



# **SUDAN ZERO HUNGER STRATEGIC REVIEW 2017-2030**

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## ACRONYMS AND ABBREVIATIONS

AAAIID	Arab Authority for Agricultural Investment and Development
AfDB	African Development Bank
AMS	Aggregate Measurements of Support
AOAD	Arab Organization for Agricultural Development
BCC	Behavioural Change and Communication
BCM	Billion Cubic Meters
CAADP	Comprehensive African Agricultural Development Programme
CBoS	Central Bank of Sudan
CDF	Community Development Fund
CMAM	Community Management of Acute Malnutrition
COMESA	Common Market for Eastern and Southern Africa
CPA	Comprehensive Peace Agreement
CSO	Civil Society Organization
CV	Coefficient of Variation
DDRSI	Drought Disaster Resilience and Sustainability Initiative
EWS	Early Warning System
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FEWSNET	Famine Early Warning Systems Network
FDI	Foreign Direct Investments
FIVIMS	Food Insecurity and Vulnerability Information and Mapping System
FNS	Food and Nutrition Security
GAFTA	Greater Arab Free Trade Area
GAM	Global Acute Malnutrition
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GIEWS	Global Information Early Warning System
HAC	Humanitarian Aid Commission
HCFNS	Higher Council for Food and Nutrition Security
HDI	Human Development Index
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICT	Information and Communication Technology
IDP	Internally Displaced Person
IDD	Iodine Deficiency Disorders
IFAD	International Fund for Agricultural Development
IGAD	Inter-Governmental Authority on Development
IGADD	Inter-Governmental Authority on Drought and Development

ILO	International Labour Organization
INGO	International Non-Governmental Organization
IPC	Integrated Phase Classification
IYCF	Infant and Young Child Feeding
Km	Kilometre
LDC	Least Developed Country
MAM	Moderate Acute Malnutrition
MDG	Millennium Development Goal
MICS	Multiple Indicators Cluster Survey
MoAF	Ministry of Agriculture and Forestry
MoAFP	Ministry of Animal Resources, Fisheries and Pastures
MoE	Ministry of Education
MoFNE	Ministry of Finance and National Economy
MoFT	Ministry of Foreign Trade
MoH	Ministry of Health
MT	Metric Tonne
NGO	Non-Governmental Organization
NLC	National Land Commission
NSAS	Nubian Sandy Stone Aquifer System
OCHA	Office for the Coordination of Humanitarian Affairs
OECD	Organization for Economic Cooperation and Development
SAM	Severe Acute Malnutrition
SDG	Sustainable Development Goals, or Sudanese Pounds where applicable
SIFSIA	Sudan Institutional Capacity Programme: Food Security Information for Action
SHHS	Sudan Household Health Survey
SPFS	Special Programme for Food Security
SRC	Strategic Reserve Corporation
SUN	Scaling Up Nutrition
S3M	Simple Spatial Surveying Methodology
SUDNAIP	Sudan National Agricultural Investment Plan
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNCATAD	United Nation Conference on Trade and Development
UNCT	United Nations Country Team
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
USD	US Dollars
WASH	Water, Sanitation and Hygiene

WB	World Bank
WFP	World Food Programme
WHO	World Health Organization
WTO	World Trade organization

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The report was prepared by a multi-disciplinary team involving Senior Policy Advisers (Zohair Mubarak Abdalla and Saad Elmedani Daak), Senior Researchers (Hamid Hussein Faki and Elfadil Ahmed Ismail) and Senior Academicians (Mrs. Sumaia Elfadil and Omer Ejaimi). The preparation of the report was coordinated by Professor Ahmed Ali Geneif and was guided by the Lead Convener, Professor Abdalla Ahmed Abdalla.

Wide consultations were made with an array of public and private sector institutions and valuable inputs for drafting the various sections of the report were provided by the Ministries of Agriculture and Forestry, Federal Ministry of Health, Social Welfare, Environment and National Resources, and by the National Population Council, Central Bureau of Statistics, The Food Security and Nutrition Technical Secretariat, Agricultural Bank of the Sudan and Agricultural Research Corporation enriched the comprehensive review. Valuable information and insights were provided by country partners including WFP, FAO, UNICEF, UNDP, UNEP, UNHCR, SRCS, World Bank, USAID, EU, ECHO, DIFD – UK Embassy, Italian Cooperation, CBoS, MoSS/PRCC, University of Khartoum, Al-Ahfad University, and DAL Group

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## FOREWORD

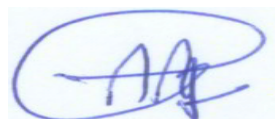
The 2030 agenda for sustainable development introduced by UN general assembly was adopted by 193 countries including the Sudan in September 2015. The adoption of the agenda is a firm commitment for achieving sustainable development goals and targets (SDG) including sustainable development goal 2 (SDG 2) for short is called Zero Hunger, which aims to end hunger, achieve food security and improve nutrition and promote sustainable agriculture by the year 2030. In its relentless efforts to help the Sudan in enhancing its food security programmes, WFP has commissioned a country led, open and consultative national Zero hunger strategic review which was conducted to help the Sudan government and partners including relevant international organizations, local and international NGO's, other donors and private sector and civil society organizations in identifying their roles, determining their best impact oriented interventions and modifying their programmes and plans in supporting the Sudan to realize Zero hunger by 2030.

The complexity, multidisciplinary and multi sector nature of food and nutrition security made it essential to have multidisciplinary study team (see annex 3) to prepare this strategic review report through extensive participatory consultation and discussion with wide range of stakeholders including relevant government ministries and agencies, international organizations, NGOs, civil society organizations, bilateral donors, the private sector, universities and research institutions.

The report is a synthesis of the views, comments and recommendations of all above mentioned stakeholders. It builds on the 5 targets of SDG 2 and is based on the analytical and the conceptual framework of food and nutrition security shaped by WFS-1996 definition of food and nutrition security (FNS) with its four-interlinked dimension of availability, accessibility, utilization and stability.

On the basis of the analysis of food and nutrition security situation including nutrition and health status, assessment was made of present and past policies, programmes and strategies, governance, manpower, resources need and challenges and constraints, as well as views and comments of the stakeholders. The report has identified a number of priority actions, interventions and recommendations that provide the strategic direction and guidelines needed to make progress towards realization of Zero hunger and elimination of malnutrition by 2030. It goes without saying that this is not a strategy, nor an action plan, but it is rather a framework or road map for all stakeholders concerned in assisting them to formulate programmes and plans of action for realization of the above objectives of zero hunger and sustainable elimination of malnutrition.

This strategic review and its directions will have maximum benefits and impact if an implementing mechanism under the highest political authority at national and state level is established, and aligned with the present higher coordinating councils in the different fields as indicated in the report, and made effectively operational to implement the major adopted recommendations, and monitor progress toward realization of SDG 2 targets on the basis of quantifiable indicators, and propose the necessary corrective timely actions, if need arises. Its operation will be made greatly effective if it is supported with the necessary manpower, precise basic information, required surveys and participation of the stakeholders particularly the primary stakeholders, and mobilization of communities and required financial resources.



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## EXECUTIVE SUMMARY

### Background

The 2030 Agenda for Sustainable Development, officially known as ‘Transforming the World,’ was introduced by the United Nations General Assembly and adopted by 193 Countries, including the Sudan. The 2030 Agenda outlines 17 Sustainable Development Goals (SDG) that aim to eradicate poverty and hunger and ensure sustainable and adequate livelihood, prosperity and peace to all individuals of the world. No one is to be left behind. The SDGs are intimately interconnected: the success of one will lead to the success of the others.

The second SDG aims to *end hunger, achieve food security and improve nutrition and promote sustainable agriculture*, and is organized according to five targets. In order to better work towards achieving these targets, a country-led and consultative Strategic Review has been undertaken by a private consultancy firm commissioned by the World Food Programme (WFP). The aim of this Review is to help the Government and partners, including relevant international and regional organizations as well as Non-Government Organizations (NGO), Community-Based Organizations (CBO) and the private sector, to formulate effective and viable complementary and supplementary programmes and plans for the realization of zero hunger in Sudan by 2030.

This Strategic Review has focused its analysis on the five targets of SDG 2: SDG 2.1: Hunger and access to food; SDG 2.2: Nutrition; SDG 2.3: Agricultural productivity and income of small-scale food producers; SDG 2.4: Food production systems and agricultural practices; and SDG 2.5: Genetic diversity. The food and nutrition security situation analysis presented in Section 2 of this Review, along with a discussion of the policies, plans and institutional arrangements outlined in Section 3, have led to the identification of gaps and challenges to ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture by 2030. Suggested plans of action are presented in Section 4.

### Food Security and Nutrition in Sudan

Sudan is a large country in North East Africa occupying an area of 1.886 million square kilometres and neighbouring seven countries. The abundant natural resources including sunshine, agricultural land, water, livestock, genetic biodiversity, forests, pastures, fresh and marine fisheries, wild life and mining areas, constitute the base for economic growth and development of the Sudan.

However, the current food security situation in many parts of the country is worrying, with almost 46.5% of the population living under the poverty line with wide disparities in poverty incidence between rural areas (57.6%) and urban areas (26.5%). Hunger in the Sudan is caused by a myriad of factors, including ongoing internal and neighbouring conflicts, massive displacement, natural disasters such as drought, and detrimental economic reforms and sanctions, among others. These negatively affect the purchasing power of the poor due to scarce employment opportunities, meagre incomes, lack of access to productive resources and a substantial increase in commodity prices.

Hunger affects people in a multitude of ways and disproportionately targets the most vulnerable, such as pregnant women and children. The rates for malnutrition in its different forms are alarming, and are significantly higher in rural areas and among the poorest quintiles. Of concern is the fact that rates for stunting, wasting and underweight are all on the rise in recent years.

Micronutrient deficiencies exist as well, such as anaemia, lack of vitamin A and iodine deficiency disorders (IDD), resulting in the diminished mental ability of children, human productivity and in the long term overall national development. Compounding hunger, the deteriorating environmental health, food safety, sanitation and shortage of clean drinking water in most rural areas in the Sudan remain a distressing issue and cause for concern.

The massive displacement of the population caused by the combined effects of drought, land degradation, disintegration of rural economy and more importantly by conflict, makes Sudan host to one of the largest concentrations of internally displaced persons (IDP) and to a large number of refugees and asylum seekers. This has resulted in a noticeable shift in the population landscape map and added to the demands for social services, disrupted the lives and livelihoods of communities, and aggravated political, economic, social and environmental fragility.

The goal of enhancing food and nutrition security and eliminating hunger in the Sudan by 2030 is also subject to numerous challenges and prospects of both global and regional origin. These include the recent global economic downturn and financial crises and the volatility of the commodity markets, as well as the political transformation in the region as a result of the Arab Spring, escalating regional conflicts, the fall and instability of oil prices and the long lasting economic sanctions against Sudan, which impeded its efforts to utilize its vast agricultural and food production resources, expand trade and benefit from international support.

Despite vast and rich natural resources, the productivity of the food production sector in the Sudan is remarkably low for almost all food crops, livestock and fishery and in all arable (traditional rain-fed, mechanized rain-fed and irrigated), livestock (pastoral, agro-pastoral and sedentary) farming systems and fresh and saline water fishery systems. Despite global technological advancement, adoption of traditional farming practices in all farming systems is the norm. The insufficient and weak linkages among researchers, extension agents and farmers to facilitate demand driven research and technologies, constrain the efforts to enhance agricultural productivity; and farmers continue to have insufficient knowledge of alternative agriculture technologies. The productivity of the vast cropland in the Sudan is also rapidly deteriorating as a result of overexploitation, continued mono cropping and inadequate cultural practices.

Geography and the environmental resources' base of the national economy make the Sudan highly vulnerable to the impacts of climate change, especially in rural areas. The frequent occurrence of shocks and hazards such as drought, high rainfall variability and alternating river or irrigation floods threaten the production, availability and access to food and livelihoods. Though smallholder

producers, farmers and pastoralists are in a continuous struggle to adapt to climate shocks, their resilience to such events is progressively declining, as witnessed by negative demographic changes which intensified competition over natural resources and proliferation of local level conflicts, expanding poverty and food insecurity especially among women and children in rural areas, unsustainable urban growth, and deteriorating quality of rural life.

These shocks are not properly attended to due to inadequacy of plans and limited availability of capable institutions for disaster monitoring, early warning and post-disaster rehabilitation. Moreover, gaps are also due to lack of will and capacity of the State and investors to take into consideration the local needs and rights, and that wealth generated through their investment should yield dividends for the affected communities. The declining investment for advancing human capital and rural infrastructure all have added to food and nutrition insecurity and to increased vulnerability to natural and man-made disasters and crisis.

As a result, Sudan has been receiving food assistance and nutrition supplements from the international community for many years, most notably during the 1984/85 drought, during Operation Lifeline Sudan from 1989-92, and for the past 13 years in Darfur and parts of the eastern states. Most of the assistance to enhance recovery and resilience of the vulnerable groups and their ability to cope with emerging threats is provided through several public measures and mechanisms comprising social safety networks, social solidarity and care programs and by the UN system, especially the World Food Programme (WFP) through provision of food and nutrition assistance.

### **Policies, Plans, Institutions and Actors**

To address the multidisciplinary and multi-sectorial nature of food insecurity and malnutrition in Sudan, a wide range of coherent, comprehensive and result-based cross sector policies, legislation, programmes and plans were developed and enacted. However, while most of these programmes and plans included a food security objective, few included nutrition with concrete targets or actions for confronting endemic problems of malnutrition. Most of the plans and strategies followed a top down approach without consultation or participation of all stakeholders, particularly grass root organizations and most vulnerable segments of the population especially in the most affected states.

Efforts have been made recently to improve governance and the efficiency of the institutions concerned with food security and nutrition. This review provides an account of the institutions involved, including public and private sector, international organizations and civil society organizations, as well as a critical evaluation of their performance. A lack of coordinating bodies and the severe shortage of manpower on food security and nutrition particularly at the state level is documented.

### **The Way Forward: Zero Hunger in Sudan by 2030**

Results of the analyses and intensive consultations with stakeholders confirmed the urgency of undertaking concerted and collaborative action to confront the challenges and decisively move towards the simultaneous realization of the five targets of SDG 2. The interventions proposed herein

are the syntheses of the views, comments and recommendations of all stakeholders engaged in this Review process.

The most salient proposed interventions are as follows:

#### 1. Hunger Challenge

- Increase Government ownership and publicly visible commitment to hunger eradication
- Develop credible national plans with clear tasks for all levels of Government
- Coordinate services provided by the Government and international the community
- Develop a common programming strategy
- Complement increased budget allocations with new funds from other sources

#### 2. Access to Food (SDG 2.1)

- Create and improve rural livelihood opportunities through training, education, financial services and investment and enable small food producers to increase their productivity and generate new employment in nascent rural industries
- Support national efforts to prevent emergencies and maintain stable access to food
- Strengthen the national capacity to respond to and manage emergencies
- Support the existing caseload of refugees and IDPs with food and nutrition assistance, and increase the effectiveness and sustainability of assistance.
- Expand and improve the social protection system.

#### 3. Nutrition (SDG 2.2)

- Align the national framework and strategy with SDG 2 targets, regulate food fortification, implement WASH pledges, improve health and nutrition information systems and evaluate the role of safety nets.
- Improve the availability and affordability of food rich in micronutrients
- Treat acute malnutrition in emergency and recovery situations and offer nutrition support of people suffering from infectious diseases, and integrate CMAM through all service entry points.
- Research and introduce fortification and composite flour making, new nutrient rich crops viable for small producers and introduce labour saving techniques and tools.
- Implement a consolidated national BCC strategy addressing feeding practices, WASH, education and agriculture. Awareness raising should employ mass media and mobile phones for maximum reach.
- School education and education of women on nutrition and health needs to equip women, families and communities with skills to address their own health and nutrition challenges.
- Access to safe water, sanitation, hygiene, and food safety should be increased and complemented by promotion of sanitary social behaviours.
- Offer nutrition counselling and other services through community health facilities. Develop general and specific nutrition expertise in rural areas and hospitals and make required supplies accessible.

#### 4. Agricultural Productivity and Food Supply (SDG 2.3)

- Set a target to double production of small scale food producers, support availability of financial services and partner with private sector to invest into the agricultural input industry to serve small scale food producers
- Improve research and extension services to support especially small food producers to increase productivity.
- Diversify crops and livestock and promote horticulture for household food consumption. Develop the fishing, dairy and poultry industries and promote forestry for income generation and environmental protection.
- Improve availability of water to support intensification and diversification of food production through water harvesting, irrigation and building of dams in Wadis. Improve rural infrastructure supporting farmers' linkage to markets and nutrition including roads, markets, health facilities and drinking water.
- Reduce the levels of post-harvest losses of small scale food producers at the farm level and reduce household level food waste through policies, programmes, institutional mechanisms, infrastructure and changes in food preparation and eating habits.

#### 5. Sustainable Food Production Systems and Practices (SDG 2.4)

- Promote sustainable use of land through adoption of sustainable and resilient agricultural practices and land use systems including the demarcation of livestock routes and herders and farmers access to natural resources. Rehabilitate and reforest degraded land.
- Devise national sectorial plans to increase resilience, specifically the shock-responsiveness of safety nets, resilience of agricultural practices, community emergency food supplies and transport infrastructure between food surplus and deficient areas need to be improved.
- Develop national resilience programme to enhance food nutrition security in the medium term; this programme is to be part of and operated simultaneously with a long-term strategy addressing the underlying and basic causes of hunger and malnutrition.

#### 6. Supporting Food Production Capacities (SDG 2.a, 2.b)

- Increase farmer's income and reduce costs of foods by improving farmers' physical access to markets as well as the cost and efficiency of markets.
- Adjust trade policy, fiscal policy, legislation and infrastructure to focus exports on commodities that smallholders in Sudan are most competitive in producing and ease importation of commodities most important for food security. Improve strategic food reserves to stabilize prices.

To ensure effective implementation of the proposed interventions, a number of core common interventions were proposed. These interventions include: political will and commitment at the highest level to eradicate malnutrition; appropriate policies; incorporation of food and nutrition security programmes and plans in national and sectoral development plans; participation of all stakeholders and community organizations; alliance of all concerned in fighting hunger; organizing a national day for eradication of malnutrition; and mobilization of financial resources. Needless to mention that political stability, peace and rule of law are fundamental for the development and prosperity of the country.

### Concluding Remarks

Considering the challenges outlined in this review, questions may be raised on the Sudan's ability to achieve the SDG 2 targets by 2030. The analyses and the discussions with the major stakeholders including the government and the private sector indicate a promising and optimistic view.

The concept of food resilience is winning over food self-sufficiency in the development of programmes for sustainable food security. The programmes by the main UN organizations assisting the country in eradication of malnutrition are more oriented now to addressing the causes of hunger and malnutrition and have started, in earnest, programmes of enhancing resilience and transition from relief to recovery and to development. A revived political will and commitment together with active and coordinated participation of all stakeholders, can make this possible.

## 1. INTRODUCTION

### 1.1. Zero Hunger and the Sustainable Development Goals

The seeds of the sustainable development goals (SDG) were first sown at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 with the development and adoption of Agenda 21. Twenty years later at Rio+20 conference, the resolution ‘The Future We Want’ was reached by member States, outlining the main themes for sustainable development as poverty, education, energy, health, sanitation and water.

Recognizing remaining gaps in achieving the Millennium Development Goals (MDGs) by 2015, and building on the agenda of Rio 1992 and Rio 2012, the Sustainable Development Goals (SDG) were introduced by the United Nations (UN) General Assembly and adopted by 193 member States, including the Sudan. The SDGs outline a set of universal goals intended to meet the urgent environmental, political, and economic challenges facing our world by 2030.

The SDGs are a set of 17 interconnected development goals contained in para 54 of the United Nations Resolution A/RES/70/1. The 17 goals have 169 targets and some 230 indicators. The general aim of the SDGs is to eradicate poverty and hunger and ensure sustainable adequate livelihood, prosperity and peace for all individuals of the countries of the world. No one is to be left behind. The SDG agenda coincides with other historic agreements reached in 2015 at the COP21 Paris Climate Change Conference and the Addis Ababa Action Agenda on Financing for Development.

The second SDG aims to *end hunger, achieve food security and improved nutrition and promote sustainable agriculture*. SDG 2 is comprised of five targets, collectively known as *Zero Hunger* and briefly outlined as follows (see Annex 1 for complete targets and indicators):

- 2.1 End hunger and ensure access to food
- 2.2 End malnutrition
- 2.3 Double agricultural productivity and incomes of small-scale food producers
- 2.4 Ensure sustainable food systems and resilient agricultural practices
- 2.5 Maintain genetic diversity of seeds, plants and animals.

In order to better work towards achieving these targets, a country-led and consultative Strategic Review has been undertaken by a private consultancy firm, *Geneif Consultation*, commissioned by the World Food Programme (WFP). The aim of this Review is to help the Government and partners, including relevant international and regional organizations as well as Non-Government Organizations (NGO), Community-Based Organizations (CBO) and the private sector, to formulate effective and viable complementary and supplementary programmes and plans for the realization of zero hunger in Sudan by 2030.



## 1.2 Review Methodology and Analytical Framework

The Zero Hunger Strategic Review establishes a baseline that fosters joint understanding of the challenges and gaps in the national response to food and nutrition security, leading to joint agreement and consensus on priority actions required to achieve zero hunger by 2030. To contribute towards this end, the Strategic Review intends to achieve the following main objectives:

1. Analyse the current situation of food and nutrition security in the Sudan in the context of broader development and humanitarian challenges, with specific reference to access to food, nutrition and health status, agricultural productivity and income, food production systems and agricultural practices, and genetic biodiversity;
2. Outline the local operational context including policies, strategies, programmes, institutional capacities, other relevant actors and resource flows;
3. Provide a framework for ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture to guide the government and its development and humanitarian partners to formulate strategies and actionable plans in order to achieve the targets of SDG 2 by 2030.

The Strategic Review has been guided by the following main principles:

*Anchored in national development vision and plans.* The Strategic Review consolidates, harmonizes and complements existing policies and plans of relevant federal and sector institutions, as well as plans of development and humanitarian partners.

*Inclusive and holistic.* The Strategic Review relies on an inclusive and consensus-based approach whereby all relevant stakeholders were actively involved in reviewing draft versions and contributing to the development of the strategic outcomes. The composition of the research team was deliberately varied in order to address the cross-sectoral nature of hunger, and includes expertise in agriculture, nutrition and public health, marketing, rural development, social protection, climate change, resilience, gender equality, and macroeconomic policies and strategic planning (see Annex 2 for members of the review team).

*Prioritises coordination and coherence* among the different parties addressing the various dimensions of food and nutrition security in the Sudan, recognizing the strategic outcomes and action points contained in this Review will only be achieved if all stakeholders fully cooperate and coordinate with one another.

*Recognizes territorial dynamics and potentials* and aims to reduce disparities and reliance on social assistance and equity programmes by prioritising the development of the food production and rural sector. Such an approach will allow decision makers to address inequalities between geographical areas and reduce bitterness and associated conflicts.



*Focused on the most vulnerable.* The review focuses on and advocates for the right to food in sufficient quantity and quality for all people at all times, and in particular for the most vulnerable.

*Peoples' participation.* The review assesses and advocates for the inclusion of all stakeholders, particularly local communities, small scale farmers, the urban and rural poor, women, children and the elderly, through participation and/or consultation in planning and implementation of programmes and projects aimed at improving their own food and nutrition security.

*Results based approach.* To be in line with the proposed SDG targets and indicators, the Strategic Review adopts a results-based approach for proposed actions to ensure contribution to outcomes and to accurately measure progress.

The process of drafting the Zero Hunger Strategic Review was based on intensive review of food and nutrition security in the Sudan analysing available data and literature on the subject, and supported by extensive consultation with concerned stakeholders. Time limitations prevented field visits, however, the research team relied on numerous reports and studies outlined in the Reference Section. Finally, a draft of this Review was circulated in a number of states to solicit contribution and ensure commitment to the implementation of recommendations. The drafting process is briefly outlined below:

#### *Desk Studies*

- a) Intensive review of existing materials on food and nutrition security in the Sudan obtained from concerned government institutions and other development and humanitarian partners, NGOs and research and academic institutions (see References).
- b) Analysis of the available data to examine the present status of nutrition, including determining who most suffers from malnutrition, where they are located, and the causes.
- c) Examination of the various international, regional, national and local drivers and determinants of food insecurity at individual, household, locality, state and national levels.
- d) Examination of foreign relations associated with food and nutrition security including international and regional trade and agricultural agreements and South-South Cooperation.

*Consultations* with the below stakeholders to exchange views on recommended actions and to consolidate national ownership of the review process and its output (See Annex 3 for complete list of institutions consulted and persons met):

- a) Senior and technical officials from relevant government authorities, international organizations, private sector, NGOs, and research and academic institutions, reflecting local knowledge, practical experiences and institutional engagement in the various food and nutrition security domains
- b) Technical Advisory Committee for the review, which includes members from main government institutions and UN agencies, to monitor and provide guidance to the review process

- c) Concerned Federal and State Ministers to solicit their view on emerging issues and possible actions to achieve the Strategic Outcomes and to ensure that the process was fully owned by the Government of Sudan
- d) Vice President of the Republic of the Sudan through his briefing on the review process and soliciting his auspices and commitment to the final deliverables.

The Strategic Review presented in the following sections is the result of the above analytical, participatory and inclusive consultation process. It reflects the commitment of the Government of the Sudan to end hunger, achieve food and nutrition security and promote sustainable agriculture through the development of a realistic and operational framework, outlined forthwith in this Zero Hunger Strategic Review.

## 2. ANALYSIS OF FOOD AND NUTRITION SECURITY SITUATION IN SUDAN

### 2.1 Sudan's Food Potential and the Hunger Challenge

#### 2.1.1 Demographic Structure and Dynamics

Sudan is the third largest country in Africa, located in northeast Africa and neighbouring seven countries. It covers an area of 1.886 million square km divided into 18 states. Sudan's total population of about 38.4 million<sup>1</sup> is expected to reach 50 million by 2030. Demographic structures have a profound impact on natural resource use, employment and income generation and henceforth on sustained availability and access to food. Almost two thirds of the population live in rural areas with marked regional variation; 8% of these are nomads and pastoralists. Children 0-14 years and youth 15-24 years represent 41% and 20% of the population respectively, reflecting a high level of dependency and posing potential employment challenges. The literacy rate is estimated at 72% and net primary school attendance rests at 77.4 % for boys and 75.5 % for girls. However, Sudan has the highest out of school children rate among the Middle East and North Africa (MENA) countries. It is estimated that 2.5 million children aged 6-13 years are out of school; the majority of them are girls.

Demographic structure in Sudan is also characterized by instability associated with massive displacement caused predominantly by conflict, but also by drought, land degradation, and the disintegration of the rural economy. Drought and famine in 1984/85 displaced approximately 1.8 million persons, mainly along the edges of the Sahara in Darfur and Kordofan and in Eastern Sudan. More recent and on-going conflict and civil strife has seen Sudan host one of the largest concentrations of internally displaced persons (IDPs), refugees and asylum seekers in the world. This has resulted in a noticeable shift in the population landscape and added to increased demands for social services, disrupted the lives and livelihoods of communities, and aggravated political, economic, social and environmental fragility.

Another conspicuous feature of the population landscape in Sudan is the rapid urban growth in the country. At the time of the First Population Census in 1955/56 only 8.8% of the country's total population were classified as urban, the majority of whom were in the capital city of Khartoum. By 2015 around 40% of the total population was living in urban areas particularly in Khartoum, which accommodates around 50% of Sudan's urban population and shows an average annual growth rate of over 6% (see Table 2.1).

**Table 2.1 Urban Population in Sudan**

1955/56	8.8%
1985	22.4%
1995	31.4%
2010	40.0%

<sup>1</sup> MICS (2014) Central Bureau of Statistics, Ministry of Cabinet, Sudan

### 2.1.2 Food Self-reliance and Malnutrition

The potential of food self-reliance in the Sudan is evident, thanks to its bountiful land and water resources and to its varied agro-systems and population that enabled diversified food production. The Sudan's abundant natural resources including sunshine, agricultural land, water, livestock, genetic biodiversity, forests, pastures, fresh and marine fisheries, wild life and mining areas constitute the base for its economic growth and development. Out of the Sudan's expanse of 188 million ha, almost 58% (109 million ha) is cultivable, most of it is rain-fed<sup>2</sup>. The water resources of the country include 30 Billion Cubic Meters (BCM) of running Nile, non-Nile and renewable ground water, in addition to 1000 BCM of rainwater and huge reservoirs of fossil underground water occurring in localized and regional basins, including the Nubian Sandstone Aquifer System (NSAS) - the world's largest known fossil water aquifer system (SUDNAIP, 2015). The Sudan accommodates a large herd size encouraged by extensive forests, pasture and rangeland (146.5 million ha) accessible during the rainy season and is almost self-sufficient in meat; and the Red Sea, River Nile and Dams' reservoirs host ample fish resources. Nonetheless, these potentials do not tally with the sizable population trapped in chronic structural poverty and hunger.

The current food and nutrition situation in many parts of the country is worrying and almost half the population in the Sudan live under the poverty line, mostly in rural areas. Hunger is estimated at 31.5 percent of the population and is much higher in the female-headed households. The rates for malnutrition in its different forms, especially among new born, children and women of child bearing age exceed the global emergency thresholds and are also on the rise, and are significantly higher in rural areas and among the poorest quintiles. Nearly one in every five persons in the Sudan is in need of humanitarian assistance.

### 2.1.3 Macroeconomic Challenges

Sudan's economy has witnessed significant transition over recent years, with large oil exports early in this century and, after many years of civil conflict, with the socio-economic stability following the signing of the 2005 Comprehensive Peace Agreement (CPA). The six-year transitional period following signing of the CPA has been characterized by many positive effects on Sudan's economic, social and political situation, reflected in economic growth reaching unprecedented peaks of 9.9% in 2006 and 10.9% in 2007; respective drops in inflation to 6.5% and 5.4%; and a rise in agricultural gross domestic product (GDP) from 4.8% in 2005 to 6.5% in 2006 and around 7% up until 2010 (SUDNAIP, 2015).

However, following the secession of the South in July 2011, the Sudan lost three-quarters of its oil production, half of its fiscal revenues, one-fifth of its natural land resources (including forests), and

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<sup>2</sup> Sudan National Agriculture Investment Plan (SUDNAIP) 2016-2020, Final report, October 2015

about two-thirds of its international payment capacity. This has severely limited Sudan's economy and fuelled macroeconomic instability and structural imbalances, reflected in a declining GDP rate of 2.5% in 2011 and 1.4% in 2012, and high and persistent budget and current account deficit.

Abolishing the fuel subsidy in September 2013 as part of the Economic Reform Programme (2012-2014) intended to rectify and reduce fiscal imbalance, instead invigorated inflation to a record high of 36.9% in 2014 and resulted in loss of real income of about four percent overall, with a large part of this burden falling on the poor. Attempts to mitigate the negative impact of the reforms on government employees by raising the minimum wage and increasing expenditure on employees' compensations by 16.0% in 2014 proved not to be sufficient. The International Monetary Fund (IMF) estimated that one million more people have been added to the 13.5 million poor people in Sudan, as result of the 2013 economic reforms. The toll of the recent (2016) measures of devaluing the local currency and abolishing universal subsidies (on fuel, electricity, medicine, etc.) and increasing taxes is expected to be even far more harmful on the poor.

At the same time, the impact of 20 years of economic embargo and a series of economic sanctions has severely isolated the Sudan economy with very limited international support, hindered financial flows and jeopardized foreign direct investments, thwarting the Sudan's ability to utilize its vast agricultural and food production resources and expand trade. Hopefully, the United States decision on 13 January 2017 of partially lifting the economic sanctions, while maintaining part of the political sanctions in addition to banned government borrowing, is expected to bring valuable opportunities to the Sudan economy and its people, including enhanced partnership with the external world.

#### **2.1.4 Geo-Political Transformations**

The global economic downturn and financial crises by the end of the last decade and the volatility of the commodity markets affected all food producing and consuming countries, with the poor communities in developing countries being hit harder. Region-wise, political transformation as a result of the Arab Spring, escalating strife and conflict in Yemen, Syria, Iraq, and Libya, and the fall and instability of oil prices negatively impacted economies of the countries of the region, and adversely affected employment opportunities, especially in the Gulf Cooperation Council (GCC) countries. Remittances from Sudanese working in these countries shrivelled, thus affecting purchasing power and the food and nutrition situation of their dependent families at home.

Notably, the continuation of civil strife in various parts of Sudan caused huge loss of life, severely debilitated capacity for development, and have led to one of the largest concentrations of IDPs in the world, estimated at 3.2 million in 2016<sup>3</sup>. Sudan has also been welcoming refugees from South Sudan, where latest estimates (November 2016) indicated that the country provided refuge to more than 250,000 people arriving at the White Nile State with a rate of 2000 per month (increased to more than 40,000 last January 2017 as a result of declared starvation). Other South Sudanese fled the economic and conflict crisis to South Kordofan and East Darfur, where more than 47,000

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<sup>3</sup>International Displacement Monitoring Centre IDMC, 2016. Web: [www.internaldisplacement.org/database](http://www.internaldisplacement.org/database)

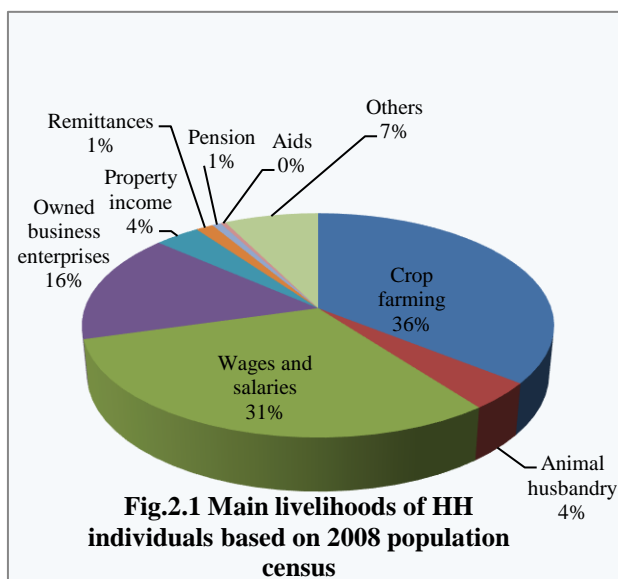
refugees since mid-2016 resided. It is believed that the majority of refugees are dispersed all over the country and not living in organized settlements. These factors combined have contributed to the increasing food pressure in the Sudan and increased level of food relief provided by WFP and other humanitarian organs.

## 2.2 Hunger and Access to Food (SDG 2.1)

Ending hunger means that all people, especially the most vulnerable, have access to the sufficient, nutritious and safe food they need to survive and to live healthy and productive lives. Poverty is often the main determinant of access to food, which in Sudan is compounded by scarce employment opportunities, limited livelihood options, and substantial increases in commodity prices. Other factors not strictly defined by poverty can also affect access to food, such as political instability, internal and external conflict and its resulting displacement. The discussion in this section intends to place these broader issues in perspective and analyse their implications for food access, while subsequent sections of this chapter focus on the more specific issues related to nutrition, agricultural production, and food systems and practices.

### 2.2.1 Livelihoods and Income Generation

Sudan remains rural in social, economic and cultural outlooks with the majority of the country's population living in rural areas and pursuing environmentally extractive livelihood systems. The structure and dynamics of Sudan's population has a profound impact on employment and income generation and henceforth on food access and food and nutrition security. Almost two thirds of the population are below 25 years of age implying high dependency ratio and potential employment problems. Based on the Central Bureau of statistics (2009) the labour force refined participation rate for persons 15 years and above is averaging 48%, with 73% for males and 23% females<sup>4</sup> (FAO-SIFSIA 2010).



An overview of the livelihoods activities in Sudan (Fig. 2.1) shows crop farming and animal husbandry as the main activity, representing 40% of livelihoods overall and over 60 percent of the total female employment (UNDP and ILO 2014). Most of the rural poor also supplement their

<sup>4</sup>With the lack of gender disaggregated data, it could not be possible to infer whether the 23% for women participation also include their role in family domestic affairs and in family agriculture, firewood gathering, cooking and even herding.

income with collection of firewood for charcoal making, agricultural casual labour and non-agricultural wage labour, internal transfers and remittances, as well as indoor/home activities. In this regard, it is worth mentioning that the remittances of the Sudanese working abroad play an important role (though not yet accurately quantified) in supporting the incomes of their receiving families, and consequently food accessibility and the national economy in general.

Nevertheless, progressive shifts in livelihood systems are taking place especially in rural areas of the Sudan due to accelerating poverty levels, proliferation of resource-based conflict, and the decreasing resilience to changes in environment and in market prices which have all added to pressure and enhanced the pace of outmigration from rural areas and unplanned expansion of urban areas particularly the capital, Khartoum. It is worth mentioning that in many of the rural towns and big villages there exists rudimentary activities relating mainly to agro-industries, and in some towns modern processing activities; all these in addition to simple craftsmen like blacksmith, mechanics, etc. provide seasonal and sometimes longer employment to rural men and women. Moreover, in recent years, foreign investors in agriculture who have been awarded large tracts of land also provide employment. The recent discovery and rush for gold also provided temporary employment but with negative effects to agriculture by taking away the needed workforce during the peak periods.

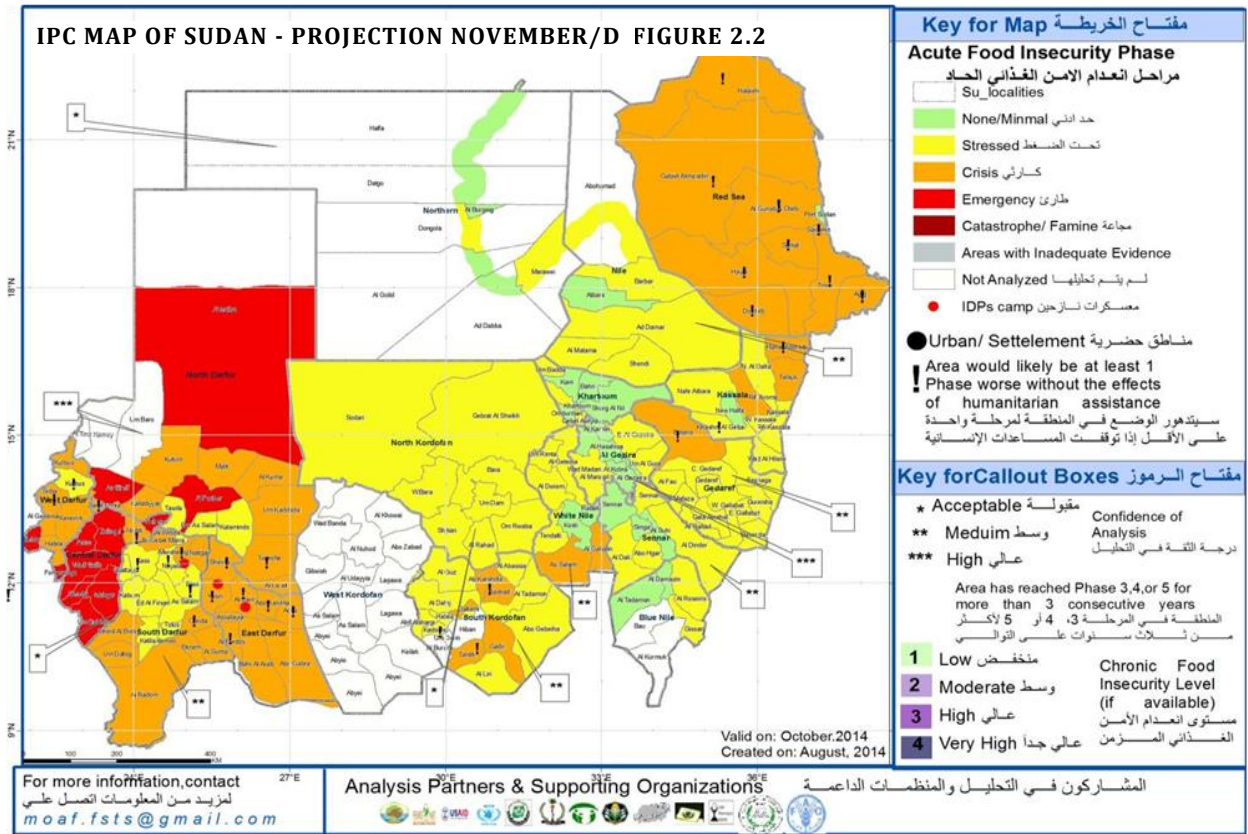
Significant progress in promoting economic growth, reducing poverty and enhancing food and nutrition security in Sudan cannot be achieved without realizing more fully the potential human and productive capacity of the agricultural sector. This is because agriculture contributes significantly (34%) to GDP and to over 80% of non-petroleum export revenues. It also employs 48% of the labour force, supplies the bulk of basic food for consumers, and provides subsistence and other incomes to the bulk of the population, in addition to its strong forward and backward linkages and multiplier effect on other sectors, notably trade and industry. Henceforth, agriculture constitutes the prime foundation for the Sudan to pursue efficient economic opportunities, and its revitalizing as a major source of government revenue, employment, foreign reserves and investments is crucial.

### **2.2.2 The Poverty Trap**

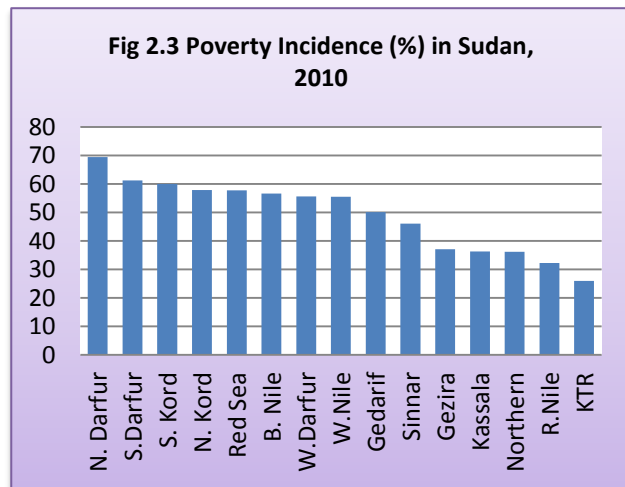
The loss of oil revenue as a result of the cessation of South Sudan, detrimental economic reforms and sanctions and continuing internal conflicts has been further exacerbated by the high burden of debilitating diseases, health system gaps, low levels of public spending on health, water sanitation and hygiene, and education, and limited livelihood opportunities. These factors are compounded by a long-term anti-agricultural bias in policy formulation and failures to translate the Sudan's agricultural potential into broad based socio-economic development. Taken together, this has resulted in crisis and emergency levels of food insecurity, with indicators showing high disparities among states and localities (see Figure 2.2).



The Famine Early Warning Systems Network (FEWSNET) estimates that as of September 2016, four million people are in the crisis phase, according to the criteria of the Integrated Phase Classification (IPC).



Food and nutrition insecurity in Sudan is, by and large, a function of food inaccessibility primarily due to poverty. At the same time, hunger and under nutrition are often a cause of poverty as they negatively affect the ability of the individual to develop to their full physical and mental capacity. Sudan is one of the poorest countries in the world. Almost 46.5% of the population in the Sudan live under the poverty line, with wide disparities in poverty incidence (see Fig 2.3) between urban areas (26.5%) and rural areas (57.6%). Nationwide, the structural food deprivation (hunger)<sup>5</sup> is estimated at 31.5 percent (about 13.5 million people) and is higher in female headed households (37 percent) than in male headed households (31 percent).

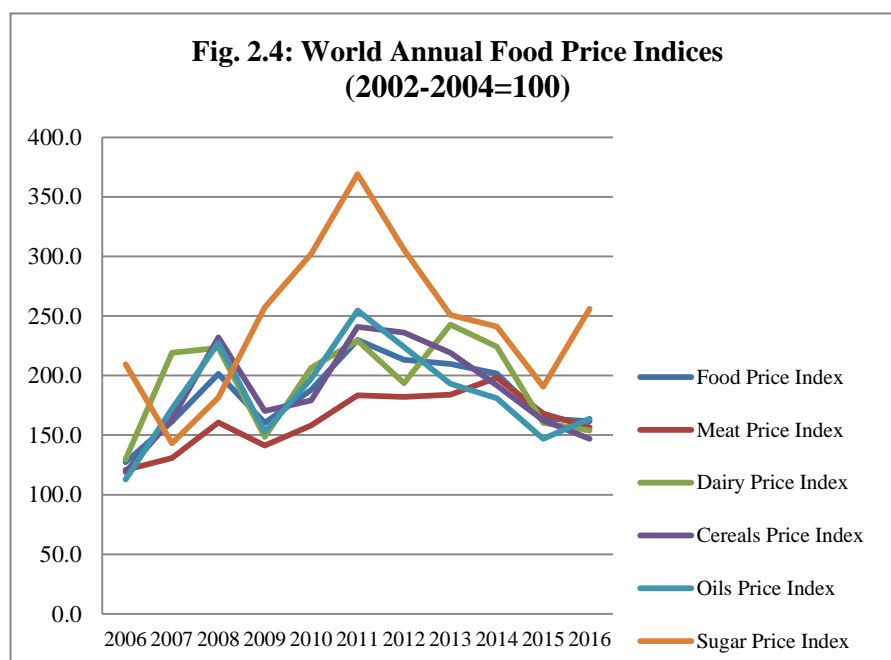


<sup>5</sup> The minimum dietary energy requirement (MDER) defined for the Sudan is 2400 kcal



### 2.2.3 Food Price Volatility

The period from 1999 to 2006, which was one of historically low food prices witnessing more focus



on lower incomes of producers, was followed by an extended period of high and volatile prices from 2007 to 2013 (Figure 2.4) as a result of the concentration of production of the main traded cereals in a few geographic areas, coupled with growing environmental and climatic challenges, thin international markets, and high transaction costs. These spikes in food prices negatively

impacted food and nutrition security with food riots erupting in many developing countries. Global hunger is estimated to be up by 2-3 %, following these food price increases. Sudan's limited foreign exchange for imports further aggravated the impact of high prices, noted by a surge in wheat and wheat flour prices. Meanwhile, the supply response of the agricultural sector to increased prices for sorghum remained low partly due to climatic factors and to unconducive macroeconomic and sectorial policies.

Price volatility also poses social and political challenges to national authorities. Responses to such challenges often involve ad hoc and uncoordinated interventions in food and agriculture markets coming at high costs and often exacerbating price volatility and food insecurity. The various international and regional forums that have deliberated on these issues reflected on the pressing need for a coordinated policy response by countries to price volatility, including transparency in transactions in all markets and provision of better information and actions to address the underlying structural causes of food price volatility.

In Sudan, the nominal prices of all food commodities are on the increase due to changes in demand mainly as a result of population growth and to fluctuations in domestic production due to erratic weather, and changes in domestic policies resulting in increased production and import taxes and foreign exchange limitations. The increasing cost of production, partly due to elimination of fuel subsidies, has also been responsible for price rises in food commodities. In addition, domestic prices of cereals (sorghum, millet and wheat) have shown considerable variation within and between years. During the year, cereal prices generally drop in October/November following the start of the

main harvest (normally completed in February), and remain more or less stable through to March, before rising and peaking in August/ September. This picture can be traced all over the country and is indicative of high seasonality as well as close market integration, nationwide. Domestic prices for livestock products and fish have also increased, though their export price remained almost unchanged. High food prices have left about three-quarters of the resource-limited rural population facing serious food insecurity and consuming food of lower nutritional value, entrenching them in a cycle of poor nutrition. At the national level, investing in the rural sector, improving rural/urban linkages, and promoting market development can mitigate food price shocks and their impact on food security.

#### **2.2.4 Conflict and Insecurity**

Globally conflict is a major cause of poverty and has disastrous impacts on food and nutrition security, particularly of the rural population. In the Sudan, tension and conflict is often resource-based, triggered by competition on the continually degrading land resources as a result of climate change, growing population and increased number of livestock, and associated with weak governance of land and natural resources in terms of legal frameworks, policies and institutional structures. Discord over large-scale investments in land, water, and natural resources - especially involving dam construction, mechanized agriculture, oil exploration and drilling - have fuelled a wide range of conflicts in the country. These conflicts can range in intensity from ad hoc, occasional skirmishes to large-scale violent clashes between entire population sub-groups.

Although quantifiable statistical data is not available, there is wide recognition that the social, economic and political costs of conflicts in the country have been notably high.<sup>6</sup> These involve loss of human lives, enormous human insecurities and displacement, erosion of governance and massive loss and misdirection of economic resources, derailing of development interventions and wide sense of social despair and political instability. This is in addition to widespread violence, especially against women and children. The link between conflict and food and nutrition insecurity, and more so in the rural areas, is evident. Evidence from Darfur suggests that the conflict has resulted in an unprecedented destruction of environmental resources.<sup>7</sup>

#### **2.2.5 Internally Displaced Persons (IDPs) and Refugees**

One of the most significant effects of conflict is displacement, whether it be internal displacement due to civil conflict or displacement of people across international borders. The current crisis evolving in South Sudan has forced at least 1.4 million South Sudanese to flee their homes into neighbouring Ethiopia, Kenya, Sudan and Uganda. As of April 2017, Sudan is hosting 1.5 million refugees from South Sudan, Ethiopia, Chad and Central Africa. The government has estimated 352,740 South Sudanese seeking safety and protection in Sudan since 2013. About 84 per cent of

<sup>6</sup> Peace Research Institute, U.K., Study proposal on the “developmental burden of violent conflicts in Sudan 1956-2015”

<sup>7</sup> UNEP (2007), Sudan Post Conflict Environmental Assessment

the new arrivals are women and children. Until a political solution in South Sudan is reached, the number of refugees is likely to continue to grow. In eastern Sudan, the humanitarian response for 93,965 refugees and asylum-seekers has stretched resources, increasing pressure on the government and humanitarian partners.

However, displacement can also be caused by other factors, such as natural hazards, climate change, and lack of economic opportunity. Sudan's current economic structure has exacerbated on-going threats to livelihoods in rural areas, low agriculture and labour productivity, limited employment opportunities and inadequacy of basic services. This has forced many to migrate to urban centres and to gold mining localities, leaving behind rural households headed by women lacking productive resources, and worsening the shortage of labour during agricultural peak periods.

### 2.2.6 Emergency and Food Assistance

The large humanitarian aid flows provided by UN and donor support, mainly coordinated through the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) have been instrumental in reaching vulnerable populations. The provision of basic services to an estimated 2.5 million IDPs supports the key interventions under humanitarian assistance. In addition, there are about 70 international NGOs (INGOs) operating in Sudan, in part as implementing partners of the activities coordinated by OCHA, and several others such as Qatar Fund and the Islamic Development Bank are operating on their own.

Sudan has for a long time been a recipient of food assistance largely in response to internal conflicts among its people. Gradually increasing from 182,000 metric tons (MT) in 2000, food assistance deliveries by the World Food Programme (WFP) peaked at 931,000 MT in 2005 and has gradually tapered off to 133,800 MT in 2016 (Table 2.2). Those predominantly targeted are displaced persons in conflict-affected areas bordering South Sudan (South Kordofan, Blue Nile and Abyei) and Darfur; in 2016, food assistance reached almost 5-6 million IDPs and refugees

**Table 2.2: Food Assistance in USD and in metric tons, 2012-2016**

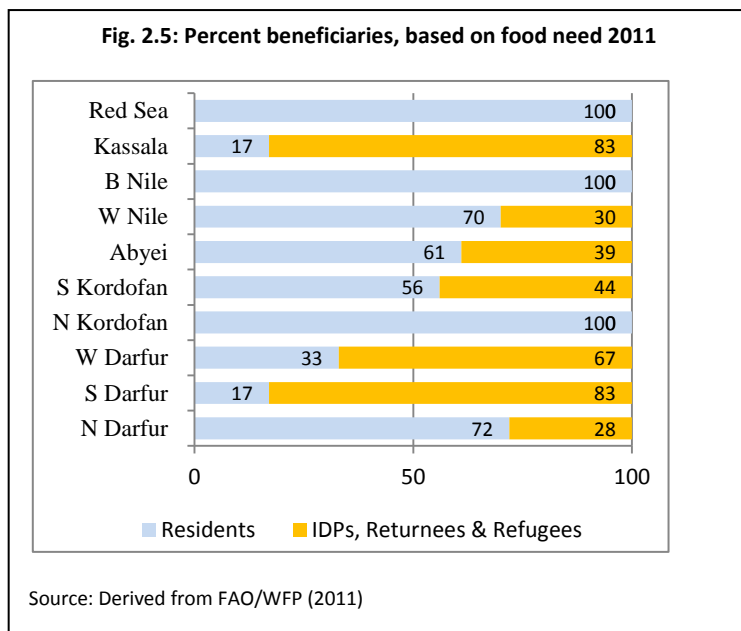
State	U.S. Dollars (million)	Metric Tons (000)
Fiscal Year 2012	175.4	150.07
Fiscal Year 2013	186.6	162.54
Fiscal Year 2014	195.8	181.99
Fiscal Year 2015	164.2	137.07
Fiscal Year 2016	164.3	133.87
TOTAL	886.3	765.54
AVERAGE	177.27	153.11
Standard Deviation	13.9	19.75
Coefficient of Variation	8%	13%

Source: OCHA, Sudan 2016

across Sudan. However, food insecure resident populations in many states also receive food assistance, sometimes more so than displaced persons (see Fig. 2.5 on following page).

The Office of Food for Peace (FFP) partners with WFP and the United Nations Children's Fund (UNICEF) provide emergency assistance to the most vulnerable people in Sudan. Each year FFP

targets over 2.5 million food-insecure Sudanese in Darfur, Blue Nile, South Kordofan, and Central and Eastern Sudan as well as South Sudanese refugees who have fled to Sudan. FFP partners provide assistance to internally displaced persons, refugees, host communities, and conflict-affected populations.



A key challenge is ensuring humanitarian access to reach affected populations in some conflict-affected areas due to insecurity and other factors. Limited access, and the expected tightening of donors' pledges to finance humanitarian and food assistance due the drop in the priority ranking of Sudan, may further jeopardize access to food for the most vulnerable.

### 2.2.7 Recovery and Reintegration of IDPs

The government and the international community are both striving to transition gradually from focusing on humanitarian assistance towards recovery and development. Recovery signifies affected people are able to rebuild their own livelihood systems and institutions to cope with adverse surroundings and conditions. This transition is an important component of resilience and a priority for Sudan.

The country has undertaken several attempts to move from the humanitarian into the recovery stage. The East Sudan Recovery and Development Fund (ESRDF) development programme (2006-2011) in Red Sea, Kassala, and Gedaref states aims at rehabilitating areas affected by armed conflict, providing services in education, health, and water, building human and institutional capacity, combating poverty, and developing infrastructure, agriculture, industry, fisheries, and tourism. The European Union contributed €140 million in 2016 and 2017 to help Sudanese returnees to reintegrate into their society, and the Ethiopian and Eritrean refugees to improve their livelihoods. The financial support would cover improving rural development, food security, health and education in the three states.

The Doha Document for Peace in Darfur (DDPD) recovery programme (2012-2015) lays the groundwork for recovery and reconstruction of IDPs in Darfur states and has received pledges of

financial support exceeding USD100 million. As a result of this initiative, the Darfur Development Strategy (DDS) was developed and the United Nations Fund for Recovery and Reconstruction and Development in Darfur (UNDF) was established. These are managed and coordinated by the Darfur Regional Authority (DRA), the government and the United Nations Country Team<sup>8</sup>, and other partners from the international community. The DDS, also supported by the Qatar Development Fund through the UNDF, has three main objectives:

Pillar 1: Governance, Justice and Reconciliation: pledging USD 23.423 million aims to:

- Reduce conflicts on land, natural resources, arms proliferation and governance.
- Build confidence and social cohesion amongst returnees and host communities, both nomadic and sedentary communities.

Pillar 2: Reconstruction: pledging USD 57.646 million aims to:

- Support the recovery and stabilization of the economic and social structures of the affected population.
- Construct and restore physical infrastructure and delivery of basic services and facilities in form of shelter, education, and health, and water, community policing, linking communities to markets, and restoring productive systems.

Pillar 3: Economic Recovery: pledging USD 7.43 million aims to:

- Achieve food security and poverty alleviation through directly supporting agriculture and livestock based value chains and improving access to financial services for young entrepreneurs and small-scale producers to diversify their livelihoods and establish small-scale businesses.

The Plan adopts an area-based approach, focusing on certain geographical locations in each state to ensure complementarities among themselves and with ongoing government and partners' interventions. The Plan also cares for building the technical and administrative skills of government and community institutions to sustain long-term recovery and development progress. Although implementation has begun, there has been limited outcome, as it has been reported that some IDPs were unwilling to return voluntarily to resettle in rehabilitated sites in their homesteads and farms unless the security situation is guaranteed.

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<sup>8</sup>UNDP, FAO, UNFPA, UNHABITAT, UNHCR, ILO, WHO, UNICEF, UNWOMEN, UNIDO, UNOPS, UNEP, IOM

## 2.2.8 Social Protection and Safety Nets

Various social protection<sup>9</sup> programmes, social safety nets<sup>10</sup>, and a variety of social transactions such as remittances, social networks and family support are functional all over the Sudan as core instruments for reducing poverty, addressing inequality, and helping the poor and vulnerable households improve food security and enhance their capacities to manage economic and social risks<sup>11</sup>. These programmes are managed by the Government, Non-Government Organizations (NGOs) and social protection partners, including social networks and individual initiatives. The beneficiaries from these programmes include IDPs, refugees, and millions of recipients of humanitarian aid.

**Table 2.3: Sudan's Existing Social Safety Net Interventions, 2012  
(by Cost and Beneficiaries)**

	Financial Allocation: 2012 (SDG)
GDP	190.4 billion
Subsidies	10.0 billion (5.2 % of GDP)
Main Government funded SSNs	927.8 million (0.5% of GDP)
Main Non-government funded SSNs	2.6 billion
TOTAL excl. Subsidies	3.5 billion (1.8% of GDP)
% of Gov. Total (excl. Subsidy)	26.5%
13.5 TOTAL incl. Subsidy	billion (5.5% of GDP)

The total cost of the social safety nets interventions in 2012 reached SDG 13.5 billion (5.5% of Sudan GDP). More than a quarter (26 percent) of these interventions is funded by the Government (excluding universal subsidies) as seen in Table 2.3.

The Government's primary poverty targeted social safety net intervention is *Zakat*, one of the five pillars of Islam. Its objective is to ensure that the needy, especially the poorest of the poor, do not fall into destitution, and to increase equity by redistributing income from the better-off to the worse-off. In addition to the Federal and each State's Zakat Chamber, there are currently nearly 20,000 Zakat grass root committees in Sudan, which help Zakat Chamber to identify the most-needy deserving Zakat support. In 2012, the fund supported 4.5 million poor families and individuals. A major challenge of the system is the inability to identify the poorest and most-needy and to reach them immediately or through long term productive schemes.

Social Support Projects are the major channel for managing and delivering the largest cash transfers to pre-identified beneficiary households from a common list in all states at rate of SDG150 per month per family, in addition to automatic eligibility to the National Health Insurance Fund. Over 350,000 poor families are being targeted (89% were reached) since 2011 and the project's overall objective was to serve 500,000 households by 2014.

<sup>9</sup>Social protection consists of (i) social insurance programs covering pensions, health insurance; (ii) social assistance consisting of provision of targeted programs to increase access of vulnerable groups to basic services; and (iii) labor market programs to promote employment, productivity, and micro-finance.

<sup>10</sup>Safety nets are non-contributory (the receiver does not pay) transfer programs targeted to increase consumption of basic commodities and essential services by the poor and vulnerable, and include such programs as cash transfers, public works, and in-kind support including fee waivers for basic services and school feeding and nutrition programs.

<sup>11</sup>World Bank Discussion paper # 1415 May 2014; by Annika Kjellgren, Christina Jones-Pauly, Hadyiat El-TayebAlyn, EndashawTadesse and Andrea Vermehren



The Community Development Fund (CDF) started in 2006 and has a resource portfolio of \$75 million (43% contributed by Government and 57% from Multi Donor Trust Funds). Its main objective is to meet urgent community-driven recovery and development needs in the war-affected and underdeveloped areas of Sudan, and to empower communities and local government entities to initiate and lead local level community driven development activities. Since its start, the CDF has supported over 1,100 community initiatives and used the productive safety net “Cash-for-Work” methods in the implementation of interventions.

Support of the extended family in Sudan constitutes the main defence against hunger and extreme destitution, and is considered an obligation for the financially capable members. Such support takes innumerable forms and could extend beyond remittances and cash donations to include hosting and feeding students, the sick and travellers and embrace various social transaction processes such as food, crop and animal giving. Free communal work (*Nafeer*) for the benefit of the needy is wide spread especially in rural areas of the Sudan. No data could be obtained on the volume of this support, which is often concealed for many reasons, the least is preserving pride and dignity of receivers, but it is safe to say this remains a common and crucial form of social protection.

## 2.3 Nutrition and Health (SDG 2.2)

Lack of access to food directly results in malnutrition, which can have a severe and often lasting impact on affected populations. The alarming malnutrition rates, especially in the rural areas and among conflict affected and displaced populations of the Sudan, is not only caused by persistent inadequacy of food access, as seen earlier, but is also aggravated by inadequate nutrient-rich food intake, poor access to health, safe water, sanitation and hygiene, and poor home and community care. The scale of these issues and their implications for food and nutrition security are discussed below to characterize and explore effective options/actions to address emerging gaps.

The World Health Organization (WHO) defines malnutrition as deficiencies, excesses or imbalances in a person’s intake of energy and/or nutrients. The term malnutrition covers two broad groups of conditions: 1) under-nutrition, which includes *stunting* (low height for age), *wasting* (low weight for height), *underweight* (low weight for age), and *micronutrient deficiencies* (a lack of important vitamins and minerals); and 2) overweight, obesity and diet-related non-communicable diseases. This section focuses primarily on the first group: under-nutrition, which refers to food intake that is considered insufficient to meet dietary energy requirements (for carbohydrates, fats, proteins, vitamins, minerals and water) in order to lead a productive and healthy life.

### 2.3.1 Acute Malnutrition

Moderate and severe acute malnutrition, measured as wasting (low weight for height) is highly prevalent in the Sudan, especially among children under five years of age and women of child bearing age. As per WHO classification of severity of wasting, Global Acute Malnutrition (GAM) is above the critical level, increasing from 15% (threshold) in 2006 to 16.3% in 2014 (Figure 2.6).

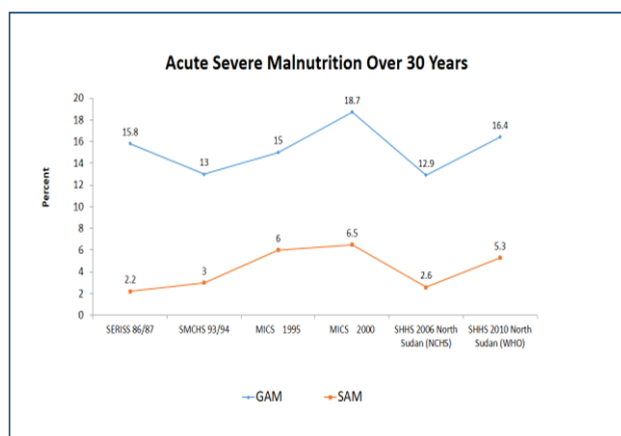


FIG 2.6 Acute Severe Malnutrition over 30 Years

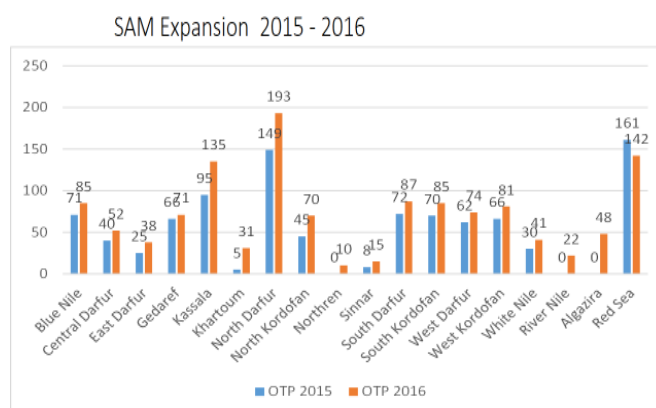


Fig 2.7 SAM Expansion 2015 - 2016

Severe Acute Malnutrition threatens the lives of over half a million children each year, and has expanded in every affected state between 2015 and 2016 (Fig. 2.7). Geographically, about 29 % of the localities in Sudan are classified as ‘very critical’ with regards to severe wasting. Overall, six states: North Darfur (ND), South Darfur (SD), Gezira, Kassala, Khartoum and Red Sea (RS) states carry half of the total SAM burden in Sudan<sup>12</sup>.

### 2.3.2 Chronic Malnutrition

In the Sudan, more than two million children under five years are stunted (low height for age) and are unlikely to ever reach their full growth and development potential. Based on the WHO classification, about 70% of the 184 localities in Sudan have a high stunting rate (above 30%) in children aged 6-59 months. Pockets of very high stunting rates (> 40% prevalence) are in the Eastern States, with a highest level (73%) in Gedaref (Fig. 2.8).

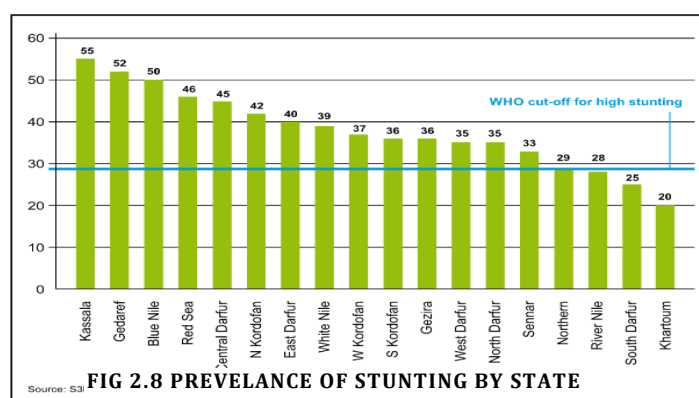


FIG 2.8 PREVELANCE OF STUNTING BY STATE

Even States in the middle zone of Sudan such as White Nile, Sinnar and Gezira states, famous for their agriculture production, suffer from stunting (around 50% of surveyed localities in Gezira have

<sup>12</sup> Simple Spatial Survey Method (S3M), Sudan 2013

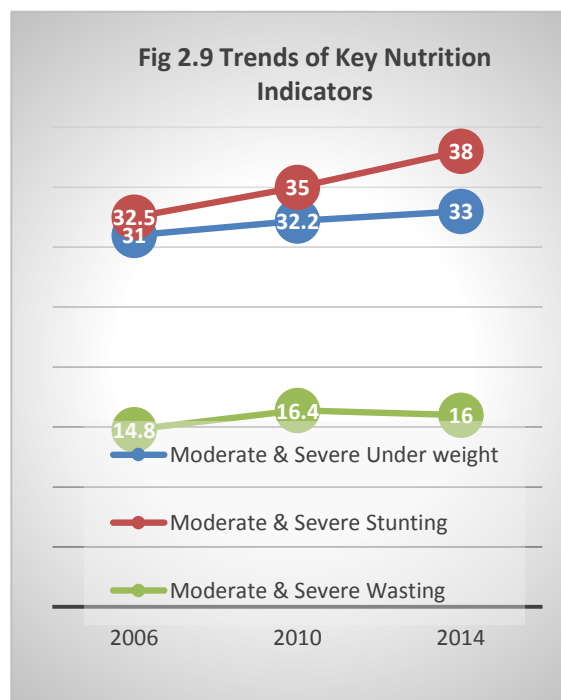


high prevalence rate of stunting with very high levels in three localities) (S3M 2013). This finding supports the evidence that nutrition cannot be read without health, life style associated behaviours and other factors such as purchasing power or the quality of agricultural production. High rates of stunting are noted in seven conflict affected areas (five states of Greater Darfur, Blue Nile, and South Kordofan), ranging from 34% in South Darfur to 47% in Central Darfur.

Underweight (low weight for age) is a measure of both acute and chronic malnutrition. Severe underweight is high across Sudan with highest rates in the Eastern Region, Sinnar and North Darfur. WHO classifies a global underweight  $\geq 30\%$  as 'very high'. Currently 33% of children are under weight. Very high prevalence of child underweight, quite above 40%, is noted in Darfur, Kassala and West Kordofan (WK) compared to a relatively lower prevalence in Northern (21.9), Khartoum (23.2%) and RN (29.8%). Recognizing the likely irreversible consequences of stunting and importance of nutrition during the critical 1000 days (during pregnancy and the first 24 months of the child's life), a global shift has taken place from investment on reducing underweight to preventing stunting<sup>13</sup>.

Overall, stunting, wasting and underweight are significantly higher in rural areas than in urban areas and among the poorest quintiles than the richest. Regarding gender variation in under-nutrition, boys were reported to be slightly more underweight, stunted, and wasted than girls. Under nutrition is also higher among children of mothers with no education compared to children of mothers with only eight years of basic education (MICS 2014).

While nutrition partners have made commendable efforts during the last two decades, progress made in reducing malnutrition is remarkably sluggish. The rate of wasting, while decreasing 0.4% between 2010 and 2014, was still higher than rates in 2006 (Fig. 2.9). At the same time, rates of underweight continued a slow but steady increase from 31% to 33%, while most concerning of all is the stunting rate which has increased from around 33% in 2006 to 38% in 2014.



<sup>13</sup>UNICEF Improving Child Nutrition: The Achievable Imperative for Global Progress, 2013

### 2.3.3 Micronutrient Deficiencies

Micronutrient deficiencies occur when the quality or variety of food is inadequate even when there is plenty in terms of quantity. Consuming food that lacks important nutrients such as iron, iodine, zinc or vitamins will lead to preventable disease and even death. In Sudan 28% of children receive minimum dietary diversity and 40.7% of children age 6-23 months receive solid, semi-solid and soft foods at the minimum frequency (MICS, 2014). Rates above 40% were only seen in Northern (65%), River Nile (45%), Khartoum (44%) and Blue Nile (41%) states. Only 15% receive a diet that's sufficient in both diversity and frequency.

On average, the diet in Sudan is comprised mainly of cereals (71%), followed by oil crops and milled oil, while vegetables, fruits and legumes/pulses each provide around 6% of energy intake. Energy from livestock is attributed mostly to milk (65%) and far less to meats (25%), indicating relatively limited animal protein intake. This may account for the high rates of anaemia in Sudan, as iron deficiency is considered to be the most common cause of anaemia globally.

Approximately 76% of Sudanese women aged 15-49 years are moderately anaemic while about a quarter of them (23%) are severely anaemic (S3M 2013). The proportion of women who are severely anaemic ranges from 38% in Gedaref to 13% in West Darfur (SHHS 2010). The percentage of severely anaemic women is lower among pregnant women (14%) than among those who are not pregnant (24%), due to the distribution of iron and folic acid supplements. However, use of prenatal supplementation ranges widely, from as low as 2% in West Kordofan, South Kordofan and Blue Nile, to 61.6% in Central Darfur, 42% in Northern and 41% in Khartoum states.

Sixty percent (60%) of children under age five are moderately anaemic while one-third are severely anaemic. The severity of anaemia ranges from 19.2% in North Darfur to 87.4% in the Red Sea State (SHHS 2010). Anaemia was one of the top five leading causes of disability among the Sudanese population, as measured by Disability Adjusted Life Years (DALY) in 2010<sup>14</sup>. More than 50% of households in 42 localities use iodized salt. However, the inadequate consumption of iodized salt is still widespread due to the absence of national legislation banning the use of non-iodized salt. Lowest usage rates are seen in South Kordofan (SK), West Kordofan, and West Darfur (WD) and surprisingly, in some pockets in Khartoum, Gezira and Northern states (S3M 2013).

Maternal under nutrition is very high, where up to 62% of the under nourished mothers in some locations are classified as 'extremely' undernourished. Mothers' under-nutrition leads to the inter-generational cycle of malnutrition as low birth weight (LBW) is directly affected by the nutrition and health of the mother. Consequences of low birth weight can impede child survival, growth and cognitive development in later life. Scarce information is available about LBW, where only 16% of children born in Sudan in the last two years were weighed at birth. Of those measured, 32.3% were considered LBW - quite above global levels of 15-20% (MICS 2014). Prevalence is greater in states of North Darfur (47.5%), East Darfur (47%), North Kordofan (41%) and West Kordofan (36%).

<sup>14</sup> Global Burden of Disease, Sudan's Profile 2010

This compares to lowest rates of 17% in Red Nile and 22% in Khartoum. The prevalence of LBW is most prevalent in rural and conflict-affected areas and to mothers with lower education and poor household wealth.

Adolescent nutrition especially for girls is a critical factor, where consequences of under nutrition do not only undermine the health of this group but also affects their offspring. About 22% of women aged 20-24 years had at least one live birth before age 18 years (MICS 2014). Limited information is available about adolescent's health and nutrition status in Sudan. As per the global school-based student health survey for Sudan 2012, around 14% of girls aged 13-15 years are underweight.

Consumption of plant sources of Vitamin A-rich foods was low across the country, while consumption of animal sources of Vitamin A was generally higher. In general, rural people usually confine themselves to a diet consisting in the main of calorie dense staple products (sorghum and millet) probably due to their low purchasing power. On the other hand, the rural poor in some localities have managed to diversify their diet through the consumption of available and nutritious wild foods. Vitamin A supplementation (VAS) to children 6-59 months and to lactating mothers during six weeks after delivery (post-partum) is used as a proxy indicator for Vitamin A Deficiency. Twenty-eight (28%) percent of states reached a coverage < 75% of VAS; however, there are large areas of the country where coverage of VAS is very low. States with the highest pockets are almost consistent with those of macronutrient deficiencies.

### 2.3.4 Socio-Cultural Determinants of Nutrition

Cultural factors and food taboos have a role in influencing nutrition status. Given the complex social dynamics, as well as diverse geographical, education and socioeconomic variations in Sudan, socio-cultural determinants have an effect on nutrition, particularly of pregnant and lactating women and children under five years of age. The less diversified diet noted in parts of Sudan could be associated with food habits, customs and traditions that create food taboos in some localities and deprive children and women from nutritious available food supplies (such as fish and poultry products). Other practices, such as inequitable intra-family distribution of food, have an impact on nutrition<sup>15</sup>.

Mothers themselves tend to withhold breast feeding during illness, as well as avoiding some foods during pregnancy out of fear of fattening the foetus and suffering from obstructed delivery due to a sizable baby.<sup>16</sup> Exclusive breastfeeding for six months has improved from 33.7% in 2006 to 55.4% in 2014, but these gains might be hampered by the low rate of continued breastfeeding up to 24 months at 48.8% (MICS 2014).

Much of the literature on nutrition suggests that determinants vary depending on context and population group. One very common finding across contexts is that progress in women's

<sup>15</sup>S.A Taha: Ecological factors underlying protein-calorie malnutrition in an irrigated area of Sudan; Ecology of food and nutrition; volume 7; 1979; published online 2010

<sup>16</sup>Harrison GG.; Nutrition and child feeding in the Sudan; Ahfad J 1992 Dec;9(2); PubMed accessed on 13<sup>th</sup> April 2017 at <http://www.cnbi.nlm.nih.gov>

empowerment is strongly correlated with improved nutrition. There are multiple facets and causal linkages related to income generation (food production, processing, and preparation); and to childbearing, caretaking and rearing roles. Investment in women's education – particularly beyond the primary level – and in women's health (including reproductive health), as well as the removal of discriminatory barriers to ensure women's fair access and rights to resources, services and social protection, are all important factors for improved nutrition. A cross-country study of developing countries covering the period 1970–1995 also found that 43% of the reduction of hunger that occurred was attributable to progress in women's education. This was almost as much as the combined effect on hunger reduction of increased food availability (26%) and improvements to the health environment (19%) during that period. Various studies have also confirmed the positive association between the education of women and children's health outcomes such as height, weight, or immunization. Stunting in Sudan is higher among children of mothers with no education (46.8%) compared to children of mothers with only eight years of basic education (37.8%) and (27.6%) with secondary education (MICS 2014). Underweight also worsen with mother's lowest education (41% for children of none educated mothers to 24% of those with secondary education) as well as prevalence of Low Birth Weight (LBW). Investment in health and nutrition education programmes in schools and in non-formal settings has also shown positive impact in reducing food insecurity and malnutrition.

### **2.3.5 Water and Sanitation**

Availability of water, sanitation and health (WASH) implies provision of enough quantities of safe water for drinking, good hygiene and household cooking; as well for access to health care facilities. The lack of access to WASH, especially in rural areas, leads to high prevalence of infectious diseases such as diarrhoea which can lead to or aggravate malnutrition.

In Sudan, access to improved sources of water and sanitation is generally low, with 68% of the urban and 32.9% of the rural population having access. Only 4% of household members using unimproved drinking water use an appropriate treatment method for water. Half of the states (9) including Darfurs, Kordofans, Sinnar and Gadarif reach a coverage of 30% or less of sanitation. Across Sudan, 28% of households have a specific place for hand washing and only 55% use soap or other cleansing agents in that place.

Diarrhoea, soil born parasitic infections, malaria, respiratory infections and vaccine preventable diseases, namely measles, are contributing to malnutrition among children and among the general population. Diarrhoea and acute respiratory tract infections are common among children, with a prevalence of 29% and 17% respectively. Diarrhoea among children varies widely between states, ranging from the lowest in West Kordofan (7.6 %) to the highest in Khartoum (42.7 %). This is explained by the fact that the use of improved sanitation facilities in 4 out of 7 localities in Khartoum state is less than 50%. Care seeking for diarrhoea is poor with lowest rates in Darfur states. Only 53% of households safely dispose of their child's faeces.

### 2.3.6 Health Services

Universal access to health care with focus on primary health care (PHC) is one of the three core strategic objectives for the National Health Strategic Plan -NHSSP 2012-2016 and beyond. Around 71% of the population in the Sudan (88% in urban to 61% in rural areas) live within 5 km. from the nearest health facility. Service availability and utilization by urban residents is 25% higher than for those in rural settings, and is a cause of people's movement from peripheries to urban centres in search for good health services. The public health sector runs close to 4,237 units, raising the coverage with the essential health package including nutrition from 25% in 2011 to 60% in 2015. It also runs 380 rural and 55 general hospitals; however, the distribution of these facilities is uneven<sup>17</sup> and most are not well equipped to provide the support required for outbreak control (surveillance, case management, health education, vector control, vaccination and inter-cluster coordination). The continued massive brain drain is affecting the availability of workforce compared to population size, posing another major challenge to overall health services and is far below the WHO standards<sup>18</sup>. There is only one specialized center in the country for nutrition training and research at Ahfad University for Women. Other short trainings are conducted by MOH.

Community based Management of Acute Malnutrition (CMAM) is a global intervention adopted by the FMOH to scale up treatment of larger numbers of children affected with severe acute malnutrition. It is characterized by prevention, early identification of malnourished children and community based management of none complicated acute malnutrition. Government endeavours to scale up CMAM coverage is translated in annual allocation of USD 10,000,000, for the period 2015-2020 in a collaboration between the Ministry of Social Protection and Welfare under poverty eradication programme, the FMOH and the Ministry of Finance. This commendable support has resulted in remarkable increased number of children admitted to the CMAM programme from 166,000 in 2015 to 224,614 by 2016 child (83% of the target) and with a cure rate of 78%, the gap results from those who exit the programme (defaulters). Within this programme, the government in partnership with the private sector has initiated local production of therapeutic and supplementary food that used to be imported.

## 2.4 Agricultural Productivity and Food Supply (SDG 2.3)

### 2.4.1 Domestic Food Production

In the Sudan, domestic food production is dominated by cereal grains; crop diversification beyond cereals is quite narrow and is limited to sesame and groundnuts in the rain-fed sector, and legumes and pulses in irrigated areas. Cereal production is highly variable due to erratic intensity and distribution of rainfall<sup>19</sup> in the semi-mechanized and traditional sub-sectors and to frequent water shortages in irrigated farming. Per capita cereal grains production over the last fifteen years depicted

<sup>17</sup>FMOH, strengthening PHC through family health approach: policy options 2016

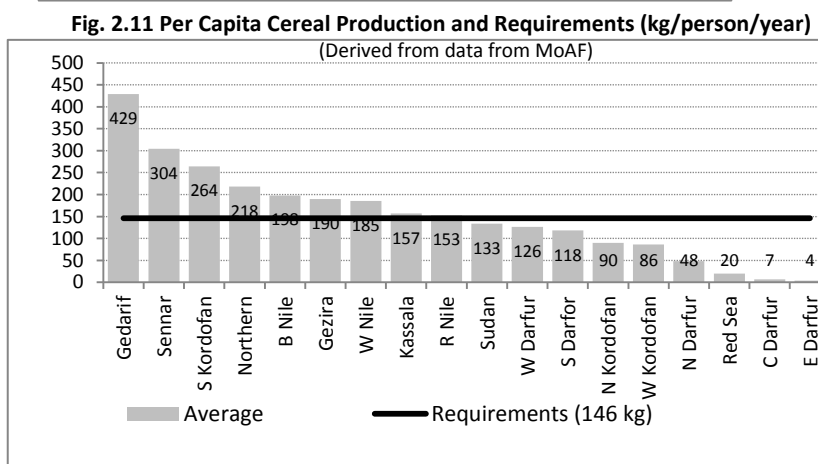
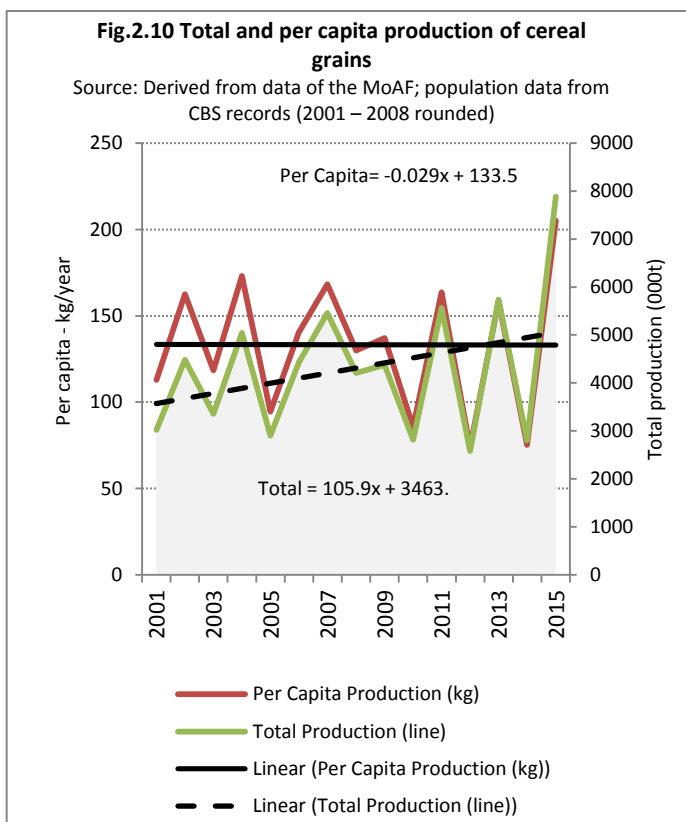
<sup>18</sup>National Human Resource Strategy/FMOH 2011-2016

<sup>19</sup> Coefficient of variation CV of 34% in cereal production

a slow but steady declining trend of minus 0.03 kg per person per year (Fig. 2.10), due to slow growing and instable production, coupled with a rising population.

The growth in total production depicted by the dotted line in the adjacent figure is more a function of horizontal expansion largely based on natural resource exploitation.

Low and variable grain production is even more pronounced at the state level (Fig. 2.11). Low rates of cereal production are especially alarming in the Darfur states, Red Sea, and West and North Kordofan states. Highly producing states are mainly those accommodating semi-mechanized farming (Gedaref, Sinnar, Blue Nile, White Nile and South Kordofan). Production variability, primarily due to rainfall fluctuations, causes random deficits and surpluses and allows for intermittent exports. The overall average per capita production of 133 kg hides marked state-specific fluctuations and nevertheless runs short of meeting the average annual per capita requirement of 146 kg in eight states.



While the total balance of grains other than wheat is often in surplus (Table 2.4), this is heavily skewed to sorghum, representing over three quarters of production; shortages frequently exist in millet, rice and maize production. Regardless, the commodities shown in Table 2.4 are not sufficient substitutes due to the growing shift of consumption

	2010	2011	2012	2013	2015
Wheat	(1,951)	(1,502)	(1,676)	(1,794)	(1,724)
All other Grains	(1,408)	1,760	(1,187)	1,549	3,718

Source: Food Security Guide 2014, Technical Secretariat for Food Security, MoAF



preferences favouring wheat, millet consumption localized to West Sudan, and the rather limited maize consumption.

The most important factor affecting the production of cereals is the poor productivity in the irrigated and semi-mechanized and traditional rain-fed sectors; this represents the most important problem facing agriculture in Sudan, and actually it's the mother of the problems. In spite the long history of agriculture in Sudan, the poor productivity of the whole sector continued as a result of traditional and primitive systems of production, the use of low-efficiency agricultural practices, the lack of the required agricultural inputs and the low level of adoption of modern technologies. This is also due to the absence or fluctuation of the right policies required to protect producers and guaranty their stability in the production cycle to achieve the sustainable development of the agricultural process. However, in recent years there have been indications of the development of productivity of different crops as shown in (Figure 2.12).

Crop	Production in thousand tons			% Change in the 15/2014 season		Productivity kg / acre			% Change in the 15/2014 season	
	Average five seasons	13/2014	14/2015	Average five seasons	Previous season	Average five seasons	13/2014	14/2015	Average five seasons	13/2014
Maize	3281	2249	6169	88	174	230	217	295	28	36
millet	570	359	1245	118	247	128	100	158	23	58
Wheat	388	194	473	22	144	707	697	884	25	27
Peanuts	1366	963	1871	37	94	208	323	360	73	11
Sunflower	117	56	51	-56	9	271	371	336	24	9
Sesame	343	205	721	110	252	72	107	114	58	7
Cotton	141	162	176	25	9	486	947	1072	121	13

**Fig 2.12- Comparison of the production and productivity of the most important agricultural crops for the period 2008 - 2015**

Source: Dawelbeit, Mamoun (2015). Current Situation of Agriculture and Reform Challenges. A paper presented to Workshop 2 of a Series of Workshops on: Towards a Shared Vision on Economic Reform in Sudan. UNICONS Consultants, Ltd.

This indicates the potential for crops productivity to evolve if the above factors are available. It is important to mention here that there are promising and encouraging opportunities now to raise productivity remarkably through the modern technologies that have been implemented in Sudan in recent years. The most important of this is the implementation of the Zero-tillage technology (conservation agriculture) applied in the rain-fed sector and resulted in achieving high and unprecedented increase in productivity in all crops grown reaching three to five times higher than the productivity achieved in conventional systems<sup>20</sup>. This is a break through and gives an opportunity for launching a program to increase productivity in the rain-fed sector in a remarkably and in a fast way if the government provided the necessary support to the producers in this sector to enable them to apply this technology. One of the positive developments in the irrigated sector is the improvement in the productivity of different crops, especially wheat, which showed a clear

<sup>20</sup> Rasheed and Burhan 2002 - 2003 Agricultural Investment Journal Issue

improved productivity, indicating improved adaptation of wheat to the Sudan climatic conditions (resilience) thanks to the production and adoption of local heat tolerant varieties and associated agricultural practices. Also the adoption of modern irrigation systems in the irrigated sector has led to a marked improvement in the productivity of different crops.

### 2.4.2 Agricultural Research and Technology Transfer

Despite a long history of agricultural research and education in the Sudan, a sound system of technology generation and transfer is not yet in place. Numerous factors contributed to this situation including inadequacies in research methods, underfunding, insufficient trained staff and weak agricultural extension and transfer technology structures. The single-topic research approach dominates, despite wide acknowledgement of the system perspective and its holistic interdisciplinary approach to the analysis of problems and recommendations of realistic productivity enhancing solutions. The negative impacts of the weak linkages between research, technology transfer and extension are amply demonstrated by the wide gaps that exist between verified research yields and yields obtained by producers: gaps between on-farm trials and various crops in the rain-fed sector varied from 102 to as high as 354 kg/fed, representing potential yield gaps of between 117-327%. Underfunding agricultural research has continued for decades (World Bank Group, 2015) with an annual budget of only about 0.3 percent of GDP. Agricultural research spending per unit value of agricultural output is extremely low, with Sudan ranking the lowest in Africa<sup>21</sup>. Agricultural research and technology generation also faces severe staff shortages, brain drain and inadequate capacities; the workforce measured by the full-time equivalent (FTE) per a million of the population accounts for only 29 FTE in 2000, compared to 708 for China, 1013 for Tunisia, 299 for Malaysia, and 307 for South Africa, as examples<sup>22</sup>.

Non-conducive policy changes have also severely influenced supply and availability of improved seeds. Currently, certified seed production covers only 20% to 30% of the total demand in the Sudan. Small farmers cannot access quality seeds due to remoteness from sources of supply, lack of finance, high prices and lack of information about improved seeds. The vast expanses of crop production in the country are dependent on seeds kept by farmers, which are prone to hazards of mixing, weed and pest infestation. Provision and use of fertilizers is likewise largely inadequate for realising high productivity. Confirming fertilizer as one of the main crops production inhibiting factors, the World Bank Group (2015) reported fertilizer use in Sudan as averaging 7,3 kg per ha of crop land in 2009, which places the country at a 129 rank in fertilizer use among 155 countries. It is surprising that fertilizer use in the Sudan declined from high past levels of 80 kg/ha in the mid-1970s and 70 kg/ha in the 1980s.

<sup>21</sup>Stads, Gert-Jan and Kamal El Siddig (2010). Sudan Recent Developments in Agriculture Research. IFRI Country Note, October 2010.

<sup>22</sup>UNESCO 2006; Neinke and Faki 2003



### 2.4.3 Food Reserves and Food Losses

Inadequate harvest and post-harvest operations lead to significant food losses. On average about 96,000 tons (between 7-20%) of wheat are annually lost during the harvest in Gezira<sup>23</sup>, a quantity sufficient to feed over 2 million people for an entire year. Post-harvest losses may reach up to 50 percent in the case of highly perishable products such as fish, milk and vegetables. Cereal grain storage relies on a variety of traditional unimproved structures such as *Siwaibas* (mud rooms and cottages), *Shonas* (aligned on top of each other), and *Matmoora* (underground pits); all are prone to various forms of grain losses. The limited modern grain storage facilities are mainly available for wheat with a total capacity of 630,000 MT, and sufficient for 70 days of consumption.

### 2.4.4 Physical Infrastructure

Notwithstanding the importance of the agricultural sector in the Sudan, the supporting physical infrastructure that facilitates agricultural and rural development and enhances food production and value-addition is generally weak.

At the national level, modern grain storage facilities are limited in capacity. The most recent warehouse survey conducted by SIFSIA in 2011 showed an estimated storage capacity of 3.6 million MT excluding the traditional and conventional vessels of less than 500 MT. The largest warehouses were in the Red Sea state (30,000 MT) and in Khartoum (28,800 MT) and used mainly by the big milling companies, like Sayga, Wheata and Seen to store wheat and wheat flour imports. Infrastructure for value addition through adequate post-harvest handling, sorting, packing and transport, especially for perishable fruit, vegetable, fish and dairy products, is generally highly inadequate, and equally so for the food processing facilities.

Beside shortages in storage capacities, food distribution faces challenges of inadequate physical transport, limited market information, and discouraging policies of excessive taxation and cumbersome procedures leading to high transaction costs (Abdelrazig and Faki 2013). This situation impedes food transfer from surplus to deficit areas, especially during the rainy season. Despite continual efforts to build roads, national paved roads are still limited and not supported by proportionate feeders and rural road network. Sudan's spatial road density and population-related roads length compare unfavourably with other countries in Africa and the region impairing accessibility (World Bank 2008). The road system extends to only 11,900 km of which 4,320 km are paved including 3,500 km of asphalted all weather roads. Feeder roads, crucial in rural areas, form only 20-30% of the national roads network and are not sufficiently maintained, and many of them are not passable during the rainy season. In addition to high transaction costs, transport tariffs on feeder roads are 50% higher than on national roads, resulting in high transport costs per km. Sudan's single-track, narrow-gauge rail network of 4,578 km has gone off-course decades ago, except in few major lines and its contribution to transport is declining. River transport is very limited; and only two deep-water harbours are operational in Port Sudan and Sawakin in Red Sea

<sup>23</sup>Dawelbeit, Mamoun (2015). Current Situation of Agriculture and Reform Challenges. A paper presented to Workshop 2 of a Series of Workshops on: Towards a Shared Vision on Economic Reform in Sudan. UNICONS Consultants, Ltd.

state with an overall annual capacity of less than 5 million tons. People's mobility all over the country is continually hampered by these poor facilities especially in rural areas during the rainy season and by the limited and scattered markets which generally lack basic facilities needed for sieving, weighing, storage, grading and quality control.

Equally important is the need for expansion of water harvesting structures for supplementary irrigation and for the diversification and intensification of farming in rain-fed areas, with possible improvement of local diets and nutritional status of the rural population. Encouraging establishment of producers' marketing associations will also go a long way in their organization and increasing their negotiation skills and bargaining power in the market.

Sudan agriculture is also deficient in machinery use despite the huge expanse of the country. Though the number of tractors almost doubled between years 2000 and 2008, the served area per tractor remained high at 762 ha in 2008 (compared with only 34 ha for Egypt). Agricultural practices in the vast areas of traditional rain-fed agriculture are manually performed though machinery use has lately increased, and full mechanized agricultural production is now performed by some private companies in Gedaref State. In irrigated and semi-mechanized farming, various types of machinery are employed but they are inadequate and rather obsolete; in 2007, the number of available tractors covered only 37% of the total area under crops<sup>24</sup>. The established agricultural machinery assembly within GIAD Industrial Complex south of Khartoum in 2001 forms a step forward in domestic manufacturing, and almost all types of agricultural machinery and equipment are produced including those suitable for animal draught.

#### **2.4.5 Agricultural Finance**

The shortage of agricultural finance is an intrinsic constraint holding agriculture and food supply back for decades, despite continual policy assurances that agriculture would be the leading sector in the economy, especially following the oil loss with the secession of South Sudan. Sector-specific agricultural spending, as delineated in SDNAIB, averaged only 2.6% of total spending during 2012-2014 and only reached 8% when other related sectors were added. This constitutes no more than 1% of the GDP to a sector that provides around 30% of Sudan's GDP. In addition to the meagre budgetary resources allocated to agriculture, the distribution of these resources is biased towards the irrigated and semi-mechanized sub-sectors leaving an insignificant portion to the traditional rain-fed sub-sector. Lending from commercial banks that used to allocate a high share to agriculture, around 30% in 2000 dwindled to only 4% in 2006. Furthermore, no significant levels of assistance were given to agriculture over time, and long-time distortions to agricultural incentives were reported over the years since 1960. According to Sudan's World Trade Organization accession data, current total Aggregate Measurements of Support (AMS) to agriculture during 2013-2015 formed only 0.012% of the total value of agricultural production. The share of price distorting support in the form of minimum price setting for three crops (sorghum, wheat and cotton) is minimal (0.005%). Most of the support is within the green box (non-distortive) forming about 6% of the total

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<sup>24</sup> A study conducted by New Tech Engineering Company and Hunting Technical Services.

value of agricultural production. Compared to the AMS during 2003-2005 measuring close to 10% of agricultural GDP, there has been an enormous drop in support to agriculture.

#### **2.4.6 Food Imports**

Sudan imports many food products, the most important commodities being wheat and wheat flour which form 41% of the total value of food imports; the share increases to 67%<sup>25</sup> when sugar is added. Measured in terms of wheat equivalent, wheat and flour imports amounted to an annual average of over 2.2 million tons during 2013-2015. Lately, flour imports have been increasing relative to grain due to shift in exchange rate policy that reduced the incentive for grain imports for local milling. Varying quantities of meats, fish, vegetables, fruits are also imported, but there is no indication that Sudan faces acute production gaps of most of them and some seem to fall in the domain of luxurious consumption. Overall, formidable foreign exchange shortages challenge Sudan's ability to meet its import requirements. The rising prices and inflation have had direct results in limiting food accessibility in an economy where there were no corresponding increases in consumers' incomes.

Meanwhile, illegal border trade is considered to be common across Sudan. The difficulty of surveillance and control of Sudan's long borders and the high prices of food commodities in neighbouring countries boosted smuggling of food products across the borders especially from Kassala, Gedaref, White Nile, South Kordofan and Darfur states; this has affected food availability in these states. Quantities exchanged through these transactions are difficult to estimate but generally believed to be significant. In addition to saving the high costs of combating these activities, organizing border trade and reactivating border ports would augment local food availability and also provide considerable opportunities for employment and income generation.

### **2.5 Sustainable Food Production Systems and Practices (SDG 2.4)**

#### **2.5.1 Food Production Systems**

The typology of food production, and generally agricultural systems in the Sudan, is usually identified under five subsectors: traditional rainfed, semi-mechanized rainfed, irrigated, livestock and forestry subsectors, contributing on average 11.9, 2.1, 25.8, 57.8 and 0.3 percent of the GDP, respectively.

The rainfed sectors operate under marginal semi-arid zones but extend south to the 12th parallel where rainfall conditions are better<sup>26</sup>. Yet production is highly variable on account of variable rainfall and market conditions. The irrigated sector, with more stable production conditions, extends over various areas in the central and northern parts of the country. Livestock is raised in all rainfed and irrigated systems but predominantly exist within the traditional rainfed under pastoral modes of production. The forests sector exists in the form of diverse natural forests and rather limited reserved

<sup>25</sup>Central Bank of Sudan

<sup>26</sup> FAO Special Report – Quasi-Crop and Food Supply Assessment Mission, January 2012.

forests. The area composition of the different systems varies with climatic conditions and government's plans and policies. During 2012-2013 rainfed agriculture occupied an average of about 42 million feds. compared to about 3.5 million feds. under irrigation<sup>27</sup>.

The rainfed sector represents Sudan's *granary*, producing the bulk of the sorghum and pearl millet. It is a major player in the production of oil seeds, especially sesame, and accommodates all Sudan's gum Arabic production. The irrigated sub-sector produces almost all of Sudan's wheat and sugar, most of its food legumes and a substantial portion of sorghum and groundnuts. Cereal production is highly variable and productivity under all systems, and more so in rainfed agriculture, is rather low, for reasons referred to under section 2.4.1 above.

*Horticulture* production (fruits and vegetables) is practiced mainly along the banks of permanent rivers and seasonal *khors* (depressions), and also through irrigation from underground water resources. Although not sizably significant in terms of area, horticultural production is of importance to livelihoods of a considerable number of small scale farmers, particularly those living along river banks, and also those using home gardening, or *Jobraka*. Lessons learned from various locations demonstrated high possibilities for expanded vegetable production in rain-fed areas with water-harvesting using simple technology, and the potential for significant improvement in nutritional content of the local diet. In addition to contribution to food security and improved nutrition and health, fruit production is also evolving as an export sub-sector with potential markets in neighbouring countries, especially for bananas, mangoes and citrus fruits. However, similar to field crops, yields of almost all horticultural crops are low as a result of low potentiality of local cultivars and inefficient cultural practices.

*Livestock*, dominated by sheep, goats, cattle and camels, is an essential capital asset and a main source of household income for pastoralists and agro-pastoralists, and plays an important role in the livelihoods of both rain-fed traditional and sedentary farmers. However, the practice of keeping large herd sizes creates many challenges in production, animal health, and not least in environmental degradation. Pastoral land in almost all states that is continually being reduced by expansion in arable farming is further under stress by inward and outward migration of the rising number of livestock. Many studies have drawn attention to rangeland degradation - due to overstocking and overgrazing of already fast shrinking range and pasture resources - as the most prominent environmental problem affecting livestock husbandry in Sudan. Shortage of drinking water in areas away from rivers and water reservoirs in the summer season immensely affects livestock production.

Minimal effort has been made to introduce new/modern livestock farming systems, and little research is being undertaken to improve animal feed through utilization of abundant agricultural by-products. Other constraints to improved livestock production include poor productivity of local breeds and the difficulty of changing cultural beliefs and practices, such as animal hoarding.

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<sup>27</sup> Reports of the Central Bank of Sudan.

Farmers blocking stock routes and the weak enforcement of law protecting such routes also influence livestock production.

Animal health factors affecting livestock production include poor and inadequate clinical services, deficient disease surveillance/reporting systems and poor vaccination coverage to curb the spread of animal diseases and parasites. Poor infrastructure, insufficient mobility facilities and inaccessible roads due to physical factors and security reasons make follow-up and provision of veterinary services on time difficult.

Production of livestock products is gradually rising, and Sudan generally produces its needs of livestock products. One notable exception is milk. Shortages are mainly due to inefficient distribution and lack of cold storage and processing facilities, whereby huge amounts of milk are wasted due to lack of access to scattered and remote pastoralists who own the bulk of livestock in the country. Similarly, the poultry industry in all areas outside of Khartoum is still in its infancy, despite the expanding market for poultry products.

Notwithstanding the available marine and fresh water *fish* resources, fish production in the Sudan is still not a major business compared to its potential. Fishing in the Red Sea state is practiced only seasonally in few coastal settlements using primitive artisanal methods and equipment. The estimated annual sustainable yield for fish in the sheltered coastal zone is about 10,000 MT of various fish varieties. However, the estimated actual current total fish catchment ranges between 600 to 1000 tons annually with traditional methods, and between 900 and 1,500 tons under the commercial gears. Less than half of the quantity produced via both methods is exported. The fishing livelihood is constrained by lack of infrastructure (landing sites and cold storage) and adequate fishing tools, inappropriate modes of transport, and by poor enforcement of rules and regulations pertinent to natural resource management and environmental conservation and regulations, especially with regard to the more industrial foreign trawlers that are depleting fish stocks. However, positive indicators for substantial increase in fish production were obtained from investment in fresh water aquaculture recently undertaken by private entrepreneurs in rural areas.

### **2.5.2 Pressure on Natural Resources**

Sudan is a dry country exhibiting typical Sahelian zone features, with its characteristic low amount of rainfall, scarcity of water, and short agricultural season (3-4 months). Drought is a recursive phenomenon and frequent drought cycles extending over 2-3 years are common. Natural resources are the main base of the Sudan's economy with agriculture accounting for around 37%<sup>28</sup> of the GDP. In addition, environmental resources are also the backbone of the other sectors of the economy, especially manufacturing, transport and trade, and provide for the main source of domestic energy, building materials and local industries in rural areas.

The Sudan is endowed with bountiful natural resources in terms of agricultural land, ample underground and surface water from running rivers, in depressions and along running seasonal

<sup>28</sup>Central Bank of Sudan, 53rd Annual Report, 213

streams (*khores*), and is blessed with varied ecological zones comprising different rain-fed and irrigated agro-systems which provide for the cultivation of several cash, food and industrial crops; as well as rich natural pasture supporting huge animal wealth. Nevertheless, varied challenges and constraints have hampered the efficient utilization of these resources for food production and enhancing food and nutrition security.

The vulnerability of agricultural production systems in the Sudan has been aggravated by the often poorly implemented and/or inadequate legislations on land and water use. Regulations that govern the pattern of land use to tie in with the natural resource endowments in various agro-ecological zones are still lagging behind. Progress on the envisaged formulation of land use maps has not borne fruit bearing in mind the importance of devising appropriate modalities to enforce resulting legislation. Lacking also are the specifications that prohibit crop sequence leading to soil impoverishment and alternative options of soil conserving crop sequence and the poor enforcement of land laws resulting in under cultivation of allotted large schemes, continued mono-cropping and neglect of rotations which enhanced land degradation especially in rain-fed agriculture.

Rangelands and forests are an important environmental asset and a source of the biodiversity and forage reserves. They provide animal feed as well as a wide range of goods and services and support the livelihoods of many rural communities. They also provide valuable environmental services and play a vital role in mitigating the effects of climate change, arrest land degradation and help in hindering desertification. However, both rangelands and forests are currently under threat of degradation, increasing desertification and aridity. The existing regulation of allocating 10% rain-fed farming and 5% of irrigated land to forests has hardly found any significant implementation while the national goal of increasing forest reserves to 20% of the total area of the country as stipulated in the Forest Policy of 1986 is still to be realized. Moreover, there is lack of tightened and enforced laws to combat forestry crimes of illegal exploitation of wild flora and fauna such as illegal logging and land conversion that threatens biodiversity and endangered species.

Climate change and conflict also resulted in great loss of forest cover. A UN report on Darfur indicated that Sudan has lost more forest cover than any other country in Africa, with the conflict in Darfur a major contributor to the trend<sup>29</sup>. The annual removal rate of forests, estimated at 2.4%, is considered the highest rate of deforestation in developing countries<sup>30</sup> resulting in a loss of about 11% of Sudan's forest cover between 1990 and 2005<sup>31</sup>. In Darfur, a third of the forest cover was lost between 1973 and 2006. In Gedaref State, the area described as grazing lands has declined from 78.5% of the state's total area in 1941 to only 18.6% in 2002<sup>32</sup>. City encroachment into natural habitats, as a result of increasing populations and urbanization, is also another major threat to biodiversity. With the secession of the South, the Sudan lost most of its forests. The remaining forests, though some of them are kept in reserve, are subjected to severe cutting together with shrubs

<sup>29</sup>United Nations, Sudan: Beyond Emergency Relief, Longer-term trends and priorities for UN agencies in Darfur; September 2010

<sup>30</sup>Forests National Corporation, Report, 2013

<sup>31</sup>Emelie Dahlberg and Daniel Slunge, 2007, *ibid*

<sup>32</sup>Babikir, Mustafa, 2011, Mobile pastoralism and land grabbing in Sudan: Impact and responses, paper presented at the International Conference on the Future of Pastoralism, Feinstein International Centre, University of Tufts



for home fuel and commercial production and selling of charcoal. All these factors contribute to soil erosion and desertification leading to tribal conflicts over land.

Animal overstocking in many parts of the country as a consequence of climate change, expansion of crop land, shortage of water supplies in areas with good grass, and the fragile security situation, in addition to the expulsion of the Sudan's herdsman from South Sudan following its secession, forced animals to graze on limited land area resulting in overgrazing and accelerated rangeland degradation. Poor distribution of livestock watering points encourages overgrazing around these points by nomads while leaving pastures unutilized elsewhere. On the other hand, many of the traditional livestock routes have been blocked by farming and have been lost (Egis Bceom 2009) while the existing routes lack water and basic veterinarian and social services. In fact, there is hardly any policy regulating the nomadic sector (UNDP Sudan, 2006), which holds most of the livestock in the country, and its interconnection with the rival sector of crop farming, resulting in frequent conflicts and loss of lives and property.

Energy availability impacts all dimensions of food security. Globally, the scarcity of fossil fuel is expected to increase by more than one third in the coming 20 years, driving its price rise and negatively impacting its accessibility. The average world annual consumption of energy is estimated at around 1.6 toe/capita; around 5 toe/capita in OECD countries, and less than 1 toe/capita in developing countries (Africa about 0.5 toe/capita). While the contribution of renewable energy, including biomass, is globally on the increase, modern renewable energy is insufficiently available for agriculture in most developing countries, and more so for the poor and rural households. Much of the effort in expanded energy provision in developing countries thus far has focused primarily on household energy use, accounting for 68% of total energy consumption, and 20% for industry and transport combined, with less attention being paid to energy services for rural industries and agriculture. In contrast, the average household energy demand is around 40% of total energy use in industrialized countries, and industry and transport are around 30% each. Energy for agricultural practices (on-farm as tractor/machinery fuel, water pumping, irrigation and for post-harvest processing in food production, packaging, transport and cooking, etc.) in many developing countries, including the Sudan, constitutes not more than 5% and continues to be based to a large extent on human and animal energy, and on traditional wood-fuels. The potential gains in agricultural productivity, especially from the dominant traditional sector, through the deployment of modern energy services are not being fully realized, thus reducing both the quantity of food produced, and its quality.

### **2.5.3 Land Tenure and Land Acquisition**

Land in the Sudan plays important cultural and socio-political roles. Land disputes are among the main reasons for escalating tension and have resulted in conflicts in western and southern Sudan.



Weak land governance<sup>33</sup> and associated law and policies, coupled with weak institutions for land dispute and conflict resolution, manifests themselves across all states of the Sudan,<sup>34</sup> having pervasive impacts on the development of agriculture, food and nutrition security, and on the long standing imprudent use of land and other natural resources which has led to their cumulative impoverishment.

Statutory and customary paradigms for land exist in parallel in Sudan. Generally, land as stipulated by the 1925 Land Ordinance, is controlled by the State, but communal tenure rights exist in the customary and informal domains and apply to vast tracts of rural land. Land tenure insecurity has resulted mainly from the imposition of formal law that does not recognize individual rights to unregistered land. The fundamental aspects of the 1970 Unregistered Land Act<sup>35</sup> were further exacerbated by the 1984 Civil Transaction Act and its amendments of 1991 and 1993, which prohibits any legal basis in any case against the government pertaining to unregistered land and therefore, no court of law is competent to receive a complaint that goes against the interest of the State. All unregistered land is therefore available for use by the State including issuing long-term leases on community lands without consulting local rural dwellers and pastoralists or obtaining their consent. The situation was further aggravated by the 1971 Local Government Act which dismantled traditional authorities and transferred their functions to local governments. Consequently, the long-time reasonable allocation and protection of resources as well as the conflict management practiced through the deep-rooted local institutions and traditional leadership systems were lost and could hardly be compensated by the less experienced government institutions and officials. Natural resource management has therefore weakened resulting in misuse through deforestation and harmful grazing practices. The effectiveness of remedial actions to recognize customary land laws and traditional institutions (as included in 1984 Civil Transactions Act) were undermined by the appointment of traditional leaders on a political basis and by government interventions in their roles.

The first wave of State acquisition of land started with the introduction and expansion of semi-mechanized farming on the central clay plains in Eastern Sudan and in the Blue Nile, White Nile, and South and West Kordofan States and resulted in a substantial reduction in lands available for smallholders' production. The area under semi-mechanized farming increased from 214,000 fed. in 1954/55 to reach 31 million fed in 2015. Appropriation of land for the semi-mechanized sub-sector has resulted in significant modifications in land tenure arrangements and led to the transformation of vast tracts of rain-fed cropping and grazing lands into other patterns of land use. It also induced accelerated land degradation, deprived large number of small traditional farmers and herdsmen from access to land and pasture, and constituted a source of tension and civil conflict between settled farmers and lease-holders and pastoralists.

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<sup>33</sup> Land governance concerns the rules, processes and structures through which decisions are made about access to land and its use, the manner in which the decisions are implemented and enforced, and the way that competing interests in land are managed.

<sup>34</sup>FAO, Towards Improved Land Governance, September 2009

<sup>35</sup> Private land was confined to land registered before 1970 under the 1929 Land Ordinance (mainly confined to agricultural land along the Nile).

Furthermore, land use regulations (in terms of crop rotations and allocating 10% to rain-fed farming and 5% of irrigated land to forests) are not adhered to, leading to over-exploitation, land degradation and productivity decline. Results of recent research monitoring the changes in pastoral resources in eastern Sudan using remote sensing and local knowledge<sup>36</sup> signalled land grabbing as a major impediment to improving livestock productivity and natural resource management, and cited clearance of natural vegetation associated with the rapid expansion of mechanized agriculture in the region as a major cause of loss of biodiversity, with its long-term devastating and irreversible impacts on natural resource regeneration. The expansion of such schemes also deprives pastoralists of their resting place during their dry season movement and denies them access to *hafirs* meant for watering their animals and forces them to compete with settled villagers for access to land and water, which sometimes leads to conflicts.

The issue of land tenure is becoming more important and complicated with the latest wave of privatization and commercialization of land rights, and local communities all over the country are becoming increasingly sensitive to issues of land expropriation within their communities. The Comprehensive Peace Agreement (CPA) of 2005 called for establishing a National Land Commission (NLC) and regional land commissions in the states to consider mechanisms that will allow current holders user rights to land and the opportunity to transfer user rights to long term leases. Following secession of South Sudan, the NLC has not been formed and only one regional land commission was established in Darfur. With the loss of oil revenue, foreign direct investment (FDI) became a very important source of external funding for Sudan, and an important source of foreign currency to support the country's persistent current account deficits. Consequently, the Land Acts and Investment Encouragement Laws of 2013 facilitate Government's continued issuance of new long-term leases over community lands to international commercial interests without consulting local populations or obtaining their consent. A recent study by the World Bank revealed that the Sudan became one of the global "hotspots" for such large-scale land acquisitions. Though the Land Act prohibits foreigners from purchasing land, it nonetheless allows them to lease land for up to 99 years. Within 10 years (2005-2016) Sudan established itself as the second highest country in the region, after Saudi Arabia, in attracting foreign direct investment. Consistent with the United Nation Conference on Trade and Development (UNCTAD) report for 2015, FDI increased after the secession of South Sudan and rose from 1.3% of GDP in 1995, to 31.1% in 2011, 50.6 % in 2012 and to 46.1% in 2013.

Large-scale investments in land, water, and other natural resources have fuelled a wide range of conflicts in the country. These conflicts are symptomatic of the lack of will and capacity of the State and investors to take into consideration local needs and rights, and to recognize that wealth generated through these resources should yield dividends for the affected communities. This has resulted in obscure and loose land tenure and lead to uncontrolled expansion in farming and grazing and emergence of serious conflicts over the control and use of land, water and natural vegetation resources, which along with population growth has evolved into a state of extensive communal

<sup>36</sup>Hussein M Suliem and Abdel Ghaffar M Ahmed; Monitoring changes in pastoral resources in eastern Sudan: A synthesis of remote sensing and local knowledge, October 2013

practices leading to harmful resource use, degradation and eventually declining productivity and production of both crops and livestock. Competition over natural resources is now considered a major cause of the conflicts that have spread in many parts of the country, especially Western Sudan (United Nations Environment Program 2007). Many of the brewing conflicts are in turn having noticeable negative effects on crop and livestock production through producers' displacement, and loss of assets and migration to urban areas.

#### **2.5.4 Gender Equality and Women's Empowerment**

Sudan has a young population, with as much as 61 percent of its population under 25 years of age. Unemployment in the country amounts to 21 percent, with the highest levels found among youth in the 15-24 year-age bracket, recording 33 percent in general and 44.8 percent among young women (Ministry of Labour, 2011). Female participation in the formal labour force is very low, presumably due to cultural biases against female education in the past and formal non-farm employment. According to World Bank estimates<sup>37</sup>, the differential of participation to the labour force between men and women ranges from 10% (among low income earners) up to 30% (middle income). National Statistics show that the level of economic activity among women is still very low (only 22% of married women), as women tend to be secluded to non-remunerated tasks in the shadow economy (mainly household work and internal family affairs). The income ratio between women and men is around 0.25, which means men earn on average 4 times more than women. In 2014, the unemployment among men reached 12% while among women is almost double (21.6%).

Despite their low participation rate, rural women in many states (e.g. Darfur, Blue Nile and Gezira) play an important role in supplementing family incomes through their work in agriculture and other non-farm tasks. Notwithstanding the limited employment opportunities, unemployment among women, in Blue Nile State, for example, remained low at 4 percent compared to 13 percent nationwide and their contribution to active labour force is almost double that for the Sudan. Even in the RED Sea State, where the main role of the Bija Societies has traditionally been confined to motherhood and child rearing, significant contribution (an average of 50 percent) to family income was made by some women in few localities such as Agig, Tokar and Sinkat with their activities concentrating on mats making out of Dom palm, plating of Dom palm leafs, handicraft as well as in agricultural tasks and care for livestock. However, bias against women in the agricultural sector is evident. The position of women with regard to customary land rights requires particular attention, as women are increasingly becoming the principal farmers when men migrate to urban centres in search of work. Women's low status under customary land law does not correspond to their important roles in production and land management, and makes it less likely for women to invest in and increase productivity of their land. Their access to financial services, particularly to the levels of credit required to expand a business, is held back by cultural assumptions and common banking limitations.

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<sup>37</sup> Rural Livelihoods' Adaptation to Climate Change in the Horn of Africa (Sudan), (RLACC II – Sudan), Project Formulation Process, under Analysis (Carbonium September 2016)

Nonetheless, notable efforts have been made in the Sudan with respect to women's empowerment, including their representation in political, economic and social decisions and increasing their membership of the national and state legislative assemblies to a minimum of 30%, as a fixed quota. A special bank for women has been created 'Family Bank' to cater for women's requirements and investment, and is managed by women. Commendable efforts are also exerted for rural women empowerment by civil society organizations and cooperative societies in many localities in Sudan (e.g. Gedaref and White Nile States). Through work in education, farming, maternity, health and social awareness, these organizations seek to assist women in raising their standard of living, and their awareness concerning their social and economic rights.

### **2.5.5 Vulnerability to Natural and Man-Made Disasters**

The diversity of environmental conditions in the Sudan, especially in relation to water availability, rainfall amount and soil type has given rise to a wide variety of habitat and livelihood options. However, high dependence on this landscape makes Sudan – particularly the rural poor - vulnerable to natural and man-made disasters. Global experience over the past 20 years has also shown an increase in the number of local areas reporting negative impact on human and natural resources. In the Sudan, food and nutrition security especially among the rural poor is subject to frequent occurrence of shocks and hazards such as drought, high rainfall variability and alternating river or irrigation floods as well as price fluctuations. These shocks are not properly attended to due to inadequacy of plans and limited availability of capable institutions for disaster monitoring, early warning and post-disaster rehabilitation. As a result, crop and livestock losses are expected. Moreover, vast areas of land in rain-fed agriculture remain uncultivated every year for fear of poor and irregular rains and fluctuations in market prices, in addition to the fear of a breakdown in the fragile security situation in certain localities.

Population instability, associated with massive dislocation caused by the combined effects of drought, land degradation, disintegration of rural economy and conflict, is prevalent in Sudan and especially in Darfur. The shift in population intensifies competition over resources and proliferation of local level conflicts and a wide range of human security risks; these have intensified following the secession of South Sudan in 2011. Poverty and food insecurity of smallholder producers, both pastoralists and farmers who are the major environmental users and contributors to food availability, are currently under persistent state of crisis manifested in accelerating levels of rural poverty, food insecurity, conflicts, and shifts in livelihood systems, and in their decreasing resilience to even slight fluctuations in rainfall or price levels in the markets. Within the poor rural communities, women and children are recognized as particularly vulnerable and are affected especially through scarcity of fire wood and water and accelerating food insecurity. Deteriorating rural life due to outmigration as well as the numerous factors mentioned throughout this review has pushed the already very vulnerable smallholder producers to the limits of their coping mechanisms. In most cases, the functional moral economy<sup>38</sup> has been ruptured and disintegrated, leaving households and

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<sup>38</sup>Moral economy, also referred to as 'subsistence ethics', refers to a multiplicity of social transaction and exchange processes expressed through capability of extended family to support, embrace and buffer individuals suffering hunger and food crisis.

communities even more vulnerable to the effects of shocks. Finally, a decreased resilience to both natural and man-made disasters has also been driven by other factors such as escalating conflicts, land degradation and insecurity of land rights, discussed earlier.

These events reveal how disasters are continuously constructed through a combination of risk drivers (i.e. degradation of hazard-regulating ecosystems such as forests and rangelands; high levels of relative poverty; and badly managed urban and regional development) which are compounded by conflicts. Moreover, there are emerging risks and new vulnerabilities associated with the increased incidence and spreading of trans-boundary plant pests and animal diseases to new geographic areas.

Several initiatives aimed at enhancing peoples' resilience and their ability to cope with emerging threats have been put in place. These include social safety networks, social solidarity and care programs, enhancing rural communities' capacity, and income generating projects. The government has recently increased its expenditure on social infrastructure and support to orphans and elders as well as expanding coverage of the health insurance programme. Notwithstanding this support, a recent baseline social survey carried out by the Zakat Chamber reflected on the limited coverage of these programmes and showed that the majority of poor families in urban and rural areas<sup>39</sup> do not have access to social solidarity and safety nets support. Such measures should not only meet immediate needs, often arising from natural disasters or conflicts, but also contribute to reducing uncertainty and improve agricultural productivity.

While the World Food Programme (WFP) has long history of being the lead international organization providing emergency assistance to vulnerable groups, in 2015 WFP began a two-year protracted relief and recovery operation which focuses on building resilience among vulnerable groups and promoting long term sustainable food security. Working with the Government of the Sudan and other development partners under the United Nations Development Assistance Framework (UNDAF), WFP is implementing programmes and activities in order to build resilience, including food for assets, food for work, food for training, and school feeding.

### **2.5.6 Climate Change, Adaptation and Coping Mechanisms**

The precarious situation of natural resources in Sudan, and their impact on agricultural production, is aggravated by the fore-mentioned factors, but also by the effects of climate change, including a rise in temperature, drought and increasing rates of desertification, and erratic fluctuation in the intensity and distribution of rainfall and floods. These factors are expected to reduce yield, encourage weed and pest proliferation, and increase the likelihood of short run crop failures. Though changes in rainfall patterns are harder to predict, different regions may experience both higher and lower precipitation. However, even where higher rainfall may benefit agriculture, historical evidence from different parts of the Sudan shows that with high-intensity rains and lack of water-harvesting infrastructure, much may be lost to run-off. Extreme weather events in general will be

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<sup>39</sup> The rural poor families account to 76% of the total number (i.e. 46 thousand)

an increasing problem for food production, with droughts, high temperatures and floods all likely to increase in frequency. Adverse effects of climate change will impact food security, and the poor and vulnerable communities will be affected most.

A recent environmental and climate change assessment undertaken by the International Fund for Agricultural Development (IFAD) indicates that climate change is already taking place leading to more severe and chronic droughts and threatening all rain-fed agricultural systems in the Sudan, and further indicating that the boundary between desert and semi-desert zones shifted southwards by between 50 and 200 km over the past 80 years. While smallholder producers, farmers and pastoralists have been in a continuous struggle to adapt to the climate shocks they are experiencing frequently, there is ample evidence that their resilience to the impact of climate change is progressively declining.

Several efforts to better prepare for and adapt to the effects of climate change have been put in place. The foundation for the Early Warning System (EWS) was first established by the Sudan Institutional Capacity Programme: Food Security Information for Action (SIFSIA) (2008-2012) covering the Damazine Crop Market and its links with other markets for the management and analysis of market information. Baseline information was used to forecast and prepare for upcoming events such as natural hazards and price surges. Currently, however, there is a real gap in information collection tools and analytical capacity of related institutions, as well as a lack of adequate coordination with other stakeholders.

The strategic grain reserve is operated by the Strategic Reserve Authority at the federal level, although each state must develop its own strategic reserve stock and storage vessels. However, most states lack sufficient storage facilities and their agricultural surpluses are often directly traded at low harvest prices. Coordination needs to be strengthened between federal institutions and the state authorities in establishing buffer stock reserves, and efforts directed to expand storage capacity in the main production states.

Coordinating disaster management activities in Sudan is the responsibility of the Humanitarian Aid Commission (HAC), while the Strategic Reserve Corporation (SRC) is mandated to distribute food to vulnerable groups during emergencies and to stabilize the price of grains whenever necessary. Although federal<sup>40</sup> authorities have subsidiary links to state level institutions for emergency preparedness, it is obvious that the current situation is not satisfactory; greater resources and stronger commitment needs to be made to include food and nutrition security in preparedness, involve other essential stakeholders, and strengthen inter-agency collaboration.

### **2.5.7 Genetic Diversity (SDG 2.5)**

Due to imprudent resource use and weakly implemented policies, marked biodiversity losses and changes in fauna and flora jeopardize adaptation and resilience of crop and livestock systems and

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<sup>40</sup>The Ministry of Social Affairs establishes and supports safety nets and humanitarian assistance for poor and vulnerable groups through the Zakat Chamber and microfinance projects.



ultimately threaten the food supply. Sudan is known as one of the origins or diversity centres for a number of grown plants: sorghum, pearl millet, okra, melons, sesame and dry dates, for which wild relatives still exist and a secondary home for some others (HCENR 2014). Biodiversity loss has been driven by many direct factors comprising climate change, over-exploitation of the forestry resources, biotic agents and invasive alien species. Indirect drivers include shifts in agricultural technology, socio-economic changes, emerging constructions such as dams, oil and mining, and changing farmers' practices. Biodiversity loss has led to erosion of some of the old landraces cereal crops<sup>41</sup>, extinct or seriously threatened indigenous and exotic trees and shrubs, and endangered valuable or highly palatable range plants species. This is due in part to the large-scale appearance of invasive alien plant species such as mesquite and invasive indigenous plant species such as *Striga*, Rantok (*Xanthium spinosum*), Adar (*Sorghum spp.*), Ankuj and Sorieb as well as a variety of trans boundary plant pests such as locusts and grasshoppers, fruit flies, oil sucking bugs, and animal pests and diseases. The Sudanese bio-safety National Law issued in 2010 faces challenges of implementation, and an overall policy and framework on access to genetic resources and benefit sharing is lacking. The protection of genetic diversity is particularly important for small-scale food producers and their livelihoods, as well as for agricultural production as a whole.

## 2.6 Supporting Food Production Capacities

### 2.6.1 Agricultural Investment (SDG 2.a)

Sudan has recently been increasingly targeted by foreign direct investments (FDI) in the field of agriculture, especially from Arab investors. These investments were facilitated by the conducive investment concessions promoted by the national government and in many cases the low land price offered. In the face of this rush of foreign direct investments, state governments are now putting in place measures to ensure the proper utilization of lands, to compensate local farmers and traditional land owners, and to even incentivize communities to cooperate with the new established projects. To realize this, the state governments are promoting their own mechanism of accommodating foreign investment while maintaining the rights of the local communities. One successful example is River Nile state where the Ministry of Investment created what is known as the reconciliation right (*Taradi* in Arabic), which is a legal convention that dictates the allocation of 25% of the land granted to foreign investors to be given to the local population as a mean to ensure their cooperation with the investment. Some of these foreign direct investments have shown remarkable success in setting models of increasing productivity and as such enhancing the efficiency of these new investments in agricultural production.

### 2.6.2 Food Trade (SDG 2.b)

Sudan's foreign trade has a lot to do with its national and household food security. Most exports originate from small farmers' production, the promotion of which enhances rural employment and

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<sup>41</sup> Development of wheat programme in Sudan has resulted in replacement of the old varieties by adaptable dwarf heat tolerant varieties which resulted in remarkably high yields



income generation. Sudan is currently involved in the World Trade Organization (WTO) accession process that will provide enormous opportunities to expand trade and benefits from the wide range of concessions provided to least developed countries. Even before joining the WTO, Sudan is benefiting from assistance in a number of areas such as the Enhanced Integrated Framework and Aid for Trade conducive to promoting the country's supply side and accordingly its exports. Currently Sudan faces barriers to its traditional agricultural exports, such as China's high tariff on its sugar imports (50%), India's levy of 30% tariff on Sudan's gum Arabic imports and 100% on groundnut oil, Korea's tariff rate quota on sesame. Both Korea and India do not include Sudan under their Generalized System of Preferences applied under the WTO. US sanctions also have negative indirect effects on Sudan's foreign trade. Yet, by and large, most of Sudan's agriculture export problems are internal. Weak production and poor infrastructure, along with high internal taxation and high transport and transaction costs, creates high production costs and raises domestic prices above global levels, leading to low competitiveness in outside markets. The revenue from Sudan's agricultural exports – most of which is food – has over time run below its total cost of imports with a worsening agricultural trade balance. Further, exports suffer from high concentration being largely directed to the Gulf area, as well as inconsistent quality and safety to meet the more stringent demands of industrial countries. Exports of processed agricultural products are quite limited making an average of 8.5% of the total export value during 2008-2011.

On the import side, Sudan is applying a relatively high agricultural tariff averaging 30.3% in 2013/2014 of which only 3.7% are tariff exempt, 84.3% face a tariff below 15% while some imports are charged a maximum tariff of 40%. Such high tariffs affect food imports, although some essential food imports such as wheat are charged low tariff. Pressures to reduce tariff might be encouraged by Sudan's membership in the Zero/low tariff COMESA and GAFTA agreements with expected demand for MFN treatment.

Overall, Sudan faces challenges to improve the efficiency of its food production and quality in order to raise its competitiveness in international markets and withstand possible reductions in its import tariff if it accedes to the WTO. It also faces challenges to effectively benefit from the concessions provided by developed countries to LDCs, such as duty-free quota free imports, the WTO cotton initiative that is expected to provide benefits to LDCs small cotton producers, assistance and concessions under the non-trade Concerns of agriculture in which food security is an integral part. Development in agricultural trade would be beneficial to food and nutrition security in many ways including provision of employment opportunities, generation of income and the hard currency for imports of food and medicine.

## 2.7 Concluding Remarks

The potentials for food self-reliance in the Sudan, as seen earlier, are evident. Nonetheless, these potentials do not tally with the current alarming food and nutrition security situation, as described in this analysis. The endemic conflicts and environmental shocks such as droughts and floods cause

massive internal displacement of people, intensify the vulnerability of families in many parts of the country and leave sizable portions of the populations trapped in chronic structural poverty and hunger. Moreover, the on-going threats to livelihoods in the rural areas, limited employment opportunities and inadequacy of basic services force many to migrate to urban centres and to gold mining localities, leaving behind more rural households headed by women, who with the lack of productive resources, typically supplement family incomes through agriculture labour.

Agriculture contributes significantly (34%) to GDP and to over 80% of non-petroleum export revenues. Notwithstanding the importance of the agricultural sector in the Sudan, the supporting physical and financial infrastructure that facilitates agricultural and rural development and enhances food production is markedly weak. Significant progress in promoting economic growth, reducing poverty and enhancing food and nutrition security in Sudan cannot be achieved without realizing more fully the potential human and productive capacity of the agricultural sector.

The Sudan government, with support from development partners, is exerting commendable efforts to promote wide scale balanced development and to enhance community resilience to shocks. However, Sudan's ability to reach the Sustainable Development Goal of Zero Hunger by 2030 depends on a concerted and collaborative effort to ensure access to food by all people, achieve food security and improved nutrition and promote sustainable agriculture. Section 3 of the Strategic Review discusses national policies and federal and state plans relevant to achieve this, and outlines the Ministries, Institutions and other actors tasked with achieving Zero Hunger.

### 3. POLICIES AND PLANS OF NATIONAL AND INTERNATIONAL ACTORS

#### 3.1 Overview

The multidisciplinary nature of food insecurity and multitude of causes of malnutrition call for a multi-sector and holistic approach in order to end hunger. It also calls for coherent, comprehensive and result-based cross sector policies, legislation, programmes and plans that cover adequately the interest of the poorest, most vulnerable and marginalized segments of the population. As a contribution to this end, this chapter provides a review of the present policies, plans and strategies relating to food and nutrition security in Sudan, and the relevant bodies and institutions responsible for implementing them.

#### 3.2 National Policies and Plans

##### 3.2.1 Poverty Reduction

The abolishing of fuel subsidies in September 2013 has pushed at least one million people into poverty, adding to the 13.5 million people already living in poverty. Though the exact impact of the reduction of subsidies on fuel, electricity and medicine in 2016 is not yet known, it is certain to have greater negative impact on the most vulnerable population.

At the same time monetary and fiscal policies, particularly taxation policies, have made no remarkable increases in agricultural exports nor in fiscal growth or import substitutions, issues which subsequently affect employment, income and purchasing power of rural and urban poor. The government has issued in 2013 an Investment Encouragement Act which is a modification of its old preceding laws. It is directed towards local and foreign private investors, the public sector, and co-operatives, and provides incentives and privileges including exemption from taxes on capital items, value added tax, custom duties, incentive price of land, freedom on foreign currency transfer, guarantee against confiscation and nationalization and provision of public goods.

The First (2007 – 2011) and Second (2012 – 2016) National Development Plans included among their objectives eradication of extreme poverty and hunger; achieving food security, sustainable economic stability and balanced development; increasing growth creating income generating activities and promoting people participation and gender equality. These two plans have been aligned to the Millennium Development Goals objectives and targets.

The Sudan Interim Poverty Reduction Strategy Paper (2012 – 2014) was prepared jointly by the Sudan government, the World Bank (WB) and the International Monetary Fund (IMF), and approved by the Sudan's National Assembly in July 2012. The strategy is based on four pillars: strengthening governance and institutional capacity of the public sector; developing human resources; promoting economic growth and employment; and integrating IDPs and other displaced

people. Its objectives were to decrease poverty from 46.5% in (2009) to 23.3% by (2015). Unfortunately, for a number of reasons, this target was not achieved. The strategy also emphasized the importance of agriculture as the engine of growth. However, the development of this sector also lagged behind due to underfunding and numerous problems and constraints.

Following the Doha Peace Agreement in Darfur, the government of the Sudan in collaboration with the United Nations prepared a six-year (2013-2019) Development Strategy for Darfur region. The main objectives of the strategy are rehabilitation, reconstruction, construction and development of sectors to lead to stable, peaceful and prosperous Darfur. It is interesting that the strategy is giving special attention to include programmes and projects to enable Darfur fast transition from food relief to development.

The Food and Agriculture Organization (FAO) in collaboration with selected states in 2016 prepared the food security strategy 2016 -2030 for the Blue Nile, Gedaref, Kassala and the Red Sea states. The strategies analysed the present situation, identified gaps and challenges and made recommendations for sustainable improvement of food and nutrition security.

### **3.2.2 Agriculture**

The Ministry of Agriculture prepared the Agricultural Law of 2016 which includes all related laws and legislations, but has yet to be approved by the Council of Ministers and ratified by Parliament. A Rural Development Food Security and Poverty Reduction Act was prepared in 2005 but in these 17 years it has not yet been ratified by the legislative assembly. This act calls for financial support to poor farmers guided by the concessions of the WTO Doha Development Agenda to LDCs. Related legislation includes the Gum Arabic Act of 2009, liberalizing its trade; the Seed Act of 2010, upgrading seed administration, ensuring plant breeders' rights and regulating the seed production chain; and the Agricultural and Livestock Professional Organization Act of 2011, regulating producers' organization. A number of related legislations include the Natural Water Policy of 2000; the Environment Protection Act of 2001; and the Natural Resources and Forest Act of 2002.

The Agricultural Revival Plan I (2008 – 2011) and Plan II (2012 – 2014) are considered as the phased development of a long-term agricultural strategy (2003 – 2027). Both plans gave the highest priority to the broad agricultural sector with the objective of increasing agriculture productivity and production, promoting exports, preserving natural resources, pursuing balanced development to include all states, reducing poverty by 50% by 2015, improving support services of research, extension, markets, finance, insurance, quality control, market information and communication. The 2<sup>nd</sup> plan in addition called for the fulfilment of the Maputo declaration made by the African Union Head of State including the Sudan for allocating 10% of the national budget to agriculture and for realizing 6% annual rate of growth in agriculture in compliance with guidelines of the Comprehensive African Agriculture Development Programme (CAADP).

However, the full-fledged Agricultural Revival Plan formulated in 2008 that would have formed a solid base to push agriculture forward has, due to various reasons, faced deficient implementation and has ultimately collapsed. A robust concept of comprehensive and balanced agricultural development contributing to overall economic growth is lacking. Imbalances are also evident through skewed public spending and provision of private bank financing favouring the irrigated and mechanized subsectors and largely neglecting traditional rain-fed agriculture that occupies the majority of cultivated land, hosts most of the livestock wealth and supports the bulk of poor households. In general, economic policies have been biased towards subsidies, taxes and exchange rates rather than provision of public services such as research, extension, improved technology and social protection.

The Quarter Century Strategy for the Agriculture Sector (2003 – 2027) is focusing on agricultural development with due attention to food security, but meagre coverage of nutrition and its related supporting activities. The strategy aims at ensuring food availability at reasonable prices and stable quantities of safe and nutritious food to be accessible to all citizens at all time. Support is given to poverty reduction through generation of employment opportunities, improvement of living conditions and growth of the economy. The strategy also aims at gradual building of grain reserves sufficient for yearly national consumption. It calls for promotion of agricultural exports of commodities in which Sudan enjoys comparative advantage, sustainable development of natural resources and control of desertification. It highlights the forward linkage with sectors such as those working on agricultural marketing and processing and backward linkage with the other sectors supplying agricultural with inputs and services.

The Sudan National Agricultural Investment Plan (SD NAIP 2016 – 2020) is aligned to CAADP objectives and strategic directions. It aims to accelerate implementation of the existing initiative and also launch new initiatives that address national and regional priorities. Among the seven investment areas of the plan, one is devoted to increasing agricultural productivity and production and another to enhancing food security.

With regard to land, the 1925 Land Ordinance which states that all unregistered land belong to the government is still in force. The 1970 Act of Unregistered Land gives the government the authority for the acquisition of all unregistered land for public purpose such as development of large agricultural schemes. The 1984 Civil Transaction Act with its 1991 and 1993 amendments does not permit raising any legal case against the government when it uses or confiscates unregistered land. The Federal Ministry of Agriculture has prepared a land use law which, among other things, includes giving all authority on agricultural land to the Ministry all over the country. The law has not yet been approved by the Council of Ministers. Land tenure issues are important to sustainable agricultural development particularly to small scale farmers and consequently to agricultural productivity, agricultural finance and growth and improvement of food and nutrition security. Under the present system, certain burning issues remain unresolved such as land tenure, collateral for credit from formal institutions by small scale farmers, settlement of nomads and pastoralists, cattle routes, tribal lands and communal ownership of land.

### 3.2.3 Health and Nutrition

As of 2007, the Federal Ministry of Health (MOH) is being guided by the Nutrition Policy. The MOH proposed a number of policies and strategies that tackle the gaps in nutrition as part of the comprehensive service package. These policies include financing policy to increase expenditure on health, global strategy, health insurance, universal health coverage, etc.; nonetheless the implementation of these policies is very slow compared to the challenges ahead. Furthermore, the universal health coverage which ensures access to the basic package including nutrition services is not budgeted, and therefore compromising policy implementation.

There is a Food Legislation Act for food control and food hygiene regulations, additives, contaminants, licensing of food establishments, and registration of pre-packed food. The government has prepared a new Food Safety Law which is now under review by different concerned ministries.

The National Nutrition Strategy (NNS) 2014 – 2018 is formulated and implemented by the Federal MOH with candid support of national and international partners, and is aligned with the recently developed National Health Strategic Plan (2017 – 2020), while a National Strategy for Micronutrients is under preparation. The objectives of the NNS and targets are fully aligned with the six global adopted targets of the World Health Assembly 2012 to be achieved by the year 2025. The plan adopted the targets with little modification to match the pace of progress made in the Sudan. In all, these targets are globally adopted as a yard stick for Zero Hunger 2030. The Sudan's NNS targets for 2018 are:

- 15% reduction of stunting among children under five
- 50% reduction of anaemia in women of reproductive age
- 50% reduction in low birth weight
- Increase exclusive breast feeding in the first 6 months at least up to 70%
- Halt the increase in childhood overweight, and
- Reduce and maintain childhood wasting to less than 10%.

An investment case on nutrition was launched by the Government of the Sudan as a 5-year project in collaboration with UNICEF, WFP and other partners to reduce the negative effects of malnutrition on children, adolescent girls and women, with particular concern to prevention of acute and chronic malnutrition and micronutrient deficiencies. Specific targets include the increase of national coverage of nutrition-specific and nutrition-sensitive packages to 90% to save more lives and achieve greater reduction in malnutrition indicators; and to increase funding to USD 524 million annually. However, these targets will remain unmet if rigorous, geographically focused and well-integrated multi-sectorial interventions are not undertaken by the Government of the Sudan.

The National Health Strategic Plan (2017 – 2020) endeavours to improve health services through increasing access of the population especially those most in need to the universal health coverage

(UHC). The UHC includes, but is not limited to: nutrition, control of prevalent diseases, and safe water and sanitation. The plan emphasizes financial and social protection through extended health insurance.

The National School Health Strategy 2017-2020 targets basic and secondary school children. It's founded on the pillars of the global FRESH strategy (Focusing Resources on Effective School Health) adopted by the Ministries of Education and Health. School based nutrition services, health services, skill based health education, and supportive school environment with a focus on WASH, are the main pillars of the strategy. Promoting the intergenerational nutrition cycle and hygiene of adolescent student girls is an important component of the strategy.

The Environmental Health Act of 1974 is still operational though lacking food and environment safety. The National Environmental Health Strategic Plan 2015-2019 and the Sudan National Sanitation and Hygiene Strategic Framework, both focused on strategic directions to increase investment to the sector, improve coordination and addressed the following areas under a framework of rural/urban, humanitarian, transitional and development context. This embraces Household Sanitation and Hygiene, Institutional and Public Sanitation and Hygiene, Environmental Health Services, food safety including control management systems, legislations, food inspection, food laboratories, occupational health, air and chemical safety. Main gaps are related to lack of reference laboratories at state level, logistic support including inspection equipment, transportation for monitoring and supervision.

### **3.2.4 General Gaps and Challenges**

The previous section summarises some of the major policies and legislations directly or indirectly relating to food and nutrition security. Based on this summary, a number of general challenges remain. Overall, food as a fundamental human and legal right has yet to be reflected or incorporated in the present macro-level policies and legislations. There is still a need for formulation and implementation of coherent new policies and legislations explicitly directed to fill in the gaps in solving the problems and basic causes of food insecurity and malnutrition. In addition, old policies and legislations need to be reviewed and based on lessons from past experience, or abolished as necessary.

There is an overall need to strengthen the enforcement of government policies and legislations and prevent their evasion through direct or indirect means. A case in point is the President of the Directive on exemption of agriculture of all taxes, which has been evaded by some states which continue to impose fees on agriculture production and trade. In general, the implementation of present policies and legislations is difficult to assess due to inadequacy of data and lack of appropriate complimentary monitoring and evaluation system.

The Sudan has a long history and familiarity with development planning and strategies which started after independence. However, formulation and implementation of fully fledged plans or strategies



for food security and nutrition is relatively new. Most of the strategies include food security objectives but few include nutrition.

With the exception of the National Nutrition Plan, most plans and strategies do not have concrete targets or actions for confronting malnutrition nor their consequent impact on health, productivity and economic growth. Some plans have general objectives without quantifiable targets, limiting scope for monitoring and evaluation. It is also noted that each concerned ministry is formulating its own plan or strategy without coordination with other related ministries. State-level plans and strategies have not been coordinated with national plans, leading to contradictions in some objectives. Most follow a top down approach without consultation or participation of stakeholders, particularly grass roots organizations and vulnerable segments of the population especially in the most affected states.

### 3.3 National Actors

Food and nutrition security is served by a wide range of institutions; it is not the intention of this review to provide an exhaustive list, but to highlight some of the key actors in each broad institutional category.

#### 3.3.1 Ministries and Public Institutions

All ministries are involved, in one way or another, in some area of food and nutrition security; however, the detailed roles of ministries that have a very indirect role are not mentioned in this section. It is worth mentioning here that the Sudan has a federal decentralized system of government, therefore, most ministries have their parallels at the state level. An account of some of the major institutions at the national level is given here.

The *Federal Ministry of Agriculture and Forests* takes a great responsibility share in food security. In 2003, the Council of Ministers has officially directed the ministry to establish a food security department to maintain and follow-up the conditions of food security in the country. The Special Programme for Food Security (SPFS) which was initiated by FAO had been under the ministry covering also Kordofan, White Nile, River Nile and North State. The Ministry is also responsible for livelihood programmes, early warning system and malnutrition and food security in collaboration with FAO. It hosts the *Food and Nutrition Technical Secretariat* that now assists the *Higher Council for Food and Nutrition Security*.

The *Federal Ministry of Livestock, Fisheries and Rangeland* is responsible for development activities, programmes and plans related to the livestock and fisheries sector. The *Livestock Research Centre* deals with animal health and production issues. In the past Livestock Research used to include well advanced research in range development which was located in Gazala Jawazat in Darfur.

The *Strategic Food Reserve Corporation* was established in 2000 and later attached to the Agricultural Bank of the Sudan (ABS). It is financed by the Ministry of Finance. Its objectives include acting as a buffer against crop failure and shortage, stabilizing food supply and prices, and form a source of supply to the needy during emergency situations. The crops procured by the reserve corporation are wheat, millet, rice and sugar. The strategic food reserve grew from 56,000 Tons in 2010 to 526,000 tons in 2012.

*National Agricultural Research Corporation* is under the ministry of agriculture and is responsible for agricultural research, operation, policies, plans and implementation. It has focused its attention and resources on irrigated agriculture and has yet to give the rain fed and traditional agriculture the attention and coverage they deserve. There is also a Biotechnology Research Centre which is responsible for bio-safety research and proposal of laws and legislations relating to bio-safety and GMOs. It also handles the ethical aspects of bioresearch. *The Food Research Centre* deals with research on food preservation, processing and handling. Its research in the development of composite flour from wheat, sorghum and guar to make bread is well advanced.

*The Federal Ministry of Environment, Natural Resources and Physical Development*, has responsibility on all matters related to environment including climate change.

*The Federal Ministry of Health* is responsible for promotion and protection, restoration and sustaining the general health of all population's segments especially those most at risk such as children, mothers, elderly, displaced, etc. It is responsible of designing policies, legislations, standards and protocols including nutrition and health service packages that guide state and local level implementation including partners' plans. It is also the Technical Secretariat of the national high co-ordination council for public health which is chaired by the President of the country. The *National Health Insurance Fund* provides its services to about 380,000 households, and is planning to reach 1.13 million households by 2018.

*The Federal Ministry of Welfare and Social Security* is in charge of social protection and support to poor and vulnerable people, particularly the elderly, homeless, orphans, and street children. It carries its mandate through support from Zakat chamber, social insurance programme, microfinance, Social Saving Bank, etc. The *Zakat Chamber* gives money it collects from Zakat cash and in-kind transfers, plus financing programmes, to the poor and other vulnerable groups. The Commission for Student Support finances poor student, almost 30% of all students at high secondary and post-secondary levels.

*The Ministry of Interior* accommodates the Humanitarian Aid Commission (HAC) which monitors humanitarian organizations in the field, sets policies and registers civil society organizations. Also, the commission for refugees (COR) is under it.

*The Federal Ministry of Finance and Economic Planning* is responsible for macro policies, budgets, designing and monitoring national plans and strategies. It coordinates poverty eradication with all ministries, and also oversees the MTDf for social services. *The Central Bank* sets, implements and monitors monetary policies and programmes. It also monitors the operation and performance of

microfinance for which it has directed the commercial banks to set aside 12% of their portfolio for micro credit (30% women, 70% rural families).

*Ministries in the States* are counterpart ministries for most federal ministries mentioned above. They perform more or less the same functions of the federal ministries but at the states and district levels.

### **3.3.2 Coordination Councils**

Councils are established with the encouragement of the government to facilitate co-ordination, co-operation and integration through collective action by the stakeholders of the concerned sector. They are meant to improve governance in sectors and activities where co-ordination and co-operation is required. Key Councils are highlighted here.

*High Council for Food and Nutrition Security* was established in May 2015. It is chaired by the Vice President. Its main objective is to promote co-ordination and co-operation among government ministries and agencies, the private sector and civil societies in all matters relating to food and nutrition security. All technical matters of the council are handled by a technical secretariat under the ministry of agriculture. The technical secretariat establishment was supported technically and financially by FAO, WFP and EU. The council has chapters in four states but are not yet operational.

*Higher National Health Coordination Council* is chaired by the President of the Sudan. Its main objective is the promotion of cross sector co-ordination and cooperation. Its members include the relevant ministries and the governors of states. The Federal Ministry of Health is the Secretariat of the council.

*National Population and Development Council*, is under the Ministry of Welfare and Social Security. It is chaired by the President of the Sudan. It includes the relevant ministries and the governors of the states. In addition, it has subcommittees on poverty, health, and NGOs. It was monitoring the Sudan progress in achieving MDG goals and targets. It represented the Sudan in meetings related to MDG and prepared the technical documents in co-ordination with the relevant ministries.

*National Council for Strategic Planning* is under the presidency – it is responsible for formulating and monitoring national strategies, it started with the comprehensive strategy (1992 -2002). It carries its mandate with the support of line ministries.

### **3.3.3 Private Sector**

The private sector plays an important role in the economy relating to the production and marketing of agricultural commodities. In addition, most of the support services of transport, processing, marketing, etc. are carried out by individual companies and in limited cases by co-operatives.

Finance to the agricultural sector is mainly provided by the Agricultural Bank of the Sudan (ABS), however, commercial banks provide some credit to agriculture directed to those farmers with

collateral, who are mostly the big farmers. Microcredit schemes are still developing and growing but at slow pace and with limited scope to reach sizable number of small farmers in rural areas. There are a number of insurance companies in the country. However, their involvement and coverage to the agricultural sector is very limited.

### 3.3.4 Other National Actors

There is wide variety of civil society organizations in the Sudan. They work in many fields of food security and nutrition. Farmer or livestock *Unions* defend the rights of their members and promote actions that leads to development and improvement of their subsectors. *Chamber of Commerce*, through its endeavours to improve trade and marketing has proved beneficial to food security and nutrition. And the *Consumer Protection Society* is non-profit organization with objective of protecting the consumers against fraudulent practices, supply of unsafe and unwholesome food, excessive prices and unjustified shortages of food. It has been working for decades in the capital and some major cities. It needs to establish chapters in all states of the country. There are also number of national non-government organizations (NGOs) involved in food and nutrition security. Most NGOs concentrate on humanitarian assistance.

## 3.4 Regional Actors and Plans

The Sudan is a member of the Arab League and its affiliated specialized organizations, among them the Arab Organization for Agricultural Development (AOAD) which is based in the Sudan. A recent *Sudan Initiative for Achieving Food Security in the Arab Countries* was prompted by the global food crisis in 2007/08 which severely impacted the Arab food importing countries, especially those that lack the natural resource base for food production, such as the GCC countries. The initiative was presented by the President of Sudan and adopted by the Arab League in its summit in Riyadh in 2013. The initiative stands as regional cooperation between Arab countries where Sudan provides natural resources and other Arab countries provide direct investment for food production to contribute to realising food security in the region. In addition to the production, processing and export of cereals (mainly wheat and rice) sugar, vegetable oils, red meat, milk and fodder, the program is also associated with investment in infrastructure supporting these activities, mainly in roads, railways, energy, and storage facilities. The plan for implementation dictated the development of 3.4 million hectares, irrigated and rain-fed to produce 14.92 million tonnes of the suggested crops with a total investment of U\$ 9.94 billion. A considerable portion of production is set to supply the local markets. The initiative shall also provide employment opportunities in the rural areas of the Sudan in addition to facilitating technology transfer, hence increasing the efficiency of Sudan's agricultural sector. Furthermore, the high level of investment in infrastructure will have a crucial impact on flourishing economic activity in the rural areas and in the country as a whole and contribute to enhancing incomes. All of these factors combined are expected to contribute immensely to the eradication of hunger and the strengthening of food security in the country.

The Arab Authority for Agricultural Investment and Development (AAAID), based in the Sudan, has already invested in a number of food security projects mainly in rain-fed agriculture and poultry. In this regard, it is worth mentioning that various Arab funds have contributed generously for the development of agriculture, particularly the development of dams.

Sudan is a member of African Union (AU) and is committed to implementation of CAADP initiatives, as explained earlier. Sudan is also a member state of the Intergovernmental Authority on Development (IGAD) together with another six countries in the horn of Africa. This authority was created in 1992 to supersede the Intergovernmental Authority on Drought and Development (IGADD) initiated in 1986. Its main objective is to boost agricultural production and sustainable management of natural resources and the environment to ensure resilient livelihoods and sustained economic growth in the region, in conformity with its Agriculture, Natural Resources and Environment Agenda for 2016-2020. Currently IGAD with support of the African Development Bank (AfDB) is implementing the Drought Disaster Resilience and Sustainability Initiative (DDRSI) in the horn of Africa including a project aiming to enhance resilience of pastoralists and agro-pastoralists in Kassala, Gedaref and White Nile States. The Sudan is also a member of the Common Market for Eastern and Southern Africa (COMESA) which is considered as an avenue for expanding its exports market, particularly for agricultural products.

The International Centre for Agricultural Research in the Dry Areas (ICARDA) founding mandate is to promote agricultural development in the dry areas of developing countries. Its two decades of research partnership with Sudan has helped the country develop new heat tolerant wheat varieties which are transforming wheat production in Sudan. The introduced varieties are generating stable yields of up to six tons per hectare and contributing significantly to higher farmer productivity and incomes, and reduced dependence on costly food imports.

Sudan is a member of the Islamic Conference which through its affiliate Islamic Bank in Jeddah has provided assistance for re-integration and settlement of IDPs. It has also provided financial assistance to agricultural development in various states.

Sudan also participates in various South-South Cooperation Programmes, among them the Sahelo-Sahara Organization (CEN-SAD) which includes Sahelian and North Africa countries and supports the SPFS in the Sudan.

### 3.5 International Actors and Plans

A number of international organizations resident in Sudan are involved in programmes supporting food and nutrition security, including WFP, FAO, WHO, IFAD, UNICEF, OCHA, WB and the United Nations Development Programme (UNDP). Some provide technical assistance in fields related to hunger and malnutrition such as policy, capacity building, and training. Some are engaged in project implementation in agricultural production, marketing, information and distribution. Others are engaged in providing humanitarian food assistance. The following briefly outlines the

collective work of these organizations in the field of food and nutrition security within various frameworks, plans, or initiatives.

The UN and its partners implement humanitarian and development operations in the Sudan according to 11 sectors: emergency; shelter and non-food items; food security and livelihoods; education; nutrition; protection; recovery, return and reintegration; refugees; water, sanitation, and health; co-ordination; and common services/logistics. Among the sector objective are saving lives and reducing acute food insecurity to below emergency levels. Joint UN emergency programs include the Sudan Humanitarian Response Plan (2017-2019), which supports the timely allocation and disbursement of donor resources to the most critical humanitarian needs. The Sudan Humanitarian Fund provides early and predictable funding to international and national non-governmental organizations and UN agencies to address critical humanitarian needs in Sudan.

The *Food Security and Livelihood Sector* aims to save lives through availability accessibility and diversity, increased food security, reduced malnutrition rates and strengthened livelihoods. Emphasis is also placed on gender and environment, and co-ordination of multiple assistance efforts is adapted. The sector is co-lead by FAO and WFP.

The *United Nations Development Assistance Framework (UNDAF) – (2018-2021)* is the framework under which all resident UN organizations (referred to as the UN Country Team, UNCT), under the leadership of the Resident Coordinator, coordinate efforts for the development of Sudan and its vulnerable people. Five areas of focus include: 1) Economic Development and Poverty Reduction; 2) Environment, Climate Resilience and Disaster Risk Management; 3) Social Services; 4) Governance, Rule of Law and Institutional Capacity Development; and 5) Community Stabilization.

The Global Scaling Up Nutrition (SUN) was launched in 2010, and the Sudan has joined it in 2015. Its objective is to assist the concerned parties to reduce significantly under-nutrition. It emphasizes co-ordination by bringing authorities of countries burdened by under nutrition together with other national stakeholders and the global coalition of UN organizations and donors. Support is provided through this initiative to the Ministry of Health including advocacy for policy in areas of nutrition and health through the Sudan National Nutrition Strategy Plan and development of a multi-sector approach.

The Sudan is also a member of a number of international research organizations such as Consultative Group on International Agricultural Research (CGIAR), International Centre for Agricultural Research in Tropical Africa (CIAT), International Livestock Centre for Africa (ILCA), International Centre for Research on Sorghum in Arid Areas (ICRSA), and International Potato Centre (IPC).



## 4. THE WAY FORWARD: ZERO HUNGER IN SUDAN BY 2030

### 4.1 Overview of Gaps and Challenges

As we have seen, parts 2 and 3 of this review have explored the hunger challenge in the Sudan by detailing the food and nutrition security situation as well as the plans and actions of various stakeholders, including national, regional and international actors. Through this analysis, numerous gaps and challenges have been noted. The below high-level figure provides an overview of these gaps as an introduction for the following section that detail specific recommendations for each of the SDG targets.

**Table 4.1 Overview of Zero Hunger Gaps and Challenges**

Hunger challenge	<p><b>Lack of clear national commitment</b></p> <p><b>Leadership for Zero Hunger:</b> Increase Government ownership and publicly visible commitment to hunger eradication and convert into policies, governance and priorities especially in agriculture.</p> <p><b>National planning:</b> Develop credible national plans with clear tasks for all levels of Government, ministries, institutions, councils, etc. Planning should be informed by the voice of the communities and the strategic review.</p>
	<p><b>Insufficient coordination and programming</b></p> <p><b>Coordination between partners:</b> Coordinate services provided by the government and the international community at national, state, locality and community level better and revitalize partnerships.</p> <p><b>Programming:</b> Develop a common programming approach with all major actors including cross cutting issues of gender, youth &amp; employment as well as design principles of participatory planning and results based management</p>
	<p><b>Lack of finances</b></p> <p><b>Mobilize finance:</b> Complement increased budget allocations with new funds raised from the private sector, the general public, the international community, new taxes on luxury goods and investments from expatriate Sudanese.</p>
Access to food	<p><b>Limited economic access to food</b></p> <p><b>Create &amp; improve rural livelihood opportunities:</b> Through training, education, financial services and investment enable small food producers to increase their productivity and generate new employment in nascent rural industries.</p>
	<p><b>Inadequate emergency response</b></p> <p><b>Prevention &amp; Management of emergencies:</b> Support national efforts to prevent emergencies and maintain stability with a Steering Committee of all involved actors to respond and manage emergency response.</p> <p><b>Emergency response capacity:</b> Strengthen the national capacity to respond to emergencies.</p> <p><b>Humanitarian support to the displaced:</b> Support the existing caseload of refugees and IDPs with food and nutrition assistance. Increase the effectiveness and sustainability of assistance.</p>
	<p><b>Insufficient social protection</b></p> <p><b>Safety nets:</b> Expand and improve the social protection system.</p>



Nutrition	<p><b>High prevalence of malnutrition</b></p> <p><b>Policy &amp; planning:</b> Align the national framework &amp; strategy with SDG 2 targets, regulate food fortification, implement WASH pledges. Improve health &amp; nutrition information systems and evaluate the role of safety nets.</p> <p><b>Prevention of malnutrition:</b> Improve the availability and affordability of food rich in micronutrients</p> <p><b>Treatment of malnutrition:</b> Treat acute malnutrition in emergency and recovery situations and offer nutrition support of people suffering from infectious diseases. Integrate CMAM through all service entry points..</p> <p><b>Research and tools:</b> Research and introduce fortification and composite flour making, new nutrient rich crops viable for small producers and introduce labour saving techniques and tools.</p>
	<p><b>Unhealthy eating habits</b></p> <p><b>Awareness &amp; behavioural change:</b> Implement a consolidated national BCC strategy addressing feeding practices, WASH, education &amp; agriculture. Awareness raising should employ mass media and mobile phones for maximum reach.</p> <p><b>Nutrition education &amp; skills:</b> School education and education of women on nutrition and health needs to equip women, families and communities with skills to address their own health and nutrition challenges.</p>
	<p><b>Poor sanitation &amp; health services</b></p> <p><b>Access to water, sanitation &amp; hygiene:</b> Access to safe water, sanitation, hygiene and food safety should be increased and complemented by promotion of sanitary social behaviours.</p> <p><b>Health services:</b> Offer nutrition counselling and other services through community health facilities. Develop general and specific nutrition expertise in rural areas and hospitals and make required supplies accessible.</p>
Productivity	<p><b>Low agricultural productivity</b></p> <p><b>National targets and partnerships to increase productivity of small scale food producers:</b> Set a target to double production of small scale food producers, support availability of financial services and partner with private sector to invest into the agricultural input industry to serve small scale food producers</p> <p><b>Extension services &amp; research:</b> Improve research and extension services to support especially small food producers to increase productivity.</p> <p><b>Diversify agricultural production and develop food industries:</b> Diversify crops and livestock and promote horticulture for household food consumption. Develop the fishing, dairy and poultry industries and promote forestry for income generation and environmental protection.</p> <p><b>Infrastructure:</b> Improve availability of water to support intensification and diversification through water harvesting, irrigation and building of dams in Wadis. Improve rural infrastructure supporting farmers linkage to markets and nutrition including roads, markets, health facilities and drinking water.</p>
	<p><b>High post-harvest losses</b></p> <p><b>Reduce post-harvest losses and food waste:</b> Reduce the levels of post-harvest losses of small scale food producers at the farm level and reduce household level food waste through policies, programmes, institutional mechanisms, infrastructure and changes in food preparation and eating habits.</p>
	<p><b>Degradation of natural resources</b></p> <p><b>Protection of natural resources:</b> Promote sustainable use of land through adoption of sustainable and resilient agricultural practices and land use systems including the demarcation of livestock routes and herders and farmers access to natural resources. Rehabilitate and reforest degraded land.</p>
Sustainability	<p><b>Insufficient ability to withstand shocks</b></p> <p><b>Resilience:</b> Devise national sectoral plans to increase resilience, specifically shock-responsiveness of safety nets, resilience of agricultural practices, community emergency food supplies and transport infrastructure between food surplus and deficient areas need to be improved.</p>
Production capacities	<p><b>Underdeveloped agricultural markets</b></p> <p><b>Connect farmers to functioning markets:</b> Increase farmer's income and reduce costs of foods by improving farmer's physical access to markets as well as the cost and efficiency of markets..</p> <p><b>Agricultural trade &amp; economics:</b> Adjust trade policy, fiscal policy, legislation and infrastructure to focus exports on commodities that smallholders in Sudan are most competitive in producing and ease importation of commodities most important for food security. Improve strategic food reserves to stabilize prices.</p>

## 4.2 Recommended Actions to Zero Hunger in the Sudan by 2030

The section of the review offers specific actions according to each target area of SDG 2, relying upon the analysis of the food and nutrition security situation in Sudan, the overview of the approach, plans and strategies of the Government, national and international actors to address hunger, and finally the consideration of the overall gaps and challenges noted in section 4.1 above. This therefore constitutes the critical component of this review: to offer recommended actions and pathways to achieve Zero Hunger in the Sudan by 2030.

**Table 4.2 Recommended Actions to Zero Hunger**

4.2.1 The Hunger Challenge	
<p><b>1. Lack of a Clear National Commitment to Eradicate Hunger</b></p> <p><i>Sudan is rich in natural resources and has the potential to be a food secure country reaching all targets of SDG 2 by 2030. While Sudan recently went to turbulent times fueling food insecurity the country is entering a transition period of increasing stability and must seize the opportunity to confront its humanitarian and development challenges. To reach SDG 2 the Government has to commit to eradicate hunger translate this commitment into policy, a clear governance and credible plans.</i></p>	
<p><b>A. Leadership for Zero Hunger</b></p> <p><i>Increase Government ownership and publicly visible commitment to hunger eradication and convert into policies, governance and priorities especially in agriculture.</i></p>	
i.	Political will and commitments: Without political will and commitments at the highest level, such a challenging and complex issue of eradication of hunger and malnutrition would be difficult to realize. In Brazil where the pioneering Zero Hunger succeeded, it came to be known that one of its reasons for success was the political will and the commitment of the president of Brazil to this programme. It is required here that hunger and malnutrition eradication to be endorsed at the highest level and to ensure it is put on the top of the agenda of the country as center of development for at least the coming 12 years.
ii.	Governance: In all sectors and at all levels there is much to be done to improve governance of food security and nutrition in order to have an effective system that promotes coordination among all concerned institutions, multi-sector cooperation and participation of all stakeholders. Moreover, this improvement is needed to identify clearly the role of government agencies, the private sector and other partners, particularly the international organizations in realization of the adopted objectives of eradication of hunger and malnutrition. The government could play a leading role in this by creating mutually supportive relation between the public sector and all stakeholders to work together in making decisions, rules and actions for achieving food and nutrition security. Responsible institutions need to be developed efficiently and manpower needs to be developed intensively. The institutions and individuals should be motivated through a system of incentive resting on merit based promotion and adequate salaries. The branches of the national committee on food security in the states should be made effective and active and in close co-ordination with each other and with the National Council for Food and Nutrition Security. The same should apply to the nutrition and medical councils. The system of good governance, as explained earlier, should be supported by well-functioning and efficient institutions, political support and will, strong cooperation spirit, effective policies and plans, and appropriate legal system. In this respect the National Council for Food Security and its Chapters in the States should be strengthened. The government coordination is not only necessary for effective food security by driving all for a holistic approach to confront the multi-dimensional challenges of hunger, but is also essential for realization of balanced and inclusive economic growth, which is among the most important elements for eradication of hunger and malnutrition.
iii.	Develop effective governance system based on co-operating, efficient, and accountable institutions supported with appropriate legislation and policies.

- iv. Policies: The 'Right for Food' should be in the constitution and reflected in clear national policies and legislations
- v. Give priority to sustainable agricultural development making once again the agricultural sector as the spearhead of economic and social development.
- vi. National Food Day: the government should consider assigning one day each year as the day of fighting and eradicating hunger. The day should be under auspices of the President of the republic and it should be celebrated all over the country

#### B. National planning

*Develop credible national plans with clear tasks for all levels of Government, ministries, institutions, councils, etc. Planning should be informed by the voice of the communities and the strategic review.*

- i. The planning experience of Sudan denotes existence of institutional gaps in strategic planning and implementation, which requires strengthening capacity and solid coordinating linkages and networks among line ministries at federal, state and locality government levels together with the participation of the grass root target communities.
- ii. The state plans and strategies should be coordinated with the national plans and should be compatible and not .contradictive
- iii. Adopt the formulation of comprehensive and coherent food security and nutrition programme at the state and national level addressing the basic causes of hunger and malnutrition. It is opportune that the UN family, chief among them WFP, have been gradually during recent years directing their efforts to transition from relief to recovery and development. Food assistance is being used to support resilience without stopping relief when the need arises since relief is considered part of integrated steps towards development. WFP has progressed well in its preparatory programmes for development through food for work, food for assets, and food for training. The realization of a long term development programme would require more co-ordination among the concerned UN family and more specified division of labor as indicated by an evaluation of the latest UNDAF as transition from relief to development. Time is opportune to take action in this regard.
- iv. Formulate and implement agricultural strategies, plans and programmes emphasizing resilient and sustainable agricultural development (crops, livestock, fishery, forestry and agro-industry) focusing on rural traditional agricultural development with especial orientation to small scale farmers and rural poor with due consideration to conservation and optimum utilization of natural resources and maintaining balanced environment and friendly eco-systems.
- v. Plans and strategies for development: At national and sector levels development plans many lack coherence and most of them did not incorporate food and nutrition specific activities. It is verbose not reflected into action. All, should incorporate food and nutrition security in a clear, precise and targeted manner.
- vi. The performance of the economy of Sudan denotes a bias towards promoting the service sector activities at the expense of the development sector activities, creating a gap in current ad development budget allocations away from sectors that can contribute to income generation, food security, and poverty alleviation and can add to the balance of trade and balance of payment.
- vii. Consider utilizing the framework provided through this strategic review by the Government of the Sudan and its relevant partners in formulating an integrated actionable plan to enhance FNS and achieve the SDG 2. This plan should have measurable indicators based on SDG 2 indicators and they may add to them, if the need arises. This would allow objective monitoring and evaluation of progress and achievements of these plans. To monitor and evaluate the progress in implementation, a special body is to be established under the auspices of the President of the Republic. This body is to be composed of all relevant Ministries, Public Agencies, Private Sector and NGOs and should have chapters at the state level. The body should review the FNS situation, assess the progress in achieving the SDG 2 and propose modifications or corrective actions, if the need arises. It should coordinate its work closely with partners, particularly relevant or concerned international and regional organizations and the National Security



Food and Nutrition Council and other related national coordinating councils. It should provide regular six month reports to the President and hold an annual meeting.

- viii. Adopt the present Strategic Review priority action and recommendations as a framework or a road map for achieving zero hunger and sustainable development of food security and nutrition. The road map is to be composed of three phases. The First Phase is a preparatory phase for the second and third phase while emphasizing relief operations. The Second Phase would concentrate on resilience and starting the Third Phase, which will concentrate on development. It should be mentioned here that the emergency assistance and relief would continue throughout the three phases due to the conditions of Sudan relating to climatic conditions and climate change and due to instability in neighbouring and some parts of the country.
- ix. The delays of recovery and reintegration strategies and programs in different parts of the country indicate prematurity in conceptualizing and addressing the problems of transition from humanitarian into recovery and resilience, to facilitate the next move of those affected areas into development era.
- x. Founding an implementing authority composed of the government, advised by partners, native administration and community based organizations, to oversee and coordinate policy, planning and implementation of recovery and reintegration programmes.

## 2. Insufficient Coordination and Programming

*Currently the response of various sector in the food security field is not coordinated and lacks a common understanding of the situation and the results of the various interventions. The programming of the different actors lacks a common approach with regards to targeting, gender and community participation.*

### A. Coordination between partners

*Coordinate services provided by the government and the international community at national, state, locality and community level better and revitalize partnerships.*

- i. The overlapping services of the national and international community organizations in certain areas, wasting scarce human and financial resources indicate the existence of an administrative and management gap in government organization and institutions capacity in coordinating such services and functions at federal, state, locality and community levels.
- ii. Inadequate database and lack of coordination among stakeholders in data collection, analysis and retrieval
- iii. Ensure Sufficiency and accuracy of data relating to food and nutrition security.
- iv. Revitalize programmes: Request the UN resident organizations, including FAO, IFAD, OCHA, UNDP, UNEP UNESCO, UNICEF, UNIDO, WB, WFP, WHO, and others to expand present programmes relating, directly or indirectly, to food security and to revitalize programmes directly relating to food and nutrition security. These programmes include WFP Protracted Relief and Recovery Operation, transition from relief to recovery to development, social protection, including food for work, assets and training, and System Approach for Better Education Results (SABER) through school feeding. FAO Special Programme for Food Security, and Community Development Fund. The same should be requested from regional Arab and African Organizations.
- v. Alliance: Encourage, support and strengthen the alliance (in line with SUN), of all stakeholders together with leading figures from the political parties, media, private sector, women, universities, farmers' union and Sudanese abroad to advocate and defend issues relating to hunger and malnutrition.

### B. Programming

*Develop a common programming approach with all major actors including cross cutting issues of gender, youth and employment as well as design principles of participatory planning and results based management*

- i. The general consensus that cross cutting issues of gender, youth and employment, are always overlooked or considered as minor, indicating the existence of a gap in strategic close analysis and planning and implementing of the expected impacts and outcomes of such ignored issues.
- ii. Participatory approach: It is hoped that in all plans and strategies for eradication of malnutrition and hunger the primary beneficiaries should be involved in the formulation, implementation and monitoring and evaluation of the activity concerning them. Plans and all other activities should follow a bottom up approach in all project cycle.
- iii. Results based management: Encourage all stakeholders to adopt effective results based management approach to enhance and support managing implementation of priority actions or activities undertaken by each to the achievement of strategic objectives of SDG 2. For this purpose, the results based management system should include baseline data and targets to be achieved as per specified time period, in addition to relevant indicators to monitor progress in implementation. It is also necessary to establish M&E structures at both head office and the locality levels in order to provide for timely and smooth flow of information and to ensure widespread stakeholder involvement in monitoring and evaluation functions.
- iv. Provision of food security information systems in advance.
- v. Target the geographical areas where hungry people live and focus on the most impact-oriented nutrition specific interventions including improvement of the activities in which their lives depend. The most insecure states as per IPC Sudan would be addressed as priority, such as Darfur states, East Sudan states (Red Sea, Kassala, and Gedaref) and states bordering South Sudan. Moreover, localities in the different states suffering from conflict, combined with climatic hazards like West of Southern Kordofan, West and East Darfur should receive special attention. Also, states suffering from particular nutritional problems such as Vitamin A deficiency in South Darfur and Gezira, and iodine deficiency in Kordofan and Darfur should receive a special programme to confront these problems. Within the states, the focus should be on the most vulnerable localities such as in North Kordofan the most food insecure localities as indicated by WFP are Gubiesh, and Abu Zabad. In Blue Nile Giessan; in Red Sea Tokar locality.

### C. Mobilize finance

*Complement increased budget allocations with new funds raised from the private sector, the general public, the international community, new taxes on luxury goods and investments from expatriate Sudanese.*

- i. Mobilize finance: for affecting all programmes for improving adequate food utilization. The government alone might not be able to ensure the required finance, therefore partnership with the private sector, international investors and donors, NGO and the general public might be essential. However, the government could mobilize a large part of the finance from publicly acceptable taxation. If taxation is found acceptable and feasible, it is proposed to have ear tagged taxes and tariffs on cigarette, and women cosmetics and to use the proceeds on ending malnutrition in vulnerable areas and for women empowerment
- ii. Finance of the proposed activities when translated into programmes and plans would be challenging. Ready-made projects and free land should be given to attract Sudanese working abroad to invest in projects related to food security in their home states. Moreover, the Sudanese working abroad should be motivated by the government and central bank to transfer, keep and invest their money in the Sudan which according to conservative estimate is between 3 – 5 billion US Dollars.
- iii. Sourcing funds for emergency programmes from government, private sector, national NGOs, microfinance agencies, communities and potential donors including Arab governments and humanitarian funds, and from Western and Asian countries.

## 4.2.2 Hunger and Access to Food (SDG 2.1)

### 1. Limited Economic Access to Food

*Notwithstanding the high potential of food self-reliance in the Sudan, there is clear evidence that a sizeable proportion of the population, especially the rural people, IDPs and women, has limited access to sufficient and healthy food and safe drinking water. On top of poverty and high vulnerability, their purchasing power is further eroded by the limited employment opportunities and meager incomes gained, and by lack of access to productive resources as well as the substantial increase and volatility of commodity prices. Consistent with the goal of ending hunger by 2030, endeavors shall be made to facilitate sustainable and stable employment generating opportunities that would reduce the current levels of poverty of the rural population and would increase availability of, and their accessibility to food and ensure that vulnerable populations consume an adequate diet in times of need.*

#### A. Create and improve rural livelihood opportunities

*Through training, education, financial services and investment enable small food producers to increase their productivity and generate new employment in nascent rural industries.*

- i. Increase purchasing power, particularly of the poor small scale farmers and most vulnerable groups through income generation by increasing productivity and production of agricultural crops and livestock, developing non-food small scale rural industries and generation of employment opportunities.
- ii. Provide technical assistance and vocational training in areas related to basic life skills, literacy, training for employment, and support building and activating cohesive households and village communities such as youth and rural women committees for food production and increased family income
- iii. Diversifying sources of livelihood incomes through the promotion of farmer training and field schools and vocational training centers teaching skills in farming, carpentry, masonry, sewing, auto repair and computer skills.
- iv. Encourage microfinance institutions and credit schemes to support and avail microfinance (and increase ceiling) for SMEs income generating and value-adding activities, such as cottage industry, home gardening, domestic poultry production, handicraft and agro-processing development and encourage women and youth involvement (and other relevant vulnerable groups) in these activities to enhance the food and nutrition security outcome.
- v. Facilitate farmers', particularly small scale farmers', access to credit and required financial resources.
- vi. Poor financial support and institutions particularly for small scale framers
- vii. Adopt conducive macro policies to enhancement of purchasing power through income generation, and supportive fiscal and monetary policies
- viii. Encourage private sector (local and foreign) investment in rural and vulnerable areas open to climate change and disasters by offering investors free or nominally priced land and exemption from taxation for at least 10 years. This would generate employment and improvement of the purchasing power. Also, encourage investors to develop small local farmers in their areas through contract farming or satellite farms around the investors' big farms and providing local farmers with inputs in addition to giving them technical advice and marketing their harvested crop at an agreed advanced price. Satellite farms could be part of the contract between the government and the investor or between the investor and the farmers
- ix. Support and encourage the WFP to intensify and expand its programmes for food for work, for assets and for training

#### B. Prevention and Management of emergencies

*Support national efforts to prevent emergencies and maintain stability with a Steering Committee of all involved actors to respond and manage emergency response.*

- i. Establishing steering committee including government, the international community, national NGOs, community based organizations, private sector to oversee and coordinate policy, planning and implementation of emergency interventions and programmes.



- ii. Maintain political stability and domestic peace through application of the rule of law, elimination of inequality, prevention of conflict, eradication of hunger and reduction of bitterness of marginalized groups. Political stability and prevention of conflict are not only essential to the eradication of hunger, but also to the sustainable development and prosperity of the country. The on-going national dialogue, reconciliation efforts with the fighting factions, and the lifting of US economic and political sanctions will go a long way in ensuring sustainable political stability and economic development which are fundamental for eradication of hunger and sustained food and nutrition security.
- iii. Ensure peace and conflict resolution.
- iv. Building enabling conditions and capacities of planning, enforcing security, resolving disputes on land-rights and land use, and promoting public awareness among affected people.
- v. Establishment of safety protected areas.
- vi. Establishment of safety areas protected by law and order
- vii. Develop and implement a disaster management plan with risk management including risk prevention (following less risky protection and finding alternative job) and risk mitigation (diversification of products and having multiple sources of income and risk coping - selling assets, use of savings and migration). Risk management in combination with insurance would most probably reduce risks confronted by individuals and households.
- viii. Develop Early Warning Systems (EWS) at national and state levels based on improved coordinated and precise food security and information system, satellite images if possible and the results of the combined health and nutrition surveillance. The early warning system could also greatly benefit from WFP vulnerability analysis and mapping (VAM) and FAO global information early warning system (GIEWS) and FAO food insecurity and vulnerability information and mapping system (FIVIMS). The annual assessment of crops and food security by Sudan government, FAO and WFP will be very useful. The Meteorology Department information and projection on rain fall, atmospheric pressure and temperature should be part of the early warning system. Chapters of the early warning system should be in all states requesting them to make regular information on agricultural production, food, climate, resources, and movement of the population, health and general environment.

### C. Emergency response capacity

*Strengthen the national capacity to respond to emergencies.*

- i. Strengthen the rapidity of response capacity, especially the capacity of government institutions in disaster preparedness,
- ii. Provide pre-positioned stocks especially in isolated areas inaccessible in the rainy season.
- iii. Lack of food security reserves for emergency to promptly and timely supply the vulnerable people when needed at both national and locality levels
- iv. Review, improve and develop effective food reserves for improving food and nutrition security. At present, there is the Strategic Food Reserve Corporation (SFRC) which stores wheat, millet, rice and sugar. It functions apparently as buffer stock against crop failure or shortage, in addition to stabilization of prices. It sometimes supports emergency food shortages of vulnerable groups due to natural disasters. Therefore, there is a need for a specialized reserve institution for food security which would provide the affected population with the needed food. Study the situation on the bases of need assessment. If there is a need for the establishment of food security reserve and was found feasible, establish one food security reserve in western Sudan and one in southern Kordofan. In protracted disaster zones, serious consideration should be given to the establishment food emergency reserve.
- v. Establishment of community cereal banks in carefully selected towns and villages subjected to the risks of food shortage due to marketing or transport difficulties or due to man-made or natural disasters. The cereal could be stored in improved locally built stores made of local material (Gosieba) or underground (Matmoura) protected from store-pests hazards. The experience of the Agricultural Bank of the Sudan (ABS) on this regard should guide the development of establishment of the cereal banks in the places requiring it. FAO had some decades back supported in this respect in western Sudan by developing

- community cereal banks by basing its improvement programmes on the long tradition of local storage of cereals.
- vi. Develop logistic capacity of engagement of government supported by UN and NGOs help and construct road and feeder roads reaching affected people on time.
- vii. Strengthening the enabling capacities of emergency preparedness and early warning system of government and community institutions.

#### D. Humanitarian support to the displaced

*Support the existing caseload of refugees and IDPs with food and nutrition assistance. Increase the effectiveness and sustainability of assistance.*

- i. Ensure stability and continuity of improvement in food and nutrition security to lead to sustainable eradication of hunger and malnutrition and drastic reduction of their outcome relating to children stunting and wasting and maternal negative effects. particularly in a country like Sudan subjected to the vagaries of nature particularly rainfall and other risks emanating from internal and external economic shocks, conflicts, endemic and trans boundary diseases and limited financial resources. Provide unconditional food, nutrition and related assistance to those affected by emergency situations.
- ii. For emergencies, continue to provide food assistance including food vouchers, which has already been successfully implemented by WFP
- iii. Providing food aid and food assistance, and nutrition supplements, public health, drinking water and sanitation facilities and other basic needs
- iv. Seeking international community support and to continue providing food aid and assistance to cope with current and future anticipated emergencies.
- v. Assessment of affected people.
- vi. Assessment of the interest of IDPs on voluntary return
- vii. Improve the effectiveness and efficiency of food aid through ensuring that the commodities supplied are socially acceptable and that they do not compete and crowd out locally produced and available local commodities (market displacement). Moreover, the food aid should not lead to the growth of the culture of dependence among the receiving beneficiaries, but rather to be considered as a push to quick recovery leading to development of resilient community and households.

#### E. Safety nets

*Expand and improve the social protection system.*

- i. Develop a *comprehensive National Social Protection/Welfare Policy to provide* strategic clarity on the contribution that social protection can and should make to the national poverty reduction objectives, and to enhance management of social protection schemes through the effective coordination among the various social safety nets implemented by the government, semi-autonomous agencies, and non-government actors to develop proper targeting and a unified beneficiary registry and eliminate overlap, and inculcating a culture of evaluation and accountability in their operations.
- ii. Enhance collaboration of the Ministry of Welfare and Social Security with UN counterparts, including WFP, FAO, UNICEF, etc. to improve national Social Protection system including the development of guidelines for the implementation of productive safety nets.
- iii. Expand non-contributory social transfers to vulnerable groups
- iv. Increase and improve social assistance including old-aged pension, disability allowance, food aid, etc.
- v. Protection of livelihoods and development of safety nets to increase the resilience of communities specially in disaster prone areas , through forging partnership across sectors
- vi. Develop an inclusive social protection programme particularly for vulnerable groups including food aid, social safety nets and insurance.

## 4.2.3 Nutrition and Health (SDG 2.2)

### 1. High Prevalence of Malnutrition

*The vast prevalence of malnutrition, especially among children, adolescent girls and women especially in the rural areas of the Sudan, has a debilitating effect on the health and general wellbeing of the population and creates poverty traps, increases infant and maternal mortality and other morbidities and impede the country's economic and social development.*

#### A. Policy and Planning

*Align the national framework and strategy with SDG 2 targets, regulate food fortification, and implement WASH pledges. Improve health and nutrition information systems and evaluate the role of safety nets.*

- i. Review and revise national nutrition plan aligning it with SDG 2 objectives and targets and with 25 years' national strategy objectives relating to sustainable agriculture and food security and inciting all interrelated sectors to incorporate these programmes for retention in this plan.
- ii. Adopt the WHO recommendation related to the six global targets to be achieved by 2025, relating to stunting, wasting and others, as shown below. To achieve these targets this will require yearly reduction of 3.9% in stunting, 5.3% in anemia among women in reproductive age and 3.9% in low birth weight, as well as increase exclusive breast feeding by 2.3% yearly, while maintaining no increase of overweight and reduce wasting to less than 5%.
- iii. Establish standards on food fortification and bio fortification.
- iv. Maintain sharp focus on all food security and nutrition programmes and plans on nutritionally vulnerable groups such as young children below five and two years, infant children, and pregnant and lactating women. Also, concentrate on the most affected areas through conflict or natural disasters. Special attention should be given to the poorest and marginalized areas. Adopt a development strategy which is growth oriented but skewed to pro poor economic growth which is balanced and fairly distributed is the most powerful instruments for reducing hunger and malnutrition which equally are powerful instruments for health and productivity.
- v. High attention to prevention and management of MAM learning from the lessons generated through recent evaluations
- vi. Promoting and sustaining nutrition specific interventions focused on IYCF and nutrition-sensitive interventions addressing underlying causes throughout the life cycle (some are mentioned under availability, access and gender mainstreaming programmes). These interventions will not only contribute to reduce stunting, but also important in preventing future obesity.
- vii. Improve the nutrition and health information system and integrate nutrition into the disease early warning system to predict and timely respond to disasters.
- viii. Develop an adolescent focused, phased and friendly health and nutrition strategy focusing on school health programmes as an immediate priority to promote intermittent supplementation of iron and folic acid to adolescent girls.
- ix. Align the objective of the Sudan Government, UNICEF, and WFP "Investment case on nutrition" with the objectives and targets of SGD2 to follow the multi-sectorial approach for coordination and integration and for pooling of resources and efforts to reach common goals.
- x. Involve the private sector in nutrition specific interventions including commercial production of required products or provision of assistance. A case in point is the involvement of DAL Group which with the support of USAID is providing school meals to some schools in Eastern Sudan. They are also manufacturing food supplements and packing them in a handy and convenient manner for distribution and use.
- xi. Sudan should fulfill commitment to realize international agreements and declaration related to WASH and pledge to increase government expenditure
- xii. Implementation of the Sudan National Sanitation and Hygiene Framework 2016
- xiii. Increase in government expenditure on health at national and state levels.
- xiv. Ensure availability of all supporting services and equipment to effect the health and nutrition objectives. The supporting services includes effective governance, functioning and effective institutions, legislations for food safety, standards and quality control, training of manpower and strengthened food and nutrition security communication, knowledge and information systems.

- xv. Adopt a multidisciplinary action programme at national and state level integrating interventions that address underlying causes of malnutrition is paramount to the success of any health and nutrition programming. In this respect, deliver integrated nutrition health, WASH services particularly in underprivileged areas at risk of disease outbreaks.

#### B. Prevention of malnutrition

*Improve the availability and affordability of food rich in micronutrients.*

- i. Direct provision of nutrition products rich in micronutrients, including promotion of homemade food rich in micronutrient such as vegetables and fruits, in addition of micronutrient supplies in home based food learning from existing projects of school feeding and joint resilience programmes (Vitamins Supplementation), scale up food fortification with Vitamin A. These products can be promoted and marketed through retail marketing. A government policy supported by all sectors, encouraging the private sector and community public services to buy in is crucial to success of the approach
- ii. Promote consumption of food with adequate micro nutrient through price incentive of lower taxes particularly in the most affected area (vitamin A deficiency in south Darfur and Gezira and Iodine deficiency in Kordofan).

#### C. Treatment of malnutrition

*Treat acute malnutrition in emergency and recovery situations and offer nutrition support of people suffering from infectious diseases. Integrate CMAM through all service entry points.*

- i. Prevent and treat all forms of acute malnutrition in emergency and recovery situation with emphasis on reduction of moderate acute malnutrition (MAM) to curb other forms of acute malnutrition (wasting) through community based resilience strategies focusing on household nutrition sensitive programming and women empowerment (education, health, livelihood skill development)
- ii. Integrate community based management of acute malnutrition (CMAM) through all service entry point whether at community or referral care, across the country with priority gaps identified at local level through the S3M survey.
- iii. Nutrition support for adult population with infectious diseases such as HIV/AIDS, TB.
- iv. Scale up coverage with CMAM to prevent and manage MAM being a risk for SAM.

#### D. Research and tools

*Research and introduce fortification and composite flour making, new nutrient rich crops viable for small producers and introduce labour saving techniques and tools.*

- i. Introduce labour saving techniques relating to long time collecting fuel wood, fetching water, milling cereals and preparing food in polluted atmosphere. Enhance access to improved source of water, replacement of traditional cooking material such as wood with improved techniques along with literacy classes especially for rural women will save time and reduce indoor pollution.
- ii. Strengthen food research and support the research and implementation of composite flour for making bread in economically viable and socially acceptable manner in view of its numerous economic, social and nutritional benefits. In the same line strengthen the institute in terms of finance and technical capacity and involve directly the participation of the private sector in the implementation of this venture, at national and states levels.
- iii. Encourage research institutions to identify and promote crops rich in the required micro nutrients which could also be produced by small scale farmers in irrigated and rain-fed areas, as well as to assess the underlying causes for poor nutrition knowledge and practices. Research should be tailored to address the reasons for high prevalence of malnutrition in areas such as Gezira state, White Nile etc. where food availability is not a major concern.
- iv. Enhance food fortification with focus on salt iodization, flour fortification with iron and folic acid and oil with vitamin. This is critically important to crisis; however ideally utilization of nutrient food should be promoted through behavioral change and communication (BCC). This will require productive partnership with the private sector.
- v. Encourage the private sector to invest in labour saving techniques in rural areas including clean and economical cooking stoves, milling and consumer demanding packages of sorghum and millet.

## 2. Unhealthy Eating Habits

*Stunting, wasting and underweight are highly prevalent in the Sudan especially among children and women of child bearing age, and significantly higher in rural than in urban areas and among the poorest quintiles than the richest. Their expansion is also associated with lack of access to sufficiently diversified and healthy food associated with food habits, customs and traditions that ban consumption of certain nutritious foods exposed inhabitants in rural areas, and especially women and children to a much higher risk of micronutrient deficiencies. Along with the strategic insight, efforts shall be exerted to improve nutrition and consumption of diversified and healthy food and further reduce the incidence of under-nutrition and non-communicable diseases*

### A. Awareness and behavioural change

*Implement a consolidated national BCC strategy addressing feeding practices, WASH, education and agriculture. Awareness raising should employ mass media and mobile phones for maximum reach.*

- i. Behavioural change: Currently several programmes tailored BCC plans exist. A national consolidated BCC strategy that's contextually, culturally and gender sensitive strategy addressing all gaps in health and nutrition practices targeting priority communities should be developed. Priority is to prevent stunting, wasting under nutrition and micronutrient deficiencies. The strategy should address underlying causes related to all determinants of nutrition including: healthy feeding practices, WASH, education, agriculture, and others, and to maximize contribution to and utilization of community-based nutrition integrated programmes.
- ii. Enhance understanding and awareness of importance of adequate food use and utilization in reducing and ending all forms of malnutrition leading to stunting, wasting or lower birth weight of children and other risk factors to non-communicable diseases such as overweight, obesity leading to diabetes, heart problem, etc. which are on the rise particularly in the cities. In these cases, there is a need to change people behaviour and attitude towards improved nutritional practices. This is proposed to be reached through:
- iii. Increased awareness through channels of mass media, social networks and new technology of mobile phones, as well as extension, social and medical workers. Encourage local community leaders to enhance awareness of people on the importance of nutrition on their health and welfare. These community leaders include imams, priests and preachers who could deliver these messages during their speeches to the worshippers. The community leaders could include Farmers Unions, women association, political parties, NGOs and leaders of residential areas in cities and villages.
- iv. Behavioural change could focus on the promotion of the IYCF strategy, health practices, sanitation and hygiene, community based nutrition integrated programmes, general population healthy feeding practices using local nutritious and light meal rich in fibrous cereals, protein rich sources e.g. eggs etc.. Such a behavioral change will have impact on child nutrition, school performance and overall productivity through better time management
- v. Prevent Acute Malnutrition through promotion of IYCF (1000 day window of opportunity) to ensure the normal growth of young children and protect them against diseases. With this strategy, exclusive breast feeding and provision of timely, adequate, nutrient diversified and safe complementary feeding should be highly emphasized in all behavioural change communication strategies.
- vi. Promote consumption and production of diversified diets. Consumption could be enhanced through incentive prices and change in consumer behavior. Those who have no problem to access food need demonstration and convincing on the benefits of diversified and balanced food. Others might not be aware of the best way to use food in terms of preparation, storage, etc. Here comes the role of counseling in the specialized centers, the women association, NGOs and the media. In the rural areas, the farmers should be encouraged to produce diversified food rich in micronutrient in their backyard gardens. Also, schools are to be encouraged to produce and consume these required diversified and balanced nutritious foods. At the national level the government should encourage more production of vegetables, fruits, livestock products, and fish by marketing the necessary resources and monitoring to the national plans and programmes on crops, livestock development and fisheries development. It is equally important as indicated earlier to integrate nutrition education in school curricula at all levels and strengthen the nutrition component in the teachers' training curriculum as well as establishing backyard gardens in

selected schools. The emergency food aid should include more of the required balanced and diversified food.

- vii. Promote healthy and feeding practices and improve health and nutrition status of the general population with special attention to more disadvantaged population (children less than two years and from two to five years, adolescent girls and women in reproductive age, pregnant and lactating mothers and IDPs through investment on behavioral change and communication strategies.

#### B. Nutrition education and skills

*School education and education of women on nutrition and health needs to equip women, families and communities with skills to address their own health and nutrition challenges.*

- i. Skill based health education; which is to have in its curricula for schools up to high secondary level.
- ii. Education of women would greatly sharpen and enhance their natural abilities for adoption of good practices and attitude for effective use and utilization of food for the benefit and welfare of their families. Therefore, women empowerment in nutrition specific and sensitive programming is instrumental in preventing stunting, wasting and in promoting good cognitive development.
- iii. Create supportive, community centered environment, enabling them with knowledge and skills to address their own health and nutrition, increase their access to food, awareness and utilization of quality diversified food, and avoidance of the rapid transition in diet and physical inactivity patterns

### 3. Poor Sanitation and Health Services

*The deteriorating environmental health, food safety, sanitation and shortage of clean drinking water in most of the rural areas in the Sudan remain a distressing issue and cause for concern. There is limited implementation of standards for food safety and safe agriculture production along the value chain. As pests, weeds and diseases continue to cause losses for farmers, the use of unregulated chemicals will likely increase. Farmers' lack of information on how to handle these issues in a safe manner is impacting the health and wellbeing of farmers and consumers.*

#### A. Access to water, sanitation and hygiene

*Access to safe water, sanitation, hygiene, and food safety should be increased and complemented by promotion of sanitary social behaviours.*

- i. Increasing access to safe water, sanitation and hygiene and food safety to prevent infectious diseases with focus on household, schools, rural areas and IDPs.
- ii. Establish community approach to total sanitation.
- iii. Promote social behavior supportive to good health such as hand washing specially among children, teeth brushing, breastfeeding, having breakfast preferably before going to work or schools, spacing birth intervals.

#### B. Health services

*Offer nutrition counselling and other services through community health facilities. Develop general and specific nutrition expertise in rural areas and hospitals and make required supplies accessible.*

- i. Provision of nutrition services through integrated service delivery points at community and primary health care. This will require government attention to production and retention for human resources especially for nutrition and in rural settings; meanwhile task shifting strategies should be implemented. As well ensure timely provision of supplies required for programme implementation (e.g., ready-to-use therapeutic and supplementary foods, vitamin A capsules, and iron, zinc and multiple-micronutrient powders for home-based fortification).
- ii. Promote food and nutrition counselling through primary health care and improve and expand dietetic units in hospitals and medical centers.
- iii. Prevention and treatment of other endemic diseases such as measles, diarrhoea, malaria, bilharzias, soil-borne diseases, respiratory tract infections, TB, etc.



## 4.2.4 Agricultural Productivity and Food Supply (SDG 2.3)

### 1. Low Agricultural Productivity

*The productivity of the food production sector in the Sudan is remarkably low for almost all food crops, livestock and fishery and in all arable (traditional rain-fed, mechanized rain-fed and irrigated), livestock (pastoral, agro-pastoral and sedentary) farming systems and fresh and saline water fishery systems. Despite global technological advancement, adoption of traditional farming practices in all farming systems is the norm. The insufficient and weak linkages among researchers, extension agents and farmers to facilitate demand driven research and technologies, constrain the efforts to enhance agricultural productivity; and farmers continue to have insufficient knowledge of alternative agriculture technologies. In line with the SDG 2, efforts will be multiplied to boost agriculture (crops, livestock and fishery) production and productivity through the minimization of the technological gaps with focus on improved inputs and production techniques, investment in more research and capacity development and in closing the gap between farming communities, research and markets through effective extension services. While the recommended activities are carried out it must be understood that small scale producers, especially those in the affected areas, need support while producing food crops. They need tools, seeds, food especially during seasonal hunger periods, and other inputs and assets that are to be provided by government, UN agencies, international and national NGOs, private sector, and community. Therefore, programs like specific food security projects, food for assets, and farmers field schools are cordially invited to assist small producer's endeavors.*

#### A. National targets and partnerships to increase productivity of small scale food producers

*Set a target to double production of small scale food producers, support availability of financial services and partner with private sector to invest into the agricultural input industry to serve small scale food producers*

- i. Formulate and enhance production and productivity of crops grown, livestock raised and fish catch by small scale farmers to more than double through coherent policies and provision of supporting services shown below
- ii. Improve the livelihood and agricultural production systems of small scale farmers' who are most dominant in traditional and irrigated sectors (tenants)
- iii. Introduce strategic partnership with the private sector and other interested organs to provide the investment required for establishing a seed industry adapted to the local environment and ecological conditions as well as other suitable technologies such as fertilizers and proven tillage practices (conservation agriculture).

#### B. Extension services and research

*Improve research and extension services to support small food producers to increase productivity.*

- i. Develop and expand extension services among all farmers particularly small scale farmers to promote best practices in agricultural production including adoption of improved technology and climate sensitive agriculture
- ii. Support and develop problem oriented adaptable research on increasing agricultural productivity and maintaining biodiversity including strengthening of gene banks
- iii. Conduct detailed studies and develop strategy and a national programme to improve sustainable energy provision for agriculture and food security especially in rural areas through the use of non-conventional sources including solar, wind and bioenergy.
- iv. Increase yield through reducing gaps between high research and low farmers yields through facilitating provision of required inputs, adoption of required technology, zero tillage in rainfed areas, finance, capacity building of institutions and individuals at extension and farmers training schools and appropriate marketing systems and policies
- v. Establish electronic database on all crops and livestock raised in the different farming systems in the Sudan to establish a base that would also allow for monitoring productivity and competitiveness and assess impacts on productivity, food availability and food and nutrition security

#### C. Diversify agricultural production and develop food industries

*Diversify crops and livestock and promote horticulture for household food consumption. Develop the fishing, dairy and poultry industries and promote forestry for income generation and environmental protection.*

- i. Support and expand crop and livestock diversification in rainfed agriculture to widen the option for nutritive products
- ii. Pursue agricultural diversification and intensification particularly in irrigated areas. Adopt and modify the present national horticulture plan and integrate it in irrigated schemes and expand on large scale production of livestock products, fruits and vegetables for wide local consumption and export.
- iii. Encourage rural households to establish and improve backyard gardens (Jobraka) for cultivating some of the food they need even on seasonal basis during the rainy season. The production period could be extended in localities where water harvesting is possible. In the same line, school gardens should be expanded and run by school children for their own use.
- iv. Support Ministry of Agriculture action plan for development and expansion of horticulture and livestock products to ensure their availability, particularly for most vulnerable areas and for export.
- v. Develop and improve fisheries sub-sector and fishing livelihood through:
  - o protection of natural fresh water fishing resources, establishing fishing ponds in floating cages and earth basins, enhancing sustainable and rational management of fishing grounds supported by appropriate laws and assist organizing fishers' association
- vi. Mapping and assessing fish and marine stock resources and enforce rules and regulations to prevent overfishing and to protect marine ecology and the environment
- vii. Encourage investment to develop fishing sites and fishing ports and provide modern landing facilities, services and infrastructure and use more motorized boats as well as provision of sufficient fishing gears and accessories.
- viii. Improve fishers' livelihood and develop capacities of the fishermen and their association in use of advanced fishing techniques and improve local and export markets of sea products to increase earnings of fish folks from the fishing industry.
- ix. Expand and develop aquaculture in all parts of the country as a quick and low cost system of fish production.
- x. Improve existing legal frameworks and formulate other relevant legislative regulations to monitor the whole fishing industry and to enhance sea food safety and quality.
- xi. Develop the forestry subsector with particular emphasis on Gum Arabic to provide income for purchasing of food, wind breaks and the greening inside and around cities and villages to enhance enabling environment for crop production and animal grazing.

#### D. Infrastructure

*Improve availability of water to support intensification and diversification through water harvesting, irrigation and building of dams in Wadis. Improve rural infrastructure supporting farmers' linkage to markets and nutrition including roads, markets, health facilities and drinking water.*

- i. Ensure availability of drinking water to humans, animals and agriculture after rainy season through water harvesting or underground water. Adopt all known methods of water harvesting near homes, farms, community activity cites and residential areas. It is worth mentioning here that there are more than 20 big seasonal wadies (running streams) in Darfur and numerous ones in South Kordfan and Blue Nile, the biggest is Wadi Abu Habil in Nuba Mountains. Dams could be built through community help in theses Wadi to develop diversified and intensified year-round agriculture as was the case when the Governor of South Darfur built with the help of the community the Um Dafug Dam in South Darfur.
- ii. Encourage availability of effective infrastructure relating to roads, health, markets and research.
- iii. Improve, develop and expand infrastructure particularly roads, markets, health centers and drinking water and sanitary services with priority to rural areas prone to manmade or natural disasters. Encourage movement of crops and trade between surplus producing and deficit states and stop payment of fees for trade between states
- iv. Ensure engagement of government, UN and NGOs help oversee road construction through FFA activities related to the development of feeder roads linking the farm to the market.

- v. Food for asset, recovery and resilience particularly encouragement of WFP to continue its much appreciated programmes in this respect
- vi. Provide UN and NGOs support to means of production, food for assets, while building water harvesting and other related infrastructure necessary for food production until adequate food crops supplies for household consumption and a surplus for the market are produced
- vii. Provision of food for asset particularly encouragement of WFP to continue its much appreciated programmes in this respect

## 2. High post-harvest losses

*The goal for enhanced availability of food requires focusing on the opportunities for appreciable value addition, reduced post-harvest losses and improved utilization of surplus food products through investing in post-harvest infrastructure and agro-processing to also prolong the shelf-life and availability of nutritious perishable fruits, vegetables, and dairy and fish products. Investing in these domains has the potential to transform the food and nutritional security for the Sudan in real and substantial ways that will impact positively on food and nutrition security and improve human development indicators and generate further avenues for non-farm employment. Access to credit and microfinance is essential if farmers are to take full advantage of value-addition and market opportunities*

### A. Reduce post-harvest losses and food waste

*Reduce the levels of post-harvest losses of small scale food producers at the farm level and reduce household level food waste through policies, programmes, institutional mechanisms, infrastructure and changes in food preparation and eating habits.*

- i. Support post-harvest losses programme between the Ministry of Agriculture and UN WFP and FAO to enhance food security analysis and tackle the problem of food losses.
- ii. Accelerate reduction in the reported food waste at the household level which would also increase food availability if the use of food relating to preparation, storage and eating habits is improved. Women, communities and related associations should be involved

## Sustainable Food Production Systems and Practices (SDG 2.4)

### 1. Degradation of natural resources

*The extensive natural resources of the Sudan are under severe threat of degradation as a result of their mismanagement and over exploitation and also due to the vagaries of climate change and conflicts in certain locations. The severe deforestation is the result of poverty and low food production forcing small households to cut trees to sell for income and to feed animals. The productivity of the vast cropland is rapidly deteriorating as a result of hurried overexploitation, continued mono cropping and inadequate cultural practices. Both forest and rangeland are shrinking with expansion in crop production, movement of pastorals in search for water and fodder and overstocking of livestock, in addition to deforestation for timber and wood-cutting to augment poor rural incomes. The issue of inadequate land tenure arrangements and gender bias against women with regard to access to productive resources, finance, knowledge and markets add to reduced incentive of investment, loss of biodiversity and declining long-term productivity of natural resources. The sustainability of these systems and of the very food and nutrition security of the poor, small-scale producers and women and children are compromised. The strategic review foresees paramount importance of taking adequate measure to conserve and improve utilization of natural resource for sustainable agriculture production systems and livelihoods.*

### A. Protection of natural resources

*Promote sustainable use of land through adaptation of sustainable and resilient agricultural practices and land use systems including the demarcation of livestock routes and herders and farmers access to natural resources. Rehabilitate and reforest degraded land.*

- i. Formulate and implement agricultural strategies, plans and programmes emphasizing resilient and sustainable agricultural development (crops, livestock, fishery, forestry and agro-industry) focusing on rural traditional agricultural development with especial orientation to small scale farmers and rural poor with due consideration to conservation and optimum utilization of natural resources and maintaining balanced environment and friendly eco-systems, through:
  - a) Upgrading capacity of native administration, participating communities, women and the youth, and farmers and pastoral associations in community resource conservation and

- development with particular emphasis on rangeland and forestry
- b) Enhance awareness and encourage local community and public/private partnership in establishing private nurseries and implementing decrees and laws to enhance reforestation (the Tree Belt Fund Law, Forestry Law of 2002 and Presidential Decree of increasing reserved forests)
- ii. Complete demarcation and establishment of required stock routes to conserve and improve productivity of pastures resources for increasing the number of grazing livestock, and support stock routes with required veterinary services, adequate drinking water (water harvesting), and fodder supplies
  - iii. Take measures to increase plantation of forests in the Sudan particularly due to great loss of forest after South Sudan secession, cutting woods and forests, conflicts, desertification and negligence. All states should be encouraged to plant forests up to rates to be determined according to the natural conditions. Greening of cities and their surroundings for protection against sandy storms and desertification should be adopted. The government directive that 10% of the rainfed schemes and 5% of the irrigated schemes should be covered with forests should be strictly applied. Forests products provide income to buy food and to improve livelihood of small households
  - iv. Reform land and land use systems introducing appropriate legislation, completing land use map, and controlling desertification, reducing unorganized use of marginal lands and improving and rehabilitating rangelands
  - v. Improve access to natural resources, especially land and water, inputs and finance by all, particularly small scale farmers, women and rural poor
  - vi. Introduce labour saving techniques for rural women. In rural areas, women could be greatly advanced and relieved if labor savings are introduced to free women time for child care, food, her other productive activities and to improve her well-being. Women in rural areas spent long time collecting fuel wood, fetching water, milling cereals and preparing food in polluted atmosphere. Provision of stoves such as wisely and compassionately provided by WFP to some vulnerable group saved women time in collecting wood and cooking in smoky place. The givers of help to rural women including the government should provide programme for providing women with labor saving techniques in the major activities undertaken by women at home and in the farm. Milling by hand is an arduous job and hence commercial milling at different grades according to the needs the population for the main staple of millet and sorghum and selling it different packages would greatly save time to women. The private sector should be invited and motivated to invest in milling and packaging of sorghum and millet particularly in areas where these two crops are staple crops where convenience is priced highly with wandering pastoralist Improved cooking stoves or solar energy or gas stove will not only save time and improve the health of women and children but also beneficial to the environment since it would reduce deforestation and land denudation. Suitable water harvesting system or digging of well where conditions are favorable would save the greatest time the women spend in this tiresome chore in rural areas. To advance rural women empowerment, programmes for literacy and women association would be needed. Promote nutrition behavioral change communication strategy addressing priority health and nutrition issues and aligned to local contexts.

## 2. Insufficient ability to withstand shocks

*People in most of the rural areas in the Sudan are prone to natural disasters and crises and to constant fear of the breaking in the fragile security situation in certain localities, while local early warning systems are not well developed for giving timely alarm. The risks of these extreme events threaten the production, availability and access to food and even to peoples' livelihood. The nature, frequency, intensity, combination and duration of disasters and crises influence the type and scale of impacts on different groups. The strategic review strives to develop sound and effective measures to implement resilient agricultural practices that increase productivity and production, and help maintain ecosystems as well as strengthens capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality. Such measures would be implemented through a twin track approach. In one side they would assist in enabling the food insecure and vulnerable groups to adjust to emergencies as a result of civil strife, natural disasters and other 'shocks' and on the other side simultaneously to develop, protect, restore sustainable livelihoods and pave the way for development. All stakeholders would need to work to promote the self-reliance of targeted households through conditional seasonal support linked to livelihood opportunities such as skills training and community assets creation and activities including consultations with displaced populations and host communities to ensure, wherever possible, that benefits from assets are shared between both groups.*

### A. Resilience

*Devise national sectoral plans to increase resilience, specifically the shock-responsiveness of safety nets, resilience of agricultural practices, community emergency food supplies and transport infrastructure between food surplus and deficient areas need to be improved.*

- i. Under the circumstances of the country, it becomes imperative to develop the resilience of households and communities particularly in vulnerable areas and country in general to absorb and recover quickly from the effect of any shocks. The relief assistance would continue and will never stop when needed to alleviate the calamities or other shocks mentioned above. To prevent relief or emergency assistance to become the rule, the resilience of these communities is to be built to make them strong enough to recover quickly with the least damage to their capacity to rise and move forward again, through various measures including. Creation or restoration of assets, enhancement of livelihood opportunities, school meals and nutrition education. This can only be achieved if relief is given with an eye on long term development that would solve the underlying and basic causes of malnutrition i.e. to integrate relief with resilience as building blocks for long term development.
- ii. Adoption of multidisciplinary and multi sector approach. Since resilience cuts across the food security dimensions of availability, accessibility and utilization, climate change adoption and mitigation should be considered among other related sectors.
- iii. Maintenance and improvement of social safety nets to cope with natural and manmade disasters to facilitate supplies of food and health services in place and on time.
- iv. Support and co-ordinate with the UN concerned resident organizations in their efforts and plans to continue providing emergency assistance when required but as part of the future programme of development representing initial building blocks. Adopt well integrated and comprehensive programmes and plans for realization of transition from relief to development within specified long time period
- v. Promote resilient agricultural systems within a programme including climate adaption and mitigation, and resource conservation which forms part of plans and programmes aiming at increased agricultural productivity
- vi. Promote Good storage system from where rural people, particularly vulnerable groups, could get immediate supplies in the locality such as village, cereal bank or the district or in the state as food security reserve or emergency food reserve.
- vii. Reduce all aspects of inequalities of food and nutrition security including household inequalities where men eat first and more than children and women and where disparities appear between income groups

and regions. For example, when food is in abundance in Gedaref, it is not accessible to the people in western Sudan due to shortage of finance, infrastructure relating to transport and storage. Development of the necessary adequate and economically cost effective transport particularly railways would reduce these inequalities

- viii. After population has reached worrying levels in many cities in the Sudan with acute health effects to the population particularly children, it is right time to put plans for urban population management
- ix. Building community capacity for mitigating localized emergency incidents.
- x. Building community capacity
- xi. Provision of food assistance, nutrition supplements and therapy, public health services, drinking water and sanitation facilities, and building resilience capacity of affected communities, local governments and other national NGOs staff (example: SRCS)

## 4.2.6 Supporting Food Production Capacities (SDG 2.a, 2.b)

### 1. Underdeveloped Agricultural Markets

*Numerous factors impede the proper functioning of food commodity markets and their supporting activities including difficulty of timely access to market information. The seasonality of farming in addition to climatic factors add to extreme seasonal and between years' food price volatility and further impacts access to adequate food. Small scale farmers lack bargaining power and limited efforts were made to enhance their engagement in producer organizations and farmer cooperatives. To these should also be added the limited capacities for storage and maintaining adequate food reserves.*

#### A. Connect farmers to functioning markets

*Increase farmer's income and reduce costs of foods by improving farmer's physical access to markets as well as the cost and efficiency of markets.*

- i. Inadequate marketing structures leading to unnecessary high marketing costs, variation in prices and non-competitive dealings in some food crops
- ii. Link farm to market, food for assets, farmers field schools
- iii. Link producers to markets
- iv. Link farm to market through provision of adequate market information, satisfactory marketing extension and encouragement of producers associations.
- v. Promote efficient and dependable marketing system to supply buyers' needs and sell farmers products.
- vi. Improve the marketing system by enhancing marketing efficiency, reducing cost and expanding accessibility of farmers to markets
- vii. Improve and develop the marketing system for better efficiency and accessibility by small scale farmers. Efficient markets are essential since household food stocks for more than 14 days are rare and most people depend on the market for their food supplies.
- viii. Improve physical infrastructure in terms of roads, bridges and telecommunication to enhance connectivity to increase market access and simultaneously reduce transaction costs of both market inputs and outputs, and expand electrification especially for irrigation of horticultural crops and encourage investment for establishing agricultural engineering and services centers in all farming systems, and refrigeration and cold storage facilities for fruits, vegetables and fish and establish fruit vegetable processing structures. Foreign investors could be invited to invest in these investments opportunities. Some of them might be tempted to come through permission to use the "boot" system (build, own, operate and transfer
- ix. Rehabilitate agricultural products markets and support crop and livestock revolving markets at State level with required facilities and services (sieving, storage, quality control, slaps) and enhance marketing extension services and market information system and encourage establishing marketing associations to organize producers and increase their bargaining power in negotiating supplies of inputs and sales of outputs
- x. Reduce taxes and tariffs on food commodities and abolish fees on inter-state food movements



- xi. Promote the development of solid retail markets for local production of nutritious and safe commodities at affordable prices to high density areas of poor communities in cities and towns. This is to be based on the present experience of some local government in having retail outlets at reduced prices. Cooperatives and the private sector are to be encouraged to open such outlets.

#### B. Agricultural trade and economics

*Adjust trade policy, fiscal policy, legislation and infrastructure to focus exports on commodities that smallholders in Sudan are most competitive in producing and ease importation of commodities - most important for food security. Improve strategic food reserves to stabilize prices.*

- i. Promote agricultural export by enhancing the competitiveness of the commodities in which the Sudan has comparative advantage particularly those produced by small scale farmer
- ii. Reduce food prices and control inflation through supportive macro and micro economic policies, increased productivity and production, reduced food losses and waste, decreased marketing costs and functioning and effective buffer stocks, strategic food reserves and food security reserves
- iii. Develop and organize trade in the required food items through importation by adoption of effective policies and the required legislations and development of the required infrastructure  
Organize and develop border trade to reduce or prevent illegal trading through the reported smuggling of large quantities of food items into neighboring countries which affects the availability of these items in the local markets and frustrate government planning
- iv.

## 5. CONCLUSION

An analysis of current and future situations clearly indicates that Sudan has the capacity to achieve the second goal of sustainable development (SDG 2) by 2030. This is reflected in the abundant agricultural and natural resources in Sudan, the stated political commitments to eradicate malnutrition and poverty, the development of national reconciliation resulting from the national dialogue, expected to lead to political stability and indicators of the future of the economy, enthusiasm and commitment of all stakeholders, and growing regional and international cooperation. The lessons learned from the implementation of the Millennium Development Goals (MDGs) until 2015 have greatly benefited the country in the development of effective plans and institutions. It is therefore very much hoped that the institutions and plans to eradicate hunger and malnutrition will be established in due course.

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## Annexes

### Annex 1: Sustainable Development Goals SDG Targets

#### Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

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 (FIES)

2.2.1 Prevalence of stunting (height for age  $<-2$  standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age

2.2.2 Prevalence of malnutrition (weight for height  $>+2$  or  $<-2$  standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)

2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size

2.3.2 Average income of small-scale food producers, by sex and indigenous status

2.4.1 Proportion of agricultural area under productive and sustainable agriculture

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

2.a.1 The agriculture orientation index for government expenditures

2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector

2.b.1 Producer Support Estimate

2.b.2 Agricultural export subsidies

2.c.1 Indicator of food price anomalies

## **Annex 2: Members of Strategic Review Team**

Professor:	Abdalla Ahmed Abdalla - Convener
Professor:	Ahmed Ali Ahmed Geneif – Team Leader
Dr.	Zuhair Mubarak Abdalla
Dr.	Saad Elmedani Ahmed
Professor:	Hamid Hussein Mohamed Faki
Dr.	Sumaia Mohamed Elfadil (Mrs)
Professor	Elfadil Ahmed Ismail
Professor:	Omer Abdalla M. Ejaimi



**Annex 3: List of Institutions Consulted and Persons Met**

Vice President	H.E. Hassabo Abdulrahman
Federal Ministry of Health:	Mrs Somaya Idris Okud Mrs Salwa Sorkkati Mrs Durria M Osman Mrs WafaBadawi Mrs Huda Kambal Mrs FatmaGhifar Dr Eman Sowar Eldahab Mrs Asia Dahab
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CBOS	Karamalla Ali Abdulrahman Kamal Ahmed Ismaeil Hala Mohamed Othman Tajuldin Soumia Khalid Alkhair Azrag Amira Al hadi
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Agriculture Bank	Noruldin Mohamed Othman
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ECHO – European Commission for Humanitarian Operation	Clement Cazaubon
FAO	Elwathig Mukhtar Jama Abdi Adan
Gadaref State - Mahgoub Sons - Samsem and Gadaref Areas. Rain fed projects and Industrial complex	Wagdi Mahgoub
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