COMPETITIVE AGRICULTURAL TECHNOLOGY FUNDS IN DEVELOPING COUNTRIES

Gerard J. Gill and Diana Carney

Dissatisfaction with traditional mechanisms of funding agricultural research and dissemination (AR&D) in developing countries has led to the introduction of competitive agricultural technology funds (CAM) in an increasing number of them. This model is now favoured by many donors, despite the fact that available information on its modalities and performance has been fragmentary. This paper reviews experience with ten such funds in very different national and institutional settings.

Policy conclusions

- Where there is sufficient AR&D capacity in-country to constitute an effective market, a competitive fund can stimulate competition and enhance efficiency. Where there is not, it is better for donors to concentrate on building up this capacity through institutional development across all sectors, not just in the public sector as in the past.

- Among smaller countries where this is impracticable an alternative worth investigating is the regional fund.

- Funds work best where government leads the institutional reform initiative, has a clear vision of priorities and is willing to put t necessary mechanisms and modalities in place.

- The best 'home' for a CATF is in an independent institution which does not bid for projects. Locating a fund within a traditional public sector AR&D institute minimises success prospects.

- Competitive funds are more expensive to administer than block grant, and the smaller the fund the higher the proportion of costs needed for quality administration. In the interests of setting up a pluralistic national system, funds should pay the overheads and staff costs of those from outside the public sector.

- Monitoring and evaluation should focus on impact on intended beneficiaries. There is as much to be learned from studying failure as from studying success.

- When setting up a fund, every effort should be made to draw on the 30 years of experience of developing this model in Latin America; including the adaptation of modalities, mechanisms, guidelines and pro formas.

- The governing body should be high profile, pluralistic and with no majority from any one stakeholder. Priorities should be set by this body in line with national policy priorities.

- Where there is commitment to institutionalised reform it may be appropriate to establish an endowment based on debt converse provided the government is prepared to make a significant contribution in local currency.

Introduction

Agricultural research and delivery systems have performed disappointingly in the least developed countries, particularly those of sub-Saharan Africa. In some developing countries in Asia and Latin America there has been a degree of success, especially in adapting 'green revolution' technology from centres under the umbrella of the Consultative Group for International Agricultural Research (CGIAR), and popularising it in agriculturally-favoured areas (i.e. those with favourable production potential and reasonably good market access). But even
in these countries little has been achieved in risk-prone environments (i.e. those which rely on rainfed crops, have harsh environments with uncertain rainfall, and poor physical and social infrastructure), and little has been done to address problems that impact directly on disadvantaged farming communities.

Even public sector agricultural research and development institutions that were once relatively successful are failing to adapt to new demands, constraints and challenges (Echeverría et al., 1996). These include: declining levels of domestic and donor support for agriculture, economic liberalisation, structural adjustment and globalisation. A fundamental problem is that AR&D institutions are typically funded by block grants whose renewal is seldom linked to performance or impact. Without such a linkage, there tends to be:

- lack of client orientation;
- lack of prioritisation in line with national policy objectives;
- failure to allocate scarce resources efficiently;
- political interference in governance and management;
- lack of transparency and professionalism in project selection, management and evaluation;
- bureaucracy and over-centralisation

**Competitive agricultural technology funds**

Efforts have been made in recent years to revitalise AR&D by relating funding more closely to performance. The establishment of competitive agricultural technology funds found increasing favour in this context, with both donor agencies and some national governments.

The model has been used to fund scientific research in developed countries for many decades, and for at least 30 years in Latin America. The fund is a pool of money designed to support the development of agricultural technology. When it is established a set of rules guiding its use, management and accountability arrangements are put in place in support of its objectives. The CATF can cover research, technology delivery and uptake processes. There is advance identification of priority areas in which activities will be supported. The availability of funds in the agreed thematic areas is then widely advertised, and proposals are solicited. The key is open competition to work on sections of an agreed agenda for the development and delivery of agricultural technology.

**Objectives**

Specific objectives of the different funds vary, but Kampen (1997) has identified a number of aims that are common to many competitive agricultural research funds (Box 1). Some funds also have an equity focus that requires applicants to address the technological needs of the disadvantaged. Some have taken decentralisation as an objective, giving extra weight to applications from outside the major cities, the principal universities and the mainstream research organisations, with the aim of strengthening AR&D as an inclusive national system.

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<th>Box 1: Ideotype of CATFs</th>
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<td>- Autonomous or semi-autonomous status in relation to all stakeholders.</td>
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<td>- Priority areas clearly derived from national policy priorities Requirement of evidence that the proposed research is demand-driven.</td>
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<td>- A set of rules that encourages the widest possible participation in the scheme.</td>
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<td>- Wide advertisement of the programme and of conditions for application.</td>
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In a recent review, Echeverria (1998) listed what are generally perceived as the advantages and disadvantages of CATFs. The major ones are listed in Box 2.

### Box 2: Advantages and disadvantages of CATFs

**The advantages include:**

- increased effectiveness by directing resources by merit;
- increased efficiency by reducing costs, eliminating duplication, increasing accountability of research resources, and increasing utilisation of infrastructure by providing operating resources;
- closer alignment of AR&D with national research priorities,
- promotion of a demand-driven national system;
- strengthened links between research and extension organisations, agricultural production and agricultural policies;
- induced institutional change in the national innovation system;
- merit review and expert feedback.

**The disadvantages include:**

- lack of support for medium to long-term research agenda, human capital development or new research infrastructure; higher funding uncertainty;
- time required for applying, revising and reporting reduces time for research;
- low sustainability of funding when national constituency is weak and external funding sources dry up;
- in some countries there are too few potential Providers to create a competitive market.

Based on Echeverria, 1998

Some commentators also detect a hidden agenda in such funds, arguing that where the public sector AR&D establishment is firmly entrenched and resistant to change, a CATF may be set up with the tacit objective of undermining the existing system by creating a parallel one that begins to produce results. The idea seems to be that when the two systems are then viewed side by side, the system that has consistently failed to deliver will either be forced to reform or will collapse.

**Funding**

There is an attractive hypothesis that CATFs can spur a virtuous circle of more relevant, demand-driven and
cost effective AR&D and that this will in turn lead to increased sustainability of funding: once national
governments, donors and the private sector are convinced that their priorities are indeed being better served
through the establishment of these new funding mechanisms, they will increase their own support to the funds.
However the difficulties can be great, particularly on the government side. Financial sustainability requires a
strong and lasting political commitment to the idea that the public sector should retain a strategic role in AR&D,
and this is often lacking, particularly in the finance ministries of countries undergoing structural adjustment.

Beginning to test this hypothesis was a major - though difficult to achieve - objective of the study reported here.
At a general level, there is no compelling evidence that this virtuous circle is automatically generated by the
establishment of CATFs; there are too many other difficulties that can get in the way, not least the fact that
financially hard-pressed governments may accept donor-funding of CATFs as a means of reducing their own
input. In any case it is almost certainly too ambitious to expect a single institutional mechanism to achieve this
notoriously elusive goal.

Even if there is scope for increasing the overall productivity of the research system through the establishment
of CATFs, there remains the problem of where the funding is to come from. In Asia and Latin America some
funds are financed entirely from domestic sources, so the answer is clear. At the other extreme, in sub-
Saharan Africa bilateral donors and development banks have been amongst the major proponents of the
competitive fund model, and have provided almost all the finance.

An approach with many proponents is that of drawing funds for the CATF from within the sector either through
a tax on agricultural production (the cess) or through voluntary contributions ('checkoffs') (Gilles, 1997). A
problem common to both is that the poorer the country and the more subsistence-oriented its agriculture, the
less scope there is for raising revenue in this way. Nor can the least developed countries easily fund AR&D
from general taxation because of their generally low domestic tax base. The cost of establishing and
maintaining funds of the required size is high, and even if their introduction does succeed in raising cost-
effectiveness, the benefits may not materialise in a form that generates either tax revenue, or revenue from
producers' associations that can be ploughed back. This is especially true of funds with a strong focus on the
problems of the most disadvantaged.

Continued donor funding is needed in poorer countries, but this too tends to be unreliable except within short-
term horizons. Endowments are a further option, in which interest generated from an investment finances the
fund (Weatherly, 1996). However, the initial investment must be large and few donor agencies are prepared to
make such a commitment; many are prohibited by their own statutes from doing so. If these difficulties can be
overcome, debt conversion could be used to endow a fund, but it would be important for the host government
to demonstrate commitment by contributing some collateral investment (Dunn, 1997).

The case studies

The case study funds are listed in Box 3. They were chosen to provide: (a) geographic spread; (b) examples of
both long established and relatively new funds; (c) examples of national, sub-national and regional funds; (d)
examples from the technology development and technology transfer ends of the spectrum; and (e) examples of
funds with and without donor involvement. The case study countries also represent wide diversity with respect
to number of development-related variables. A common framework of analysis was used throughout in order
to maximise scope for comparison between the different funds. Greater detail can be obtained in Gill and

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<td><strong>Africa Regional:</strong> ATTF/ASARECA: The Agricultural Technology Transfer Fund (ATTF) of the Association for Strengthening Agricultural Research in East and Central Africa (est. 1994 to support transfer of agricultural technologies; entirely funded by World Bank and USAID) (Sam Chema).</td>
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<tr>
<td><strong>Chile FONDECYT:</strong> Fondo Nacional de Desarrollo Cientifico y Tecnologico (The National Fund for Scientific and Technological Development) under Chile's National Commission for Scientific and Technological Research (est. 1981 under government science and technology development programme; 100 per cent government funded) (Julio Berdegue and German Escobar).</td>
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<tr>
<td><strong>Chile FONDEF:</strong> Fondo de Fomento del Desarrollo Cientifico y Tecnologico (Fund for the Promotion of Scientific and Technological Development) under Chile's National Commission for Scientific and Technological Research (est. 1991 with loan from Inter-American Development Bank, but majority (72 per cent) local contribution) (Julio Berdegue and</td>
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Evidence

The CATF promises a ready mechanism to make AR&D more efficient, effective, relevant and accountable. However, the case studies suggest that fund performance, especially in the least developed countries, has in many cases been disappointing. Governments or donors wishing to set up a CATF should take the following considerations into account.

Competitive and collateral elements

When funds are established, two separate sets of characteristics are often confused. The mere fact that researchers have to compete for funding implies certain benefits, at least in theory, including mechanisms for prioritising proposals most consistent with the fund’s objectives.

Collateral objectives are not derived from the element of competition, but when included tend to make it more effective. They include improving the adequacy and dependability of funding, drawing upon the comparative advantage of a wide range of institutions, achieving greater synergy by enhancing networking and teamwork, and improving management structures by making them more decentralised, flexible, accountable and transparent. Other collateral objectives will make the end product more relevant and problem-oriented.

The Latin American case studies show that it is possible to have competitive mechanisms without any of the above collateral objectives. The latter can be achieved only if they are put into operation through appropriate eligibility, screening and prioritisation criteria, and if appropriate management procedures are followed throughout.

The context of a national system

Defining the CATF to include both competitive and collateral objectives implies that the grant-making process must be thrown open to competition from those outside the core public sector institute(s). Competition must not be blunted by eligibility and screening criteria that impose de facto entry barriers. Even broadly defined,
however, CATFs can only ever be a component of the system. Many funds seem to have been established on
the implicit assumption that other components such as appropriate skills, equipment and infrastructure were
already in place. Where these have deteriorated or are outdated, they have to be regenerated before CATFs
can function fully.

Management efficiency

Inadequate staffing levels, the prevalence of part-timers among senior staff, time-consuming procedures and
inadequate training have been major management headaches in most of the smaller funds. Inadequate access
to modern communications methods is found even in otherwise well-managed funds. Even the most efficient
funds can have difficulty in handling changes in project specifications and in responding to changing
circumstances. Reliance on volunteer inputs for functions such as pre-screening, peer review and proposal
evaluation in countries where professional salaries are very low often leads to serious processing delays. A
related issue is confidentiality in relation to the above processes, especially in small countries. There are clear
diseconomies of scale in management and administration: while funds in the larger countries cost 5-6 per cent
to manage, some of the smaller ones cost 36-43 per cent.

Most funds advertise the availability of their grants openly and widely. Where this is not the case, examination
of the distribution of awards supports suggestions that restrictive practices are in operation.

Monitoring and evaluation of funds concentrates on financial aspects. Technical evaluations tend to look only
at task completion, not impact on intended beneficiaries. It is very rare for technical progress reports to be
rejected or returned for amendment, and no case was identified of a project being terminated for poor technical
performance.

Smooth inflow of resources to the funds has not always been matched by an equally smooth outflow to
grantees. The reasons are over-centralised financial management systems, processing delays attributable to
under-staffing, awardees' failure (in the eyes of fund managers) to properly account for advances and extreme
cautions in disbursement, fed by fear of fraud. The provision of clear guidelines at all points in the project cycle
is widely appreciated and where there is a well thought-out pro-forma, grantees do not seem to find application
and reporting requirements unduly burdensome. In this as other respects, more attention needs to be paid to
learning from the experience of already established funds, especially, for instance, from Latin America's
lengthy experience.

Quality and relevance

The governing bodies of CATFs are usually public sector dominated. Where there is provision for a pluralistic
board some positions allocated outside the public sector often remain unfilled, or participation in meetings is
low, suggesting perceived inability to influence decisions. Priorities emerging from such boards are not likely to
be balanced. Nor, however, can priority setting be left to scientists alone.

Most funds urge beneficiary participation in proposal preparation, but firm evidence of this is rarely required.
Scoping grants are not used in any case study fund. A number of funds require a cash contribution in order to
demonstrate demand drive and hence relevance, but this tends to exclude the poor. Farmers were rarely
involved in the initiation phase, and even more rarely at subsequent stages. Where commercialisation is a fund
objective, 'demand drive' has to come from consumers, at least as much as farmers. A sensible balance must
be struck between the views and interests of all stakeholders, the precise nature of which will depend on
individual circumstances and the objectives of the fund.

Case study funds with an equity focus have been more successful at addressing poverty issues than gender
issues. They have probably been least successful in addressing the problems of groups disadvantaged on
ethnic grounds. One reason appears to be inadequate training and sensitisation amongst those awarded
grants. The case study funds which focus on the strategic end of the research spectrum do not directly concern
themselves with equity issues, but if the work they support ultimately lowers the price of food or significantly
affects employment opportunities, it is of great relevance to the disadvantaged. However no evidence of this
indirect impact was uncovered in the case studies.

Decentralisation is an area in which there may be a trade-off between quality and relevance: it has been
resisted in one case study fund because it was felt that it would compromise quality, it was promoted in another
because of a belief that it would increase relevance. The case studies clearly show that where networking is a
specified aim of a fund, there tends to be a relatively high level of inter-disciplinarity and institutional
complementarity, and a relatively wide range of activities within the research-to-delivery spectrum, but there is
little public-commercial sector networking. Where this exists there is important synergy. Most funds can provide
a maximum of three years funding, which distorts the portfolio towards short-term issues, regardless of relevance to the country's needs and priorities.

Financial sustainability The case study funds which have a wide basis of support tend to be found in countries that have a tradition of reasonably successful research and extension and a supportive legal and financial framework. In these same countries the national authorities, rather than donor agencies, have tended to take the lead in establishing the fund, indicating an underlying level of experience and self confidence. Funds that have their origins in national initiatives also tend to be carefully targeted.

Many of the newer funds exhibit a certain similarity of objectives. As these are much in keeping with current development thinking, 'donor drive' is implied. Staff at one African research institute described CATFs as 'transient', 'donor-imposed' and 'faddish', which does not augur well for the sustainability of this approach in countries where donors have taken the lead. So far, there is little evidence of donor-initiated funds being taken over by national governments.

Funds in which donors have had close involvement in establishing modalities tend to have a strong equity focus, but the funds that have best stood the test of time have no such remit. Lacking this, fund managers have been able to concentrate on serving clients who have both their own resources and the political influence to ensure that financial inflows can be sustained. Funds with a central equity focus require a great deal more effort and political commitment if they are to have any real prospect of sustainability.

References


