I. Introduction and Context

Country Context

The Southern Africa region has an estimated population of 258 million people with an estimated Gross Domestic Product (GDP) of US$ 471 billion. Although agriculture varies in importance within the economies of Southern Africa, it remains the primary source of subsistence and income for most of the population. In low income countries agriculture is often the largest contributor to GDP, and agricultural performance has a strong influence on economic growth, level of employment, demand for other goods, food security and overall poverty reduction. The Southern Africa region is poised for transforming its agriculture. The region includes both IDA (low income) and IBRD (middle income) countries and hosts two well established pan African institutions covering agriculture and commerce – the Southern African Development Community (SADC) and the Common Market for East and Southern Africa (COMESA). The presence of seven middle income countries within the region, in particular South Africa, has generated a strong and growing regional market for agricultural products. Although agriculture sector performance has improved recently – with accelerated growth in agricultural GDP over the past two years – the sub-region as a whole is characterized by structural deficits in cereal and livestock production, and it suffers periodically from temporary food deficits and high food price crises.

Sectoral and Institutional Context

Agricultural technology as a driver of agricultural growth. The World Development Report 2008 argued that Sub-Saharan Africa will meet the Millennium Development Goals (MDGs) only if there is significant growth in the agricultural sector – and such growth is dependent upon growth in agricultural productivity. Although Africa has recorded increased growth in agricultural productivity in recent years, most of this growth has been driven by capturing increased efficiencies rather than technical change. Comparisons of total factor productivity growth in the past decade have shown that technical change accounted for a large share of productivity growth in Asia and Latin America, but a very small share of Africa’s growth. Although Southern Africa has experienced more technology-driven productivity growth than other regions in Africa, the gains have occurred primarily within middle income countries, and there is potential for increasing technology-driven productivity growth in both middle and low income countries within the region. Analysis within Southern Africa has identified a number of yield gaps – the difference between actual and achievable yields given specific agricultural potential and production systems – that could be realistically narrowed with additional investments in agricultural technology adaptation and dissemination.

The potential for technology spillovers within the region. While the Southern Africa region is characterized by a wide variability in agricultural conditions, groups of countries within the region share similar agro-ecological zones and production systems, which suggests that there is potential for shared solutions to common problems. Agro-ecological zones in the region range from the sub-tropical/cool zones of South Africa, Zimbabwe and Namibia to the tropical/warm conditions in Mozambique, Tanzania and DRC, with a number of major clusters. Farming systems within the region range from pastoral, agro-pastoral, to cereal, root or forest based production system, but mixed maize cropping systems predominate.

Agricultural technology generation and dissemination systems can be more effective and more efficient. As noted in the Bank’s Africa agriculture strategy documents, the broad policy conditions needed to facilitate the movement of agricultural technology within the region are in place, but national systems still face a number of challenges in improving their technology and service delivery systems, including a lack of capacity to implement technology transfer, effective extension services, and bottlenecks in...
information systems for innovation. Several national agricultural technology and generation and dissemination systems operate below potential due to poor facilities, low salaries, relatively weak levels of human capital, and low levels of overall investment and budget support. These factors, in turn, are linked to the high degree of fragmentation in the deployment of resources within the sector, where limited financing is spread over a range of priorities. Given the small size of many African countries and economies, few can afford fully elaborated technology systems that address the many crops and livestock breeds in their highly diversified production systems.

Regional integration to create a larger shared technology space has proven to be an effective solution for increasing efficiency in the face of common problems, reducing duplication and addressing issues of the fragmentation associated with small country systems. Regional approaches based on increasing specialization and concentration can help achieve economies of scale within systems and across national boundaries. They mitigate the isolation that can occur in small fragmented institutions by creating effective mechanisms for facilitating exchange and building a critical mass of researchers.

Proposed regional operation – Agricultural Productivity Project for Southern Africa (APPSA). The proposed operation would promote regional approaches to agricultural technology generation and dissemination by supporting the strengthening and scaling up of regional centers of research leadership on commodities of regional importance. This approach is currently being pursued by IDA in other regions of Africa through the West Africa Agricultural Productivity Program (WAAPP) and the East Africa Agricultural Productivity Program (EAAPP). Structured as adaptable program loans, both of these programs have been designed to support an initial set of strong national systems to establish regional centers of excellence; coverage will expand over time to include more countries and additional centers. These programs are facilitated and complemented by the activities of sub-regional research institutions, which play a key role in facilitating collaborative work between countries and acting as brokers for the exchange of information and materials.

APPSA would support the development of collaborative partnerships between weak and strong systems in the region. APPSA would differ from EAAPP and WAAPP in that it would invest in building systems that have demonstrated some potential but that are not yet as strong as systems in neighboring middle-income countries. As a result, the design of APPSA would likely place greater emphasis on technology transfer, and it would use capacity development and training as a key entry point to build relationships between stronger and weaker systems. Ideally, a program designated as a center of excellence should be in a position to lead regional initiatives, should be connected to the global system of research, and should have the capacity to develop partnerships across the sub-region.

Status of support for regional R&D activities within the region. SADC has expressed strong ownership of a regional approach that focuses on programs that are of strategic importance to the region and that have large potential for spillovers across country borders. In line with its support under CAADP Pillar IV, SADC is currently in the process of defining a new regional agenda for R&D and supporting the establishment of an autonomous sub-regional research organization to implement this agenda. The newly established Center for Coordination of Agricultural Research (CCARDESA) is expected to significantly increase the capacity available to support regional R&D activities, and the proposed regional program is seen as an important activity in its initial implementation of its operational plan.

Relationship to CAS

APPSA’s focus on agricultural technology within the context of a regional approach is well aligned to the objectives of the World Bank’s new Africa Strategy. The Strategy emphasizes the need for investments to improve the competitiveness and resilience of the agriculture sector, and it identifies regional integration as an important mechanism to achieve higher economic growth and poverty reduction. The Strategy also highlights the scope for drawing important lessons from middle income countries and taking advantage of opportunities for them to serve as catalysts for growth and development to the rest of Africa. APPSA is also part of a larger commitment by IDA to help countries enhance long-term food availability by providing a mix of short-term interventions designed to stimulate rapid supply responses and sustainable medium- and longer-term investments in agricultural productivity.

APPSA meets IDA’s regional project eligibility criteria because it (i) supports activities that will be coordinated across three or more countries, (ii) generates benefits that spill over country boundaries, (iii) has the support of SADC; (iv) provides a platform for policy harmonization, and (v) is part of the regional agricultural strategy.

II. Proposed Development Objective(s)

Proposed Development Objective(s)

The objective of the proposed operation is to (i) enhance regional specialization in agricultural research; (ii) enhance regional collaboration in agricultural training and dissemination; and (iii) facilitate increased sharing of agricultural information, knowledge and technology across boundaries of participating countries.

Key Results

The program would build and strengthen linkages between regional centers of research leadership (RCLs) in line with the region’s R&D priorities. It is proposed that IDA support this approach with a regional horizontal and vertical APL, of which a first phase of five years would be followed by two further phases of five years each. By the end of the full APL period – 15 years – the program would be expected to contribute to increased adoption of improved technologies. In the long term, this would be measured by an increase in the adoption of new varieties, technologies, management practices, and improved processing and handling
methods. Triggers for moving between phases would be expected to focus on implementation performance and satisfactory achievement of a regional program of work.

The core project-level results for the first phase would focus on measuring changes in institutional capacity and technology development or access. Project results would be measured using the following key indicators:

- Increase in the numbers of existing and new technologies disseminated in more than one Program Country; and
- Increase in production and/or productivity at farm level, as measured by the percentage increase in production or productivity over control technology for all disseminated new technologies.
- Increase in research scientists working in regional research projects on the basis of percentage of total research staff of the regional center of leadership.

III. Preliminary Description

Concept Description

Initial country participation. Any country in the Southern Africa region could participate in the initiative by committing to develop one of its agricultural research centers into a regional center of leadership for an agreed priority commodity or research theme. Three IDA countries have already indicated interest (Malawi, Mozambique, and Zambia) and discussions have been initiated in additional middle income countries. The program would initially target a restricted set of countries to: (i) support the building of RCLs where potential exists and where increased investment is required – most likely Malawi, Mozambique and Zambia; and (ii) facilitate the participation of regional centers in strong national systems where greater knowledge sharing and brokering is needed – most likely South Africa, Botswana and possibly Namibia. Use of a horizontal APL would allow for additional IDA countries to participate beyond the first-round countries.

Design considerations

Lessons learned from WAAPP and EAAPP. Lessons learned from WAAPP and EAAPP will inform the design of APPSA. These include the need for: (i) development of strong collaboration among participating countries and stakeholders (including the building of strong communication systems); (ii) a focus on technology adoption in addition to technology generation, which often requires developing partnerships with other programs or operations; and (iii) supporting implementation readiness at early stages.

Features of a center of leadership: A center of leadership is defined as a leading agricultural technology program/center that has established capacity (or has shown strong potential to establish capacity) in the areas of research, technology dissemination, and training that distinguishes it as a leader in the region and beyond. A program designated as a center of leadership should be in a position to spearhead regional initiatives because (i) it has established a critical mass of highly qualified staff; (ii) is connected to the global system of research; (iii) possesses high-quality facilities (or has the potential to develop them); (iv) has the ability to develop and manage complex projects; (v) has the ability to create partnerships; and (vi) can facilitate the processes of institutional learning and change that underpins a dynamic technology innovation system.

Systems-oriented approach. The program would adopt a systems approach that focuses on the full range of the research and dissemination actors, but within the context of a specific program. Criteria for selecting a specific national program to host the RCLs could include: The program/center must be a national priority with: (i) potential for subregional spillovers; (ii) potential for leadership in the area selected; (iii) alignment with regional priorities as defined by the countries themselves; (iv) potential to address both immediate and long-term food security needs; and (v) demonstrated interest by the host country to support the development of the regional center of leadership.

Support to innovation. APPSA will build on ongoing initiatives within national agricultural research and extension systems to address institutional bottlenecks to innovation. Many national systems in the region are in the process of implementing lessons learned with regard to improving the effectiveness of technology generation and dissemination systems, as well as training programs. This includes: (i) establishing close linkages and feedback mechanisms between extension and research to ensure that appropriate technologies are available for transfer to beneficiaries. (ii) putting in place flexible, decentralized, and demand-driven delivery systems; (iii) building pluralistic research systems that facilitate increased involvement of private sector and university systems in addition to traditional public research bodies; and (iv) introducing competitive, rigorously reviewed research programs linked to international, regional and national knowledge sources. APPSA is expected to strengthen these efforts and to provide financing to extend them within the regional landscape of R&D actors.

Linkages to the CGIAR System. The project would strengthen national systems and promote a more regional approach within these systems, under which it would make sense for some programs to be bigger within a regional context. This will enable national systems to strengthen their ability to partner with the CGIAR systems and facilitate greater exchange of technologies - breeding material, technical approaches – as well as training or capacity development. The project would not be a funding source for CGIAR centers, and RCLs would not replace CGIAR centers or their global mandate. The project would be expected to complement investments made in the CGIAR system and to support the CGIAR reform process (including the development of mega-programs) by building strong partners and counterparts within Southern Africa.
Component Description

Financing of activities to be supported under the proposed regional effort will take place through IDA credits (for IDA countries) and through countries’ own resources (for IDA and IBRD countries). IDA support for each country will include funds for the center of leadership to be established in the host country, as well as financing for specialists from the host country to participate in programs led by RCLs located in other countries, and for technologies and seeds to flow across boundaries. The project would have three components:

Component 1: Technology Generation and Dissemination. The first component would support technology generation and dissemination activities associated with regional centers of leadership. This would include research activities targeting the technology priorities defined through regional dialogue and consistent with the regional priority-setting study. Research activities could cover a range of issues including breeding, germplasm collection or characterization, farm management, processing, and socio-economics. The component would also support regional dissemination programs or technology transfer sub-projects to link centers of leadership to institutions in other countries and enable scaling up of innovations. Technology generation and dissemination activities would target participation from a range of institutions, in line with FAAP principles, and they would aim to strengthen linkages between researchers, extension and end users.

Component 2: Center of Leadership Strengthening. The second component would support capacity building for RCLs including infrastructure and equipment investments, capacity building and training for staff, and knowledge sharing and exchange. Targeted training and staff exchanges would take place within the context of technology generation and transfer sub-projects. Long term training (external Msc and Phd training) may be supported, but primarily within the context of sandwich programs, where research is done in part in the person’s home country, or through joint supervision arrangements. Infrastructure and equipment investments would build on existing investments and would finance institutions within the system that are part of the country’s center of leadership priority program.

Component 3: Coordination. The third component would finance coordination at the national level, which will be managed through the establishment of coordination units or teams within existing structures in implementing agencies. At the regional level, the program will be managed by CCARDESA for coordination of the planning and implementation of research and training activities, and the dissemination of information among the Program countries. Each participating country will allocate resources to CCARDESA based on an agreed upon work plan with an overall ceiling established during the preparation process.

IV. Safeguard Policies that might apply

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V. Tentative financing

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