MALABO MONTPELLIER PANEL

Benin

MECHANIZED

Transforming Africa's Agriculture Value Chains

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Over the last 10 years (2005-14), the average annual machinery growth rate in Benin was 1.5 percent, while the average agricultural output grew by five percent. According to the 2018 Biennial Review Report by the African Union, Benin is currently not on track for meeting the Malabo Commitment area #3.1, "Access to agriculture inputs and technologies," with a score of 4.23 out of a minimum score of 5.53, which reflects the comparatively low level of mechanization. The overall commitment category score is 10. However, recent initiatives reflect renewed institutional and programmatic commitments to enhance mechanization.

INSTITUTIONAL COMMITMENTS

At the institutional level, the Ministry of Agriculture and Fisheries leads on agricultural mechanization in terms of program design and implementation. Within the General Directorate of Planning and Rural Equipment (DGAER), the Department of Mechanization and Appropriate Technologies (DMTA) is responsible for the study and dissemination of various mechanization systems along food value chains and the training of extension service agents, agricultural producers and rural craftsmen.[1]

Benin has two main research centers dedicated to mechanization: the Research and Training Unit in Agricultural Machinery (URFMAN) and The Agricultural Research Center (CRA) in Agonkanmey, which is part of the National Institute of Agricultural Research of Benin (INRAB), under the supervision of the Ministry of Agriculture. The URFMAN helps promote agricultural mechanization and, through innovation and local adaptation of technologies, responds to the needs of smallholder farmers. The unit's mission is to meet the needs of processors, producers and agribusinesses by developing and testing technologies for pre- and post-harvest mechanization and to train manufacturers, mechanics, and users in the production, maintenance, and use of pre- and post-harvest equipment.[2]

The CRA-Agonkanmey is responsible for the research and development of technologies. The center adopts a participatory and community approach to integrate farmers and other stakeholder in the early stages of new machine development. Moreover, the CRA-Agonkanmey contributes to the training of professionals and students through technical agricultural colleges.[3]

Training in mechanization is also conducted at the Faculty of Agricultural Sciences of the University of Abomey Clavi, at the Polytechnic School of Abomey Calavi, and at the School of Agricultural Machinery and Mechanical Engineering of the Agriculture University of Kétou. The Ministry of Agriculture, Livestock and Fisheries also has an Agricultural Research and Training Unit and the Boko Center. The centers offer training modules to manufacturers and users of equipment as well as animal-drawn cultivation techniques. Moreover, several colleges have modules on mechanization, which make up half of students' curricula and aim to train technicians to carry out mechanized agricultural production operations, including the maintenance of tractors and of other agricultural equipment.[4]

Furthermore, smallholders have been organizing themselves to access machinery by forming User Cooperatives of Agricultural Equipment (CUMA) since 1997. As most smallholder farmers cannot afford to purchase agricultural equipment, they form small farmers' groups, CUMAs, to jointly invest in new equipment or technologies. Each member has to contribute proportionately to the area of land he or she wishes to use the machinery for. In addition, farmers' groups can coordinate their farming tasks and learn new skills and best practices from each other. Depending on which crops are grown by a particular farmers' group, members may decide to acquire tractors, plows, and trailers, or processing equipment, such as cassava graters or palm nut oil machines.

POLICY AND PROGRAMMATIC COMMITMENTS

Since 2009, there has been a high-level commitment to agricultural mechanization, starting with the implementation of the Agricultural Mechanization Promotion Program (PPMA). Through the PPMA, Benin has invested US$20 million in the promotion of agricultural mechanization by importing 300 tractors and 12 combine harvesters, as well as tillers. During the first phase of the program (2009-2010) there were four types of beneficiaries: individual farmers, producer groups, young people (through the youth insertion program in agriculture) and training centers. The training centers and young people were automatically awarded 5 percent and 10 percent of the total number of tractors acquired by the PPMA, respectively.

Efforts are also being made to mechanize other segments of the food value chains. The government of Benin, with the support of India, completed the construction and installation of six agricultural processing plants in 2013. The objectives are to add value to local products, to reduce unemployment and poverty, reduce the drudgery of on- and off-farm tasks, reduce or eliminate post-harvest losses, and increase overall GDP. For example, Benin produces an average of 120,000 tons of oranges per year, but it sells barely a quarter of them.[5] The Allada plant produces pineapple juice, a plant in Kpomassè produces tomato concentrate, and the Zakpota plant produces orange juice. In northwestern Benin, two factories produce cashew-apple liquor and mango juice, and there is also a cashew kernel factory in Parakou, in northern Benin. The choice of construction sites was made according to where crops are mainly grown to ensure a reliable supply of raw materials. The production capacity of the pineapple, mango, and orange juice units is estimated at 10 tons per day, while that of the apple-cashew and tomato concentrate units is one ton per day and seven to 10 tons per day, respectively.[6]

Several research centers in Benin also offer programs that are aimed at increasing the uptake of mechanization in the agriculture sector. The Agricultural and Food Technology Program (PTAA) seeks to adapt existing agricultural technologies to the local context and to design new machines, tools, and technologies that would help farmers increase their productivity while maintaining good soil health and improving farmers' working conditions. Furthermore, the program is aimed at developing technologies for storage and preservation of food products to reduce post-harvest losses. PTAA has developed a locally adapted post-harvest technology for rice processing. In the south of Benin, where traditional processing systems are still widely used, more than 95 percent of rice production is not parboiled. This also means that local rice is not very competitive compared to imported rice, primarily due to its high breakage rate of 25 percent (compared to 55 percent for imported rice), and other low-quality factors, including the heterogeneity of the grains in the stock and the presence of white plates in the grain of rice. The new processing machines will improve the threshing, paddy drying, paddy cleaning, dehulling, rice sorting, and packaging, leading to an improved quality, less waste, and increased competitiveness compared to imported rice.[7]

Mechanization is further promoted through education programs. Four institutions focus on technical agricultural education: three Colleges of Technical Agricultural Education (CETA) and the Agricultural high school Medji of Sékou (LAMS), attached to the Ministry of Technical Education and Vocational Training. The main areas of teaching are vegetable production, livestock production, environmental and nature conservation, processing, equipment, economy and management, and general education.[8] Teaching at the CETAs is 25 percent theoretical and 75 percent practical, while teaching at LAMS is 40 percent theoretical and 60 percent practical.

Several institutions in charge of mechanization and ambitions programs and interventions reflect the government's commitment to boost agricultural growth and transformation through mechanization of the agriculture value chain. Importantly, the government has placed an emphasis on mechanization supply, capacity strengthening, skill development, and postharvest loss reduction to increase value addition at all stages of value chains. However, more opportunities could be created for the private sector, particularly local manufacturers, to increase the level of mechanization to meet continental and international targets on agriculture.

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