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FOOD FOR AFRICA

ON THE WAY TO FOOD SOVEREIGNTY



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The report “Food for Africa: On the Way to Food Sovereignty”, presented at the session on the sidelines of the International Conference on African Countries Food Sovereignty Ensuring (November 20-21, 2025, Addis Ababa), is a comprehensive study by experts from the HSE University Center for African Studies. This paper attempts to outline the foundations of a new food policy for Africa and reflects the joint vision of Russian and African experts. “Food for Africa: On the Way to Food Sovereignty” explores the multifaceted aspects of the path from food security to food sovereignty and has become a reflection of the Center’s long-running research program on this topic.

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Food for Africa: On The Way To Food Sovereignty

Demographic Factors and the Transition to Food Sovereignty

Population growth in Africa is the primary factor that will shape development trajectories of African economies in the medium term. This growth is not only driving urbanization and infrastructure development, but also creating structural imbalances.

The rise in prosperity has a proportional effect on population growth: in many African countries, the birth rate is gradually declining. For instance, in 2021, the average number of children per woman in Africa was one fewer than it was between 2005 and 2007. Almost everywhere in Africa, the fertility rate is significantly lower among urban women (who, on average, have 30–40% fewer children than women in rural areas). Consequently, urbanization emerges as one of the main long-term factors constraining fertility rates.

Historically, the economic development of cities depended primarily on population growth driven by high birth rates and substantial rural-to-urban migration. Today, however, both of these drivers are weakening amid housing shortages and limited access to social services. Additionally, expanding educational opportunities, including for women, has contributed to delayed childbearing as individuals pursue career and educational advancement. As a result, despite the global trend of urbanization, in certain regions, it may act as a limiting factor for demographic growth.

Despite these trends, by 2100 Africa is expected to become one of the most densely populated continents according to the United Nations projections — and the only region in the world where population growth will continue. This long-term demographic roadmap presents both new opportunities and new challenges.

One of the key potential structural imbalances is the increasing pressure on food security systems, which could lead to social and economic instability. However, these risks seem to be manageable, as research by the HSE Centre for African Studies shows that the food situation in Africa is not worsening but rather remaining stagnant. Over the past 20 years, approximately a quarter of the population has consistently faced undernourishment.

To address the persistent issue of food insecurity, increasing domestic food production has emerged as a critical task for African countries, situated at the intersection of policy (ensuring sovereignty, stabilizing the socio-political situation, creating jobs in the agro-industrial complex, including highly qualified positions) and economics (optimizing trade balances, localizing and developing industry).

It is important to note that over the past 30 years efforts to address hunger and malnutrition in African countries have primarily operated within the framework of so-called “food security”. Until recently, Western countries, mainly through international institutions, dominated the agenda in this area. In 1996 the World Food Summit was held at the FAO headquarters in Rome, where the concept of “food security” was officially defined. According to the adopted declaration, food security is considered achieved when “people have physical and economic access at all times to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” While this definition has become widely accepted and firmly entrenched, it is not without notable flaws.

This approach to food security narrows the issue down to ensuring access, which in turn allows the most influential players (primarily Western governments, corporations, and traders) to leverage it for their own interests. Among these objectives are stockpiling food within their own borders; purchasing arable land

in developing countries; and maintaining Western control over agricultural technologies and expertise. Lobbies and interested suppliers, intermediaries closely connected with transnational corporations, traders, and other international actors play a decisive role in perpetuating Africa's dependence on food imports. These groups actively advocate for the abolition or reduction of protective tariffs, using international platforms such as the WTO and regional economic communities as tools of influence.

Another component of the same strategy involves measures aimed at limiting demographic growth in Africa. Since the famous 1972 report "The Limits to Growth" by the Club of Rome, it has been argued that controlling birth rates is a necessary condition for solving the global hunger problem. However, facts suggest otherwise: population growth and increasing density, similar to what occurred historically in Europe, serve as essential drivers in developing countries for forming local markets for food, infrastructure development, and productivity growth, all of which help address hunger.

Thus, limiting demographic growth does not mean an improvement in the social situation, including access to food, but rather a long-term decline in the investment attractiveness of African markets, and therefore worsening conditions for industrial and infrastructural development.

Western-driven measures to reduce fertility are largely ineffective in Africa. The demographic transition is ongoing and still far from complete; similarly, population density in most African countries remains well below that of Western Europe. The real aim behind efforts to limit fertility of Global South may be the West's intention to preserve global dominance — an aspiration rooted, among other factors, in the explosive demographic growth that once occurred in Europe from 1650 to 1914.

In the context of the gradual shift of political influence from the North to the South, an alternative approach to food policy is becoming increasingly relevant. Instead of focusing on expanding food imports

(an inevitable consequence of the food security concept) the priority should be strengthening national production fostering the agricultural sector, reducing dependence on foreign suppliers and achieving a certain level of food sovereignty.

Thus, for Africa, the next stage of development involves transitioning from food security to food sovereignty. Clearly, this transition must address several key factors: transforming population growth into an economic asset, building domestic capacity, improving the population's diet in quality rather than quantity, and creating a continent-wide logistics network that links remote areas with major distribution and storage centers.

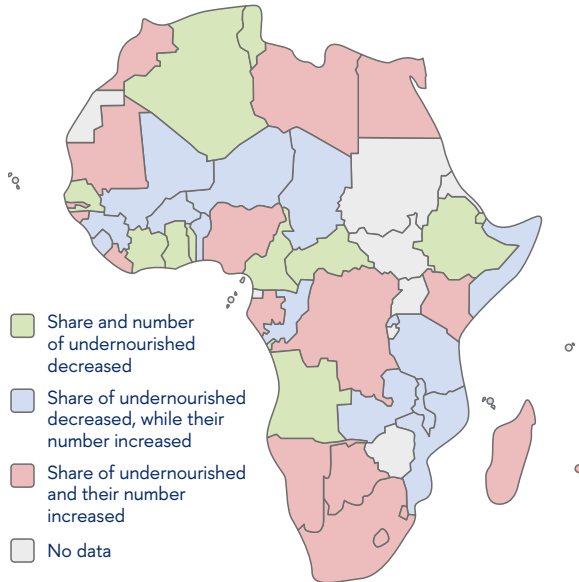
Despite its growing popularity among developing countries, the concept of food sovereignty is still in its formative stages. However, it is already evident that an alternative to food imports must be a combination of measures aimed at localizing food production, enhancing the position of African countries within global value chains on the world food markets, and equipping governments, African companies, and farmers with tools to secure food sovereignty. These tools include agricultural mechanization, expanding the range and volume of fertilizers used, developing food reserve systems, implementing irrigation, adopting flexible subsidy policies, influencing consumer habits related to nutrition, and utilizing indigenous tools for collecting and analyzing relevant information about the environment, production, stocks, and population needs in terms of food security.

Is there a food crisis in Africa now?

Food issues, deficits, hunger and famines seem to come hand in hand with Africa along the way. However, many international organisations tend to showcase that the food situation in Africa is now getting even worse. At first glance, such claims seem correct – according to FAO classification in 2024¹, the number of undernourished people in Africa has increased by more than 100 million (to 307 million) compared to

1 FAO. The State of Food Security and Nutrition in the World 2024. URL: <https://openknowledge.fao.org/server/api/core/bitstreams/06e0ef30-24e0-4c37-887a-8caf5a641616/content>

Undernourishment dynamics in Africa, 2004–2024 (% of population)



Source: prepared by the HSE University Center for African Studies based on UN DESA, GHI and FAO data.

2005. The number of undernourished over the world has decreased, except for in Africa where this number has increased. However, in relative terms, the number of undernourished in Africa has been hovering between 15-20% of the population for the past 20 years, and the number of 'non-undernourished' people in Africa is also increasing every year.

The number of undernourished in Africa has been hovering between 15-20% of the population for the past 20 years

Those advocating a pessimistic view on the food situation in Africa turn to big data and look at the food situation on a continental scale. However, behind the big numbers and the isolated – albeit disturbing – cases of Nigeria and DR Congo (which together accounted for almost half of the increase in the number of undernourished people in Africa), success stories do exist. For example, the number of undernourished decreased in Senegal, Cameroon, Côte d'Ivoire and Ethiopia (in both absolute and relative terms), as did the

share of undernourished people in Mali, Rwanda and Tanzania. At the same time, the productivity of African agriculture is growing – in 2003, it amounted to USD 138 billion, while in 2022 reached USD 327 billion (in current USD). The child mortality rate is decreasing (up to 44% in different regions of Africa). In West and Central Africa, child mortality decreased from 168 (per 1,000 children under 5 years of age) in 2000 to 86 in 2023. Across Africa, the mortality rate of children under 5 years of age has decreased in 70 years from 311 (per 1,000 children, 1955) to 49 (in 2023).

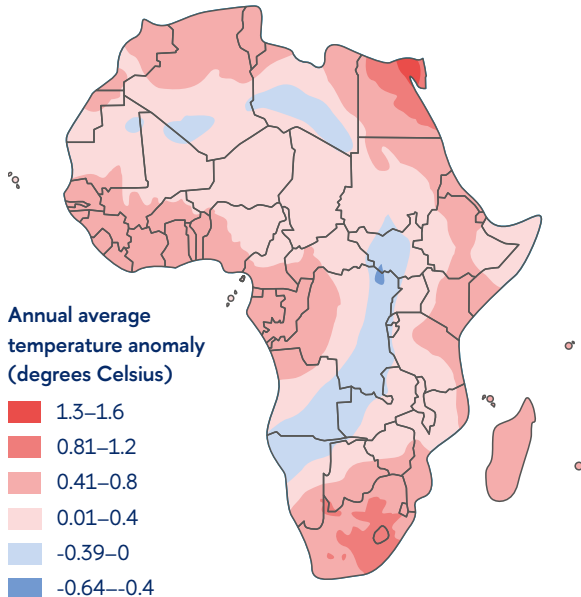
Indeed, while population growth, coupled with ineffective agricultural policies and Africa's dependence on imports of certain basic food commodities, has meant that the number of undernourished may be rising in quantity (including as a result of population growth), it is staying the same in relative terms. Moreover, the increase in the number of undernourished in Africa did not start in 2022 after the crisis in Ukraine or even in 2020 with the COVID-19 pandemic. Indeed, the last time the number of undernourished fell year-on-year in Africa was in 2009, and it has been rising ever since. Not only is the number of undernourished people in Africa increasing, but so is the number of articles on food security – in both academia and the media. The topic has become 'trendy', thus impacting interpretations and increasing securitisation.

The problem of hunger is often reduced to climate change. For instance, in the SIPRI (Stockholm International Peace Research Institute) report dedicated to the issue of food insecurity in Africa, 'climate' is mentioned 93 times, while 'fertilisers' or 'reserves' are totally absent². That said, the impact of climate change has not yet been fully studied and assessed, which means that its regional impacts may differ – i.e. improvements in one region and crises in another. One study, published in 2015, found that rainfall in Sahel had increased by 10% in the preceding decades and that it could be due to climate change³.

2 SIPRI. Food insecurity in Africa: drivers and solutions. URL: https://www.sipri.org/sites/default/files/2023-01/2301_sipri_rpp_food_insecurity_in_africa_1.pdf

3 Carbon Brief. Factcheck: Is climate change 'helping Africa'? URL: <https://www.carbonbrief.org/factcheck-is-climate-change-helping-africa/>

Temperature anomaly (2000–2020 compared with 1951–1990)



Source: prepared by the HSE University Center for African Studies based on data from Cowtan, Kevin & National Center for Atmospheric Research Staff (Eds). "The Climate Data Guide: Global surface temperatures: BEST: Berkeley Earth Surface Temperatures." Retrieved from <https://climatedataguide.ucar.edu/climate-data/global-surface-temperatures-best-berkeley-earth-surface-temperatures>. Calculated by the Data for Children Collaborative with UNICEF.

This caused Lake Chad to fill up with rainfall – in October 2020 the first peak of 700 cm (October 2) and a second peak of 711 cm (October 15), above the recorded peaks in the last decade, were reached on the lake. The rainfall helped farming in several areas; however, there ensued an overflow of major rivers, which in turn led to flooding and significant losses and internally displaced persons in the region⁴.

Food situation in Africa is not deteriorating, but rather is not improving fast enough

So far, Africa’s agricultural sector has largely followed an extensive development model – driven by rising food imports on the one hand, and the expansion of agricultural land on the other.

From 2000 to 2024, the area of agricultural land in Africa increased by 100 million hectares, a growth comparable to that recorded over the entire period from 1964 to 2000.

Deforestation in many African countries presents a much more immediate and localized threat to environmental sustainability than global warming. As the availability of uncultivated land continues to diminish, the transition toward a more intensive model of agricultural development becomes increasingly important. At present, however, agricultural productivity across Africa is improving only slowly. From 2000 to 2023, maize yields increased from 1.8 to 2.1 tons per hectare, sorghum yields grew from 0.86 to 0.93 tons per hectare, and wheat yields rose from 1.7 to 2.8 tons per hectare. Despite political and economic instability, many countries still demonstrate this gradual upward trend in crop productivity.

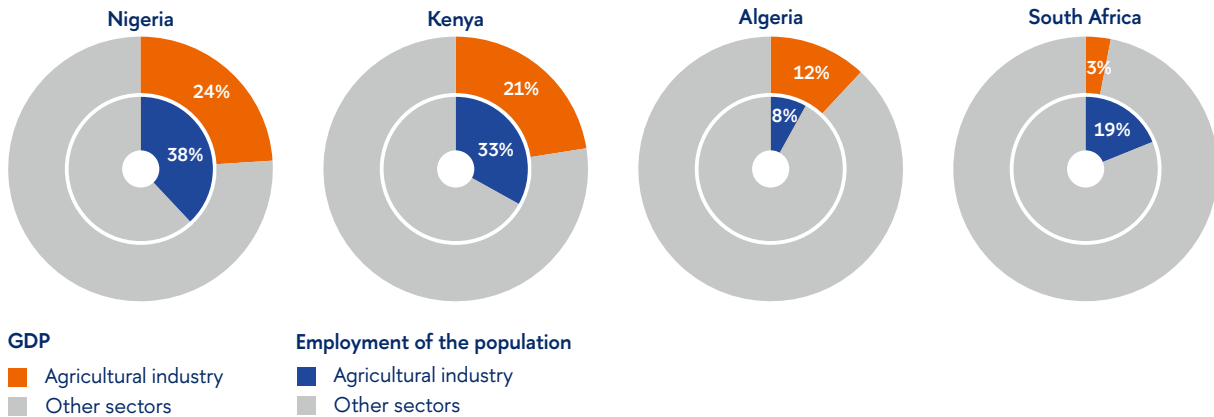
For example, in Rwanda not only population and economic indicators are rising, but agricultural yields are also improving. Between 2015 and 2025, wheat productivity increased from 0.8 to 1.33 t/ha, while maize and sorghum yields also grew – by 0.14 t/ha and 0.15 t/ha respectively over the same period. In Ethiopia, wheat productivity increased from 2.79 to 3.2 t/ha over ten years, and maize yields rose from 3.73 to 3.96 t/ha. South Africa (with a 0.83 t/ha increase in wheat yields over 10 years), Tanzania (0.52 t/ha), and Kenya (0.42 t/ha) are among the fastest-advancing countries in wheat productivity. A general upward trend in the yields of major crops can be observed across much of the continent.

However, this growth is constrained by limited technical capacity and low levels of mechanization, including shortages of agricultural

machinery and irrigation systems. Fertilizer use also remains low: the average consumption of fertilizers in Sub-Saharan Africa is only 17 kg/ha (in nutrient terms), compared to the global average of 135 kg/ha.

⁴ HumAngle. 2022 Rainy Season Has Increased The Volume Of Lake Chad – Report. URL: <https://humanglemedia.com/the-2022-rainy-season-has-increased-the-volume-of-lake-chad-report/>

Percentage of GDP generated by agriculture and share of working population employed in this sector, 2022



Source: prepared by the HSE University Center for African Studies based on the World Bank data.

The main reason why the extensive model still prevails over the intensive one is the continued availability and relatively low cost of arable land not yet brought into agricultural use, as well as abundant low-cost labor.

The transition toward intensive agricultural models is taking place in countries with high population density and is closely linked to the demographic transition. Against the backdrop of rapid population growth (since 1995, the country's population has nearly tripled — from 5 million to 14 million people) and the centralization of agricultural support measures in the hands of the state, yields have been rising even as cultivated areas remain unchanged. For example, since 2016 the area under wheat cultivation has remained stable at 12–13 thousand hectares, while yields have increased by 0.5 t/ha over the same period. Given the interaction between extensive and intensive growth models, new approaches are needed to discuss food security challenges in Africa.

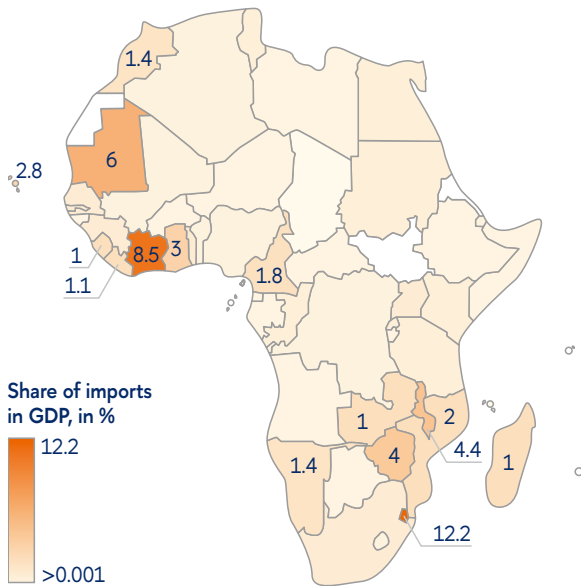
Food sovereignty is not an alternative to food security, but rather its next, more advanced stage

The very wording highlights the role of the local, national and regional actors, focusing on local agricultural production, developing and sharpening

the tools for state support and interventions (subsidies, protection measures, logistical and infrastructure projects, etc.), establishing its own strategy for developing the food system. The desired model can be network-centric, which will allow a more dynamic response to food crises – e.g. through the formation of food reserve systems on the side of importers rather than exporters. At the same time, **network-centricity** should be maintained not only at global level, but also at intra-country level - it is necessary to create conditions and infrastructure (primarily transportation) for the equal distribution of food products throughout the country to prevent the overconcentration of the food stocks within the metropolitan areas surrounded by wastelands.

The primary criterion of sovereignty is a country's ability to overcome food crises, respond flexibly to external shocks, adjust the development trajectory of its domestic food markets, balance consumption and production, and determine long-term development paths. In the long run, African countries will remain importers of food, and their transition toward food sovereignty will mean more predictable and stable purchasing patterns for their partners, as well as growing demand for fertilizers, seeds, equipment,

Food imports dependence (share of imports in GDP), 2021



Source: prepared by the HSE University Center for African Studies based on World Bank data.

technological solutions, and software. To reduce food imports in the future, African countries must increase imports of production inputs in the coming years.

The solution to Africa’s excessive dependence on food imports lies in increasing imports of production inputs

A complete rejection of food imports—or even their reduction—cannot be an end in itself. Therefore, in countries where strategic planning is conducted consciously, the focus is on changing the structure of imports rather than eliminating them. For example, in Nigeria, wheat importers are required to produce food products using local crops such as cassava. In 2024, the Nigerian Senate proposed a bill obliging producers to include up to 20% cassava flour in all wheat flour. Governments are gradually beginning to influence consumer habits and preferences, taking into account local traditions and sound economic considerations.

Population growth and hunger: demography matters. But not as one would think?

Africa’s population is currently approaching 1.5 billion. By 2050, this number is expected to reach 2.5 billion, and by 2100 – 4 billion⁵.

It is worth noting that Africa is still a relatively sparsely populated continent. With an area of 30 million square kilometres, the population density is about 52 people per square kilometre. By this indicator Africa far behind Asia (156 people per sq. km)⁶. By this indicator, Africa lags not only behind Asia (104 people per sq. km) but also behind Europe (73 people per sq. km). Excluding the Sahara and Kalahari deserts, as well as a number of uninhabitable areas (about 11 million square kilometres in total), Africa will still remain in third place among the parts of the world with a population density of 66 people per square kilometre. If the population grows to 2.5-3 billion, its density in the habitable part of the continent will still be three times lower than, for example, that of India today. Population growth, in turn, is primarily driven by declining mortality, as effective treatments have been developed for most diseases that in past centuries made large parts of Africa dangerous and relatively unsuitable for habitation.

Many expert papers and reports on Africa start with theses that population growth would challenge regional stability and contribute to food crises, outbound migration and political turmoil. Africa’s demographic transition has been later in coming than in other regions; it is in the early stages of transition, causing the population to grow rapidly. That is perceived as a threat and has led to attempts to control the process.

In 1992, a report *Beyond the Limits*⁷ published by the Club of Rome – one of the most influential behind-the-scenes non-profit organisations, notorious for its struggle with overpopulation – was released.

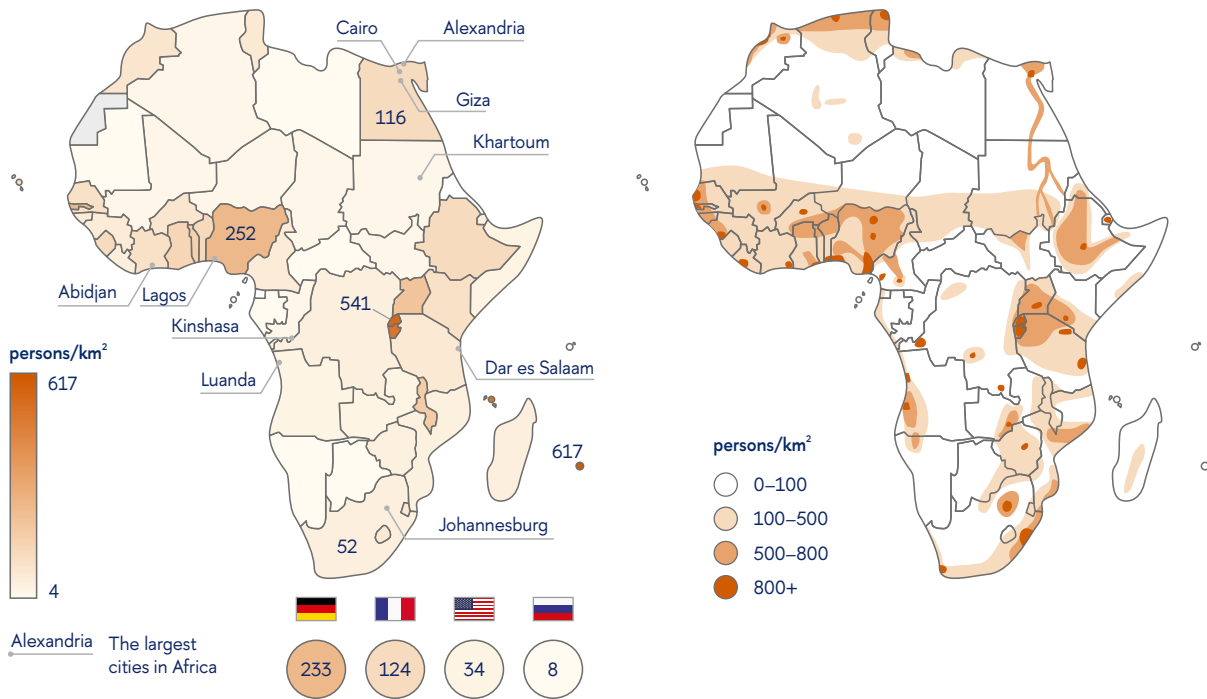
Population growth and hunger: demography matters. But not as one would think?

5 UNICEF. Generation 2030. Africa 2.0. URL: <https://data.unicef.org/resources/generation-2030-africa-2-0/>

6 World Bank. Population density (people per sq. km of land area). URL: <https://data.worldbank.org/indicator/EN.POPDNST>

7 Meadows D., and Randers J. *Beyond the limits: confronting global collapse, envisioning a sustainable future*. Vermont: Chelsea Green Publishing, 1992.

Population density in Africa, 2024



Source: prepared by the HSE University Center for African Studies based on World Bank data.

It warned about the threat of overpopulation and has strongly influenced how conflicts in Africa are viewed by the world. One example given to demonstrate the danger of overpopulation in the views of the Club of Rome and numerous Western publications was the genocide that devastated Rwanda in 1994. The case of Rwanda was presented as a precursor of similar catastrophes in bigger “overpopulated” countries⁸.

Publications of leading international organisations systematically built in the public consciousness the connection of population growth with crises and hunger. Among the signature papers are Demographic Change in Sub-Saharan Africa (1993), Briefing Note Population and Development in Africa (prepared by the Organisation of African Unity (OAU) and the UN Economic Commission for Africa (UNECA) in 1994), Harnessing the Demographic Dividend for Africa’s Socio-Economic Development (prepared by AU in 2012), Synthesis

Report on the Demographic Dividend in Africa (by African Institute for Development Policy and UNFPA, 2015), UNECA’s Demographic Profile of African countries (2016) and more. The ideas developed in these works create a negative image of population growth, while suffering from ambiguities and lacunas, ignoring possible positive population growth impacts on the food situation.

However, the bread riots and general destabilisation of Africa engendered by population growth has never happened and the prospects of such are quite low. In contrast to the pessimistic view of the correlation between population growth and access to food, an alternative positive vision can be considered.

Population growth makes agriculture more profitable: the number of consumers increases, as does the number of workers. In this way, both consumption and production growth can and should be combined

8 Prunier G. The Rwanda Crisis: History of a Genocide (2nd ed.). Kampala: Fountain Publishers Limited, 1999.

Thirty years have passed since the Rwanda genocide. Following a significant population decrease – from seven million people in the late 1980s to five million by the end of 1994 – by now, the population of Rwanda has surged to 14 million. Rwanda remains the most densely populated in continental Africa and is also one of the leaders in terms of economic growth. In terms of population density in Africa, Rwanda is surpassed only by Mauritius – which could well be the most prosperous country on the African continent. In Rwanda itself, economic growth is evident. In the past 30 years, crop production has increased more than sixfold, both due to increased agricultural productivity and fertilisers intake growth, as well as because of new land included in agricultural turnover. Development of agriculture was combined with other infrastructure investments: the length of paved roads has doubled to 1,200 km and the capacity of power plants has increased sevenfold to 230 MW. The growth of the Rwandan economy is not just a result of the balanced development of infrastructure but is also due to the consistent development of the tertiary sector of the economy.

with investments in fertilisers, irrigation systems and resource allocation, leading to multiplicative effects. Rising urbanisation together with the population leads to a gradual change in consumer habits, the emergence of supermarkets, the development of the bulk purchasing segment and, consequently, the consolidation of farms (it is easier for large chains to work with a limited number of suppliers with similar standards) and, finally, an increase in their technical equipment and productivity.

The larger a population is, the easier it is to feed

Therefore, it is worth considering a positive option: the larger a population is, the easier it is to feed. A growing population would lead to a more evenly distributed population, bridging the gaps (i.e. unpopulated areas) between 'food hubs', increasing not only the size of the workforce and arable land, but also development of infrastructure⁹. Low population density results in low-quality infrastructure (including roads), and food is not brought into remote areas due to insufficient demand and high transportation costs.

The growth of the working-age population in the future enables efficient utilization of labor resources in agriculture, which in turn creates opportunities for reallocation of workforce to

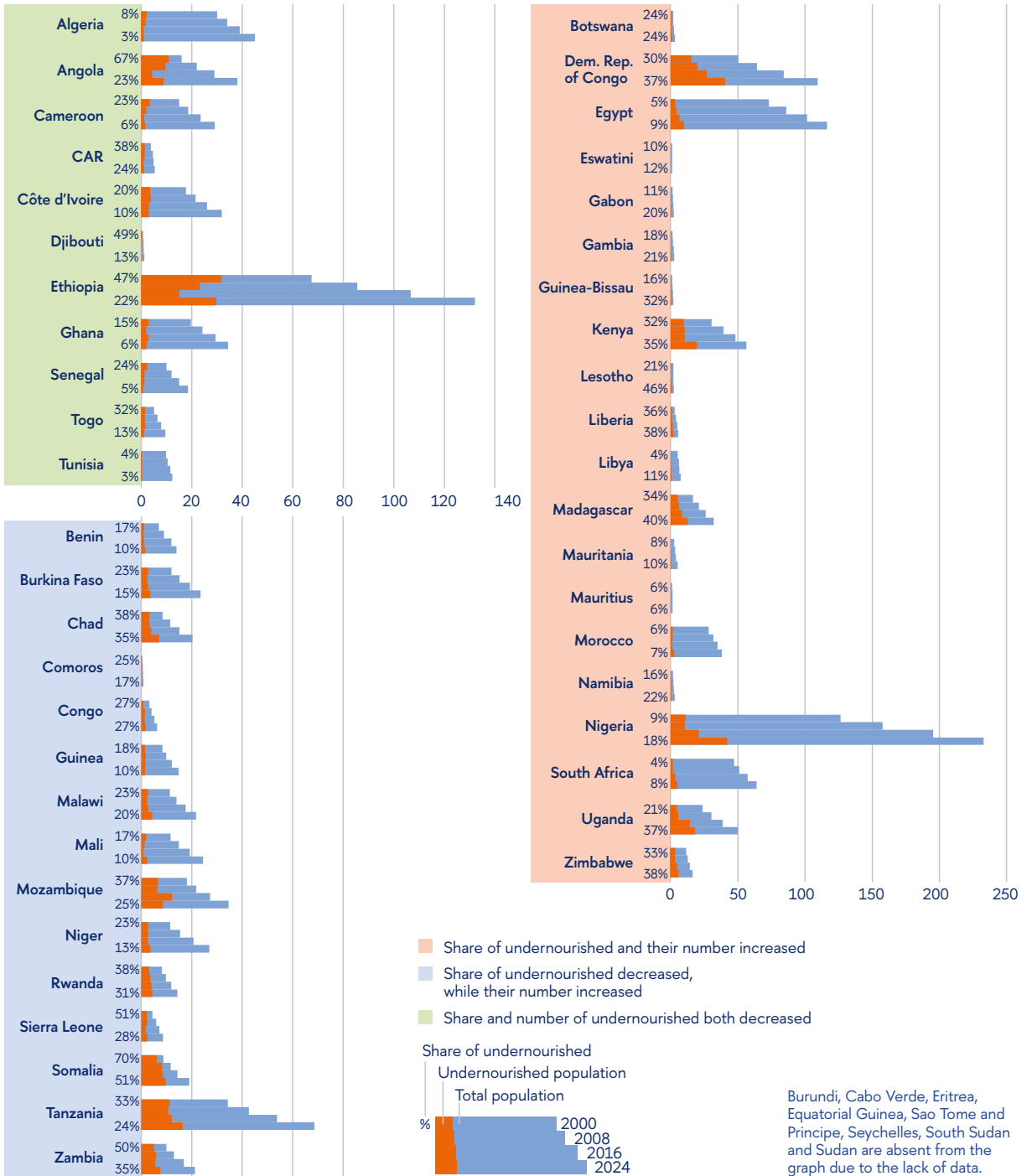
other sectors of the economy — such as industry, services, or innovative industries. This process promotes diversification of the economic structure and an overall increase in employment levels, which is particularly crucial for countries with limited resources and high unemployment rates, where the agricultural sector remains the primary employer. Consequently, demographic growth can serve not only as an instrument for transitioning from food security to food sovereignty but also as a component of strategic redistribution of labor resources within the national economy.

Analysis by the HSE Center for African Studies shows that, in the long run (from 2004 to 2024), despite population growth in many African countries, the number of undernourished people has been decreasing.

However, the correlation of population growth with hunger reduction is still very sensitive to changes in the political and economic environment. In some countries this has occurred as a result of civil wars or unrest that have led to disruptions in the food system, primarily in terms of food delivery, while in others the situation has worsened as a result of overdependence on external supplies of basic food commodities. However, such spikes are often short-term and levelled off in the long run.

⁹ World Bank Blogs. Can rapid population growth be good for economic development? URL: <https://blogs.worldbank.org/en/african/can-rapid-population-growth-be-good-for-economic-development?page=1>

Population growth and undernourishment in Africa, 2004–2024



Source: prepared by the HSE University Center for African Studies based on UN DESA and Global Hunger Index data.

Population growth and hunger: demography matters. But not as one would think?

It is technically difficult at this stage to isolate other factors and calculate a clear correlation between demographic growth and undernourishment. Nevertheless, this topic deserves further research using concrete country cases, since it is evident that population growth generally does not lead to a deterioration in food security.

What matters greatly is the relationship between population distribution and food availability across urban and rural areas. Food shortages push people to migrate and settle in cities, where food systems are more efficient — supporting the idea that “the more people there are, the more food is produced.” At the same time, rural areas — typically less well supplied with food — maintain higher birth rates, which creates additional food security risks, especially for children. Yet in the longer term, population growth itself creates the conditions for the emergence of local, peripheral markets that are less dependent on external food supplies.

Strategy of eliminating hunger through the birth rate control is not an option

Thus, the expected growth of Africa’s population to 3 billion people in the coming decades is likely to contribute to food deficit reduction through market growth, infrastructure development and agricultural production¹⁰.

The nature of all the interrelations within this system still needs to be examined in detail, and this requires discarding, at the outset, unfounded and biased generalizations about the supposed inevitability of food shortages driven by population growth.

If destructive factors prevail in a particular region or country — such as a lack of investment in infrastructure and fertilizers or a high dependence on imports —

a demographic surge may indeed produce negative effects. However, it is already clear that hunger-reduction strategies based on controlling birth rates are meaningless. Instead, what is needed are sector-specific strategies grounded in realistic assessments of population growth and its potential consequences.

Main trends in agriculture

1. New diet trends

Per capita kilocalorie consumption¹¹ per day varies across Africa: with a global median consumption of 0.61 (in an index where the highest indicator is assigned a value of 1) in 2022, some countries performed strongly, such as Algeria (0.83) and Morocco (0.78). In Sahel and Western Africa, perceived by many as food crises prone, the indicator is average at 0.61 in Mali, 0.54 in Burkina Faso and 0.53 in Senegal¹²; South Africa’s kilocalorie consumption is around the same level at 0.58. The deficit in kilocalorie intake is registered in Central and Southern Africa: 0.4 in Angola, 0.38 in Zambia, and 0.23 in Zimbabwe. By comparison, the US figure in the index above is 1, China’s is 0.77, and Europe’s average is 0.8 to 0.9.

These indicators, first of all, allow us to draw conclusions about the diet. In some countries, a low-calorie diet is common due to the prevalence of vegetables, fruits, sometimes poultry or fish, and the lack of dairy and meat products.

Overall, it is not only about food availability, but what is available as well

In recent years, there has been a shift from a low-calorie diet to a new high-fat, high-sugar diet, which brings certain risks¹³. With rapid urbanisation, higher incomes and female employment opportunities, the

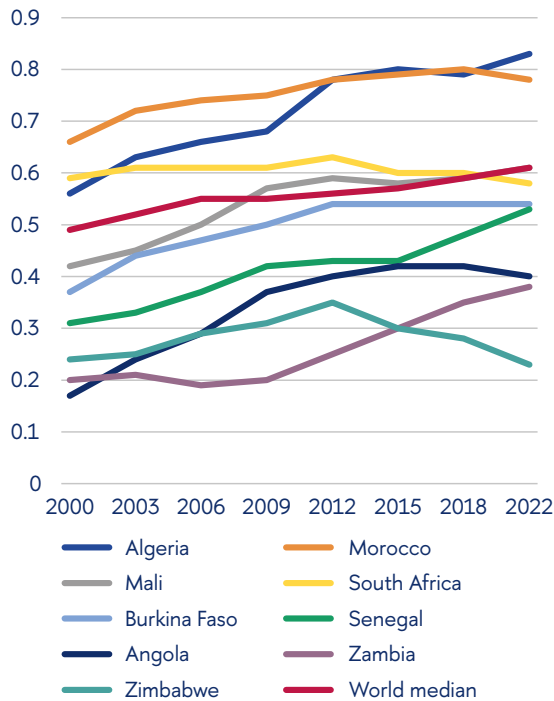
10 RT. Maslov A. The myth of overpopulation: More people in Africa are the solution, not the problem. URL: <https://www.rt.com/africa/591953-africa-population-growth-west-worried/>

11 World Bank. Kilocalories per person per day (highest score=1). URL: https://prosperitydata360.worldbank.org/en/indicator/IDEA+GSOD+v_23_03

12 One of the reasons why calorie intake in the Sahel zone is higher than in Sub-Saharan Africa may be the abundance of dates in the diet. The caloric value of dates is about 25 calories per fruit (about 274 kcal per 100 grams of product), which with the production volumes (e.g. Niger - 16.6 thousand tons in 2020, Chad - 21.2 thousand tons in 2020) makes dates an important source of calories for local population.

13 Global Food Research Program. Ultra-processed products make up nearly half of low-income South African adults’ diets. URL: <https://www.globalfoodresearchprogram.org/ultra-processed-products-make-up-nearly-half-of-low-income-south-african-adults-diets/>

Kilocalories per person per day (highest score = 1), 2000–2022



Source: prepared by the HSE University Center for African Studies based on World Bank data.

demand for convenience foods is growing rapidly and supply chains are undergoing a transformation, with production shifting to low-cost processed foods. Consumption of processed and ultra-processed foods is increasing not only in urban but also in rural Africa due to, among other things, the mechanisation of agricultural production, increased income from non-farm employment and the associated increase in the opportunity cost of time. Many processed foods are high in sugar, salt, saturated fats and/or preservatives and, thus, contribute to overweight and non-communicable diseases such as diabetes, cardiovascular disease and cancer. At the moment, Africa has not seen a surge in fat consumption, and it would be premature to claim a shift to an unhealthy dietary pattern, but the risk in the form of a slow but steady increase in sugar consumption remains: thus, total African consumption of sugar (raw equivalent) in 2010 was 15.6 million tonnes, 20.1 million tonnes in 2016 and 21.9 million tonnes in 2023¹⁴.

Regulating the composition of foods consumed by the population is one of the key instruments through which the state can exert long-term influence on food markets and strengthen food sovereignty. Implementing such regulation requires practical measures, including digital product labeling systems.

Excessive sugar consumption contributes to the development of non-communicable diseases, including cardiovascular diseases, diabetes, and cancer. As of 2019, mortality from this spectrum of illnesses in Sub-Saharan African countries totaled approximately 2.9 million people, accounting for 37% of all deaths (an increase from 24% in 2000).

South Africa stands out as a country where the issue of excessive sugar intake and the associated health risks is particularly critical. In 2019, more than 50% of all deaths were linked to non-communicable diseases. In response, South Africa has implemented measures aimed at reducing sugar consumption. In 2019, the country introduced the «Health Promotion Levy» (unofficially — sugar tax). This tax is levied on carbonated and non-carbonated soft drinks, as well as fruit juices and nectars containing more than 4 g of sugar per 100 ml. The tax rate is 0.0221 rand (approximately USD 0.0012) per gram of sugar exceeding the threshold.

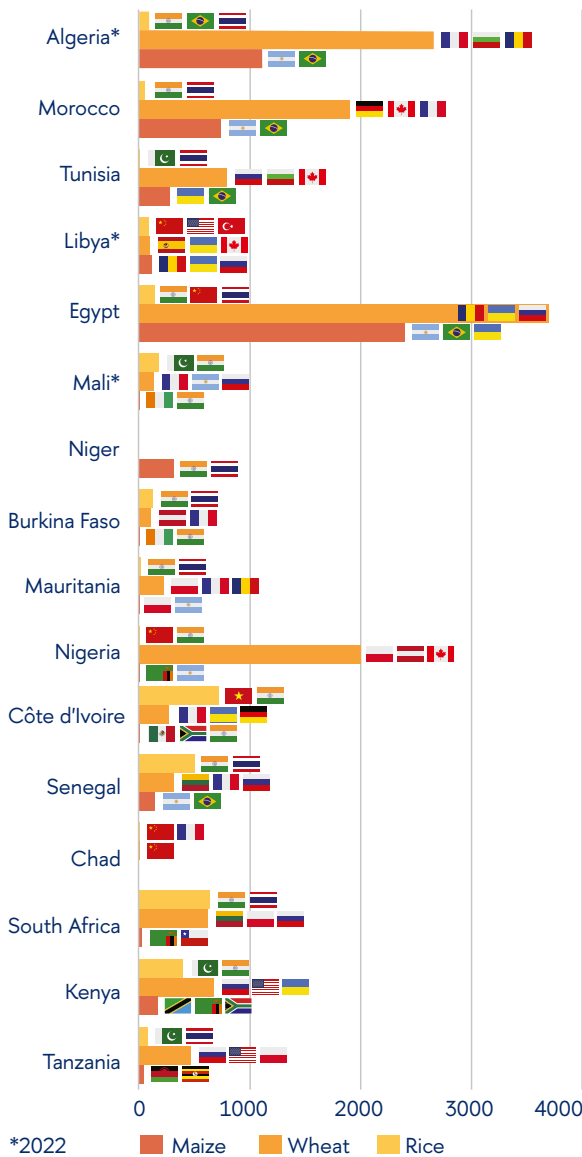
The proposed legislation faced opposition from sugar producers due to the fact that sugar production is a large industry (for instance, in 2024, according to USDA data, South Africa produced 17.9 million tonnes of sugarcane and 2 million tonnes of refined sugar). However, the tax had only a minimal impact on domestic sugar production but effectively reduced sugar consumption. According to FAO data, between 2019 and 2022, sugar intake in South Africa decreased from 1.7 million tonnes to 1.5 million tonnes.

14 FAOSTAT. Food Balances (2010-). URL: <https://www.fao.org/faostat/en/#data/FBS>

Grains

Africa has the potential to become a major producer of cereal crops: for 2023, the area planted with maize is 44 million hectares with a production

Import of rice, maize and wheat in Africa, 2023, USD million



Source: prepared by the HSE University Center for African Studies based on Trade Map and OEC data.

of 95 million tonnes. For 2023, 18.4 million hectares have been allocated to rice (production of 42.7 million tonnes) and 27.7 million hectares to sorghum with a yield of 26 million tonnes.¹⁵ However, **due to a lack of fertilisers, field yields are not sufficient to meet the growing needs of the population.** Africa spends up to USD 80 billion annually on food imports, and up to USD 16 billion of this is wheat.

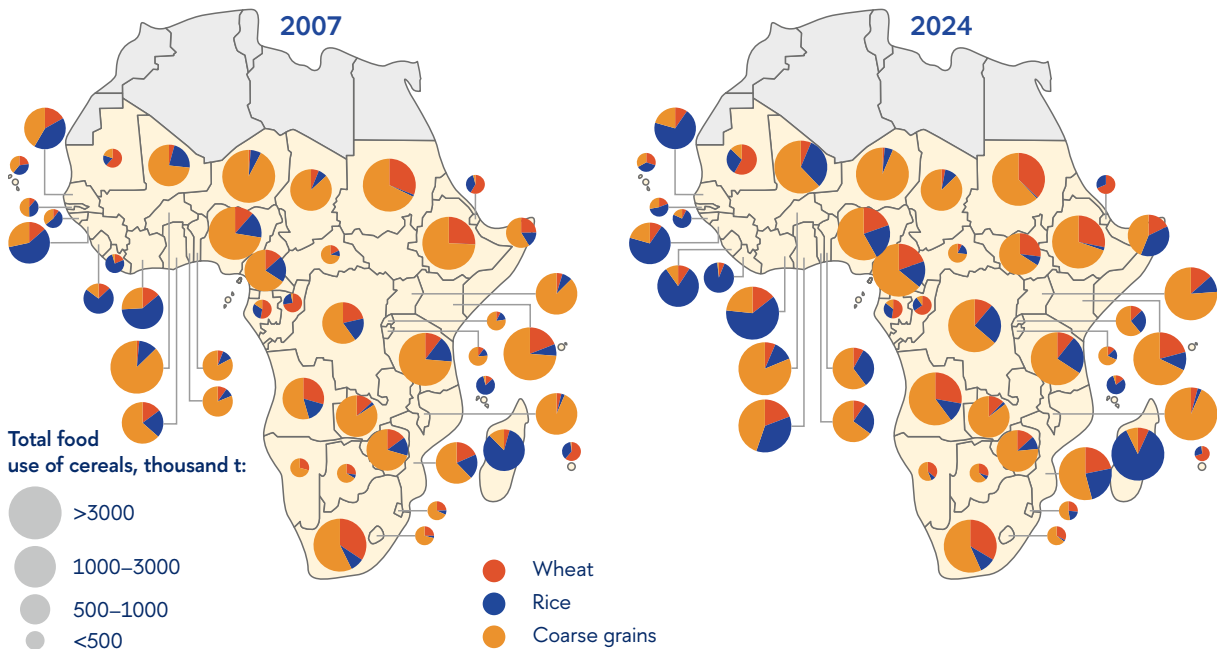
Nigeria is a textbook example of the “wheat trap” (after the title of a 1985 book by Swedish researchers Gunilla Andrae and Björn Beckman, *The Wheat Trap: Bread and Underdevelopment in Nigeria*)¹⁶. Since colonial times wheat (poorly suited to the country’s climatic conditions) has been replacing traditional crops in the African diet. The process intensified with gaining independence and the influx of petrodollars, which created a westernised class of urban dwellers, consumers of wheat products. They in turn created a demand for wheat imports, which is extremely difficult to replace with local production. The most consumed cereal crop in Nigeria is maize, accounting for almost 40% of consumption in quantity terms, rice and sorghum have roughly equal shares of 22% and wheat only 15%. Wheat is the only cereal in Nigeria for which imports are the main source of supply. On average, Nigeria spends about USD 2.5 billion per year on wheat imports (USD 3 billion in 2023, and USD 2.4 billion between July 2023 and April 2024).

Wheat is not a traditional crop for most African countries, and compared to other regions, Africa ranks last among consumers of bakery and confectionery products. Nevertheless, imports of this particular crop account for a significant portion of African government and consumer expenditures.

15 USDA. International Production Assessment Division. URL: <https://ipad.fas.usda.gov/Default.aspx>

16 Andrae G., Björn B. *The Wheat Trap: Bread and Underdevelopment in Nigeria*. London: Zed Books, 1986. 192 p.

Food use of main crops in Sub-Saharan Africa, 2007–2024, thousand t



Source: prepared by the HSE University Center for African Studies based on FAO data.

The way out for African countries may be to consistently support more domestically adapted crops like sorghum, cassava, etc. Such measures could include imposing obligations on flour producers to replace a share of wheat flour with sorghum, introducing more pest and climate-resistant varieties and seeds.

The way to African food sovereignty seems to be in reducing dependence on wheat in general, not only on wheat imports

Protein intake: dairy, fish, meat and poultry

Although overall protein intake is not significantly below the recommended and required amounts, the problem lies in its composition

The average protein intake in Africa has decreased over the last 10 years and stands at 65-66 g per person per day, which is 26.8 g less than the world average.

The majority of protein consumed in Africa is low-quality plant proteins, with them constituting 77% of the intake (37% in the EU). African countries consume plant proteins almost as much as the world average (50 g), but with animal proteins like fish, meat, eggs, dairy products their consumption is 2-3 times less. With the spread of fast food – noodles and other snacks – the share of low-quality proteins will probably increase even more.

Consumption specifics limit the continent-whole approach. Here, even a country-by-country approach is not sufficient, given the significant differences in traditional diets in different regions of the same country – for example, in the countries of Western Africa coastal populations depend primarily on fish, while those in the northern regions depend primarily on dairy products and beef. Moreover, the share of animal protein intake is still so small and fluid that a single reform in one country may have an impact on continent-wide statistics.

The Kenyan dairy industry is among the top in Africa and is the leading in Eastern Africa. This case demonstrates the potential of the government interventions and investments in food sovereignty. The dairy is contributing 4.5%, 14% and 44% to the national, agriculture and livestock sub-sectors GDP, respectively. In 2023 total milk production in the sector is estimated to be 4.6 billion litres (for comparison, about 2.9 million litres in 2000), and the consumption of dairy products remains high (about 98 kg /capita/year in milk equivalent). Such an increase was possible due to high demand for processed milk and milk products due to a growing urban middle class and ongoing investments in value added products including long-life milk and milk powder. A chain of production has been established — milk collection from small farms is centralised in so-called 'milk bars', from where milk is either delivered for processing or sold to consumers in raw form. A big role in establishing value-added production is played by the government, that supports the industry through set of regulatory measures and incentives. There are also support measures from the regional governments - for example, in Murang'a the county government established a subsidy programme in early 2023 - milk producers are receiving 7 shillings (USD 0.054) per delivered litre of milk via e-card¹⁷.

On the other hand, there is growing global pressure — primarily from the United Nations Environment Programme — to reduce the consumption of animal protein and shift toward a plant-based diet. If this trend continues while protein consumption in Africa stabilizes, the continent may have an opportunity to transition toward a post-industrial model of dietary patterns.

Dairy products remain the main source of animal protein in Africa, but this is primarily at the expense of Northern Africa, where milk powder has a significant market share, and Eastern Africa, namely Kenya, where the government has consistently supported local producers and the dairy industry occupies an important position in the economy (4.5% of GDP).

The low consumption of milk and dairy products is due to low production levels, lack of canning technology (for products on the domestic market) and the high prevalence of lactose intolerance among the African population. Overall, dairy farming remains primarily subsistence, especially for countries with a significant share of nomadic population: Mali, Niger, South Sudan, Ethiopia. Improving the efficiency of the dairy industry in such countries is not only an issue of food

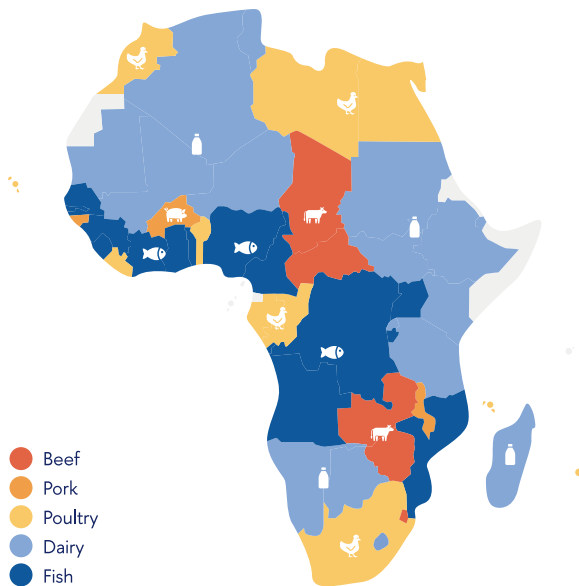
sovereignty and balanced diet, but also of security in its broader sense. Government support to the dairy industry, creation of additional jobs and infrastructure will help to improve life conditions of herdsman, consequently, contributing to the resolution of the centuries-old farmer-herder conflict.

Meat is generally less consumed in Africa compared to other regions (about 20 kg of all meat species per person per year in 2021 against 45 kg per person globally and 79 kg per person in Europe¹⁸) due to its high price and additional production costs in the pastoral sector, as well as the lack of infrastructure (industrial slaughterhouses). The variation in meat and poultry consumption in Africa is very wide, ranging from an average of 6.9 kg per person per year in Ethiopia to 58 kg per person per year in South Africa, with an average of 17 kg per person per year in Africa. **Chicken** is the main meat for the vast majority of Africans, accounting for around 30% of annual meat consumption. In general, it is chicken that has accounted for most of the growth in meat and protein consumption in Africa. However, this consumer boom is largely driven by imports — African countries spend more than USD 2 billion a year on poultry imports.

17 Kenya News Agency. Dairy, Mango Farmers To Access Subsidies Via E-Card. URL: <https://www.kenyanews.go.ke/dairy-mango-farmers-to-access-subsidies-via-e-card/>

18 FAOSTAT. Food Balances (2010-). URL: <https://www.fao.org/faostat/en/#data/FBS>

Main source of animal protein in Africa, 2024



Source: prepared by the HSE University Center for African Studies based on FAO data.

Urbanisation and low efficiency of domestic production in Africa, including feed shortages, will remain the key drivers of chicken consumption and import growth

Consumption is expected to increase as the demand for chicken in Africa rises, with a projected market volume of 11 million tonnes by the end of 2030¹⁹.

Because of **pork's** limited potential as a source of protein, engendered by climate and religious taboos, what meat African cities will eat — chicken (local or imported), beef, lamb, fish or goat meat and in what proportions — depends on decisions with little time to make. Global consumption standards make the key role of chicken almost inevitable, but whether it comes from Africa or abroad depends on whether African governments can take measures to support

the industry, introduce more efficient and crossbred types of poultry, support higher input requirements (housing/shelter, commercial diet, and strict disease/vaccination programmes) associated with the more genetically efficient breeds. Otherways, chicken may become the new “wheat trap” for Africa.

Despite the fact that Africa provides approximately 10% of global fish catch²⁰ and 10% of global fishermen are Africans²¹, fish consumption is almost 2 times less than world average (9 kg per capita vs 20 kg²²). According to IDH, the African continent has been experiencing a seafood deficit since 2001 and this deficit has been growing by 13% every year²³. This is primarily due to the low level of knowledge of African aquatic resources, lack of skilled labor and infrastructure (storage, processing, delivery to consumers). The most pressing issue is aquaculture: fishing is haphazard, extensive and often left to foreign companies. At the same time, due to the low efficiency of the fishing industry in Africa, imports of fish and seafood are increasing. Fish imports have increased

fivefold in 20 years and almost reached USD 5 billion by 2023. It is the development of **aquaculture** and improvement of technological equipment of the industry that will guarantee the growth of fish consumption in Africa.

2. Shift away from subsistence farming

With urbanisation, there has been a shift away from subsistence farming and, more widely, from eating locally grown food. Land is increasingly given to technical (cotton, rubber) and export crops, while food is increasingly imported: wheat, rice, and corn. There is a decline in the food base in the wild, as well as in fauna, amidst population growth, hunting and insurgency.

19 African Union Development Agency, Digitalising The Poultry Industry In Africa. URL: <https://www.nepad.org/blog/digitalising-poultry-industry-africa>

20 FAOSTAT. Food Balances (2010-). URL: <https://www.fao.org/faostat/en/#data/FBS>

21 FAO. The State of World Fisheries and Aquaculture 2018. URL: <https://openknowledge.fao.org/server/api/core/bitstreams/6fb91ab9-6cb2-4d43-8a34-a680f65e82bd/content>

22 FAOSTAT. Food Balances (2010-). URL: <https://www.fao.org/faostat/en/#data/FBS>

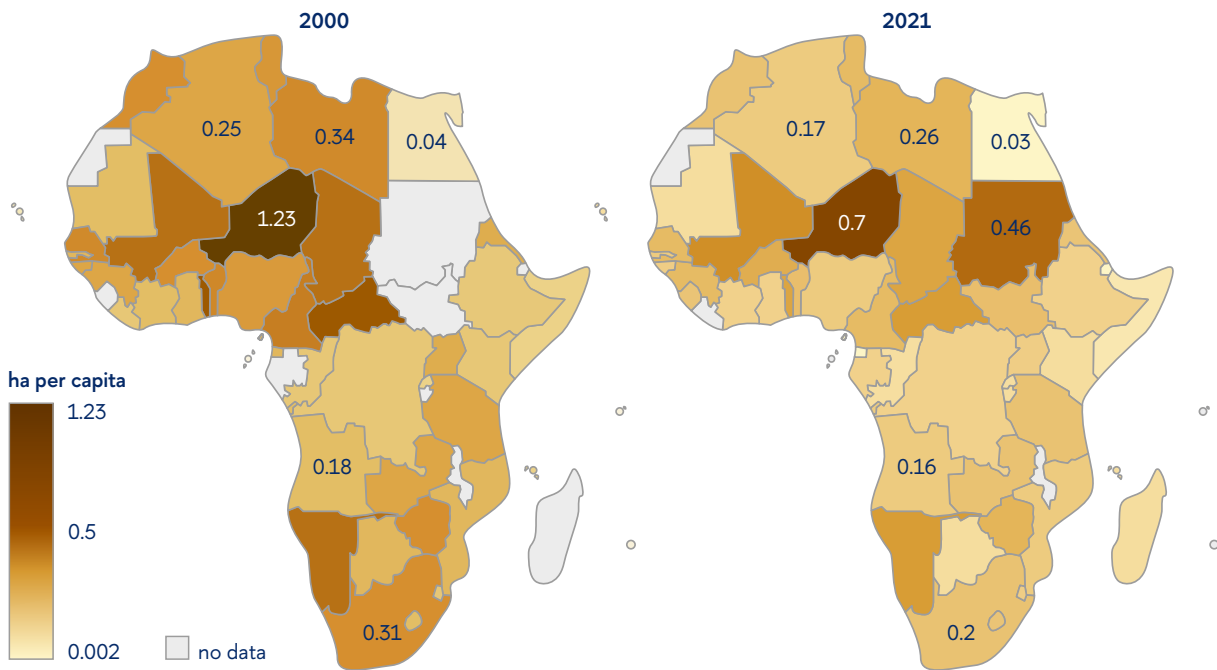
23 IDH. Fish farming for African food security and job creation. URL: <https://www.idhsustainabletrade.com/news/increasing-food-security-through-local-fish-production-and-market-growth-in-africa/>

Land dilemma exists as well, as alternative to agriculture options arise for land use. For instance, in Tanzania in the period from 2022–2023, the territory of national parks amounted to 99.3 thousand hectares, the revenue from these territories for this period amounted to USD 123.9 million²⁴, the average revenue amounted to USD 12.5 thousand/ha. While the approximate income from agriculture does not exceed USD 1 thousand per ha.

As a consequence, there is a decrease in opportunities for **extensive growth** (arable land, pastures), an increase in demand for intensive farming methods introduction.

One of the main methods of increasing the quality and quantity of yield is the application of fertilisers.

Arable lands (ha per person), 2000–2021

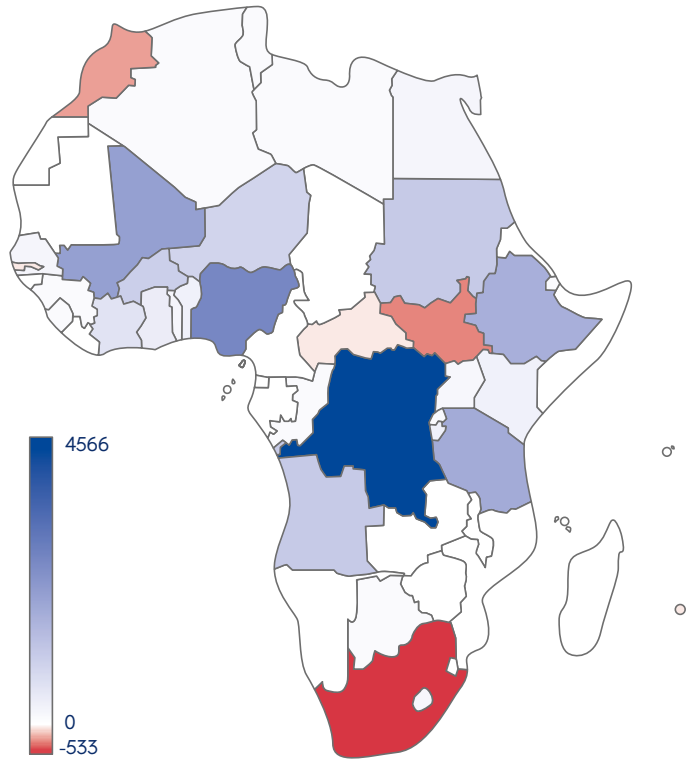
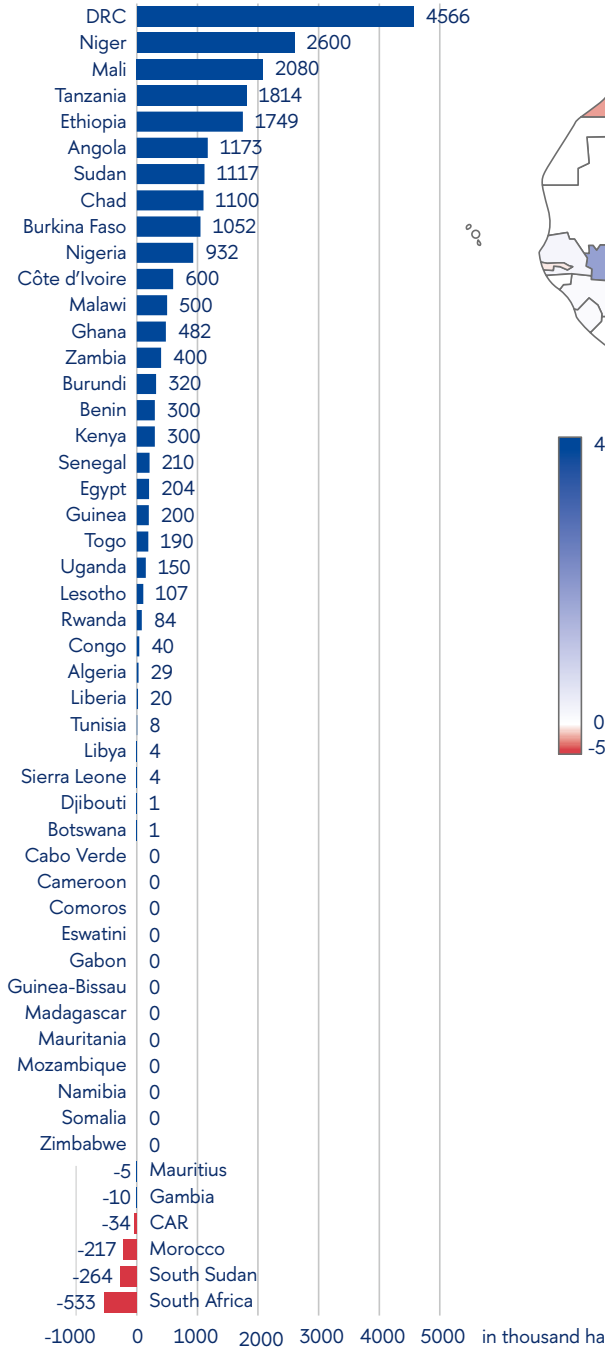


Source: prepared by the HSE University Center for African Studies based on FAO data.

The Egypt case demonstrates that even acute scarcity of arable land can be mitigated through targeted investments in infrastructure. The policy of expanding cultivable land through desert reclamation dates back to 1950, when A. Hussein, then Minister of Social Affairs, proposed distributing desert plots for irrigation among landless farmers. This initiative, known as the “Five Feddan Scheme,” stipulated that each farmhold should not exceed five feddans (approximately 0.4 ha), aiming to increase the number of smallholder farms and promote agricultural development.

24 The Citizen. Tanapa revenue soars by 94 percent as tourism rebounds. URL: <https://www.thecitizen.co.tz/tanzania/news/national/tanapa-revenue-soars-by-94-percent-as-tourism-rebounds-4564600>

Agricultural area growth in Africa, 2010–2021



Source: prepared by the HSE University Center for African Studies based on World Bank data.

In the 1990s, the Egyptian government launched several reclamation projects covering a total of one million feddans of desert land. By 2009, the planned scope of these initiatives was increased to three million feddans by 2030. Although these projects have not yet been fully realized, desert reclamation remains a priority within Egypt's agricultural policy framework. In 2023, A.-S. El-Kuseir, Minister of Agriculture and Land Reclamation, announced that agricultural land had expanded by over 1.5 million ha since 2013.

Furthermore, the government is implementing multiple projects aimed at developing greenhouse horticulture and improving water use efficiency. According to a report of the Ministry of Planning and Economic Development, in 2023, Egypt increased its investments in agriculture and irrigation sectors to USD 3.8 billion — an increase of 71% compared to the previous year.

These measures are designed with a long-term perspective; however, tangible results are already emerging. Egypt has succeeded in achieving self-sufficiency in vegetables, fruits, rice, fish, and sugar. In 2023, the export of fresh agricultural products exceeded 7 million tonnes in physical volume, illustrating the effectiveness of these strategic investments in diversifying and strengthening the country's food production capacity.

Digital solutions in agriculture

The agricultural sector in Africa is based on small-scale farms. By 2023, there were 33 million small-scale farms (with an area of less than 2 hectares) that cultivated up to 80% of arable land in sub-Saharan Africa. In total, they contribute up to 70% to the region's agricultural output²⁵.

Such specifics of the sector impose certain restrictions and requirements on the digitalization processes that have been increasingly developing in Africa's agriculture in recent years. For the governments and large businesses, the use of solutions based on artificial intelligence (AI) technologies, big data analysis, the Internet of Things (IoT), Internet of Environment (IoE) and automated control systems opens up opportunities for optimizing production, improving forecasting quality, minimizing losses and improving resource allocation. Technologies such as geographic information systems (GIS), drones for agriculture, and smart irrigation systems are enhancing

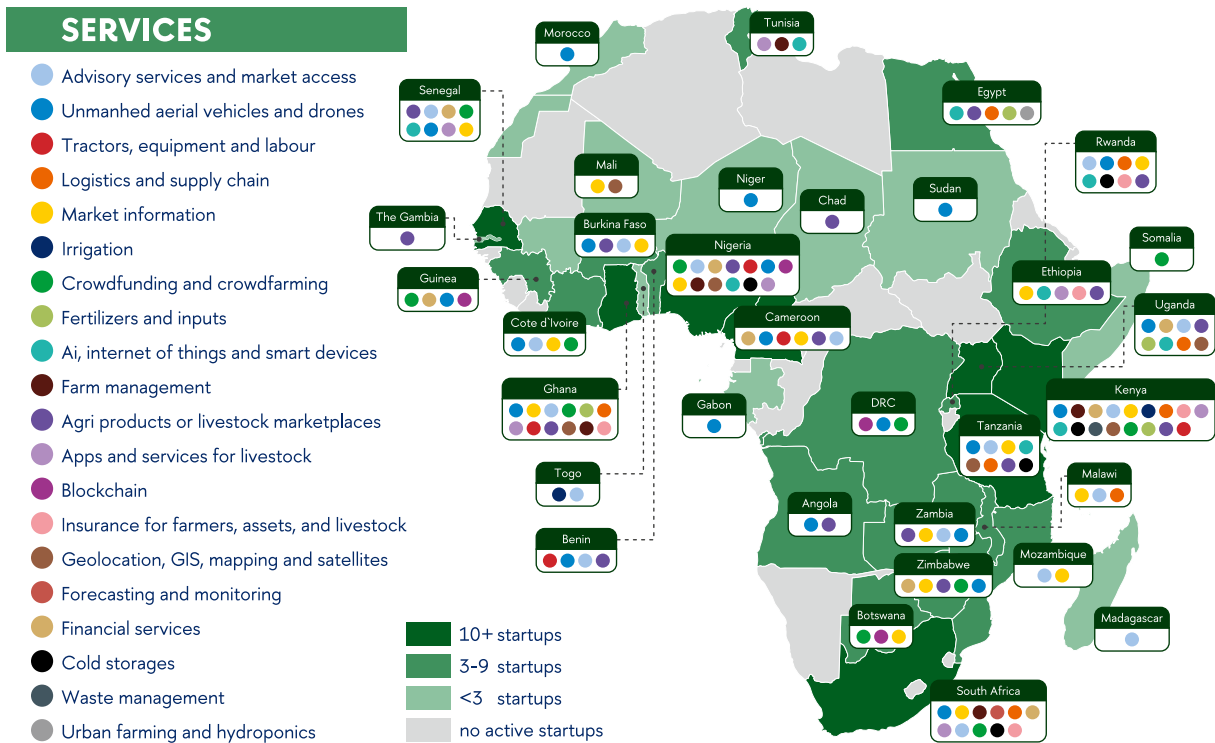
productivity without extensive land expansion. Digital solutions can also become a catalyst for significant changes for small farms, providing farmers with access to precision farming tools, crop forecasting, and soil and plant health monitoring.

Digital solutions in the sector should be accessible to the farmers with varying educational backgrounds, cover remote regions of the country, be as independent as possible from the Internet, and provide information in local languages.

One of the primary challenges is the sector's low productivity and limited capacity to sustain domestic consumption without imports

Marketplaces, online platforms that directly connect various participants in the production and distribution chain, are emerging as vital solutions. Usually, such platforms allow for direct transactions, which is especially important for farmers with limited access to banking infrastructure. For example, *Twiga* — a Kenyan digital platform that connects suppliers and consumers of agricultural products. By 2025, the platform has brought together over 140,000 vendors.

Map of agrotechnical initiatives in Africa, 2021



Source: prepared by the HSE University Center for African Studies based on the data from Briter Bridges.

Twiga enables farmers not only to conduct transactions but also to access credit for startup capital. Financial operations on the platform are facilitated through KCB Bank Kenya.

Along with marketplaces, the sector of e-learning is developing. Major international online platforms such as the FAO Academy and the UNECA educational portal make a significant contribution to the education of farmers by providing free courses, technical webinars, mobile learning, face-to-face training workshops. However, their impact remains limited due to weak audience reach and unstable Internet access in a number of regions. In this regard, the number of educational initiatives based on the SMS-informing model is growing. Such projects include the Cameroonian initiative NDEMRI (Nurturing Digital Extension through Mobile and Responsive Intelligence), the Kenyan

Arifu platform, etc. Short text messages (sometimes in local languages) with educational information about the peculiarities of planting and cultivating a particular crop are sent to farmers. In some projects, such as Kilimotech Chatbot in Tanzania, farmers can send a return SMS request, and the response will be generated by AI. According to various initiatives, the initial country coverage in the first phases of the introduction of such platforms is about 1,500 - 4,000 people. SMS notifications do not require a stable Internet connection and smartphones. For users who cannot read, developers are introducing voice support for AI. So, the Tanzanian Kiazi Bora app ("The best sweet potato" in Swahili) has a voice module. Based on the received voice request, the AI generates and voices advice in Swahili on various aspects of growing, harvesting and selling sweet potatoes.

Digital solutions in agriculture in Ethiopia

The agricultural sector is one of the priority areas of Ethiopia's development. To support digital transformation in this area, the Ministry of Agriculture and the Agricultural Transformation Institute (ATI) have developed a **Digital Agriculture Roadmap 2025-2032**.

As part of the Roadmap, the Government plans to introduce smart farming technologies, tools aimed at increasing productivity and effectively managing natural resources. The key elements for building the necessary digital infrastructure are the introduction of farmer profiles with unique identifiers, as well as the creation of a database of production activities linked to specific landholdings and agricultural producers.

Hotline 8028, which has been implemented in partnership with the national telecom operator Ethio Telecom since 2014, occupies a special place among projects aimed at farmers. The service provides farmers with personalized advice and information on farming via voice menu and SMS in regional languages. Since launch, the system has processed more than 67 million calls.

In 2021, Digital Green introduced the **FarmStack** platform in Ethiopia, an open source software for data exchange. The platform uses APIs and integrations with the CKAN open data management system to simplify the exchange of information between various actors, including government agencies, non-governmental organizations and agricultural producers.

The Ministry of Agriculture uses the **Agri (Ag) Datahub** platform, designed to aggregate agricultural data from various sources, including databases, APIs, and Internet of Things (IoT) devices. The Ministry has also developed a **National Soil Information System** with the aim of increasing agricultural productivity through improved management of soil resources. The system was introduced in 2017 as a further development of the Ethiopian Soil Information System (EthioSIS). The EthioSIS project, launched in 2012, laid the foundation for mapping soils and assessing their fertility throughout the country.

Ethiopia's **Telebirr mobile payment platform**, launched by Ethio Telecom in 2021, is also having a significant impact on agricultural development. Through the issuance of digital loans worth about 9 billion Ethiopian birr (about \$65 million), Telebirr promotes investments in agrotechnical resources and technologies aimed at increasing agricultural productivity and sustainability.

Artificial intelligence is also put to practical use in the agricultural sector. Since 2023, the **Farmer CHAT** digital assistant has been operating, an AI-based advisory system that provides farmers with real-time recommendations based on their geolocation. The service covers issues related to crop cultivation, soil types, and market conditions. The application is available in regional languages and significantly increases the economic efficiency of the state agricultural consulting system — it reduces the average cost per farmer from \$35 to \$3.5. The chatbot was developed by the non-profit organization Digital Green (USA), specializing in supporting small agricultural producers.

Digital data collection models

Data collection is another priority area for the digital transformation of agriculture. Real-time monitoring of weather and soil conditions significantly enhances crop quality and yield. At the same time, such projects face a significant number of challenges: such initiatives require large amounts of funding, expensive and high-performance equipment, and qualified personnel.

Such programs are often implemented by large companies and agencies. For example, in Tanzania, the **FarmSMS** initiative has been operating since 2010, which is coordinated by the Tanzania Meteorological Agency (TMA) together with the World Meteorological Organization (WMO). The development was carried out by TMA in partnership with the Dar es Salaam Institute of Technology. The program is aimed at reducing the risk of crop failure against the background of repeated droughts. A real-time weather report is sent to farmers as SMS notification. Depending on the forecasts of droughts, farmers can choose the time for planting crops more precisely. During the pilot launch in 2010-2013, the initiative proved its effectiveness: farmers who acted on information from weather experts received higher yields than those who relied on traditional weather forecasts. Yields increased from 50 to 125% depending on the region.

The application faces certain technical difficulties, such as delays in SMS notifications due to high traffic and lack of back-up information means. Due to the limitations of mobile communications, the actual delivery of messages takes 3 or more days. In 2020-2021, due to technical problems, the operation of the application was suspended for 20 months, after which the FarmSMS system started working again in October 2021. For 2025, the application, despite technical limitations, is functioning: 28.3 thousand are registered in the system. For example, alerts are sent via mobile modems and, with optimal communication quality, can achieve

maximum performance of 5-10 thousand SMS notifications per day.

The private sector is investing in data collection — the Internet of Things (IoT), or rather, the Internet of Environment, which is becoming an independent and rapidly growing segment of the IoT market. As part of such projects, investors pay for collecting data from a variety of sensors in real time. Private companies (such as **AGRIoT** in Rwanda) sell sensors and applications to manage the data they receive. However, this area is still poorly developed due to a lack of funding and a high entry threshold. A farmer using IoT software must not only maintain expensive equipment, but also have basic data interpretation skills.

Programs for tracking the rainy and drought seasons, educational materials for farmers, marketplaces with supplies, machinery and fertilizers are already showing an increase in yields and a reduction in crop losses after harvest. The success of digital agriculture in Africa will depend on overcoming structural challenges such as limited digital literacy, remote infrastructure, and funding constraints.

Fertilisers market in Africa: towards agricultural intensification

Fertilisers will be the main trendsetter for African agriculture development in the forthcoming decades

As of 2023, agricultural fertiliser use in Sub-Saharan Africa is **22.6 kg/ha**²⁶ of active ingredients (compared to APAC at 300 kg/ha), with some countries like Uganda, Guinea, Republic of Congo, Niger and CAR using less than 5 kg/ha. Following the meeting of African Ministers of Agriculture in 2006 in Abuja (Nigeria), a modest goal was set to increase the average volume of fertiliser use from 8 kg/ha to 50 kg/ha, which is still yet to be achieved in most countries. According to the calculations of the United Nations Development Programme (UNDP), achieving the goal of increasing the use

26 Malpass D. A transformed fertilizer market is needed in response to the food crisis in Africa. URL: <https://blogs.worldbank.org/en/voices/transformed-fertilizer-market-needed-response-food-crisis-africa>

of fertilisers could triple food production in Africa in the near future, as well as reduce malnutrition by almost 5%²⁷. Fertiliser consumption in Africa is 7.5 million tonnes of active ingredients, and most of it is imported nitrogen, potash and phosphate fertilisers.

Fertilisers have already contributed to food sovereignty of several African countries. Among them is Ethiopia, which has arranged an increase in production due to the introduction of new wheat varieties and an increase in the use of fertilisers.

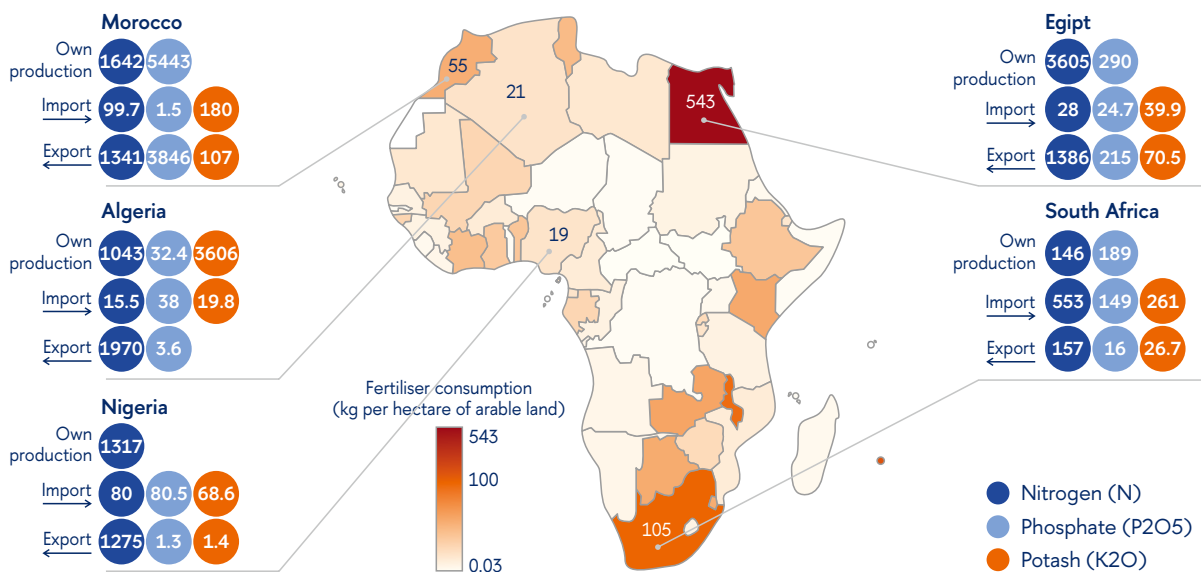
African market share of imported fertilisers (7.6% of global value) and exported (12.4%) is relatively high, whereas indicators of several countries (Morocco, Algeria, Egypt) are in position to increase significantly this decade.

According to the Africa Fertilizer Map, the major fertiliser producers on the African continent —

Morocco, Algeria, Nigeria, South Africa and Libya — manufacture fertiliser not only for their own consumption but also for export, including intra-regional exports²⁸. Africa is endowed with the resources for fertiliser production. According to the USGS, up to 80% of the world's phosphate reserves are concentrated in Africa. Africa annually produces around 250 bcm of natural gas (about 1 thousand cubic metres of gas is needed to produce 1 tonne of ammonia fertiliser). That proves the potential for wider regional cooperation in fertilisers production²⁹.

South Africa, Ethiopia, Zambia, Djibouti, Tanzania and Zambia are the region's leading fertiliser buyers (the combined share of these five countries is 20% of total African imports)³⁰. At the same time, Morocco, South Africa, Egypt, Nigeria are among the five leaders exporting to other countries of the region: they account for 82.1% of external African exports and 76.2% of intra-regional exports.

Production and trade of fertilisers in Africa (by nutrient), 2022, thousand t



Source: prepared by the HSE University Center for African Studies based on Africa Fertilizer Map and FAO data.

27 UNDP. Towards Food Security and Sovereignty in Africa. URL: <https://www.undp.org/facs/publications/towards-food-security-and-sovereignty-africa>
 28 Africa Fertilizer Map. URL: <https://www.africafertilizemap.com/>
 29 Sviridov V., Andreeva T. Russian Fertilizers as an Element of Strengthening Africa's Food Sovereignty. URL: <https://africajournal.ru/wp-content/uploads/2024/07/Sviridov-Russian-Fertilizers.pdf>
 30 IFASTAT. URL: <https://www.ifastat.org/>

However, intra-regional fertiliser consumption and distribution remain low. The main reasons include low qualification of farmers and specialists involved in the agricultural sector, dependence on subsidies, shortage of foreign currency and the general lack of government support for the sector.

It is the government that should be the main player in the emerging fertiliser markets

Given the small size of farms and their lack of working capital and knowledge of soil conditions, it is the government that should be the main player in the emerging fertiliser markets. Examples of separate states show that the set of these measures is limited, but allows to achieve significant results even in the short term.

However, the main reason remains the benefit for large African producers of targeting external markets. Countries with unstable economic and political environment, as well as countries amidst acute food crisis, cannot pay for sufficient volumes of fertilisers at market price, which directs export flows to other regions rather than inland.

Another critical reason for low consumption and intraregional exports is the poor state of logistics. For example, the main railroads and transport trade corridors on the continent pass through coastal countries, international ports and major railway stations, almost completely ignoring the inland countries (most affected by the food crisis).

The de facto 'exclusivity' of some routes increases the price of fertiliser shipments. According to Africa Fertilizer Map's 2021 calculations, the transportation cost per tonne of fertiliser from Dakar to Bamako averaged USD 54 (1,115 km), from Beira to Lusaka USD 85 (1,055 km), from Durban to Harare USD 115 (1,680 km) and from Dar es Salaam to Lusaka USD 100 (1,940 km)³¹. Meanwhile, the major railroads and transport corridors affect intracontinental countries tangentially. This increases the cost of transportation at the expense of conveyance within the country itself (from the transport hub to the periphery) and adds the risk of a transport blockade if relations between states deteriorate.

Nigeria provides an example of the use of a range of government support measures for the development of the sector. Fertiliser consumption trends are positive, but reflect the general picture for Africa (less than 20 kg/ha). Nigeria's former president Muhammadu Buhari (2015-2023) made the fertiliser programme a priority and several steps have been taken at state level in this regard:

1. Establishing a **legal framework** for the development of the national fertiliser market segment.
 - **Presidential Fertiliser Initiative** (2016), the objectives of which were, among others, to rehabilitate local idle infrastructure and encourage domestic production (blending) of fertilisers³².
 - **The National Quality Fertiliser Control Act** (2019) to prevent substandard or counterfeit products from entering the market³³. One of the requirements of the act is for companies operating in Nigeria to register and obtain certificates of registration and marketing authorisation from the relevant agency. To this end, an electronic platform, The National Fertiliser Management Platform, has been operationalised. The first certificates were issued in 2022.

31 Africa Fertilizer Map. URL: <https://www.africafertilizermap.com/#Interactive>

32 Nigeria Sovereign Investment Authority, Presidential Fertiliser Initiative (PFI). URL: <https://nsia.com.ng/portfolio/presidential-fertilizer-initiative-pfi/>

33 Federal Republic of Nigeria Official Gazette, The National Quality Fertiliser Control Act. URL: <https://nesgroup.org/farmgain/documents/Official%20Gazette%20of%20NATIONAL%20FERTILIZER%20QUALITY%20CONTROL%20ACT,%202019.pdf>

2. **Support for local producers** of fertilisers and agricultural products.
 - **Non-tariff measures.** Import bans on urea and NPK were introduced in 2016 and 2018, respectively.
 - **Subsidies.** Subsidies to increase the amount of fertiliser per hectare of cultivated land under various schemes and programmes (including the Federal Market Stabilisation Programme, the 2010 Fertiliser Voucher Programme, and the Growth Enhancement Support Scheme) have been used in Nigeria since 1977. However, after 2015, due to declining government revenue as a result of falling oil prices and the government’s high debt obligations to agro-dealers, subsidies were not used. In 2022, the subsidy system was partially brought back; in 2023, several state governments in Nigeria announced the introduction of a 50% subsidy on fertiliser purchases.
3. **Direct purchase by the government**
 Nigeria is using contracting for the supply of raw materials for local blending in Nigeria is done through government procurement: in 2019, a contract was signed with Uralkali (a Russian company, part of Uralchem Group), for the direct supply of potash component for NPK fertilisers.
4. Introduction of a **Soil Doctor programme** to test soils and determine the level of fertiliser requirement, with parallel training of specialists and opening of laboratories.

Despite the positive trend in fertiliser use, Nigeria remains dependent on external fertilisers, the supply of which can be drastically reduced in times of crisis, leading to higher prices and a reduction in already established local production. The only way for Nigeria to achieve food sufficiency via increased fertiliser application is to harness its vast natural gas resources for nitrogen fertiliser production.

An USD 11 million **soil fertility mapping project** (launched in 2012) was completed in Ethiopia in 2019³⁴. The maps, which contain soil characteristics and soil nutrient levels, have helped create recommendations for a more balanced use of fertilisers and new mineral mixtures, instead of using one type for all soil types. In this regard, Ethiopia has abandoned some fertilisers that did not suit the soil type in terms of nutrient composition (in particular DAP was completely replaced by NPS and its varieties in 2015)³⁵.

The logistics of fertiliser distribution is also important: small farms, those who primarily need fertilisers, find it difficult to buy large batches of fertilisers coming to ports. At the same time, it is unprofitable for suppliers to divide batches of fertilisers into small portions. Thus, investments are needed in a mechanism for redistributing and

packaging imported fertilisers on the territory of ports or in the vicinity of them.

Africa’s food sovereignty through fertiliser supply should be complemented by educational and research initiatives

These include additional courses, lecture series, internships for farmers and government officials.

34 FAO. Using Soil Maps to Promote Efficient Use of Fertilizers Learning from the Ethiopian Experience. URL: <https://www.fao.org/3/cb9452en/cb9452en.pdf>

35 AfricaFertilizer. Ethiopia Fertilizer Dashboard. URL: <https://viz.africafertilizer.org/#/ethiopia/wpContentPage/country-overview-8>

SSA trade corridors

Mombasa (1,1-1,600km/3-7 days):

Kenya, Uganda, Rwanda, South Sudan

Dar es Salaam (1,5-2,100km/3-7 days):

Tanzania, Burundi, Rwanda, Zambia, DR Congo

Beira (1,600km):

Mozambique, Malawi, Zambia, Zimbabwe

Abidjan-Dakar (1,1-2,500km/2-6 days):

Guinea, Mali, Burkina Faso, Senegal, Ivory Coast

Djibouti (800km/2-3 days):

Djibouti, Ethiopia

Togo (1,600km/4-5 days):

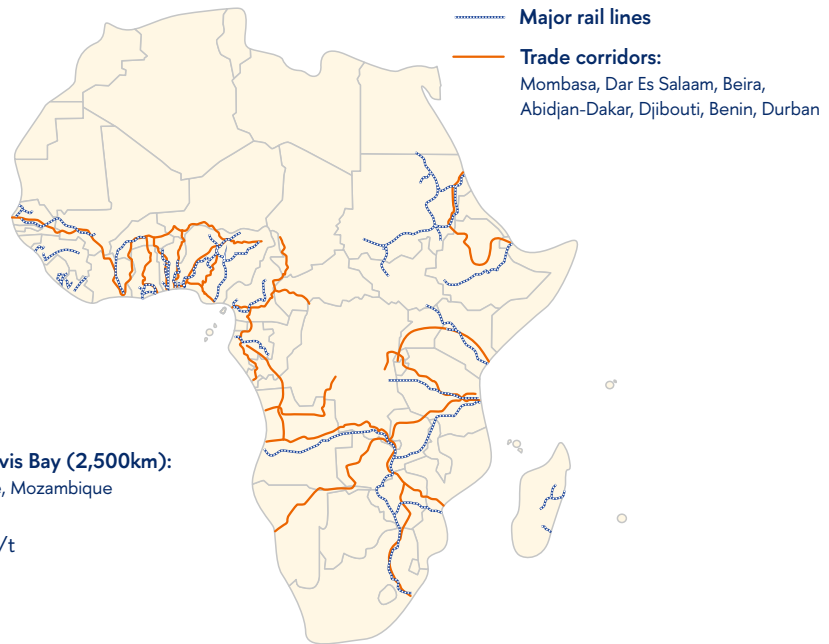
Togo, Burkina Faso, Niger

Benin (1,100km/2-3 days):

Benin, Niger

Durban (2,100km) Lobito (1,800km), Walvis Bay (2,500km):

South Africa, Angola, Namibia, Zambia, Zimbabwe, Mozambique



Dar Es Salaam to Lusaka: 1,940 km — 100 \$/t

Beira to Lusaka: 1,055 km — 85 \$/t

Durban to Harare: 1,680 km — 115 \$/t

Dakar to Bamako: 1,115 km — 54 \$/t

Abidjan to Ouagadougou: 1,153 km — 81 \$/t

Source: prepared by the HSE University Center for African Studies based on Africa Fertilizer Map data.

3. Subsidies and subventions

Many African countries, such as Algeria, Egypt and others provide government subsidies on food products, especially wheat and bread as a staple (baguettes and loaves of white bread).

Subsidies are an important tool to fight hunger, which is evident when comparing with the Global Hunger Index indicators³⁶. Thus, in Algeria and Senegal, where subsidised products fully cover the national average bread consumption, the level of malnutrition among the population has been gradually decreasing since 2000 and fluctuations in world grain prices have not had a strong impact on the indicator. In Morocco and Tunisia, where subsidised bread meets about half of the demand, malnutrition rates remain at the same level with slight

fluctuations (Morocco) or slightly decreasing (Tunisia). This underlines the strong influence of international conditions on regional bread markets that are not subsidised by the state.

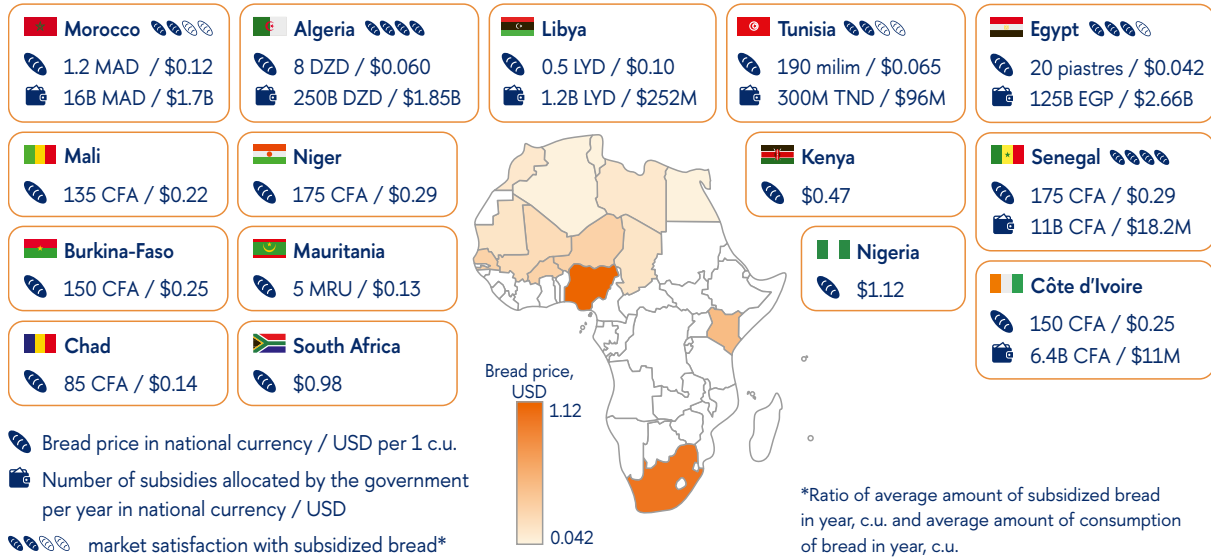
Nevertheless, bread subsidies are also a change-sensitive instrument and **cannot function in isolation from other factors**. For example, in Egypt, where subsidised bread covers more than half of the demand, the malnutrition rate has increased. This process is linked to Egypt's dependence on wheat imports as well as the country's crisis phenomena — food prices inflation rose by 60% between 2013 and 2023, along with foreign debt and the dollar's exchange rate to the national currency³⁷.

High government subsidies on bread and flour stimulate consumption but limit private sector growth

³⁶ Global Hunger Index. URL: <https://www.globalhungerindex.org/>

³⁷ International Institute for Strategic Studies. Egypt's economic crisis and uneasy position in the Middle East. URL: <https://www.iiss.org/publications/strategic-comments/2023/egypts-economic-crisis-and-uneasy-position-in-the-middle-east/>

Subsidies on bread in African countries



Farmers and enterprises involved in bread production (flour mills, bakeries) find it unprofitable to work below or at par with the market price. Subsidies are beneficial in the short term (instant access to food for all segments of the population) but can cause irreparable damage to the economy in the long term. For example, the impoverishment and ruin of bakeries operating at a loss leads to less competition in the market, monopolisation of the sphere, and deterioration of product quality. Finally, all this leads to distortions in the distribution of resources in the economy and, thus, social inequality, which the subsidy system is originally aimed to combat.

To increase the efficiency of subsidies for bread and food in general, the most of the subsidy regimes requires more flexibility with policies exclusive for each individual country. Such a flexible system should consider the level of self-sufficiency and grain imports; the percentage of the population below the poverty threshold and the population receiving minimum wages; the

level of logistical connection between the centre and the periphery and other indirect factors.

For instance, in Algeria, according to Algerian researcher Bouchafaa Bahia, as of 2018, about 52% of the population on average risks poverty and needs subsidised products, but 48% of the population may not need subsidies³⁸. Qualitative analysis of existing risks and resources for the introduction of subsidies can improve the situation of all participants in the economic life of the state.

The dependence of many African countries on imports and the resulting fluctuations in world product prices remains a major challenge to a flexible subsidy system. Thus, rising prices for imported wheat will inevitably lead to an increase in prices for baked products, even subsidised ones. To mitigate risks, it is very important to ensure a long-term transition to own raw material resources. An option for countries that cannot achieve self-sufficiency may be the development of reservation systems.

38 Bahia B. Subsidizing Bread In Algeria? Yes, But... // Revue d'économie et de statistique appliquée. 2018. Vol. 15, №1. Pp. 83 – 89.

4. Food reservation systems

Food availability remains one of the main reasons behind most African food crises, which is provoked in the first place by the shortage of food not in the country as a whole, but by its uneven distribution between regions. In Africa, there has already been experience in establishing reservation models at national level. For example, **Ethiopia** has a reserve system (run by the Ethiopian Food Security Reserve Authority (EFSRA), established by the Council of Ministers; renamed the Strategic Food Reserve Agency (SFRA), but in fact it currently has no food reserve policy³⁹ and faces the inability to solve food crises in regions affected by political turmoil — e.g. Tigray. Issues related to the food reserve system are addressed only in related strategies such as the National Policy and Strategy on Disaster Risk Management, Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and Growth and Transformation Plans (GTP 1 and GTP 2)⁴⁰.

Thus, countries face difficulties in establishing national reserve systems — in fact, there is no surplus to set aside as a reserve. A collective reserve system could help to relieve the pressure on national systems.

5. Water withdrawal dilemma

The state of water balance in Africa is an important factor for forecasting economic growth, overcoming the problem of hunger, and progress on sustainable development goals. Only in 13 countries of Africa (Algeria, Botswana, Gabon, Gambia, Ghana, Djibouti, Egypt, Libya, Malawi, Namibia, Tunisia, South Africa, Sudan) the level of access to water sources of acceptable quality exceeds 90%. The worst situation with access to water is in DR Congo, Mozambique, Equatorial Guinea, Chad,

Madagascar, Central African Republic (less than 65%)⁴¹.

Access to drinking water is becoming a separate problem. According to Aquastat, per capita availability of freshwater is reducing across the continent; in Angola, Botswana and Zambia, where per capita access to freshwater was above the world average in 2002, by 2021 the rates have fallen below the world average. In some countries of the continent — Gabon, Mali, Mozambique — total renewable water resources per capita have almost halved in 20 years. One of the main problems is water loss during water withdrawal. On average on the continent, between 80 and 95% of water withdrawals are from agriculture, with losses through evaporation or return to rivers and groundwater aquifers ranging from 40% (in developed countries) to 80% (in developing and least developed countries) due to inefficient water systems.

For Africa, international water basins are the norm: there are 63 in total, covering almost two-thirds (64%) of the African continent. The largest basins are the Congo, Nile, Niger and Zambezi rivers. The most complex basin in terms of combining the scale of water challenges and political disagreements today is the Nile. The population of the basin, which is shared by 11 countries, has quadrupled in half a century (from 143 million in 1971 to 622 million in 2025) and continues to grow.

The first step to increase adaptability to water challenges is solutions at the basin management level

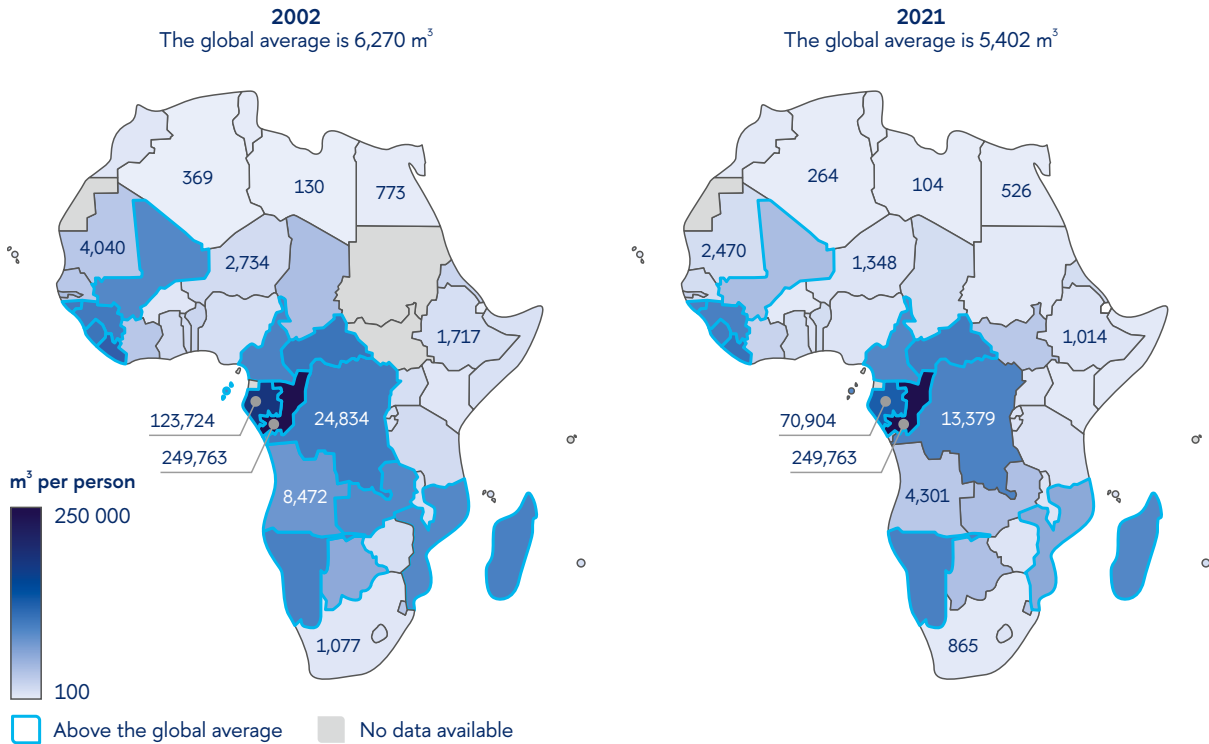
This is not only information exchange based on geographic information systems, AI and monitoring technologies, but also harmonisation and coordination of water withdrawal, mutual support mechanisms, energy grid integration, joint food reserves. Without such coordination, the struggle for water quality and sanitation often makes no sense at all or multiplies costs.

39 Mulugeta, M. Food Reserve System in Ethiopia: Assessment of the Current Implementation Technicalities and Policy Recommendations. URL: <https://jsd-africa.com/Jsda/Vol17No5-Fall15A/PDF/Food%20Reserve%20System%20in%20Ethiopia.Messay%20Mulugeta.pdf>

40 Ethiopia Ministry of Agriculture. Disaster Risk Management. Strategic Programme and Investment Framework. URL: <https://www.preventionweb.net/media/97384/download?startDownload=20240930>; Ethiopia Ministry of Finance and Economic Development. Growth and Transformation Plan I. URL: <https://www.greenpolicyplatform.org/sites/default/files/downloads/policy-database/ETHIOPIA%29%20Growth%20and%20Transformation%20Plan%20I%2C%20Vol%20I%20%20%282010%2C11-2014%2C15%29.pdf>

41 UN Water. URL: <https://sdg6data.org/index.php/en/tables>

Total renewable water resources per capita (m³/person)



Source: prepared by the HSE University Center for African Studies based on AQUASTAT data.

The structural transformation of African economies will inevitably raise the issue of new water withdrawal dilemmas

Only a few countries can afford to divert water to cities, energy or industry without improving irrigation efficiency. Africa's economic boom cannot happen without investment in water conservation, desalination for coastal megacities, and improved water use efficiency, which starts with better monitoring and reduced losses. These measures may be supported via increasing agricultural productivity and intensifying trade in water-intensive food and goods. A modern solution to the water problem could be the development of a new multi-component system of water use, including not only infrastructure but also rationalisation of water use – policies to improve water efficiency and the use of non-conventional sources.

Main river basins in Africa



Source: prepared by the HSE University Center for African Studies based on AQUASTAT data.

The key areas for investment in Algeria's water infrastructure are the collection and distribution of water in desert regions, as well as seawater desalination. One of the largest projects in this domain involved the transfer of water from the city of In Salah to Tamanrasset, located in the Sahara Desert, completed in 2011 at a cost of approximately USD 2.5 billion. By 2025, a central initiative is the National Desalination Project. This two-phase undertaking involves the construction of seven new desalination plants and the modernization of four existing facilities by 2030. Upon the completion and commissioning of all facilities, the share of drinking water supplied to Algeria from the Mediterranean Sea is expected to increase from 18% to 42%, or from 2.2 million cubic meters per day to about 5.8 million cubic meters. At these rates, desalinated water will cover up to 60% of the country's drinking water needs by 2030. The cost of the national project is estimated at USD 5.4 billion.

New food sovereignty systems

Population growth opens new opportunities for Africa — expanding consumer markets and increasing the continent's attractiveness to foreign investors. The long-term food security outlook will depend on how effectively African governments and businesses are able to capitalize on this demographic expansion.

Local content should become an integral part of international trade in food products

For Africa, the issue of food sovereignty is broken down into two circuits – external and internal. On the external side, it is necessary to gradually reduce dependence on the external environment, such as global price fluctuations, political will of exporters, development agenda imposed from outside. If import substitution is impossible (e.g. with wheat), African governments need to take a more proactive stance and exert more pressure on suppliers. The logic of other sectors can be applied to food as well – local content should become an integral part of international trade in food products, meaning technology and knowledge sharing, food stocks creation on the territory of importers, etc. Such an approach is logical, given that the food situation in the world is indivisible. Issues in the importing country today mean problems for the exporting tomorrow – and vice versa.

In turn, for exporters, investments in distribution, storage, and food logistics infrastructure — as well as in localized processing (for example, flour milling that incorporates local inputs) — will become a long-term competitive advantage in growing markets that will gradually restrict imports of finished products and certain types of raw materials.

Urbanisation is bringing about significant changes in eating behavior and the problem of access to food is widely recognised, but the responses to these challenges must be conscious and long-term. It is not just about the quantity of calories and protein, but also the quality of them. Food aid, for example, should not become a way to inculcate certain non-African consumption habits, and urbanisation should not become a driver of increased consumption of low-quality protein.

The dispersal of the state support resource is also obvious. For each country a **strategic food commodities** list may be developed, consisting of a food basket to ensure a healthy diet that can be fully produced within the country. These same commodities should be the focus of government support in terms of creating a full cycle of production: from feed, seeds and vaccines, to industrial equipment and processing and packaging facilities. Full self-sufficiency is impossible, but it is achievable in basic categories.

In terms of the domestic market, it is necessary to take measures to increase agricultural productivity, through transition to intensive farming, use of quality fertilisers, which increase the quality and yields of agricultural products, improve soil fertility, aquaculture, and industrial livestock breeding. Increasing imports of fertilisers and technical equipment of farms in general is crucial here. Given the small size of farms, **the role of the government is of key importance** – it should be the main customer of soil quality research and mapping

programmes, wholesale purchaser of fertilisers for further distribution among farms.

The answer to solving Africa's excessive food import dependency, while seemingly paradoxical, is to increase imports, but of the means of production.

International assistance in this regard may be focused on facilitating this import and maintaining favourable conditions for its expansion.

About HSE University Center for African Studies



Center for African Studies
HSE University

HSE University Center for African Studies (HSE CAS) was established in 2020 in response to the increasing significance of Africa as a focal point for foreign policy and economic engagement for the Russian Federation. The Center specialises in expert and analytical research, focusing on the African markets and the assessment of associated financial, legal and political risks. The primary objective of HSE CAS is to conduct a comprehensive analysis of projects that are either currently being implemented or proposed for implementation in Africa by Russian entities, with an emphasis on risk analysis and the identification of strategic opportunities.



HSE University Center for African Studies

By 2025, HSE CAS aims to emerge as the preeminent center in Russia for applied expertise concerning the risks and opportunities inherent in conducting business in Africa

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The core research domains of HSE CAS encompass an array of topics, including but not limited to: energy and food markets, education, ICT, transport and logistics, financial infrastructure, decision-making systems and the overall business environment. Additionally, the Center conducts thorough risk assessments – spanning financial, legal and political dimensions.

A significant focus of the Center's scientific and analytical work includes the training of personnel through collaborations with universities, research institutions and governmental bodies across African nations. This initiative also extends to the implementation of professional development programmes aimed at mid- and senior-level officials from both African countries and Russia, alongside training tailored for Russian enterprises with interests in Africa.

In 2023, HSE CAS prepared and launched a handbook entitled **Africa 2023: Opportunities and Risks**, which addresses pertinent inquiries regarding the current landscape of African nations, potential avenues for collaborative development and associated threats warranting consideration. The principal sections of this publication examine various facets of human capital in Africa – including demographics, education and cultural dynamics – alongside analyses of natural resources (such as minerals, water supply and ecosystems), food markets, macroeconomics (covering trade, debt, sanctions, and currency fluctuations), infrastructure (including transport, energy, urbanisation and digitalisation), political systems, security issues, integration processes, and the evolving nature of Russian-African relations.

At the First Russia–Africa Ministerial Conference in 2024, an expert and analytical handbook titled *Africa 2025: Prospects and Challenges* was presented. The handbook was prepared by the Center’s team with the participation of leading African experts. It covers a broad range of topics, including the macroeconomic situation of African countries, their domestic and external debt, the cost of borrowing, and the degree of foreign trade diversification; major trends in agriculture and consumer preferences, the relationship between food sovereignty and population growth, and the role of fertilizers and food reserve systems in addressing food crises; the state of Africa’s electric power sector, the role of diesel generation, and the opportunities created by the energy transition; as well as the e-governance, key developments in education, the growth of the creative economy, the rising role of African businesses in the continent’s economy, and how Africa is perceived by leading global analytical centers.

A central theme throughout the publication is sovereignty — financial, food, energy, digital, cultural, and educational. In 2025, the third edition of the book was presented at the St. Petersburg International Economic Forum (SPIEF). The foreword to the publication was written by Olusegun Obasanjo, Nigerian political leader, former President of Nigeria, and mediator for the African Union, the East African Community (EAC), and the Southern African Development Community (SADC).

In 2023, during the Second Russia-Africa Economic and Humanitarian Forum, HSE CAS, unveiled **Russia-Africa E-Governance Knowledge Sharing Programme**. Subsequently, in December of the same year, officials from authorities departments

participated in Winter E-Governance Knowledge Sharing Week for African officials.

HSE CAS staff and external experts have prepared and launched several publications. These include the aforementioned *Africa 2023: Opportunities and Risks* (in Russian)⁴², *E-Governance in Africa: Opportunities and Challenges*⁴³, the report *Russia-Egypt: Trajectory of Cooperation* (in Russian and Arabic)⁴⁴, *Africa: Development Prospects and Recommendations for Russian Policy*⁴⁵, as well as the report for Valdai Discussion Club entitled *Prospects and Tasks of Russian-African Cooperation*⁴⁶.

Furthermore, the online platform for the Knowledge Sharing Programme – **E-Governance Knowledge Hub** – has been established to aggregate information regarding e-government development in Africa, ongoing projects, challenges and potential solutions. Apart from that, corporate information systems and geographic information systems are being developed to support decision-making.



E-Governance Knowledge Hub

42 Центр изучения Африки НИУ ВШЭ. Африка 2023: Возможности и риски. URL: <https://we.hse.ru/irs/cas/africa2023>

43 HSE Center for African Studies. E-Governance in Africa 2024: Challenges and Opportunities. URL: <https://e-governancehub.ru/read-book-e-governance-in-africa-2024-challenges-and-opportunities/>

44 Росконгресс. Россия и Египет: траектория сотрудничества. URL: https://cdnweb.roscongress.org/upload/medialibrary/a68/Russia_Egypt_rus.pdf?1655234016413490

45 НИУ ВШЭ. Африка: перспективы развития и рекомендации для политики России. URL: https://globalaffairs.ru/wp-content/uploads/2021/11/doklad_afrika_perspektivy-razvitiya.pdf

46 Valdai Club. Russia-Africa Cooperation: Outlook and Objectives. URL: <https://valdaiclub.com/a/reports/russia-africa-cooperation-outlook-and-objectives/>



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