

Unlocking the potential for achievement of the UN Sustainable Development Goal 2 – “Zero Hunger” - in Africa: Targets, strategies, synergies and challenges

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Popular scientific summary

- The UN Sustainable Development Goal (SDG) 2 (“Zero Hunger”) aims to end all forms of hunger by 2030.
- Africa is off track to reach this goal. Current efforts and progress are insufficient.
- Major drivers of hunger are war/conflicts, poor governance, inadequate health services, increasing inequality, weak economic development, climate change and biodegradation.
- Africa must champion the SDG agenda on all levels and facilitate synergies to unlock the potential for reaching “Zero Hunger” throughout the continent.

1 **Abstract**

2 **Background:** The UN Sustainable Development Goal (SDG) 2 (“Zero Hunger”) aims to end
3 all forms of hunger and malnutrition by 2030. Thus, a range of different strategies are needed
4 to facilitate the achievement of SDG 2 to overcome challenges and enable synergies between
5 various SDG targets.

6 **Objective:** The aim of this review is to highlight Africa’s progress towards SDG 2 including
7 targets, strategies, synergies and challenges.

8 **Methods:** We scrutinized published research articles in peer reviewed journals, UN reports
9 and in-country Africa reports (between 2015 and 2020) that were relevant to the current topic.

10 **Results:** Several hunger indicators are showing slow progress or even deterioration in Africa.
11 The prevalence of undernourishment in the general population was 19.1% in 2019 and is
12 expected to increase to 25.7% in 2030. Improvements in child stunting in several regions in
13 Africa is slow, especially in sub-Saharan Africa where about 34% of under-fives were stunted
14 in 2012 and 31% in 2019. In Eastern Africa, stunting prevalence decreased from 38% in 2012
15 to 34% in 2019. Major drivers of hunger are poor governance and state fragility, war and
16 conflicts, increasing inequality, weak economic development, climate change, biodegradation
17 – and now lately the covid 19 pandemic; factors that all increase food insecurity.

18 **Conclusion:** Africa is off track to reach SDG – “Zero Hunger” - by 2030. Current efforts and
19 progress are insufficient. Africa must champion the SDG agenda on a national, regional and
20 global level to facilitate synergies to unlock the potential for reaching “Zero Hunger”
21 throughout the continent.

22 **Keywords:** Africa, climate change, covid pandemic, development programs, food systems,
23 governance, malnutrition, Sustainable Development Goals, United Nations

24 **Introduction**

25 **The UN Sustainable Development Goals**

26 The Sustainable Development Goals (SDGs) were born at the United Nations (UN)
27 Conference on Sustainable Development in Rio de Janeiro in 2012 where the main
28 objective was to produce a set of universal goals that met the urgent environmental,
29 political and economic challenges facing the world (1). Notably, 17 SDGs were to replace
30 the eight UN Millennium Development Goals (MDGs) (Fig. 1). This marked the start of a
31 renewed and collective global effort to tackle the indignity of poverty, especially in low-
32 and middle-income countries (LMICs), as well as an acknowledgement of the need for the
33 human species to adjust its living patterns within sustainable planetary boundaries. Thus,
34 the SDGs represented a considerable advance from the MDGs, with a substantially broader
35 agenda affecting all nations, requiring coordinated and sustainable global actions (2). The
36 processes towards the 17 SDGs were led by the nations rather than steered by international
37 agencies as was the case with the MDGs. The UN Member States themselves guided the
38 whole SDG process, including leading discussions and the selection of goals, targets and
39 indicators (3).

40 Within the wide thematic areas covered, the SDGs' core focus is on the cross-cutting 5 Ps (Fig. 2):
41 People's wellbeing; Planet with protection of the earth's ecosystems; Prosperity with eradication of
42 poverty and inequality; Peace, and international Partnerships (4, 5).

43 **SDG 2 “Zero Hunger” – targets and indicators**

44 SDG 2 “Zero Hunger” includes several targets to be achieved by the year 2030. To monitor the
45 progress of these targets, several indicators are defined (Table 1). The targets and indicators for
46 SDG2 “Zero hunger” include nutrition, food production, agriculture and food systems (6).

47 **The current hunger situation in Africa**

48 The prevalence of *undernourishment* is a “Zero Hunger” indicator using in-country data to
49 estimate dietary energy intakes relative to food availability based on national food balance sheets.
50 Since 2015, the prevalence of undernourishment, defined as an estimate of the percentage of the
51 population whose habitual food consumption is insufficient to provide the dietary energy
52 levels required to maintain a normal active and healthy life, is gradually increasing (7). The
53 majority of undernourished people in Africa is found in the sub-Saharan region, which shows
54 an increase of about 32 million undernourished people since 2015 (8). Table 2 shows the
55 prevalence of general population undernourishment in African regions for 2005-2019, with
56 only Northern Africa showing a decline. It is discouraging for Africa that a rapid increase in the
57 prevalence of undernourishment is projected from 19.1% in 2019 to 25.7% in 2030 (8). Notably,
58 when measured using the food insecurity experience scale (FIES), the state of both moderate and
59 severe food insecurity increased in Africa as a whole from 2014 to 2019 (8) (Fig. 3). FIES is a
60 self-reported questionnaire focusing on behaviors and experiences related to difficulties accessing
61 food because of resource constraints.

62 *Stunting* among children below 5 years is commonly used as a marker of chronic undernutrition
63 and defined as height-for-age z-score more than two standard deviations (SD) below the WHO
64 Child Growth Standards median. Stunting is a result of insufficient nutrient and energy intake over
65 a long period of time. There are large variations of stunting prevalence both between and within
66 countries. In 2019, 144 million children under 5 years were affected by stunting worldwide, a 12%
67 reduction relative to the baseline reference year for the global nutrition targets in 2012 (164
68 million) (9, 10). In Africa, from the year 2000 to 2020, there has been a gradual decline in the
69 number of stunted children below five years of age, from 38 to 29% (9, 10). However, the
70 prevalence is still high and even short of the set targets for both 2025 (about 16%) and may still not
71 be achieved by year 2030 set target of 11% (8). The biggest challenge remains in sub-Saharan

72 Africa which is the only region with increasing prevalence of stunting (8). In line with this, the
73 highest stunting prevalence in 2014 was found in East Africa (43%) according to the UN (9)
74 whereas a recent analysis reported a stunting prevalence of 33% among under-fives children
75 under five years (11). Notably, there was wide variations between countries in East Africa,
76 ranging from 21.9% in Kenya to 53% in Burundi.

77 *Wasting* (weight-for-height z-score < -2 SD of the WHO Child Growth Standards median)
78 among children under five years, which is a marker of acute malnutrition, is still way above the set
79 global targets, i.e. 6.4% in 2019, 5% in 2025 and 3% by 2030 (8). Currently, the prevalence of
80 wasting for the African region is 6.4%, with only the Southern African region having a
81 prevalence below 5% (9, 10).

82 **Strategies to combat hunger towards SDG 2 – a mixed African perspective**

83 As to African strategies to achieve “Zero Hunger”, there is no one-type-fits all. The continent
84 offers widely different conditions for land-, water- and forest-based food production, with
85 regard to soil and rainfall. The level of technological development, besides economic, legal
86 and social assets of cultivators, varies among fisher folks, forest people and nomadic groups,
87 to achieve food security.

88 *Peace, governance and institutions*

89 The 2019 Global Report on Food Crisis indicated that conflict created food insecurity in the
90 following African countries: Democratic Republic of Congo, South Sudan, the Lake Chad Basin,
91 Somali and the Central African Republic (12, 13). Therefore, African countries must establish
92 political and financial commitment to proposed SDGs actions backed by institutional reforms,
93 strict implementation measures as well as quality monitoring and evaluation of progress (14). In
94 the 2015, UN food agencies suggested that poverty and hunger eradication in all LMICs by
95 2030 would be possible (15). This would involve investments in social protection combined

96 with public and private efforts to raise investment levels in productive sectors, especially
97 among rural areas and particularly in agriculture (16).

98 *Food systems and agriculture*

99 Robust food systems and agriculture are crucial for food security. Agricultural diversification
100 means growing individual food crops for consumption and where possible keeping a variety
101 of animals for meat or milk and eggs (17). Climate Smart Agriculture is a strategy that
102 includes development and promotion of innovations to adapt and create resilience to climate
103 change and extreme weather events (18). This focuses on the use of high-yielding, drought
104 tolerant crop varieties, climate information services, agricultural insurance, agroforestry,
105 water harvesting techniques, and integrated soil fertility management practices. Such climate
106 smart agriculture will be especially important in West, Central East and Southern Africa
107 regions that are prone to challenging climatic conditions.

108 Africa must ensure that food production strategies are based on solid policy frameworks that
109 safeguard food security to rural communities as well as sustainable production. Two dominant
110 types of agricultural production systems stand in contrast to each other and may cause
111 political tension. Simplified, the commercially based large-scale mono-crop intensified
112 cultivation is geared to increase yields aimed primarily for the foreign markets, typically
113 generated by multinational corporations. These often buy land and squeeze small-holder
114 farmers out of production. On the other hand, various forms of locally based and diversified
115 food production by small farmers have proven to be successful in both enabling healthy diets
116 and often some income for the households, but may lose in the competition with large food-
117 chain companies due to lack of appropriate markets. Over the last decade the understanding of
118 the potential of small-holder farming also with respect to yields comparable to high-tech
119 commercial agriculture, has increased. Agro-ecological farming, drawing on local

120 environmental condition, traditionally successful farming methods, safeguarding of
121 ecosystems and capturing carbon, has attracted renewed interest. Less use of artificial
122 fertilizers and pesticides brings the best of traditional knowledge to the fore as well as new
123 research aimed at improving food security to rural families (19).

124 *Collaboration with UN Specialized Agencies, Programs and Funds*

125 African countries are collaborating with several UN development bodies to achieve “Zero
126 Hunger”, including various activities explicitly aimed at ending hunger and achieving
127 sustainable food systems in Africa (20). Some token examples are listed in Table 3.

128 Also to be mentioned in this context is the recent (February 2021) adoption, by the UN
129 Committee on World Food Security, of the “UN Voluntary Guidelines on Food Systems and
130 Nutrition”. Here, experiences from and recommendations for ways to reach SDG 2 at an
131 accelerated pace towards 2030 were negotiated. Alongside this more than two years long
132 process, an initiative of the UN Secretary-General in 2019 for a UN Food Systems Summit in
133 September 2021 are being planned in various ways, including through 5 separate “Action
134 Tracks” directed by experts in various fields together with interested states, civil society and
135 private sector organizations, and with opportunities for wide engagement for those interested
136 in proposing various “game-changing solutions” toward achieving SDG2. Also, national
137 dialogues in some 60 countries, both government-led and independent ones, will provide new
138 information of the efforts of individual African states regarding what ought to be more
139 coordinated efforts at national levels towards 2030.

140

141 The UN has been integrated into nationally-led SDG implementation strategies to end hunger
142 through the Zero Hunger Challenge. Each UN development agency is aligned with the 2030
143 Agenda in their programs and activities to deliver outcomes across a range of the agenda’s

144 goals and targets to attain “Zero Hunger” in Africa. They are committed to bring together
145 governments, civil society, the private sector and others for collective impact in the area of
146 food security, nutrition and sustainable food systems (21). This collective commitment
147 focuses on a call to end hunger, eliminate all forms of malnutrition, and build inclusive and
148 sustainable food systems within planetary safe operating limits.

149 **Synergies among the SDGs to achieve “Zero Hunger”**

150 An important recognition underlying the SDGs is that all the 17 goals are interrelated, in what is
151 commonly known as a synergistic relationship. Thus, success in one goal affects attainment of
152 others, including SDG 2 “Zero Hunger”. For example, SDG 1 “No Poverty” has impact on the
153 “Zero Hunger” target since being poor negatively impacts the capacity of individuals’ to access
154 adequate food both in quality and in quantity (22). Synergy between SDG 3 “Good Health And
155 Well-Being” and SDG 2 is through the fact that good health is closely linked to nutrition, with
156 good health relying on sufficient and adequate macro- and micronutrient intake. Furthermore,
157 access to quality health care is necessary to prevent and treat diseases that may increase nutrient
158 needs through increased catabolism and malabsorption. Furthermore, SDG 3 “ Good Health And
159 Well-being” includes family planning and reproductive health that is important to ensure
160 manageable family size, which is less prone to food insecurity and improved child nutritional status
161 (23). SDG 4 on “Quality Education” relies on the achievement of “Zero Hunger” since food is
162 needed to facilitate learning and cognitive development. In the long-term perspective, quality
163 education and learning enable individuals and societies to develop. In many countries, school
164 meals are an important source for daily nutrition and good health promotion (24). In fact, a quality
165 education should include a curriculum involving food, nutrition and agricultural food production,
166 targets within SDG 2. SDG 5 “Gender Equality” is important to achieve “Zero Hunger” since
167 women with access to income typically improve the children’s nutrition and health (22). SDG 6
168 “Clean Water And Sanitation” is a prerequisite for good health through avoidance of enteric

169 infections. In fact, not having access to safe water impacts on other parts of daily life activities,
170 including nutrition. For example, lack of clean water for drinking and to prepare food,
171 increases the vulnerability to infections and sickness which in turn affects nutritional status
172 (25). SDG 8 “Decent Work And Economic Growth” is related to the “Zero Hunger” target since
173 countries with high rates of malnutrition and food insecurity may have a high loss of Gross
174 Domestic Product (26). SDG 13 “Climate Action” is of major importance, especially to some of
175 Africa’s most vulnerable societies, since climate change increases droughts, floods and other
176 extreme weather events with detrimental effects on food production (27). SDG 14 “Life Below
177 Water” and SDG 15 “Life On Land” relate to loss of biodiversity, acidification of the oceans and
178 soil degradation which threaten the ability to produce food (22). SDG 16 “Peace, Justice And
179 Strong Institutions” is critical to ensure “Zero Hunger” as instability, war and bad governance are
180 among the major contributors of food and nutritional insecurity. SDG 17 “Partnerships For The
181 Goals” pinpoints the necessity for strong global collaboration to achieve the goals, including SDG
182 2 “Zero Hunger” (22).

183 **Challenges to achieve SDG 2 in Africa**

184 Several challenges are slowing down the progress to achieve the desired targets.

185 *State fragility*

186 Conflicts, wars and insurgencies have affected many African countries, resulting in several
187 conflict events at one time or another rendering many hungry and food insecure. For example,
188 in 2017, the South-Sudan war caused 42% of its population to face severe food insecurity (28,
189 29). Somalia, South-Sudan, Chad, and the Democratic Republic of Congo, known for
190 protracted crises, have very high child undernourishment and under-five mortality rates
191 compared to stable nations in Africa (29).

192 *Poor governance and corruption*

193 In Africa, poor governance by far has hampered the progress of food security in many nations.
194 Governance is a key priority action area to mitigate food insecurity in terms of building and
195 enabling policies and regulatory frameworks to enhance increased coordination of
196 agricultural, climate change and food system policies (30). Due to poor governance, policy
197 and coordination of national agricultural policies, strategies, investment plans and climate
198 change instruments, including national adaptation programs, are lacking in many food
199 insecure African countries (30).

200 Poor governance and corruption, specifically the lack of democracy in food and agriculture,
201 widen the already yawning gap between the have and have-nots in many African countries.
202 Thus, no initiative on food security will work in the absence of ethical public behavior
203 because of corruption and poor governance culture (31). Increased reported corruption in the
204 import and distribution of agricultural inputs by government agencies in African countries
205 delays the end to hunger goals (31).

206 *Climate change*

207 Climate shocks, as evidenced by the increasingly more frequent occurrences of cyclones' and
208 droughts have affected the most vulnerable populations in Africa through devastating effects on
209 their food and nutrition security. The estimated numbers of droughts and floods have increased,
210 respectively, from 89 256 000 and 5 583 000 between 1980-1989, to 158 509 000 and 23 332 000
211 between 2000-2009 (32). Regrettably, green-house gas emissions, attributed mostly to the
212 industrialized Western World, are linked to adverse climate changes, causing food insecurity for
213 the poorest people in the global south hardest, mostly in LMICs (16). Water shortages are the most
214 concerning aspect of climate change in Africa. Already, in parts of the Sahel region such as Mali,
215 desertification is reducing available croplands (8). Furthermore, climate change affects local

216 biodiversity and may contribute to new invading alien species affecting local food production. This
217 is currently a large problem with a locust invasion in Eastern Africa that threatens to eradicate
218 crucial harvests from the local small-scale farmers (33). A predictive model on climate change
219 including possible determinants, projects a 20% increase in child malnutrition by 2050, and a 50%
220 decrease in crop yields in many sub-Saharan countries (32). Unfortunately, this model mentions
221 that by the 2080s, arid and semi-arid land in Africa will have increased by 5-8%, leading to
222 significant reduction in rain-fed land for cereal production. Thus, the success of the SDG 13
223 “Climate Action” and the Paris Climate Accord (target of staying below 2 °C warming) and the
224 future temperature trajectory, will be of major importance to food security on the African
225 continent. Furthermore, increased competition for key resources, such as fertile land and clean
226 water, contribute to provoking violence and armed conflicts, exacerbating the vicious circle of
227 hunger and poverty and resulting in protracted crises.

228 *Natural resource mismanagement*

229 Mismanagement of natural resources like water, largely contributes to food insecurity and
230 inefficacy of food production practices. African countries that have prioritized good practices
231 and technologies utilizing efficiency in water use and management, have promoted their food
232 productivity gains, as evidenced by outcomes of research and development (R&D)
233 investments. African countries that have made significant investments in agricultural R&D
234 continue to reap food productivity and security gains for their population. For example
235 Namibia, largely a desert, utilizes the available water resources to enhance food production by
236 having a system of responsive and accountable governance (34).

237 *The role of forests for food security, nutrition and the challenge of forest mismanagement*

238 In 2017, The High Level Panel of Experts of the UN Committee on World Food Security
239 emphasised that sustainable forest management is important to maintain and enhance the

240 economic, social and environmental values of all types of forests (35). This is important in the
241 strive towards “Zero Hunger” since deforestation is a critical sustainable development
242 challenge, as increasing food production to meet growing demand has strikingly reduced
243 tropical forests. This is especially true in sub-Saharan Africa that continues to face serious
244 food insecurity issues because small-holder farming is the main driver of forest reduction
245 (36). During the period between 2001 and 2015, 92% loss of land area covered by forests in
246 Africa was attributable to expansion of small-holder farming (37). For example, the
247 Democratic Republic of Congo and Cameroon have reported increasing deforestation
248 associated with high levels of poverty and food insecurity (38). Annually, about 13 million
249 hectares of forests are lost due to deforestation, partly by agriculture, logging, mining and
250 infrastructure development. Deforestation is a significant factor in promoting climate change
251 through increased emission of greenhouse gases, thus altering worldwide temperature and
252 weather patterns.

253 *Fisheries and aquaculture*

254 Fisheries and aquaculture have often been arbitrarily separated from other parts of the food
255 and agricultural systems in food security studies, debates and policymaking. Small-scale
256 fisheries in sub-Saharan Africa are threatened by overfishing, pollution and competition for water
257 which is a potential threat to their sustainability. The significant development of aquaculture
258 raises many questions about its environmental impacts on land, water and biodiversity, as well as
259 sustainability and has itself to face competition from other users of land (40). However, the
260 demand for fish is growing due to a combination of factors such as population growth,
261 urbanization, and increasing wealth and incomes. Aquaculture is one of the few food
262 production sectors worldwide where growth in production is outpacing growth in population.
263 Small-scale fisheries can give opportunities to the poorest, landless, food-insecure people and
264 households, providing them a critical (and sometimes unique) source of income and

265 livelihood. Intake of fish can help reduce the risks of malnutrition and of non-communicable
266 diseases. Farmed fish contribute to improved nutritional status of households, directly through
267 self-consumption, and indirectly through selling farmed fish to enhance household purchasing
268 power. Notably, there is almost a consensus that women's roles in aquaculture and fisheries
269 are not fully recognized, often go unrecorded, are undervalued, and are largely invisible in
270 national statistics (41). Thus, given the importance of small-scale fisheries and aquaculture
271 in poverty alleviation, food security and nutrition in sub-Saharan Africa, governments
272 should make fish an integral component of inter-sectoral national food security and
273 nutrition programmes, with special emphasis on small-scale capture fisheries and fish
274 farming or aquaculture projects. Stakeholders in these fish sub-sectors should support self-
275 organized local professional organizations and cooperatives, as these strongly contribute to
276 and foster the integration of small-scale operations into markets. State labour, finance, and
277 policy formulation and implementation agencies, in collaboration with fisheries agencies,
278 should improve national regulations for fish workers, including women workers in fish
279 processing factories and markets, ensure that adequate and specific budget allocations
280 are made for small-scale fisheries and aquaculture development, and facilitate the direct
281 involvement of farmers and other stakeholders in the process of priority setting and choice of
282 technology (41).

283 *A food system for the first six months of life and beyond*

284 As recommended by the WHO, infants should be given exclusively breastmilk for the first six
285 months of life and if possible continue with breastfeeding for up to two years or beyond in
286 combination with suitable complementary foods. The interactive food systems implied have
287 numerous dimensions both economically, socially, culturally and psychologically in relation
288 to women's lives and rights. While breastfeeding mothers are the primary actors to ensure an
289 ideal and functioning food system in this case, they need support at many levels: near family,

290 practice at delivery wards, community support, work place allowances, legal protection etc.,
291 to maintain the protective food system needed through these critical first 1000 days of life.
292 Any government must decide whether it will actively promote and strengthen this critical food
293 system with regard to actively protecting and optimizing nutrient supply to its youngest
294 citizens. The constant and often misleading advertisements of breastmilk substitutes for profit
295 by large multinational companies must be met by strong legal regulations of such marketing
296 and through systematic follow-up. Moreover, the International Code of Marketing of Breast-
297 milk Substitutes and subsequent bi-annual resolutions should be implemented in national
298 legislations (42). The stakes are high, as “Zero Hunger” not least demands action for the
299 particularly vulnerable age bracket 0-24 months. The issue should therefore no longer be
300 dealt with by health systems and especially primary health care alone as is typical, but be
301 treated alongside other food system challenges in their own right.

302 *Conflicting global and national food policies*

303 Global and national food policies affect food security in both rural and urban Africa. Despite
304 food insecurity generally having been described as a rural issue, the effect of global and
305 national policies on food insecurity is increasingly also making it an urban challenge (43).
306 Increased export driven agriculture by big companies may cause small-scale farmers to sell
307 their farm land and migrate to cities. Thus, the functioning of the food systems is an
308 increasingly central issue for policymakers concerned with the future development of urban
309 areas in Africa (44). “Super marketization” refers to the fact that big supermarkets have taken
310 over retail shops in many African countries. There are several concerns over the negative
311 impacts of the “super marketization” of food. They may provide cheaper food, their
312 contribution to dietary shifts escalates the “triple burden of malnutrition” (the coexistence of
313 overweight/obesity, undernutrition and micronutrient deficiencies) (45). “The global
314 supermarket” is another term reflecting the dominant power of transnational food companies

315 that often control whole food chains from production to retail level. Combined with frequent
316 unethical marketing of ultra-processed unhealthy foods to children and youth, these
317 companies play a part in the global “nutrition transition” from traditional foods to more
318 processed, energy-dense, nutrient poor foods that contribute to increasing overweight/obesity
319 also in many African countries.

320 *Conflicting agricultural practices*

321 Conflicting agricultural practices and policies have affected progress towards “Zero Hunger”
322 in Africa. The choice between organic and conventional agriculture may impact on health
323 For example, biofertilisers in conventional farming containing heavy metals, have shown an
324 extremely long persistence in the soil environment leading to metal accumulation (46). In
325 addition, mechanized farms in sub-Saharan Africa may increase gender inequalities especially
326 among rural women in some countries (47). This can be observed in terms of loss of
327 employment for casual laborers, when low-income rural workers are being replaced by
328 mechanization which in turn threatens their food security and nutritional status. In Zimbabwe
329 and Malawi, reports indicated negative effects of inadequate conservation agriculture
330 (improved soil structure and soil erosion protection) to promote food security among farmers
331 (48). Notably, the majority of rural small-holders are less likely to benefit from mechanization
332 of agriculture. For example, small-scale traditional farmers cannot afford tractors, even when
333 they are highly subsidized which leads to elite capture (31). A case example is Ghana, where it
334 was found that distribution of government-imported tractors was not transparent and
335 encouraged rent-seeking behavior (31). Sadly, the tractor imports were politically more
336 attractive than is investing in skill development (49). Tractors showed short-term effects and
337 generated media attention, which was particularly valuable prior to elections just as in many
338 other African countries (31).

339 Good agricultural practices, including the importance of food security initiatives in school
340 curriculum, is desired, for example, through in situ soil application and utilization of organic
341 waste materials via compost processing (50). This has been shown to enhance soil and plant
342 productivity, increase soil water retention, sequester carbon, and decrease external synthetic
343 fertilizer and chemical inputs. Such an educational model for organic waste-to-resource
344 initiatives is positively associated with food production for long-term sustainability that is in
345 alignment with SDG 2 “Zero Hunger” (50).

346 Another conflicting food policy in Africa is the imbalance between agricultural extension/
347 agricultural advisory services in the interest of large commercial producers versus those of
348 family farmers. For example, a recent Ethiopian study identified gaps between digitalizing
349 agricultural extension information services and stakeholders’ experiences (51).

350 *Population growth*

351 Population growth will greatly increase the amount of food needed to adequately feed
352 Africa’s people. Despite a fall in fertility rates, the number of children per family in Africa is
353 still much higher than the global average (2.4 children per women in 2018) and the population
354 is growing. For example, in sub-Saharan countries the fertility rate has gone from 6.8 children
355 per woman in the 1970s to 4.7 children in 2018 (52). Increasing population pressure in Africa
356 (about 1.2 billion in 2018) impacts on food security and has worsened land scarcity, land use
357 intensification, and land degradation linked to food insecurity. This together with increased
358 poverty are associated with a stronger tendency to use soil-mining practices, for example
359 removal of soil conservation structures to use fertile soils within the structures (53).

360 Remarkably, land degradation in combination with population growth, continuously lead to
361 increasing food insecurity unless targeted policy interventions for improved food markets and
362 agro-processing technology adoptions are introduced (53).

364 The COVID-19 pandemic is here singled out as a challenge of its own as it is so thoroughly
365 worsening all the above challenges. This global pandemic has worsened the slow progress to
366 “Zero Hunger” in Africa. Furthermore, the pandemic has a considerable negative effect on the
367 economic development in Africa. Indeed, lately several households in Africa, with low levels
368 of educational attainment and high dependence on labor income, experience an enormous real
369 income shock that has visibly jeopardized their food security (54). Informal food traders are
370 an essential part of a wider food system going from input suppliers, to farmers, and to the
371 final eaters (55). By far, the “informal food sector” in Africa is still the highest employer to
372 the young African population and has been greatly disorganised by COVID-19 pandemic.
373 This sector is made up of small-scale owner-operated enterprises (e.g. selling food of various
374 kinds, including street traders, hawkers, street restaurants etc.) that employs more people than
375 the formal food and grocery sector or even other sectors (55).

376 **Summary and future directions**

377 Despite challenges, many African countries have made significant improvement in reducing
378 stunting, wasting and underweight among children < 5 years (56). African countries are
379 striving towards “Zero Hunger” by developing policies and involving several stakeholders.
380 Notably, increased effort both from the African nations, the African Union and the
381 international community, is necessary to unlock the potential for “Zero Hunger” on a long
382 term basis. This includes international partnership and collaboration on food systems, trade,
383 health services and climate change. Collaboration between African countries and several UN
384 agencies and other development partners, as well as the African Union’s efforts to achieve
385 “Zero Hunger” in Africa are important, but at risk of being insufficient. With only nine years
386 left to the 2030 SDGs target, all African countries should increase progress actions towards

387 “Zero Hunger” as well as champion the SDGs on the global stage, including the SDGs targets
388 related to planetary health (climate, water, land) where global efforts are crucial and to which
389 the poorest people in the world are most vulnerable. African nations should continue and
390 strengthen the research and development in sustainable and climate resilient food and
391 agriculture practices. Also, Africa must support the SDG agenda at the national and
392 continental level to harness the synergies between the targets, including good governance,
393 good health and well-being, gender-equality, decent work and economic growth as well as
394 reduced inequalities.
395

396 **References**

- 397 1. Patel V, Saxena S, Lund C, Thornicroft G, Baingana F, Bolton P, et al. The Lancet
398 Commission on global mental health and sustainable development. Lancet 2018;
399 392:1553-98.
- 400 2. UN General Assembly. 2105. Transforming our world: the 2030 Agenda for
401 Sustainable Development. Available at:
402 <https://www.refworld.org/docid/57b6e3e44.html> (accessed 2 November, 2020).
- 403 3. Sachs JD. From millennium development goals to sustainable development goals.
404 Lancet 2012;379:2206-11.
- 405 4. World Health Organization. 2015. Health in 2015: from MDGs, millennium
406 development goals to SDGs, Sustainable Development Goals. 2015. Available at:
407 <https://apps.who.int/iris/handle/10665/200009> (accessed 8 February, 2021).
- 408 5. Tremblay D, Fortier F, Boucher JF, Riffon O, Villeneuve C. Sustainable development
409 goal interactions: An analysis based on the five pillars of the 2030 agenda. Sustainable
410 Development. 2020;28:1584-96.
- 411 6. Ritchie R, Mispy, Ortiz-Ospina. 2018. Measuring progress towards the Sustainable
412 Development Goals. Available at: <https://sdg-tracker.org> (accessed 8 February, 2021).
- 413 7. Food and Agriculture Organization of the United Nations. 2019. Sustainable
414 Development Goals; 2.1.1 Prevalence of undernourishment. Available at:
415 [www.fao.org/sustainable-development-
416 goals/indicators/211/en/#:~:text=Indicator%202.1.,normal%20active%20and%20health%20life](http://www.fao.org/sustainable-development-goals/indicators/211/en/#:~:text=Indicator%202.1.,normal%20active%20and%20health%20life). (accessed February 9, 2021).
- 417
418 8. Food and Agriculture Organization of the United Nations. 2020. The State of Food
419 Security and Nutrition in the World 2020. Transforming food systems for affordable

- 420 healthy diets. Available at: <https://doi.org/10.4060/ca9692en> (accessed February 28,
421 2021).
- 422 9. UNICEF/WHO/World Bank Group Joint Child Malnutrition Estimates. 2018. Levels
423 and trends in child malnutrition. Available at: [https://www.who.int/nutgrowthdb/2018-](https://www.who.int/nutgrowthdb/2018-jme-brochure.pdf)
424 [jme-brochure.pdf](https://www.who.int/nutgrowthdb/2018-jme-brochure.pdf) . (accessed February 28, 2021).
- 425 10. Global Nutrition Report. 2020 Global Nutrition Report. 2020. Available at:
426 <https://globalnutritionreport.org/reports/2020-global-nutrition-report>. (accessed
427 February 28, 2021).
- 428 11. Tesema GA, Yeshaw Y, Worku MG, Tessema ZT, Teshale AB. Pooled prevalence
429 and associated factors of chronic undernutrition among under-five children in East
430 Africa: A multilevel analysis. *PLoS One* 2021;16:e0248637.
- 431 12. FAO. Africa Regional Overview of Food Security and Nutrition Accra, Ghana 2019
432 Available at: www.fao.org/3/ca7343en/ca7343en.pdf. (accessed April 19, 2021).
- 433 13. Food Security Information Network. Global Report on Food Crisis. Update September
434 2019. 2019. Available at: www.fsinplatform.org. (accessed April 19, 2021).
- 435 14. Caiado RGG, Leal Filho W, Quelhas OLG, de Mattos Nascimento DL, Ávila LV. A
436 literature-based review on potentials and constraints in the implementation of the
437 sustainable development goals. *J Clean Prod* 2018;198:1276-88.
- 438 15. McGuire S, FAO, IFAD, WFP. The state of food insecurity in the world 2015:
439 meeting the 2015 international hunger targets: taking stock of uneven progress. *Adv*
440 *Nutr.* 2015;2015:623-4.
- 441 16. Mason-D'Croz D, Sulser TB, Wiebe K, Rosegrant MW, Lowder SK, Nin-Pratt A, et
442 al. Agricultural investments and hunger in Africa modeling potential contributions to
443 SDG2–Zero Hunger. *World Develop* 2019;116:38-53.

- 444 17. Waha K, Van Wijk MT, Fritz S, See L, Thornton PK, Wichern J, et al. Agricultural
445 diversification as an important strategy for achieving food security in Africa. *Glob*
446 *Change Biol* 2018;24:3390-400.
- 447 18. Zougmore RB, Partey ST, Ouédraogo M, Torquebiau E, Campbell BM. Facing
448 climate variability in sub-Saharan Africa: analysis of climate-smart agriculture
449 opportunities to manage climate-related risks. *Cahiers Agric* 2018;27:1-9.
- 450 19. Bosc J, Goïta M, van der Ploeg JD, Sekine K, Zhang, L. Investing in smallholder
451 agriculture for food security. Rome, Italy: Report by the High Level Panel of Experts
452 on Food Security and Nutrition; Committee on World Food Security; 2013.
- 453 20. WHO Press Report. Africa can rely on United Nations Development System in decade
454 of action to fulfil 2030 Agenda, Deputy Secretary-General tells Regional Forum 2020.
455 Available at: <https://www.un.org/press/en/2020/dsgsm1390.doc.htm>. (accessed
456 February 28, 2021).
- 457 21. United Nations. Zero Hunger Challenge 2015. Available at:
458 <https://www.un.org/zerohunger/content/pathways-zero-hunger>. (accessed February 28,
459 2021).
- 460 22. Scaling Up Nutrition. 2016: Nutrition is essential for the success of the SDGs; 2016
461 Available at: [https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-](https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-development-goals/)
462 [development-goals/](https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-development-goals/). (accessed February 28, 2021).
- 463 23. Fernandez RM. SDG3 Good Health and Well-Being: Integration and Connection with
464 Other SDGs. *Good Health and Well-Being*. 2020:629-36.
- 465 24. Verguet S, Limasalle P, Chakrabarti A, Husain A, Burbano C, Drake L, et al. The
466 broader economic value of school feeding programs in low-and middle-income
467 countries: estimating the multi-sectoral returns to public health, human capital, social
468 protection, and the local economy. *Front Publ Health* 2020;8: 587046.

- 469 25. Schuster RC, Butler MS, Wutich A, Miller JD, Young SL, et al. “If there is no water,
470 we cannot feed our children”: The far-reaching consequences of water insecurity on
471 infant feeding practices and infant health across 16 low-and middle-income countries.
472 *Am J Hum Biol* 2020;32:e23357.
- 473 26. Siddiqui F, Salam RA, Lassi ZS, Das JK. The intertwined relationship between
474 malnutrition and poverty. *Front Publ Health* 2020;8: 453.
- 475 27. Bamwesigye D, Hlavackova P, Darkwah SA, Verter N. Deforestation, climate change
476 and food security nexus in sub-Sahara Africa: Content Analysis. 2019. Preprints 2019;
477 2019020154. doi: 10.20944/preprints201902.0154.v1.
- 478 28. Otekunrin OA, Otekunrin OA, Momoh S, Ayinde IA. How far has Africa gone in
479 achieving the zero hunger target? Evidence from Nigeria. *Glob Food Sec* 2019;22:1-
480 12.
- 481 29. Otekunrin OA, Otekunrin OA, Sawicka B, Ayinde IA. Three decades of fighting
482 against hunger in Africa: Progress, challenges and opportunities. *World Nutr*
483 2020;11:86-111.
- 484 30. Lipper L, Thornton P, Campbell BM, Baedeker T, Braimoh A, Bwalya M, et al.
485 Climate-smart agriculture for food security. *Nat Climate Change* 2014;4:1068-72.
- 486 31. Daum T, Birner R. The neglected governance challenges of agricultural mechanisation
487 in Africa—insights from Ghana. *Food Sec* 2017;9:959-79.
- 488 32. Tirado M, Hunnes D, Cohen M, Lartey A. Climate change and nutrition in Africa. *J*
489 *Hunger Environ Nutr* 2015;10:22-46.
- 490 33. Kimathi E, Tonnang HE, Subramanian S, Cressman K, Abdel-Rahman EM,
491 Tesfayohannes M, et al. Prediction of breeding regions for the desert locust
492 *Schistocerca gregaria* in East Africa. *Sci Rep* 2020;10:1-10.

- 493 34. Yunusa IA, Zerihun A, Gibberd MR. Analysis of the nexus between population, water
494 resources and Global Food Security highlights significance of governance and
495 research investments and policy priorities. *J Sci Food Agric* 2018;98:5764-75.
- 496 35. Committee on World Food Security. Sustainable forestry for food security and
497 nutrition. Rome, Italy; 2017. Available at: www.fao.org/cfs/home/events/susfor/en/
498 (accessed February 28, 2021).
- 499 36. Pelletier J, Ngoma H, Mason NM, Barrett CB. Does smallholder maize intensification
500 reduce deforestation? Evidence from Zambia. *Glob Environ Change*. 2020;63:102127.
- 501 37. Curtis PG, Slay CM, Harris NL, Tyukavina A, Hansen MC. Classifying drivers of
502 global forest loss. *Science* 2018;361:1108-11.
- 503 38. Ngome PIT, Shackleton C, Degrande A, Nossi EJ, Ngome F. Assessing household
504 food insecurity experience in the context of deforestation in Cameroon. *Food Policy*
505 2019;84:57-65.
- 506 39. Lawrence D, Vandecar K. The impact of tropical deforestation on climate and links to
507 agricultural productivity. *Nat Climate Change* 2014;5:27-36.
- 508 40. Committee on World Food Security. Sustainable fisheries and aquaculture for food
509 security and nutrition. Rome, Italy; 2014. Available from:
510 www.fao.org/3/av032e/av032e.pdf (accessed February 28, 2021).
- 511 41. Muzari W. Small scale fisheries and fish farming, processing and marketing in sub-
512 Saharan Africa: implications for poverty alleviation, food security and nutrition. *Int J*
513 *Sci Res* 2016;5:1740-9.
- 514 42. World Health Organization. International Code of Marketing of Breast-Milk
515 Substitutes Geneva, Switzerland: World Health Organization; 2018. Available at:
516 <https://www.who.int/nutrition/netcode/resolutions/en/>. (accessed April 19, 2021).

- 517 43. Battersby J, Watson V. Addressing food security in African cities. *Nat Sustain*
518 2018;1:153-5.
- 519 44. Crush J, Riley L. Urban food security, rural bias and the global development agenda.
520 *Hungry Cities Partnersh Discuss Pap* 2017;11:1-11.
- 521 45. Demmler KM, Klasen S, Nzuma JM, Qaim M. Supermarket purchase contributes to
522 nutrition-related non-communicable diseases in urban Kenya. *PloS One*.
523 2017;12:e0185148.
- 524 46. Urta J, Alkorta I, Garbisu C. Potential benefits and risks for soil health derived from
525 the use of organic amendments in agriculture. *Agronomy* 2019;9:542.
- 526 47. Daum T, Adegbola YP, Kamau G, Daudu C, Zossou RC, Crinot GF, et al. Perceived
527 effects of farm tractors in four African countries, highlighted by participatory impact
528 diagrams. *Agron Sustain Develop* 2020;40:1-19.
- 529 48. Mango N, Siziba S, Makate C. The impact of adoption of conservation agriculture on
530 smallholder farmers' food security in semi-arid zones of southern Africa. *Agric Food*
531 *Sec* 2017;6:32.
- 532 49. Benin S. Impact of Ghana's agricultural mechanization services center program. *Agric*
533 *Econ* 2015;46:103-17.
- 534 50. Creegan EF, Flynn R. *SDG 2 Zero Hunger. Actioning the Global Goals for Local*
535 *Impact: Springer; 2020. pp. 23-37.*
- 536 51. Atinaf M, Karanasios S, Anteneh S. Digitalizing agriculture extension service in
537 Ethiopia: a design-reality gap analysis. *PACIS 2020 Proceedings; 2020; Dubai, United*
538 *Arab Emirates.*
- 539 52. Shapiro D, Hinde A. *Laggards in the Global Fertility Transition. Wittgenstein Centre*
540 *Conference 2018: 3rd Human Fertility Database Symposium. Available at:*
541 <https://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Conferences/2018/Fertil>

- ity_across_time_and_space/Presentations/Shapiro_Hinde_WIC2018-3rdHFD.pdf
(accessed February 28, 2021).
53. Holden ST, Ghebru H. Land tenure reforms, tenure security and food security in poor agrarian economies: Causal linkages and research gaps. *Glob Food Sec* 2016;10:21-8.
54. Arndt C, Davies R, Gabriel S, Harris L, Makrelov K, Robinson S, et al. Covid-19 lockdowns, income distribution, and food security: An analysis for South Africa. *Glo Food Sec* 2020;26:100410.
55. Wegerif MC. “Informal” food traders and food security: experiences from the Covid-19 response in South Africa. *Food Sec* 2020;12:797-800.
56. Annan K. Data can help to end malnutrition across Africa. *Nature* 2018;555:7.
57. United Nations Development Programme. Transforming food and agriculture Creating food security while fighting climate change. 2020. Available at: <https://reliefweb.int/report/world/transforming-food-and-agriculture-creating-food-security-while-fighting-climate-change> (accessed February 28, 2021)..
58. Food and Agriculture organization of the United Nations. The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction. Available from: www.fao.org/3/ca6030en/ca6030en.pdf (accessed February 28, 2021).
59. Food and Agriculture organizaion of the United Nations. Evaluation of FAO’s contribution to Sustainable Development Goal 2 - “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”. Phase 2. Thematic Evaluation Series, 11/2020. Rome. 2020.
60. World Food Programme. Zero Hunger 2020. Available at: <https://www.wfp.org/zero-hunger> (accessed February 28, 2021).

- 565 61. Odenigbo MA, Elabor-Idemudia P, Geda NR. Influence of nutrition-sensitive
566 interventions on dietary profiles of smallholder farming households in East and
567 Southern Africa. IFAD Research Series. 2018:1-26.
- 568 62. High Level Panel of Experts on Food Security and Nutrition of the Committee on
569 World Food Security. Food security and nutrition: building a global narrative towards
570 2030. Rome. 2020.
- 571 63. UNICEF. Food Systems for Children and Adolescents. 2018. Available at:
572 <https://sites.unicef.org/nutrition/food-systems.html> (accessed February 28, 2021).
- 573 64. UNICEF. For Every Child, Reimagine. 2020. UNICEF Annual Report 2019.
574 New York.
- 575 65. The Global Goals For Sustainable Development. Available at:
576 <https://sdgs.un.org/goals> (accessed February 28, 2021).
- 577 66. United Nations. 2015. Transforming our World: The 2030 Agenda for Sustainable
578 Development. Available at:
579 <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>
580 (accessed February 28, 2021).
- 581
- 582
- 583

Tables

Table 1. Sustainable Development Goal 2 (“Zero Hunger”) – targets and indicators relevant for Africa

Sustainable Development Goal 2: Targets	Sustainable Development Goal 2: Indicators
Target 2.1 Universal access to safe and nutritious food	2.1.1 Prevalence of undernourishment 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale
Target 2.2: End all forms of malnutrition	2.2.1 Prevalence of stunting among children under 5 years of age 2.2.2 Prevalence of childhood malnutrition (wasting or overweight)
Target 2.3: Double the productivity and incomes of small-scale food producers	2.3.1 Volume of production per labor unit by classes of farming/pastoral/forestry enterprise size 2.3.2 Average income of small-scale food producers, by sex and indigenous status
Target 2.4: Sustainable food production and resilient agricultural practices	2.4.1 Proportion of agricultural area under productive and sustainable agriculture
Target 2.5: Maintain the genetic diversity in food production.	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities 2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction Target for these two indicators is set for the year 2020
Target 2.A: Invest in rural infrastructure, agricultural research, technology and gene banks	2.A.1 Agriculture orientation index for government expenditures 2.A.2 Total official flows (official development assistance plus other official flows) to the agriculture sector
Target 2.B: Prevent agricultural trade restrictions, market distortions and export subsidies	2.B.1 Value of agricultural export subsidies
Target 2.C: Ensure stable food commodity markets and timely access to information	2.C.1 Indicator of food price anomalies

Table 2. Prevalence of population undernourishment in the world and in African regions

Prevalence of general population undernourishment (%) ¹								
	2005	2010	2015	2016	2017	2018	2019 ²	2030 ²
World	12.6	9.6	8.9	8.8	8.7	8.9	8.9	9.8
Africa	21.0	18.9	18.3	18.5	18.6	18.6	19.1	25.7
Sub-saharan Africa	23.9	21.3	21.2	21.4	21.4	21.4	22.0	29.4
Eastern Africa	32.2	28.9	26.9	27.1	26.8	26.7	27.2	33.6
Middle Africa	35.5	30.4	28.2	28.8	28.7	29.0	29.8	38.0
Southern Africa	4.9	5.4	7.0	8.0	7.0	7.9	8.4	14.6
Western Africa	13.8	12.1	14.3	14.2	14.6	14.3	15.2	23.0
Northern Africa	9.8	8.8	6.2	6.3	6.6	6.3	6.5	7.4

¹The prevalence is defined as an estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels required to maintain a normal active and healthy life. Modified from (7).

²These are projected values.

Table 3. Examples of UN-based initiatives directed towards achieving Sustainable Development Goal 2 in Africa

UN Agency	“Zero Hunger” initiatives	Implemented case examples	Location in Africa
United Nations Development Programme (UNDP)	Women first initiatives focusing on: women emancipation, livelihood diversification, for example, changes in social norms to avoid excluding women in resource ownership and property (57)	Collective gardens, for example Rain4Sahara where women are growing food for cash, hygiene and nutrition programs From subsistence to sustenance, women provided with extension agents and farming services to grow nutritious diverse fruits and vegetables	Niger, Sahel region Ethiopia, Horn of Africa
Food and Agriculture Organization (FAO)	Skilling of smallholder rural farmers Farmer notebook focusing on conservation agriculture (58) Funding of SDG 2, promotion policies (91% of FAO project portfolio and budget of about 6.7 million USD) (59)	Solar dried vegetables Education on good farming practices to reduce soil erosion, moisture loss and conserve soil nutrients Supports national programs, legal and policy initiatives, regional programmes, investment in food systems, climate finance, UN collaboration, and education. Farmer field schools, support communities in the implementation of good agricultural practices to boost incomes	Kenya, East Africa Zimbabwe, South Africa Across Africa Burkina Faso, Nigeria, West Africa. Kenya, Malawi, Uganda East Africa
World Food Programme (WFP)	Humanitarian food assistance Scaling-up nutrition investments in food security, procurement and logistics Educating communities about the nutritional importance of eating a wide range of foods (60)	Put the most vulnerable first Pave the road from farm to market Encourage sustainable variety of crops	All regions of Africa All regions of Africa All regions of Africa

<p>International Fund for Agricultural Development (IFAD)</p>	<p>Nutrition- sensitive Agriculture</p> <p>Investing in rural agriculture (61)</p> <p>Rural women finance projects (61)</p>	<p>Agribusiness/value-chain development</p> <p>Rural marketing</p>	<p>Zambia, Southern Africa</p> <p>Mozambique, Southern Africa</p> <p>Zambia, Burkina Faso, Ghana, Mali, Gambia, Benin and Sierra Leone</p>
<p>UN Committee on World Food Security and Nutrition- High –Level Panel of Experts (HLPE)</p>	<p>Global evidence- based international and intergovernmental scientific platform</p> <p>Facilitate policy debates and policy making (62)</p>	<p>Expert reports on different aspects of food security and nutrition</p> <p>Providing independent, comprehensive analysis on effective policy frameworks for fundamental food security systems transformation</p>	<p>All regions in Africa</p>
<p>The United Nations Children's Fund (UNICEF) and World Health Organization (WHO)</p>	<p>Food systems approaches that affect food, people, and the planet (63)</p> <p>Developing guidelines on healthy, nutritious and sustainable diets to promote child full potential development (64)</p>	<p>Framework on Food Systems for Children and Adolescents</p> <p>UNICEF continues to support nutrition programmes focusing on prevention first and if that fails, treatment</p>	<p>All regions in Africa</p> <p>All regions in Africa</p>

Figure legends

Fig. 1. An overview of the 17 United Nations Sustainable Development Goals. Modified from (65, 66).

Fig. 2. The 5Ps (People's wellbeing; Planet with protection of the earth's ecosystems; Prosperity with eradication of poverty and inequality; Peace, and international Partnerships) of sustainable development. Modified from (4, 5).

Fig 3. Food insecurity in Africa for the period 2014 to 2019. Modified from (8).

Figure 1



Figure 2



Figure 3

