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Foresight Analysis: Drivers and Triggers of Agrifood Systems Transformation in Africa

Executive Summary

Responding to calls by the 28th Session of the Committee on Agriculture and other governing bodies, FAO is currently engaged in foresight exercises for the transformation of agrifood systems at all levels. This information note outlines the findings to date of the Regional Foresight Exercise (RFE) for sustainable and resilient agrifood systems, ongoing in the African region and elicits further engagement of Members and other regional stakeholders in strategic foresight to support decision making processes.

Agrifood systems in the region face short- and long-term challenges and opportunities. Within the conceptual and methodological framework established by the recently published FAO flagship report *The future of food and agriculture – Drivers and triggers for transformation* (FOFA-DTT), regional experts are analysing selected priority drivers (driving forces) of agrifood systems to detect signals of possible future trends, outline alternative future scenarios, identify global priority areas or ‘triggers for transformation’ and strategic options to activate such triggers.

The trends across subregions in population, urbanization, and economic growth, signal the exacerbation of already urgent challenges to face, including the endemic dimension of multidimensional poverty and food insecurity. Additionally, the low productivity of the agricultural sector compared to other regions, in combination with climate change, accelerate the overuse of natural resources and their degradation process, boosting conflict and political violence at several levels. Conflicts, political instability, and natural disasters are among the factors that increase communities’ vulnerability, to the extent of provoking massive forcibly internal displacement and international migrations.

If the neglect of public investment continues, innovative production approaches may be more unlikely to materialize, while differences of per capita income, savings and investment potential may further exacerbate the different capital-intensities of agriculture across countries, regions, and continents. Concurrently, though, emerging agroecological practices that trade off physical with human capital and other innovative approaches may signal a possible future change of paradigm in agricultural practices. On a global scale, the ongoing conflicts such as the wars in Ukraine and the Middle East

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stress the trade-off between efficiency, brought by specialization, and resilience, implied by diversification of activities and income sources.

The RFE builds on four global long-term alternative scenarios of possible futures presented in FOFA-DTT, to provide more region-nuanced narratives. To move future agrifood systems towards a scenario of sustainability and resilience, FAO has identified, four ‘triggers for transformation’, to be targeted by suitable strategies, policies, and behavioural changes: (i) Institutions and governance; (ii) Consumer (citizen) awareness; (iii) Income and wealth distribution; and (iv) Innovative technologies and approaches.

Preliminary RFE findings emerged about the regional nuances of these triggers, to be further articulated at country level for HICs and LMICs. Middle-income countries are at a crossroads. They may follow the unsustainable development paradigm adopted by HICs, thus largely contributing to further degrading natural resources, exacerbating climate change, and leading to ungovernable inequalities such as the FOFA-DTT paradigmatic ‘*Race to the Bottom*’ (RAB) scenario. Alternatively, particularly if HICs set a good example, they may adopt innovative development paradigms towards more sustainable alternative futures such as the paradigmatic ‘*Trading off for Sustainability*’ (TOS) scenario.

FAO’s Strategic foresight work is expected to benefit from the support from members as well as members may benefit from FAO’s strategic foresight findings to frame and nurture their strategic decision-making processes for transforming agrifood systems.

Queries on the content of this document may be addressed to:

ARC Secretariat

ARC-Secretariat@fao.org

I. Short and long-term challenges facing countries in the region

1. Short-termism and political economy dynamics have undermined tax revenues and fiscal space, inclusive growth, and investment in innovation. Inequality has been exacerbated by volatile economic growth, low public investment, and inefficient wealth redistribution.
2. Geopolitical and geoeconomic tensions, growing inequalities, ecosystems degradation and climate change may force a trade-off between short-term efficiency and longer-term resilience, emphasizing the need for reliance on own production processes and favouring domestic agricultural processing. Such shifts could potentially impact trade and investment flows. To progress towards sustainability, decarbonizing economies may require substantial investment.
3. The reassessment of domestic agrifood systems to reduce their dependence from the external context, also due to the recurring disruptions on supply routes, may change the relative domestic prices of goods, including food and factors of production. Concurrently, geopolitical conflicts may increase the cost of servicing external debt and importing food and agricultural inputs.
4. The worsening of the exchange rates has impacted food prices, particularly in food-importing countries. Long-lasting debt may widen divergence between the region and high-income countries (HICs). Fragile economies are particularly exposed to debt distress¹ and are being impacted by the effects of global monetary policy change and the evolution of interest rates.
5. Civil society groups may have the potential to stimulate and complement governments' action. Adopting circular economy approaches in agriculture, incorporating Indigenous Peoples' knowledge² and building upon traditional agrifood practices; preventing the shift of consumption towards less healthy diets and keeping obesity and overweight below the global trends³; and enhancing regional cooperation are possible pathways forward.
6. Extreme weather events, including droughts and floods, disrupt lives and economies. Small islands and coastal areas are highly vulnerable to sea-level rise. Regarding agriculture, climate change is already reinforcing the degradation of ecosystems and erosion, the loss of soil fertility and biodiversity, particularly where conventional agriculture, monoculture, prevails. The high use of unregistered or banned and Highly Hazardous Pesticides (HHPs) is also posing serious risks to human health⁴ and the environment.⁵ Overall, untaxed environmental costs raise serious concerns.
7. Governments in the African region face these urgent realities, further exacerbated by the specificities that encompass the region. African population is continuously growing, and cities are increasing in size and number. Yet, in many African countries, rapid urbanization has not been aligned with a significant enhance of productivity growth and dynamism of non-agricultural sectors. The lack of a structural transformation is exacerbating the endemic dimension of poverty and the already existing food security emergencies.
8. African subregions are significantly different from each other. Southern Africa shows the lowest population growth rate and the best economic performance, thanks to some level of

¹ See International Monetary Fund's list of Debt Sustainability Assessments (DSA) for Low-Income Countries (LIC) reporting the debt distress status, as of 30 November 2023: [LIC DSA Comprehensive List 2023 November COM\(37\).xlsm - Read-Only \(imf.org\)](#).

² Africa has the second largest concentration of Indigenous Peoples with 16.3 percent of the global Indigenous Peoples. <https://www.fao.org/indigenous-peoples/en/>

³ [Reardon, T., Tschirley, D., Liverpool-Tasie, L. S. O., Awokuse, T., Fanzo, J., Minten, B., ... & Popkin, B. M. \(2021\). The processed food revolution in African food systems and the double burden of malnutrition. *Global Food Security*, 28, 100466.](#)

⁴ Self-poisoning occurs primarily in rural areas of low- and middle-income countries in Africa. United Nations Environment Programme (2022). *Synthesis Report on the Environmental and Health Impacts of Pesticides and Fertilizers and Ways to Minimize Them*. Geneva. <https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/38409/pesticides.pdf>

⁵ Bertrand, PG (2019). *Uses and misuses of agricultural pesticides in Africa: neglected public health threats for workers and population. In Pesticides-use and misuse and their impact on the environment*. 1-14. <https://doi.org/10.5772/intechopen.84566>

diversification. Eastern and Western African economies are very vulnerable to poverty and food crises due to ongoing conflicts, erratic weather conditions, and high dependence on natural resources and agricultural production. Central Africa remains the poorest subregion despite the diversity of its natural resources and its strategic position for subregional trade.

9. Despite a significant reliance on agriculture, the sector's productivity is still very low. Lack of innovation and technological equipment exacerbates pressure on natural resources and fuel conflicts, mainly in rural areas, where the availability of natural resources is also challenged by the impact of climate change.

10. Amid these challenges, it becomes crucial to transition from short-termism towards a more strategic long-term approach.

II. Background to the Regional Strategic Foresight Exercise

11. Responding to calls by the 28th Session of the Committee on Agriculture⁶ to reinforce strategic foresight capacities and activities, FAO is currently engaged in foresight exercises for the transformation of agrifood systems at all levels. In this endeavour, the Organization benefits from the conceptual and methodological framework established by the recently published FAO flagship report *The future of food and agriculture – Drivers and triggers for transformation* (FOFA-DTT),⁷ based on the Corporate Strategic Foresight Exercise 2020–2022. This approach underscores the complementarity of qualitative and quantitative foresight; therefore, FAO is strengthening its quantitative analysis and modelling capacities to support Members to better anticipate future scenarios for strategic decision making.

12. In this context, the Regional Office for Africa (FAO RAF), as well as the other FAO Regional Offices, is engaged in a Regional Foresight Exercise (RFE) on the future of agrifood systems, supported by the FAO Foresight Network (FFN) which comprises several Offices and Divisions.

13. The RFE aims to: i) develop regional and subregional strategic visions and actions to move agrifood systems towards sustainability and resilience; ii) support United Nations Common Country assessments and FAO Country Programming Frameworks; and iii) enhance institutional capacities on strategic foresight exercises at all levels.

14. The RFE provides a granular assessment of regional dynamic relationships occurring among agrifood, socioeconomic and environmental systems (**Figure 1**), through a stepwise analytical process that considers:

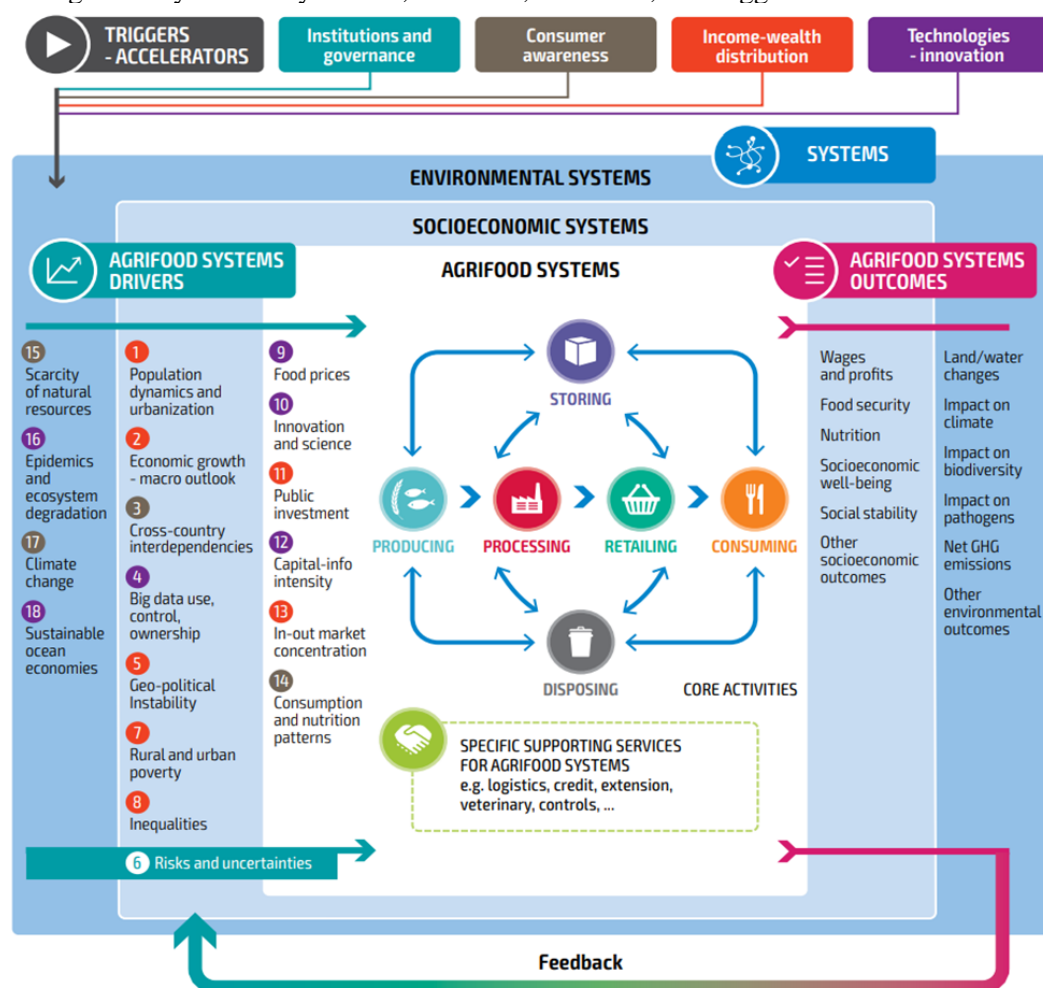
- a. **Key drivers** (driving forces) of agrifood systems;
- b. **Weak signals** of possible futures;⁸
- c. **Scenario narratives** for alternative futures based on weak signals;
- d. **Triggers for transformation** – priority focus areas that could transform agrifood systems; and
- e. **Strategic options** and policies to activate key triggers for transformation.

15. This information note outlines RFE's findings to date and elicits further engagement of Members and other regional stakeholders in strategic foresight.

⁶ <https://www.fao.org/3/nj008en/nj008en.pdf>

⁷ FAO (2022). *The future of food and agriculture – Drivers and triggers for transformation*. FAO UN. Rome <https://www.fao.org/3/cc0959en/cc0959en.pdf>

⁸ The term “weak signals” in future studies, borrowed from Strategic Early Warning Systems, refers to events that could magnify to determine the future, or shrink and become irrelevant.

Figure 1. Agrifood systems: key drivers, activities, outcomes, and triggers for transformation

Note: Agrifood systems (white box at the centre) operate within broader socioeconomic and environmental systems (light blue and dark blue boxes). Drivers (left-hand side) influence agrifood systems' outcomes (right-hand side). Triggers for transformation (top) affect agrifood systems through their impacts on drivers.

Source: FAO. 2022. The future of food and agriculture – Drivers and triggers for transformation. The Future of Food and Agriculture, no.3. Rome. <https://www.fao.org/3/cc0959en/cc0959en.pdf>, based on F4F Model <https://foresight4food.net/food-systems-model/>

III. Drivers of agrifood systems in the region

16. Based on the several rounds of consultations, regional experts agreed on selecting 9 regional priority drivers for the agrifood systems in the African region⁹, out of the 18 global drivers proposed in the FOFA-DTT report, as shown in **Table 1**. These were identified as being the most significant and impactful in the African region. Noteworthy, these drivers interact with each other, being both influenced and influencing the others in a dynamic manner. Analysing the trends of each driver and their interactions helps understand past and recent performances of agrifood systems, and how socio-

⁹ The African region refers to sub-Saharan Africa. The analyses, carried out at regional and subregional level, comprise four subregions: Central Africa (Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, Sao Tome and Principe); Eastern Africa (Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda); Southern Africa (Angola, Botswana, Comoros, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, United Republic of Tanzania, Zambia, Zimbabwe); and Western Africa (Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali Niger, Nigeria, Senegal, Sierra Leone, Togo). For more details on the country groups see the [FOFA Data Dashboard](#).

economic and environmental systems have influenced them. Moreover, this analysis also hints at possible future trends (weak signals).

Table 1. Priority drivers of agrifood systems for Africa

Priority Driver	Related Drivers
Population dynamics and urbanization (Driver 1)	Consumption and nutrition patterns (Driver 14) Rural and Urban Poverty (Driver 7)
Economic growth, structural transformation, and macroeconomic stability (Driver 2)	Inequalities (Driver 8)
Cross-country interdependencies (Driver 3)	
Geopolitical instability and conflicts (Driver 5)	Risk and Uncertainties (Driver 6)
Food prices (Driver 9)	Market concentration (Driver 13)
Innovation and science (Driver 10)	Big data use, control, ownership (Driver 4) Capital and information intensity of production (Driver 12)
Public and private investments (Driver 11)	
Scarcity and degradation of natural resources (Driver 15)	Sustainable Ocean Economies (Driver 18)
Climate Change (Driver 17)	Epidemics and degradation of ecosystems (Driver 16)

Notes: The left-end column contains the priority drivers chosen for the African region; the right-end column contains drivers that are linked with each priority driver.

Source: FAO. 2024. *Regional Foresight Report for Africa*. Draft. Unpublished

IV. Selected key drivers and related weak signals

17. To complement experts' assessments and identify "weak signals" of possible futures, quantitative analyses of key drivers, were provided through the interactive FOFA Data Dashboard,¹⁰ and other external sources for indicators. Preliminary key findings of priority Drivers' and their interaction in the Region are summarized here below.¹¹

Population dynamics, urbanization, economic growth, and inequalities

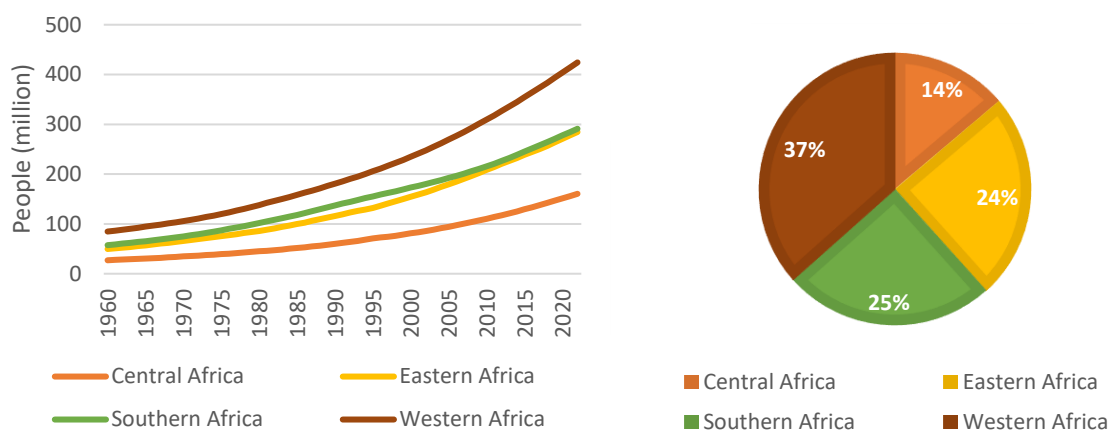
Since 1960, African population has continuously grown, yet with consistent disparities across subregions. Currently, more than the 37 percent of the total population is concentrated in Western Africa (

18. **Figure 2).** As the African population grows, its demographic structure evolves: from 1950 to 2020 the average age dropped from 19.1 to 18.7 years in contrast with a global ageing population whose average in the same period shifted from 23 to 31 years¹².

¹⁰ <https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/>

¹¹ This information note portrays selected preliminary analyses of drivers. Full analyses are to be provided in the Regional Foresight Report under preparation as part of the RFE.

¹² Elaboration of data by the UN Population Division, World Population Prospects: [The 2022 Revision \(2023\)](#)

Figure 2. Population in Africa by subregions from 1960 to 2022 and in 2022

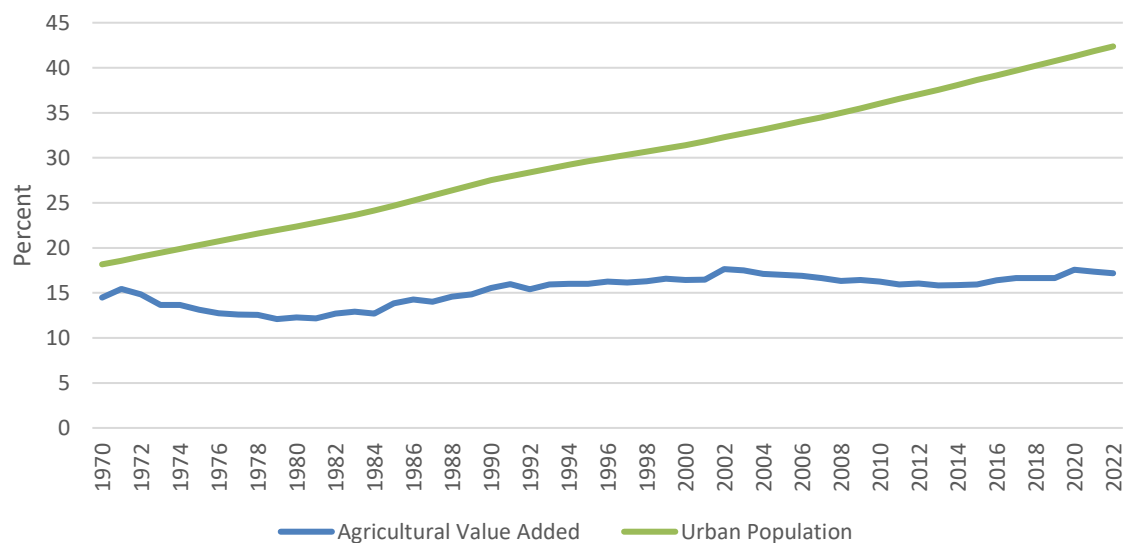
Source: Authors' elaboration based on UN Population Division, accessed through the [FOFA Dashboard](#).

Note: Subregional aggregates exclude HICs. The left-hand graph shows total population in African Subregions. The right-hand pie chart shows the share of population by subregion in the latest year available (2022).

19. With urban population growing more than rural population, Africa may be locked in a sort of 'urbanization without industrialization'¹³, a process where the contribution of agriculture to the economy remains stable and consistent, while the urban population increases (**Figure 3**). This situation reflects the slower development of labour productivity in the non-agricultural sector (**Figure 4**), which does not absorb the increasing supply of labour from a growing urban population in search for job opportunities and better income. This situation is typical of countries abundant in natural resources that are the main drivers of growth, such as Angola, Equatorial Guinea and Zambia.

¹³ Gollin, D., Jedwab, R. & Vollrath, D (2016). Urbanization with and without industrialization. *J Econ Growth* 21, 35–70. <https://doi.org/10.1007/s10887-015-9121-4>

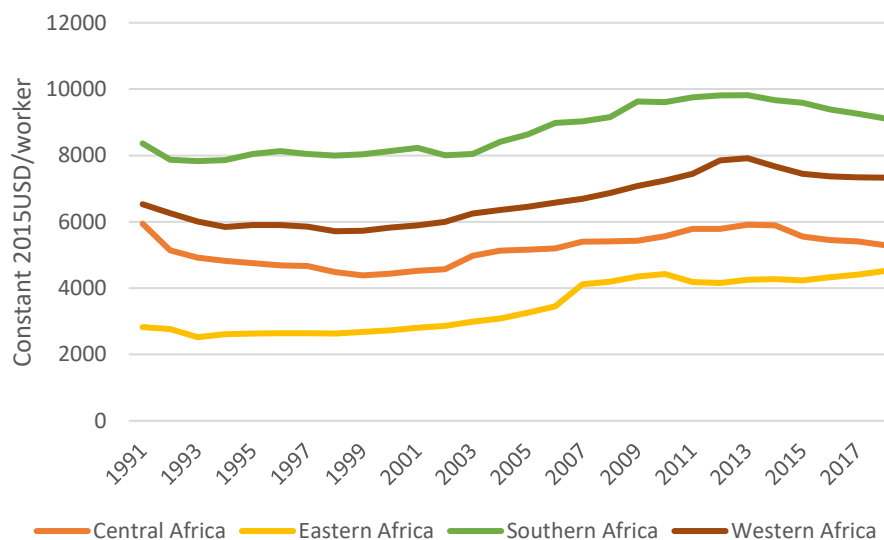
Figure 3. Evolution of agricultural value added (as a share of GDP in constant 2015 USD) and urban population (1970-2022)



Source: Authors' elaboration. Agricultural value added based on FAOSTAT, accessed through the [FOFA Dashboard](#) and urban population based on United Nations Population Division.

Note: Regional aggregates exclude HICs. Agricultural valued added as a share of GDP (constant 2015 USD) corresponds to division 1-3 of the International Standard Industrial Classification (ISIC, revision 4) and includes forestry, fishing, cultivation of crops and livestock production. Urban population refers to people living in urban areas as defined by national statistical offices.

Figure 4. Labour productivity (constant 2015 USD/worker) in non-agriculture sector by African subregions (1991-2018)

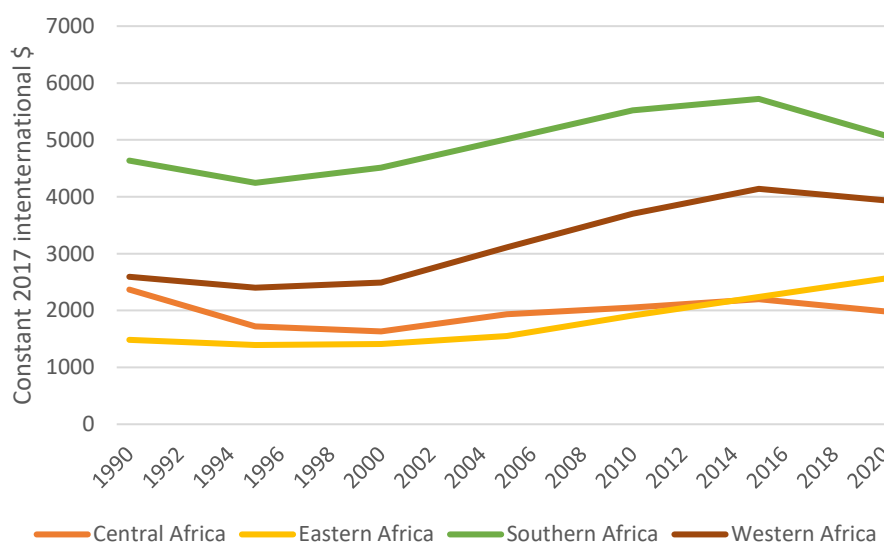


Source: Authors' elaboration based on FAOSTAT and UN Population Division, accessed through the [FOFA Dashboard](#).

Note: Subregional aggregates exclude HICs. Labour productivity of non-agriculture sector refers to the value of production per labour unit. It is computed as the difference between the GDP and the valued added in agriculture, divided by the employment in the non-agriculture sector.

20. Despite economic strong growth rates in the last decade, the African GDP per capita is still the lowest globally, with no sign of convergence with HICs and the other regions¹⁴. In addition, subregional economic disparities and diverging dynamics are significant (**Figure 5**). While the leading position of Southern Africa is attributable to the availability of resources – as hydrocarbons and rare minerals – and more diversified economies, Eastern Africa is the only subregion showing an increasing trend in recent years, thanks to the economic performances of Kenya, Rwanda, and Tanzania.

Figure 5. GDP per capita in Purchasing Power Parity (constant 2017 international USD) in Africa by subregions (1990-2022)



Source: Authors' elaboration based on World Bank, accessed through the [FOFA Dashboard](#).

Note: Regional and subregional aggregates exclude HICs. GDP per capita (constant 2017 international \$) based on Purchase Power Parity (PPP) is the GDP converted to international \$ using PPP rates.

21. The unequal distribution of income across regions and within the region determines a high prevalence of poverty in Africa, which in turn affects households' dietary patterns. The percentage of people living on less than 1.90 USD (2011 PPP) a day is consistently higher than the world average. In 2021, 78 percent of African population were unable to afford healthy food, compared with the 42

¹⁴ FAO UN 2022. The future of food and Agriculture – Drivers and triggers for transformation. The Future of Food and Agriculture, no.3. FAO UN. Rome. Figure 1.12, p.34.

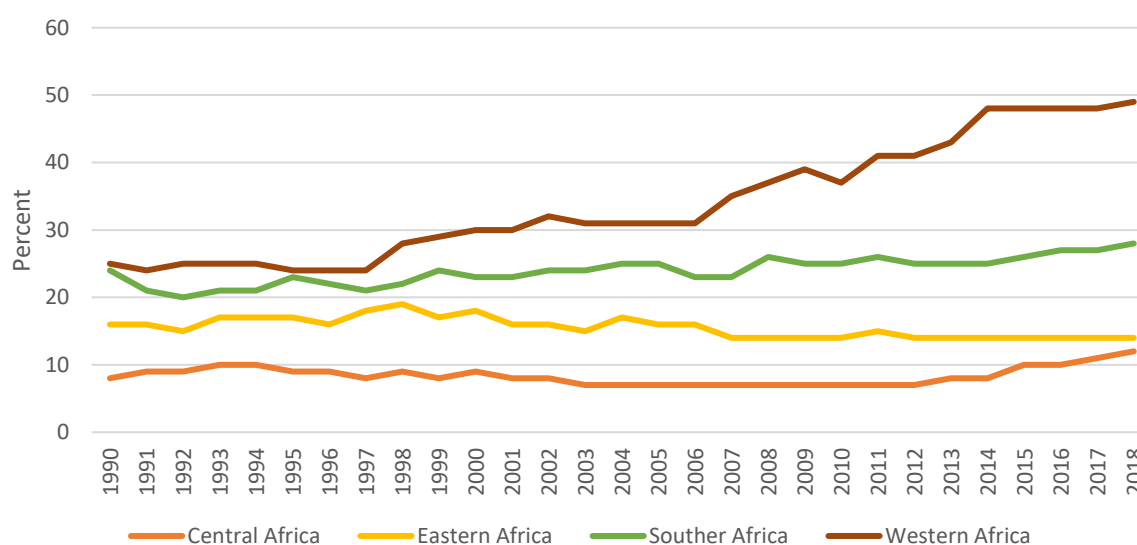
percent at global level¹⁵. In Africa, the average cost of a healthy diet has been increasing over time, reaching the value of 3.57 PPP dollars per person per day in 2021. This means that not only the poor but also a large proportion of people defined as non-poor cannot afford a healthy diet.

22. **Weak signals of possible futures.** The African population is rapidly growing. The phenomenon of urbanization without industrialization, the consistent subregional economic disparities and the endemic dimension of poverty might signal the absence of structural socio-economic transformation and continuation of challenges and outcomes of the past 40 years. The exacerbation of food crises and multidimensional poverty continue to be the most urgent and emerging challenges.

Agricultural transformation, and public investments

23. African labour productivity in agriculture, relative to the labour productivity in the rest of the economy in the last decades displays substantial subregional disparities. (**Figure 6**). In Western Africa, it exhibits a steep increase, mostly due to the increase of agricultural productivity vis-à-vis a very low and stagnating productivity in non-agricultural activities. In the other three subregions the relative agricultural productivity is much lower with differentiated patterns. In Southern Africa, a relatively high but stagnating agricultural productivity is combined with a much higher but still stagnating non-agricultural productivity. In Eastern Africa a very low and stagnating agricultural productivity is associated with a higher and growing non-agricultural productivity, while Central Africa displays a very low but slightly increasing agricultural productivity associated with a relatively high but stagnating non-agricultural productivity. Overall, these differentiated levels and patterns of agricultural vis-à-vis non-agricultural productivity signal the different role of the non-agricultural sector in determining the dynamics of each subregional economic system¹⁶.

Figure 6. Labor productivity in agriculture) relative to the rest of economy by African subregions (1990-2018)



Source: Authors' elaboration based on FAOSTAT, accessed through the [FOFA Dashboard](#).

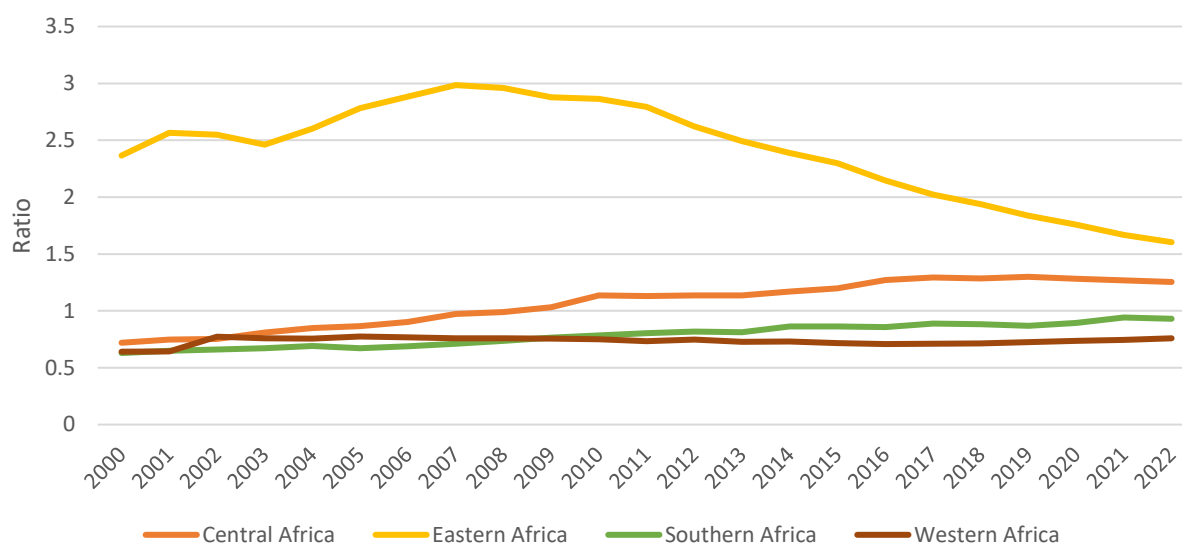
Note: Subregional aggregates exclude HICs. The relative labor productivity in agriculture is computed as the agricultural labor productivity) divided by the labor productivity of the rest of the economy, both expressed in constant 2015 USD/worker multiplied by 100. Eastern Africa excludes Djibouti, Somalia and South Sudan due to discontinuous data availability.

¹⁵ [FAO, AUC, ECA and WFP \(2023\), Africa-Regional Overview of Food Security and Nutrition 2023: Statistics and trends. Accra, FAO.](#)

¹⁶ A detailed analysis of labour productivity in each subregion is portrayed in the in the Regional Foresight Report under preparation.

24. In opposition to the diverging trends in labour productivity shown in **Figure 6**, African subregions are converging towards similar level of agricultural capital productivity, with Eastern Africa experiencing a structural transformation due to the increasing investments in agricultural capital made by Ethiopia, Kenya, Rwanda and Uganda from 2010 onwards (**Figure 7**). The decline in agricultural capital productivity in Eastern Africa is explained by an increase of capital stock in Ethiopia, Kenya, Rwanda and Uganda, while the increase in agricultural capital productivity in Central Africa is due to a stagnating stock of agricultural capital combined with a growing agricultural value added.

Figure 7. Agricultural capital productivity, by African subregions (2000-2022)

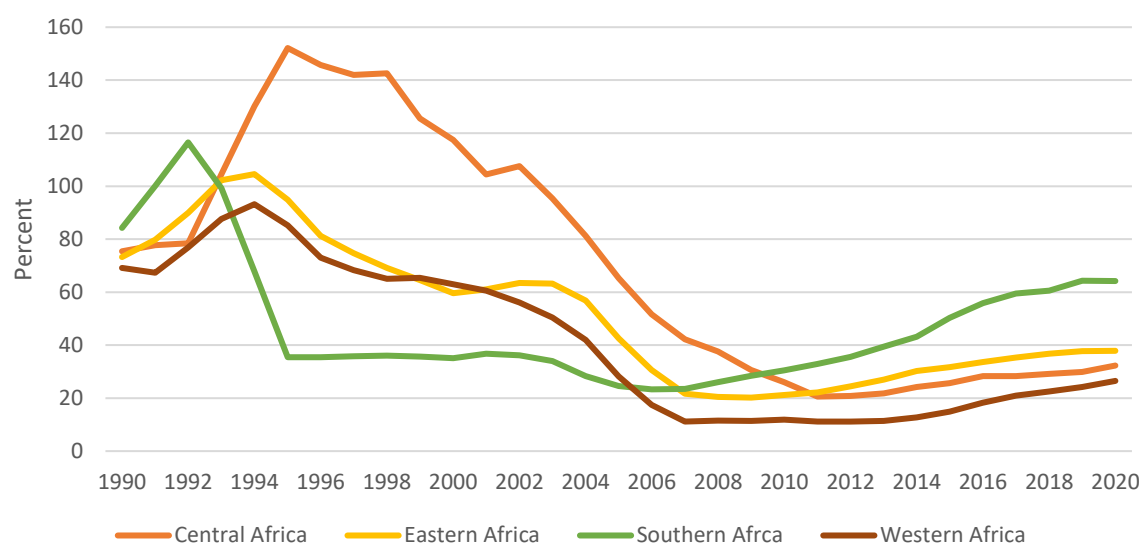


Source: Authors' elaboration based on FAOSTAT, accessed through the [FOFA Dashboard](#).

Note: Subregional aggregates exclude HICs. Productivity of agricultural capital is computed as the ratio between agricultural value added and agriculture net capital stock, both expressed in constant 2015 USD. Eastern Africa does not include Eritrea due to discontinuous data availability in the original source.

25. A critical issue regarding capital is that Africa must nearly always import machinery and intermediate inputs for high-productivity technologies. This might end up in a trade deficit to be matched but a net inflow of money from abroad¹⁷. External finance, a financial liability towards the rest of the world, rises external debt, which boomed during 1990s and currently increasing again, especially in Southern Africa, after a decade of downward trends in the early 2000s. (**Figure 8**).

¹⁷ [FAO \(2022\), *The future of food and agriculture – Drivers and triggers for transformation*. The Future of Food and Agriculture, no.3. Rome, FAO.](#)

Figure 8. External debt stock as a share of GNI (percent), by African subregions (1990-2020)

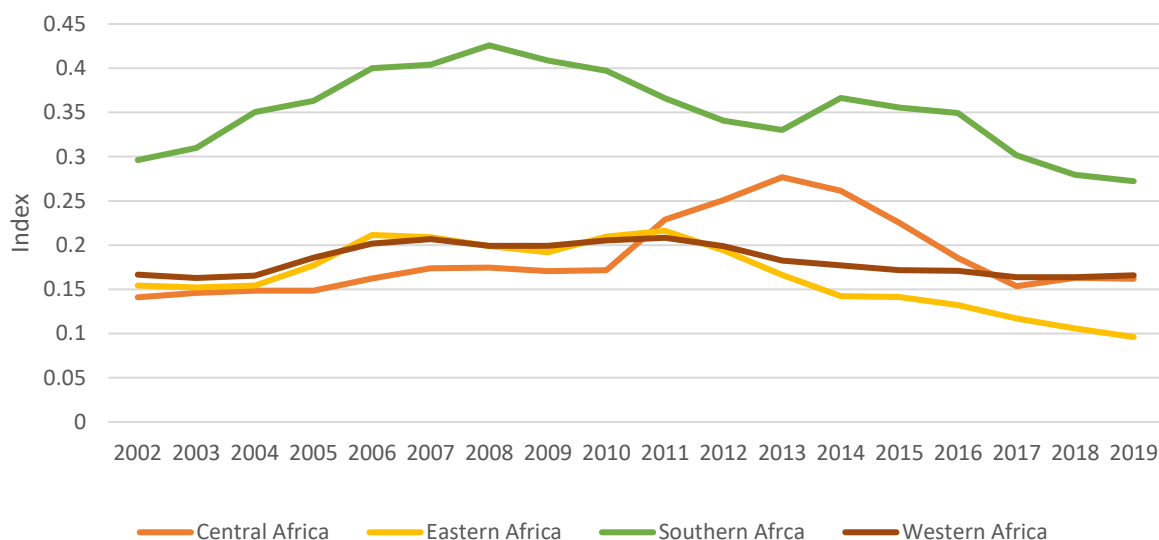
Source: Authors' elaboration based on World Bank, accessed through the [FOFA Dashboard](#)

Note: Regional and subregional aggregates exclude HICs. External debt stock as a share of Gross National Income reports the ratio of total external debt stock to gross national income. The graph shows the moving average of a three-year time window of the indicator for each subregional aggregate.

26. Among the factors causing divergences in labour and capital productivity of the agricultural sector across sub-regions, there are disparities in the provision of public resources. The Agriculture Orientation Index (AOI) largely below 1 (**Figure 9**) highlights that governments are definitely underspending on agriculture, compared to the contribution of the sector to GDP. Only a minority of countries (3-4) are on track with the public target in public investment in agriculture of the Malabo Declaration¹⁸. This may substantially hamper public expenditure in agricultural research. Countries allocating larger shares of expenditure on R&D and extension are better off than those overinvesting in private goods as input subsidies in the long run¹⁹.

¹⁸ African Union (2024), *4th CAADP Biennial Review Report 2015-2023*.

¹⁹ Pernechele, V., Fontes, F., Baboska, R., Nkuinguoa, J., Pan, X., & Tuyushime, C. (2021), *Public expenditure on food and agriculture in sub-Saharan Africa: trends, challenges and priorities*. Rome, FAO.

Figure 9. Agricultural orientation index of government expenditures (2002-2019).

Source: Authors' elaboration based on FAOSTAT, accessed through the [FOFA Dashboard](#).

Note: Subregional aggregates exclude HICs. Agriculture orientation index is defined as the agriculture share of government expenditure divided by the agriculture value added as a share of GDP, where agriculture refers to the agriculture, forestry, fishing, and hunting sector. The graph shows the three-year centred moving averages.

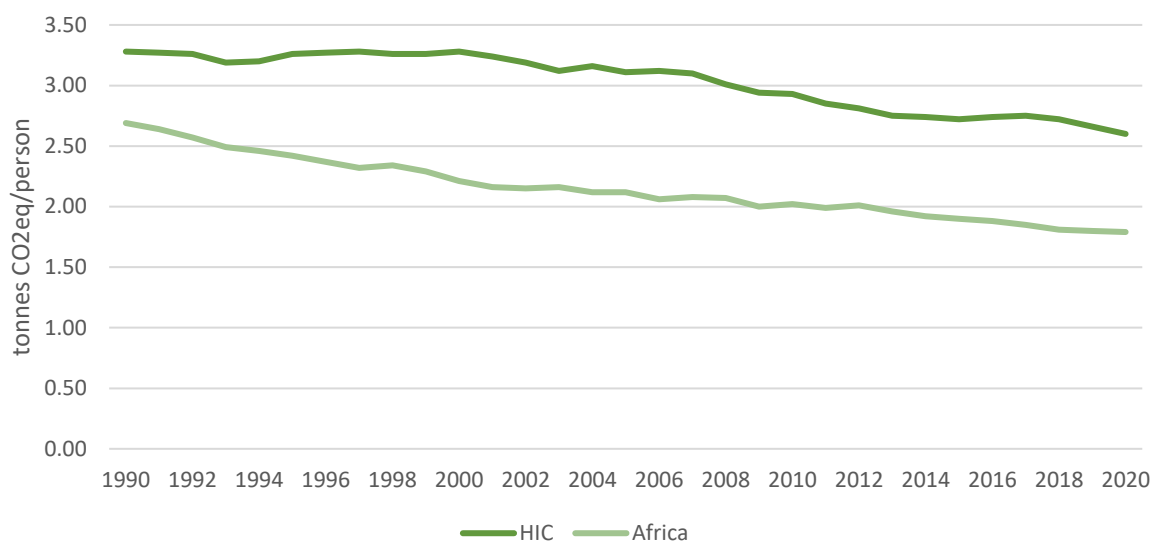
27. Subregional differences are also significant on the side of investments from private banks, Private and public investments in agriculture sector may impact the advancements of technological innovation, and the spreading of mechanization in agriculture.

28. **Weak signals of possible futures.** Despite representing a large source of income in Africa, the agriculture sector consistently shows much lower labour productivity compared to non-agricultural sectors. If trends of public underspending in the sector continues, specifically whenever public research and development are affected, it may be difficult for agriculture to emerge as an engine of sustainable growth, able to provide not only food but needed energy and environmental services. Subregional disparities, also linked with heterogeneity and natural resources endowments might pave the way to differentiated development patterns with possible implications for intra and extra continental migrations. In addition, the interplay the development of agriculture and the dynamics of the non-agricultural sector any become a key aspect to drive the future of agrifood systems in Africa.

GHG emissions, Natural resources, and conflicts

29. Notwithstanding the fact that agrifood systems in Africa produce less GHG emissions per capita than those in HICs along a decreasing trend, the lack of agricultural transformation and transition towards technological innovations and the sharp population increases might end up rising GHG emissions to alarming levels (**Figure 10**).

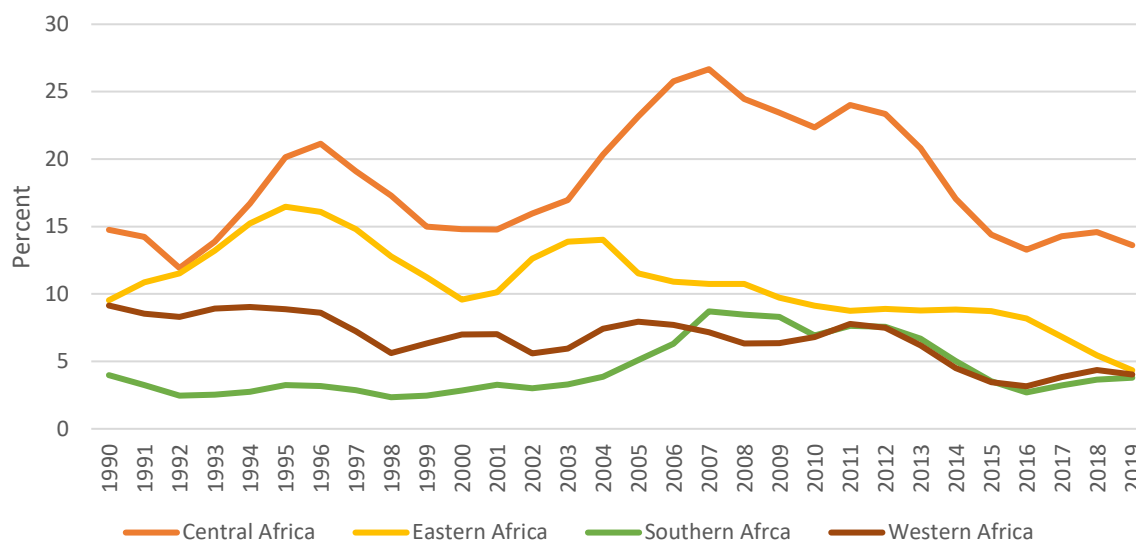
Figure 10. Emissions of agrifood systems per capita (tonnes CO₂eq, GWP-100 AR5/person) in Africa and HICs (1990-2020)



Source: Authors' elaboration based on FAOSTAT, accessed through the [FOFA Dashboard](#).

Note: The Africa aggregate excludes HICs. Agrifood system components consider farm gate, land use change, pre-and postproduction as well as sectors in the National GHG Inventories used for reporting to the UNFCCC. Africa excludes Central African Republic, Congo, and Democratic Republic of Congo due to discontinuous availability of data in the original sources.

30. Emissions, low productivity of agriculture and population growth contribute to a significant pressure on natural resources (**Figure 11**), particularly in Central Africa, whose continuous degradation may hinder not only the continent but also the global environment and markets.

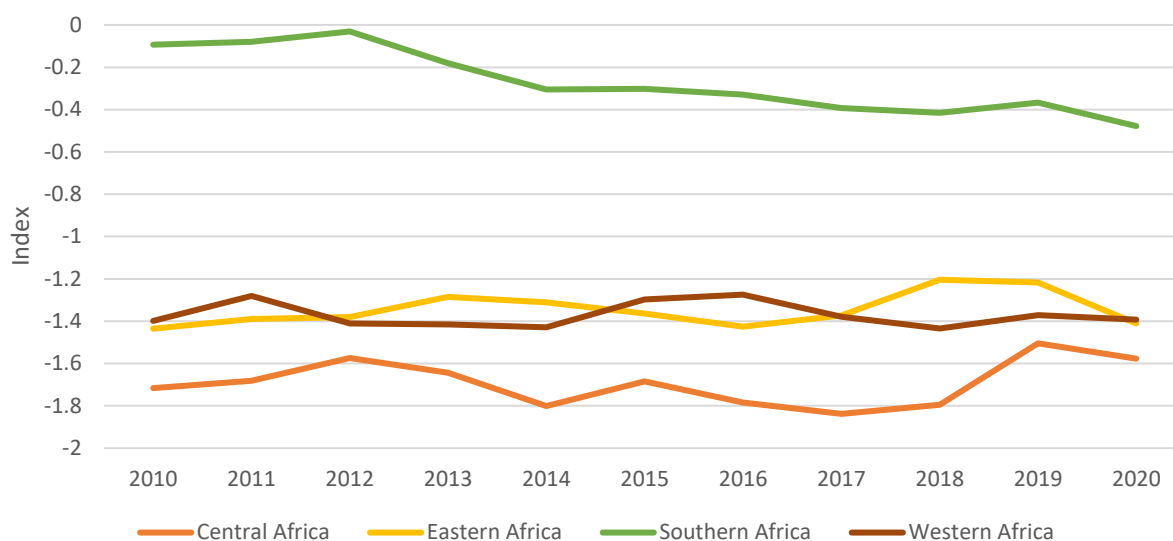
Figure 11. Natural resources depletion as a share of GNI (percent), by African subregions (1990-2019)

Source: Authors' elaboration based on World Bank, accessed through the [FOFA Dashboard](#).

Note: Regional and subregional aggregates exclude HICs. Natural resource depletion is the sum of net forest depletion, energy depletion and mineral depletion. The graph shows the moving average of a three-year time window of the indicator for each subregional aggregate.

31. In the last decade, several typologies of conflicts with different contributing factors have continued or emerged, e.g., the actions of terrorist and armed groups, mainly active in remote rural areas of Eastern, Central and Western Africa (**Figure 12**). This condition is linked with continuously growing number of deaths due to armed conflict, battles and political unrest and violence in the region (**Figure 13**).

Figure 12. Political stability and absence of violence/terrorism (index) by African subregions (2010-2021)



Source: Authors' elaboration based on FAOSTAT, accessed through the [FOFA Dashboard](#).

Note: The subregional aggregates are weighted averages of country values. They exclude HICs. The index of political stability and absence of violence/terrorism measures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. The index ranges from approximately -2.5 (weak political stability) to 2.5 (strong political stability).

Figure 13. Battle-related deaths (people) as a share of total population in Africa and HICs (2001-2021)



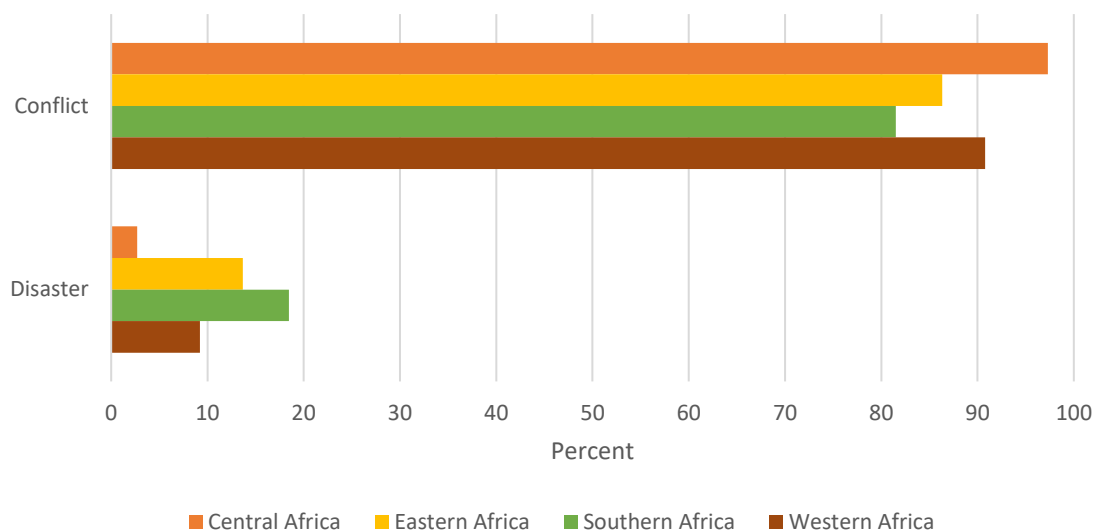
Source: Authors' elaboration based on World Bank, accessed through the [FOFA Dashboard](#).

Note: Africa aggregate exclude HICs. Battle-related deaths as a share of total population is the computed as the number of deaths in battle-related conflicts between warring parties over the total population.

32. One of the main consequences of conflicts and violence is the internal displacement of entire communities, a phenomenon that mainly characterizes Central and Eastern Africa. However, in Africa,

people are forcibly displaced also due to natural disasters, especially in Eastern Africa and Southern Africa where droughts are increasing in severity and duration (**Figure 14**).

Figure 14. Internally Displaced People (IDPs) by conflict and natural disasters as a share of the total IDPs, by African subregions (2020)



Source: Authors' elaboration based on Internal Displace Monitoring Centre, accessed through [FOFA Dashboard](#).

Note: Subregional aggregates exclude HICs. Internally Displaced People by conflict and disaster as a share of total IDPs is computed as the share of people living in internal displacement due to conflict or disaster over the total IDPs with data from the latest year available (2020).

33. **Weak signals of possible futures.** Increasing political instability, mainly in rural areas, where natural resources degradation, triggered by climate change already reduces the availability of land and water raises serious concerns about the future of agrifood systems. Local conflicts and political violence is already forcing entire communities to relocate mainly towards more urbanized areas, exacerbating unsafeness and unsustainable urbanization. Whether these trends continue in the future or not may heavily determine the future of economic activities, the sustainability of agrifood systems and the overall well-being of entire populations.

V. Alternative future scenarios for agrifood systems

34. The RFE builds on the four FAO global long-term alternative scenarios for the future of agrifood, socioeconomic and environmental systems, to provide more nuanced narratives of possible futures that highlight key regional specificities.²⁰ The four RFE scenario narratives, which are intended as paradigmatic of a virtually infinite set of possible futures, and will be better articulated during the next steps of the RFE, are summarised below (**Table 2**).

²⁰“Long-term” in this context refers to the years from 2030 up to 2100.

Table 2. Narratives of alternative scenarios for agrifood systems

<p>More of the same (MOS). No significant investments were made towards sustainable agrifood systems and the pressure on natural resources increased due to the impact of climate change. Cities continued to grow in size and number, without a structural transition of the economic systems towards non-agricultural sector. Subregional differences led to a heterogeneous development, fuelled by single countries performances. Provided the unequal distribution of well-being, multidimensional poverty and food crises remained urgent challenges to face.</p>
<p>Adjusted future (AFU). Agriculture remained the main source of income, but fiscal and credit policies increased the amount of investments in high-productivity technological equipment. Pressure on resources was slightly released also due to better designed interventions oriented towards sustainable agrifood systems and economic diversification. Yet, regional disparities hampered the equal distribution of the economic gains, posing further challenges to the fight to end poverty and hunger.</p>
<p>Race to the bottom (RAB). Population and urbanization continued to grow without a transition in the economic structure. Per capita income remained stagnant, and poverty consolidated, triggered by subregional disparities. Agriculture contributed the most to GDP without significant improvements in productivity or technological innovation. Natural resources remained a crucial asset in the global market, yet their inevitable degradation, caused by the joint effect of climate change and unsustainable agriculture practices, boosted conflicts and exacerbated food crises. Forcibly internal displacement of entire communities challenged internal security, increasing unregulated, unequal and unsustainable urbanization of cities with a saturated job market.</p>
<p>Trading off for sustainability (TOS). Transformed geopolitics and power dynamics redefined the development paradigm focusing on sustainable agrifood systems. Society promoted inclusiveness, through strengthened inter-institutional cooperation and governance. Decision-making expanded beyond economics, promoting awareness, education, and gender equality to fight poverty and hunger. Multilateral organizations aided geopolitical balance, the catching up process of least developed countries and territories. Countries adopted integrated economic models emphasizing environmental conservation and the transition to a low-carbon economy. Promoting nutritious food and climate-resilient integrated agricultural practices ensured food security. Food prices considered externalities. Public investments led R&D and citizens benefitted from AI and free information. Well-designed fiscal policies and stable food prices guaranteed healthy diets.</p>

VI. Triggers for transformation, strategic options, and trade-offs

Triggers for transformation and strategic options

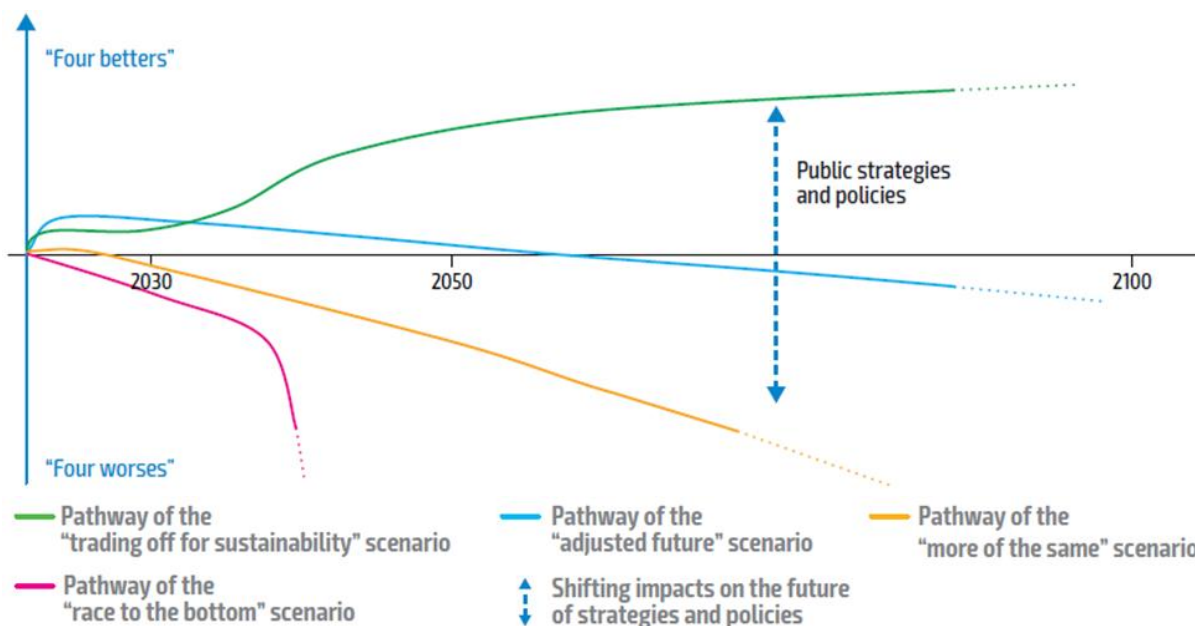
35. To move agrifood systems towards sustainability and resilience, FAO has identified four global priority areas, or “triggers for transformation”, to be targeted by suitable strategies, policies and behavioural changes: i) Institutions and governance; ii) Consumer (citizen) awareness; iii) Income and wealth distribution; and iv) Innovative technologies and approaches (**Figure 1**, top part). Thanks to their transformative potential, these triggers are expected to spread impacts throughout agrifood systems. Depending on whether they will be activated or disabled, the future could mimic one of the four paradigmatic scenarios, as illustrated in **Table 3** and the FAO inspirational *four betters* – *better production, better nutrition, a better environment* and *a better life* – could materialize or dissipate (**Figure 15**).

Table 3. Triggers for transformation under alternative scenarios

	Institutions and Governance	Consumer (citizen) awareness	Income and wealth distribution	Innovative technologies and approaches
More of the Same (MOS)	Weak governance of global issues; roles of public and private confused	Piecemeal approaches of few groups have limited or no impacts on transformation	Inequalities, hunger, extreme poverty not tackled; HICs and LICs diverge	Within the current paradigm (large scale, labour saving) CC 2100: 3+
Adjusted Future (AFU)	Selective pursuit of 2030 Agenda for Sustainable Development; private bodies cover public functions	Segmented pressure groups focus on well-being of selected societal layers/LICs	Voluntarist actions to combat most striking situations; weak fiscal systems	Mostly within the current paradigm; small-scale survives CC 2100: 3-
Race to the Bottom (RAB)	Short-termism, dismantlement of rules; government collusion with elites	Green-social washing fools consumers; citizens irrelevant in all systems	No taxes, no services - “stratified societies”; exacerbated poverty in HICs and LMICs	Extractive economies based on exhaustible resources dominate CC 2100: 4+
Trading off for Sustainability (TOS)	Global governance of global phenomena; power distributed; roles well defined	Consumers give up final consumption to invest in transformation; HICs give room LICs in resource use	Efficient fiscal system, new metrics for well-being adopted; less leakages from LICs	Effective strategies for “circular” economies dominate CC 2100: 2-

Note: CC2100: 3+ means: Scenario compatible with an increase in the average global temperature by 2100 due to climate change above 3 degrees Celsius compared to the pre-industrial period. Analogously, 3-, 4+ and 2-, mean, respectively: below 3, above 4 and below 2 degrees Celsius.

Source: Based on FAO. 2022. The future of food and agriculture – Drivers and triggers for transformation. Rome. <https://www.fao.org/3/cc0959en/cc0959en.pdf>

Figure 15. Scenario pathways and public strategies and policies to trigger transformation

Source: FAO. 2022. [The future of food and agriculture – Drivers and triggers for transformation](https://www.fao.org/3/cc0959en/cc0959en.pdf) – Rome. <https://www.fao.org/3/cc0959en/cc0959en.pdf>

36. Through Regional Expert Consultations, preliminary findings emerged about the regional nuances of these triggers, to be further articulated the forthcoming RFE activities:²¹

- a. **Institutions and governance.** Strategic options involve fostering partnerships among institutions, companies, and civil society; and reducing political barriers for regional integration and responsible governance of inclusive tenure rights. It is key to reduce risks associated to decarbonization.
- b. **Consumer (citizen) awareness.** Education for consumer awareness and youth engagement is vital. Long-term strategies envisage curriculum changes to promote critical thinking and healthy food choices. Additionally, it is advisable to conduct campaigns on specific topics such as food labelling and direct purchase from farmers.
- c. **Income and wealth distribution.** Key measures include reformulating fiscal policies; enhancing inclusion and resilience through social protection programmes; promoting employment and incentivising rural women and youth; facilitating financial and crop insurance mechanisms; linking the agrifood sector to other sectors such as tourism, health and energy; and developing infrastructure to support local markets. Digital and emerging economic activities present opportunities for this transformation.
- d. **Innovative technologies and approaches.** Strategic options include enhancing rural information and communications systems to increase access to science and innovations to small and medium enterprises and small farmers; supporting mobile-based innovations such as real-time price and market information, weather forecasting, pest and disease detection; supporting precision and nutrition-sensitive agriculture; and increasing research and innovation, along with incentives for climate-smart agriculture, agroecology and regenerative agriculture.

Trade-offs along transformative patterns

²¹ Strategic options, policies and investments to activate these triggers at global level are reported in part 3 of FAO, 2022. *The future of food and agriculture – Drivers and triggers of transformation*. Rome. <https://www.fao.org/3/cc0959en/cc0959en.pdf>

37. In addressing the transformation of agrifood systems, win-win solutions would be welcome. However, most likely trade-offs – that is, potentially conflicting objectives – will need to be balanced, as frequently emerged during the RFE Expert Consultations. They include, for example, the possible trade-off between reducing greenhouse gases to mitigate climate change and achieving other key SDG targets, such as Zero Hunger, as envisaged in the Trading Off Sustainability “TOS” scenario. Trade-offs and balancing actions are expected to be considered in initiatives at all levels, as articulated in FAO’s global roadmap for *Achieving SDG 2 without breaching the 1.5°C threshold: A global roadmap* (Box 1).

Box 1. *Achieving SDG 2 without breaching the 1.5°C threshold: A global roadmap*

FAO's Global Roadmap²² to achieve SDG 2 without breaking the 1.5°C threshold involves a process that spans three years, starting with the 28th United Nations Climate Change Conference (COP) in 2023, with a global vision of the limits of agrifood systems today and a diagnosis of what has not worked so far in transforming agrifood systems. It then moves from a global vision implying theories and practices of change at global level to the identification of actions required at regional level and related costing and financing options (thanks to quantitative modelling) to be discussed at COP 29. It then ends by establishing country action plans and funding and monitoring mechanisms at country level, by the time COP 30 takes place. It also examines how to integrate technical assistance into strategies while supporting sustainable investment plans.

The global roadmap presents 120 actions, divided in ten domains of actions, and associated with 20 global milestones aimed to track progress in the right direction. Put together, they show a consistent pathway, starting from today’s situation and pivoting quickly towards a trajectory like the FOFA’s “Adjusted Future” (AFU) scenario, before accelerating transformation to converge towards a “Trading Off Sustainability” (TOS) scenario. In 2024, the global roadmap will be adapted to the regional context, building on the work initiated by the Regional Foresight Exercise (RFE).²³

38. Along their development pattern, middle-income countries are at a crossroads. They may follow the unsustainable development paradigm adopted by HICs, thus largely contributing to further degrading natural resources, exacerbating climate change and leading to ungovernable inequalities such as the FOFA-DTT paradigmatic “Race to the Bottom” (RAB) scenario. Alternatively, particularly if HICs set a good example, they may adopt innovative development paradigms towards more sustainable alternative futures such as the paradigmatic “TOS” scenario.

39. National governments are instrumental in steering agrifood systems towards sustainability, yet their efforts cannot exist in isolation due to the supranational nature of the challenges ahead, such as international conflicts, governance of global finance, trade and multinational corporations, climate change, biodiversity loss and resource depletion. These issues underscore the need for extensive international cooperation and support.

40. FAO’s achievements in the Strategic Foresight domain, including the corporate flagship series The Future of Food and Agriculture (FOFA), the Regional Foresight Exercises (RFEs) and all the sector-specific foresight activities carried out so far, are fundamental for countries to utilize FAO’s foresight findings in their policymaking processes.

41. Complementarities between qualitative and quantitative analyses and modelling for foresight and the analyses for FAO Roadmap to achieve SDG 2 within the 1.5 degrees threshold are expected to nurture both country-level exercises and the next review of the FAO Strategic Framework 2022-31

42. Encouraging FAO to strengthen the FAO Foresight Network, actively participate in UN global exercises such as the Futures Lab, the Foresight Community of Practice, the UN Summit for the Future, support Common Country Assessments and other UN Cooperation Frameworks, will help to position FAO at the heart of strategic transformative processes.

²² <https://www.fao.org/3/cc9113en/cc9113en.pdf>

²³ See more details at <https://www.fao.org/interactive/sdg2-roadmap/en/>

43. The active participation of Members to the ongoing RFEs is a concrete opportunity to provide guidance on priority drivers of agrifood systems and triggers for their transformation in the region and subregions, to ensure due consideration to subregional and country specificities, and to increase the ownership of strategic foresight findings.

44. FAO will take good note of any guidance from the Regional Conference and other governing bodies regarding strategic foresight, to ensure the achievement of the *four betters* and the SDGs).