

AGRICULTURAL RESEARCH IN AFRICA

Investing in Future Harvests



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CHANGING DONOR TRENDS IN ASSISTANCE TO AGRICULTURAL RESEARCH AND DEVELOPMENT IN AFRICA SOUTH OF THE SAHARA

Prabhu Pingali, David Spielman, and Fatima Zaidi

The challenge of feeding 2.4 billion people in Africa south of the Sahara (SSA) by the middle of the current century is a topic set squarely on the development agenda of the global donor community. But this community is also a loose collection of actors—developing-country governments, multilateral agencies, and charitable foundations—with varying levels of commitment, coordination, and interaction. If solutions to Africa’s challenges require long-term investments in agricultural research for development (AR4D), as demonstrated by many of the chapters in this volume, and if few governments in the region have adequate public resources to commit to research, then donor assistance will likely play a key role in financing. While recent trends suggest that development assistance flows are on an upswing for many agricultural sector activities, including research, it remains to be seen whether the donor community and its many stakeholders will stay the course and continue investing in AR4D in Africa over the long haul.

This chapter examines one facet of this resourcing challenge—the role and contribution of the donor community and official development assistance (ODA) to AR4D. Specifically, it examines historical and emerging trends in the international donor community in terms of who is investing, how much they are investing, and where their investments are targeted. The chapter goes on to explore the potential impacts of these donor trends on future human and agroecological landscapes, with a particular focus on SSA.

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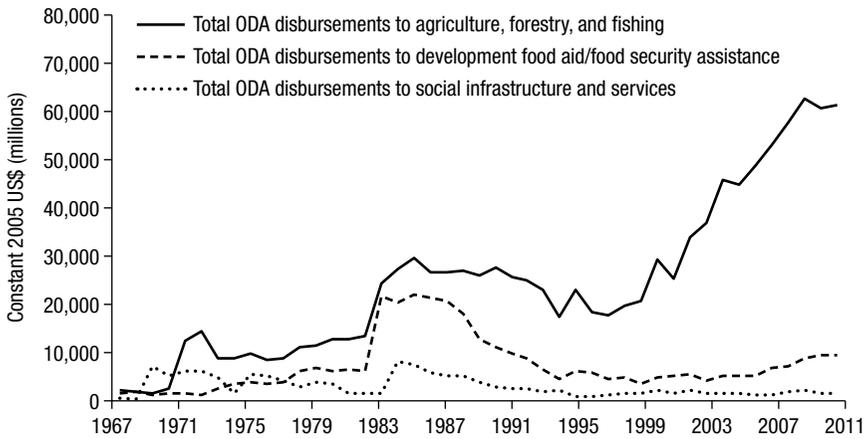
Past Trends in Donor Assistance to Agricultural Development

Since the 1960s, donor assistance to agriculture and rural development has been a largely successful investment. Development assistance allocated to agricultural research, rural infrastructure, human capital development, and agricultural policy reforms has demonstrated the important contribution of agricultural development to poverty reduction and economic growth (Staatz and Eicher 1990; World Bank 2007a). In general, the returns to agricultural development assistance have been positive, despite occasional failures resulting from poorly designed projects and policies. And within the broad category of agricultural development, agricultural research is often cited as the single-best investment in terms of increasing productivity and reducing poverty (Fan and Pardey 1997; Fan 2000; Fan, Hazell, and Thorat 2000).

Among many investments made in agricultural research during the past five decades, South Asia's Green Revolution—the doubling of the yields and output of South Asia's major food staples between 1965 and 1985—is one of the most cited examples of this high payoff (Hazell 2010; Pingali 2012b). But similar successes have also been achieved in Africa at different scales and with different crops and technologies (Spielman and Pandya-Lorch 2009; Haggblade and Hazell 2010). A shared characteristic of many of these high-return investments was the contribution of modern science, particularly plant breeding and cultivar improvement, which was supported by the donor community (Evenson and Gollin 2003; Raitzer and Kelley 2008; Renkow and Byerlee 2010). Long-term donor commitments paid handsomely relative to many alternative public investment opportunities (Chapters 3, 5, 6, and 11, this volume).

The public and private donors who financed many of these investments were considered visionaries of their time (Lele and Nabi 1991). The Ford Foundation and Rockefeller Foundation were the drivers behind the creation of an international agricultural research system focusing on major staple food crops (rice, wheat, and maize), while the World Bank and other members of the bilateral and multilateral donor community invested in the creation of a broader research network under the CGIAR umbrella.

Yet despite the enthusiasm for agricultural development through the 1970s—and despite the many development successes in Asia, Africa, and Latin America—donor assistance declined dramatically in the mid-1980s (Pingali 2010). ODA trend figures point to several “lost decades” in donor support to AR4D, including research in and for African agriculture (Chapter 1, this volume). The lost decades in funding began from a peak in 1983–1986 when yearly ODA disbursements to agriculture, forestry, and

FIGURE 6.1 Official development assistance to agriculture and related sectors, 1967–2011

Source: Calculated by authors based on data from OECD (2013a) and World Bank (2014a).

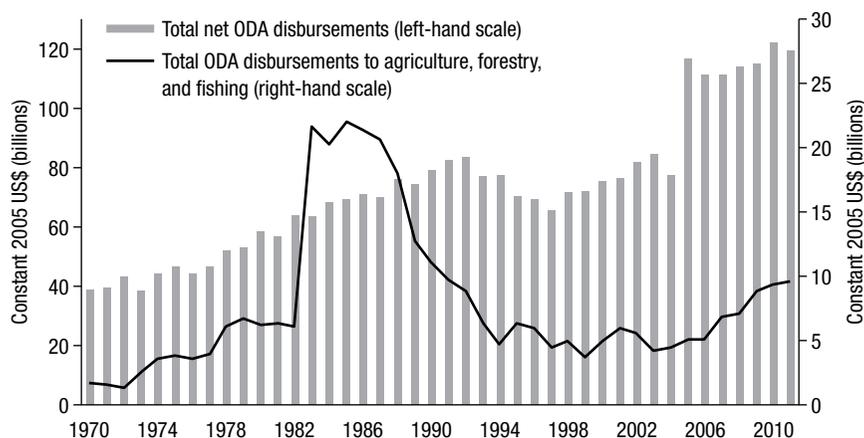
Note: ODA = official development assistance.

fishing averaged \$21.4 billion¹ (in constant 2005 terms) and declined to just \$4.5 billion by 1997–2000, according to data from the Organisation for Economic Co-operation and Development (OECD 2013a) data. The period of stagnation continued through to 2004–2006 (Figure 6.1).² As a proportion of net ODA disbursements, agriculture, forestry, and fishing dropped from almost 14.7 percent in 1983–1986 to 1.9 percent in 1997–2000. And while it can be argued that figures derived from OECD are fraught with data-quality concerns, there is sufficient acknowledgment in the donor community itself that the so-called lost decades are real (see, for example, World Bank 2007a).

The causes are fairly well documented. Donor support for agricultural development and agricultural research and development (R&D) began to dwindle in the mid-1980s in response to low and declining real food prices worldwide, particularly between 1985 and 2005; growth in the number of aid recipients competing for a relatively fixed pool of funding; and concerns about persistent policy biases against agriculture, inefficient bureaucracies, poor project management, short funding cycles, long delays in completion, and

1 All currency is in US dollars, unless specifically noted otherwise.

2 Note that Figure 6.1 shows a sharp increase in ODA disbursements to agriculture, forestry, and fishing between 1982 and 1983; OECD/Development Assistance Committee data do not provide a sufficient level of disaggregation by country, donor, or sectoral activity to fully explain this trend in the data.

FIGURE 6.2 Official development assistance, 1967–2011

Source: Calculated by authors based on data from OECD (2013a) and World Bank (2014a).

Note: ODA = official development assistance.

lags between research and impact (Byerlee 1998; Islam 2011). More generally, the donor withdrawal from agriculture was part of a larger withdrawal from many sectors receiving development assistance in SSA during the mid-1980s (Figure 6.2). This was a period of widespread complacency about agriculture resulting from high global food surpluses; low commodity prices; competing commitments to health, education, and other social-sector investments; and structural adjustment programs designed to reduce public expenditures on agriculture and other sectors of the economy (Christensen 1994; Islam 2011). However, this withdrawal from agriculture persisted even as ODA disbursements began to recover in the mid- to late 1990s (Figure 6.2), particularly for social infrastructure and services (Figure 6.1).³

Only during the past decade have there been signs of a recovery in ODA for agricultural research. Recent signs of a recovery in ODA to agriculture, forestry, and fishing emerged after funding levels hit bottom in 1997–2000: following a stagnant period in 2004–2006, average yearly ODA disbursements increased to \$10.38 billion in 2009–2011, although they remained at just 2.3 percent of total ODA during that period.

3 Note that this chapter does not address the related issues of aid effectiveness, tied aid, or the extent to which ODA earmarked for developing countries actually flows back to donor countries in the procurement of goods and services associated with development assistance, or the issue of ODA's impact or the attribution of impact.

The groundwork for this tentative upswing in donor funding was laid during a succession of high-profile global, regional, and national political commitments that began in 2000. The obvious watershed event was the United Nation's Millennium Development Goals (MDGs), a compact under which 189 countries committed to new and lofty medium-term development outcomes. The first and most visible goal—halving extreme poverty and hunger by 2015—contributed to a renewed global interest in food security; agricultural development; and, more implicitly, agricultural research. On the global stage, this priority was further taken up by the Group of Eight (G8) nations at their 2005 Gleneagles Summit and in subsequent forums.

In Africa, the MDGs were followed by the Comprehensive Africa Agriculture Development Programme (CAADP) (Chapter 1, this volume). African ownership and leadership of CAADP played a key role in putting AR4D squarely on the regional and national development agendas, and the 2006 Framework for African Agricultural Productivity (FAAP), organized with support from the Forum for Agricultural Research in Africa (FARA), provided a roadmap for improving agricultural productivity through applications of modern science, better donor coordination, and stakeholder engagement (FARA 2006).

These regional efforts gained further footing when the World Bank capped off a renewed global commitment to agriculture with its 2008 World Development Report titled *Agriculture for Development* (World Bank 2007a). This was the first time agriculture was featured in the organization's highly influential annual report since 1982, and helped frame several World Bank initiatives on agricultural research in the years that followed. For example, one of the World Bank's hallmarks of its renewed commitment to agricultural research has been the introduction of a regionalized approach to programs aimed at enhancing agricultural productivity in East, West, and Southern Africa (Chapter 2, this volume). These programs allocate upward of \$80 million over six years in each subregion to strengthen scientific and technical capacity in agriculture, encourage technology transfers and knowledge sharing, and establish subregional centers of scientific excellence in specific crops and systems (World Bank 2007b, 2009, 2014b).

But do these subregional and country-level efforts actually account for the recent upswing in donor funding to agricultural research? While CAADP and the FAAP roadmap focus attention on AR4D, and while the World Bank's regional agricultural productivity programs bring new funds to the task, their overall contributions need to be seen in terms of how effective they are in leveraging funds from other sources, including African governments

themselves. Expenditure reviews suggest that budgetary support to agriculture is not meeting the CAADP target in most countries (Chapter 5, this volume). A number of issues ranging from poor data availability and quality, to the lack of an agreed-upon measurement system covering agriculture, to low stakeholder participation in the CAADP process may partly explain why these targets have not been met by so many countries (Morton 2010; ONE 2013; Randall 2011).

Furthermore, any new resources garnered from subregional and country-level efforts bring with them some of the same challenges as experienced in the past. For example, a new subregional approach to funding agricultural research may not change the traditional financing mechanism by which the World Bank and other donors direct funding to specific national agricultural research institutes, programs, and projects. This may benefit some research activities, but there is sufficient evidence suggesting that short-term commitments leave national agricultural research systems to struggle with the sharp loss of funding when the funding ends (Chapter 4, this volume). Moreover, other areas of agricultural research may be left behind when certain commodities take precedence. Whether these programs are constructive engagements that leverage regional spillover effects, overcome small-country constraints, and sustainably improve capacity and resource deficits of national agricultural research institutes (NARIs) remains to be seen (Chapter 14, this volume).

So is there a different way to understand the recent upswing in donor funding to agricultural research? Arguably, the single-most significant driver of this upswing was the global food price crisis of 2007–2008, when the international prices of major food cereals rapidly increased (Headey and Fan 2010). In response to the price crisis, G8 countries assembled to pledge \$20 billion to agricultural development at their 2009 L'Aquila Summit—pledges that increased to \$22 billion at the Pittsburgh G20 summit with commitments from additional countries. The 2009 G8 L'Aquila Food Security Initiative (AFSI) pledges and the wider commitment to global food security, agricultural research, and productivity growth have since been the subject of much follow-up discussion at subsequent gatherings of the G8 and G20 groups of nations (Coppard 2010). This included an increase in disbursements to CGIAR, which invests more than 50 percent of its resources in Africa—on the order of \$922 million between January 2008 and July 2009—to raise agricultural productivity through scientific research (G8 2009).⁴

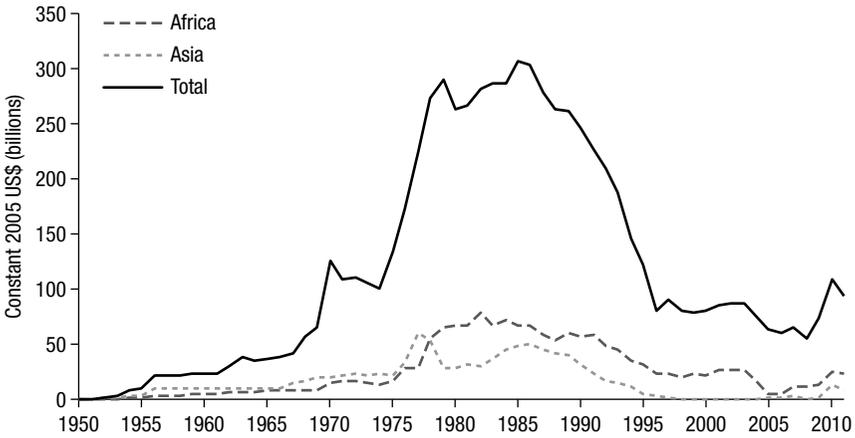
⁴ Note, however, that some partner countries have considered their ODA loans for agriculture development as financial disbursements under the G8 commitment.

A key driver behind this upward shift in assistance to agricultural research is the renewed commitment of traditional bilateral donors, such as the European Union (EU), United Kingdom, and United States, as well as the traditional multilateral agencies, such as the World Bank. The EU pledged \$3.8 billion to agricultural development in response to AFSI in 2009. Similarly, the US “Feed the Future” initiative committed \$3.5 billion in 2010 over three years to results-driven programming in agricultural development and food security that targets some of the world’s poorest and most vulnerable countries and communities (Feed the Future 2011). The World Bank reentered the field by expanding its investments in agricultural development lending and grants, while also assuming trusteeship of the Global Agriculture and Food Security Program (GAFSP), an initiative begun in 2010 that made available some \$521 million (of \$925 million pledged by most of the world’s major donors) to support strategic investment plans for national and regional agriculture and food security through both public- and private-sector financing (GAFSP 2011).⁵ All of these donors—working in concert with other bilateral donors, multilateral agencies, and charitable foundations to encourage far-reaching governance and structural reforms—boosted CGIAR funding from \$500 million in 2008 to \$1 billion in 2013, raising hopes that the world’s largest agricultural research partnership will play an expanded role in tackling the world’s major development challenges (CGIAR 2013).

These major donors—alongside many other bilateral donors and multilateral agencies—have committed significant resources to agriculture since 2009, and a significant portion of this commitment has been further allocated to agricultural research. There are also signs of even greater commitment to agricultural research in the near future. For example, the Sustainable Development Goals (SDGs)—currently under development and expected to be issued in 2016 as a follow-on to the MDGs—are expected to include both agricultural productivity and environmental stewardship as key

5 GAFSP is the first global fund designed exclusively for smallholder productivity growth in least developed countries. It is a competitive grants program that was set up to support public- as well as private-sector efforts for enhancing smallholder productivity. While the GAFSP fund is administered by the World Bank, decisions about grants and performance tracking are made by a steering committee comprising major GAFSP donors, national partners, and civil society representatives. National proposals are reviewed by an independent technical committee, then the steering committee makes a final selection. In the case of SSA, grants are explicitly tied to CAADP country plans and priorities. Since the amount of funding provided by GAFSP is relatively small, its success depends on its ability to leverage additional resources from ongoing ODA and domestic efforts in each country. GAFSP may also play an important role in helping to coordinate disparate national efforts targeting the same smallholder populations. It is too early to say whether GAFSP will be successful in reinvigorating smallholder agriculture in the least developed world, but it is an experiment worth monitoring.

FIGURE 6.3 Estimated funding allocated to agricultural research by the United States Agency for International Development, 1950–2011



Source: Alex (2013).

goals, potentially encouraging new global, regional, and national commitments toward agricultural research to eradicate hunger and poverty by 2030 (Farming First 2013; UN 2013).

Nevertheless, it remains to be seen whether these new resources will lead to significant, long-term, and steady increases in assistance to international and national research institutes, programs, and activities. For example, US assistance to agricultural research since 2009 (Figure 6.3) is far less in real terms than what was provided in the 1970s, suggesting that the US renewed commitment is still a strategic “work-in-progress” at best (Anderson and Roseboom 2013). Also, it is not entirely clear whether bilateral funds are ultimately destined for national systems, or instead earmarked for CGIAR and regional organizations—a strategy that does little to reverse the depreciation that occurred in national systems during the lost decades. Ultimately, this may suggest that only multilateral donors—primarily the World Bank—will constitute a renewed source of funding for national systems, although data from past trends do not indicate what may be in store from the World Bank for the future (Pardey et al. 2006). Further, it is unclear whether assistance to agricultural development and agricultural research is being better coordinated, targeted, and evaluated in light of the Paris Declaration on Aid Effectiveness (2005), the Accra Agenda for Action (2008), and the Busan High Level Forum on Aid Effectiveness (2011), among other events. Most donors would

argue yes. But critics—for example, ONE (2013) and Coppard (2010)—remain skeptical. Others, such as Benin (2014), who focuses more specifically on AFSI, suggest that, while there are positive signs, it is still too early to tell.

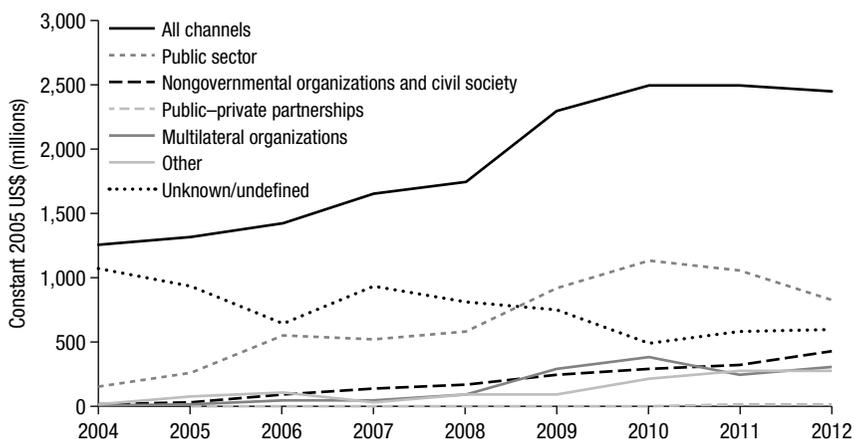
Emerging Trends in Donor Assistance to Agricultural Development

Regardless of what the major donors are doing, another important aspect of the tentative increase in assistance to agricultural research is the entry of new donors to the landscape (Lele 2009; Pingali 2010). Unfortunately, statistics compiled by OECD, the primary data source for most analyses of ODA trends, shed little light on these new donors, because few report their development spending to OECD, and among those that do report, few do so in a manner that is comparable with other sources of assistance or in a way that separates funding for agricultural research. As of 2011, only three non-OECD countries and one charitable foundation reported their assistance to agricultural development to OECD's Creditor Reporting System (OECD-CRS).⁶

But even with this underreporting and measurement problem, OECD statistics suggest several emerging trends. First, OECD reports that nonbilateral/multilateral channels for ODA disbursement are diversifying: between 2004 and 2011, the share of ODA disbursements through nongovernmental organizations (NGOs), civil society, and public–private partnerships increased from 1.3 percent of the total to 13.7 percent (Figure 6.4). Second, OECD reports that the share of total assistance provided by new donors to agricultural development grew from zero in 2008 to 5 percent in 2011 (Figure 6.5). And from among those reporting developing assistance spending to OECD, the Bill & Melinda Gates Foundation accounted for 92 percent of the yearly funding attributable to sources other than traditional bilateral and multilateral donors during 2009–2011.

Necessarily, the analytical usefulness of OECD's statistics on ODA to agricultural development is limited by several known shortcomings (Coppard 2010). First, as already mentioned, many nonmembers of OECD's Development Assistance Committee (OECD-DAC) and nonofficial donors simply do not report to OECD-CRS, including, among many others, the Rockefeller Foundation and the Ford Foundation—two of the earliest and most influential donors to agricultural development. Second, the actual types of assistance

⁶ Only the Czech Republic, Kuwait, the United Arab Emirates, and the Bill & Melinda Gates Foundation reported their assistance to agricultural development to OECD's Creditor Reporting System. For these donors, the earliest year for which assistance was reported is 2009.

FIGURE 6.4 Official development assistance disbursements by type of channel, Africa South of the Sahara, 2004–2011

Source: Calculated by authors using data from OECD (2013b).

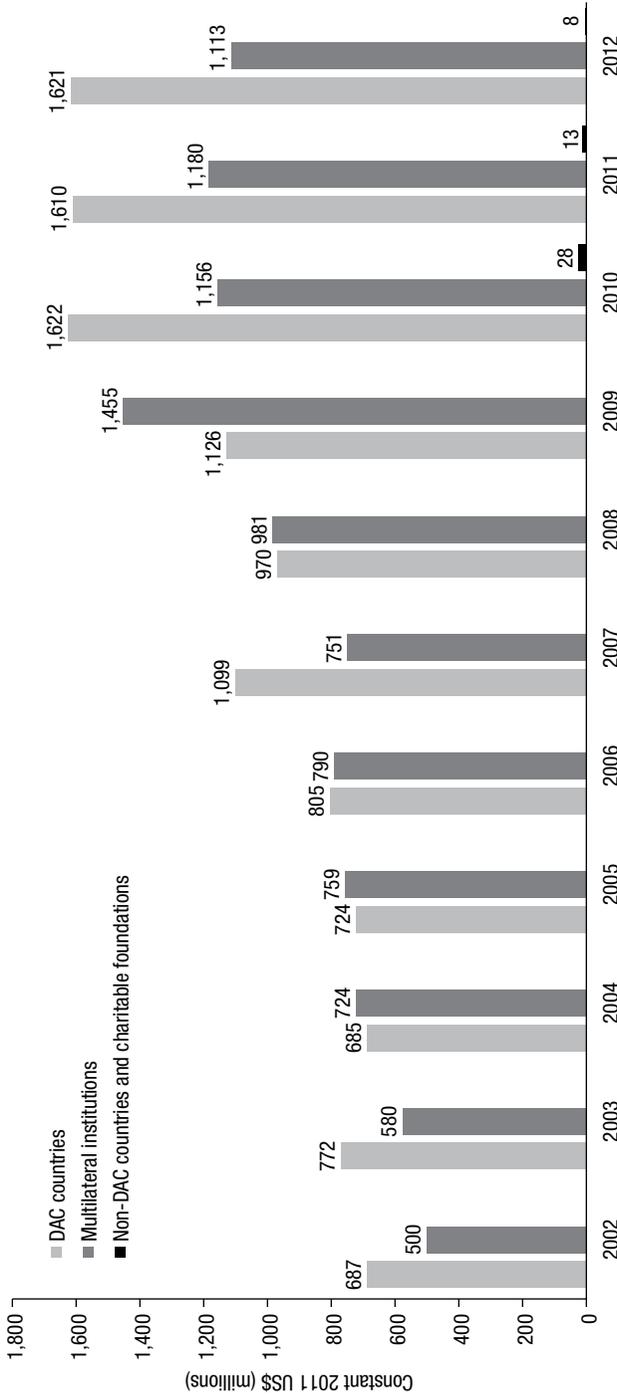
Note: Other channels include, for example, universities, colleges, or other teaching institutions, and research institutes or think tanks; unknown channels are listed as such by OECD (2013b).

reported cover a range of funding mechanisms that vary in their degree of relevance to development or research: categories, such as ODA grants, ODA-like grants, ODA loans, private grants, and equity investments, are all open to interpretation. Third, complete data series on agricultural development begin only at 2002, making it difficult to match trends by individual donors with the more aggregated trends dating back to the mid-1960s.

As a result, OECD-CRS data overlook the rising proportion of assistance to agricultural development from other avenues, chiefly (1) new, high-profile bilateral donors, such as Brazil, Russia, India, and China; (2) new, smaller, low-profile bilateral donors, such as Argentina, the Czech Republic, Israel, Poland, Korea, Kuwait, Qatar, Saudi Arabia, Slovakia, Taiwan, Thailand, and Turkey; and (3) many charitable foundations, private philanthropies, and corporations, such as the Tata Trusts, Gatsby Charitable Foundation, and McKnight Foundation (Table 6.1).

Smith, Yamashiro, and Zimmermann (2010) attempt to remedy this with a snapshot of ODA circa 2007–2009 from new and emerging bilateral donors. Their analysis draws primarily on net disbursement data from OECD data for those countries reporting to OECD and official government sources for Brazil, China, India, Russia, and South Africa. They report a total of \$11.8 billion in ODA, 80 percent of which is attributable to developing-country donors, and

FIGURE 6.5 Development assistance to agriculture, Africa south of the Sahara, 2002–2011



Source: Calculated by authors based on data from OECD (2013b).

Note: DAC countries = countries that are members of the Organisation for Economic Co-operation and Development's Development Assistance Committee.

TABLE 6.1 Official development assistance from new and emerging donors to developing countries, 2007–2009

Region/country	Estimated official development assistance (US\$ millions)
Emerging European Union donors	1,140
Other emerging developed-country donors	1,190
Brazil	437
China	1,800
India	610
Kuwait	283
Saudi Arabia	5,564
South Africa	109
Taiwan	435
Thailand	179
United Arab Emirates	88
Total (all new/emerging bilateral donors)	11,835
Total (all new/emerging bilateral developing-country donors)	9,505

Sources: Calculated by authors based on Smith, Yamashiro, and Zimmermann (2010) citing official government publications, OECD statistics, and various other sources.

Notes: Emerging European Union donors refers to Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia; other emerging developed-country donors refers to Iceland, Israel, Liechtenstein, Russia, and Turkey. The figure for China is based on the lower estimate from Smith, Yamashiro, and Zimmermann (2010).

58 percent of which is attributable to a single donor—Saudi Arabia. Although these figures do not provide a complete sense of how resources are allocated between Africa and other developing regions, they do provide some evidence of assistance from new donors.

Unfortunately, these estimates are not disaggregated by sector, making it difficult to determine exactly how much is directed to agricultural development or, within this area, to agricultural research. However, other sources do shed some light on the magnitude and nature of these donors' contributions to agriculture. These contributions are explored below, focusing on Brazil, China, India, and the “new philanthropists.”

Brazil

Following President Luiz Inácio Lula da Silva's first visit to Africa in 2003 to advance his country's engagement in Africa's development,⁷ Brazil has committed

7 Between 2003 and 2010, President Lula made 12 separate trips to Africa, visiting 27 countries—more than all of his predecessors combined (see www.bbc.co.uk/news/world-latin-america-11717757).

new resources to the task. ODA from Brazil totaled \$90 million between 2003 and 2009, of which \$45 million was allocated to Africa, according to Patriota and Pierri (2013), who draw on figures from the Brazilian Cooperation Agency.

Brazil's most notable engagement comes in the form of extending its experience in agricultural intensification to Africa. This has included vocational training and technology transfer projects in more than a dozen countries (Patriota and Pierri 2013). A notable focus of this engagement revolves around the possibilities of transforming the Guinea savanna into a highly productive agriculture and livestock area, as Brazil did with its Cerrado savanna.

Although technical cooperation represents just 3 percent of Brazil's ODA (excluding debt relief and export credits), agriculture is the key focal point of its cooperation activities. Between 2003 and 2010, agriculture accounted for 22 percent of the country's technical cooperation portfolio and 26 percent of its Africa portfolio (Cabral and Shankland 2013). In addition, Brazil has committed resources under the Brazil–Africa Dialogue on Food Security, Fighting Hunger, and Rural Development to support initiatives modeled on recent national programs implemented in Brazil. Examples include the 2008 More Food Africa Program (Programa Mais Alimentos África), aimed at increasing productivity through technology transfers and mechanization, and the 2010 Food Acquisition Programme (Programa de Aquisição de Alimentos), aimed at providing social protection services through local food procurement (Barka 2011; Cabral and Shankland 2013).

Not unlike China, Brazil has received some criticism for its assistance to agriculture in Africa. Concerns include the bias toward large-scale mechanized farming of cash crops, such as cotton, soybeans, and tobacco—a strategy that may have performed well in Brazil but is criticized by some as inappropriate to many smallholder systems in Africa (Chichava et al. 2013; Mukwereza 2013; Rada 2013). Another criticism is leveled at the apparent lack of coordination across the 20-plus Brazilian agencies working on agricultural development issues in Africa (Cabral and Shankland 2013).

Despite these criticisms, Brazil's encounter with African agriculture seems to have gathered momentum (Cabral and Shankland 2013 reported Brazilian initiatives in 38 countries). The main vehicle for Brazil's engagement in Africa has been the Brazilian Cooperation Agency. For agriculture, however, the opening of an international office of the Brazilian Agricultural Research Corporation (Embrapa) in Accra, Ghana, in 2006 is heralded as one of the critical drivers in strengthening research linkages and partnerships with Brazil. This office, though later scaled down to cover only Ghana, pioneered a number of technology transfer partnerships across the region that opened the door for dozens of new projects.

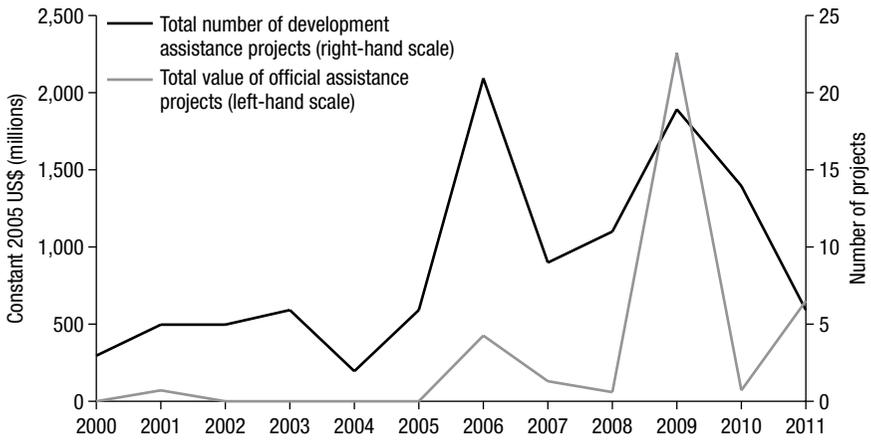
China

Aid flows from China vary widely, depending on the nature and measurement of the flow, but they generally fell in the neighborhood of \$1–\$3 billion between 2007 and 2009 (Bräutigam 2011; Buckley 2013). China's approach to ODA, first outlined in a white paper published in 2011 (People's Republic of China 2011) suggests that China's sectoral allocations are quite similar to allocations by most OECD-DAC member countries: allocations to economic infrastructure development account for 61 percent of the total, whereas agriculture accounts for just 4.3 percent (People's Republic of China 2011).

Although China's ODA primarily focuses on neighboring Asian countries, significant funding is also flowing to Africa. Estimates reported by Pingali (2012a) indicate that between 2001 and 2009, China's assistance to Africa consistently captured 38–44 percent of the total development assistance budget. This funding follows directly from the 2000 Forum on China–Africa Cooperation that elaborated China's assistance strategy for the region, and the ambitious Program for China–Africa Cooperation in Economic and Social Development (FOCAC 2009; AATF 2010). Beyond its commitments to canceling debts, reducing trade barriers, and increasing development assistance for African countries, the program committed resources to training African agricultural scientists and establishing agricultural technology demonstration centers with the support of Chinese expertise.

A significant part of China's commitment to African agricultural development was contained in a donation of \$30 million to the Food and Agriculture Organization of the United Nations (FAO) in 2009. The aim of this donation was to expand China's contribution to FAO-led efforts to eradicate hunger and poverty by assisting developing countries in improving agriculture and food production under the umbrella of FAO's Special Program for Food Security (SPFS). China, along with other developing countries, uses SPFS as a vehicle to provide experts, technicians, and technical support to national and regional food security activities (FAO 2010). Technology transfers and support to NARIs are an implicit outcome of the program design, with the potential to parallel other donor initiatives and programs, such as the Alliance for a Green Revolution in Africa (AGRA) funded by the Rockefeller Foundation and Bill & Melinda Gates Foundation (Bräutigam 2009).

Strange et al. (2013) examine Chinese assistance to Africa between 2000 and 2011 and identify 71 projects totaling \$981 million similarly accounting for approximately 4.6 percent of total ODA to Africa (Figure 6.6). A looser definition of ODA that includes projects related more to investment than to assistance suggests 107 projects during the same timeframe totaling more

FIGURE 6.6 Official development assistance to Africa from China for agriculture, forestry, and fishing, 2000–2011

Sources: Calculated by authors based on data from AidData (2013) and Strange et al. (2013).

than \$4 billion and still accounting for about 5.4 percent of all flows to Africa. Notably, many of these projects tend to be a combination of public and private Chinese investment, as is often characteristic of recent trends in Chinese assistance to agriculture (Freemantle and Stevens 2013).

China's support to African agriculture has attracted significant attention in the global development community. Some critics have focused on the potentially controversial aspects of the political "noninterference" principle underlying China's ODA policy. Thus, Chinese development assistance supported Zimbabwe with technology demonstration centers, inputs and equipment for tobacco and cotton farming, and other activities during the height of Zimbabwe's international political isolation in the mid-2000s (Mukwereza 2013). Others have focused on many of the same historical issues raised about assistance from OECD-DAC member countries: aid tied to procurement of goods and services from the donor country, aid focused on supporting extractive industries and nonrenewable resource exploitation, and aid associated with weak growth linkages or poor labor standards or land appropriation.

Evidence both for and against these criticisms is scant, but the debate is not likely to dissipate any time soon.⁸ And given the central importance of agriculture to many developing countries, particularly in Africa, it is likely that

⁸ See, for example, Bräutigam (2011), Buckley (2013), Freemantle and Stevens (2013), and Strange et al. (2013), among many others.

this debate will intensify as China explores new opportunities for agricultural technology transfers, food staple production, and large-scale mechanized farming in the region—many of which are areas of interest shared by other OECD-DAC donors and African governments.

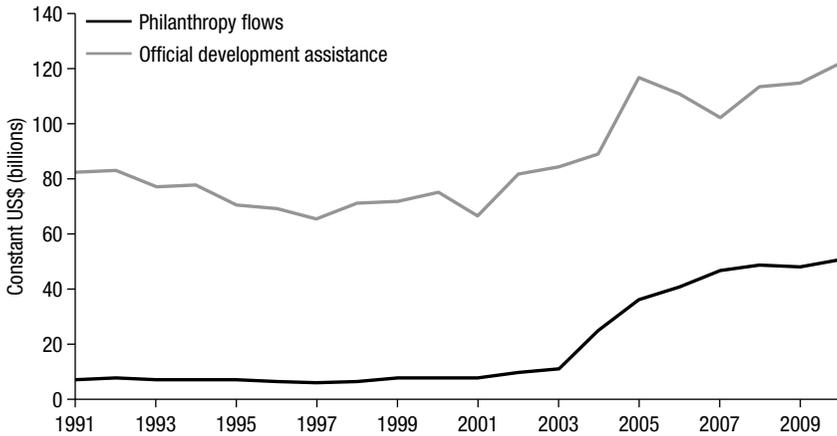
India

Similar to Brazil, India's presence in Africa has been a topic of note in recent years. India has many long-standing political and economic ties with African countries, as well as the successes of the Green Revolution during the 1960s and 1970s to inspire partnerships supporting agricultural research. There is, however, very little documentation on the size, scope, or nature of Indian ODA to the region. Primarily, attention has been given to Indian corporate investment in land deals related to agricultural ventures (von Braun and Meinzen-Dick 2009; Rahmato 2013; Rowden 2013), or to private-sector technology transfers embodied in farm machinery and irrigation equipment (Modi 2013).

Nonetheless, there is some evidence that India is driving toward greater research collaboration with African countries. The first India–Africa Forum Summit held in New Delhi in 2008 marked a symbolic shift in this direction (Singh 2013). Official cooperation supporting agricultural research—formally organized under the India–Africa Framework of Cooperation—has included study tours, technology transfer programs, higher-education scholarships, participation in international projects, and extension training, with future plans that include rural technology parks, farm science centers, and other public and private investments (AU 2011; Singh 2013). Further exploration of the relationship between Africa and India is warranted.

The “New Philanthropists”

The past decade has seen a rapid expansion of philanthropic and charitable organizations ranging from privately funded foundations to religious charities to corporate initiatives focused on social responsibility and social entrepreneurship. Although precise definitions, sources, and uses of philanthropic spending in developing countries vary, and data collection efforts are limited, trend data strongly indicate an acceleration of development assistance from philanthropic donors. For example, the Hudson Institute (2012)—using its own figures and data—estimated total philanthropic flows in 2010 from DAC member countries at \$56 billion, a figure that compares favorably with the \$128 billion in ODA flows from the same countries (Figure 6.7). Again, while these figures are not disaggregated between Africa and other developing regions, they nonetheless point to trends that may affect funding for agricultural research in SSA.

FIGURE 6.7 Philanthropic and official development assistance flows to developing countries, 1991–2010

Source: Hudson Institute (2012); Pingali (2012a); OECD (2013a).

Philanthropic assistance to agricultural development is directed through a wide range of organizations, including foundations where a related corporate entity is directly associated, sometimes (but not exclusively) as part of their corporate social responsibility activities. The Syngenta Foundation for Sustainable Agriculture and Monsanto Fund are examples emerging from the global crop and bioscience industry. The Barwale Foundation is a similar example from India, and although its R&D funding and activities are not directly focused on African agriculture, its work on such topics as marker-assisted selection for crop improvement and hybrid seed production, as well as its close linkages to both private seed companies and the international agricultural research system, suggests potential for positive research spillovers for SSA (Barwale Foundation 2012).

The landscape also includes foundations that are effectively separate from their corporate parent or drawn from a corporate parent with little or no direct association with agriculture or agricultural development. This was the case with the Ford Foundation and Rockefeller Foundation when they forayed into agricultural development in the 1950s, the Tata Trusts in 2003, and the Bill & Melinda Gates Foundation in 2006.

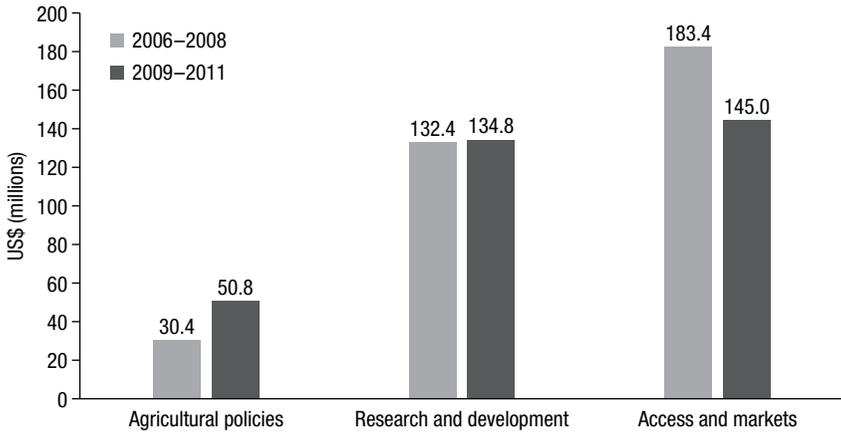
Also included in this landscape are industry organizations that represent a group of corporate entities with direct interests in agricultural products and services. Examples include Croplife International, which draws its membership from the six largest multinational crop science companies. Other

philanthropies include social entrepreneurship and venture capital funds with explicit investments in agricultural development activities, such as the Pearl Capital Partners (PCP) group, an investment initiative targeting small and medium-sized agribusinesses in East Africa with funding from the Gatsby Charitable Foundation. PCP has made several investments in seed companies that host their own breeding programs, including \$1 million in the Kenyan company Western Seed in 2008 and \$350,000 in Uganda's Nalweyo Seed Company in 2006 (Fletcher 2011). Still, other philanthropies are nonprofit, nongovernmental, direct-giving, faith-based, and charitable organizations that provide financial support to agricultural development activities.

Although many philanthropic organizations are engaged in agricultural development around the world, the entry of the Bill & Melinda Gates Foundation (BMGF) into agriculture is often cited as a catalytic event in changing the assistance trend (Pingali 2012c). Between November 2006 and September 2013, the Foundation awarded 461 grants totaling approximately \$2.523 billion for agricultural development globally.⁹ More specifically, between 2009 and 2011, the Foundation invested \$50.8 million in agriculture policies, \$134.8 million in R&D, and \$145.0 million in access and markets. (Figure 6.8), a significant share of which is allocated to programs that focus directly or indirectly on SSA. In a few short years, the BMGF has invested more than half of its sizable African agricultural development portfolio in agricultural research.

Initially, the BMGF's approach to making grants involved identifying market and government failures and addressing those gaps through technology R&D, as well as strategic advocacy investments. It brought high-profile tranches of new funding to the research agenda, and invested in both the established field of cultivar improvement and the more novel field of biofortification. This approach has also helped convene several agricultural research initiatives that have successfully leveraged funding from other donors willing to buy into BMGF's strategic priorities. These investments—alongside other large-scale initiatives on livestock improvement, nutrition, data and statistics, and organizational reform—represent a significant injection of new life into the global agricultural research system.

9 In fact, while the Bill & Melinda Gates Foundation's program on agricultural development did not begin until 2005, its first grant in the field of agriculture was given in September 2003 to support the activities of the HarvestPlus Challenge Program to reduce micronutrient deficiencies in developing countries by breeding higher levels of essential micronutrients into staple crops. The grant was given to the International Food Policy Research Institute (IFPRI) in the amount of \$25 million over four years. The second grant was awarded in November 2005 in the amount of \$0.6 million to the International Center for Tropical Agriculture (CIAT) to demonstrate that biofortified crops can be delivered effectively to farmers and consumers.

FIGURE 6.8 Early grant disbursements for agricultural development from the Bill & Melinda Gates Foundation, 2006–2011

Source: Adapted from Pingali (2012a).

BMGF’s influence on the global agricultural development agenda has been more than proportional to its financial contribution over the past five years. The foundation has helped the donor community “rediscover” agricultural development by advocating for greater attention to agriculture, setting examples through its own strategic investments, and engaging in multilateral initiatives and global networks on agriculture (Pingali 2012c).

As part of this effort, BMGF maintains a dialogue with major bilateral donors, such as the United States Agency for International Development and the United Kingdom’s Department for International Development, while also supporting the commitments to agricultural development set by the G20 group of nations and multilateral efforts, such as GAFSP. BMGF formally joined CGIAR in 2010, and has been a strong proponent for CGIAR’s return to its historical strength in crop improvement. The reversal in declining trends in funding for crop genetic improvement over the past few years show the foundation’s impact on CGIAR priorities through its own investments, as well as its advocacy with the other donors to the system.

Creating an effective “hand-off” from global public-good R&D to technology dissemination at the regional and national levels requires identifying and strengthening partnerships with actors along the commodity value chain. BMGF has been experimenting with institutional innovations at the regional level, such as through AGRA, and at the national level, such as with

the Ethiopian government's Agricultural Transformation Agency (ATA). AGRA, in particular, is intended to provide a bridge from global innovation to local technology adoption in Africa. The AGRA program on African Seed Systems has already released and disseminated more than 150 new varieties of the major staple crops across SSA, working with local private-sector entities. AGRA has also become an influential advocate for agricultural R&D in the region, closely collaborating with CAADP and other regional bodies.

BMGF has faced major challenges in converting its significant global public good investments into impact on the lives of smallholders, particularly in SSA. Poor infrastructure investments and weak policy incentives continue to constrain the rapid uptake of improved varieties and technologies. For example, current seed policies across SSA do not promote the free movement of improved seed across borders, and sometimes even across states within a country. BMGF has also been constrained in building effective partnerships at the national level because of poor technical, policy, and managerial capacity. Broad-based capacity-building efforts, though crucial, are beyond the scope of a single donor and require sustained commitment from a larger coalition of bilateral and multilateral funders. Developing countries themselves need to step up their own commitment in this regard.

Philanthropists are not without critics. Herdt (2012) shares several insights based on experiences of the Ford Foundation and Rockefeller Foundation in light of the large scale at which BMGF has entered the field of agricultural development. His most salient concern is the tentative nature of charitable support to agricultural development—symbolized by the eventual exit of both the Ford Foundation and the Rockefeller Foundation from the field—and the need for national organizations and policies to replace development assistance. He further argues that today's foundations may be pursuing strategies that are too narrowly focused on technology solutions without commensurate focus on developing the national capacity that would eventually “work themselves out of their jobs,” particularly in SSA. That said, BMGF does have a fairly broad portfolio of education and training activities focused on building national capacity to support agricultural development and R&D through programs that are administered through regional initiatives in SSA.¹⁰

10 Such initiatives include degree and other training (in such disciplines as plant breeding, seed systems, and agricultural economics) run with support from AGRA under the auspices of such programs as the Regional Universities Forum for Capacity Building in Agriculture; the African Centre for Crop Improvement (ACCI) at the University of Kwazulu-Natal, South Africa; the West Africa Centre for Crop Improvement at the University of Ghana; and the Collaborative Masters of Agricultural and Applied Economics.

New Priorities in Agricultural Development

The re-emergence of traditional donors to agricultural development and agricultural research, and a growing role for emerging donors in these areas, suggest a new landscape with the potential for improving the prospects for rapid agricultural productivity growth and poverty reduction in developing countries. New sources of funding—from such large emerging economies as Brazil and China, to such middle-income and resource-rich countries as Saudi Arabia, to philanthropic organizations—may rewrite the rules of development assistance in terms of whom, how, and what they fund.

Greater diversification of funding sources can insulate recipient developing countries and their research systems from the shocks and volatility associated with dependence on a small number of donors and donor-funded projects. It can also spread the benefits of assistance from a singular focus on public agricultural development and research projects to a wider set of engagements targeting the private and civil society sectors. Ultimately, such diversification would also bring with it a variety of innovative ideas and approaches that could be tailored to fit the development needs of a given country or community.

However, this new landscape may also come with high transaction costs if it is not accompanied by a coherent vision and an improved cooperation strategy in support of agricultural research. Improved reporting mechanisms are an immediate priority, so that donor assistance to agriculture and agricultural research can be accurately characterized and coordinated. Although the OECD-CRS reporting tool (OECD 2013b) is not the only data warehouse for public and private donors to record their contributions, it is probably the foremost platform for comparing assistance levels and trends by type, source, sector, and destination. Thus, greater effort by donors and OECD to encourage accurate reporting and to improve the coding of development and research activities is crucial to future analysis. Another priority is better coordination of the assistance to agricultural development and research. New bilateral donors, such as China and Saudi Arabia, could do more on this front by engaging with the international community to adhere to and promote the aforementioned Paris Principles on Aid Effectiveness, the Accra Agenda for Action, and the Busan High Level Forum on Aid Effectiveness.

Last, but equally important—keeping in mind that agricultural development is ultimately the domain of sovereign nations—is the need to ensure that donor assistance is closely aligned with national strategies and policies. This is not as simple or obvious as it may seem. Many developing countries continue to pursue ill-advised policy regimes that are biased against agricultural growth, small-holder farming systems, and sustainable use of scarce natural resources. Donors

can do much more to understand underlying political processes that lead to such policy regimes (Future Agricultures 2012), and to use this understanding to support evidence-based policy research that demonstrates the importance of formulating suitable and realistic national agricultural policies, and the potential role of agriculture as an engine of broader economic growth and poverty alleviation. Donors can also do much by reducing the influence of their own political and economic interests on official assistance programs. While the surge in philanthropic engagement in agricultural development may dampen the promotion of vested interests by bilateral donors, philanthropies are no less charitable when it comes to promoting their own agendas. Stronger advocacy and push-back from developing countries will likely be critical to improvement on this front.

There are signs that some regions and countries have recently begun to operate on a more equal footing with bilateral and multilateral donors as a result of diversification in assistance sources. In Africa, the CAADP process and regional organizations, such as the Common Market for Eastern and Southern Africa (COMESA) and the Economic Community of West African States (ECOWAS), have made concerted efforts with member countries to put priority setting firmly in the hands of African governments and their stakeholders. However, challenges remain.

The first and more obvious challenge may simply be poor national capacity. While overall ODA for agriculture has risen in recent years, the effectiveness of this assistance is still in question because of poor national-level capacity to absorb and use the funds effectively. Inadequate human capacity at the technical and managerial levels may be a consistently significant barrier to creating sustainable rural change in the least developed countries. Poor capacity may also limit the ability of many countries to establish their own priorities and to effectively coordinate the funds and agendas of their numerous foreign donors. Indeed, the demand for talented nationals at the country offices of the donor agencies may have further added to the human capacity strain faced by several country governments.

National capacity limitations are just a part of the story, and the emphasis here is more on the donors themselves. Donors face a broad range of challenges, an important one of which is their ability to understand and address the local context. There is widespread recognition that donor priorities and programs do not always reflect the needs and priorities of the country concerned. This is partly because of poor national capacity to articulate needs and priorities, but also because of capacity constraints within donor agencies. Often the problem lies in donors' limited understanding of ground-level needs and realities, and—in the case of aid targeted toward agricultural R&D—an understanding of

complex tropical farming systems is particularly limited. Strengthening in-house capacity by building a cadre of tropical agricultural specialists and experienced development practitioners should be a high-priority investment for most donor agencies.

This inability to understand local context often leads to poorly aligned or irrelevant strategies espoused by both traditional and emerging donors. Each donor that engages in Africa's agriculture sector seems to have a slightly different view of agriculture's role in wider economic growth and poverty reduction. For some, such as BMGF, economic growth hinges on agricultural development, which is driven by productivity growth in smallholder farming. For other donors, the agricultural sector is less of a strategic focus and takes a second seat to humanitarian relief, social-sector interventions, and other priorities. Other donors espouse strategies that seek to replicate their own successes—whether in terms of China's achievements in rural development, India's Green Revolution, or Brazil's success in the Cerrado—through technology transfers and infrastructure development. The question may not be whether these strategies are well reasoned or otherwise convincing, but whether donors can (1) find the common ground to support African agriculture with new expertise and resources, (2) pause long enough from their own strategic rhetoric to understand the nuances of the region's challenges, and (3) dispense with cookie-cutter approaches taken in the past and instead cooperate with each other to find “best-fit” solutions for African agriculture.

Even where strategies may be aligned, the control and management of resources earmarked for ODA still pose a challenge for agricultural development in the region. International intermediaries still control funds and manage programs, such that a large share of the increased funding noted earlier flows through outside intermediaries, rather than being given directly to developing-country governments or local organizations. Traditional intermediaries include CGIAR and international NGOs engaged in agricultural development activities. Newer intermediaries include GAFSP, which has been administering its grants through multilateral donors and United Nations agencies. Funds flowing to countries through these channels tend to be tightly controlled for specific projects and are often managed by technical and administrative staff from the international intermediaries. Country ownership of such efforts tends to be tenuous and to accentuate the problem of building local capacity, discussed above.

A less obvious challenge lurking in the background relates to the credibility and influence of new and emerging donors. Traditional bilateral and multilateral donors operate in the region through a well-established sense of credibility

that has allowed them to lend support and exert influence on decisions taken by sovereign governments. But it is worth asking whether their preeminence in the donor landscape is coming to an end with the entry of new donors with similar levels of credibility, such as Brazil, China, and India—many of which are symbolically aligned with the region's political and historical struggles. Meanwhile, BMGF and other philanthropists—though lacking in credibility as nonstate actors—seem to have exerted influence in such countries as Ethiopia, where the combination of a strong and independent national development strategy has allowed similarly independent donors to engage directly with the government.

Even where these emerging donors have both credibility and influence, the long-standing issue of donor coordination poses a final challenge worth consideration. Least developed countries have long struggled with the problem of donor coordination to ensure that support fits within the country's overall framework of development priorities. Unfortunately, many of the least developed countries lack the capacity to set priorities or establish and enforce a coordination mechanism. Hence, donor coordination mechanisms have been established by the donors themselves. However, these mechanisms tend to exclude the new and emerging donors. Private philanthropies, in particular, have generally been excluded from the donor coordination groups, while emerging donors, such as China, have avoided them.

A few SSA countries, such as Ethiopia and Ghana, have emerged as exceptions. Both have taken strong ownership of the development agenda and have established country-driven donor coordination mechanisms. Ethiopia's previously mentioned ATA was established with the specific intention of building strong local capacity for strategic planning, priority setting, and overall coordination of development resources targeted toward agriculture. Many other countries in Africa are interested in emulating the ATA model; however, human capacity constraints may hold them back.

There have been signs of greater donor coordination in recent years, with CAADP serving as a strong mechanism in support of donor coordination. Similarly, the CGIAR reform process has emerged as a strong mechanism for donor coordination, specifically on the agricultural R&D front (Chapter 15, this volume). However, the links between CGIAR priorities and those of specific countries have been historically weak, and there is little evidence to indicate that the reforms have changed that situation. This strongly suggests the need for the new aid structure to create mechanisms to improve linkages between international R&D and national agriculture development strategies (Pingali 2010). Even within a country, the process for identifying technology needs and

prioritizing them for budget support is uncertain. As a result, R&D activities continue to be undervalued in national strategies and donor priorities.

More than two decades ago, Vernon Ruttan suggested the formation of “National Research Support Groups” that would assess and prioritize research demands and champion their supply at the national level (Ruttan 1987). Such groups could also be conduits between national R&D with international research pipelines, and between client demand at the farm level and other actors in commodity-specific value chains or the wider innovation system (Ekboir and Rajalahti 2012; Lynam 2012). Better data generation and analysis could strengthen the ability of such national research groups to identify high-priority problems and potential solutions available from the global research community, and coordinate their adaptation and dissemination at the national level. Most important, these research groups could help strengthen subregional and regional voices by working collectively with regional groups, such as the Southern African Development Community and ECOWAS, and with global alliances, such as the Global Forum for Agriculture Research.

Conclusion

There are many innovative approaches to the challenge of bringing the best science to bear on feeding an expected population of nine billion by 2050, the most significant portion of whom will be in SSA. Considerable financial resources will likely be needed to underwrite those approaches, and donor assistance will be a likely source of funding for agricultural research in the region. What remains to be seen is whether public policymakers and their constituents in donor countries are willing to invest in agricultural research for developing countries.

Despite science-led successes in agricultural development between the 1960s and 1980s, the international donor community largely turned its back on agriculture beginning in the mid-1980s. The consequences for national and international research capacity are still evident today, and recovery has been slow. Yet several watershed events in recent years have encouraged the donor community to re-engage with global efforts in support of agricultural development and research. There are growing expectations of a long-term renewal in commitments to agricultural research by both the leading bilateral and multilateral donors and the growing group of new players in the international donor community. And although these new participants provide just a sliver of the development assistance channeled toward agricultural development, they bring new resources, expertise, and perspectives to the table. ODA

from Brazil and China, coupled with strategic investments from BMGF, are among the most influential contributions amassing in this area.

But if the past is any predictor of the future, caution is warranted. Quite simply, it is too soon to determine whether this is a momentary blip in the longer downward trendline. Several efforts to improve the transparency and efficacy of donor assistance to agricultural research may help address this concern. Going forward, greater transparency is needed to ensure accurate and constructive analysis of development assistance levels, trends, priorities, destinations, and uses—especially for new funding sources that are not reporting to the OECD-CRS. Continued monitoring of both new donors and the more traditional bilateral and multilateral donors is still needed to continuously improve coordination and effectiveness in compliance with the Paris Principles on Aid Effectiveness and the Accra Agenda for Action.

Greater ownership of the development assistance agenda in support of agricultural R&D by leaders, agricultural ministries, research organizations, farmers' associations, and other constituencies in SSA is also needed. Experiences from other developing countries—most notably China, India, and Brazil—suggest that more assertive priority setting, resource allocation, and R&D management at both national and subnational levels are feasible and desirable. However, this can only occur if SSA countries open the door to a wider discussion on the opportunities and limits of development assistance to agricultural R&D.

Efforts must also be made to monitor the performance of the recipients of development assistance for agricultural research—in terms of both developing-country governments and international agricultural research organizations. Close monitoring is needed to determine whether recipients are chalking out their own, independent priorities and strategies; making necessary changes to the governance, organization, and management of agricultural research efforts to increase research impact; and monitoring the returns on their investments of scarce public resources for research. It may be too early to tell, but the signs are both positive and worrisome—for policymakers, for donors, and for food-insecure households throughout the developing world.

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