GCRFAFRICAP
CLIMATE SMART AGRICULTURE FOR DEVELOPMENT

POLICY TOPIC SUMMARY **March 2022**

Agricultural land in the context of climate risks

KEY MESSAGES

- iFEED focuses on changes to population-level nutrition security and climate-smart agriculture at the national level. Analysis includes 2050 projections of national food production, nutrition security and emissions for four contrasting scenarios, with resulting implications for national food system policy processes. Subnational simulations of future climate, crops and emissions underpin projected changes at the national level across 16 scenarios for Malawi, South Africa, Tanzania and Zambia.
- Expansion of land under agriculture, either for crops or pasture, is a feature of most of the modelled scenarios across the four focal countries. This is likely to lead to greater conflicts over land within agriculture (e.g. crops versus pasture), over land for agriculture versus other uses (e.g. woodland), and over water between agriculture and downstream consumers.
- Traditional and customary forms of land tenure are likely to come under increasing pressure from agricultural reform and land expansion. Insecurity of tenure or a lack of access to agricultural land are likely to lead to increased vulnerabilities, social inequality and rural poverty.
- A coherent and cross-sectoral policy approach is needed to secure traditional and customary forms of land tenure, to prevent agricultural expansion that damages other land uses with important environmental and livelihood functions, and that enables technological transformation in agriculture that is inclusive, equitable and leads to improved livelihood and nutritional outcomes.

Key findings: changes in agricultural land in iFEED

- Expansion of land under agriculture, either for crops or pasture, is a feature of most of the modelled scenarios across the four focal countries (Malawi, Tanzania, South Africa and Zambia). Such expansion is likely required to produce sufficient food in 2050 without yield improvements larger than those seen historically in the region.
- In Malawi and Zambia, agricultural land area expands in the high policy implementation/high market connectivity scenarios but contracts with high climate risks as climate change impacts reduce the land area viable for agriculture. In Tanzania agricultural land area expands in all future scenarios, but is coupled with increased yields in the high-tech scenarios.
- In the South Africa scenarios the picture is more complex, with pasture land increasing under both low climate risk scenarios, crop land increasing under the high climate risk and low land reform scenario, and land under agriculture overall decreasing under the high climate risk and high land reform scenario.

- Where the area under agriculture expands it is likely that there will be greater conflicts over land. For example, in Malawi, where agricultural land expansion occurs in the high policy implementation scenarios, conflicts over land are likely to occur between crop production and livestock grazing. The same is likely to be true in South Africa in the low land reform scenarios.
- Expansion of the area under agriculture is also likely to lead to increased conflicts between agriculture and other land uses, such as miombo woodland, which is not currently as widely protected by conservation legislation as other land use types[1]. Loss of miombo woodland may have significant impacts on biodiversity, greenhouse gas emissions, soil carbon, and on local livelihoods if they are lost as sources of food, medicines, fuel wood and building materials[2].
- Conflicts over water between agriculture and downstream consumers are likely to increase with the expansion of irrigation associated with increased area under crop production in the high policy implementation (Malawi), high market connectivity (Zambia), and high-tech (Tanzania) scenarios, and due to increased water demand in the high climate risk scenarios in South Africa. Increased water demand for agriculture may also exacerbate transboundary tensions over water resources.

Policy barriers and enablers

- Traditional forms of customary ownership of land[3] are likely to be put under increasing pressure by the agricultural reforms and land expansion associated with many of the future scenarios. Smallholder and subsistence farmers in particular are likely to be without title deeds or statutory recognition of land rights, making them vulnerable to loss of land as investment and technology enable elite capture of land[4].
- Insecurity of land tenure and increasing demand for land for commercial agriculture may force more smallholder farmers off the land. At the same time, without support to access farm technologies and markets, smallholder farmers may have to abandon agriculture. Both are likely to lead to increasing rural vulnerabilities and social inequality, and exacerbate rural poverty.
- South Africa has inherited a racially skewed land ownership, with the majority of commercial agricultural land (87%) held by a minority of farmers of European descent. Post 1994 land reforms have sought to transfer approximately 30% of farmland to native peoples through land restitution (returning land to historically dispossessed groups), land redistribution (transfer of land to historically disadvantaged groups) and land tenure reform (to secure rights for informal occupiers and leaseholders). However, land reform programs have lacked adequate financing and post-settlement support, such that many have failed or are on the verge of collapse, and agricultural productivity has declined.

[1] Timberlake J, Chidumayo E.N. 2011. *Miombo Ecoregion Vision Report*. Occasional Publications in Biodiversity WWF – SARPO.
[2] Kalaba FK, Quinn CH, Dougill AJ. 2013. Contribution of forest provisioning ecosystem services to rural livelihoods in the Miombo woodlands of Zambia. *Population and Environment*. 35(2): 1-24.
[3] "The tenure usually associated with indigenous communities and administered in accordance with their customs, as opposed to statutory tenure usually introduced during the colonial period" (FAO 2002).
[4] German L, Schoneveld G, Mwangi E. 2013. Contemporary Processes of Large-Scale Land Acquisition in Sub-Saharan Africa: Legal Deficiency or Elite Capture of the Rule of Law? *World Development*. 48: 1-18.

Policy pathways

- Cross-sectoral policy planning between agriculture and conservation departments will be needed to make sure adequate protections are in place for important land uses, such as miombo woodland, to prevent agricultural expansion leading to losses in important environmental (e.g. soil carbon) and livelihood (e.g. wood fuel) functions.
- Agricultural policy that targets increased commercialization will need to consider the implications for land tenure, and safeguard traditional and customary forms of land ownership. However, commercialization of agriculture, while increasing production in some countries and circumstances, is likely to make agriculture less resilient to climate impacts and increase the risks of yield losses.
- Securing land rights and tenure, combined with support for farmers to access technology, diversify agricultural production away from maize, and connect into local, regional and international markets, will be needed to ensure an equitable and inclusive agricultural future that leads to improved incomes and nutrition security under both low and high climate risks.

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About the Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) Programme
The Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) programme is a four-year research programme focused on improving evidence-based policy making to develop sustainable, productive, agricultural systems, resilient to climate change. The programme is being implemented in Malawi, South Africa, Tanzania, Zambia, and the UK led by the University of Leeds, in partnership with the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), a pan-African multi-stakeholder policy network. The programme is funded by the UK Government from the Global Challenges Research Fund (GCRF), which aims to support research that addresses critical problems in developing countries across the world. It is administered by the UK's Biotechnology and Biological Sciences Research Council (BBSRC) - UK Research and Innovation (UKRI).

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