



LAGOS
MODEL
UNITED
NATIONS **20**

Background Guide

Food and Agricultural Organization



FAO

Property of Lagos Model United Nations

Background Guide: Food and Agricultural Organization.

Edited and reviewed by

Olufolajimi Otitoola (Deputy Secretary-General)

Ima-Abasi Emmanuel Ubong-Abasi (Under-Secretary-General Research)

Rafiat Temitura Shittu (Under-Secretary-General for the Development Department)

Written by

Oludayo Olowofowobi (Chair)

Phitami Niyo (Vice-Chair)

Olajugba Oluwatosin Joseph (Researcher)

Ajiboye Toluwani (Researcher)

Design by

Ayoola Adebawale

Cover photo by

Favour Obakin

LMUN 2020: The Fifth Session.

Table of Contents

Letter from the USG	1
Abbreviations	2
Committee Overview	3
Introduction	3
Governance, Structure and Membership	4
Mandate, Functions and Powers	5
Recent Sessions and Current Priorities	6
Conclusion	7
Annotated Bibliography	7
Bibliography	8
I. Climate Change and Food Security	10
Introduction	10
International and Regional Framework	11
Role of the International System	13
Impact of Climate Change on Food Production	15
Vulnerability of Smallholder Farmers	16
Access to Food in Climate-Related Disasters	17
Adaptation and Mitigation Strategies for Achieving Food Security	18
Adequate Nutrition in the era of Climate Change	19
Conclusion	19
Further Research	20
Annotated Bibliography	20
Bibliography	22
II. Ensuring Equality in the Demand and Supply of Agricultural Produce	26
Introduction	26
International and Regional Framework	27
Role of International System	29
Addressing Food Insecurity in Conflict Regions	31
Capacity-building in Low-Income Food Deficit Countries/Low-Development Countries	32
Leveraging Technology to Achieve Equality in the Supply of Agricultural Produce	34
Blockchain Technology	35
Mainstreaming Gender in Agriculture and Capacity Building for Women in the Agricultural Sector	36
Case Study – Austria	37
Conclusion	38
Further Research	38
Annotated Bibliography	39
Bibliography	40

Letter from the USG

Dear Delegates,

It is my distinct pleasure to welcome you all to the Lagos Model United Nations Conference (LMUN) 2020, the Fifth session. This conference for the past four years has aimed to create a forum of opportunities for self-discovery, development of certain skills such as; teamwork, public speaking, negotiation and solving global issues. During LMUN, delegates are encouraged to put aside all forms of personal peculiarities with a view to improving the quality of the world through the outcome of the various issues that will be discussed in committees.

The staff for the Food and Agriculture Organisation (FAO) are; **Rafiat Temitura Shittu** (Under-Secretary-General), **Oludayo Olowofowobi** (Chair), **Phitami Niyo** (Vice-Chair), **Olajugba Oluwatosin Joseph** (Researcher) and **Ajiboye Toluwani** (Researcher).

Rafiat is currently a 500 level law student at the University of Lagos. She was a delegate in LMUN 2016 and 2017. She went on to serve as the Rapporteur and Researcher of the General Assembly and Commission on the Status of Women, respectively, in LMUN 2018 and as the Vice-Chair of UNICEF in LMUN 2019. She was also a delegate at the 2019 National Model United Nations New York, where she won a position paper award as a member of award-winning Outstanding Delegation from the University of Lagos. She was also a delegate at the 2017 National Model United Nations, Washington DC. **Dayo** is a 400 level law student at the University of Lagos. His first MUN experience was at LMUN 2018 in the General Assembly, where he bagged several awards. In 2019, he was a part of the award-winning outstanding delegation from the University of Lagos at the National Model United Nations New York. He won the Outstanding Position Paper award of the Human Rights Committee at the conference. He served as a Researcher for the General Assembly at LMUN 2019. **Phitami** is a 500 level law student at the University of Lagos. Her MUN journey started at LMUN 2019 where she was awarded the Distinguished Delegate and Outstanding Position Paper of UN-Women. She has also participated as a delegate at the Ghana International MUN 2020. **Olajugba** is a 400 level law student at the University of Lagos. He is passionate about the SDGs, especially Goal 2 on Zero Hunger and Goal 13 on Climate Action. His MUN journey began in 2018 when he participated in the LMUN as a delegate representing Bolivia in the United Nations Environment Assembly. He will be serving as a researcher for the Food and Agricultural Organization at LMUN 2020. **Toluwani** is a 500 level law student at the University of Lagos. He has over two years of MUN experience. In 2018, he was the delegate from Panama at LMUN where he won an honourable mention. In 2019, he was represented Maldives at the Babcock MUN.

The topics to be discussed by the committee at this year's conference are:

- I. Food Security and Climate Change
- II. Ensuring Equality in the Demand and Supply of Agricultural Produce

Delegates are reminded that this background guide is not to serve as a replacement of the research to be done by individual delegates, but instead is to serve as an introduction to the topic(s) to be discussed, that will guide their understanding of the various topics. Delegates are encouraged to conduct their research beyond the background guides and make use of the Annotated Bibliography and Bibliography which has been provided for further research.

In order to further prepare for the conference, each delegate or delegation is to submit a Position Paper on the date communicated after registration and assignment of country and committee, in accordance with the position paper guide.

Other essential documents that will aid preparation for the conference, has been provided for delegates on the LMUN website – www.lmun.ng.

If you have any questions or concerns regarding your preparation for the committee or the Conference itself, please contact me at – usqdevelopment@lmun.ng or the committee at – fao@lmun.ng.

We look forward to seeing you at LMUN 2020 Conference, the Fifth Session.

Rafiat Shittu

USG Development Department, LMUN 2020

Abbreviations

CESCR	United Nations Committee on Economic, Social, and Cultural Rights
CFS	Committee on World Food Security
CO2	Carbon dioxide
COP	Conference of the Parties
CSO	Civil Society Organization
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GHGs	Greenhouse gases
GNAFC	Global Network against Food Crises
ICESCR	International Covenant on Economic, Social and Cultural Rights
IFAD	International Fund for Agricultural Development
IIA	International Institute of Agriculture
IPC	Integrated Food Security Phase Classification
LDC	Least Developed Country
MDGs	Millennium Development Goals
N2O	Nitrous Oxide
NAPA	National Adaptation Programmes of Action
NGO	Non-Governmental Organization
SDGs	Sustainable Development Goals
UCDP	Uppsala Conflict Data Program
UNFCCC	United Nations Framework Convention on Climate Change
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WHO	World Health Organization

Committee Overview

Introduction

The Food and Agricultural Organization (FAO), founded in 1945, is a specialized agency of the United Nations (UN) that spearheads international efforts to eradicate hunger and food insecurity.¹ It partners with the UN through the Economic and Social Council (ECOSOC). FAO facilitates partnerships between the UN, Non-Governmental Organizations (NGOs), Civil Society Organizations (CSOs), Member States, the private sector and other stakeholders in a bid to achieve food security for everyone around the world through regular access to enough high-quality food to lead active and healthy lives. The work of the FAO spans across reduction of hunger, malnutrition and food insecurity; increase of the sustainability and productiveness of agriculture, forestry and fisheries; reduction of rural poverty; enabling inclusive and efficient agricultural and food systems; and improving the resilience of livelihoods to disasters.² Currently, the FAO has over 194 Member States and works in over 130 States worldwide.

Before the FAO, the International Institute of Agriculture (IIA) was founded in 1905 in Rome to study the state of agriculture, and disseminate the information gathered.³ In 1943, the Interim Commission on Food and Agriculture was established to create a permanent agricultural organization, and this eventually culminated into the formation of the FAO.⁴ Shortly after the end of the Second World War, the Constitution of the FAO was signed at the First Session of the Conference of the FAO and entered into force on 16 October 1945.⁵ Subsequently, the FAO inherited the statistical data of the IIA and continued its core mission which is the needs of farmers, agriculture and economic development.⁶

In the first two decades after its establishment, FAO facilitated the establishment of important agricultural agreements and institutions, amongst which was the World Food Program (WFP) in 1961.⁷ In 1974, against the backdrop of famine and global crises, the first World Food Conference convened in Italy.⁸ Here, Member States adopted the *Universal Declaration on the Eradication of Hunger and Malnutrition* (1974) affirming that, “every man, woman has the inalienable right to be free from hunger and malnutrition in order to develop fully and maintain their physical and mental faculties”.⁹ In commemoration of the founding of the FAO, the FAO Conference adopted *Resolution 1/79* (1979) to establish World Food Day to be observed on 16 October annually.¹⁰ At the World Food Summit in 1996, the *Rome Declaration on World Food Security* and the *World Food Summit Plan of*

¹ FAO, *About FAO*, 2019.

² *Ibid.*

³ FAO, *FAO-Its origins, formation and evaluation 1945-1981*, p. 3-5.

⁴ *Ibid.*, p 12-13.

⁵ *Ibid.*, p. 13.

⁶ FAO, *About FAO*, 2019.

⁷ *Ibid.*

⁸ FAO, *World Food Summit*.

⁹ FAO, *World Food Summit*; UNOHCR, *Declaration on the Eradication of Hunger Malnutrition*, 1996-2019.

¹⁰ FAO, *Major Trends and Policies in Food and Agriculture*.

Action were adopted. Both recognized seven broad commitments such as the eradication of poverty, implementation of policies to improve physical and economic access of nutritionally adequate and safe food, agriculture, fisheries, forestry and rural development policies.

Governance, Structure and Membership

FAO is a specialized agency of the UN and reports to ECOSOC.¹¹ FAO currently has 194 members, two associates (the Faroe Islands and Tokelau) and one-member organization (European Union). The supreme body of FAO is the all-member FAO Conference, created by *Article III of the FAO Constitution (1945)*,¹² which holds its regular biennial sessions in Rome. Although it may meet in special sessions if there is a majority vote at the regular session.¹³ Each Member State and Associate Nation is represented by one delegate. Most importantly, the latter reserves the right to participate in the deliberations of the Conference but can neither vote nor hold office.¹⁴ Each Member Nation is entitled to one vote on the condition that they meet up with their financial obligations. The Conference bears the responsibility of making recommendations to Member States and Associate Members, by a two-thirds majority, on issues relating to food and agriculture for consideration with the ultimate aim that they would implement these nationally.¹⁵ Also, it may make recommendations to any international organization regarding issues relating to the FAO and may review the decisions made by the Council or any other subsidiary body of the FAO and may establish Regional Conferences. Regional Conferences exist for Africa, Asia and the Pacific, Europe, Latin America and the Caribbean and Near East Africa and North Africa.¹⁶ These are the highest governing bodies of the Council and they act as a forum for discussion on regional priorities, as well as challenges to formulate a stance regarding global policy for Members.

The Council of the FAO consists of 49 Member Nations with a Chairperson, all elected by the Conference. Each of which has one representative and is entitled to one vote elected for a period of three years; but each Member of the Council may appoint alternates, associates and advisers to its representative.¹⁷ Its activities are guided by rules laid down by the Conference. The Council acts as on current food and agricultural activities and situations, and activities of the organization as a whole, including the development of the Programme of Work.¹⁸

A Director-General of the Organization shall be appointed by the Conference for a term of four years and is entitled to re-election for another period of four years. The current

¹¹ FAO, *About FAO*, 2019.

¹² *Constitution of the United Nations Food and Agriculture Organization*, adopted 16 October 1945.

¹³ *Ibid.*

¹⁴ FAO, *Basic Texts of the Food and Agricultural Organization of the United Nations Volumes I and II 2017 edition*.

¹⁵ *Ibid.*

¹⁶ FAO, *FAO Regional Conferences*, 2019.

¹⁷ FAO, *Basic Texts of the Food and Agricultural Organization of the United Nations Volumes I and II 2017 edition*.

¹⁸ FAO, *Governing and Statutory Bodies: Council*.

Director-General of the Organization is Qu Dongyu, elected as the ninth Director-General since FAO was founded. The organization is composed of six main departments: Agriculture and Consumer Protection; Economic and Social Development; Fisheries and Aquaculture; Forestry; Corporate Services; Human Resources and Finance; and Technical Cooperation.¹⁹ Specialized divisions further support these departments. For example, the Agricultural and Development Economics Division (ESA) is the focal point for FAO's economic research and policy analysis for world food security and sustainable development. It focuses on the analysis of agricultural and rural development programs and projects, and produces comparative studies on agriculture, at country and regional level, in the overall economic development process and poverty reduction.²⁰

The FAO is funded from various sources, with the bulk of the funds coming from compulsory assessed contributions by Member States, as well as voluntary contributions by Member States. The total FAO planned budget for 2018-2019 is \$2.6 billion. Of this amount, 39% comes from assessed contributions paid by member countries while 61% will be mobilized through voluntary contributions from Members and other partners.²¹ The amounts Member States are assessed are determined at the FAO Conference.²² Special funding is earmarked for programs and includes contributions from Member States, international financial institutions, and the private sector, with funding often directed towards specific programs.²³

Mandate, Functions and Powers

FAO's primary responsibilities are outlined in the *Basic Texts of FAO* that includes *FAO's Constitution* (1945) and the applicable *Rules of Procedure*.²⁴ The mandate of the FAO, as outlined in the preamble of the Constitution, is to address the following: "raising levels of nutrition and standards of living of the peoples; improvements in the efficiency of the production and distribution of all food and agricultural produce; bettering the condition of rural populations; and is contributing towards an expanding world economy and ensuring humanity's freedom from hunger." Invariably, FAO deals with increasing the level of nutrition and not directly the production of food.²⁵ FAO works closely with agencies such as the World Food Programme to facilitate the distribution of food, especially in times of emergency.

The core functions of the FAO are to collect and analyse information related to nutrition, food and agriculture and to make this collection and analysis of data available.²⁶ Further, FAO provides technical assistance to Member States, organizes programs and missions,

¹⁹ FAO, *Departments*.

²⁰ FAO, *Economic and Social Department (ES)*.

²¹ FAO, *About*.

²² FAO, *Strategic Planning*.

²³ FAO, *Technical Cooperation Department*; FAO, *Strategic Planning*.

²⁴ FAO, *Basic Texts of the Food and Agriculture Organization of the United Nations*, Volume I and II, 2017.

²⁵ UNEP, *United Nations Specialized Agencies versus United Nations Programs*, 2010.

²⁶ FAO, *Basic Texts of the Food and Agriculture Organization of the United Nations*, Volumes I and II, 2013, p.3.

cooperates with Member States, and takes appropriate measures to implement the mandate of the organization set forth in the preamble.²⁷

Furthermore, complementing its core functions is its provision of assistance in emergencies.²⁸ Owing to the complementary relationship between conflicts and decline in nutrition, FAO has organized programs in multiple regions to mitigate this risk of food insecurity through a multi-sector approach premised on these four thematic pillars: “Enabling the Environment; Watch to Safeguard; Apply Risk and Vulnerability Reduction Measures; and Prepare to respond.”²⁹

Recent Sessions and Current Priorities

The current efforts of the FAO are guided by the themes of gender, governance, nutrition and climate change impacts in all aspects of its work.³⁰ The FAO has reaffirmed its commitment to eradicating hunger, and in recent years paid focus to the effect of climate change on agriculture, fisheries, and forestry, and promoted the adoption of adaptation and mitigation measures such as climate-smart agriculture, sustainable agriculture and fisheries practices. In sync with the reality of the Sustainable Development Goals (SDGs), FAO set broad goals of the 2030 Agenda which are: end poverty, hunger and malnutrition, sustainable development in agriculture, fisheries and forestry and combat and adapt to climate change. Undoubtedly, these broad goals are interlinked with the attainment of the SDGs.

The 41st Session of the FAO held from 22-29 June 2019. The new chairperson was elected from Uruguay and the importance of the participation of young people, especially women, in agricultural activities was noted. Recognizing a reversal in the attainment of the SDG 2, the Conference endorsed the Biennial Theme 2020-2021 “Promoting healthy diets and preventing all forms of malnutrition”, stressing that FAO has a leading role in supporting countries in transitioning towards sustainable agriculture and food systems.³¹

The 163rd FAO Council Session held from 2-6 December 2019 in Rome. The Council endorsed the Multi-Year Programme of Work (MYPow) for 2020-2023 which, through its prioritized thematic work streams, provides a comprehensive framework for accelerating progress toward meeting SDG 2 targets by 2030.³² It also encouraged the consideration of the Committee on World Food Security(CFS)’s involvement in the preparation of the planned World Food Systems Summit.

FAO is the proposed custodian UN agency for 21 SDG indicators across Goals 2 (Zero Hunger), 5 (Gender Equality), 6 (Clean Water and Sanitation), 12 (Responsible

²⁷ FAO, *FAO Attributes, Core Functions, and Comparative Advantages*.

²⁸ FAO, *FAO in Emergencies: Resilience*.

²⁹ FAO, *Resilient Livelihoods: Disaster Risk Reduction for Food and Nutrition Security*, 2013.

³⁰ FAO, *Our Priorities: The Strategic Objectives of the FAO*, 2019.

³¹ FAO, *Report of the Conference of the FAO*, Forty-first Session; Rome, 22-29 June 2019.

³² FAO, *Report of the Council of FAO*, Hundred and Sixty-third Session, Rome, 2-6 December 2019.

Consumption), 14 (Life Below Water) and 15 (Life on Land).³³ FAO can support governments to set national priorities and targets; foster strong and coherent institutional and policy environments; engage all actors concerned in national policy processes and dialogues, as well as contribute to innovative partnerships. It can also support national statistical institutions to produce global and national indicators, support governments to report on challenges and results; contribute to mobilizing resources in support to national efforts; and contribute to the follow-up and review of SDGs.

Further, the FAO conducts evaluations to assess activities, projects, strategies and policies, to guide its dissemination of evidence-based information that can be incorporated in decision-making processes. The recently concluded evaluations include: evaluation of its partnerships with the private sector, mid-term evaluation of disposal of obsolete pesticides including persistent organic pollutants, promotion of alternatives and strengthening pesticides management in the Caribbean, evaluation of the project land indicators and Rangelands Management in Smallholders Agro-pastoral Production Systems in South Western Angola (RETESA).³⁴

Conclusion

The FAO is currently guided by objectives which include eliminating hunger, food insecurity and malnutrition, making forestry and fisheries more productive and sustainable, reducing rural poverty, enabling inclusive and efficient agricultural and food systems, increasing the resilience of livelihoods to threats and crises- in setting out its actions, programs and policies. However, the role of multilateralism of State parties in these efforts cannot be undermined, also there has to be interagency cooperation with other UN agencies for an effective realization. Not forgetting the realization of the SDGs by 2030, FAO, and with its partner organizations, play an integral role towards this end as there is an interconnection between the reduction of hunger, malnutrition and food insecurity and the realization of the SDGs.³⁵

Annotated Bibliography

Food and Agricultural Organization of the United Nations, “Achieving Zero Hunger by 2025”, available at: <http://www.fao.org/3/18624en/18624EN.pdf> (accessed 16 December 2019)

This document contains the declaration by African Heads of State and government address hunger by 2025. This document would provide delegates

³³ FAO, *FAO and SDGs Indicators: Measuring up to the 2030 Agenda for Sustainable Development*.

³⁴ FAO, *Evaluation at FAO*, 2019.

³⁵ FAO, *FAO and the SDGs*, 2015.

with a veritable tool to better understand the urgency of the attainment of food security.

Food and Agriculture Organization, “Basic Texts of the Food and Agriculture Organization, Volumes I and II”, available at: <http://www.fao.org/docrep/meeting/022/k8024e.pdf> (accessed 16 December 2019)

This document is basically the Constitution of the FAO as it delineates all the powers and functions of its member-bodies as well as the structure and programs of the organization. This will help delegates better understand the power and mandate of the FAO, towards a well-rounded discussion at the Conference.

Food and Agriculture Organization, “FAO and the SDGs” [Report], available at: <http://www.fao.org/3/a-i6919e.pdf> (accessed 16 December 2019)

This document explicitly reveals the interrelation between the priorities of the FAO and the SDGs. Basically; it brings to limelight FAO’s actions towards ensuring that the SDGs are achieved by 2030. Hence, this document helps delegates tailor their decisions to revolve around the achievement of the SDGs.

Food and Agriculture Organization, “Our Priorities: FAO Strategic Objectives”, available at: <http://www.fao.org/3/mi317e/mi317e.pdf> (accessed 16 December 2019)

This document contains the current priorities of the FAO as well as strategic objectives towards its achievement. Therefore, delegates will find this useful in understanding issues that are at the front-burner for Member States of the FAO.

Food and Agriculture Organization, “State of Food and Agriculture [Report]”, available at: <http://www.fao.org/docrep/018/i3300e/i3300e.pdf> (accessed 16 December 2019)

This document provides an in-depth analysis of global food security, through well-researched statistics and qualitative data. Without any doubt, delegates will find this of immense help in demystifying the problem of global food security towards ultimately addressing it.

Bibliography

Food and Agricultural Organization of the United Nations, “About FAO”, available at: <http://www.fao.org/about/en/> (accessed 16 December 2019)

Food and Agricultural Organization of the United Nations, “World Food Summit”, available at: <http://www.fao.org/wfs/> (accessed 16 December 2019)

Food and Agriculture Organization, “FAO - its origins, formation and evolution 1945-1981 [Website], available at: <http://www.fao.org/docrep/009/p4228e/P4228E02.html> (accessed 16 December 2019)

Food and Agricultural Organization of the United Nations, “FAO Regional Conferences”, available at: <http://www.fao.org/about/meetings/about-regional-conferences/en> (accessed 16 December 2019)

Food and Agriculture Organization, “Governing and Statutory Bodies: Council”, available at: <http://www.fao.org/unfao/govbodies/gsbhome/council/en/> (accessed 16 December 2019)

Food and Agriculture Organization, “FAO in Emergencies: Resilience”, available at: <http://www.fao.org/emergencies/how-we-work/resilience/en/> (accessed 16 December 2019)

Food and Agriculture Organization, “FAO Attributes, Core Functions, and Comparative Advantages”, available at: <http://www.fao.org/docrep/meeting/025/md881e01.pdf> (accessed 16 December 2019)

Food and Agriculture Organization, “Strategic Planning”, available at: <http://www.fao.org/about/strategic-planning/en/> (accessed 16 December 2019)

Food and Agriculture Organization, “Resilient Livelihoods: Disaster Risk Reduction for Food and Nutrition Security”, available at: <http://www.fao.org/docrep/015/i2540e/i2540e00.pdf> (accessed 16 December 2019)

Food and Agriculture Organization, “Technical Cooperation Department”, available at: http://www.fao.org/tc/funding_en.asp (accessed 16 December 2019)

Food and Agriculture Organization, “Our Priorities: FAO Strategic Objectives”, available at: <http://www.fao.org/3/mi317e/mi317e.pdf> (accessed 16 December 2019)

United Nations Environment Programme, “United Nations Specialized Agencies versus United Nations Programs”, available at: http://www.rona.unep.org/documents/partnerships/IEG/UN_Specialised_Agencies_Vs_UN_Programmes.pdf (accessed 16 December 2019)

I. Climate Change and Food Security

“We must connect the dots between climate change, water scarcity, energy shortages, global health, food security, and women’s empowerment. Solutions to one problem must be solutions for all” – Ban Ki-Moon, Former Secretary-General of the United Nations³⁶

Introduction

The rise of global temperatures since the first industrial revolution in about 1850 drew the attention of the international community to the need to tackle climate change and its adverse effects.³⁷ These changes have serious impacts on the four dimensions of food: food availability, food accessibility, food utilization and food systems stability.³⁸ Thus, food production is at the mercy of unpredictable weather, but a rapidly changing climate is making agriculture an even more vulnerable enterprise. Climate influences crop growth, total yield, pest occurrence, water availability, fertilizer need and even the quality of the food produced. Therefore, a disruption of favourable weather patterns and extreme weather events can affect food production which in turn affects food security and its related components.³⁹

This connection between climate change and food security cannot be overlooked, as the increasing world population constantly needs food to survive.⁴⁰ In 2017, the FAO reported that 819 million people are undernourished.⁴¹ It is projected that global population will grow to around nine billion by 2050.⁴² This will have implications on land use, food production systems, access to food and could potentially lead to civil unrest.⁴³ Due to climate change, extreme weather events such as droughts and floods have become more frequent adding to the global burden of hunger caused by poverty, weak governance, conflict, poor market access, and food shortage.⁴⁴ These weather disruptions and the effects have adversely impacted the availability of food in different regions, and have put world food security at risk.

As countries differ in their development level, so do they vary in their vulnerability to climate change, the amount and type of greenhouse gas (GHG) emissions they emit and their opportunities to reduce GHG emissions and improve agricultural productivity.⁴⁵ The most vulnerable to climate change risks are the populations in the least developed and some developing regions who depend on agriculture for food security. Africa is the world’s most vulnerable to the impacts of climate change, despite being the least contributor to

³⁶ UN, *Addressing the 66th Assembly: We the Peoples*, 2012.

³⁷ FAO, *Climate Change and Food Security: A Framework Document*, Rome, 2008.

³⁸ *Ibid.*

³⁹ *Ibid.*

⁴⁰ FAO, *How to Feed the World in 2050*.

⁴¹ FAO, *State of Food Security and Nutrition in the World*, 2017.

⁴² UN, *World Population Prospects 2019*.

⁴³ International Food Policy Research Institute, *Conflict and Food Security*.

⁴⁴ WFP, *Climate Impacts on Food Security*, 2018.

⁴⁵ FAO, *Climate-Smart Agriculture*, 2010.

global emissions. Africa accounts for only 2-3% of the world's carbon dioxide emissions from energy and industrial sources.⁴⁶

On the other hand, the food production process in turn contributes to climate change through the emission of GHGs. It is important that in proffering solutions to this issue, transformational investments climate-smart agricultural practices should be encouraged to progressively tackle climate change while ensuring the resilience and continued productivity of food systems around the world should be capitalized.

In order to address the threat of climate change and food insecurity, Member States, civil society, and other international actors will need to create and implement food security strategies that include adaptive and mitigation tactics in addressing climate change.⁴⁷ At the 2017 UN Climate Change Conference, the 23rd Conference of Parties (COP) to the 1992 UN Framework Convention on Climate Change (UNFCCC), world leaders and experts acknowledged global food security could be achieved through coordinated efforts towards addressing climate change, poverty, and hunger.⁴⁸

International and Regional Framework

Given the importance of achieving global food security, various international documents address and provide for the right of an individual to adequate food and nutrition. The *Universal Declaration of Human Rights* (UDHR) (1948) recognized the right to food as part of the right to a decent standard living.⁴⁹ *Article 1 of the Universal Declaration on the Eradication of Hunger and Malnutrition*, adopted at the World Food Conference in 1974, provides that everyone has the right to be free from hunger and malnutrition and it is a fundamental responsibility of Governments to work together for higher food production and efficient distribution of food between countries.

Under, *Article 11(1) of the International Covenant on Economic, Social and Cultural Rights* (ICESCR), the right of everyone to an adequate standard of living for himself and his family, including adequate food.⁵⁰ Hence, State Parties are obliged to respect, promote and protect and to take appropriate steps to achieve progressively the full realization of the right to adequate food.⁵¹ The UN Committee on Economic, Social, and Cultural Rights (CESCR) in charting a direction for attaining food security has stressed that:

The right to adequate food is realized when every man, woman and child, alone or in community with others, have physical and economic access at all times to adequate food or means for its procurement. The core content of the right to adequate food implies the availability of food in a quantity and

⁴⁶ UNFCCC, *Africa is Particularly Vulnerable to the Expected Impacts of Global Warming*, Nairobi 2016.

⁴⁷ FAO, *Climate Change and Food Security: Risks and Responses*, 2016.

⁴⁸ *Ibid.*

⁴⁹ General Assembly, *Universal Declaration of Human Rights*, 10 December 1948, 217 A (III), article 25.

⁵⁰ General Assembly, *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, UNTS vol. 993, p. 3.

⁵¹ FAO, *The Human Right to Adequate Food and Freedom from Hunger*, 1998.

quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture and the accessibility of such food in ways that are sustainable and that do not interfere with the enjoyment of other human rights. Accessibility encompasses both economic and physical accessibility.⁵²

In the *Rome Declaration on World Food Security* (1996), States “reaffirmed the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger.⁵³ Also, a mandate of the Special Rapporteur on the right to food was established by the Commission on Human Rights in 2000.⁵⁴ It was endorsed and extended by the Human Rights Council to monitor the situation of the right to food throughout the world, identify general trends related to the right to food, and promotes the realization of the right to food through dialogue with relevant actors.⁵⁵ The Human Right Council’s advisory committee also analyses issues relevant to the right to food.

In 1994, *United Nations Framework Convention on Climate Change* (UNFCCC) was adopted to provide an overall policy framework for addressing climate issues and prevent “dangerous” human activity from interfering with the climate system and stabilize greenhouse gas concentrations.⁵⁶ The Conference of Parties (COP) to the *UNFCCC*, in partnership with the FAO, raises awareness on agriculture and food security concerns for the next global climate change agreements, which would result in the integration of climate change challenges into food security as well as food security principles into national sectoral policies and programs to address climate change.⁵⁷ Following the UNFCCC, the *Kyoto Protocol* was adopted in 1997, an expansion of the goals and Member States’ commitments to addressing climate change worldwide.⁵⁸ In achieving this, parties to the Protocol are also to implement policies and measures towards the promotion of sustainable forms of agriculture in the light of climate change considerations. In 2015, the *Paris Agreement* also within the *UNFCCC*, was adopted with aims to strengthen the global response to the threat of climate change by keeping the global temperature below 2°C and strengthen the ability of countries to deal with the impacts of climate change. Within the Paris Agreement, a specific preamble focuses on “safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change”.

⁵² UN Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 12: The Right to Adequate Food (Article 11 of the ICESCR)*, 12 May 1999, E/C.12/1999/5, pp. 6, 8 and 13.

⁵³ FAO, *Rome Declaration on World Food Security and World Food Summit Plan of Action*, World Food Summit, 13-17 November 1996.

⁵⁴ UN Commission on Human Rights, *Resolution 2000/10: The right to food*, 17 April 2000, E/CN.4/RES/2000/10.

⁵⁵ Human Rights Council, *Resolution 6/2: Mandate of the Special Rapporteur on the right to food* (2007).

⁵⁶ General Assembly, *United Nations Framework Convention on Climate Change: resolution/adopted by the General Assembly*, 20 January 1994, A/RES/48/189.

⁵⁷ FAO, *Policy Support and Governance: UNFCCC*.

⁵⁸ UNFCCC, *Kyoto Protocol to the United Nations Framework Convention on Climate Change* (UNFCCC), adopted at COP3 in Kyoto, Japan, on 11 December 1997.

Recognizing the links between climate change and food security, the General Assembly *Resolution 70/1*, Transforming our world: 2030 Agenda for Sustainable Development, encouraged Member States, civil society, and other international actors to take the steps necessary to reach the 17 Sustainable Development Goals (SDGs), such as eradication of world hunger (Goal 2), and combat climate change and its impacts (Goal 13).⁵⁹ It encourages international cooperation to ensure investment in infrastructure and technology to improve agricultural productivity.⁶⁰ Goal 13 provides for mitigation and adaptation efforts towards achieving climate security. The FAO has recognized the nexus between climate change and food security and ultimately proffers methods aimed at creating resilience to climate change to achieve food security.⁶¹

Role of the International System

The international system is constantly dedicated to achieving food security and reducing world hunger and starvation. Since the establishment of the FAO, it has been active in its primary objective to raise levels of nutrition throughout the world and eradicate global starvation, through its efforts as well as partnerships with various organizations. Under its climate-smart agriculture framework, FAO supports Member States in building technical expertise to better develop adaptation and mitigation measures against climate change.⁶² From 2009 to 2017, FAO has implemented over 300 programmes and projects to tackle problems caused by climate vulnerability. Equally, whilst recognizing the challenges faced by developing countries and the paucity of resources, FAO assists LDCs in designing National Adaptation Plans (NAPs) and National Appropriate Mitigation Actions and in fulfilling their pledges towards climate security under the Nationally Determined Contributions (NDCs).⁶³ FAO also assists countries in integrating forest-related climate change mitigation and adaptation measures into their NAPs, National Forest Programs (NFPs) and other forest policy and planning processes since situating forests in a landscape context have effects on climate change mitigation and food security.⁶⁴ The FAO, recognizing the crucial role of sustainable soil practices in mitigating climate change, has equally established the Global Soil Partnership for Food Security and Climate Change Mitigation and Adaptation.⁶⁵ In addition, FAO has been a longstanding member of the Global Alliance for Climate-Smart Agriculture (GACSA).⁶⁶ This is an inclusive, voluntary multi-stakeholder platform that works towards three major outcomes; improving farmers' agricultural productivity and incomes in a sustainable way; building farmers' resilience to extreme weather and changing climate; reducing greenhouse gas emissions associated with agriculture when possible.⁶⁷

⁵⁹ General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015.

⁶⁰ UNDP, *Sustainable Development Goals*, 2020.

⁶¹ FAO, *Climate Change and Food Security: Risks and Responses*, 2016.

⁶² FAO, *Climate Change* 2019.

⁶³ *Ibid.*

⁶⁴ FAO, *Climate Change for Forest Policy-makers*, 2018.

⁶⁵ FAO, *Global Soil Partnership for Food Security and Climate Change Mitigation and Adaptation* 2011.

⁶⁶ FAO, *Climate Smart Agriculture* 2019.

⁶⁷ FAO, *Policy Support and Governance* 2019.

Also, the World Food Programme (WFP) is an agency which seeks to eradicate world hunger and achieve global food security. It was established in 1961 as a multilateral food aid programme is the leading humanitarian organization addressing food security through the delivery of food assistance in emergencies and working with communities to improve nutrition and build resilience.⁶⁸ WFP assists 86.7 million people in around 83 countries each year.⁶⁹ WFP's emergency and recovery operations in the last decade have been in response to climate-related disasters, at a cost of \$23billion.⁷⁰ WFP along with partners provides document analysis highlighting the links between food security and climate risks. The Food Security and Climate Change Vulnerability map developed by WFP and the UK Met Office highlights the importance of urgent action to scale up climate change adaptation and mitigation efforts for the most food-insecure people.⁷¹ Through initiatives such as the Food Security Climate Resilience Facility and R4 Rural Resilience Initiative launched in 2011, the WFP helps the most food-insecure people and countries in innovative integrated climate risk management approach in implementing the *Paris Agreement*.

The Global Network against Food Crises (GNAFC) was launched at the 2016 World Humanitarian Summit by the European Union, FAO and World Food Programme (WFP) with the objective of tackling the root causes of food crises through shared analysis and information, strategic programming, strengthened coordination and high-level policy uptake and analysis in evidence-based responses across the humanitarian-development nexus, towards developing innovative approaches to food security.⁷²

Furthermore, several funds within the UN system finance activities aimed at reducing greenhouse gas emissions and increasing resilience to the negative impacts of climate change. The Global Environment Facility (GEF) established in 1991 an independent financial organization providing grants to developing countries for projects that benefit the global environment and promote sustainable livelihoods in local communities, and is the financing mechanism of the UNFCCC. It contributes to the overall objectives reducing or avoiding greenhouse gas emissions in the areas of renewable energy, energy efficiency and sustainable transport, and by supporting interventions that increase resilience to the adverse impacts of climate change in vulnerable countries, sectors and communities.

In addition, the International Fund for Agricultural Development (IFAD) is established to invest in rural people, empowering them to increase food security, improve the nutrition of their families and increase their incomes. The organization helps such rural people to build resilience and take charge of their development. Since 1978, IFAD has provided over \$21 billion in grants and low-interest loans to projects that have reached about 491 million people.⁷³ IFAD's Adaptation for Smallholder Agriculture Programme (ASAP) is the largest

⁶⁸ General Assembly Resolution: A/RES/1714(XVI) Ft 1; WFP, "Overview".

⁶⁹ *Ibid.*

⁷⁰ WFP, *Climate Change*.

⁷¹ *Ibid.*

⁷² FAO, *The Global Network against Food Crises holds its first high-level meeting 2019*.

⁷³ IFAD, "About Us".

global climate change adaptation programme for smallholder farmers. The organization channels climate and environmental finance to smallholder farmers, helping them to reduce poverty, enhance biodiversity, increase yields and lower greenhouse gas emissions, and has helped 8 million vulnerable smallholders in 43 countries cope with the impact of climate change and build more resilient livelihoods.⁷⁴ IFAD is also an executing agency of the Global Environment Facility (GEF) and of the Green Climate Fund (GCF) which are among the main financial mechanisms for addressing poverty alleviation, sustainable ecosystem management and climate change adaptation and mitigation.

Impact of Climate Change on Food Production

Food production is at the mercy of unpredictable weather, but a rapidly changing climate is making agriculture an even more vulnerable enterprise. The overall impact of climate change on agriculture is expected to be negative, reducing food production/supplies and raising food prices. The impacts of climate change on food production includes shortening of crop yields and negatively altering their nutrients. This is because growing crops in harsh and unfavourable weather affects the crops healthy formation. This invariably leads to worsened malnutrition challenges inclusive of obesity and nutrition challenges in poor communities.⁷⁵ In 2011, at the USA, exposure to high-temperature events caused over \$1 billion in heat-related losses to agricultural producers.⁷⁶

These losses not only apply to crop products but also animals, livestock and fisheries. Heat stress affects animals both directly and indirectly. Over time, heat stress can increase vulnerability to disease and reduce fertility.⁷⁷ Rising temperatures are predicted to reduce potential catches of many fish species in the tropics by 40-60% and in the high latitudes by 30-70% by 2055 as a result of species redistribution.⁷⁸ This makes it pertinent to address climate change because it relates to food security, which is connected with poverty alleviation.

Furthermore, FAO has recognized that future water availability for food security as a result of climate change is a looming problem which can be averted by market-based instruments such as water-pricing and water trading to enhance water use and improve water demand management and has also proffered climate-compatible trade policies as a solution to this menace.⁷⁹ The FAO in partnership with Le Centre d'Actions et de Realisations Internationales (CARI) is implementing the AVACLIM (Agro-ecology, Ensuring Food Security and Sustainable Livelihoods while Mitigating Climate Change and Restoring Land in Dryland Regions) Project in Burkina Faso, Senegal, Ethiopia, South Africa, Morocco, India and Brazil to ensure food security and sustainable livelihoods while mitigating the effects of climate

⁷⁴ IFAD, "Ensuring Environmental Sustainability and Building Resilience to Climate Change".

⁷⁵ FAO, *Climate Change and Food Systems* 2015.

⁷⁶ U.S. Global Change Research Program, "Climate Change Impacts in the United States: The Third National Climate Assessment".

⁷⁷ FAO, *Climate Change* 2020.

⁷⁸ *Ibid.*

⁷⁹ *Ibid.*

change through increased carbon storage, supporting biodiversity and transition into sustainable agricultural practices through locally appropriate solutions.⁸⁰

Vulnerability of Smallholder Farmers

There are an estimated 500 million small farms in developed regions supporting almost 2 billion people.⁸¹ These small farms produce about 80% of the food consumed in Asia and Sub-Saharan Africa.⁸² Across the world, most especially in the least developed and developing regions, smallholder farmers are responsible for the production of key agricultural sectors and are a vital prerequisite for achieving stable national food security. However, they are adversely affected by factors caused by climate change with larger implications on food deficit, leading to chronic starvation, food shortages and malnutrition. This is largely as a result of the lack of access to funds and technological benefits to intensify agricultural output.⁸³ In fact, the number of the poor could increase between 35 and 122 million by 2030 if the status quo remains.⁸⁴ A FAO assessment of 189 countries' Intended Nationally Determined Contributions (INDCs) indicates that developing and less-developed countries urgently need support. These INDCs rely 90% on their agricultural sector in their adaptation/mitigation strategies.⁸⁵

Also vulnerable to the adverse effects of climate change to their food systems are indigenous communities, which are estimated to be about 370 million or 15% of the poorest.⁸⁶ Global climate change is regarded as the most pervasive, overarching threat to security of the food systems of indigenous people.⁸⁷ The protection of the right to food of indigenous people is critical to their identity and their survival, because they rely on their local food systems and immediate environment for food security.⁸⁸ Despite these challenges, it should be noted that indigenous people can help enhance the resilience of ecosystems where they inhabit through their innovative and creative ways, drawing on traditional knowledge, skills, and other technologies.⁸⁹ The FAO has suggested that indigenous adaptation mechanisms should be mainstreamed into global adaptation strategies in the sense that traditional knowledge is understudied and integrated into scientific research. This has yielded dividends in the Amazon Basin where indigenous communities are reintroducing hardy indigenous crops that are more resilient to unpredictable weather.⁹⁰ Further, that indigenous peoples have a key role to play in preserving carbon stocks by reducing deforestation and ensuring sustainable forest management which holds an estimated 1.5 billion hectares of land for smallholder farmers

⁸⁰ FAO, *Climate Change, Water and Food Security*.

⁸¹ FAO, *Climate Change 2020*.

⁸² *Ibid.*

⁸³ FAO, *FAO's Work on Climate Change*, 2016.

⁸⁴ *Ibid.*

⁸⁵ *Ibid.*

⁸⁶ UN, *International Day of the World's Indigenous People*, 2019.

⁸⁷ FAO, *Indigenous Peoples' Food Systems and Well-being*, 2013.

⁸⁸ *Ibid.*

⁸⁹ FAO, *FAO Policy on Indigenous and Tribal Peoples*, 2010.

⁹⁰ Development Aid, *Investments in Indigenous People, Youth and Women essential to Fight Climate Change in Latin America and Caribbean*, 2019.

to combine agriculture with trees.⁹¹ Equally, the UN has pioneered initiatives related to the issue of climate change as it relates to indigenous people, with the aim of greater land ownership for indigenous communities and participatory assessment of their farms and trees.⁹²

Furthermore, women play a major role in agriculture accounting for 43% of the agricultural labour force in developing countries.⁹³ This figure rises to more than 60% in parts of South Asia and Africa.⁹⁴ However, women face the challenge of having to adapt their production systems to the impacts of climate change and natural disasters. There are large differences between men and women in terms of impacts, vulnerabilities, responses and capacity to adapt to climate change. This includes access to resources, awareness, knowledge, training and information, essential services such as markets, and decision-making power,⁹⁵ as well as lack of purchasing power in some cases due to extreme variability of food prices caused by climate change. Ensuring equal access for women to productive resources, climate-smart and labour-saving technologies and practices is crucial to enhance the agricultural productivity and sustainability of agriculture.⁹⁶ FAO is committed to mainstreaming gender equality into climate-related planning processes, promoting inclusive and diversified sustainable food and agriculture systems to help reduce rural poverty and avoid crises linked to distress migration, conflict over resources and discrimination over social groups.⁹⁷

Access to Food in Climate-Related Disasters

One of the pillars of food security is food accessibility which encompasses the ability for all people to have physical access to food.⁹⁸ However, countries with the worst food crises in 2018 accounted for two-thirds of the total number of people in the world facing acute food insecurity – amounting to nearly 72 million people. Climate change was one of the drivers of food insecurity for the majority of the acutely food-insecure people of which about 29 million people were acutely food-insecure in 26 climate-affected countries with 23 million of them in 20 African countries.⁹⁹ Almost one-third of all climate disaster loss accrues in the agricultural sector. Such crises deprive the people within that region, access to food either physically or even financially due to price inflations of available food.

In 2018, Afghanistan suffered severe drought which put a strain on food production and stripped farmers and livestock keepers of their assets and livelihoods. This was the country's worst food insecurity emergency since the 2011 drought. The latest Integrated Food Security Phase Classification (IPC) reported that 13.5 million people faced severe

⁹¹ *Ibid.*

⁹² FAO, *Indigenous People Central to Combat Climate Change*, 2016.

⁹³ FAO, *Tackling Climate Change Through Rural Women's Empowerment*.

⁹⁴ *Ibid.*

⁹⁵ World Bank and FAO, *Training Module. How to integrate gender issues in climate-smart agriculture projects*.

⁹⁶ FAO 2011, *The State of Food and Agriculture; Women in Agriculture: Closing the gender gap for development*.

⁹⁷ FAO, *Strategy on Climate Change*, 2017.

⁹⁸ FAO, *Food Security Information Action*, 2008.

⁹⁹ FAO, *The State of Food Security and Nutrition in the World*, 2018.

acute food insecurity between November 2018 and February 2019. Six million more than last year. Alarming, of those severely food insecure, 3.6 million were experiencing emergency levels. Between January and May 2019, some 116,000 people have been internally displaced due to conflict at the critical time of harvest. Mass distress sale of livestock, high morbidity and mortality of animals and low productivity continue to be a major concern for pastoralists, who make up 70% of the population.¹⁰⁰ In 2018 the Syrian Arab Republic suffered its worst drought in 30 years followed by heavy, out-of-season rains, which, coupled with the effects of conflict, caused wheat production to hit a three-decade low. An estimated 6.5 million Syrians are food insecure in need of urgent action.¹⁰¹ Also, In Ethiopia, despite major improvements in southern pastoral areas in late 2017 and early 2018, the country still faced a major food security emergency in 2018 with 8 million people in need of food assistance. This was driven by several interrelated factors: the aftermath of three preceding years of poor rainfall, and high food prices.¹⁰²

Adaptation and Mitigation Strategies for Achieving Food Security

Adaptation measures to climate change deal with the impacts of climate change in a bid to reduce human and natural vulnerability.¹⁰³ The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”.¹⁰⁴ It involves learning to manage new risks and strengthening resilience in the face of change, dealing with shocks and preparing for increased frequencies of extreme events.

On the other hand, mitigation addresses the causes of climate change. By lessening the severity of key damages to the agricultural sector, adaptation is the key defensive measure. Agricultural production is projected to increase in developing countries, so are agricultural emissions, which contribute to climate change. IPCC estimates that Nitrous Oxide (N₂O) emissions are projected to increase by 35-60% and CH₄ by 60%, with additional emissions from land being converted to agriculture.¹⁰⁵ From the onset of international negotiations on climate change, it has been clear that ensuring food security and food production is, therefore, one objective of the negotiations on climate change mitigation. *Article 2 of the UNFCCC* states that the actions to mitigate climate change and stabilize atmospheric GHG were to be done “in such a time frame to ensure that food production is not threatened”.¹⁰⁶

The FAO under the aegis of the UNFCCC was directly involved alongside the Global Soil Partnership in the Bonn Climate Change Conference which formed a springboard for

¹⁰⁰ FAO, *FAO in Emergencies*, 2019.

¹⁰¹ FAO/WFP, *Monitoring Food Security in Countries with Conflict Situations*, 2019.

¹⁰² FAO, *FAO in Emergencies*, 2019.

¹⁰³ FAO, *Climate Change Adaptation and Mitigation in Agriculture*, 2012.

¹⁰⁴ IPCC, 2007.

¹⁰⁵ *Ibid.*

¹⁰⁶ UN, *United Nations Framework Convention on Climate Change*, 1992.

actions to curb greenhouse emissions, fast-track resilience-building efforts and best practices on climate policy.¹⁰⁷ A major FAO strategy for combatting climate change focuses on adaptation and mitigation strategies in agriculture. It assists Member Countries by providing technical guidance, better data collection for improved decision making as regards the implementation of adaptive measures towards climate-smart agriculture and Disaster Risk Reduction policy and action.¹⁰⁸

Adequate Nutrition in the era of Climate Change

The number of undernourished people in the world was estimated in 2017 to be around 821 million,¹⁰⁹ and they are directly or indirectly dependent on agriculture for their livelihoods. These nutrition deficiencies are related to under-nutrition, micronutrient deficiencies, overweight and obesity; especially in regions with minimum food choice and options. Under-nutrition is still responsible for 15% of the global disease burden.¹¹⁰ Also, a 2018 report indicated that worldwide nearly 51 million children under five years of age had stunted growth and were wasted (too thin for their height – a sign of acute malnutrition), accounting for 7.5% of the global population of children of this age in 2017.¹¹¹

Climate change affects food production and supply. In turn, distribution systems are weakened especially in a growing number of low and middle-income countries which face a persistence of macronutrient and micronutrient undernutrition, as well as diet-related chronic diseases.¹¹² On the other hand, the food system faces additional pressure as the global population grows, to around 9 billion by 2050, and as dietary patterns shift towards higher consumption of calories, fats and animal products and away from cereals, roots, tubers and pulses,¹¹³ which are likely to increase total global food demand, GHG emissions and land competition.

Dietary changes are highly significant for the future food system because, per calorie, some food items require considerably more resources (such as land, water and energy) to produce than others.¹¹⁴ Methane, nitrous oxide and carbon dioxide emitted by livestock activities (i.e. enteric fermentation and manure management) and land-use changes make a substantial contribution to anthropogenic GHG Emissions.¹¹⁵

Conclusion

Without a doubt, there is a strong nexus between future food systems and climate change. The world currently faces food insecurity and the effects of climate change make it harder to achieve food security globally. In order to address this, a holistic approach, which

¹⁰⁷ FAO, *Global Soil Partnership*.

¹⁰⁸ FAO, *Climate Change Adaptation and Mitigation in Agriculture*, 2012

¹⁰⁹ FAO, *The State of Food Security and Nutrition in the World*, 2018.

¹¹⁰ *Ibid.*

¹¹¹ FAO, *The State of Food Security and Nutrition in the World*, 2018.

¹¹² WHO, *Global Nutrition Policy Review: What does it take to Scale Up Nutrition Action?* 2013.

¹¹³ FAO, *Cereals and Other Starch-Based Staples: Are Consumption Patterns Changing?* 2004.

¹¹⁴ FAO, *The Future of Food and Agriculture Trends and Challenges*, 2017.

¹¹⁵ FAO, *Tackling Climate Change through Livestock* 2013.

addresses climate change, whilst addressing projected population explosion and dietary concerns, should be taken. Member States must take steps towards sustainable agricultural practices to guarantee food security of present and future generations in a climate-friendly manner. Such steps must be taken in a sustainable way to guarantee the food security of present and future generations, as well as livelihoods that depend on food production, and without adding to the already obvious effects of climate change. Adopting climate change adaptation and mitigation tactics, such as community-supported agriculture, fisheries, and aquaculture helps in achieving food security while responding to the effects of climate change. Inclusion of women and indigenous populations helps build climate resilience in communities and provides additional economic opportunities. Developing national adaptation programs and climate change adaptation strategies, and collaborating with other nations, can strengthen bilateral and multilateral coordination on achieving food security and building climate resilience”.

Further Research

In the formulation of resolutions, delegates should also consider the following questions: How can information be used as a tool of adaptation to climate change in food systems? How can disadvantaged societies be equipped to absorb and recoup from losses due to climate-related risks and disasters? How can climate risks further be managed to ensure adaptation to a rapidly changing climate? Can food consumption mitigate climate change? If so, how can policies regulate it? How can international and regional cooperation be further enhanced to ensure the implementation of policies across nations and in particular developing countries? How can loss of food and food waste be addressed to ensure the utilization of food and adequate nutrition in the era of climate change? How can technology be utilized by the international community to mitigate the effects of climate-related risks and disasters on food systems? And how can developing countries gain access to these technologies? How can the capacity and ability of nations (especially the least developed ones) to achieve food security be further strengthened? How can nations ensure the effective implementation of policies formulated towards achieving food security?

Annotated Bibliography

Food and Agriculture Organization, Climate Change Adaptation and Mitigation in Agriculture, available at: <http://www.fao.org/elearning/Course/FCC/en/pdf/learnernotes0856.pdf> (accessed 16 December 2019)

This document will serve as a useful tool for delegates to understand the basic concepts of adaption and mitigation as it relates to agriculture and climate change. This will further aid in brainstorming ingenious ideas along this line.

Food and Agriculture Organization, “Food Security and Nutrition in the Age of Climate Change”, available at: <http://www.fao.org/3/ca1334en/CA1334EN.pdf> (accessed 16 December 2019)

This document provides a holistic analysis of the issues surrounding food security and nutrition in the age of climate change, as well as solutions to the challenges. Delegates will find this useful in understanding the interrelationship between nutrition levels and climate change, and will find it to be a useful foundation for proffering resolutions.

Food and Agriculture Organization, “Climate Change and Food Security”, available at: <http://www.fao.org/forestry/15538-079b31d45081fe9c3dbc6ff34de4807e4.pdf> (accessed 16 December 2019)

This document provides basic information on the connectivity between climate change and food security, and suggestions towards ways to move forward. It also shows the opportunities for the agriculture sector to adapt, as well as describing how it can contribute to mitigating the climate challenge. Delegates will find this useful in adopting solutions geared at ensuring food security in the face of climate change.

Food and Agriculture Organization, “The Future of Food and Agriculture: Trends and Challenges”, available at: <http://www.fao.org/3/a-i6583e.pdf> (accessed 16 December 2019)

This document contains global trends influencing food security and their challenges to food and agriculture. It also includes future projections on food production, population growth, nutrition and health, changing food systems owing to the effects of climate change. Delegates will benefit from this document and will gain insight into the future of food and agriculture especially in the light of sustainable development.

Food and Agriculture Organization, “Nutrition in Brief”, available at: <http://www.fao.org/3/a-i4142e.pdf> (accessed 16 December 2019)

This document would help delegates with basic knowledge and the relationship between agriculture, food and nutrition. It also highlights the work, strategy, policy and programmes of the FAO in nutrition in various regions. Delegates will find this document useful in understanding why nutrition matters in correlation with healthy diets, food composition, and consumption.

Food and Agriculture Organization, “The State of Food Security and Nutrition in the World”, available at: <http://www.fao.org/3/i9553en/i9553en.pdf> (accessed 16 December 2019)

This document highlights the most recent trends in hunger, food insecurity and malnutrition in all its forms; it closely scrutinizes the extent to which climate variability and extremes are undermining progress in areas of food security and nutrition, as well as providing guidance on how the key challenges can be overcome. Delegates will find this comprehensive document useful in understanding how Member States can build climate resilience for food security and nutrition.

Bibliography

Department of Economic and Social Affairs, “Indigenous Peoples: Climate Change”, available at: <https://www.un.org/development/desa/indigenouspeoples/climate-change.html> (accessed 2 April 2020)

Development Aid, *Investments in Indigenous People, Youth and Women essential to Fight Climate Change in Latin America and Caribbean*, 2019, available at: <https://www.developmentaid.org/#!/news-stream/post/55340/investments-in-indigenous-people-youth-and-women-essential-to-fight-climate-change-in-latin-america-and-the-caribbean> (accessed 2 April 2020)

Food and Agriculture Organization, “The United Nations Decade of Action on Nutrition”, available at: <http://www.fao.org/3/a-i6130e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Adapting Irrigation to Climate Change*, 2020, available at: <http://www.fao.org/in-action/aicca/overview/background/en/> (accessed 7 January 2020)

Food and Agriculture Organization, *Cereals and Other Starch-Based Staples: Are Consumption Patterns Changing?* 2004, available at: <http://www.fao.org/3/j1183e/j1183e00.htm> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate Change Adaptation and Mitigation in Agriculture*, 2012, available at: <http://www.fao.org/elearning/Course/FCC/en/pdf/learnernotes0856.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate Change and Food Systems*, 2015, available at: <http://www.fao.org/3/a-i4332e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate Change*, 2008, available at: www.fao.org/clim/index_en.htm (accessed 6 January 2020)

Food and Agriculture Organization, *Climate Change*, 2019, available at: <http://www.fao.org/climate-change/our-work/what-we-do/ndcs/en/> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate Change*, 2020, available at: <http://www.fao.org/climate-change/programmes-and-projects/detail/en/c/1199652/> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate Smart Agriculture*, 2019, available at: <http://www.fao.org/climate-smart-agriculture/news/detail/en/c/1198686/> (accessed 7 January 2020)

Food and Agriculture Organization, *Climate-Smart Agriculture*, 2010, available at: http://www.fao.org/fileadmin/user_upload/newsroom/docs/the-hague-conference-fao-paper.pdf (accessed 6 January 2020)

Food and Agriculture Organization, *Economic and Policy Analysis of Climate Change*, 2019, available at: <http://www.fao.org/in-action/epic/news-and-events/detail-events/en/c/1176126/> (accessed 7 January 2020)

Food and Agriculture Organization, *FAO in Emergencies*, 2019, available at: <http://www.fao.org/emergencies/countries/detail/en/c/161506> (accessed 7 January 2020)

Food and Agriculture Organization, *FAO Policy on Indigenous and Tribal Peoples*, available at: <http://www.fao.org/3/i1857e/i1857e00.pdf> (accessed 3 April 2020)

Food and Agriculture Organization, *FAO's Work on Climate Change*, 2016, available at: <http://www.fao.org/3/a-i6273e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Food Security Information Action*, 2008, available at: <http://www.fao.org/3/al936e/al936e00.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Global Soil Partnership for Food Security and Climate Change Mitigation and Adaptation*, 2011, available at: <http://www.fao.org/3/ap404e/ap404e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Global Soil Partnership*, available at: <http://www.fao.org/global-soil-partnership/resources/events/detail/en/c/1199051/> (accessed 3 April 2020)

Food and Agriculture Organization, *Impact of Disasters and Crises on Agriculture and Food Security*, 2018, available at: <http://www.fao.org/3/l8656EN/l8656en.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Policy Support and Governance*, 2019, available at: <http://www.fao.org/policy-support/mechanisms/mechanisms-details/en/c/450141/> (accessed 7 January 2020)

Food and Agriculture Organization, *Policy Support and Governance: UNFCCC*, available at: <http://www.fao.org/policy-support/mechanisms/mechanisms-details/en/c/448826/> (accessed 3 April 2020)

Food and Agriculture Organization, *Strategy on Climate Change*, available at: <http://www.fao.org/3/a-i7175e.pdf> (accessed 3 April 2020)

Food and Agriculture Organization, *Tackling Climate Change through Livestock*, 2013, available at: <http://www.fao.org/3/a-i3437e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *Tackling Climate Change Through Rural Women's Empowerment*, available at: <http://www.fao.org/3/ca0178en/CA0178EN.pdf>

Food and Agriculture Organization, *The Future of Food and Agriculture Trends and Challenges*, 2017, available at: <http://www.fao.org/3/a-i6583e.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *The Global Network against Food Crises holds its first high-level meeting*, 2019, available at: <http://www.fao.org/emergencies/resources/videos/video-detail/en/c/1188112/> (accessed 7 January 2020)

Food and Agriculture Organization, *The human right to adequate food and freedom from hunger*, 1998, available at: <http://www.fao.org/3/w9990e/w9990e03.htm> (accessed 6 January 2020)

Food and Agriculture Organization, *The State of Food and Agriculture; Women in Agriculture: Closing the gender gap for development*, available at: <http://www.fao.org/3/i2050e/i2050e.pdf> (accessed 3 April 2020)

Food and Agriculture Organization, *The State of Food Security and Nutrition in the World*, 2018, available at: <http://www.fao.org/3/i9553en/i9553en.pdf> (accessed 7 January 2020)

Food and Agriculture Organization, *United Nations Decade of Action on Nutrition*, 2016, available at: <http://www.fao.org/3/a-i6130e.pdf> (accessed 7 January 2020)

Harriet V. Kuhnlein, Barbara Burlingame and Bill Erasmus, *Indigenous Peoples' Food Systems & Well-being: Policy and Strategies to improve nutrition and health for Indigenous Peoples*, available at: <http://www.fao.org/3/i3144e/i3144e16.pdf> (accessed 3 April 2020)

Inter-Agency Support Group on Indigenous People's Issues, Collated Paper on Indigenous Peoples and Climate Change E/C.19/2008/CRP.2, available at: <https://www.un.org/esa/socdev/unpfii/documents/2016/eqm/IASG-Collated-Paper-on-Indigenous-Peoples-and-Climate-Change.pdf> (accessed 3 April 2020)

Office of the United Nations High Commissioner for Human Rights, *Toolkit on the Right to Food* 2019, available at: <https://www.ohchr.org/EN/Issues/ESCR/Pages/Food.aspx> (accessed 6 January 2020)

United Nations Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 12: The Right to Adequate Food (Article 11 of the ICESCR)*, 12 May 1999, E/C.12/1999/5, available at: http://www.fao.org/fileadmin/templates/righttofood/documents/RTF_publications/EN/General_Comment_12_EN.pdf (accessed 6 January 2020)

United Nations Development Programme, *National Adaptation Programmes of Action*, 2019, available at: <https://www.adaptation-undp.org/national-adaptation-programmes-action-napas> (accessed 6 January 2020)

United Nations Development Programme, *Sustainable Development Goals 2020*, available at: <https://www.undp.org/content/undp/en/home/sustainable-development-goals.html> (accessed 6 January 2020)

United Nations Framework Convention on Climate Change, *What is the United Nations Framework Convention on Climate Change?* 2020, available at: <https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change> (accessed 7 January 2020)

United Nations Millennium Declaration, September 2000, available at: https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/55/2

United Nations, “Addressing the 66th Assembly: We the Peoples”, available at: <https://www.un.org/sq/en/content/sq/speeches/2011-09-21/address-66th-general-assembly-we-peoples> (accessed 7 January 2020)

United Nations, “Global Issues: Food”, available at: <https://www.un.org/en/sections/issues-depth/food/index.html> (accessed 3 April 2020)

United Nations, *The Sustainable Development Goals* 2015, available at: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

United Nations, *United Nations Framework Convention on Climate Change* 1992, available at: http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf (accessed 6 January 2020)

World Health Organization, “Children: Reducing mortality”, available at: <https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality> (accessed 3 April 2020)

World Health Organization, *Children: Reducing Mortality*, 2019, available at: <https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality> (accessed 7 January 2020)

World Health Organization, *Global Nutrition Policy Review: What does it take to Scale Up Nutrition Action?* 2013, available at: https://www.who.int/nutrition/publications/policies/global_nutrition_policyreview.pdf (accessed 7 January 2020)

II. Ensuring Equality in the Demand and Supply of Agricultural Produce

*“Addressing hunger, malnutrition, stunting and food insecurity will require a combination of stable and adequate incomes for all, improvements in agricultural productivity and sustainability, child and maternal care and strengthened social protection for vulnerable populations” – Ban Ki-Moon, former United Nations Secretary-General.*¹¹⁶

Introduction

The world’s population is currently estimated to be around 7.3 billion people, but the United Nations (UN) projects that this number will increase by 1.2% annually.¹¹⁷ Thus, the global population by 2030 is estimated to be 8.5 billion people and to increase to 9.7 billion in 2050,¹¹⁸ and food production must increase by 60% worldwide to meet future demand.¹¹⁹ Africa (42.79%) and Asia (46%) are estimated to be the largest contributors to population growth, although Africa’s population growth is expected to contract in the long-term.¹²⁰ The inevitable consequence of this growth is its effect on demand and supply of food production, in the sense that there would be an increase in the consumption of agricultural products and invariably its demand¹²¹ which means that equivalent food supply must follow in order to forestall food scarcity.

On a deeper study, an increased ageing population around the world is likely to increase the demand for healthier products high in protein and cause a reduction in demand of starchy staple foods,¹²² and food production must be sensitive to this change in demand. Other factors that would influence demand include food safety and health benefits, social concerns, production systems and innovations, sustainability and food origin.¹²³ Estimates reveal that a total of 842 million are suffering from chronic hunger,¹²⁴ with a vast majority of about 827 million living in developing regions, and estimated at 14.3%.¹²⁵ Future demand for agricultural products is projected to decline to 1.4% presently till 2030.¹²⁶ Over 1.3 billion people have experienced food insecurity at a moderate level as they do not have access to nutritious and sufficient food.¹²⁷

It is important to realize that climate change and environmental degradation pose a threat to agricultural production. The combination of people experiencing moderate and severe food insecurity culminates to a total of 26.4% of the world population. It is pertinent to

¹¹⁶ IFPRI, *An ambitious development goal: Ending hunger and under nutrition by 2025*, 2014.

¹¹⁷ UNFPA, *World Population Dashboard*, 2019.

¹¹⁸ UN, “Growing at a Slower Pace, World Population is expected to reach 9.7 billion in 2050 and could Peak at nearly 11 billion around 2100”, 17 June 2019.

¹¹⁹ FAO, “Soil is a non-renewable resource”, 2015.

¹²⁰ UN, “World Population Prospects 2019: Highlights”, 2019.

¹²¹ B. Gardner, “Global Food Futures: Feeding the World in 2050” London, Bloomsbury, 2013.

¹²² FAO, *Economic Analysis of Supply and Demand for Food Up to 2030 - Special Focus on Fish and Fishery Products*, Rome, 2014.

¹²³ *Ibid.*

¹²⁴ FAO, *The State of Food and Agriculture, 2013: Food Systems for Better Nutrition*, Rome, 2013.

¹²⁵ *Ibid.*

¹²⁶ FAO, *World Agriculture: towards 2030/2050*.

¹²⁷ FAO, *Sustainable Development Goals Indicators 2.1.1 - Prevalence of undernourishment*, 2019.

also note that the harrowing effect of food insecurity is felt in regions with protracted conflict. In 2018, according to IPC, 56 million people need urgent food and livelihood assistance in these countries.¹²⁸

Regardless and in order to meet future demands, sustainable agricultural practices that meet the needs of the present generation without compromising the ability of future generations to meet their own needs must be adopted. It is important to lend credence to the efforts of world nations under the sustainable development goals, especially goal 2 which aims to achieve zero hunger. It includes two indicators for monitoring SDG Target 2.1: the prevalence of undernourishment (SDG Indicator 2.1.1) and prevalence of moderate or severe food insecurity based on the Food Insecurity Experience Scale (FIES) (SDG Indicator 2.1.2).¹²⁹ The reality, however, is that globally; one out of every nine people is undernourished, with the bulk residing in developing countries. Over 52 million children worldwide are adversely affected¹³⁰, leading to the death of nearly 3.1 million children per annum¹³¹ and a little more than 700 million people were exposed to severe levels of food insecurity in 2018,¹³² following a reduction in the food consumed which most likely aggravated to hunger. It is noteworthy that poverty and socioeconomic inequality are indispensable variables in determining demand and supply of agricultural produce, hence must be effectively tackled. Other factors affecting supply include the price of the goods in the market, price of costs of production, technological factors, and climate and storage possibilities.¹³³

International and Regional Framework

The basic tenet of the UN as articulated in *Article 1* of the *Charter of the UN* emphasizes solving humanitarian problems through multilateralism.¹³⁴ In 1966, the General Assembly adopted the *International Covenant on Economic, Social and Cultural Rights* (ICESCR). *Article 11* confers the right to an adequate standard of living as an inalienable right and delineated the responsibility of the government in ensuring this.¹³⁵ Further, it states that world food supplies should be distributed according to needs, and when necessary States should leverage international cooperation. The UN Committee on Economic, Social and Cultural Rights' *General Comment 4* provides for the right to an adequate standard of living, which also recognizes the right to access to food as a basic right.¹³⁶

Taking cognizance of gender discrimination and gender inequality, the *International Covenant on Civil and Political Rights* (ICCPR) (1966) proscribed discrimination of any kind on any grounds, including gender. Following the widespread gender inequality and gender

¹²⁸ FAO, *Monitoring Food Insecurity in Countries with Conflict Situation*, 2019.

¹²⁹ FAO, *The State of Food Security and Nutrition in the World*, 2019.

¹³⁰ UNICEF, *Progress for Every Child in the SDG Era*, 2018.

¹³¹ UNICEF, *From Promise to Impact: Ending malnutrition by 2030*, 2018.

¹³² *Ibid.*

¹³³ FAO, *Impact of Supply and Demand* Rome, 2005.

¹³⁴ United Nations, *Charter of the United Nation*, 1945.

¹³⁵ General Assembly, *International Covenant on Economic, Social and Cultural Rights* (A/RES/2200 (XXI)), 1966.

¹³⁶ UN Committee on Economic, Social and Cultural Rights, CESCR General Comment No. 4 (E/1992/23)1991.

discrimination, the *Convention on the Elimination of all Forms of Discrimination against Women* (CEDAW) (1979)¹³⁷ and its *optional protocol* (1999)¹³⁸ enjoins Member States to eliminate negative stereotyping of gender roles, even as it relates to food production. The *Beijing Declaration and Platform for Action* (1995) further reinforced the principle of gender equity and women participation in food allocation, noting the integral role that women play in food allocation.

With the *Rome Declaration on World Food Security* (1996), Heads of State and Government reaffirmed the right of everyone to have access to safe and nutritious food consistent with the right to adequate food and the fundamental right of everyone to be free from hunger. Commitment seven stipulates the exigency of achieving sustainable food security under a stable political and economic environment created by public-private partnership.¹³⁹ The World Food Summit Plan of Action contains practical guidelines for various Heads of State and Governments to mobilize civil society actors towards this end.¹⁴⁰ In 2008, the General Assembly adopted two resolutions regarding food security: *Resolution 63/187*¹⁴¹ and *Resolution 63/235*.¹⁴² The first deals with “The right to food”; it takes cognizance of the undernourishment faced by children and the severe discrimination faced by girls and women on the grounds of gender. Hence, calls for tackling hunger in rural areas, the mainstreaming of a gender perspective into food production and access of persons with disabilities to food supply.¹⁴³ The latter borders on Agriculture Development and Food Security, it recognizes the integral role agriculture plays in addressing population explosion and widespread hunger. Thus, it calls for policies at the national, regional and international level to adequately and urgently address agriculture development and food security.¹⁴⁴

The Sustainable Development Goals (SDGs) and its call to leave no one behind which was adopted by the General Assembly recognizes the interlink between the eradication of poverty and hunger and sustainable development to consolidate other conventions such as the *Universal Declaration of Human Rights* (1948), international human rights treaties, the 2015 Millennium Declaration, the 2005 World Summit Outcome Development, Rio +20 amongst others and address contemporary world issues through the *2030 Agenda for Sustainable Development* (2030 Agenda).¹⁴⁵ Goal 2 of the SDG deals with ending hunger, achieving food security and improving food security by 2030. This is attainable through sustainable agricultural practices, promoting small-scale farmers and equitable access to land, technology and markets. It equally entails the international community increasing emergency, short-term and long-term food emergency response systems. Goal 10 is aimed

¹³⁷ General Assembly, *Convention on the Elimination of all Forms of Gender Discrimination against Women* (A/RES/34/180), 1979.

¹³⁸ General Assembly, *Convention on the Elimination of all Forms of Gender Discrimination against Women: Optional Protocol* (A/RES/54/4) 1999.

¹³⁹ FAO, World Food Summit, 1999.

¹⁴⁰ *Ibid.*

¹⁴¹ General Assembly, *The Right to Food* (A/RES/63/187), 2009.

¹⁴² General Assembly, *Agriculture Development and Food Security* (A/RES/63/235), 2009.

¹⁴³ *Ibid.*

¹⁴⁴ *Ibid.*

¹⁴⁵ General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development* (A/RES/70/1), 2015.

at reducing inequality; nonetheless, it is on the rise with an increase in income disparity and other factors inclusive of polarized financial access stemming from gender inequality. It thus aims to promote a common prosperity through income growth of the bottom 40% for every country, towards supporting increased investments in endeavours such as the agricultural sector.¹⁴⁶ Goal 5 which revolves around the attainment of gender equality by empowering women and girls is equally of integral relevance to the attainment of Goal 2. In attaining these goals, SDG 17 aims to rejuvenate multilateral partnerships financially, technically and operationally to this end.

Other resolutions include the General Assembly *Resolution A/71/245* (2016) titled “agriculture development, food security and nutrition” through measures such as doubling the agricultural productivity and incomes of small-scale food producers; ensuring sustainable food systems; maintaining agricultural genetic diversity, promoting access and benefit-sharing which fosters multilateral cooperation amongst States for the exchange of plant genetic resources for planting and agricultural research purposes to promote sustainable agricultural practices.¹⁴⁷ These efforts are to be bolstered by a predictable trading environment to promote investment to promote a country’s productive capacity through technology and an innovative Agricultural Market Information System to enhance market transparency. In 2016, the General Assembly adopted the decade of nutrition (2016-2025).¹⁴⁸

Role of International System

The FAO is primarily interested in food production and agriculture whilst also providing humanitarian aid through prevention of disaster-related emergencies, providing early warnings of food emergencies and assisting the rehabilitation of food production systems.¹⁴⁹ The major role the FAO plays includes assessment of needs and relying on this to provide agricultural inputs and technological assistance towards the planning and management of sustainable recovery and rehabilitation of rural production systems. In its bid to achieve sustainable agricultural practices,¹⁵⁰ FAO liaises with Civil Society Organisations(CSOs) including Non-Governmental Organizations (NGOs) amongst which are rural and urban organizations, southern national and regional developing NGOs, humanitarian NGOs, agricultural trade unions and private sector associations, towards this end. They were recognized as playing an integral role in the World Summit Plan of Action.¹⁵¹ For example, FAO partners with agricultural businesses such as Kuehne Foundation, to help them transition towards sustainable agricultural practices through their synergy of knowledge and expertise.¹⁵²

¹⁴⁶ World Bank, “What We Do” 2019.

¹⁴⁷ General Assembly, “Agriculture development, food security and nutrition” (A/71/283), 2016.

¹⁴⁸ General Assembly, “United Nations Decade on Nutrition (2016-2025)” (A/70/L.42), 2016.

¹⁴⁹ FAO, *FAO's role in emergencies* 2019.

¹⁵⁰ *Ibid.*

¹⁵¹ FAO, *Policy and Strategy for Cooperation with Non-Governmental Organizations* 1999.

¹⁵² FAO, *How does FAO partner with private sector?* 2017.

Also, recognizing the effect of rural poverty in institutionalizing inequality, the FAO Strategic Objective Three was adopted: firstly, it encourages the equitable access to sustainable resources and services through various means such as rural development and local institutions.¹⁵³ Secondly, implores an improved ability of the rural poor to seek and maintain employment.¹⁵⁴ Lastly, the third goal seeks to improve social protection programs for issues such as food security and the empowerment of rural women.¹⁵⁵

At the 1992 Earth Summit, world leaders adopted a global blueprint for sustainable development and Chapter 14 of this agenda was aimed at promoting sustainable agricultural practices and rural development towards increased sustainable food production and enhanced food security.¹⁵⁶ At the 2012 Conference on Sustainable Development (Rio +20), world leaders reaffirmed the right of everyone to have access to safe and nutritious food, in tandem with the right to freedom from hunger, as expressed in Article 25 of the UDHR under the right of a person to an adequate standard of living.¹⁵⁷ In March 2014, the High-Level Roundtable on “Food and Nutrition Security through Sustainable Agriculture and Food Systems in the Post-2015 Agenda”, consisting government stakeholders, the UN, CSOs, farmers and the private sector was convened. It was agreed that a paradigm shift to resilient and productive agriculture and food systems under sustainable practices especially for supporting the means of livelihood for small-scale farmers was imperative.

In June 2002, the World Food Summit was convened for world leaders to reaffirm their pledge to end hunger.¹⁵⁸ In August 2002, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), a three-year international collaborative effort which lasted between 2005 and 2007 was initiated by the World Bank with inputs from the FAO, Global Environment Facility, UN Development Programme (UNDP), UN Environment Programme (UNEP), UN Educational Scientific and Cultural Organization (UNESCO) and World Health Organization (WHO). It was aimed at evaluating the relevance, quality and effectiveness of agricultural knowledge, science and technology, and the importance of public-private partnership towards reducing hunger and poverty and improving overall health and nutrition.¹⁵⁹ This subsequently led to a change in approach to agricultural practices and support for small-scale farmers in ensuring sustainable agricultural practices.

FAO actively involves in assisting Member States to adopt legislation towards increasing access to food; through the guideline provided in its *Right to Food Guidelines*. Equally, the FAO publishes annual technical reports on the state of the agriculture sector and food

¹⁵³ FAO, FAO's Strategic Objective 3: Reduce Rural Poverty, 2014, p. 2.

¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*

¹⁵⁶ Global Agriculture, Rio +20: *Opportunity for Change in Agriculture*.

¹⁵⁷ General Assembly, *Universal Declaration of Human Rights (A/RES/217 A(III))*, 1948.

¹⁵⁸ Declaration of the Food World Summit: Five years later.

¹⁵⁹ WECF, *International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) Global Summary for Decision Makers*.

security; alongside useful guidelines on sustainable agricultural practices; all in a bid to create equitable access to the agricultural sector.¹⁶⁰

Addressing Food Insecurity in Conflict Regions

The Uppsala Conflict Data Program, using available qualitative data, has classified conflict into five types- low-intensity conflict, interstate conflict, intrastate conflict, internationalized intrastate conflict and one-sided violence.¹⁶¹ Currently, eight countries have the highest burden of people suffering from food insecurity due to conflict rocking the region. These countries are Afghanistan, Central African Republic (2 million), the Democratic Republic of the Congo, Lake Chad Basin, Somalia (2.9 million), South Sudan (4.9 million), Syrian Arab Republic (7.0 million) and Yemen (17 million).¹⁶² FAO categorizes food insecurity into four pillars majorly: food availability, food access, food stability and food utilization.¹⁶³ The following are the food security variables adopted by FAO; prevalence of undernourishment, depth of food deficit, share of dietary energy supply derived from cereals, roots and tubers, food price volatility index and cereal import dependency ratio.¹⁶⁴ It is noteworthy that there is an inextricable link between food insecurity, undernourishment and conflict; as the latter leads to human displacement and undermines food production and trade, humanitarian access, households' purchasing power, and people's ability to stay healthy.

A case study is the Central African Republic in 2014. Reports state that 70% of the country's traders fled as a result of the protracted conflict in the region, and this resulted in an economic collapse and a decrease in food stock; many of the refugees and internally displaced persons are farmers, businessmen and traders who were heavily depended on in the food trade.¹⁶⁵ Additionally, fighting has destroyed or resulted in the theft of food and seed stocks, tools and equipment, livestock, and farmable land. As a result, food stocks have diminished by nearly 80% and close to 50% of livestock have been killed, or carried across borders.¹⁶⁶ IDP camps report that 78% of people have gone more than a full day without eating.¹⁶⁷

Food availability comprises a focus on the presence of calories in meals of individual-citizens of the country as well as calories available nationally. Food access measures the availability of infrastructure in a country for providing food for public access, and each individual's access to the required nutrient level in food per day using certain variables. Food stability uses variables such as dependence on food imports, domestic price variability, and variation in land equipped with irrigation, to determine food security. Whilst

¹⁶⁰ FAO, *Our Strategic Objectives*, 2014.

¹⁶¹ FAO, *Food Security and Conflict Empirical Challenges and Future Opportunities for Research and Policymaking on Food Security and Conflict*, 2018.

¹⁶² *Ibid.*

¹⁶³ FAO, *The State of Food Security and Nutrition in the World Building Resilience for Peace and Food Security*, Rome, 2017.

¹⁶⁴ *Ibid.*

¹⁶⁵ FAO/WFP, *FAO/WFP Markets and Food Security Assessment Mission to the Central African Republic*, 2014.

¹⁶⁶ *Ibid.*

¹⁶⁷ *Ibid.*

food utility includes measures on food wastage, stunted growth and low weight among children and includes anthropometric indicators to determine whether people in a country can use available calories.¹⁶⁸

The FAO partners with WFP to tackle food scarcity in emergencies. Their collaborative effort through the Food Security Assessment Mission was utilized in South Sudan. In South Sudan since 2013, following violence between militia groups, there were reported killings and displacement of over 800,000 people.¹⁶⁹ The UN agencies estimate that 4.5 million people will still face Crisis, Emergency or Catastrophe levels of food insecurity and will need assistance; acute malnutrition levels among children less than five years of age which is 16% as at 2019 – which is above the emergency threshold of 15%.¹⁷⁰

There has been a consensus with other international and regional organizations such as UNICEF, Africa’s Intergovernmental Authority (IGAD), the UN’s Office for the Coordination of Humanitarian Affairs (OCHA) and USAID to tackle food insecurity through sustainable development, food security and nutrition goals, activities to promote resilient livelihood bolstered by efforts towards peace-building and conflict resolution.¹⁷¹ FAO is providing starter kits consisting of crop seeds suited to local conditions, agricultural tools, fishing equipment and cash-based interventions with the goal of closing the food gap for some 1 million farming households.¹⁷² Additionally, FAO is carrying out extensive animal vaccination and treatment to support some 7 million livestock keepers, protecting their livelihoods and opening market opportunities.¹⁷³ WFP and its partners have responded with food and cash distributions in the worst-affected areas and have so far this year reached some 3.9 million vulnerable people; whilst UNICEF and 40 civil society organizations are providing key nutrition interventions for children and women in South Sudan: UNICEF is supporting 1,150 outpatients therapeutic programme (OTP) centre and 99 stabilization centres across South Sudan. From January to July 2019, more than 144,000 children affected by severe acute malnutrition were treated with high-quality services, of whom more than 90% have successfully recovered.¹⁷⁴

Capacity-building in Low-Income Food Deficit Countries/Low-Development Countries

This classification of countries by the FAO is based on three criteria; a national per capita Gross National Income (GNI) below the “historical” ceiling used by the World Bank to determine eligibility for international Development Association credits and grants for programs that boost economic growth, reduce inequalities and improve people’s living

¹⁶⁸ *Ibid.*

¹⁶⁹ BBC, *South Sudan Profile*, 2014.

¹⁷⁰ WFP, *More than half the country struggles to survive despite improving conditions in South Sudan*, 2019.

¹⁷¹ *Ibid.*

¹⁷² *Ibid.*

¹⁷³ *Ibid.*

¹⁷⁴ *Ibid.*

conditions.¹⁷⁵ The second criterion is the net food trade position (i.e. gross imports deducted from gross exports) of a country for an average period of three years.¹⁷⁶ The third criterion is applied on condition of the fulfilment of the first two conditions. There are currently 51 LIFDCs amongst which are Benin, Burkina Faso, Burundi, Congo, Chad, Afghanistan, Bangladesh, Vietnam, Yemen, Oceania and Solomon Islands.¹⁷⁷ Nigeria, Pakistan and Papua New Guinea recently graduated from the list.¹⁷⁸

The FAO recognized that except concerted efforts are taken in LIFDCs, population explosion would outstrip food supply and the liberalization of gain trade following the Uruguay round was likely to increase food prices in the short-term.¹⁷⁹ The FAO is guided by the *Food Assistance Convention* (2012) that establishes the basic principles of food assistance.¹⁸⁰ The role of agriculture in addressing food scarcity in LIFDCs cannot be overemphasized, however many of these countries experience infrastructural challenges as well as other debilitating factors to food production.

Hence, FAO established a Trust Fund for Food Security and for Emergency Prevention of Transboundary Pests and Diseases of Animals and Plants with an initial target of US\$500 million, with priority to the needs of LIFDCs and LDCs.¹⁸¹ Also, FAO has launched several programs in support of NEPAD's agricultural activities in the areas of land and water improvement, production intensification, and regional food security, regional cooperation in agriculture and investment in rural infrastructure. FAO has equally developed a proposal for "integrated program for building capacity in biotechnology, food quality and safety and phyto- and zoo-sanitary standards". This programme is geared at capacity-building in food production. Noting the importance of food import in maintaining food access, the FAO actively participates in the inter-agency panel of financial and commodity experts, established by the WTO following the Doha Conference and has considered the feasibility of the proposal for the creating of a revolving fund, whilst also assisting LDCs and WTO net food-importing countries to assist them in financing difficulties to promote the commercial import of food supplies.¹⁸² Also, the FAO gives technical assistance to these countries in order to enhance productivity, diversification and modernization of their agricultural sectors, inclusive of fisheries and forestry.¹⁸³

Although capacity building through increased agricultural activities would increase food production, it does not guarantee equality in demand for agricultural produce especially for those who are undernourished.¹⁸⁴ Hence, the UN and FAO encourage Member States to adopt policies and programs that are nutrition-sensitive. These policies would create

¹⁷⁵ International Development Association, "What is IDA" 2019.

¹⁷⁶ FAO, "Low-income Food-deficit Countries".

¹⁷⁷ FAO, "Low-income Food-Deficit Countries (LIFDCs)- List for 2018" 2019.

¹⁷⁸ *Ibid.*

¹⁷⁹ *Ibid.*

¹⁸⁰ General Assembly, Food Assistance Convention, 2012.

¹⁸¹ UN-OHRLLS, "Key Actions since the Adoption of the Programme of Action for LDCs".

¹⁸² *Ibid.*

¹⁸³ *Ibid.*

¹⁸⁴ General Assembly, *Agriculture development and food security: Report of the Secretary-General (A/67/294)*, 2012.

sensitization especially in regions with high levels of hunger on adequate nutrition and direct resources towards the public services that would benefit the poor and incentivize them to use additional income for improved diet and health services.¹⁸⁵

Leveraging Technology to Achieve Equality in the Supply of Agricultural Produce

The attainment of sustainable food systems forms the crux of the SDGs. However, the bottleneck lies in the fact that the roughly estimated 500 million smallholder farmers who contribute 80% of the world's food constitute the poorest and most malnourished group. Another source of concern is the fact that current unsustainable agriculture systems generate a quarter of greenhouse gas pollution and climate change whose effect on food production and food security could force over 100 million people into poverty into extreme poverty by 2030: In 2015, 10% of the world's population was living on less than \$1.90 per day; 79% lived in rural areas and relied heavily on agriculture as a source of sustenance. Between 2015 and 2017, the number of people adversely affected by hunger rose by 36.4 million to 821 million. Concurrently, over two billion adults are overweight and obese. More so, more than two billion people are deficient in key vitamins and minerals necessary for growth, development and disease prevention. The sad reality that remains is that food that is harvested but then lost or wasted occupies total arable land equal in size to China, consumes about 25% of all water used in agriculture each year, and accounts for about 8% of global GHG emissions.¹⁸⁶ This breaks down as 30% of cereals, 40 to 50% of root crops, fruits and vegetables, 20% of oil seeds, meat and dairy, and around 35% of fish.¹⁸⁷ Even so, according to the World Health Organization (WHO), as many as 600 million people get sick and 420,000 die annually due to contaminated food.

To effectively address these, it behoves members of the international community to utilize current technological innovations that make food systems more resource-efficient and climate-resilient if we are to realistically meet food demands of over 10 billion people by 2050. There are currently inefficiencies in the current food system, which could be effectively tackled by utilization of technology, to effectively link the over 570 million actors in the food system to supply agricultural products to over 7.5 billion consumers; for data-analysis especially on the impact of climate change, weather forecast and certain agricultural practices in a bid to help improve farmers' decision-making; improving equity in food access by addressing unequal access to information, knowledge, technologies and markets and ultimately improving nutrition and health through technology such as nutrigenetics and nutrigenomics.

It is projected that disruptive technology in precision agriculture could reduce farmers' cost by up to \$100 billion, increase production by up to 300 million tons; reduce freshwater

¹⁸⁵ FAO, "The State of Food Insecurity in the World", 2012, p. 20.

¹⁸⁶ World Bank, "Future of Food: Harnessing Digital Technology to Improve Food Outcomes", 2019.

¹⁸⁷ Joe McGrath "How tech and investment could help feed the many", 2018.

withdrawals by up to 180 billion cubic meters. Also, gene-editing for multi-trait seed improvements could generate up to \$100 billion in additional farmer income, increase production by up to 400 million tons, reduce the number of micronutrient deficient by up to \$100 million and microbiome technologies for enhancing crop resilience can generate up to \$100 billion in additional farmer income, increase production by up to 250 million tons and reduce GHG emissions up to 30 megatons of CO₂ amongst others.

FAO plays an integral role in advocating and promoting the importance of agricultural innovation to increase food security and food access.¹⁸⁸ In its International Symposium on Agricultural Innovation for Family Farmers, it recognized the central role that family farmers play in agricultural innovation.¹⁸⁹ Hence, FAO and its partners are working in nine pilot countries in Africa, Asia and Central America to bring international, national and local partners to design and implement capacity development plans for agricultural innovation.¹⁹⁰ This is inclusive of strategies aimed at fostering sustainable agricultural mechanization in small-scale enterprises, cooperatives and local organizations towards catering for small-scale farmers.¹⁹¹

Blockchain Technology

The blockchain is a decentralized ledger that records transactions, thereby eliminating the need for third-party interference. The following challenges have been recognized as currently affecting the supply of agricultural produce: lack of transparency due to unavailable data; high rate of manual labour, and inability to trace agricultural products.¹⁹² Distributed Ledger Technology (DLT) be utilized in the food systems to serve a plethora of functions, amongst which are reducing transaction costs and the time needed to process payments, and tracking land tenure.¹⁹³ Blockchain-based payments have considerable potential not only for retail banking but also for agricultural value chains and the development sector in cash-based assistance schemes, remittances and procurement. For example, the World Food Programme (WFP) piloted cash transfers programmes using a blockchain-based technology to record supermarket transactions in a Syrian refugee camp. The pilot programmes were believed to provide substantial financial savings for WFP, by eliminating financial intermediaries, their associated transaction fees and the time spent by WFP accountants on compiling data and reports from banks and stores, which is no longer needed with automated record-keeping from the blockchain.¹⁹⁴

As regards food supply, blockchain can be leveraged to monitor information regarding food in the value supply chain. Seeing as secure digital information can be shared with third

¹⁸⁸ FAO, "FAO's role in agricultural innovation", 2019.

¹⁸⁹ *Ibid.*

¹⁹⁰ *Ibid.*

¹⁹¹ *Ibid.*

¹⁹² FAO, "Emerging Opportunities for the Application of Blockchain in the Agri-food Industries", 2018.

¹⁹³ Emma Weston and Nolet Weston, "From Bitcoin to Agriculture: How Can Farmers Benefit from Blockchain?" Agfunder News, 2016.

¹⁹⁴ FAO, "Emerging Opportunities for the Application of Blockchain in the Agri-food Industries", 2018.

parties in real-time, it can be used to reduce food fraud, stop illegal production such as production on deforested lands, reduce food-borne illness through quicker response times, and reduce recalls and losses by tracking individual items. It is estimated that through its utilization, food loss could be reduced by 10-30 million tons.¹⁹⁵

By enabling transparency and recording every detail of the production and processing of agricultural goods, the ability to ensure compliance with food and sustainability standards will be improved. Data will be available on the quality (freshness, safety, geographic indications), safety (health, risk management) and sustainability (organic, fairtrade) of products¹⁹⁶ Furthermore, DLTs provide prospects for increased economic and financial inclusion for disadvantaged members of the agricultural sector such as women, smallholder farmers and Micro, Medium, Small-Scale Enterprises (MSMEs).¹⁹⁷

The FAO and the International Telecommunication Union (ITU) work tirelessly together to implement technology in agricultural processes, amongst which is blockchain technology, towards enhancing productivity.¹⁹⁸ It has been reported by the UN that around 50% of crop value vanishes between harvesting and the point of sale.¹⁹⁹ Hence certain blockchain technology have been established to tackle this problem such as the AgUnity-an Australian agri-tech start-up developed specifically for Kenya, Papua New Guinea and Ethiopia and AgriDigital which heralded the use of blockchain across the agricultural supply chain²⁰⁰. It is worthy of note however that there are underlying risks with its adoption. Nonetheless, these risks can be reduced by developing an assessment framework that scrutinizes the critical elements and standardizes the requirements. This would facilitate a better adoption of the DLT mainstream.²⁰¹

Mainstreaming Gender in Agriculture and Capacity Building for Women in the Agricultural Sector

According to FAO, global food security would improve dramatically if women and men had equal access to agricultural resources and services.²⁰² Estimates show that women produce between 60 and 80% of the food in most developing countries and are responsible for half of the world's food production. Even so, FAO studies prove that women are the mainstay of small-scale agriculture, farm labour force and day-to-day family subsistence but face challenges in access to resources to promote productivity owing to gender discrimination and other debilitating factors.

¹⁹⁵ World Economic Forum, "Innovation with a Purpose: The role of technology innovation in accelerating food systems transformation" 2019.

¹⁹⁶ FAO, "Emerging Opportunities for the Application of Blockchain in the Agri-food Industries", 2018

¹⁹⁷ *Ibid.*

¹⁹⁸ FAO, *E-Agriculture in Action: Blockchain for Agriculture Opportunities and Challenges*, 2019.

¹⁹⁹ CTA Blog, *The Building Blocks for Better Value Chains*, 2018.

²⁰⁰ *Ibid.*

²⁰¹ *Ibid.*

²⁰² FAO, *FAO at Work 2010-2011: Women—key to food security*, 2011.

The gender gap in food and agriculture and its harrowing effects are extensive. Reports reveal that females are more food insecure as they are left out in government decisions whilst rural women face stiff constraints compared to their male counterparts in accessing essential productive resources and services, technology, market information and financial assets. Hence, FAO's active efforts in improving gender equity in food systems. For instance, in the Philippines following the typhoon, FAO worked closely with the Bureau of Fisheries and Aquatic Resources and Local authorities to restore the fisheries-related livelihood of almost 18,000 households. It is noteworthy that these trainings were focused on women, through women-led organizations and aimed at increasing their food production and market-reach.²⁰³ Even so, in Afghanistan, FAO has organized trainings on the establishment of dairy cooperatives, cattle management and good agricultural practices²⁰⁴ and even established an Integrated Dairy scheme.²⁰⁵

Case Study – Austria

Reports reveal that 30% of all farm owners in Austria are women and women farmers have been recognized as integral drivers of rural development in Australia.²⁰⁶ There have equally been measures to promote the participation of women in the agricultural sector and rural development, these include specific training arrangements and targeted services provided by the Chambers of Agriculture. Even so, a guiding mission of the African Rural development programme in Austria is the improvement of gender equality and eradication of gender discrimination and there is a Federal Minister within the Federal Chancellery for Women, Families and Youth focusing on gender equality.²⁰⁷ It is thus no surprise that the agricultural ministry in Austria is led by women. Also, in attaining gender mainstreaming in budgeting, there is a mandatory gender analysis which cast the spotlight on existing gender inequalities in rural areas and provides an opportunity for better planning, implementation and evaluation. Gender-responsive budgeting has been regarded as a benchmark by the Federal Ministry of Sustainability and Tourism (formerly the Federal BMNT Ministry of Agriculture, Forestry, Environment and Water Management prior to 2018) for measuring the success of gender mainstreaming.²⁰⁸²⁰⁹ Measures to improve the participation of women in agriculture and rural development include specific training arrangements and targeted services within the extension services provided by the Chambers of Agriculture, Federal Ministry of Agriculture, Forestry, Environment and Water Management²¹⁰

²⁰³ FAO, *Helping Men and Women fisher folk in the Philippines to build back-better*, 2016.

²⁰⁴ FAO, "Building up self-reliance and livelihoods of Afghani women", 2019.

²⁰⁵ FAO, "Development of Integrated Dairy Schemes in Herat: GCP/AFG/046/ITA", 2013.

²⁰⁶ UN, Austria.

²⁰⁷ European Institute for Gender Equality, "Austria, structures" 2017.

²⁰⁸ European Institute for Gender Equality, "Concepts and definitions" 2017.

²⁰⁹ FAO, "Austria country indicators", 2017.

²¹⁰ *Ibid.*

More so, the Federal Ministry of Sustainability and Tourism has worked assiduously in promoting women's role in climate protection,²¹¹ noting the ripple effect it has on food production and agricultural systems. The Ministry equally published booklets on the gender-specific eating habits and the nutritional status of both sexes in Austria, as well as essential dietary recommendations. The Ministry in partnership with the Working Group of Austrian Women Peasants organized the ZAMm training programme to address the issue of gender-imbalance in national decision-making. Currently, the latter represents the interests of around 130000 Austrian women farmers.²¹² ZAMm has produced a gender equality charter in agriculture and a political manual for women farmers. The charter aims to remove structural barriers to women's participation and the manual is expected to help empower women to take political actions.²¹³

Conclusion

The set date for the realization of the SDGs especially Goal 2 which is 2025 is drawing closer,²¹⁴ whilst at the same time we are experiencing rapid population explosion which puts much pressure on food production and there are projections regarding structural changes in demand due to factors such as population growth, urbanization and per capita increases in income.²¹⁵ Hence, to realistically attain SDG 2 target and all its indicators not forgetting the interlink with SDG 5 which makes the attainment of this also imperative, cooperation across board and amongst all state and non-state actors is imperative- NGOs, international organizations and State governments- towards sustainable agricultural practices. Equally, the role of infrastructure and government policies and actions which are also climate-friendly, alongside the utilization of disruptive technology in enhancing food productivity should not be disregarded. However, there must also be at the same time a focus on gender mainstreaming, as female participation in agriculture can improve food production immensely.²¹⁶

Thus, to achieve FAO's vision of a "world free from hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner"; it important that Member States improve current efforts in a coordinated, integrated and aligned approach to enhance food security and to effectively address malnutrition.²¹⁷

Further Research

A lot of work remains to be done in achieving food security, noting the current debilitating factors such as climate action, conflicts and insurgencies, migration amongst others.

²¹¹ FAO, "What gender mainstreaming in Agriculture means in practice: Cases from Selected countries of the European Union", 2018.

²¹² *Agricultural Chamber of Lower Austria*, 2017.

²¹³ Börzsöny-Duna-Ipoly Rural Development Association, *Eat and feed adequately*.

²¹⁴ FAO, "Achieving Hunger in Africa by 2025", 2018.

²¹⁵ FAO, "The Future of Food and Agriculture: Trends and Challenges", 2017.

²¹⁶ *Ibid.*

²¹⁷ *Ibid.*

Hence, delegates should seek to answer the following questions: How can governments harness public-private partnerships to address issues of food insecurity? What is the role of political will and legal frameworks in ensuring equality in the demand and supply of agricultural produce? How can technological practices be used to ensure equality in the supply of agricultural produce whilst addressing the current drawbacks inherent in disruptive technology? How can technology be used to supply food to conflict-rocked regions? What sustainable practices can be used for capacity building for agricultural production in rural areas? How can gender be mainstreamed in national policies towards equality in the agricultural sector? What enforcement mechanisms can be implemented towards this end? How can governments ensure that there is parity in the increase in food demand and its nutritional contents? How can FAO improve Member States' resilience?

Annotated Bibliography

Food and Agricultural Organization, "What gender mainstreaming in Agriculture means in practice: Cases from Selected countries of the European Union", available at: <http://www.fao.org/family-farming/detail/en/c/1145225> (accessed 16 December 2019)

This document lays down practical guidelines and best practices adopted by leading countries as it relates to gender equity and women participation. By perusing this document, delegates would be able to borrow a leaf and learn how best gender equality can be mainstreamed into national decision-making.

Food and Agricultural Organization, "Policy and Strategy for Cooperation with Non-Governmental Organizations", available at: <http://www.fao.org/3/x2214e/x2214e00.htm> (accessed 16 December 2019)

Noting the exigency of public-private partnership in the attainment of food security, this document provides guiding principles of the FAO in its transactions with Non-Governmental bodies and other non-state actors. Delegates will find this useful in proffering solutions along the lines of public-private partnership.

Food and Agricultural Organization, "FAO's role in emergencies 2019", available at: <http://www.fao.org/3/W6020E/w6020e04.htm> accessed 16 December 2019

This document contains the steering policies for FAO actions in emergency situations, how it assists various regions facing emergencies in a bid to stem food security. Bearing in mind how conflicts and insecurity fuel food insecurity, delegates can use this document in drawing solutions for addressing the issue of food insecurity in conflict-regions.

Food and Agricultural Organization, “FAO Policy on Gender Equality: Attaining Food Security Goals in Agriculture and Rural Development”, available at: <http://www.fao.org/3/a-i3205e.pdf>

This document contains FAO’s guiding principles for Member States as it relates to minimum standards for gender mainstreaming, minimum standards for women-targeted interventions and delineates its institutional mechanisms for implementation and oversight. Delegates will find this useful in better suggesting policy frameworks for Member States to adopt in gender mainstreaming of agricultural roles.

Food and Agricultural Organization, “Mobile technologies for Food Security, Agriculture and Rural Development”, available at: <http://www.fao.org/3/a-i3074e.pdf>

This document sheds spotlight on the mobile-based agricultural interventions in Asia and calls for as well as recommends successful implementation of innovations and good agricultural practices especially in the agricultural sector in rural areas. Delegates will find this useful in understanding the underlying concepts regarding technological disruption for better agricultural practices.

Food and Agricultural Organization, “Food Security”, available at: http://www.fao.org/fileadmin/templates/faoitally/documents/pdf/pdf_Food_Security_Cocept_Note.pdf

This document elucidates the concept of food security and its basic components. Delegates will find this useful in establishing a groundwork on food security premised on equality.

Food and Agricultural Organization, “Emerging Opportunities for the Application of Blockchain in the Agri-food Industry”, available at: <http://www.fao.org/3/ca1335en/CA1335EN.pdf>

This document provides an overview of Distributed Ledger Technologies(DLTs) and their application in food and agriculture, examining public policy implications for food security and rural development and identifying some potential challenges, risks and some pointers to improve from there. Delegates will find this useful in understanding blockchain technology and how it can be leveraged in potential Member States.

Bibliography

Agricultural Chamber of Lower Austria. “Working group of Austrian Women Peasants”, available at: <https://noe.lko.at/arbeitsgemeinschaft%C3%B6sterreichische-b%C3%A4uerinnen+2500+2515544> (accessed 16 December 2019)

BBC, “South Sudan Profile”, available at: <https://www.bbc.com/news/world-africa-14069082> (accessed 16 December 2019)

Börzsöny-Duna-Ipoly Rural Development Association, “Eat and feed adequately”, available at: <http://www.borzsonyleader.hu/hirek/taplalkozz-es-taplalj-helyesen---programsoroza> (accessed 16 December 2019)

CTA Blog, “The Building Blocks for Better Value Chains”, 2018, available at: <https://www.cta.int/en/blog/article/the-building-blocks-for-better-value-chains-sid00c937942-92d4-4104-ae2-f472e2817108> (accessed 2 April 2020)

Declaration of the Food World Summit: Five years later, available at: <http://www.fao.org/worldfoodsummit/> (accessed 16 December 2019)

European Institute for Gender Equality, “Concepts and definitions In: European Institute for Gender Equality, Gender mainstreaming”, available at: <http://eige.europa.eu/gender-mainstreaming/concepts-and-definitions> (accessed 14 December 2019)

European Institute for Gender Equality, “Austria, Structures”, In: *European Institute for Gender Equality, Gender Mainstreaming*, available at: <http://eige.europa.eu/gender-mainstreaming/countries/austria/structures> (accessed 14 December 2019)

FAO, “E-Agriculture in Action: Blockchain for Agriculture Opportunities and Challenges”, 2019, available at: <http://www.fao.org/3/CA2906EN/ca2906en.pdf> (accessed 2 April 2020)

FAO, “Sustainable Development Goals Indicators 2.1.1: Prevalence of undernourishment”, available at: <http://www.fao.org/sustainable-development-goals/indicators/211/en/> (accessed 16 December 2019)

FAO, “Economic Analysis of Supply and Demand for Food Up to 2030: Special Focus on Fish and Fishery Products”, available at: <http://www.fao.org/3/a-i3822e.pdf> (accessed 16 December 2019)

FAO, “FAO’s Role in Emergencies 2019”, available at: <http://www.fao.org/emergencies/appeals/2019/en/> (accessed 16 December 2019)

FAO, “How does FAO partner with private sector?”, available at: <http://www.fao.org/partnerships/private-sector/ways-to-partner/en> (accessed 16 December 2019)

FAO, “Low-income Food-Deficit Countries (LIFDCs) – List for 2018” 2019, available at: <http://www.fao.org/countryprofiles/lifdc/en/> (accessed 16 December 2019)

FAO, “Low-income Food-deficit Countries”, available at: <http://www.fao.org/focus/e/SpeclPr/LIFDCs.htm> (accessed 16 December 2019)

FAO, “Monitoring Food Insecurity in Countries with Conflict Situation”, available at: <http://www.fao.org/3/ca3113en/CA3113EN.pdf> (accessed 16 December 2019)

FAO, “Soil is a Non-renewable Resource”, available at: <http://www.fao.org/resources/infographics/infographiics-details/en//c/278954/> (accessed 16 December 2019)

FAO, “World Agriculture: towards 2030/2050”, available at: http://www.fao.org/fileadmin/templates/esa/Global_perspectives/world.ag.2030_50_2012_rev.pdf (accessed 16 December 2019)

FAO, *FAO’s Strategic Objective 3: Reduce Rural Poverty*, 2014, p. 2, available at: <http://www.fao.org/reduce-rural-povety/en/> (accessed 16 December 2019).

FAO, *Policy and Strategy for Cooperation with Non-Governmental Organizations*, available at: <http://www.fao.org/3/x2214e/x2214e00.htm> (accessed 16 December 2019)

FAO, World Food Summit, available at: <http://www.fao.org/NEWS/1999/img/SOFI99-E.PDF> (accessed 16 December 2019)

FAO/WFP, *FAO/WFP Markets and Food Security Assessment Mission to the Central African Republic*, 2014, available at: <http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/232119/> (accessed 16 December 2019)

Food and Agricultural Organization, “The Future of Food and Agriculture: Trends and Challenges”, 2017, available at: <http://www.fao.org/3/a-i6583e.pdf> (accessed 16 December 2019)

Food and Agricultural Organization, “Sustainable Development Goals Indicators 2.1.1- Prevalence of undernourishment”, available at: <http://www.fao.org/sustainable-development-goals/indicators/211/en/> (accessed 6 December 2019)

Food and Agricultural Organization, “Achieving Hunger in Africa by 2025”, 2018, available at: <http://www.fao.org/3/i8624en/i8624EN.pdf> (accessed 16 December 2019)

Food and Agricultural Organization, “Austria country indicators”, available at: <http://www.fao.org/faostat/en/#country/11> (accessed 14 December 2019)

Food and Agricultural Organization, “Building up self-reliance and livelihoods of Afghani women”, available at: <http://www.fao.org/gender/projects/detail/en/c/1241116/> (accessed 16 December 2019)

Food and Agricultural Organization, “Development of Integrated Dairy Schemes in Herat: GCP/AFG/046/ITA”, 2013, available at: http://www.fao.org/fileadmin/user_upload/oed/docs/GCPAFG046ITA_2013_MR.pdf (accessed 16 December 2019)

Food and Agricultural Organization, “FAO’s role in emergencies 2019” available at: <http://www.fao.org/3/W6020E/w6020e04.htm> (accessed 16 December 2019)

Food and Agricultural Organization, “FAO’s role in agricultural innovation” 2019, available at: <http://www.fao.org/innovation/en/> (accessed 16 December 2019)

Food and Agricultural Organization, “The State of Food Security and Nutrition in the World Building Resilience for Peace and Food Security”, available at: <https://www.preventionweb.net/publications/view/55777> (accessed 16 December 2019)

Food and Agricultural Organization, “The State of Food Insecurity in the World”, 2012, p. 20, available at: <http://www.fao.org/3/a-i3027e.pdf> (accessed 16 December 2019)

Food and Agricultural Organization, “What gender mainstreaming in Agriculture means in practice: Cases from Selected countries of the European Union”, available at: <http://www.fao.oeg/family-farming/detail/en/c/1145225> (accessed 14 December 2019)

Food and Agricultural Organization, FAO at Work 2010–2011: Women—key to food security”, available at: <http://www.fao.org/3/am719e/am719e00.pdf> (accessed 16 December 2019)

Food and Agricultural Organization, “Helping Men and Women fisher folk in the Philippines to Build Back-better”, 2016, available at: <http://www.fao.org/gender/projects/detail/en/c/411833/> (accessed 16 December 2019)

Food and Agricultural Organization, *Our Strategic Objectives*, 2014, available at: <http://www.fao.org/3/l8580EN/l8580en.pdf> (accessed 16 December 2019)

General Assembly, “Agriculture development, food security and nutrition” (A/71/283), 2016, available at: <https://unctad.org/meetings/en/SessionalDocuments/a71d283.en.pdf> (accessed 16 December 2019)

General Assembly, “The Right to Food (A/RES/63/187)”, available at: <https://www.preventionweb.net/files/resolutions/N0848201.pdf> (accessed 16 December 2019)

General Assembly, Agriculture development and food security: Report of the Secretary-General (A/67/294), 2012, available at: <https://undocs.org/pdf?symbol=en/A/67/294> (accessed 16 December 2019)

General Assembly, *Food Assistance Convention* (2012), available at: <https://www.foodaidconvention.org/Pdf/FoodAssistance/FoodAssistance.pdf> (accessed 16 December 2019)

General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development* (A/RES/70/1), 2015, available at: <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf> (accessed 16 December 2019)

Global Agriculture, “Rio +20: Opportunity for Change in Agriculture”, available at: <https://www.globalagriculture.org/sdqs/rio-20.html> (accessed 16 December 2019)

International Development Association, “What is IDA” 2019, available at: <http://ida.worldbank.org/about/what-is-ida>

International Food Policy Research Institute, “An ambitious development goal: Ending hunger and under nutrition by 2025”, available at: <http://www.ifpri.org/publication/ambitious-development-goal-ending-hunger-and-undernutrition-2025> (accessed 6 December 2019)

Joe McGrath “How tech and investment could help feed the many” 2018, available at: <https://www.raconteur.net/sustainability/tech-investment-food> (accessed 16 December 2019)

The World Bank, *What We Do*, available at: <https://www.worldbank.org/en/what-we-do> (accessed 16 December 2019)

United Nations Department of Economic and Social Affairs, “Sustainable Development Goal 5 – Achieve Gender Equality and Empower all Women and Girls”, available at: <https://sustainabledevelopment.un.org/sdg5> (accessed 16 December 2019)

United Nations, “Growing at a Slower Pace, World Population is expected to reach 9.7 billion in 2050 and could Peak at nearly 11 billion around 2100”, available at: <https://www.un.org/sustainabledevelopment/wp-admin/setup-config.php> (accessed 16 December 2019)

United Nations Development Program, “Goal 2: Zero Hunger”, available at: <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-2-zero-hunger.html> (accessed 16 December 2019)

United Nations Population Fund, “World Population Dashboard” 2019, available at: <https://www.unfpa.org/data/world-population-dashboard> (accessed 9 March 2020)

United Nations, “Austria”, available at: <https://www.un.org/esa/agenda21/natlinfo/countr/austria/agriculture.pdf> (accessed 16 December 2019)

United Nations, “World Population Prospects 2019: Highlights”, available at: <https://population.un.org/wpp/publications/Files/WPP2019.10KeyFindings.pdf> (accessed 16 December 2019)

UN-OHRLLS, “Key Actions since the Adoption of the Programme of Action for LDCs”, available at: <http://unohrlls.org/about-ldcs/istanbul-programme-of-action/> (accessed 16 December 2019)

WECF, “International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)” *Global Summary for Decision Makers*, available at: http://www.wecf.eu/download/2008/Global_SDM_130408_FINAL.pdf (accessed 16 December 2019)

Emma Weston and Nolet Weston, “From Bitcoin to Agriculture: How Can Farmers Benefit from Blockchain?” Agfunder News, available at: <https://aqfundernews.com/from-bitcoin-to-agriculture-how-can-farmers-benefit-from-blockchain6380.html> (accessed 16 December 2019)

WFP, “More than half the country struggles to survive despite improving conditions in South Sudan”, 2019, available at: <https://www.wfp.org/news/more-half-country-struggles-survive-despite-improving-conditions-south-sudan-0> (accessed 16 December 2019)

World Bank, “Future of Food: Harnessing Digital Technology to Improve Food Outcomes” 2019, available at: <https://www.worldbank.org/en/topic/agriculture/publication/future-of-food-harnessing-digital-technologies-to-improve-food-system-outcomes> (accessed 16 December 2019)

World Economic Forum, “Innovation with a Purpose: The role of technology innovation in accelerating food systems transformation”, available at: <https://www.weforum.org/reports/innovation-with-a-purpose-the-role-of-technology-innovation-in-accelerating-food-systems-transformation> (accessed 16 December 2019)