

## FOOD SECURITY PROBLEMS IN SUB-SAHARAN AFRICAN COUNTRIES

**Aleksander Grzelak, PhD<sup>1</sup>; Agnieszka Sapa, PhD<sup>2</sup>**

Faculty of Economics, Poznań University of Economics and Business

### ABSTRACT

The main purpose of the study is to identify food security problems in Sub-Saharan African countries. Despite progress in increasing food security in the world, it is still one of the most important challenges facing Sub-Saharan Africa. The research shows that the food security is different across countries. The more favourable situation takes place in South Africa, Botswana, while at the other extreme are countries such as Madagascar, Burundi and Sierra Leone. The economic affordability of food seems to be the most important problem for these countries. So an inclusive growth could be a chance to improve the level of food security.

**Keywords:** food security, Global Food Security Index, Sub-Saharan Africa

**JEL codes:** Q18, H55, E64

### INTRODUCTION

In spite of conditions of continuous economic growth, development of food markets, advanced technical and technological progress, the global economy, although allows providing the appropriate amount of food in the global dimension, does not guarantee everyone's accessibility to it. The problem of lack of food security mainly affects the inhabitants of developing countries, especially the countries of Sub-Saharan Africa. This issue is particularly important in the light of forecasts indicating that food production by 2050 must increase by 64% compared to the 2006 year (Hanson, 2013) to provide adequate amount (in caloric terms) for the estimated 9.3 billion people (UN, 2011). It is worth to state, that at the same time, nearly half (47%) of the projected population growth will take place in Sub-Saharan Africa (Hilderink et

al., 2012), which is characterized by very low land productivity and high dependence on food import (Rakotoarisoa, Lafrate and Paschali, 2011). So in the face of the problem of hunger and malnutrition, it is essential to present the level of food security in individual regions or countries. The appropriate measures of assessing and comparing the level and changes of food security across regions serve this purpose (Thomas et al., 2017; FAO et al., 2017). The main objective of the study is to assess food security in its three dimensions in Sub-Saharan Africa using Global Food Security Index in 2012–2017.

### THEORETICAL BACKGROUND

The concept of food security has been modified for years, which reflects both the number of formulated definitions and the change in the definitions' empha-

<sup>1</sup> Corresponding author: al. Niepodległości 10, 61-875 Poznań, Poland, aleksander.grzelak@ue.poznan.pl, +4461 854 30 12

<sup>2</sup> Corresponding author: al. Niepodległości 10, 61-875 Poznań, Poland, agnieszka.sapa@ue.poznan.pl, +4461 854 30 12

sis on various elements of food security (Maxwell and Smith, 1992; FAO, 2012). The first definitions of food security focused on the supply side (UN, 1975), then on the demand aspect (FAO, 1983; World Bank, 1986) and qualitative dimension in the subsequent years (FAO, 2003). In 1996, at the World Food Summit, it was assumed that: food security, at the level of a single person, household, national, regional and global, is achieved when all people have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996). This definition indicates four pillars of food security: food availability, food affordability, utilization and stability (FAO, 2006). Some researchers also emphasise the need to take into account the fifth pillar of food security, e.g. environmental sustainability (Hanson, 2013). Given the multifaceted nature of the food security problem, there is a need for a holistic view of this issue, which is a challenge in the field of creating comparable ways of measuring food security and identifying ways to improve it (Kraciuk, 2017; Poczta-Wajda, 2018). Some literature is particularly focused on factors determining the level of food security. These factors can be divided into natural, political, social, economic and institutional (Gulbicka, 2009). FAO highlights five general drivers: economic growth, the role of family farming and smallholder agriculture, international trade, social protection systems and avoiding protracted crises (Hedden et al., 2016). At the same time, FAO as the primary cause of food insecurity indicates a too low income of households that do not allow people to achieve economic availability of food. Economic growth, which implies an increase in income of the poorest households, is crucial for building long-term food security (FAO and OECD, 2014).

Considering economic growth, as a factor determining the level of food security, the question arises whether economic growth implies reducing hunger and malnutrition or vice versa, food security implies economic growth. According to some researchers, economic growth is necessary to reduce hunger and

malnutrition. Economic growth implies higher wages, increase in household incomes, reduction of unemployment, nutrition, and thus the quality of human capital and productivity (FAO and OECD, 2014). This dependence was also the subject of empirical analyses (FAO, 2015). Other research indicates that food security determines economic growth. It is happening through the positive influence of food on physical and mental health, it means on human capital is an essential factor in economic growth. The food security is analysed in the context of the role of human capital in development (Burchi and De Mur, 2012; UNDP, 2012) and relation with sustainable development (Kleemann, 2012). The lack of food security in one country is a barrier and additional costs for global, regional or national economic growth (Torero, 2016), which was also confirmed by empirical studies (Agboola, 2014).

## MATERIALS AND METHODS

The conducted research are based on the Global Food Security Index (GFSI) developed at the request of DuPont by the Economist Intelligence Unit (EIU) from 2012. This composite indicator is aiming at monitoring progress towards food security at a country level. This synthetic index is a result of 28 indicators grouped in 3 domain (adequate to three dimensions of food security): affordability (6 indicators), availability (11 indicators) and quality and safety (11 indicators). GFSI focuses on contributing factors to food security rather than on outcomes such as food consumption or the nutritional status of the population<sup>3</sup>. Due to the method of data aggregation, the index, on the one hand, allows a macroeconomic approach to food security, which avoids diversifying the level of food security within a selected country between households. On the other hand, the standardised data allow for international comparisons in static and dynamic approach, eliminating the subjectivism of assessments. The analysis is based on GFSI data for 28 countries of Sub-Saharan Africa in 2012–2017. Such a scope of work is determined by the availabil-

---

<sup>3</sup> More details on GFSI: (Thomas et al., 2017; <https://foodsecurityindex.eiu.com/>).

ity of data. The research involved the analysis of the dynamics of phenomena, comparative analysis of indicators and correlation analysis.

## RESULTS AND DISCUSSION

According to the Global Food Security Index (GFSI), the countries of Sub-Saharan Africa have the lowest level of food security (Table 1). Although in 2017 and 2012 there was an improvement in food security in Sub-Saharan Africa, the relatively high rate of change was mainly the effect of the base as well as the relatively good economic situation in most African countries in 2012–2017<sup>4</sup>. However, the drop in the index in 2017, as compared to the previous year, may be disturbing. This unfavourable reversal of the trend is also confirmed by research conducted by other measures (FAO, 2015; FAO, 2017).

Given the scale of the problem, progress in this area on the African continent is still insufficient. For example, according to FAO data in 1990/1992–2014/2016, the share of hungry and malnourished people decreased by 12 p.p., but the number of them increased by 25% (FAO, 2015), which was also associated with a high rate of demographic growth (e.g. 2.8%, compared to 1.35% in the world and 0.2% in Europe). In 2016, the problem of food insecurity af-

fects over 21% of Sub-Saharan Africans, while over 27% of the population has experienced severe food insecurity (FAO et al., 2017).

In the majority of the analysed African countries, the GFSI increased between 2012 and 2017. The most favourable situation was recorded in South Africa and Botswana (Table 2). These countries are generally characterized by a relatively higher level of economic development compared to the other analysed countries. In 2017 the least favourable situation was in Madagascar, Burundi and Sierra Leone. And, what is worth to highlight, in the examined period the food security situation worsened in countries with the lowest food security level. So it affects countries with a low level of economic and social development, very unfavourable climate, low farmland resources, low level of human capital and low productivity of production factors. Some countries are exposed to socio-political instability<sup>5</sup> and numerous armed conflicts<sup>6</sup> (FAO et al., 2017) or weather disasters<sup>7</sup> associated with adverse climate change. As a consequence, the scale of hunger is especially significant there. The relatively high economic growth in Sub-Saharan African countries is at the same time marked by strong environmental degradation (Omisere, 2018), which consequently has a negative impact on the qualitative dimension of food security.

**Table 1.** Global Food Security Index in selected world's regions in 2012–2017

Group	2012	2013	2014	2015	2016	2017	Change (%) 2017/2012
All countries	56.0	55.9	56.6	57.5	57.9	57.3	2.32
Europe	75.0	74.5	74.6	74.6	75.6	75.2	0.27
Sub-Saharan Africa	36.0	36.3	37.2	38.3	38.4	37.3	3.61
Middle East and North Africa	60.3	59.9	61.3	62.0	62.0	60.8	0.83

Source: own elaboration based on Global Food Security Index (<http://foodsecurityindex.eu.com>).

<sup>4</sup> The average annual GDP rate growth in sub-Saharan African countries in 2012–2017 was 4.1% (from 3% in 2016 to 5.1% in 2013), IMF Regional Economic Outlook: Sub-Saharan Africa, May 2016.

<sup>5</sup> For that countries the political stability and absence of violence/terrorism index was very low. In 2015 the index was: –2.09 in Central Africa Republic, –0.4 in Madagascar while for Africa average value was 2.0, but for Europe 9.7 ([info.worldbank.org/governance/wgi/#reports](http://info.worldbank.org/governance/wgi/#reports)).

<sup>6</sup> For example in Rwanda, Burundi and Chad.

<sup>7</sup> For example an effects of El Nino in 2014–2015 in Senegal, Malawi, Zimbabwe.

**Table 2.** Value and structure of Global Food Security Index (GFSI) in selected Sub-Saharan countries in 2012 and 2017

Country	2017	2012	Change (%) 2017/2012	2017	2012	Change (%) 2017/2012	2017	2012	Change (%) 2017/2012	2017	2012	Change (%) 2017/2012
	GFSI			affordability			availability			quality and safety		
Angola	33.2	33.60	-1.2	21.9	31.10	-29.58	42.50	37	14.25	35.80	30	18.54
Benin	39.6	33.80	17.2	30.0	27.00	11.11	47.80	41	17.73	41.40	32	29.78
Botswana	59.4	56.90	4.4	54.5	50.20	8.57	67.30	65	2.91	50.10	50	-0.40
Burkina Faso	33.1	31.10	6.4	19.8	18.30	8.20	44.40	41	9.36	35.70	37	-3.77
Burundi	25.1	27.40	-8.4	13.5	16.30	-17.18	32.70	37	-11.38	33.40	29	14.78
Cameroon	41.6	38.10	9.2	33.6	29.90	12.37	44.20	42	6.51	54.20	49	9.72
Chad	28.3	28.70	-1.4	19.9	21.60	-7.87	33.00	33	-0.90	36.10	33	8.08
Congo (Dem. Rep.)	25.5	26.40	-3.4	15.7	20.40	-23.04	33.20	30	11.41	29.10	32	-9.63
Cote d'Ivoire	42.5	40.00	6.3	37.4	36.20	3.31	49.70	46	8.52	35.30	34	5.06
Ethiopia	33.3	36.50	-8.8	16.9	27.80	-39.21	47.60	46	3.48	34.90	32	9.75
Ghana	47.9	44.50	7.6	34.5	36.10	-4.43	58.00	51	14.40	53.60	49	10.52
Guinea	34.0	30.00	13.3	26.4	25.60	3.12	42.20	36	18.54	30.30	26	18.36
Kenya	42.2	42.10	0.2	37.6	39.60	-5.05	46.50	45	4.03	41.80	41	0.97
Madagascar	27.2	31.60	-13.9	15.0	21.40	-29.91	40.90	45	-8.71	20.20	21	-2.88
Malawi	31.3	32.10	-2.5	15.4	21.70	-29.03	43.40	43	2.12	37.60	29	28.77
Mali	39.4	37.80	4.2	24.0	26.70	-10.11	51.60	47	9.32	44.20	40	11.62
Mozambique	33.7	32.20	4.7	24.3	22.30	8.97	48.70	48	1.25	16.00	13	24.03
Niger	29.5	30.00	-1.7	18.9	19.90	-5.03	38.20	38	1.60	31.70	34	-6.49
Nigeria	38.4	35.40	8.5	25.0	21.40	16.82	46.40	44	6.67	49.90	48	4.61
Rwanda	39.8	38.90	2.3	29.4	30.50	-3.61	46.20	46	0.43	48.30	40	20.15
Senegal	44.2	36.30	21.8	31.6	30.10	4.98	57.00	41	39.71	40.80	39	3.55
Sierra Leone	28.7	32.50	-11.7	22.1	24.30	-9.05	32.50	39	-17.09	34.60	34	0.87
South Africa	64.0	60.10	6.5	62.7	55.50	12.97	66.80	65	2.93	59.70	58	2.40
Sudan	34.8	32.40	7.4	24.1	23.60	2.12	39.40	39	1.29	49.20	36	35.91
Tanzania	35.4	34.50	2.6	26.4	28.70	-8.01	44.30	43	3.02	33.60	26	30.23
Togo	37.2	32.70	13.8	28.5	30.50	-6.56	48.20	37	30.98	28.70	27	7.09
Uganda	43.3	40.00	8.3	36.3	37.80	-3.97	48.50	40	20.65	46.30	45	3.12
Zambia	32.4	32.50	-0.3	19.4	23.00	-15.65	46.40	45	3.57	26.60	22.00	20.91

Source: own elaboration based on Global Food Security Index (<http://foodsecurityindex.eui.com>).

It can also be noted that in Sub-Saharan African countries, the most significant problem when considering food security is the economic affordability (Table 2) of food and purchasing power of income. The remaining dimensions of food security are slightly compensated for the general situation in the area of food security. Although factors limiting food security are mainly on the demand side (affordability), it does not mean that the supply (availability) and qualitative (quality and safety) dimensions do not cause problems. So taking into account that for analysed countries there is a strong positive correlation between economic growth and the value of GFSI<sup>8</sup> and previous research, there is need to support inclusive economic growth that will include poor, farmers, unskilled labour and support sustainable use of constraining natural resources. It is therefore necessary to create socio-economic development of developing countries, inter alia, by supporting the development of agriculture and rural areas, also due to their economic, social, ecological and political significance (World Bank, 2007).

## CONCLUSIONS

Food security is a complex and multi-dimensional phenomenon. So it is difficult or even impossible to indicate a single cause of poor food security situation and, as a consequence, the only way of reducing hunger. It should be remembered that there are a group of general factors determining food security and group of country-specific structural, political and social factors. In this context, the concept of inclusive economic growth is considered. The growth that reaches the most vulnerable people of selected societies it means hungry and poor people.

Despite long-term progress in improvement (still unsatisfied) of food security situation at the global level, the number of people affected by hunger is still significant. Lack of food security is particularly important in the poorest countries, which include countries from Sub-Saharan Africa. But the problem is regionally differentiated, more favourable situation takes place in South Africa, Botswana, while at the

other extreme there are such countries as Madagascar, Burundi and Sierra Leone.

The issue of the economic affordability of food is a particularly sensitive dimension of food security in Sub-Saharan Africa. This is due to the relatively low income of the population, so the adequate economic growth is needed. But it should be inclusive economic growth, which will include the poorest and hungry people. At the same time, that strategy of economic growth cannot negatively affect the natural resources and the quality of the factors of agricultural production. In the opposite case, it will additionally threaten the potential of agricultural production and the qualitative dimension of food security. It is also advisable to develop the food industry, storage and road infrastructure as well as the level of education, in the context of food security problems.

## REFERENCES

1. Agboola, M.O. (2014). Impact of Food Security on Economic Growth in Africa: A Dynamic Panel Data Analysis; Economics Questions. Issues and Problems. In: IRI Economics Conference. Komárno, 20–22.01.2014. <http://www.irisro.org/economics2014january/11AgboolaMaryOluwatoyin.pdf> [Accessed 01.12.2017].
2. Burchi, F., De Mur, P. (2012). A Human Development and Capability Approach to Food Security: Conceptual Framework and Informational Basis. Working Paper UNDP 2012-009. February.
3. FAO (1983). World Food Security: a Reappraisal of the Concepts and Approaches. Director General's Report. Rome. Retrieved from: <https://foodsecurityindex.eiu.com> [Accessed 10.05.2018].
4. FAO (1996). Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit, Rome, 13–17.11.1996.
5. FAO (2003). Trade Reforms and Food Security. Conceptualizing the Linkages. Rome.
6. FAO (2006). Food Security. Policy Brief. June. Issue 2.
7. FAO (2012). Coming to Terms with Terminology Food Security. Nutrition Security. Food Security and Nutrition. Food and Nutrition Security. Committee on World Food Security. CFS 2012/39/4. September.

---

<sup>8</sup> Authors' own elaboration.

8. FAO (2015). Regional Overview of Food Insecurity. Africa. African Food Security Prospects Brighter than Ever. Accra.
9. FAO (2017). Food Security Indicators. Retrieved from: [www.fao.org](http://www.fao.org) [Accessed 02.04.2018].
10. FAO, IFAD, UNICEF, WFP, WHO (2017). The State of Food Security and Nutrition in the World 2017. Building resilience for peace and food security. Rome.
11. FAO, IFAD, WFP (2015). The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress. Rome.
12. FAO, OECD (2014). Opportunities for economic growth and job creation in relation to food security and nutrition. September. Retrieved from: <http://www.fao.org/3/a-bt682e.pdf> [Accessed 10.05.2018].
13. Gulbicka, B. (2009). Problemy wyżywienia w krajach rozwijających się [Problems of food nutrition in the developing countries]. Publikacje Programu Wieloletniego 2005–2009, 184, pp. 33-78.
14. Hanson, C. (2013). Food Security. Inclusive Growth. Sustainability. and the Post-2015 Development Agenda. Background Research Paper. Submitted to the High level Panel on the post-2015 Development Agenda. May.
15. Hedden, S., Hughes, B., Rothman, D., Markle, A., Maweni, J., Mayaki, I. (2016). Ending Hunger in Africa. The Elimination of Hunger and Food Insecurity on the African Continent by 2025. Conditions for Success. NEPAD. Pardee Center for International Futures. Retrieved from: <http://www.nepad.org/resource/ending-hunger-africa-elimination-hunger-and-food-insecurity-african-2025-conditions-success> [Accessed 20.04.2018].
16. Hilderink, H., Brons, J., Ordonez, J., Akinyoade, A., Leliveld, A., Lucas, P., Kok, M. (2012). Food security in Sub-Saharan Africa: An explorative study. PBL Netherlands Environmental Assessment Agency, Hague/Bilthoven.
17. Kleemann, L. (2012). Sustainable Agriculture and Food Security in Africa: An Overview. Kiel Institute for the World Economy. Kiel Working Paper 1812. December.
18. Kraciuk, J. (2017). Bezpieczeństwo żywnościowe krajów Unii Europejskiej [Food security of the European Union Countries]. Roczniki Naukowe SERiA, 19 (3), pp. 150-155.
19. Maxwell, S., Smith, M. (1992). Household food security; a conceptual review. In: Maxwell, S., Frankenberger, T. (eds.) Household Food Security: Concepts. Indicators. Measurements: A Technical Review. Unicef, FAO, New York–Rome.
20. Omisore, A. (2018). Attaining Sustainable Development Goals in sub-Saharan Africa; The need to address environmental challenges. Environmental Development, 25, pp. 138–145.
21. Poczta-Wajda, A. (2018). Miary i wymiary bezpieczeństwa żywnościowego [Measures and Dimensions of Food Security]. Zeszyty Naukowe SGGW w Warszawie. Problemy Rolnictwa Światowego, 18 (33), 1, pp. 203-213.
22. Rakotoarisoa, M., Lafrate, M., Paschali, M. (2011). Why has Africa become a net food importer? Explaining Africa agricultural and food trade deficits. FAO. Rome. Retrieved from: [http://www.fao.org/fileadmin/templates/est/PUBLICATIONS/Books/AFRICA\\_STUDY\\_BOOK\\_REVISIED\\_low\\_res.pdf](http://www.fao.org/fileadmin/templates/est/PUBLICATIONS/Books/AFRICA_STUDY_BOOK_REVISIED_low_res.pdf) [Accessed 30.04.2018].
23. Thomas, A-C., D'Hombres, B., Casubolo, C., Saisana, M., Kayitakire, F. (2017). The use of the Global Food Security Index to inform the situation in food insecure countries. EUR 28885 EN. JRC Technical Reports. DOI: 10.2760/83356
24. Torero, M. (2016). Food security brings economics growth – not the other way around. IFPRI. Retrieved from: <http://www.ifpri.org/blog/food-security-brings-economic-growth-not-other-way-around> [Accessed 02.03.2018].
25. UN (1975). Report of the World Food Conference. World Food Conference, Rome, 05–16.11.1974.
26. UN (2011). World Population Prospects: The 2010 Revision. Highlights and Advance Tables. Working Paper ESA/P/WP.220. United Nations. Department of Economic and Social Affairs. Population Division. New York.
27. UNDP (2012). Africa Human Development Report 2012. Towards a Food Secure Future. New York.
28. World Bank (1986). Poverty and Hunger: Issues and Options for Food Security in Developing Countries. The World Bank Policy Study. Washington, DC.
29. World Bank (2007). Agriculture for Development. Development Report 2008. Washington, DC.