing distribution/logistics channels, marketing, and regulatory compliance.

Points to Consider:

- Is the company’s plan realistic and sound? Does it demonstrate accurate knowledge of the research and its application? Does the business plan make sense? Is the company likely to be able to produce and market the product to smallholder farmers profitably?

- Understand where the company is in the commercialization process, what specific role the donor funding will play, and how other aspects of the process will be funded. If the company has received funding from other donors in the past, it can be helpful to understand how they used that funding.

- Recognize the trial-and-error nature of the commercialization process and the likelihood of unexpected obstacles – set targets/goals but recognize the need to be flexible. On the other hand, over time it may become evident that the company will be unable to commercialize the product successfully. It could be a problem of timing — for example, the production technology is not there yet — or more fundamental issues with the company’s management and capacity that were not visible at the outset.

- What is the company’s capacity to address issues that may arise? To what extent will the company require technical assistance from the research institution or others?

- In what ways can donor support meet capacity needs that also bring potential profitability to the commercialization process? Some common areas for donor support include: support for equipment/facilities in the mass production process, support for marketing studies and activities, support for supply chain development, and technical assistance to make companies ready for investors.

- Does the company’s management/leadership buy in to the commercialization process? Will they commit the time and financial resources needed to see it through? Given the significant investment in financial resources and the long time horizon, it is important to have management buy-in and a champion within the company who will remain positive in the face of setbacks and look for solutions. However, when one person largely drives a project, there are risks if that individual leaves the company or moves into a different role.
Success Factor #5: View the smallholder farmer as a customer.

During the commercialization process, there is a shift in thinking from viewing the farmer as a participant/beneficiary to viewing the farmer as a customer. Marketing to smallholder farmers often requires more hands-on approaches.

Points to Consider:

- Has the company accurately analyzed the market potential of the innovation? Is it likely to attract and benefit smallholder farmers? Is there a business case for the farmer/customer to use the innovation?

- Connect companies to resources that can assist in the marketing strategy development and implementation process. Partnering for Innovation and other programs have tools for use in reaching smallholder markets.

- Link companies to relevant agricultural development programs with which they can work to reach potential customers. Encourage information exchange with researchers, extension services, and development programs.

Success Factor #6: Appreciate the motivation of the researcher.

Most researchers noted that the personal satisfaction they feel in seeing their work used and benefiting others as the primary motivating factor for engaging in commercialization. Most also felt that the bulk of responsibility for managing the relationship with the company fell on them. This dynamic could be challenging when trying to balance these efforts with their main job responsibilities.

Points to Consider:

- Recognize that researchers may feel overwhelmed by the amount of involved work that is outside their area of expertise and/or the difficulties of balancing this work with core job responsibilities. Offices of technology transfer (where they exist) or other administrative offices of the research institute can provide some support.

- Look for ways to support the researcher through the process and develop creative solutions to fill capacity gaps within the research institution (see, for example, in appendices of the full report, Purdue University’s use of local consultants to fill gaps in knowledge about the local private sector and market and the British Council’s collaboration with the University of Nairobi to think of new ways to engage in commercialization).

- Most researchers reported their main motivation to be personal satisfaction in witnessing the usefulness of their work. Ensure that researchers have the opportunity to hear positive feedback and see results.

- Encourage mentoring and insist on involving multiple staff members – not only to support the next generation but also to ensure that if the researcher leaves, there will be someone else to champion the idea.
Success Factor #7: Value relationships and networking.

In most cases, informal, interpersonal communication led to companies learning about research with commercial potential. Being more purposeful and explicit in communications and networking may bring more research to the commercial market.

Points to Consider:

- At times, the project manager may need to be an intermediary/mediator between the research institution and company – particularly if one or both parties have not worked on a similar initiative before.

- The convening or connecting power of donors/project managers is valuable in making connections between researchers, companies, and other potentially helpful stakeholders throughout the process.

- It is important to cultivate a relationship with the company and research institution based on partnership and collaboration. Healthy relationships facilitate more open and honest communication. The relationship will often be one of coaching or collaborating versus the traditional project management role.

Success Factor #8: Involve the private sector in research early on.

Research benefits from early input and involvement from the private sector, as companies bring different perspectives and ideas. This company input also helps facilitate commercialization, because companies are aware of the research from participating in the research process and see it as relevant to company needs.

Points to Consider:

- Ask research institutions about the level of involvement of the private sector in their research. Facilitate connections with private-sector partners to involve them early on in publicly funded research activities. Such involvement can begin as early as the strategic design stage, prior to the start of the research project.

- Encourage companies and research institutions to engage with each other beyond the immediate tasks of commercialization. This engagement can include, for example, discussions of companies’ views on broader strategic research priorities, research institutions’ new work on relevant topics, and both parties’ observations of challenges facing the sector.
Recommendations

Ensure that any donor funding allows for co-creation and co-development.

- Look for ways to involve both the company and the research institution in the design of the commercialization initiatives. This effort helps build the relationship between them, facilitates clear communication on roles and responsibilities, and allows for a fuller discussion of opportunities and challenges from the beginning.
- The private sector should design and lead the process of commercialization. Research institutions, NGOs, and others can play supporting roles, but it is important that the company takes responsibility and designs a process that it feels is realistic based on its own experience and ways of working.
- It can be helpful to involve the private sector in the selection of research applications for grants/donor funding to provide business perspectives. For example, when selecting companies with which to partner, Partnering for Innovation uses a process that involves a review committee that includes business experts alongside agricultural and development experts. This group reviews shortlisted applications and is involved in interviewing finalists. Business experts contribute a different perspective to the review process and help ensure that the applicants have developed realistic business plans and have the capacity to be successful.

Strengthen linkages between research institutions, companies, and broader agricultural development programs with complementary interests.

- Donors, host-country governments, and NGOs can play an important role in connecting complementary projects. Connecting research institutions and companies with relevant broader agricultural development programs can be mutually beneficial. These programs benefit from scientific expertise and access to products that farmers need, researchers benefit from the ability to conduct participatory research and try their ideas in the field, and companies benefit from the opportunity to work with an informed customer base of smallholder farmers who already understand the value of the product the company sells.
- Networking and access to networks is useful in the commercialization process. Donors and project managers can serve as connectors. This can serve several purposes – making the initial connection between research institution and company; generating new ideas for research or market opportunities; and helping to address issues that may arise in the commercialization process.

Support the development and use of intermediaries to bridge the gap between researchers and businesses.

- Intermediaries such as offices of technology transfer, business accelerators, or incubators are useful tools to facilitate communication between research institutions and businesses in the commercialization process. Look to support and/or strengthen these intermediaries where they exist. At times, the project manager may also need to help connect research institutions and businesses.

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1 For more detail, see the section titled, “Future Considerations for Donors and Leaders of Research Institutions” within the full report. This guide begins with the second recommendation, as the first is geared toward project managers of research projects.
business to knowledge and tools that accelerate commercialization – they understand the different perspectives, and can serve as a facilitator to help resolve issues as they arise.

- It is valuable to engage intermediaries who have knowledge of the local market, regulatory environment, etc. Consultants can be used to supplement this when necessary.

**Design programs that recognize the financial and time horizon realities of commercialization.**

- Successful commercialization can take a long time - eight to ten years is not uncommon, and at times it is even longer. Be realistic about what can be achieved within a shorter-term project and with the resources available. Make sure the company has a longer-term plan in place to ensure that the work will continue to progress after donor funding ends.

- Build a flexible design that allows for the trial-and-error nature of the process, fostering adaptive management of unexpected challenges or issues. Agriculture is dependent on the environment and weather conditions, and there is always a certain level of unpredictability involved. It is important to have goals and milestones, but there should be some opportunity for renegotiation as circumstances merit. Make activities outcome-based (not output-based) to allow for flexibility. Milestones will change; in the case of Partnering of Innovation, it was common to have changes to production targets and construction/equipment installation deadlines.

- Commercialization projects are a team effort involving the company, research institution, and project manager. The project manager needs to build a trusting and collaborative relationship with the company and research institution. In many respects, it is a coaching relationship in which project partners feel comfortable coming to the project manager with challenges, and they look to find a solution together.

**Key Takeaways for Project Managers**

- It is important to have a thorough screening and selection process to ensure that the research is truly ready for commercialization and that companies have the capacity to successfully see the process through.

- Building and maintaining a collaborative relationship with companies and research institutions is important to success. The project manager will at times serve as a facilitator or intermediary between the research institution and the company, and at other times as a coach to find solutions to challenges.

- Remember the big picture goals and be willing to be flexible on the milestones or steps to get there when necessary. At the same time, know when to walk away - sometimes a product is before its time or that particular company is not able to make it work.

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