Biennial Review 2019

Commitment 3: Ending Hunger by 2025

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Overview of Biennial Review Africa Agriculture Transformation Scorecard

Following the 2014 Malabo Declaration, African Union (AU) Member States pledged to conduct a continentwide Biennial Review (BR) to monitor and report on progress in achieving seven thematic commitments outlined in the Declaration, systematically reviewing progress and capacity to deliver on these commitments. The Inaugural Biennial Review Report (2017), the first of its kind in Africa, was launched and endorsed by the AU General Assembly in January 2018. The second BR report was presented at the AU General Assembly in February 2020.

The seven Malabo Commitments were translated into the following seven thematic areas of performance in the BR:

1. Re-commit to the principles and values of the CAADP process.
2. Enhance investment finance in agriculture.
3. End hunger by 2025.
4. Halve poverty through agriculture by 2025.
5. Boost intra-African trade in agricultural commodities and services.
6. Enhance resilience to climate variability.
7. Strengthen mutual accountability for actions and results.

The AU Commission, with support from various partners including the Regional Strategic Analysis and Knowledge Support System (ReSAKSS), Alliance for a Green Revolution in Africa (AGRA), Bill & Melinda Gates Foundation, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), World Bank, United States Agency for International Development, Africa Lead, and CAADP Non-State Actors Coalition, developed the Africa Agricultural Transformation Scorecard (AATS) as part of the BR to evaluate member states' progress toward the Malabo goals and recognize the best-performing countries. The AATS provides a gradual, incremental scale for assessing improvement, with "milestones" that indicate whether a country or region is on track to achieve the goals by 2025. For each BR year, the AU has set milestones

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for all indicators and sub-indicators, as well as overall milestones for the seven thematic commitments, and one overall milestone score. By comparing scores across countries, the peer-to-peer metric can stimulate continuous improvement and help identify countries implementing best practices.

Forty-nine AU Member States reported on their progress during this second cycle of the BR process (compared with 47 Member States in the inaugural report). The 2019 BR milestone score was set at 6.66 out of 10, compared with 3.94 in 2017. Only four out the 49 reporting countries surpassed the 2019 milestone, compared with 20 in 2017; at the regional level, no region was on track. In this brief, we examine more closely Thematic Commitment 3 (*Ending Hunger by 2025*), its goal and targets, scoring methodology, the successes and challenges faced by countries in meeting the 2019 milestones, and recommendations for supporting achievement of the Malabo commitments by 2025.

Overview, Data, and Methodology of Commitment 3

This commitment captures member states' ability to meet the food and nutrition needs of their respective populations through successful agricultural production, access to the means of production, reduced food waste, food safety, and social protection programs for the most vulnerable populations. In some sense, Commitment 3 is the most complex, with 21 (of the 47 total) distinct sub-indicators. Progress on this commitment also shows whether the broad investments in the Malabo goals and food systems resilience do in fact result in one of the primary purposes of food and agriculture: reducing hunger and malnutrition. Within the overall AATS, the relative importance of *Ending Hunger* increases as the 2025 deadline approaches. In future years, the *Ending Hunger* theme will account for 20–24 percent of the overall AATS score, compared with only 7 percent between 2017 and 2019. Thus, while less important to the 2019 score, attention to the trends of this indicator will be essential if the AU and its member states aim to achieve their 2025 goals.

Notably, the 2019 BR also added the new sub-indicator category *Food Safety* (*3.6*) to Commitment 3, reflecting the important role that safe food plays in resilient food systems, livelihoods, and trade. To measure progress toward *Ending Hunger by 2025*, countries reported the sub-indicators listed in Table 1, under six sub-themes: (*3.1) Access to agricultural inputs and technologies; (3.2) Agricultural productivity; (3.3) Reducing postharvest losses; (3.4) Social protection; (3.5) Food security and nutrition; and (3.6) Food safety.*

The overall milestone score for Commitment 3 was set at 5.04 in 2019, an increase from 3.71 in 2017. For the *3.2, 3.3, 3.5,* and *3.6* sub-themes*,* the 2019 milestones were all set at 3.0, or 30 percent of the final 2025 goal. Among the indicators for *3.1,* most of the 2019 milestones were set at their final 2025 levels, except for irrigation (*3.1ii)* at 6.5 and seed and breeding inputs (*3.1iii)* at 3.0. The social protection sub-theme (*3.4*) was set at 100 percent of the final 2025 milestone.

Data for sub-themes *3.1, 3.2, 3.4,* and *3.6* were derived primarily from available national data sources. However, as the results indicate, only a handful of the 49 reporting countries submitted data for several of the 21 *Ending hunger* indicators. Additional data sources include FAO (Food and Agriculture Organization of the United Nations), national departments of human services, the World Bank's World Development Indicators, the World Health Organization, UNICEF, and IFPRI (the International Food Policy Research Institute). However, most indicators lacked complete data for several member states. The Technical Guidelines for preparing country Biennial Review Reports details the full methodology used and data sources for the AATS scores.

Table 1. Biennial Review 2019, Africa Agricultural Transformation Scorecard for CAADP Commitment 3, Ending Hunger, sub-themes and indicators (2025 milestone in parentheses)

Commitment 3 sub-theme or sub-indicator (2025 benchmark goal in parentheses)	Reporting countries	Countries on-track
3.1) Access to agricultural inputs and technologies		0
3.1i. Fertilizer consumption (50kg per ha of arable land)	42	4
3.1ii. Increase in irrigated farmland (100% growth rate)	34	26
3.1iii. Increase in supplied improved-variety seeds or breed (100% growth rate)	25	16
3.1iv. Proportion of farmers with access to Agricultural advisory services (100%)	41	7
3.1v. Agricultural research spending (1% of AgGDP)	42	12
3.1vi. Proportion of farmers with secure land rights (100%)	37	3
3.2) Agricultural productivity		11
3.2i. Increase in agricultural labor productivity (100% value added per worker)	16	5
3.2ii. Increase in productivity (100% value added per ha of land)	27	12
3.2iii. Increase in yields (100% for 5 national priority crops)	26	9
3.3) Post-Harvest Losses *(Halve losses by 2025)*	13	10
3.4) Social Protection *(100% of resources needed for vulnerable populations)*	27	8
3.5) Food Security and Nutrition		7
3.5i. Prevalence of child stunting (<10% of children under age 5)	23	7
3.5ii. Prevalence of underweight (<5% of children under age 5)	18	6
3.5iii. Prevalence of wasting (<5% of children under age 5)	28	25
3.5iv. Proportion of the population that is undernourished (<5%)	18	8
3.5v. Increase in proportion of women with minimum dietary diversity (50% growth)	5	4
3.5vi. Proportion of 6-23 month-old children who meet minimum acceptable diet (50%)	9	3
3.5vii. Progress on reducing food insecurity (50% reduction among adult population)	14	9
3.6) Food Safety		24
3.6i. Progress establishing functional food safety systems (100% increase on index)	47	46
3.6ii. Progress reaching at least 50% for the Food Safety Health Index (FSHI)	17	7
3.6iii. Progress reaching at least 50% for the Food Safety Trade Index (FSTI)	7	2

Note: All baseline measurements based on 2015, except for *3.1ii* (irrigated agricultural area)

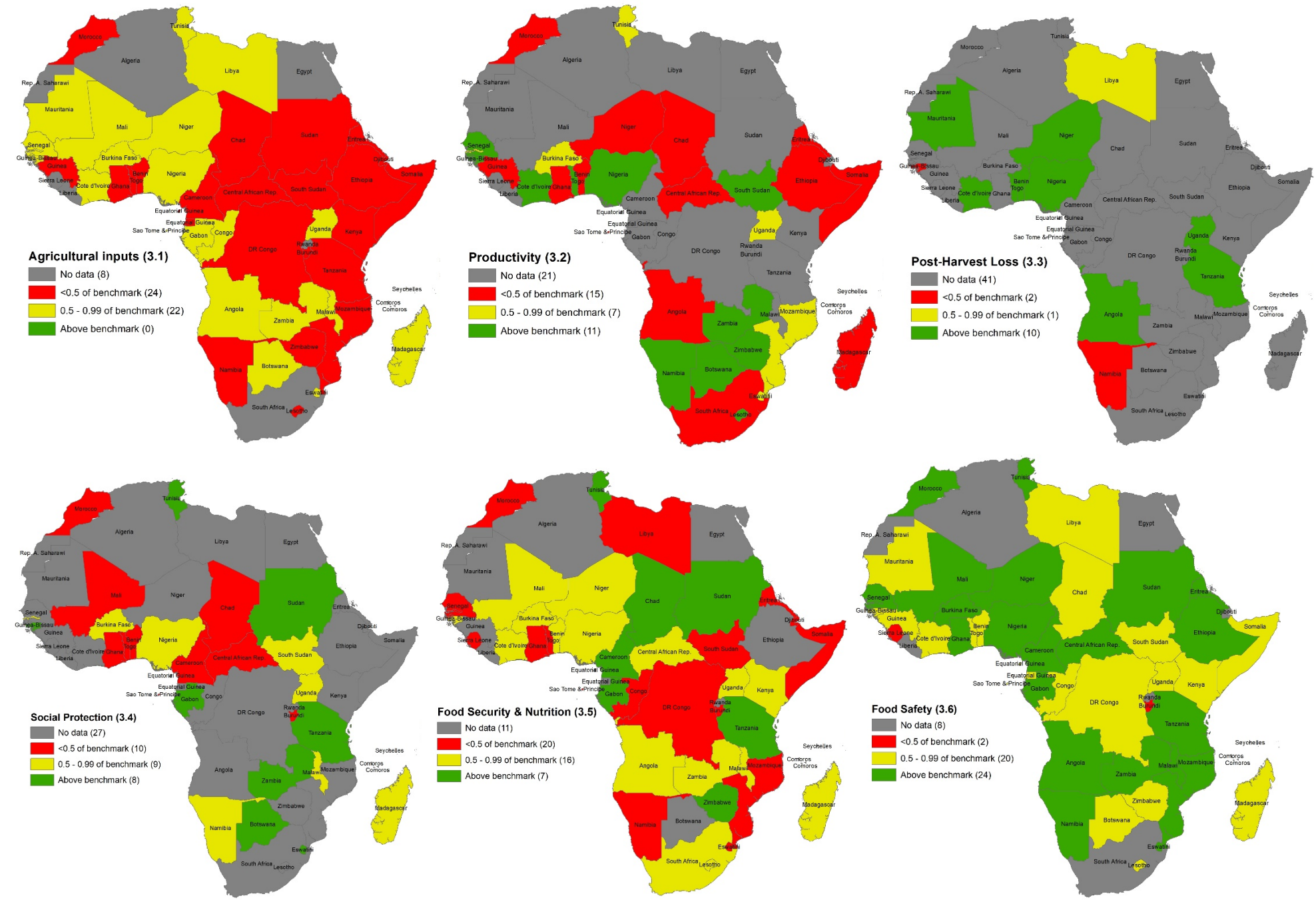


Figure 1. Biennial Review 2019, Africa Agricultural Transformation Scorecard, Commitment 3 Sub-themes

Sub-themes: *Access to agricultural inputs and technologies (3.1); Agricultural productivity (3.2); Reducing post-harvest losses (3.3) Social protection (3.4) Food security and nutrition (3.5); Food safety (3.6).*
Source: Authors' analysis, based on data from 2019 Biennial Review to the African Union Assembly on implementing the 2014 Malabo Declaration.

BR 2019 Results

Performance on the *Ending Hunger by 2025* commitment has been the lowest in both BR rounds, with zero countries on track in 2017 and only one, Uganda, surpassing the 2019 benchmark. Table 1 presents all sub-themes and indicators for Commitment 3 *and* identifies the number of member states that reported and are on track for each indicator and the six sub-themes. Except for Uganda, which moved from not being on track in 2017 to being on track in 2019, all other countries remained off track in both rounds. Figure 1 shows the six sub-themes of Commitment 3 graphically depicted, with green indicating countries that are on track, grey indicating no submitted data, and red and yellow indicating the degree to which countries fell short of the 2019 benchmark. As Table 1 and the sub-theme maps show, zero countries were on track for sub-theme *3.1* (access to agricultural inputs); 11 were on track for *3.2* (agricultural productivity); 10 for *3.3* (post-harvest losses); 8 for *3.4* (social protection); 7 for *3.5* (food security and nutrition); and 24 for *3.6* (food safety).

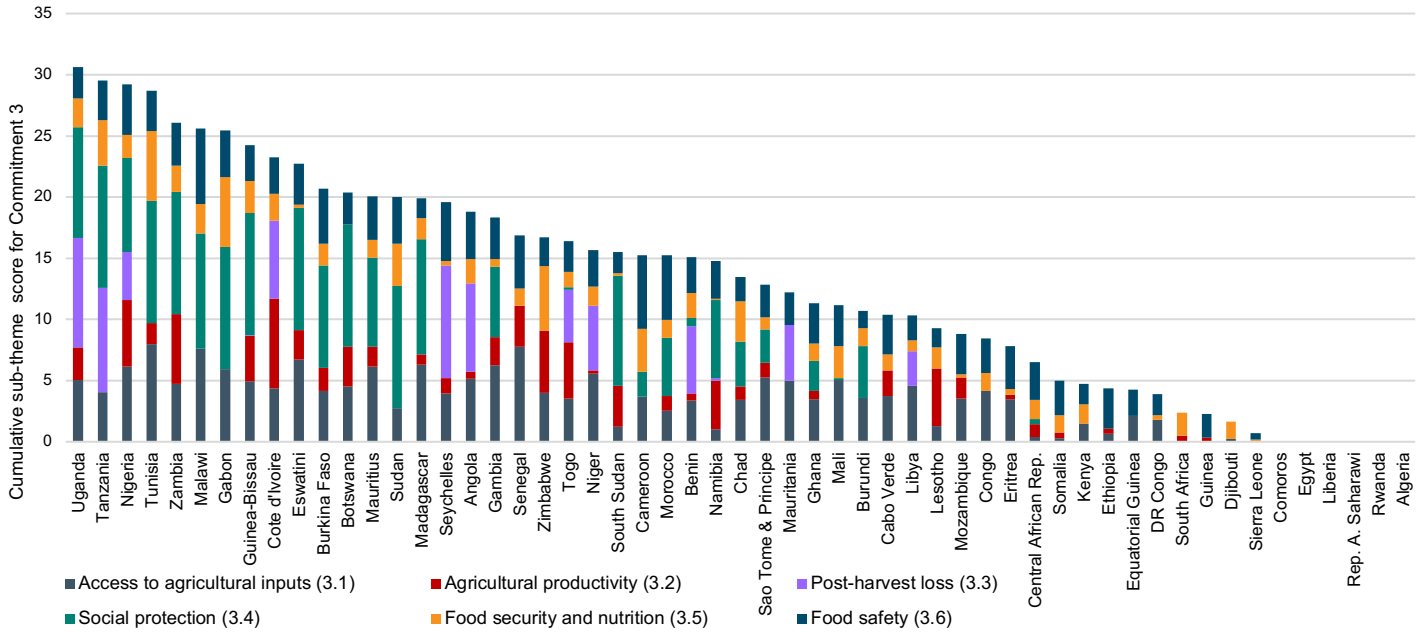
While the access to agricultural inputs sub-theme (*3.1*) had the fewest number of countries on track, it is the one with the most complete data for all indicators. For other sub-themes, some indicators suffered from poor data reporting, notably: increase in agricultural labor productivity *(3.2i)*; increase in proportion of women with minimum dietary diversity *(3.5v)*; proportion of children who meet minimum acceptable diet *(3.5vi)*; and progress on the Food Safety Trade Index *(3.6iii).*

Member states report reported low fertilizer use *(3.1i)* and very limited access to agricultural advisory education or extension services *(3.1iv).* Only 3 of 37 countries indicated that farmers had access to secure land rights *(3.1vi);* in 14 of the 37 reporting countries, less than 10 percent of farm households own or have secure rights to their farmland. Though only 13 member states submitted data on post-harvest losses *(3.3),* 10 of those reporting were on track for post-harvest loss reduction. Only 8 of 26 reporting countries met the 2019 milestone for allocating enough social protection resources to meet the required needs of vulnerable populations *(3.4).* Various indicators for the sub-commitment on food security and nutrition *(3.5)* suffered from either low reporting, poor performance, or both.

While indicator 3.6iii on the Food Safety Trade Index indicates low reporting and performance, most countries performed relatively well on this new sub-commitment, with 46 out of 47 reporting countries achieving the milestone of a functional food safety system *(3.6i)*. However, overall improvement on sub-commitment 3.6 will need more attention to meet the requirements for *Food Safety Health Index (3.6ii)* and *Food Safety Trade Index (3.6iii)*.

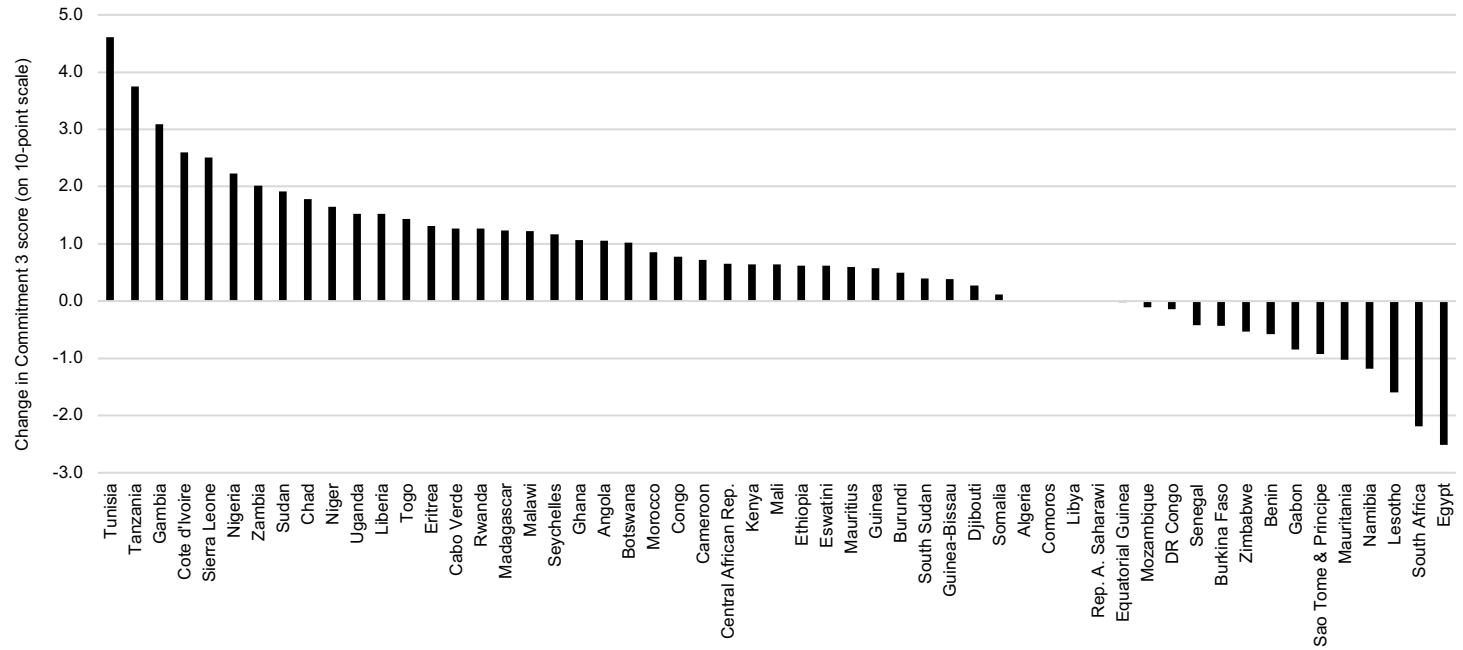
Overall sub-theme performance was poorest on agricultural productivity (*3.2*), post-harvest losses *(3.3)* and food security and nutrition *(3.5),* primarily due to low data reporting for agricultural productivity and post-harvest losses, and both low scores and low reporting for food security and nutrition. Figure 2 shows countries ranked by their overall Commitment 3 score, with colors in the stacked columns showing the contribution of each sub-commitment theme. All six sub-themes are equally weighted in their contribution to the overall Commitment 3 score. Improved performance in productivity, post-harvest losses, and food security and nutrition are imperative if the continent hopes to get on track to end hunger by 2025.

Figure 2. Agricultural Scorecard Transformation Score 2019, Commitment 3: Ending Hunger by 2025, by sub-commitment contributions to score, ranked by overall Commitment 3 score



Source: Authors' analysis, based on data from 2019 Biennial Report to the African Union Assembly on Implementing the 2014 Malabo Declaration.

Figure 3. Agricultural Transformation Scorecard, change in score for *Commitment 3: Ending Hunger by 2025*, 2017–2019



Source: Authors' analysis, based on data from 2017 and 2019 Biennial Reports to the African Union Assembly on Implementing the 2014 Malabo Declaration. ***Note:*** Scores from both 2017 and 2019 are on a 10-point scale, so the change presented is a direct computation of difference between 2017 and 2019 scores.

Thirty-seven countries improved their overall Commitment 3 score between 2017 and 2019, with the largest improvements by Tunisia, Tanzania, Gambia, Côte d'Ivoire, Sierra Leone, and Nigeria. Unfortunately, 14 countries scored lower in 2019 than in 2017, and 4 countries made no change. Figure 3 ranks all member states by the degree of change in overall score between 2017 and 2019.

Discussion and Policy Recommendations

The rather dismal performance on Commitment 3 in both 2017 and 2019 across the continent calls for urgent interventions. In particular, the following subset of Commitment 3 indicators and sub-themes merit extra attention due to both their low performance in the 2019 BR and their relationship to other indicators: fertilizer consumption *(3.1i)*; proportion of farmers with access to agricultural advisory services (*3.1iv)*; proportion of farmers with secure land rights *(3.1vi)*; and diet quality indicators *(3.5iv, 3.5v, and 3.5vi)*.[3]

Fertilizer consumption (3.1i)

Of the 42 countries that reported on this indicator, only 4 (Eswatini, Mauritius, Senegal, and Tunisia) met the milestone of 50 kg of nutrients per hectare of arable land, with Malawi close behind (49 kg/ha). Thirty countries report an average of 10 kg or less per hectare. Extreme soil degradation across the continent requires organic or inorganic soil amendments to reduce yield gaps (Tully et al. 2015; Symeonakis and Drake 2004; Vågen, Lal, and Singh 2005). Despite significant international investment in fertilizer consumption in Africa, many barriers remain, including poor or inconsistent access to fertilizer markets—a condition exacerbated in 2020 as borders closed in response to the pandemic (Ayanlade and Radeny 2020). In addition to accessibility, additional challenges include the fact that fertilizer may be of poor or unknown quality (Bold 2015); many farmers lack access to soil testing and thus may apply the wrong nutrient to address specific soil nutrient deficiencies, or they may apply fertilizer without proper erosion protection, thus wasting fertilizer while nominally improving outcomes and polluting water sources (Michelson 2017). For this reason, efficient fertilizer consumption must be appropriately paired with advisory services and soil management practices. For example, Davis et al. (2012) showed that reducing nitrogen (N) fertilizer from 80 kg/ha to 16 kg/ha or 11 kg/ha (respectively, for 3- and 4-year rotations) had no negative effect on yield; rather, maize and soybean yields *increased* in 3-year and 4-year rotation systems that incorporated locally available organic amendments. Inorganic fertilizers benefit one season of productivity, making producer yields highly vulnerable to market volatility, market access, and geopolitical phenomena from year to year. Strong up-front investments in integrated soil management systems can build long-term resilience while improving yields and ecosystem services and maximizing the yield effect of fertilizer inputs.

Though CAADP has not prioritized soil management (MaMo 2014), stronger emphasis on nutrient recycling, crop rotation, reduced tillage, agroforestry, and other good conservation management can maximize the impact of Africa's limited fertilizer use, as indicated in Davis et al. (2012), where N application more closely matched African N consumption. Like many indicators, accessible data-reporting systems should be developed to enable all farmers to report seasonal usage of both organic and inorganic fertilizers, as well as rewarding practices that enhance fertilizer utility. When effective demand for chemical inputs is highly constrained, such as during the pandemic, farmers need straightforward guidance on how to report use of organic or traditional fertilizer methodologies, along with management practices (some practices overlap with Commitment 6) so that data reflect all soil-enhancing inputs.

3 An additional brief is dedicated to issues related to food safety (3.6).

Proportion of farmers with access to agricultural advisory services (3.1iv)

Only 7 of 41 reporting countries indicated that 100 percent of farmers have access to agricultural advisory services. An additional 14 countries indicated that between 50 and 95 percent of farmers have access. Yet the majority reported that less than half of farmers have access to essential advisory or extension training. A recent book published by IFPRI on agricultural extension and advisory services globally, with a particular focus on Africa south of the Sahara, shares similar findings and also notes that advisory services are chronically underfunded and poorly coordinated among pluralistic advisory providers, which may include the government, private sector, and civil society (Davis, Babu, and Ragasa 2020). Over-burdened extension agents find themselves pulled in multiple directions (with government advisors spending only 40 percent of their time advising farmers) and often receive minimal training or continuing education. These chronic challenges have led researchers and policy analysts to question how pluralistic services can most synergistically interact with centralized government services. Shared platforms must be developed to reduce redundancy of services and improve communication between providers. Other recommendations include moving away from a top-down approach to more horizontally scalable information-sharing to reduce the burden on underfunded services. Incorporating farmers and farming communities (including women and youth) in participatory research increases farmer participation in decision making and shows strong potential to address food security, climate resilience, and equity goals, and help farmers engage regional markets (IPES-Food 2020). The aforementioned IFPRI book recommends emboldening producers to identify and prioritize their needs so that they become active problem solvers of their own agronomic challenges instead of taking a supply-driven approach of pushing technologies that may not suit farmers' needs. Participatory research in Malawi, in which farmers selected and tested a range of agroecological practices according to their preferences and labor resources, showed that in addition to improved management practices, households experienced greater food security, improved dietary diversity, and gender equity (Bezner-Kerr et al. 2019). Engaging farmers as participatory researchers also facilitates learning and community information-sharing, even when extension agents cannot visit communities for extended periods of time, and encourages further local experimentation. Lastly, logistical and data-collection barriers must be overcome. Due to transportation time required to support remote farmers, service providers should be provided motorcycles or other vehicles, and advisory services should strategically integrate information and communication technologies—from radios to smartphones and other digital technologies—to extend the reach of information exchange and allow producers to report on both formal and farmer-led advisory services.

Proportion of farmers with secure land rights (3.1vi)

Secure land rights and/or guarantee of land tenure remain a primary factor in determining a farmer's willingness to invest in long-term management practices and infrastructure that improves on-farm yields and environmental sustainability. Nonetheless, land insecurity persists as one of Africa's greatest challenges to agricultural development. Instead of increasing farmer land tenure, millions of hectares of land have been subject to large-scale land acquisitions, leading to the eviction of small-scale farmers and loss of access to grazing land. While member states should improve the quality of data for this indicator, they also must establish mechanisms to prevent loss of existing land rights. Africa south of the Sahara has been a hot-spot of farmland acquisitions, with international speculators, state-owned enterprises, members of the diaspora, and domestic political elites viewing land-based investments as increasingly attractive; in many cases, governments provide the regulatory framework and financial, technical, and administrative support conducive to land acquisitions (Anseeuw et al. 2012; Deininger and Byerlee 2011). True progress on this indicator will require challenging negotiations among stakeholders, and must include widespread participation from farmer communities at risk of land acquisition. In some cases, the assumption of large-scale investment as an effective pathway for economic development and poverty alleviation will need to be reconsidered. Identifying land for development requires inclusive legislative

and negotiation processes, with checks and balances on customary authorities, state agencies, and others to protect the rights of small farmers. Monitoring functions with full public disclosure of findings must be upheld by governmental and nongovernmental agencies. Because of the difficulties of safeguarding customary rights even in countries currently providing "best practice" legal protections, human agency among civil society and political leaders will play a role in shaping outcomes (German, Schoneveld, and Mwangi 2013) — outcomes that have severe consequences for food security and farmers' ability to make long-term investments in sustainable management practices and agricultural resilience (see Commitment 6 brief on *Climate Resilience* for more details).

Diet quality (3.5iv, 3.5v and 3.5vi)

Poor data on nutrition — most notably, on diet *quality* — remains a major reporting challenge in most countries. Indicators such as the *increase in proportion of women with minimum dietary diversity* and *proportion of children (6–23mo) who meet minimum acceptable diet* were especially underreported. This challenge requires improved data capacity as well as continentwide prioritization of diet quality, not mere caloric sufficiency or economic growth. Nutrition experts note that agricultural development programs alone do not sufficiently improve diets of all household members; strong health and nutrition communication and women's empowerment activities are recommended. Social factors like gender equality significantly influence diet quality. For example, a four-year study in Malawi showed that households in which spouses discussed farming were 2.4 times more likely to have improved food security and dietary diversity compared with those in which spouses did not discuss farming (Bezner-Kerr et al. 2019). Finally, emphasis on diet quality will help policymakers prevent the potential negative dietary changes associated with some agricultural development programs, where rising incomes in low- and middle-income countries have resulted in rapid rises in overweight and obesity (Popkin, Corvalan, and Grummer-Strawn 2020).

Achieving Malabo Declaration commitments will pave the road for Africa to achieve the Sustainable Development Goals. The expected benefits for smallholder farmers and millions of ultra-poor and food-insecure households are tremendous. However, progress will require persistent investment in *both* the Malabo commitments themselves and member states' capacity to measure and report on those commitments. Building resilient food systems across Africa demands extensive investments in land, water, locally relevant knowledge, and vulnerable communities, as well as robust systems to track progress and predict and mitigate the risks of increasing shocks. The COVID-19 outbreak poses significant challenges to already strained food systems in Africa. The pandemic is affecting health, in terms of morbidity and mortality, with negative repercussions on non-health sectors such as agriculture, tourism, transportation, and entertainment. The impacts of COVID-19 further exacerbate a situation of ongoing shocks such as desert locust swarms, fall armyworm spread, droughts, conflict, and insecurity. As pointed out by FAO/AU (2020), the continent has made important progress in terms of prioritizing social protection as a core component of poverty reduction and rural development strategies, including in the context of the Malabo Declaration; the COVID-19 pandemic offers a critical opportunity to scale up these efforts. Previous crises including the HIV/AIDS epidemic, food crises, and Ebola outbreaks have shown that while responding health needs may be the main priority, impacts on income, food security, and livelihoods must also be addressed by employing both immediate and medium-term strategies to build resilience and prevent backsliding on poverty reduction and food security gains.

REFERENCES

Ayanlade, A. and Radeny, M. 2020. COVID-19 and food security in Sub-Saharan Africa: Implications of lockdown during agricultural planting seasons. *npj Science of Food 4*(1), pp. 1–6.

Anseeuw, W.; Boche, M.; Breu, T. ; Giger, M.; Lay, J.; Messerli, P. and K. Nolte. 2012. *Transnational Land Deals for Agriculture in the Global South. Analytical Report based on the Land Matrix Database.* CDE/CIRAD/GIGA, Bern/Montpellier/Hamburg

Bold, T., Kaizzi, K., Svensson, J., and Yanagizawa-Drott, D. 2015. *Low quality, low returns, low adoption: Evidence from the market for fertilizer and hybrid seed in Uganda*. London: Centre for Economic Policy Research.

Davis, K.E., Babu, S.C., and Ragasa, C. 2020. *Agricultural extension: Global status and performance in selected countries*. Washington, DC: IFPRI.

Deininger, K. and Byerlee, D. 2011. *Rising global interest in farmland: Can it yield sustainable and equitable benefits?* Washington, DC: World Bank Group.

Davis, A.S., Hill, J.D., Chase, C.A., Johanns, A.M., and Liebman, M., 2012. Increasing cropping system diversity balances productivity, profitability and environmental health. *PloS One 7*(10), p. e47149.

FAO/AU. 2020. “Social protection: Ensuring effective response and inclusive recovery in the context of

COVID-19 in Africa.” April 12. http://www.fao.org/3/ca8631en/ca8631en.pdf.

German, L., Schoneveld, G., and 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*, p. 18.

IPES-Food, 2020. The added value(s) of agroecology: Unlocking the potential for transition in West Africa.

Kerr, R.B., Kangmennaang, J., Dakishoni, L., Nyantakyi-Frimpong, H., Lupafya, E., Shumba, L., Msachi, R., Boateng, G.O., Snapp, S.S., Chitaya, A., and Maona, E. 2019. Participatory agroecological research on climate change adaptation improves smallholder farmer household food security and dietary diversity in Malawi. *Agriculture, Ecosystems & Environment 279*, pp.109–121.

Malabo Montpellier Panel. 2014. *No ordinary matter: Conserving, restoring, and enhancing Africa’s Soils.* Dakar: Agriculture for Impact.

Michelson, H. 2017. Variable soils, variable fertilizer quality, and variable prospects. *Tropical Conservation Science 10*, p. 1940082917720661.

Popkin, B.M., Corvalan, C., and Grummer-Strawn, L.M. 2020. Dynamics of the double burden of malnutrition and the changing nutrition reality. *Lancet 395*(10217), pp. 65–74.

Symeonakis, E. and Drake, N. 2004. Monitoring desertification and land degradation over sub-Saharan Africa. *International Journal of Remote Sensing 25*(3), pp. 573–592.

Tully, K., Sullivan, C., Weil, R., and Sanchez, P. 2015. The state of soil degradation in sub-Saharan Africa: Baselines, trajectories, and solutions. *Sustainability 7*(6), pp. 6523–6552.

Vågen, T.G., Lal, R., and Singh, B.R. 2005. Soil carbon sequestration in sub-Saharan Africa: A review. *Land degradation & development 16*(1), pp. 53–71.

The Regional Strategic Analysis and Knowledge Support System (ReSAKSS) is led by AKADEMIYA2063 in partnership with the African Union Commission (AUC), the African Union Development Agency–NEPAD (AUDA-NEPAD), and leading regional economic communities (RECs). AKADEMIYA2063 receives funding from the Bill & Melinda Gates Foundation (BMGF) and the United States Agency for International Development (USAID) through the Feed the Future Policy LINK program under the Cooperative Agreement 7200AA19CA00019. The views expressed in this publication do not necessarily reflect the views of the BMGF, USAID, or the US Government.

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