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Agricultural development and food Security in Sudan as seen from Kassala State

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Any success achieving Sustainable Development Goal 2 – zero hunger – relies on sustainable systems for food production and sound agricultural policies. Kassala State in Eastern Sudan is an interesting case for policy makers as it appears to have a good potential for agricultural growth. This policy brief uses data from Kassala State to assess the close link between agricultural development and food security, and investigates factors and policies that can strengthen agricultural development, thereby increasing food security in Sudan.

Key messages

- Agricultural development is important for food security. Ownership of land is important for facilitating investment in land, for supporting agricultural development and thereby food security.
- There is a gender gap in food production and food security. Male headed households produce more food than female headed households and are therefore more likely to be food secure.
- An increase in commercial agriculture would lead to higher income and thus increased food security by consumption of more and/or better quality food. However, the promotion of cash crops requires well-functioning markets where the incomes from cash crops can be used to replace the reduction in staple crops as land is diverted to cash crops.
- Policies should target households' incomes, smallholders' own production of food, diversify agricultural food crops, improve irrigation systems, improve agricultural services, increase agricultural productivity through technology adoption, and long-term human capital development.
- Provision of fertilizers and seed subsidies will contribute to agricultural production and thus food security.
- Home gardening will target food security at the household level in a direct way, as people can grow products for own consumption in their free time.

The role of agriculture in Sudan's development

The potential role of agricultural development to achieve food security is widely recognized in developing countries including Arab countries and Sudan. For instance, Sudan was considered by the Arab Gulf countries as the 'breadbasket' of the Arab World in the 1970s. In September 2015, the UN member states including Sudan adopted the 17 SDGs Global Goals for Sustainable Development to be achieved by 2030. This includes Goal 2 – Zero Hunger – committing Sudan to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. As in most other developing countries, in Sudan the achievement of this goal relies heavily on sustainable food production systems, resilient agricultural practices, boosting agricultural productivity and increasing investments in agriculture, both public and private.

In 2017 agriculture represented 40 percent of the GDP and 53 percent of the employment in Sudan. The sector contributed with staple crops as well as commercial farming for export and raw materials for agro-industrial food products. There may be a conflict between the two, as land is a limited resource. In Sudan, on the one hand, the agricultural strategy focusing on staple food production aims to achieve food self-sufficiency to enable Sudan to utilize its own domestic production to satisfy domestic market food needs. On the other hand, the agricultural strategy focusing on commercial agricultural production aims to increase other cash crops to enable Sudan to engage in trade with other countries through the export of commercial agricultural production of cash crops to satisfy the international market. The latter will contribute to higher incomes, which in itself may contribute to food security.

Agricultural development and food security based on findings from Kassala state

Kassala State in Eastern Sudan is an interesting case for policy makers as it appears to have a good potential for agricultural growth. The total cultivable area in Kassala State is around 1.7 million hectare or 40% of the state's total land (Abdalla, et. al., 2016). The potential agricultural endowments in Kassala, such as abundant water resources, arable land and livestock, render it a suitable place for agrarian activities.

We have investigated the relations between agricultural development and food security using data collected in Kassala State. Food insecurity is measured by the Household Food Insecurity Access Scale (HFIAS) that has been widely used for measuring food insecurity (see for instance, Bertelli and Macours, 2014; Tiwari, et al., 2013). We have used regression analysis to identify the determinants of production and consumption of food, and the relationship between the HFIAS index and the size of agricultural land, household income and household size. We conducted a survey among 500 households from rural and urban areas in five localities in Kassala State during April 2019. The localities reflect a diversity of agricultural activities defined by type of irrigation (including gravity irrigated area, flood irrigated land, basin irrigated areas and rain fed areas). Another criteria for selection is the importance of these five localities in food production and employment of population in Kassala State.

As expected, the immediate and significant determinants of aggregate production of food are size of agricultural land, livestock and irrigation systems. We find that own production of food and household income have positive effects on consumption of food. Repeating the analysis for the main staple food, sorghum, we find that the significant determinants of production of sorghum are as expected agricultural land and livestock. We find that the significant determinants of consumption of sorghum are family production of sorghum, household income and family size. The role of own production is an important finding indicating that smallholder farming is still important for food security and may not fully replace income growth from other sources.

Similarly, we find that the significant determinants of household food insecurity are own production of food, agricultural land and other household and

village characteristics. For example, male headed households produce more food and have lower levels of food insecurity than female headed households.

We also find that agricultural production does not give sufficient income for many households. This motivates the households to join nonfarm activities to generate more income. At the same time there are also limited income generating opportunities from nonfarm activities. We find that there appears to be both a poor diet quality and poor diversity as the majority of consumption comes from only five items – more than half of the consumed food comes from Sorghum. The high share of Sorghum in the total food consumption is not surprising considering the high share of Sorghum in the total agricultural production.

Policy implications for agricultural development and food security

Policies related to ownership of land are important for facilitating investment in land for supporting agricultural development, and may thus contribute towards securing food security. Policies should target diversification of agricultural food



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crops, improvement of irrigation systems, and improvement of agricultural services. Moreover, policy interventions should contribute to increase households' income by supporting diversification of income resources. Policies that aim to improve education levels are significant for enhancing skill levels and supporting taking up non-farm income-generating activities.

A gender gap related to food production and food security is demonstrated by the fact that male headed households produce more food than female headed households and also are much more likely to be food secure. A countermeasure may be to strengthen female land ownership.

One indirect way of increasing food security is to promote cash crops: An increase in cash crops or agricultural production for commercialization would lead to higher incomes, which allows farmers to consume more and/or better quality food. However, the promotion of cash crops requires well-functioning markets where the income from cash crops can be used to replace the reduction in staple crops as land is diverted to cash crops. This implies potential variation in implementation of policies between regions. In the poorest places, the policy may focus on staple food production (such as sorghum), while in more developed ones on cash crops (e.g. cotton).

Another intervention to increase food security may be through fertilizer and seed subsidies, since good quality fertilizers and seed varieties will contribute to enhanced agricultural production. Continued use of integrated technology packages of improved seeds, fertilizers, pesticides and agricultural mechanization will also contribute to increase production and productivity.

Yet another intervention to increase food security may be to encourage home gardening. Home gardening interventions will target food security in a more direct way, by promoting horticultural activities close to people's houses, managed by the family members during their free time.

References

- Abdalla, E., M, and Ebaidalla, M. E., and Ahmed, H. M., (2016) "Impact of Non-farm Income Activities on Food Security in Kassala," Kassala University Journal, Vol. 8, No. 7, pp. 176-201.
- Bertelli, O., and Macours, K., (2014) "Food security and agriculture in developing countries: Measurement and hypotheses for impact evaluations," Foodsecure Working Paper No. 21. LEI Wageningen.
- Tiwari, S., Skoufias, E., and Sherpa, M., (2013) "Shorter, cheaper, quicker, better: linking measures of household food security to nutritional outcomes in Bangladesh, Nepal, Pakistan, Uganda, and Tanzania," World Bank. Policy Research Working Paper 6584, the World Bank, Washington, D.C.

This policy brief is one of two briefs based on the findings in a CMI Sudan working paper (2020) that studies agricultural development and food security with the use of survey data from Kassala State. The researchers conducting the study are part of the Agriculture and Food Security cluster in the Assisting Regional Universities in Sudan (ARUS) programme. The ARUS programme is a collaboration between CMI, the University of Khartoum, Ahfad University for Women, the University of Bergen, and several regional universities in Sudan. The programme is funded by the Norwegian Embassy in Khartoum.