



MECHANIZED

Transforming Africa's Agriculture Value Chains



In Rwanda, from 2005 to 2014, average agricultural output grew by more than five percent, while the average annual machinery growth rate was almost three percent. According to the 2018 Biennial Review Report by the African Union it was named as the best-performing country in implementing CAADP's seven commitments. Its score of 6.05 above the minimum score of 5.53 for Malabo Commitment area #3.1, "Access to agriculture inputs and technologies". The overall commitment category score is 10. This reflects the government's dedication to transforming the agriculture sector and meeting its target of 25 percent of mechanized farm operations, envisaged under the country's second *Economic Development and Poverty Reduction Strategy* (EDPRS 2, 2013-2018).^{1,2}

INSTITUTIONAL COMMITMENTS

Increasing the uptake of mechanization in Rwanda is particularly challenging, largely due to the topology and the fragmentation of land holdings (approximately 70 percent of farms have less than one hectare each and are located on hillsides). Traditionally, the Government has played a dominant role in the import and distribution of agricultural inputs, including seeds, pesticides, and mechanization equipment. However, under its *Strategic Plan for the Transformation of Agriculture Phase 3* (PSTA 3), the Government is moving toward an expanded role for the private sector in the entire agriculture value chain. Businesses now sell machinery and provide related support services. In addition, a lease law passed in February 2015 paved the way for small entrepreneurs, and smallholder farmers to acquire farm machinery. Under the program, more than 33,500 hectares of land have been mechanized so far, and more than 1,500 farmers and agronomists have been trained in new farming technology.³

All mechanization activities in the country are coordinated under the Mechanization Unit within the Land Husbandry,

Irrigation, and Mechanization Department of the Rwanda Agriculture Board (RAB). RAB is an autonomous body established to advance Rwandan agriculture into a knowledge-based, technology-driven and market-oriented industry, using modern methods in production and processing.⁴ RAB was created through a merger of three agencies: the Rwanda Animal Resources Development Authority (RARDA), the Rwanda Agricultural Development Authority (RADA), and the Institut des Sciences Agronomiques du Rwanda (ISAR), to bridge the gaps between research and extension, strengthen policy processes, and establish efficiency in service delivery through institutional integration. RAB's mandate and institutional arrangement was crafted to align with the CAADP Pillar #4, "Integrated Research, Technology Dissemination and Adoption". The Mechanization Unit promotes appropriate mechanization options for farmers, increases access to farm machinery, and develops local skills and capacity in agricultural mechanization.

The Agricultural Department at the Development Bank of Rwanda (BRD) focuses on financing for the agriculture sector to help reach an annual growth rate of 8.5 percent (from the current 5.5 percent), to increase fertilizer application and increase irrigation uptake. Since food crop processing remained stubbornly low from 1999 to 2008 (below 6.5 percent),⁵ BRD launched an agro-processing development program to strengthen linkages along the entire value chain. The total budget from the BRD of US\$170 million from 2017 to 2022 is expected to leverage more than US\$24.7 million worth of investments from the private sector. For farmers, BRD provides capital to finance input purchases, supports contract farming, and offers leasing agreements for equipment. In addition, agro-processors will receive up to US\$92 million through loans, matching grants, technical assistance, equity investments, and guarantee facilities over the course of five years to support value-addition projects, exports, and job creation. This program will also fund targeted activities in value chain research.

POLICY AND PROGRAMMATIC COMMITMENTS

The *Agricultural Mechanization Program* (2009-2013) within the Ministry of Agriculture and Animal Resources (MINAGRI) was created to increase agricultural productivity in Rwanda as part of the wider flagship *Crop Intensification Program* (CIP).⁶ With a budget of approximately US\$7 million, the program was designed to ensure that subsistence and market-oriented producers had access to the necessary and appropriate equipment. The main activities under the program were:

- Acquisition of machinery and irrigation equipment;



- Establishing hiring services for farm equipment;
- Establishing a testing and inspection workshop for farm machinery; and
- Capacity building for machine operators, individual farmers, and cooperatives.

Under the program, 81 tractors, 250 power tillers, 35 rice planters, five combine harvesters, and several kinds of farm implements – plows, mould boards, harrows/rotavators, water pumps and trailers – were acquired and sold to farmers, individuals, and cooperatives. Five heavy earth moving machines, such as bull dozers, chain loaders, and earth excavators, were also acquired to support Government efforts in irrigation development, mainly dams. Besides Government imported equipment, an additional 155 tractors were brought into the country by private operators.

To make hiring services more readily available to farmers across the country, the government set up Village Mechanisation Service Centres (VMSCs), a program through which smallholder farmers could hire or buy farm machinery. Across Rwanda, 16 VMSCs were established as well as six power tiller centers. In addition, 23 technicians completed a six-month training course on mechanization, 20 technicians were trained in tractor operation and repair (in 2011), three technicians were sent to China for a training on agriculture mechanization, four engineers were sent to Japan for training, and one engineer attended an MSc program in agriculture mechanization in India. In total, 136 farmers across the country were trained in power tiller operation, maintenance, and repair, and more than 38 operators are trained and currently employed in different VMSCs.⁷ The overall goal was to enable mechanization in 25 percent of farm operations by 2017 and allow one in every four Rwandan farmers to either own and/or hire mechanization machinery by 2020.⁸

Previously, a Department of Agricultural Mechanization was established in 2008 at the University of Rwanda, under the College of Agriculture and Veterinary Medicine (Rubizi Campus), where several entering classes have now graduated. To date, 95 students are studying for an undergraduate degree program. The department has five permanent academic staff members for teaching, research, and extension services on Farm Power, Farm Machinery, Agricultural, Process Engineering and Renewable Energy Sources. It is actively participating in training farmers on tractor and power tiller operation and the use of irrigation pumps, among other activities. The program also places emphasis on the development of low-cost replicable technologies for sustainable mechanization and fast rural economic transformation to achieve the Government's Vision 2020.⁹

Further down the value chain, initiatives such as *Muhanga Food Processing Industries (MFPI)*, a women-only cooperative established by COCOF in 2004, are contributing to mechanization efforts. MFPI buys soya, maize, sorghum, and wheat from five cooperatives (totalling 2,805 farmers, 83.5 percent of whom are women) and six additional local producers to cover gaps in raw material supply. The processed (blended) flour, soya beverage, and tofu are sold locally to supermarkets, nutritional centers, schools, and refugee camps. Longer-term plans for regional exports have also been made. MFPI directly supports 18 full-time jobs; COCOF manages farmer contracts on behalf of MFPI, arranges training for farmers and access to inputs, and will negotiate a fair price for farmers when the enterprise moves to buying pre-sorted soya and maize.¹⁰

Africa Improved Foods Rwanda Limited is a joint venture between the Government of Rwanda and a consortium of development partners and the private sector. The company manufactures high-quality nutritious complementary foods, produced with locally grown maize and soya beans, which are then milled and blended with micronutrient pre-mix, skim milk powder, and soy oil. AIF has 282 employees, including laboratory analysts, food scientists, mechanics, engineers, marketers, saleswomen and -men, finance experts, and agricultural officers. AIF has a capacity for processing 28,000 metric tons of maize and 12,000 metric tons of soybean annually, and sources about half the produce locally. AIF established rural collection centers, and offers thousands of farmers free transport and free post-harvest services. This has resulted in field rejections for aflatoxin-contaminated maize to drop from 90 percent in season 2017A to 43 percent in season 2017B to 0 percent in season 2017C.¹¹

In 2017, the government signed a deal with a Nigerian investor, BlackPace Africa Group, to develop the country's potato industry and help make Rwanda a key producer and exporter of potato products. The five-year, US\$120 million project involves construction of two potato processing factories, processing 80,000 to 100,000 ton of potatoes into frozen french fries, potato flakes, and crisps for export markets in Africa and the Middle East. Production capacity is expected to rise to 10 million tons of potato by the fifth year of the project.¹²

The progress shown by Rwanda over the last years, reflects the Government's dedication to strengthening each segment of the agriculture value chain through targeted mechanization interventions. Through an increased role of the private sector, an emphasis on research and skill development and the creation of village mechanization centers, the government emphasizes its commitment to rapidly mechanize its agriculture value chain.

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