THEMATIC NOTE 2

Innovation Funds

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SYNOPSIS

This note summarizes experiences with the two main mechanisms used to fund agricultural innovation, competitive research grants (CRGs), and matching grants (MGs). It offers lessons and guidelines for designing and implementing innovation funds, drawing on information and analysis published in World Bank (2010). That report primarily analyzed experience with World Bank investments, but the lessons are relevant in other contexts. The decision to use a grant scheme to fund innovation and the choice of scheme require a rigorous decision on the objective, which must be embedded in a strategic vision of the innovation system. CRGs are often used in the larger context of agricultural research system reform programs. MGs tend to work best when combined with complementary investments (infrastructure, financial services). Significant costs can be associated with setting up and administering a grant program, and the cost-effectiveness of procedures to keep overhead low must be balanced against the need to ensure accountability and transparency of operations. Funding priorities must be set with stakeholders, who should participate in the governance of the grant or program and provide continuous feedback on implementation. Transaction costs associated with participation in a grant scheme may be significant and reduce the pool of private applicants. Grant recipients are often not adept at fulfilling M&E requirements and will benefit from specific training and hands-on support.

BACKGROUND AND CONTEXT

Institutional core funding from public resources has been the most common means of funding research and innovation, as many core research activities require long-term support. Core funding also facilitates the development of integrated research programs to address major problems, commodity needs, or geographical areas. Many core research activities, such as plant breeding, have only one research provider, so competitive funding is irrelevant (World Bank 1999a). Institutional core funding does not easily lend itself to innovation processes that engage diverse stakeholders, however, even though much innovation can result from tapping the vast pool of creative ideas they possess. In many instances, those ideas never translate into innovation because the incentives and human and financial resources that enable collaboration and innovation are lacking.

To compensate for this failure, many countries are using innovation funds in the agricultural sector to strengthen innovation-promoting links among public institutions, private entrepreneurs, and other actors, such as groups of rural producers. These funds—often in the form of grants—create platforms for innovative activity by providing incentives to improve research collaboration and quality. They complement traditional core funding allocated annually to specific public research institutions to pursue their core research agenda.

Competitive research grants (CRGs) fund research based on national competition and scientific peer review. Transparent procedures are used to select the proposals that will receive funding, based on rigorous criteria. Grants can accomplish objectives that may be difficult to achieve through core funding, such as innovation in specific areas of research (perhaps through adaptive on-farm research projects that require organizations and farmers to work together) or innovation in a target region. If they are well designed, grants can bring greater contestability to the innovation process; the funding may not necessarily flow to the traditional recipients. Grants can promote research partnerships, leverage research resources, and help develop a more efficient, demand-driven, and pluralistic research system by involving clients in setting priorities and financing, executing, and evaluating research (World Bank 2009, 2010). For an example of using competitive grants to promote multistakeholder collaboration in India, see module 4, IAP 2.

Matching grants (MGs) can be used to finance research but increasingly promote near-market technology generation,

technology transfer and adoption, private economic activity, and overall innovation, often by including multiple stakeholders. By focusing greater attention on demand and use from the very beginning, basically by attracting users of technologies and knowledge in partnerships (and requiring a matching commitment), MGs may be more effective than CRGs at enhancing the use of technology and knowledge by farmers and other entrepreneurs. Funds from the granting organization (usually a public agency) are matched with funds from the beneficiary. Table 5.4 compares the three financing modes.

The use of MGs in particular warrants caution. They should be used for public good investments, such as generating technical or institutional innovations with positive economic, social, or environmental externalities or reversing market failures. They can thus be used for addressing knowledge gaps and reducing the risk for investment when the market fails to produce a necessary or desirable good, but at the same time other public sector instruments may be more effective and less costly.

The following list indicates when grants may or may not be a good choice (van der Meer and Noordam 2004; Donovan 2006):

- ***The lack of public goods such as infrastructure, legislation, or information.*** In this case, the appropriate solution is to invest in these public goods. It will not help to give grants to reduce the high costs of production caused by their absence.
- ***The lack of economies of scale.*** No single enterprise is large enough to make the lumpy investments needed to overcome this problem. In this case, grants do not automatically help, although it may help for governments to support collective action for making lumpy investments.
- ***High risk,*** arising (for example) from the long gestation periods for certain investments, political instability, lack of transparency in government policy, or natural disasters. Private insurance schemes can handle some risks, and governments should first deal with any deficiencies in their own policies and performance before considering grants.
- ***High costs of protecting property rights.*** In general, governments should establish and protect property rights and provide subsidies (grants) only where the costs of enforcing those rights are too high.
- ***Lack of commercialization of the economy.*** In such an economy, the development of financial services is especially slow. Grants should not be used in these cases for subsidizing credit, but they may be justified for training, developing management information systems, or helping to expand rural outreach of credit providers and install new technologies.
- ***Lack of technology, information, or trained staff.*** Grants may be useful to solve these problems.

Table 5.4 Comparison of Competitive Research Grants (CRGs), Matching Grants (MGs), and Core (Block) Funding

Issue	CRGs	MGs	Core (block) funding
Primary objectives and activities	Basic, strategic, and adaptive research (and extension)	– Demand-driven, near-market technology development, dissemination, and adoption and overall innovation processes – Private sector activity, including agribusiness and productive partnership creation	Long-term strategic research and institution building and strengthening
Key stakeholder	Primarily research system actors, increasingly also private sector	Farmers, private sector, NGOs, research institutes, extension services, other service providers based on objective	Public research organizations
Capacity requirements for success	– Requires a critical mass of staff and a steady operational budget to allow true competition and result in improved research quality – Capacity to compete and administer (including technical review) crucial for success	– More flexible with capacity requirements of participants or the administrative burden – Business understanding, ability to partner, and monitoring and evaluation requirements great	Little additional capacity required
Cost sharing	Limited, due to ownership issues	High for demand-driven activities	Limited to in-kind resources
Overhead and transaction costs	Significant, due to management and monitoring and evaluation	Varies; can be significant depending upon the degree of decentralization of the program and the overall purpose and actors involved	Low or nonexistent
Incentives for partnership	Fair, depending on criteria	High	Limited
Sustainability	Limited unless complement long-term funding	Limited unless complement long-term funding	High

Source: Authors, adapted from World Bank 2010.

INVESTMENT OR ACTION NEEDED

A number of investments and actions are needed for innovation funds to perform successfully. They are briefly explained in the sections that follow. See World Bank (2010) for detailed explanations and examples.

Establish a fund for financing projects

A grant scheme requires a fund that provides financing for the selected subprojects. The fund is usually situated within a ministry of agriculture and managed and disbursed to the winning participants by the fund secretariat (which is independent of the ministry). The actual size of the fund depends on the anticipated portfolio of subprojects (that is, the size of subprojects, the size of the grant subsidy, and the anticipated number of subprojects). Successful grant schemes supporting subprojects may range from several hundred dollars for small farmer groups and initiatives to more than US$1 million.

Establish rules regulating the terms of the competition and implementation

Transparency of management, institutional arrangements, eligibility of applicants, projects and expenditures, selection criteria and processes (calling for proposals, approval, contracting, disbursement, financial management, audits, procurement, safeguard management requirements, and M&E procedures) are the most critical elements for a successful grant scheme. Significant preparatory work is required to identify and define appropriate operational procedures.

Conduct a communications campaign

Successful grant schemes require a rigorous awareness raising and communications campaign, managed by the grant administrator (secretariat), targeting the potential applicants. A communications campaign (either a nationwide information campaign or a more targeted marketing approach) guarantees that potential grant applicants learn about the innovation fund and related capacity-building opportunities. Communications campaigns may use diverse means, such as mass media, a specific Internet site, and/or more targeted communications (such as stakeholder meetings and face-to-face contact).

Build capacity of participants and service providers

Most grant schemes need to build capacity in grant-implementing units (related to the role of implementing units, communication, administrative procedures, and requirements of the grants), potential applicants (understanding the procedures, proposal development, partnering, financial management, and M&E), and potential service providers (proposal development skills, technical skills, and M&E capacity).

Establish a governance and management system

Grant schemes require effective governance and strong management. A good practice is to maintain separate units for policy setting, technical evaluation, management, and impact evaluation. The main governing responsibility resides with a *governing board* (sometimes also called an "advisory board" or "coordinating committee"). Table 5.5 describes the typical governance and management structure for a grant scheme. Grant schemes require a secretariat to handle day-to-day administrative functions such as communication, processing, coordination, and M&E. The capacity and placement of the secretariat is of significant importance for the success of a grant program. The options range from placing the secretariat within a public institution managing the fund or outsourcing it to private or civil society.

POTENTIAL BENEFITS

The major benefits of grant schemes arise from their capacity to tap into a vast pool of *creative ideas*. For designers and implementers of grant schemes, the emerging innovations (technological and organizational) are one of the most exciting and often surprising features. By mobilizing new partners, grant programs facilitate significant opportunities for *synergies* in technology and institutional innovation development. Some schemes stipulate particular partnership arrangements, such as company-research or company-farmer partnerships (as in China and Vietnam). In Turkey, a matching grant program helped to promote scientific and technical collaboration and technology development (box 5.10).

CRGs in particular, with their clear, outcome-oriented design, can significantly increase the chances that *research will succeed and that research resources will be used effectively*. When grants focus on specific themes or activities, the approach of inviting proposals provides a good opportunity to receive the best ideas and select only proposals with a high likelihood of achieving the desired outcome.

MGs in particular have a strong business orientation (expectation of revenue) from the outset and result in more *business-driven innovations.* Because users determine what

Table 5.5 A Generalized Governance and Management Structure for Grant Schemes

Unit	Composition	Responsibilities
Governing board	Often consists of representatives of key stakeholders associated with the grant scheme, such as government, farmers, agribusiness, and finance. A nonvoting representative of the secretariat usually participates.	Responsible for overall program policy. Oversees operations, establishes program priorities, awards grants, and represents program with funding agencies. Ensures close connection between the selection criteria used to evaluate proposals and the system-level objectives to which the competitive research grant scheme should contribute.
Secretariat	Composition depends on the type and size of grant scheme. The secretariat should have administrative capacity, including capacity to manage contracts and procurement; technical expertise (for example, in agribusiness); and M&E experience. The capacity and stability of the secretariat are often crucial for the success of the grant scheme.	Responsible for managing programs and carrying out daily operations. Provides support for governing and technical bodies and facilitates communications about program operations.
Technical advisory committee	This committee may be a subcommittee of the governing board or may be combined with the technical review panel described below.	Provides technical input for planning programs and setting priorities, advises on peer reviewer selection, and monitors technical quality of research subprojects.
Technical review panel	Often composed of 3 members selected from a pool of approved experts, including technical and financial experts. The size and complexity of the proposals will determine the number of experts required. Proposals for small subprojects may require one reviewer, whereas larger or technically new or more complex proposals may require 2–3 reviewers.	Responsible for evaluating, scoring, and ranking proposals. Makes funding recommendations.
Appeals body	Often managed by the grant secretariat. Appeal decisions are made by steering committee or governing council associated with the project or host institution.	Responsible for handling any petitions that may arise from the decisions by the reviewers or the approval committee.

Source: Adapted from World Bank 2010.

Box 5.10 Getting the Most from Matching Grant Schemes: The Turkey Technology Development Project

Perhaps the most notable legacy of the Turkey Technology Development Project (a US$100-million project approved in 1991) was the construction of the Technology Development Foundation of Turkey (TTGV). The Foundation provided funds for Challenge Programs, which stimulate applied research and technology development by industry through a mix of matching grants, income notes, and conditional loans. TTGV stimulates private investment in the development of industrial technology by providing seed capital (matching funds) for market-driven research and development (R&D) subprojects in a host of critical industrial sectors, including agro-industry.

In 1992, TTGV began to cofinance R&D subprojects in the private sector with the assistance of the World Bank. Proposals were solicited twice yearly. Of 273 proposals submitted by April 1998, 103 (37.7 percent) had been approved for funding. The funded projects elicited US$99 million in funding—US$44 million from TTGV and the remainder from private matching funds. The majority of the approved subprojects (84) were for technology development; 67 of these subprojects had concluded by the time the project's Implementation Completion Report was submitted in 1998. A large majority of subprojects funded through those grants succeeded technically as well as commercially.

Source: World Bank 1999b, 2006.
Note: TTGV = Türkiye Teknoloji Geliştirme Vakfi.

kind of innovation they require, the resulting innovations often have fewer problems with adoption or transfer. The innovations must pass the test of commercial usefulness, which increases the attractiveness and efficiency of the funds used in such grants.

POLICY ISSUES

The policy issues related to innovation funds resemble those for many of the other investments discussed in this sourcebook (sustainability, equity), but special concerns are

related to the potential fragmentation of the research agenda and distortion of markets.

CRGs can be an effective component in a portfolio of funding mechanisms, but they must complement rather than substitute for long-term public funding for strategic research through block grants. When institutional block grants fall below 40–50 percent of the funding portfolio, the viability of long-term research may be compromised (EMBRAPA, IDB, and World Bank 2000). Competitive grant schemes—either for research or other activities—may introduce instability into the funding structure of institutions that compete for grants. Sustainability is also threatened by the fact that most grant schemes funded by donor organizations provide financing for only a limited number of years, and donor-initiated schemes are rarely mainstreamed into government programs. Inequitable access poses a challenge for grant schemes, particularly competitive ones. Grant schemes may be inaccessible for administrative reasons, lack of capacity to participate, or limitations inherent in the funding, which could favor particular themes or areas and unwittingly discriminate against certain groups of applicants (World Bank 2010). In Colombia, MGs were used to incentivize collaboration between smallholder groups and the private sector (box 5.11). For other examples of MG schemes, see IAP 2 on China in this module, IAP 6 in module 1, and IAP 1 in module 6.

The risk of "projectization" and the accompanying failure to build capacity are acute in grant schemes, especially in CRGs, which do not require the counterpart funding implicit in MGs and PPPs. Competitive grants may be used as stopgaps to gain resources that cannot be obtained through the national research system or financial services. This inappropriate use of competitive grants yields a set of ad hoc research projects that contribute to no overriding research strategy (World Bank 2010).

Finally, many grants by definition interfere in markets as they try to resolve market failures. As observed, poorly designed grants can easily distort markets by directing

Box 5.11 Colombia Productive Partnerships Project: Incentivizing Market Inclusion through Matching Grants

The Colombia Productive Partnerships Project creates favorable conditions for large buyers and small sellers to establish mutually beneficial and sustainable relationships. It offers matching grants to complement producers' own resources and/or funding from other sources (local governments, municipalities, commercial partners). Producer organizations use the grants to obtain technical assistance and build their capacity (for example, to meet quality standards, bargain, or enhance their entrepreneurial and negotiating skills). Through the grants, producer organizations gain the ability and incentives to invest in collective goods such as storage facilities and packing facilities. The grants also enable individual small-scale producers to invest in productivity-enhancing infrastructure and gain startup capital to meet buyers' requirements. The types of partners have varied: over half have been food processors, one-third wholesalers, and the remainder supermarkets and retailers (for domestic and international markets).

By the end of the project's first phase, of 136 partnerships financed initially, 118 were sustainably operating in a wide range of markets. The average income of small-scale producers had increased by 77 percent and their employment by 70 percent. Success varied, but the relationship between the buyer and producer was terminated only in 13 percent of partnerships. A particular set of incentives, infrastructure, and market conditions is needed to create and sustain well-functioning, productive partnerships. The key lessons for success were:

- ***A stronger producer organization yielded a more successful partnership.*** Social cohesion and business skills were difficult to achieve and are emphasized more strongly in the second phase of the project.
- ***A rigorous, transparent, and competitive selection process*** ensured the credibility and integrity of the grant scheme.
- ***Technical service providers as facilitators*** were fundamental to building trust with the commercial buyers.
- ***Management and support of partnerships should be outsourced*** to local service providers at the end of the project.

This project was the first World Bank project of its type in Latin America and the Caribbean. Since its inception, similar projects have been initiated in Brazil, Bolivia, Guatemala, Honduras, Jamaica, Panama, and Peru.

Source: Collion, forthcoming.

money to activities that would have attracted private funding anyway and by conferring undue advantages on some companies at the expense of others (see TN 1).

LESSONS LEARNED

The lessons learned from implementing innovation funds are briefly and partially discussed here. For a more comprehensive discussion, see World Bank (2010).

The decision to use a grant scheme to fund innovation and the choice of the scheme require a rigorous decision on the objective, which must be embedded in a strategic vision of the innovation system. *Weak objectives lead to incoherent priorities and funding rules and an inefficient use of resources.* Caution is advised with CRGs, given the tendency to distort long-term research agendas and markets (box 5.12). *No short-term grant scheme can substitute for long-term funding* for research, private sector development, human resource development, or infrastructure maintenance and development.

CRGs are often used in the larger context of *agricultural research system reform* programs. MGs on the other hand tend to work best when combined with *complementary investments* such as infrastructure, financial services, collective action, and market development. They also tend to benefit from *complementary policies* that are similarly introduced to provide enabling conditions that make overall investment more effective, and more attractive to prospective investors.

Significant costs can be associated with setting up and administering a grant program. Many programs set overhead costs at 10 percent of the budget, but one analysis found overhead costs of competitive grant schemes to be 25 percent or more in some cases (World Bank 1999a). The cost-effectiveness of procedures to keep overhead low must be balanced against the need to ensure accountability and transparency of operations.

Funding priorities must be set with stakeholders, who should participate in the governance of the grant or program

Box 5.12 Lessons from Competitive Grant Programs in Latin America

Do not just finance research; strengthen the capacity of research organizations. Competitive funds can be an important vehicle for financing research, piloting new ways of working, or focusing research on new topics, but they are most likely to make a sound and lasting contribution when they complement a relatively strong public sector framework for research. Public funding is essential for agricultural innovation systems. Private funding complements rather than substitutes for higher levels of public funding.

To compete for funding, research institutions require a minimum core budget and critical mass of staff. All institutions need some core funding to maintain and improve their physical and human resources. The sustainability of the public research apparatus and competitive funding alike will depend on continuous public funding. Grants usually fund operating costs over two to three years. A grant model is unlikely to flourish in a climate of fiscal austerity because there is only limited scope for private funds to substitute for public money.

The competitive fund model is more likely to strengthen the strongest agencies providing research and extension than it is to reduce disparities between the strong and the weak. Competition between alternative service providers breaks down when the range of providers is limited and many potential providers lack the skills to prepare viable proposals.

The competitive model itself has not spurred large growth in the role of the private (for-profit) sector as a provider of agricultural research and extension, but it has contributed to the broader process of private sector development. Commercial firms have played a smaller role as providers relative to public and private nonprofit agencies. To the extent that commercial firms have played a role, they have largely done so *outside* the framework of competitive grant schemes. On the other hand, under the competitive schemes, through the medium of subproject copayments, producers have provided private funds as a complement to public sector grants; they have received training in the preparation of business plans; and they have become more market-oriented owing to partnerships with producer associations that have been facilitated by competitive funding agreements. In this sense, the competitive fund model has contributed to the broader goal of private sector development without entailing a major role for commercial firms as service providers.

Source: World Bank 2009.

and provide continuous feedback on implementation. Qualifying stakeholders to fulfill these vital roles entails an investment in capacity building, as discussed earlier.

Board composition and *transparency of activities* require careful attention. Boards can easily be taken hostage by one interest group that skews decisions in favor of its constituency at the expense of others (World Bank 2010). The capacity and institutional location of the secretariat is also crucial (box 5.13).

If the *absorptive capacity is low*, grant schemes will have fewer participants, lower-quality proposals, and a tendency to favor well-established research or private business entities. In CRGs this situation will limit the chances for innovative ideas, and in MGs established businesses may abuse grants to strengthen their business positions and dominate a market.

Calls for proposals can target an entire nation, specific regions, and/or stakeholders. A *two-stage selection process*, starting with concept notes and followed by full proposal development, is recommended to winnow out ineligible applications at an early stage. Given that most MGs target farmer groups or enterprises, often all proposals that meet the minimum eligibility criteria will be funded. *A good practice is to carry out a field appraisal before accepting a concept note for further development.* The field appraisal is helpful for verifying the information and identifying needs for technical assistance (for example, for developing the full proposal). In large and/or new and technically complex projects that use MGs, a *second field appraisal* may facilitate progress with the grant scheme. In some cases eligible proposals are selected by ranking.

Consider limiting the grant contribution in the overall business portfolio of an enterprise and in the budget of a public research institution. Businesses receiving MGs should not use them as the main source of financing for a startup business. Grants can easily be abused in this way, replacing commercial financing (risk or venture capital funding) or core public funding.

Transaction costs associated with participation in a grant scheme may be significant and reduce the pool of private applicants. To retain applicants' interest in a grant scheme, the secretariat needs appropriate administrative and communication skills. Procedures for application and implementation need to be as streamlined and clear as possible. Simplified procurement methods (shopping or commercial practices) are often more suitable for business grantees, since it is in their interest to use funds efficiently. Tracking and documenting the outcomes of innovation funding are too often neglected in grant schemes, yet a sound M&E system enables grant schemes to identify and address problems as they arise. Specialized M&E personnel can be employed in the grant secretariat; the responsibilities can be outsourced to independent experts; or a combination of both options may be used. Grant recipients often are not adept at fulfilling M&E requirements and will benefit from *specific training and hands-on support*.

Box 5.13 Recommended Options for Grant Program Secretariats

- An existing public institution, such as a ministry or local government agency, can generate additional political buy-in, institutional sustainability, and leverage. The same public institution may also be the key stakeholder within the grant and innovation system and provide a higher chance of sustainability or institutional mainstreaming. Disadvantages arise from the tendency of such institutions to be bureaucratic, interfere politically, and lack commercial acumen and understanding.
- An existing private entity that brings an aptitude for business and less bureaucracy but could be affected by conflicts of interest or unwillingness to meet donor requirements (procurement and fiduciary practices or social/environmental safeguards, for example).
- Creating an autonomous public/private unit.
- Using the services of a NGO when independence and flexibility are most important and local capacity is very low. NGOs bring knowledge about donor requirements but may entail higher costs, problems with long-term institutional sustainability, and a lack of business acumen.
- If outsourcing to a competent body is not feasible, it is usually best to provide sufficient capacity building to the staff of the hosting organization, and/or supplement it with technically and administratively appropriate staff.

Source: Authors.