

# Assessing the Zero Hunger Target Readiness in Africa: Global Hunger Index (GHI) Patterns and its Indicators

Olutosin A. Otekunrin<sup>a\*</sup>, Oluwaseun A. Otekunrin<sup>b</sup>, S. Momoh,<sup>a</sup> and Idris A. Ayinde<sup>a</sup>

<sup>a</sup>Department of Agricultural Economics and Farm Management, Federal University of Agriculture, Abeokuta (FUNAAB), Nigeria

<sup>b</sup>Department of Statistics, University of Ibadan, Ibadan, Nigeria

\*Corresponding Author: otekunrinolutosin@yahoo.com

## Abstract

Sustainable Development Goal 2 is hinged on achieving zero hunger target globally, by the year 2030. Many developing countries, especially African countries, are faced with extreme hunger often caused or compounded by bad governance, conflicts and climate change. In this paper, we assess Africa's readiness towards attaining the zero hunger target by 2030 by comparing patterns of Global Hunger Index (GHI) scores and each of its indicators across Africa in 2000-2018 and proffer solutions that can help actualise the SDG 2 target by 2030. Most African countries have made significant and consistent progress in the reduction of child mortality rates from 2000 to 2018 but it was found that most African countries (except North Africans) have high prevalence of undernourishment, stunting and child wasting indicating that they are not making significant progress towards achieving zero hunger target. The study recommends that, in order to actualise the zero hunger target, each country should focus on making significant progress as regards the GHI scores and its indicators. Furthermore, African governments should give priority to fighting factors aggravating hunger in their societies including corruption, armed conflicts and extreme poverty.

**Keywords:** *Hunger; SDG 2; Poverty; Conflicts; Global Hunger Index; African countries*

## 1.0 Introduction

The term “hunger” is often used outside the context of a scientific definition to be “an uncomfortable or painful sensation caused by insufficient consumption of food and ranges from short-term physical discomfort to severe, life-threatening lack of food” (GFN, 2019). Food and Agriculture Organisation of the United Nations (FAO) defined hunger as “*an uncomfortable or painful physical sensation caused by insufficient consumption of dietary energy. It becomes chronic when the person does not consume a sufficient amount of calories (dietary energy) on a regular basis to lead a normal, active and healthy life*” (FAO *et al.*, 2019). Ending hunger involves a broad definition of hunger, including calorie deficiencies (chronic hunger), micronutrient deficiencies (hidden hunger), and related health problems (Gödecke *et al.*, 2018). FAO *et al.*, 2019

reported that more than 820 million people are still hungry globally, drawing attention to the huge task of achieving the Sustainable Development Goal 2 (SDG 2) target by 2030.

Specifically, Sustainable Development Goal 2 (SDG 2- Zero Hunger) was set to address the importance of food security and nutrition within the wider Agenda, and calls member states to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture” by 2030. The five principal targets and three implementing mechanisms of SDG 2 (UN, 2017a; Otekunrin *et al.*, 2019) are highlighted below.

### **Principal Targets of SDG 2**

1. By 2030, end hunger and ensure access to safe, nutritious, and sufficient food.
2. By 2030, end all forms of malnutrition
3. By 2030, double the productivity and incomes of small-scale food producers
4. By 2030, ensure sustainable food production systems and implementing resilient agricultural practices
5. By 2030, maintain the genetic diversity of seeds, plants, and animals.

### **Implementing Mechanisms of SDG 2**

1. Increase investment through enhanced international cooperation
2. Correct and prevent trade restrictions and distortions in world agricultural markets
3. Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information

Hunger is endemic in almost all sub regions of Africa, Prevalence of Undernourishment (PoU) reached a record of 22.8 percent in sub-Saharan Africa (SSA). The number has been increasing consistently in Africa where it almost peaked 260 million people in 2018, with over 90 million living in sub-Saharan Africa (SSA) (FAO *et al.*, 2019).

In this paper, we assess Africa’s readiness towards attaining the zero hunger target by 2030 by reviewing patterns of Global Hunger Index (GHI) scores and each of its indicators across Africa in 2000-2008 (von Grebmer, 2018; Otekunrin *et al.*, 2019) and proffer solutions that can help actualise the SDG 2 target of zero hunger by 2030.

## **2.0 Hunger in Africa**

The major factors aggravating hunger in Africa are poverty, severe pre- and post-harvest losses due to high incidence of pests and diseases, unemployment, conflicts, wars, insurgencies, poor climatic conditions and corruption. (Otekunrin *et al.*, 2019)

Nations like the Central African Republic (CAR), Somalia, Chad and South Sudan that have been engaged in prolonged crises have very high undernourishment and under-five mortality rates when compared to those that are not affected by conflict (FAO, 2017a; UN IGME, 017; FAO GIEWS, 2017; UNHCR, 2018 Otekunrin *et al.*, 2019). High incidences of pests and diseases have also contributed to reduced harvests, high food prices and loss of livestock. Cassava mosaic and brown streak virus disease are major diseases affecting Cassava (*Manihot esculenta*), the main food crop, in the Great Lakes region of East and South Africa while the Fall Armyworm (*Spodoptera frugiperda*) is a major pest of maize (*Zea mays*) and sorghum (*Sorghum bicolor*) in South Sudan (FAO, 2018e). Bird Flu (*Avian influenza*) caused huge economic losses for poultry farmers in

many African countries during the 2006-2008 and 2015-2017 outbreaks (Otekunrin, 2007; Ntsefong *et al.* 2017; Fasanmi *et al.* 2018; Otekunrin *et al.* 2018).

It is also important to note that poverty, corruption and conflict events have been identified to be positively associated with hunger in most African countries. African countries with high percentage of total population in extreme poverty, high Corruption Perceptions Index (CPI) ranks and high number of conflict events have higher GHI scores (Smith and Haddad, 2015; Otekunrin *et al.* 2019)

### 3.0 Global Hunger Index (GHI) Scores

The GHI is a tool fashioned to measure hunger at global, regional, and national levels, Wiesmann (2006). The GHI was created in 2006 by researchers from the International Food Policy Research Institute (IFPRI). Later, GHI became a joint project of *Welthungerhilfe* and *Concern Worldwide*. GHI scores are calculated on a yearly basis to identify and assess progress and setbacks in fighting hunger. It is also a means of comparing levels of hunger among countries, calling attention to countries of the world where hunger is at its peak (von Grebmer *et al.*, 2018). GHI scores are computed using a three-step procedure that utilises available data from several sources to capture the multidimensional nature of hunger in each country (von Grebmer *et al.* 2018). Values are determined using four indicators namely; undernourishment, child wasting, child stunting and child mortality (FAO, 2017a; FAO, 2017b; von Grebmer *et al.*, 2018, Otekunrin *et al.*, 2019). The computation process, described in von Grebmer *et al.*, 2018, results in GHI scores on a 100-point GHI Severity Scale, where 0 is the best score (no incidence of hunger) and 100 (the worst); *low* (< 9.9), *moderate* (10.0-19.9), *serious* (20.0-34.9), *alarming* (35.0-49.9) and *extremely alarming* ( $\geq$  50). The 2018 GHI revealed that the level of hunger and under-nutrition globally had fallen into the *serious* category, with a value of 20.9, reducing from 29.2 in year 2000.

Table 1 shows the GHI scores for African countries for year 2000, 2005, 2010 and 2018 respectively with their corresponding 2018 GHI ranks. Some African countries were not captured in Table 1 because of insufficient or lack of data for all the four GHI indicators. These include Burundi, Democratic Republic of Congo, Equatorial Guinea, Eritrea, Libya, Somalia and South Sudan. The Central African Republic (CAR) had the highest 2018 GHI score of 53.7 in Africa and globally (out of 119 countries) falling in the *extremely alarming* category. CAR has been engulfed in crises since 2012 and as of December 2017, more than 1 million people have been displaced, out of a population of 5 million people (IDMC, 2018). The crises have prevented the displaced people from participating in any agricultural activity leading to very severe food insecurity (FAO, 2018a; FAO, 2018b). Another worse hit African country is Chad (ranked 118th) with a score of 45.4 in *alarming* category. Chad is affected by conflicts in neighbouring countries (Chad is bordered on the north by CAR), low economic development and climate change (FAO, 2018c). Moreover, some countries like Ghana and Senegal previously known for high hunger levels achieved *moderate* category status in 2018 GHI scores. Tunisia, Algeria and Morocco, from North Africa, have very low GHI scores (between 7.9 and 10.4 inclusive) when compared to the scores of other African countries.

**Table 1: GHI Scores for Africa (2000, 2005, 2010 and 2018)**

<b>Rank</b>	<b>Country</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2018</b>
<b>28</b>	Tunisia	10.7	8.6	7.6	7.9
<b>39</b>	Algeria	15.6	12.9	10.6	9.4
<b>44</b>	Morocco	15.7	17.8	10.2	10.4
<b>47</b>	Mauritius	15.9	15.2	14.1	11.0
<b>60</b>	South Africa	18.1	20.8	16.1	14.5
<b>61</b>	Egypt	16.4	14.3	16.3	14.8
<b>62</b>	Ghana	29.0	22.2	18.2	15.2
<b>63</b>	Gabon	21.1	19.0	16.7	15.4
<b>66</b>	Senegal	37.3	27.8	24.1	17.2
<b>71</b>	Cameroon	41.2	33.7	26.1	21.1
<b>75</b>	Gambia	27.3	26.2	22.3	22.3
<b>76</b>	Swaziland	28.9	27.6	26.7	22.5
<b>77</b>	Kenya	36.5	33.5	28.0	23.2
<b>78</b>	Lesotho	32.5	29.7	26.3	23.7
<b>80</b>	Benin	37.5	33.5	28.1	24.3
<b>80</b>	Namibia	30.6	28.4	30.9	24.3
<b>80</b>	Togo	39.1	36.4	27.1	24.3
<b>84</b>	Botswana	33.1	31.2	28.4	25.5
<b>85</b>	Cote d'Ivoire	33.7	34.7	31.0	25.9
<b>87</b>	Malawi	44.7	37.8	31.4	26.5
<b>88</b>	Mauritania	33.5	29.7	24.8	27.3
<b>89</b>	Burkina Faso	47.4	48.8	36.8	27.7

<b>90</b>	Mali	44.2	38.7	27.5	27.8
<b>91</b>	Rwanda	58.1	44.8	32.9	28.7
<b>92</b>	Guinea	43.7	36.8	30.9	28.9
<b>93</b>	Ethiopia	55.9	45.9	37.2	29.1
<b>93</b>	Guinea Bissau	42.4	40.3	31.0	29.1
<b>95</b>	Angola	65.6	50.2	39.7	29.5
<b>95</b>	Tanzania	42.4	35.8	34.1	29.5
<b>98</b>	Djibouti	46.7	44.1	36.5	30.1
<b>99</b>	Congo, Rep.	37.8	37.2	32.2	30.4
<b>99</b>	Niger	52.5	42.6	36.5	30.4
<b>101</b>	Comoros	38.0	33.6	30.4	30.8
<b>102</b>	Mozambique	49.1	42.4	35.8	30.9
<b>103</b>	Nigeria	40.9	34.8	29.2	31.1
<b>105</b>	Uganda	41.2	34.2	31.3	31.2
<b>107</b>	Zimbabwe	38.7	39.7	36.0	32.9
<b>108</b>	Liberia	48.4	42.0	35.2	33.3
<b>112</b>	Sudan	-	-	-	34.8
<b>114</b>	Sierra Leone	54.4	51.7	40.4	35.4
<b>115</b>	Zambia	52.0	45.8	42.8	37.6
<b>116</b>	Madagascar	43.5	43.4	36.1	38.0
<b>118</b>	Chad	51.4	52.0	48.9	45.4
<b>119</b>	Central Africa Republic	50.5	49.6	41.3	53.7

---

*Source: Otekunrin et al. 2019*

*Note: Countries with the same 2018 GHI have the same rank (for example, Angola and Tanzania are both ranked 95th)*

#### 4.0 Patterns of GHI Indicators in Africa

The assessment of the each of the GHI indicators (Prevalence of undernourishment (PoU), child stunting, child wasting and child mortality rate) for African countries reveal the following.

The PoU in Africa had consistently reduced since year 2000 to 2018 especially in North Africa and some other African countries like; Algeria (10.7%-4.9%), Morocco (6.3%-3.9%), Cameroon (30.8%-7.3%), Senegal (28.7%-11.3%), Togo (31.1%-16.2%), Angola (71.5%-23.9%) and Ethiopia (52%-21.4%) while countries like Nigeria (9.3%-11.5%), Uganda (27.7%-41.4%), Madagascar (34.4%-43.1%) and Central African Republic (CAR) (42.5%-61.8%) have proportion of their population undernourished increased in 2018 compared to 2000 values (Fig. 1). It was interesting to note that majority of the North African countries (except Libya) had the lowest proportion of undernourished population in Africa (< 5% in Algeria, Morocco and Tunisia while Egypt was <10%) from 2000-2018. Fig. 2 showed that PoU decreased from 14.5% (947.2 million) in 2005 to 10.8 (821.6 million) globally in 2018. There were reductions in PoU in all the African sub-regions except the West Africa region which had its PoU increase from 12.3% (33 millions) in 2005 to 14.7% (56.1 million) in 2018. The North African countries also experienced setback as their PoU increased from 6.2% (9.7 million) in 2005 to 7.1% (17 million) in 2018 (von Grebmer *et al.* 2018; FAO *et al.* 2019).

African countries experienced fluctuating values for the prevalence of stunting (Figure 3). For example, the Central African Republic (CAR), Madagascar, Nigeria, and Niger had higher stunting prevalence of 46.2%, 46.1%, 43.6% and 42.2% respectively in 2018 than in 2010. Considering progress achieved across the African continent, many countries recorded remarkable reductions but CAR had the highest increase in stunting prevalence in all the countries reported (2000 (44.6%) and 2018 (46.2%)). Ghana, Cameroon, and Kenya have consistently experienced reductions in their stunting prevalence values since year 2000 (31.3%-18.8%, 38.2%-31.7% and 41%-26% respectively) (von Grebmer *et al.* 2018).

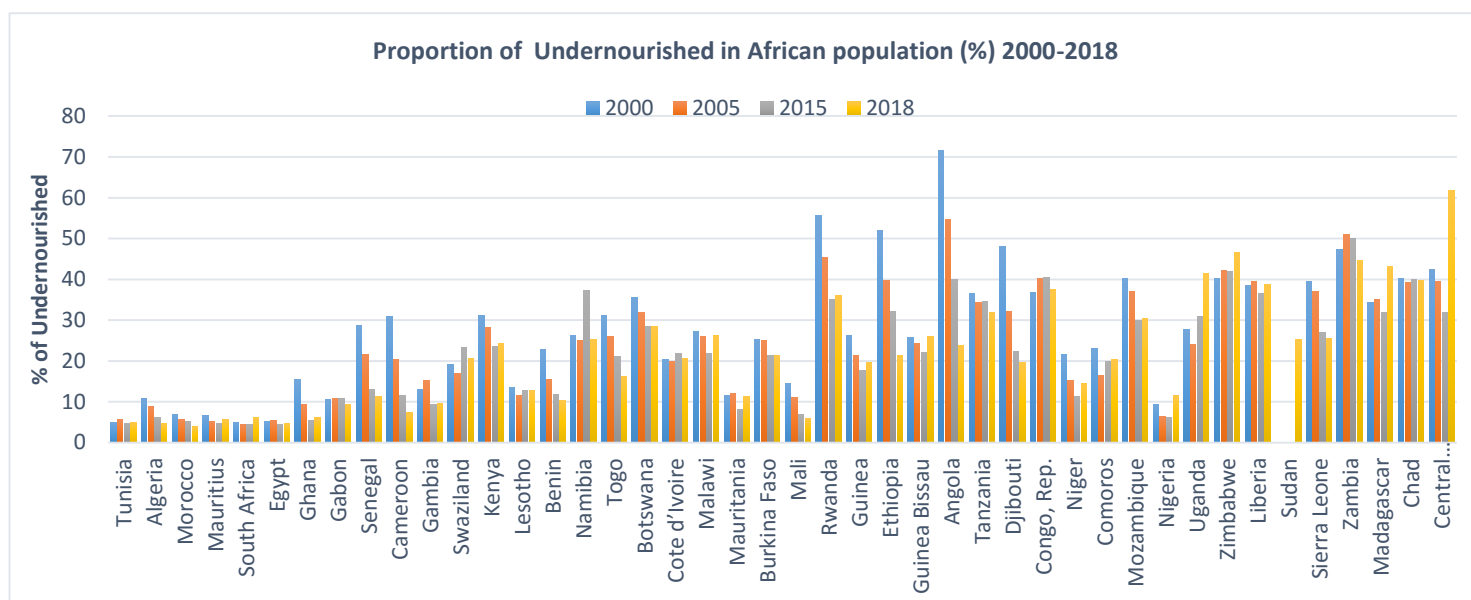


Figure 1: Proportion of Undernourished in African Population (%) 2000-2018

Source: Authors' graph from von Grebmer et al., 2018

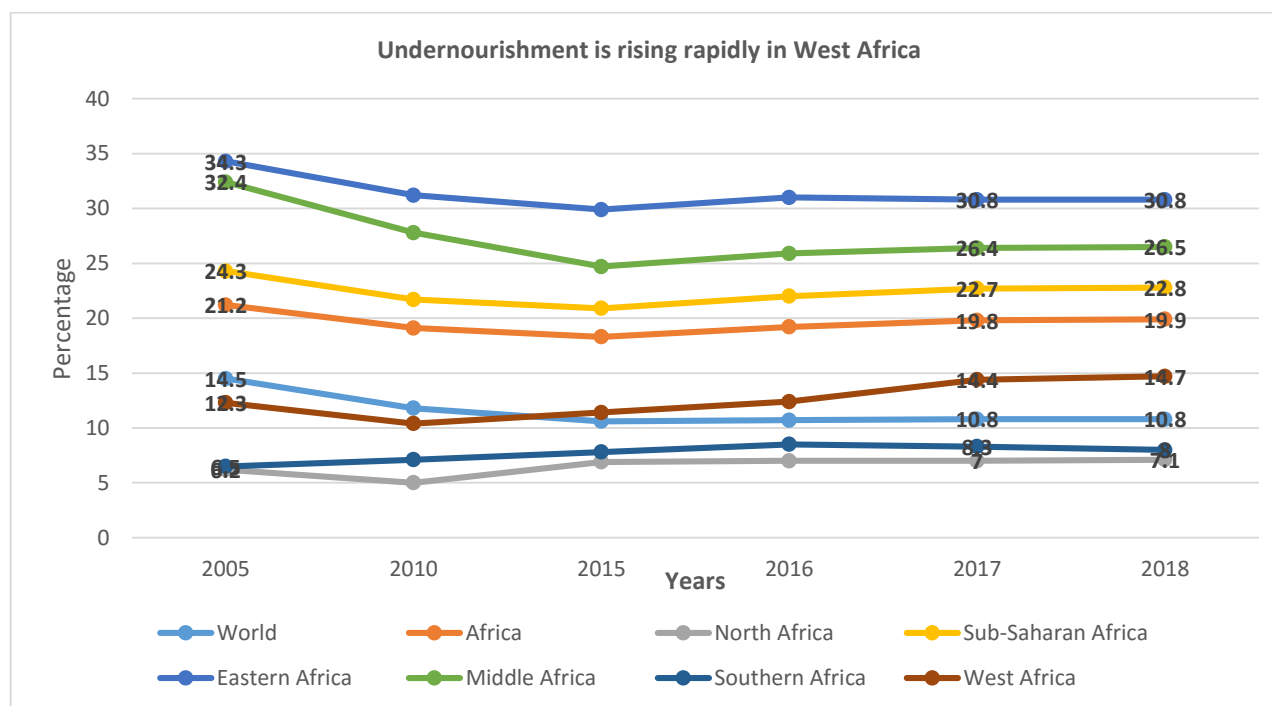


Figure 2: Percentage Undernourished Population in the world and across Africa

Source: Authors' graph from FAO et al., 2019

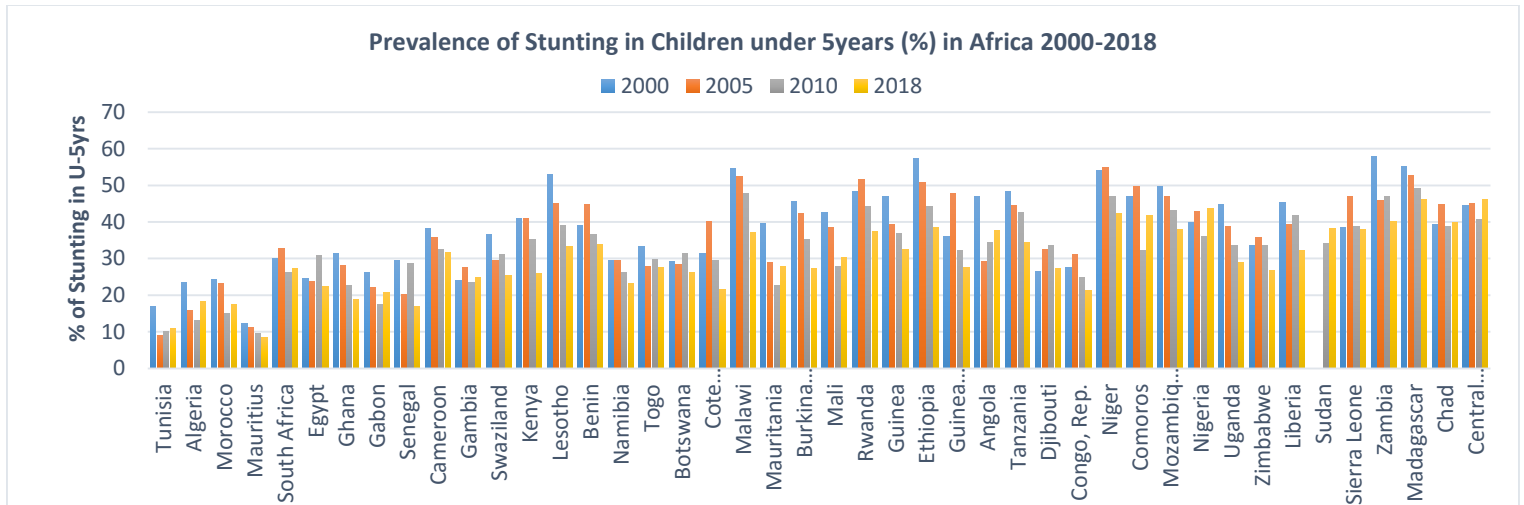


Figure 3: Prevalence of Stunting in Children under 5years (%) in Africa 2000-2018

Source: Authors' graph from von Grebmer *et al.*, 2018

Figure 4 revealed that Kenya, Lesotho, Zimbabwe, Ethiopia and Rwanda (7.4%-4%, 6.7%-2.8%, 8.5%-3.2%, 12.4-9.9 and 8.7%-2.0% respectively) had consistently reduced their child wasting prevalence rates since year 2000 while countries like Mali, Sudan and Egypt (12.6%-13.5%, 15.3%-16.3% and 7%-9.5%) recorded higher 2018 prevalence rates compared to their 2000 (Sudan was 2010) values (von Grebmer *et al.* 2018).

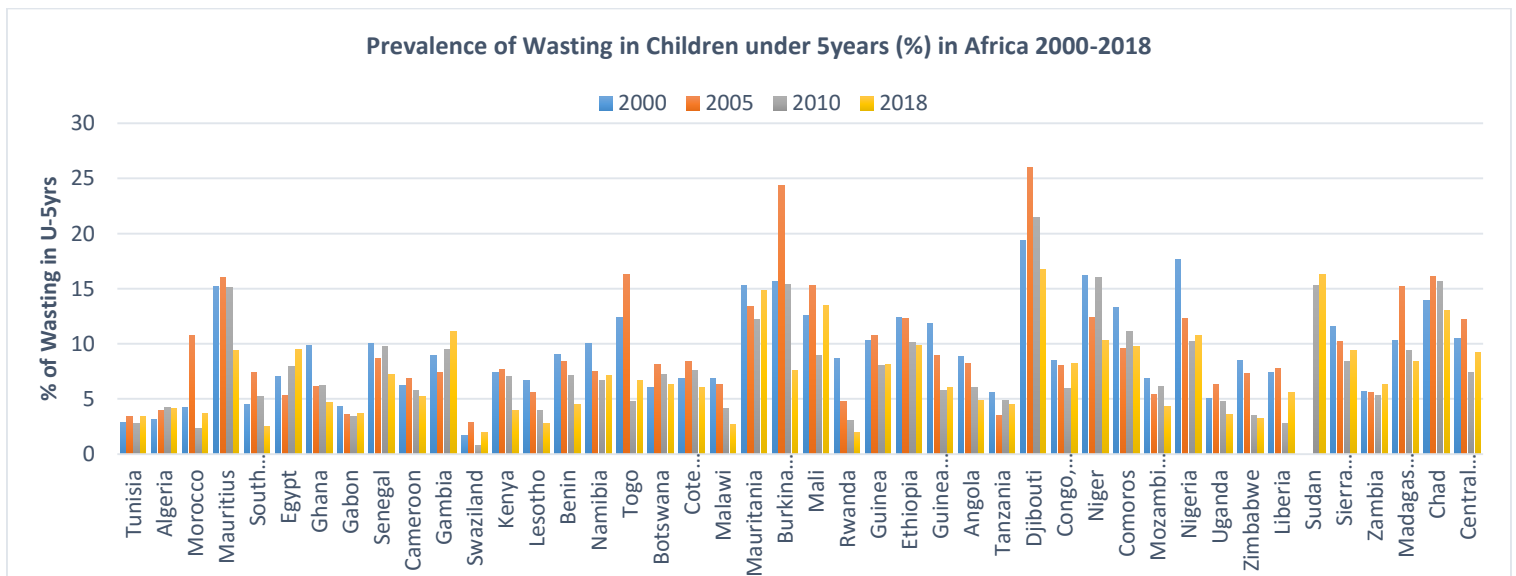


Figure 4: Prevalence of Wasting in Children under 5years (%) in Africa 2000-2018

Source: Authors' graph from von Grebmer *et al.*, 2018



Furthermore, majority of these countries have been experiencing consistent and significant reductions in their under-five mortality rate since year 2000. The only exceptions in this regard are Mauritius, which moved from 1.5% in 2010 to 8.1% in 2018 while Swaziland, Lesotho, South Africa experienced increase from 11.8%, 11.0%, and 6.7% respectively in year 2000 to 12.5%, 11.5% and 7.4% respectively in year 2005. These countries have maintained consistent reductions from year 2005 to year 2018. Comparisons could not be made for Sudan because of unavailability of data for years 2000, 2005 and 2010. All North African countries (except Libya) had the lowest under-five mortality rate (< 5%). Figure 5 shows the under-five mortality rate for 44 African countries (von Grebmer *et al.* 2018).

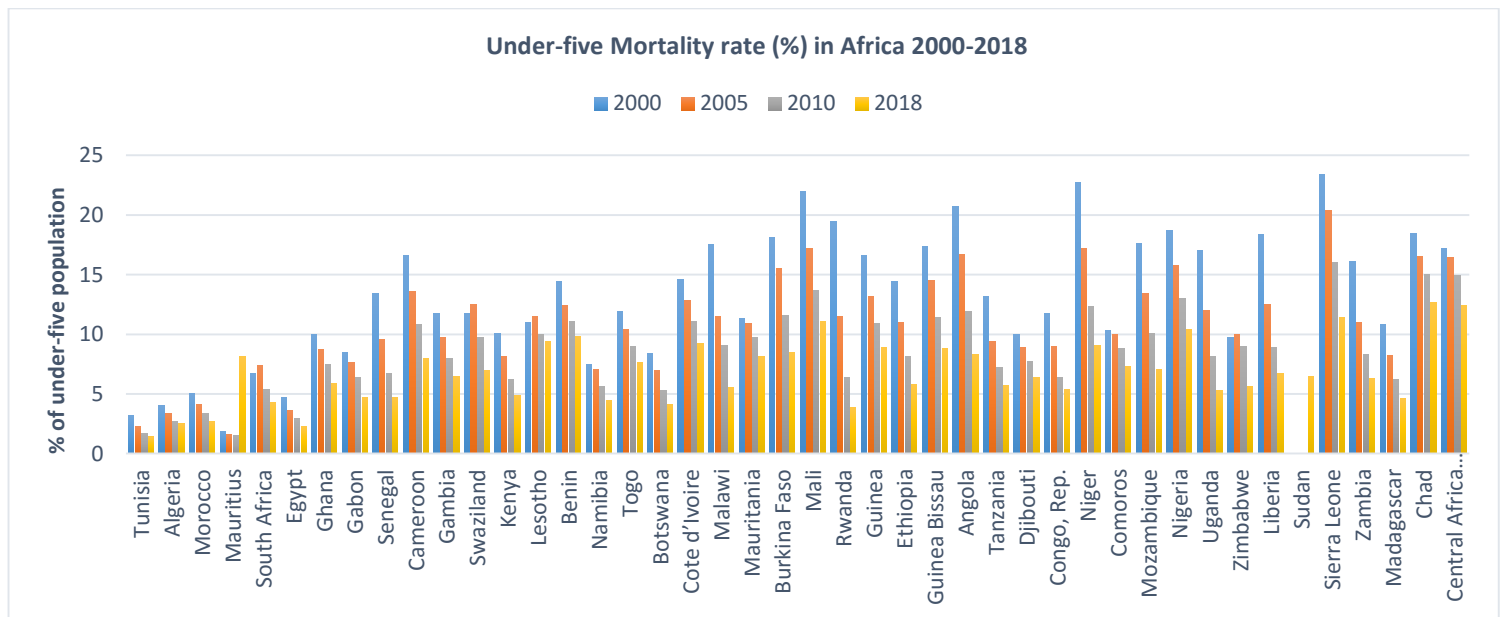


Figure 5: Under-five Mortality rates (%) in Africa 2000-2018

Source: Authors' graph from von Grebmer *et al.*, 2018

## 5.0 Conclusion and Recommendations

Many African countries still have high GHI scores indicating that a lot still needs to be done to realize the zero hunger target by 2030. Also, patterns of each of the GHI indicators revealed that many African countries have made significant and consistent progress in the reduction of child mortality rates but efforts must be put in place to ensure further reductions. Most African countries have high prevalence of undernourishment, stunting and child wasting indicating that they are not making significant progress in these areas.

To actualise the goal, each country should focus on making significant progress as regards the GHI and its indicators. Furthermore, African governments should give priority to fighting factors aggravating hunger in their societies including corruption, armed conflicts and extreme poverty.

## 6.0 References

FAO (Food and Agriculture Organisation of the United Nations) (2017a). *Regional Overview of Food Security and Nutrition in Africa 2017: The Food Security and Nutrition–Conflict Nexus: Building Resilience for Food Security, Nutrition and Peace*. Accra.

FAO (2017b). Food Security Indicators. Available at [www.fao.org/faostat/en/#data/FS](http://www.fao.org/faostat/en/#data/FS).

FAO (2018a). Food Security Indicators. <http://www.fao.org/faostat/en/#data>.

FAO (2018b). *Central African Republic and FAO: Building Resilience and Sustainable Food and Nutrition Security*. Accessed, November 30, 2018. <http://www.fao.org/3/a-au069e.pdf>.

FAO (2018c). FAO in Emergencies: Chad. Accessed November 30, 2018. <http://www.fao.org/emergencies/countries/detail/en/c/159495>.

FAO (2018d). Plant, Pests and Diseases. Available at: [www.fao.org/emergencies/emergency-types/plant-pests-and-diseases/en/](http://www.fao.org/emergencies/emergency-types/plant-pests-and-diseases/en/)

FAO, IFAD, UNICEF, WFP and WHO (2019). *The state of food security and nutrition in the world 2019. Safeguarding against economic slowdowns and downturns*. Rome, FAO.

FAO GIEWS (FAO Global Information and Early Warning System). (2017). GIEWS Country Brief: Libya, October 04, 2017. Available from: <http://www.fao.org/giews/countrybrief/country.jsp?code=LB> Accessed January 11, 2019

Fasanmi, O. G., Kehinde O. O., Laleye, A.T., Ekong, B., Ahmed, Syed S.U and Fasina, F.O (2018). National surveillance and control costs for highly pathogenic avian influenza H5N1 in poultry: A benefit-cost assessment for a developing economy, Nigeria. *Research in Veterinary Science* 119: 127–133. Available from: <https://doi.org/10.1016/j.rvsc.2018.06.006>

GFN (Global Food Banking Network) (2019). Waste Not Want Not: Toward Zero Hunger. [www.foodbanking.org](http://www.foodbanking.org)

Gödecke, T., Stein, A. J. and Qaim, M. (2018). The global burden of chronic and hidden hunger: Trends and determinants. *Global Food Security* 17, 21–29. doi.org/10.1016/j.gfs.2018.03.004

IDMC (Internal Displacement Monitoring Centre) (2018). Central African Republic: Country Information. Accessed November 30, 2018. Available from: <http://www.internaldisplacement.org/countries/central-african-republic>

NBS (National Bureau of Statistics) (2018). Labour Force Statistics –Volume 1: Unemployment and Underemployment Report (Q4 2017-Q3 2018). Available at: <https://nigerianstat.gov.ng>

Ntsefong, G.N., Shariati, M.A., Khan, M.U., *et al.* (2017). Incidence of avian flu shocks on poor household livelihoods of poultry farmers in Africa. *Int J Avian & Wildlife Biol.* 2(1):7 -11. doi: [10.15406/ijawb.2017.02.00008](https://doi.org/10.15406/ijawb.2017.02.00008)

Otekunrin, O. A (2007). The Effect of Bird Flu on Household Consumption of Poultry Products in Abeokuta Metropolis, Ogun State. B. Agric Dissertation Federal University of Agriculture, Abeokuta, Nigeria.

Otekunrin, O.A., Ayinde I.A., Otekunrin, O.A., and De Campos, J.S. (2018). Effect of Avian influenza on Household Poultry Products: Evidence from First Outbreak in Ogun State, Nigeria. *Current Agriculture Research Journal*, 6 (3), 328-336. <https://dx.doi.org/10.12944/CARJ.6.3.11>

Otekunrin, O.A., Otekunrin, O.A., Momoh, S and Ayinde, I.A. (2019). How far has Africa gone in achieving zero hunger target? Evidence from Nigeria. *Global Food Security* 22, 1-12. <https://doi.org/10.1016/j.gfs.2019.08.001>

Smith, L.C and Haddad L. Reducing Child Undernutrition. (2015). Past Drivers and Priorities for the Post MDG Era. *World Development*, 68, 180-204. <https://doi.org/10.1016/j.worlddev.2014.11.01>

UN (2017a). Sustainable Development Goal 2. Available at: <https://sustainabledevelopment.un.org/sdg2> Accessed on December 11, 2018.

UN IGME (United Nations Inter-agency Group for Child Mortality Estimation). (2017). Child Mortality Estimates Info, Under-five Mortality Estimates. Available at: [www.childmortality.org](http://www.childmortality.org). Accessed November 29, 2018.

UNHCR (United Nations High Commissioner for Refugees) (2018). *Burundi Regional Refugee Response Plan January – December 2018*. Available at: <http://www.unhcr.org/partners/donors/5a683fdf7/2018-burundi-regional-refugee-response-plan-january-december-2018.html>. Accessed January 11, 2019.

von Grebmer K., Bernstein, J. L., Hammond, F. *et al.* (2018). *2018 Global Hunger Index: Forced Migration and Hunger*. Bonn and Dublin: Welthungerhilfe and Concern Worldwide

Wiesmann, D. 2006. *A Global Hunger Index: Measurement Concept, Ranking of Countries, and Trends*. Food Consumption and Nutrition Division Discussion Paper 212. Washington, DC: International Food Policy Research Institute.

World Poverty Clock (2019). Available at: <https://worldpoverty.io/index.html>. Accessed 9 August 2019.