ISARMUN 2019





Rethinking the global food economy towards sustainable food production and distribution

Authors: Jochem Lammersman, Hoda Shoeir and Maurice Thaidigsmann

Contents

Welcome Letter
Introduction to the UN Economic and Social Council
Introduction: Sustainability and the Global Food Economy5
Towards Sustainable Food Production and Distribution
Terminology6
Food Production and Distribution in the 21 st Century8
The Ecological Impact of Food Production and Distribution9
Inputs and efficiency9
Outputs 11
Self-reinforcing process and interaction effects13
Existing Action by the International Community14
Past resolutions, international framework, active institutions14
Potential solutions and debates15
Questions A Resolution Must Answer (QARMA's)
Bibliography18
Further Readings

Welcome Letter

Esteemed delegates,

We are solemnly pleased to welcome you to this year's (IsarMUN 2019) United Nations Economic and Social Council. During this conference, many young people from across the globe will gather in Munich, Germany, to discuss issues of utmost relevance to the international community as well as to simulate - and thus understand - international diplomacy.

With this Study Guide, we aim to outline the topic, shed light on it from the perspective of the conference theme, and establish a common ground for discussion. Beyond this service, you are expected to conduct extensive research about the history, challenges, and substance of the issue as well as your country's specific position on all of its aspects. The better prepared you come, the more delegates can learn from each other and the better outcome ECOSOC will produce.

During the conference, we aim to have opening speeches, a general discussion, specific discussions, negotiations about working papers, and a vote about one or several final documents - becoming resolutions that cover ECOSOC's approach to addressing the challenges within the topic of sustainability in food production and distribution.

We hope to be of excellent guidance to you before and during the conference and wish you a wonderful week amidst all other engineers of the future! Do not hesitate to contact us with any questions about ECOSOC, the topic, the rules of procedure or MUN conferences in general. Any administrative or organisational questions will be covered by the IsarMUN 2019 Executive Board.

With highest regards,

The Chairpersons of the United Nations Economic and Social Council at IsarMUN 2019

Hoda Shoeir, Jochem Lammersma, and Maurice Thaidigsmann

ecosoc@isarmun.org

Introduction to the UN Economic and Social Council

As one of the main bodies of the United Nations that came into existence since the founding of the UN already, ECOSOC is tasked with addressing all relevant social and economic affairs on an international scale. In recent years it has therefore taken up the responsibility to deal with sustainable development in light of the Sustainable Development Goals.¹ ECOSOC, equipped with the obligation to deal with socio-economic realities, in the end is meant to have the expertise to come to substantive conclusions on issues of global development. ECOSOC has the liberty to pick from various forms in which these conclusions can be presented, such as resolutions, recommendations and conventions for consideration by the General Assembly. Additionally, it coordinates the actions of various smaller UN bodies, for example some tasked with humanitarian aid, and has the possibility to create working committees that can deal with issues more concretely through expert consultation and resolution writing. Some examples of these committees are those occupied with human rights, social development and the status of women.²

ECOSOC's position was strengthened by General Assembly resolution 68/1, which identified the body as a key institution in global developments. Before this, there have already been General Assembly resolutions granting ECOSOC the right to make so called ministerial reviews wherein progress is assessed for countries in ECOSOC agreements. Generally, there is somewhat of an urge for the Council to use its mandate more assertively, as can be seen by the reviews and various committees ECOSOC now oversees. Of course, the decision making power still lies within member states and, where other important bodies and institutions are involved, ECOSOC can only make recommendations. Resolution 68/1, as interpreted by ECOSOC itself, recognized its role in 'identifying emerging challenges and promoting reflection, debate and innovative thinking on development, as well as in achieving a balanced integration of the three dimensions of sustainable development'³ - economic, social and environmental.

¹ United Nations, Achieving Sustainable Development and Promoting Development Cooperation: Dialogues at the Economic and Social Council (New York, NY: United Nations, 2008).

 ² ECOSOC, Subsidiary Bodies of ECOSOC (2019), <u>https://www.un.org/ecosoc/en/content/subsidiary-bodies-ecosoc</u>.
³ ECOSOC, Further review of the Implementation of Resolution 61/16 on the strengthening of the Economic and Social Council (2013), <u>https://www.un.org/en/ecosoc/about/strengtheningofecosoc.shtml</u>.

Introduction: Sustainability and the Global Food Economy

In October 2018, former Secretary-General of the United Nations Ban Ki-Moon opened the Global Center on Adaptation in the city of Groningen, the Netherlands. When receiving his honorary doctorate from the University of Groningen, the former SG stated to a crowd of students that 'we are the first generation that can end poverty, but the last that can end climate change'.⁴ There is an urgent sense nowadays that climate change is affecting all walks of human endeavour and vice versa. Climate protests and other critical voices roam through civil society while interests group and industries most affected by climate regulations aim to contribute to a more sustainable planet while mediating the effects of such regulations to their businesses. In this complicated playing field, climate diplomats and other international bodies aim to make sense of these realities. For decades the UNFCCC, the climate mitigation and adaptation committee of the UN, has struggled though sometimes succeeded in presenting climate agreements, most notably in Paris in 2015.⁵ The international consensus is increasingly becoming one wherein it is considered unacceptable that global temperatures and sea-levels are rising, elemental flora and fauna is destroyed and the planet is left a worse place to live generation after generation. Obviously, a crucial part in these developments are the resources used and consequent emissions and wastes created by human enterprise. Reports of the Intergovernmental Panel on Climate Change (IPCC) firmly suggest that in order to

prevent escalations changes have to be made in the way that human life is organized. Apart from areas such as energy and transport, food production and distribution are elemental parts of this.⁶ The global food economy is responsible for the accumulation of much of the world's resource usage and produces many emissions and waste.⁷ A transformation towards a more adapted and mitigated world must



therefore include a transformation from a global food economy towards more sustainable food Assessment of Agricultural Knowledge, Science and

Figure 1 – Focus of the topic within the sustainability Venn diagram by the International Technology for Development (IAASTD).

⁴ University of Groningen, Eredoctoraat uitgereikt aan SG Ban Ki-Moon (2018), <u>https://www.rug.nl/news/2018/10/17-</u> october-awarding-of-honorary-doctorate-to-ban-ki-moon.

⁵ Center for Climate and Energy Solutions, *History of UN Climate Talks* (2017), https://www.c2es.org/content/history-of-unclimate-talks/

IPCC, AR5 Climate Change 2014: Mitigation of Climate Change (2014b).

⁷ John R. Porter, Liyong Xie et al., 'Food Security and Food Production Systems', AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability (IPCC, 2014), 485-533.

production and distribution as well.

As delegates, you are tasked with dealing with this problem. How can the global food economy be reorganized in such a way that it takes into account the changing climate? In this study guide you may find some important but basic information for your own preparations. We will deal briefly with the status-quo of the global food economy and the different ways in which it affects the climate. Secondly, we will address the various ways that have been tried already to mitigate the effects of food production and distribution on the climate as well as current ideas and debates. You may also find the Questions A Resolutions Must Answer (QARMA's) and suggested readings at the end of this paper.

Towards Sustainable Food Production and Distribution

In order to further outline the topic, this guide first settles some of the terminology, explains the fundamentals of the global food system and then addresses in which ways it affects the environment and global climate.

Terminology

A few terms require explanation in order to establish a common ground for discussion.⁸

Sustainability: The UN Food and Agriculture Organisation (FAO) "defines sustainable development as the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry, and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable". This includes social and economic aspects, which is in line with the systemic approach of the Sustainable Development Agenda 2030. The UN Environment Programme (UNEP), not in conflict with the FAO's extensive definition, regards sustainability as ensuring "that the use of

⁸ It is important to note that establishing a common ground for some terms is impossible, as substantial differences in perspective exist between UN member states, which have prevented UN organs from finding a common definition for these terms. One highly disputed example is green business / growth; UNEP, *The tricky business of reaching a global consensus on the environment* (2019a), <u>https://www.unenvironment.org/news-and-stories/story/tricky-business-reaching-global-consensus-environment</u>

resources and the environment today does not compromise their use in the future"⁹.

- "An ecosystem includes all living things in a given area, as well as their *Ecosystems:* interactions with each other, and with their non-living environments (weather, earth, sun, soil, climate, atmosphere)."¹⁰
- The World Meteorological Organisation (WMO) defines the natural Environment: environment as "the interwoven systems of atmosphere, oceans, watercourses, land, ice cover and biosphere"¹¹.
- Climate (Change): United Nations bodies usually avoid a definition of climate, but the WMO defines it as " the average weather conditions for a particular location and over a long period of time"¹². Its change was defined in the 1992 UN Framework Convention on Climate Change as "attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods"¹³.
- Food production: We consider the production of food to include all processes from the establishment of a farm or factory to the processing of the final product including "the gathering/catching, growing, harvesting [...], storing, processing, [and] packaging"¹⁴.
- Food distribution: We consider the distribution of food every act of transport, delivery, or automatic moving of food stuffs, unprocessed or processed, for further processing, thus excluding transport related to retail and/or exports of final products.

⁹ FAO, What is meant by the term "sustainability"? (2019c), http://www.fao.org/3/ai388e/AI388E05.htm.

¹⁰ UNEP, Why do ecosystems matter? (2019b), https://www.unenvironment.org/explore-topics/ecosystems/why-doecosystems-matter . ¹¹ World Meteorological Organisation, *Environment* (2019b), <u>https://public.wmo.int/en/our-mandate/focus-areas/environment</u>

¹² World Meteorological Organisation, *Climate* (2019a), <u>https://public.wmo.int/en/our-mandate/climate</u>.

¹³ United Nations, United Nations Framework Convention on Climate Change (1992).

¹⁴ John R. Porter, Liyong Xie et al., 'Food Security and Food Production Systems', AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability (IPCC, 2014), 490.

Food Production and Distribution in the 21st Century

Any explanation of the working of the global food economy must first be preceded by a quick outtake on the world's demography. There are about 7.7 billion people alive today and United Nations prospects indicate that this number may rise to almost 10 billion people around



population that occurred largely in the twentieth century is rather significant to the extent that for most of human history, our planet has not sustained human populations over three billion people, as the graph on the left Nevertheless, indicates. this population growth has been

2050.¹⁵ This growth of the world's

Figure 2 - Historic and projected total world population. Source: UN DESA. **sustained by a complex global food economy.**

At the core of this global food economy is food production that is largely covered by the whole of agricultural activities, such as crops, livestock and seafood. Some agricultures are located in parts of the world where food production is largely used for domestic purposes, most of them poor or developing countries.¹⁶ This can be the case because feeding the country's population depends on local farming, poorer countries facing greater difficulties buying food at the world's markets or lack infrastructure or expertise to successfully export agricultural commodities. For richer and developed countries the opposite can be said. Though it is true that these countries produce food for their own consumption, they tend to use food production for foreign trade to a far greater extent. A good example of this are most of the Western European countries that have long profited from European farming policies. Many Western European farmers have profited from food subsidies which they used to scale up their production so that they could sell their products at low prices at world markets.¹⁷

Countries have different supply capacities depending on the size of their agricultural sector, domestic demand, infrastructure, and more. Significiant differences exist in terms of demand

¹⁶ World Bank, *Global Economic Prospects: Commodities at the Crossroads* (Washington, D.C.: World Bank, 2009).

¹⁵ UN DESA Population Division, *World Population Prospects 2019* (2019), https://population.un.org/wpp/Graphs/Probabilistic/POP/TOT/900.

¹⁷ Organisation for Economic Co-operation and Development, *Evaluation of Agricultural Policy Reforms in the European Union* (Paris: OECD Publishing, 2011).

as well. The average individual in the developed, mostly western world consumes far more food on a weekly basis than his or her counterpart from developing and poor, mostly non-western countries.¹⁸ Food distribution can therefore be perceived as a technical or market capacity to import and export food products, but in many contexts it also refers to the way global production chains affect the access to food for different parts of the world's population, the inequalities represented by this division and its potential causes and solutions.¹⁹

The Ecological Impact of Food Production and Distribution

After having introduced the current functioning of the global food system, we are now able to look at the impact these processes have on the environment and global climate - defining the core areas of focus ECOSOC can and should address under the given topic.

As outlined in the 2019 UN Global SDG Report, "In transitioning towards sustainable food systems, the focus must be on enabling more equitable global access to nutritional foods, reducing food loss and waste and maximizing the nutritional value of produce while, at the same time, minimizing the climate and environmental impacts of production and increasing the resilience of food systems."²⁰ As such, the efficiency of food production has to increase while emissions and other impacts need to decrease. For the purposes of this Study Guide, we term efficiency-related impacts *input* and other impacts *output*.

Inputs and efficiency

With the terminology covered, it is now possible to look at the various policy areas about the impact of food production and distribution on ecosystems and the climate. First, resources, energy, and space is needed to produce food - the input. As the demand for food is growing rather than shrinking, lowering the input-related impacts is all about efficiency instead of simply reducing production.

The use of resources and energy

Agriculture accounts for 70% of global freshwater use²¹. Water is being redirected or withdrawn from natural systems for agricultural and processing purposes. In some areas, groundwater reserves have been depleted due to inefficient water management, active land

¹⁸ Max Roser and Hannah Ritchie, *Food per Person: Improving Food Supply in Early Modernized Countries* (Our World in Data, 2019), <u>https://ourworldindata.org/food-per-person.</u>

¹⁹ Paolo D'Odorico et al., 'Food Inequality, Justice and Rights', *BioScience* 69, no. 3 (2019): 180–190.

²⁰ UN DESA, *The future is now: science for achieving sustainable development*, Global Sustainable Development Report (2019), xxvi.

²¹ IPCC, Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems, Summary for Policymakers (2019), 2.

draining, and flood control measures for agricultural and industrial purposes²². Depleting water reserves also reduces water quality as the concentration of contaminants rises.

Additionally, agriculture and food production is currently very resource intensive compared to other industries (value added / resource use)²³. Besides the natural process of mineral and nutrient extraction from soils, agriculture and the food industry use a range of other natural and processed resources: minerals and chemicals in fertilizers, gases for food processing, sanitizers, wood and rubber, and fossil fuels. The vast majority of agricultural machinery for production and distribution still runs on fossil fuels – especially relevant is transport in global production chains.

This further relates to the use of energy, a resource of its own, in food production and distribution. Heating, cooling, lighting, machinery, fuel use, monitoring and safety systems all represent the wide range of needs for energy on farms and within facilities. Although striving to optimize efficiency, conventional farming methods have been found to be highly inefficient in this regard. They can have an up to 70% higher energy input use than organic systems²⁴. Yet, where energy costs are cheaper than additional workers and ecosystem damage is not priced in, conventional farming is still the more financially attractive business model – although the comparison varies between countries²⁵.

Finally, all input-related impact is greatly increased simply by way of overproducing food to compensate the loss and waste of food during production and distribution. Malicious infrastructure, storing systems, and market functionalities greatly reduce the efficiency of the food system and require unnecessary inputs. Waste deposits are further considered in the outputs section.

The use of ecosystem space and assets

Agriculture is responsible for 80% of global deforestation²⁶. This is because inefficient agricultural production, supportive / distribution infrastructure, and facilities for production require large amounts of surface area. Intact and enclosed ecosystems are often the target of expansion due to their fertile grounds, strategic location, or absence of modern civilization

²² United States Geological Survey [USGS], Groundwater Depletion in the United States (1900-2008), Scientific

Investigations Report 2013-5079 (Reston, Virginia: 2013), 48-51, <u>https://pubs.usgs.gov/sir/2013/5079/SIR2013-5079.pdf</u>. ²³ Edgar G. Hertwich, *Measuring the resource intensity of production and consumption*, presentation at the OECD/UNEP conference on resource efficiency (Paris: 2008).

²⁴ Aubrey Yee, Organic vs. Conventional Farming: Which Method Uses Less Energy?, Good.Is (01.10.2013), https://www.good.is/articles/organic-vs-conventional-farming-which-method-uses-less-energy.

²⁵ European Commission, Organic versus conventional farming, which performs better financially?, Farm Economics Brief (2013).

²⁶ UN DESA, *The future is now: science for achieving sustainable development*, Global Sustainable Development Report (2019), 65.

that would otherwise need to be destroyed or relocated. In addition, these structures often seal the ground to an unnecessary extent and thus distort the flow of rainwater to below-surface life structures. Moreover, they can cut off vital connections between sub-systems as well as interrupt animal migration paths and orientation.

Additionally, the extraction of soil (especially hummus), stone, tree roots, and weeds can further distort the ecosystem's long-grown functioning. This can be the beginning of degradation leading to desertification, landslides, or sinkholes. "An additional 12 million hectares of agricultural land annually are likely to become unusable for food production every year"²⁷. All of these changes in land conditions further have a significant impact on regional and global climate by way of releasing greenhouse gases from the ground or changing heat reflection patterns.

However, it is important to mention that farms have the potential to contribute to healthy ecosystems as well, for example by preserving endangered species, a regular addition of new biomass, or teaching about local ecosystems and nutritious foods.

Outputs

The process of food production and distribution not only consumes space, resources, and assets, but also outputs harmful to the environment and climate.

Emissions

The primary output in this regard is emissions. These are not limited to greenhouse gases, but also include other harmful gases, heat, and mechanical energy.

Food production is one of the main emitters of greenhouse gases globally. "If emissions associated with pre- and post-production activities in the global food system are included, the emissions are estimated to be 21-37% of total net anthropogenic GHG emissions"²⁸. Yet, it has to be recognized that agriculture and forestry are the main human-managed systems to bind carbon dioxide from the air. A 2018 IPCC report recognizes that "[p]lants take up carbon dioxide (CO2) from the atmosphere and nitrogen (N) from the soil when they grow, redistributing it among different pools, including above and below-ground living biomass, dead residues, and soil organic matter⁴²⁹. It also addresses the tendency of natural systems to

²⁷ IPCC, Special Report on Climate Change, Desertification, [...], Summary for Policymakers (2019), 3.

²⁸ IPCC, Special Report on Climate Change, Desertification, [...], Summary for Policymakers (2019), 7; UN DESA, The future is now: science for achieving sustainable development, Global Sustainable Development Report (2019), 58.

 ²⁹ Pete Smith, Mercedes Bustamante et al., *Agriculture, Forestry and Other Land Use (AFOLU)*, AR5 Climate Change 2014: Mitigation of Climate Change (IPCC, 2014), 818.

extract more CO2 from the atmosphere due to its increasingly higher concentrations - a factor which makes the calculation of net emissions very difficult³⁰.

Not all gases are greenhouse gases and some only develop a negative environmental impact locally, especially if trapped by landscape or wind patterns. Smog in major cities can be seen as one such example of local air pollution. For agriculture, a change in air quality or composition can lead to lower yields and a higher need for water and fertilizer input.

Heat and mechanical energy can be another harmful emission from agricultural and industrial food production and distribution. Average local temperatures can greatly increase through the presence of productive human activity if heat sinks are created and isolation is insufficient. Technology directly interacting with ecosystems such as water mills provide a form of mechanical energy that can be harmful to natural water flows and animal health, among others.

Deposits

Also an emission in the wider sense, the unsafe deposit of waste, organic and inorganic material is a further form of harmful output during food production.

One part is food waste, which in addition to requiring unnecessary additional inputs is also a form of unwanted output. Currently, 25-30% of total food produced is lost or wasted³¹. Processed food is harder to dissolve through natural processes than the original plants and animals. Additionally, food waste attracts certain species that can threaten others or the ecosystem as a whole. The large amount of wasted food is not matched by sufficiently large safe deposits, which results in it being deposited in unsafe ways or fed to animals, risking diseases. Through this process, by-products of food production can reach the environment, where they cause harm. This further includes the circulation of medication back into the production chain, which causes hyper-resistances responsible for epidemics³².

In addition to food waste, other by-products and waste are also deposited without care or regulation. Inorganic waste is even harder to dissolve and causes even more grave and long-term harm to the environment. One large category of such waste is inorganic fertilizer. Market pressures have led to dangerous overuse of nitrogen fertilizers, which can contaminate the soil

³⁰ IPCC, Special Report on Climate Change, Desertification, [...], Summary for Policymakers (2019), 8.

³¹ IPCC, Special Report on Climate Change, Desertification, [...], Summary for Policymakers (2019), 3.

³² FAO Antimicrobial Resistance Working Group, Antimicrobial Resistance and Foods of Plant Origin – Summary Report fo an FAO Meeting of Experts (2018), 2.

and groundwater³³. Additionally, among other categories of waste is medication, other chemicals (e.g. for cleaning), packaging waste or old machinery / equipment.

One way that such waste reaches the environment and causes harm besides direct deposit is through untreated/unfiltered waste water. Fertilizer and pesticide use has increased in recent years, representing a major issue for water quality especially in developing countries. According to UN water, up to 80% of global wastewater is neither treated not reused³⁴.

It is important to recognize that this is primarily a development concern, as wastewater treatment systems, safe deposit procedures and a reduction in waste, requires technology and upgrades unaffordable to many rural farmers.

Biosafety & biodiversity

Finally, Natural ecosystems and biodiversity have decreased dramatically over the past decades. This can certainly not be blamed solely on agriculture and food production, particularly since many traditional farming techniques indeed contribute to biosafety and local biodiversity. However, traditional agricultural knowledge synchronized with the local ecosystem is increasingly challenged by commercialization of food production – and with it fundamental knowledge about soils, seasonal patterns, and irrigation systems³⁵.

Instead, invasive farming methods cause substantial harm, such as, but not limited to, the relocation of (invasive) species, the spread of new diseases to ecosystems unable to protect themselves naturally against them, the spread of bioengineered 'superior' species, the neglect of seasonal patterns, the use of monocultures, or artificially created conditions for growth and harvest through geo-engineering and climate engineering³⁶.

Self-reinforcing process and interaction effects

Climate Change and degradation additionally intensify each other, with higher temperatures and extreme weather events leading to faster ecosystem degradation through permafrost soil melting and opening up, a lack of freshwater, and the migration of species, which in turn lead to a faster release of greenhouse gases.³⁷

³³ UN DESA, *The future is now: science for achieving sustainable development*, Global Sustainable Development Report (2019), 73.

³⁴ UN WATER, *Water Facts: quality and waste water* (2019), <u>https://www.unwater.org/water-facts/quality-and-wastewater/</u>. ³⁵ FAO, *FAO and traditional knowledge: the linkages with sustainability, food security and climate change impacts* (Rome: 2009), 1.

³⁶ Manu Saunders, *Single-crop farming is leaving wildlife with no room to turn*, The Conversation (14.05.2015), <u>https://theconversation.com/single-crop-farming-is-leaving-wildlife-with-no-room-to-turn-38991</u>.

³⁷ IPCC, Special Report on Climate Change, Desertification, [...], Summary for Policymakers (2019).

Existing Action by the International Community

The international community has long recognized these various impacts of food production on the environment and global climate - and has consequently tried to regulate and mitigate it through means of decisions and institutions for governance, economic and technological progress.

Past resolutions, international framework, active institutions

There have been several attempts by international entities to address the issues of food production. One of the most discussed issues in this regard was the scarcity of food. A sustainable food production and distribution system would drastically improve the undernourishment epidemic that is indicated to affect about 821 million people in the world. **The World Food Summit**³⁸ in 1996 marks a pledge of perennial value, for it has gathered all countries together in an effort to eradicate hunger globally.

Four years later, a new framework was signed by world leaders, the United Nation's Millennium Development Goals (MDGs)³⁹. This set of goals highlighted the importance of altering international food production in a way that ensures nourishment for almost all people. Achieving full eradication, meaning Zero Hunger, was set later in the United Nation's Sustainable Development Goals (SDGs)⁴⁰ in order to render the world more equitable, fair and prosperous for all. Goals 6 and 12 - 16 are especially relevant for food sustainability.

However, the issue of the current food production system not producing enough food for the population (or rather being unable to distribute the resources in a way that ensures global nourishment) merely scrapes the surface of the discussion. The issue here lies mainly in the environmentally detrimental methodology of food production and the inefficiency to produce sustainably, safely and environmentally friendly. The European Union has earned the reputation of environmental protection avant-garde through progressive food production regulations set by this. EU eco-labels⁴¹ are regulatory certifications for environmentally friendly supplier products and services. Food suppliers can register their appliances and services for their energy efficiency. The same eco-design has been carried out by China.

³⁸ FAO, World Food Summit – 13-17 November 1996 Rome Italy (2019b), <u>http://www.fao.org/wfs/index_en.htm</u>. ³⁹ United Nations, We can end poverty – Millenium Development Goals and Beyond 2015 (2019b), https://www.un.org/millenniumgoals/. ⁴⁰ United Nations, *Goal 2: Zero Hunger* (2019a), <u>https://www.un.org/sustainabledevelopment/hunger</u>/.

⁴¹ European Commission, Energy label and ecodesign (2019), <u>https://ec.europa.eu/info/energy-climate-change-</u> environment/standards-tools-and-labels/products-labelling-rules-and-requirements/energy-label-and-ecodesign en.

Now that the grounds of having resources (resolving food scarcity) and handling them in a sustainable eco-friendly way (resolving environmental inefficiency) are cleared, there still remains the candor of keeping the food. Food security is a main focus of the World Food **Program (WFP)**⁴², since the underlying problem creates a vicious cycle. The WFP recognizes that droughts, floods and storms around the world intensify and thus account for immense loss of agricultural produce, increasing the inefficiency and thus environmental impact and the cycle continues. Whereas the WFP tackles the issue by producing eco-designs and setting frameworks, The World Bank⁴³ offers financial help in order to minimize food loss and develop climate-smart farming techniques to restore degraded farmland and breed more resilient and nutritious crops. The efforts of the World Bank have aided tremendously in improving storage and reducing food loss. The UN Food and Agriculture Organization (FAO)⁴⁴ documents and reviews the changes made by these institutions, continuously giving insight, outlooks and recommendations for economic and ecological development of food systems to specific regions as well. In cooperation with the Organization of Economic Co-**Operation and Development (OECD)**⁴⁵, a yearly report is composed which outlines regional and international agricultural findings and offers expert insight on these analyses.

With regard to the climate impacts of food production, the Intergovernmental Panel on Climate Change (IPCC) and the World Meteorological Organization (WMO) contribute scientific research and advise and the United Nations Framework Convention on Climate Change (UNFCCC) discusses these findings and necessary steps on a political level.

Finally, a range of UN bodies attempted to tackle the issue in the past, including, but not limited to, ECOSOC of course, UN Water, UNEP, UNDP, and the UN Economic Commissions.

Potential solutions and debates

The discussion and friction in this topic can be summarized in a number of points.

- 1. Cost
- 2. Resources
- 3. Willingness

When speaking of cost, it is easy to proclaim that planet earth is priceless and cannot be subjected to a price tag. However, world leaders do need to keep an eye on national expenses

⁴² World Food Programme, *Climate action* (2019), <u>https://www.wfp.org/climate-action</u>.

⁴³ The World Bank, Agriculture and Food (2019), <u>https://www.worldbank.org/en/topic/agriculture</u>.

⁴⁴ FAO, About FAO (2019a), <u>http://www.fao.org/about/en/</u>.

⁴⁵ OECD and FAO, OECD-FAO Agricultural Outlook 2018-2027 (Paris: OECD Publishing / Rome: FAO, 2018).

and fiscal expenditure. And even though the World Bank supports environmental causes, they do only support countries with loans that are given if future payout is realistic and imaginable. Countries such as the Democratic Republic of Congo and Tanzania in Africa and Libya in the Middle East struggle to designate a fiscal amount to investing in a sustainable food system. For certain countries, acute problems concerning citizens' safety are granted a higher priority. Turkey for example has gone through perils to announce itself as a developing country in order to evade supplying finance for climate agreements. *A successful resolution needs to bear in mind that a financially manageable system consists of strategizing existing local goods as to not exhaust the countries' finances.*

This is also true when speaking of resources. Of course Germany can crown itself with the eco-friendly label, seen as its economical pedigree facilitates the possession of resources such as abundant renewable energy. Less economically developed countries are unaffiliated with such privilege. Belarus and Eritrea, with a minuscule 0.02% of renewable energy, have no realistic way of implementing an energy efficient food production system at the time-being, even if the willingness was present. This is also true for Cuba (0.10%), Algeria (0.12%) and Bangladesh (0.20%). A successful resolution defines an energy-efficiency standard that is proportionate to the size and population density of the country and encourages the use of alternative energy to reach abovementioned standard.

The last point also coincides to be the most unfortunate, seen as in this case the existence of resources and financial means is given. Political friction has caused countries to back out of important international agreements. The Russian Federation for example being the largest emitter to not yet sign the Paris Agreement already puts it in a tight spot. Time and time again however Russia has proven to opt taking measures into its own hands instead of relying on transnational guidance, this is merely a matter of governance habitus. Countries subjected to any kind of sanctions are also not expected to sign any international agreements, such as the Islamic Republic of Iran.

On a different account however it seems that the nature of these agreements is not incentivizing enough for countries to cooperate. In a memorable instance, Nicaragua rejected the Paris Agreement⁴⁶ seen as there is no punishment put in place for not abiding by the set rules and regulations. Hence the accord was seen as pointless and a matter of formality. This stance is not merely represented by Nicaragua, but by other countries such as Egypt.

⁴⁶ Sarah Begley, *Nicaragua Didn't Sign the Paris Agreement Because It Didn't Go Far Enough*, TIME (31.05.2017), <u>https://time.com/4799844/nicaragua-paris-climate-agreement-countries/</u>.

Lastly, there is the instance of literal inability. Exemplarily, Syria is in the midst of an immense civil war and handling mass exodus, becoming economically active is in no way imaginable for a country with these circumstances. *A successful resolution underlines that international political disagreements are an inadequate reason to be uncooperative in a situation that affects all human beings regardless of geological presence. It emphasizes the responsibility of honoring human life and the importance of its preservation rather than the puissance of institutions and contracts.*

Questions A Resolution Must Answer (QARMA's)

- To what extent can the globalized production and exchange of agricultural products continue to operate in the way it has existed until now? What elemental processes or systems should be left untouched?
- Which changes to food production and distribution are necessary to alleviate its harmful impacts on the environment, in particular ecosystems at different scales and the climate? How can the international community implement these changes? How can the local socioeconomic context be taken into account in these decisions?
- Which measures should ECOSOC suggest within its mandate to address emissions, unsafe deposits of waste, soil/flora/fauna degradation and unsustainable resource management by the food production and distribution system? Which agreements should govern these environmental impacts?
- Which measures should ECOSOC suggest within its mandate to increase the efficiency of energy and resource consumption by agriculture and the food industry? Which agreements can support these measures?

Bibliography

- Begley, Sarah. Nicaragua Didn't Sign the Paris Agreement Because It Didn't Go Far Enough. TIME (31.05.2017). https://time.com/4799844/nicaragua-paris-climateagreement-countries/
- Center for Climate and Energy Solutions. *History of UN Climate Talks* (2017). https://www.c2es.org/content/history-of-un-climate-talks/
- D'Odorico, Paolo et al.l 'Food Inequality, Justice and Rights', *BioScience* 69, no. 3 (2019): 180–190.
- ECOSOC. Further review of the Implementation of Resolution 61/16 on the strengthening of the Economic and Social Council (2013). https://www.un.org/en/ecosoc/about/strengtheningofecosoc.shtml.
- ECOSOC. Subsidiary Bodies of ECOSOC (2019). https://www.un.org/ecosoc/en/content/subsidiary-bodies-ecosoc.
- European Commission. *Energy label and ecodesign* (2019). https://ec.europa.eu/info/energyclimate-change-environment/standards-tools-and-labels/products-labelling-rules-andrequirements/energy-label-and-ecodesign_en
- European Commission. Organic versus conventional farming, which performs better financially? - An overview of organic field crop and milk production in selected Member States. Farm Economics Brief (2013). https://ec.europa.eu/agriculture/rica/pdf/FEB4_Organic_farming_final_web.pdf
- FAO Antimicrobial Resistance Working Group. Antimicrobial Resistance and Foods of Plant Origin – Summary Report of an FAO Meeting of Experts (2018). http://www.fao.org/3/BU657en/bu657en.pdf
- FAO. About FAO (2019a). http://www.fao.org/about/en/
- FAO. FAO and traditional knowledge: the linkages with sustainability, food security and climate change impacts. Rome: FAO, 2009. http://www.fao.org/3/a-i0841e.pdf
- FAO. World Food Summit 13-17 November 1996 Rome Italy (2019b). http://www.fao.org/wfs/index_en.htm

- FAO. What is meant by the term "sustainability"? (2019c). http://www.fao.org/3/ai388e/AI388E05.htm
- Hertwich, Edgar G. *Measuring the resource intensity of production and consumption*. presentation at the OECD/UNEP conference on resource efficiency. Paris, 2008. https://www.oecd.org/env/indicators-modelling-outlooks/Hertwich.pdf
- IPCC. AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (2014a).

IPCC. AR5 Climate Change 2014: Mitigation of Climate Change (2014b).

- IPCC. IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems. Summary for Policymakers (2019). https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf
- Manu Saunders. *Single-crop farming is leaving wildlife with no room to turn*. The Conversation (14.05.2015). https://theconversation.com/single-crop-farming-isleaving-wildlife-with-no-room-to-turn-38991
- OECD and FAO. OECD-FAO Agricultural Outlook 2018-2027. Paris: OECD Publishing / Rome: FAO, 2018. http://www.fao.org/3/I9166EN/I9166EN.pdf
- Organisation for Economic Co-operation and Development [OECD], *Evaluation of Agricultural Policy Reforms in the European Union*. Paris: OECD Publishing, 2011. https://www.oecd.org/eu/evaluationofagriculturalpolicyreformsintheeuropeanunion.h tm
- Porter, John R. and Liyong Xie. 'Food Security and Food Production Systems'. In: AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability - Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014). 485-533. https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap7_FINAL.pdf
- Roser, Max and Hannah Ritchie, *Food per Person: Improving Food Supply in Early Modernized Countries.* Our World in Data. 2019. https://ourworldindata.org/foodper-person

Smith, Pete, Bustamante, Mercedes et al. Agriculture, Forestry and Other Land Use (AFOLU). AR5 Climate Change 2014: Mitigation of Climate Change (IPCC, 2014). 811-922.

https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter11.pdf

- UN DESA Population Division. *World Population Prospects 2019* (2019), https://population.un.org/wpp/Graphs/Probabilistic/POP/TOT/900
- UN DESA. The Future is Now: Science for achieving sustainable development, Global Sustainable Development Report (2019). https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019. pdf
- UN WATER. *Water Facts: quality and waste water* (2019). https://www.unwater.org/waterfacts/quality-and-wastewater/
- UNEP. The tricky business of reaching a global consensus on the environment (2019a). https://www.unenvironment.org/news-and-stories/story/tricky-business-reaching-global-consensus-environment
- UNEP. Why do ecosystems matter? (2019b). https://www.unenvironment.org/exploretopics/ecosystems/why-do-ecosystems-matter
- United Nations. Achieving Sustainable Development and Promoting Development Cooperation: Dialogues at the Economic and Social Council. New York, NY: United Nations, 2008.
- United Nations. *Goal 2: Zero Hunger* (2019a). https://www.un.org/sustainabledevelopment/hunger/
- United Nations. United Nations Framework Convention on Climate Change (1992). https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
- United Nations. We can end poverty Millenium Development Goals and Beyond 2015 (2019b). https://www.un.org/millenniumgoals/
- United States Geological Survey [USGS]. *Groundwater Depletion in the United States* (1900-2008). Scientific Investigations Report 2013-5079 (Reston, Virginia: 2013). 48-51. https://pubs.usgs.gov/sir/2013/5079/SIR2013-5079.pdf

University of Groningen. *Eredoctoraat uitgereikt aan SG Ban Ki-Moon* (2018), https://www.rug.nl/news/2018/10/17-october-awarding-of-honorary-doctorate-toban-ki-moon

World Bank. Agriculture and Food (2019). https://www.worldbank.org/en/topic/agriculture

World Bank. Global Economic Prospects: Commodities at the Crossroads. Washington, D.C.: World Bank, 2009. http://siteresources.worldbank.org/INTGEP2009/Resources/10363_WebPDFw47.pdf

World Food Programme. Climate action (2019). https://www.wfp.org/climate-action

- World Meteorological Organisation. *Climate* (2019a). https://public.wmo.int/en/ourmandate/climate
- World Meteorological Organisation. *Environment* (2019b). https://public.wmo.int/en/ourmandate/focus-areas/environment
- Yee, Aubrey. Organic vs. Conventional Farming: Which Method Uses Less Energy? Good.Is (01.10.2013). https://www.good.is/articles/organic-vs-conventional-farming-whichmethod-uses-less-energy

Further Readings

- Barilla Center for Food and Nutrition. Food Sustainability Index (2019). <u>http://foodsustainability.eiu.com/</u>
- EcoWatch, A Brief Guide to the Impacts of Climate Change of Food Production, https://www.ecowatch.com/climate-change-food-production-2640810845.html
- FAO, *The State of Food and Agriculture 2016 (SOFA): Climate Change, Agriculture and Food Security* (FAO: Rome, 2016). <u>http://www.fao.org/3/a-i6030e.pdf</u>

For an overview of past ECOSOC resolutions, please see <u>https://www.un.org/ecosoc/en/documents/resolutions</u>

- For an overview of past UNFCCC documents and decisions, please see <u>https://unfccc.int/documents</u>
- UNCTAD. United Nations Guidelines on Consumer Protection (2019). <u>https://unctad.org/en/Pages/DITC/CompetitionLaw/UN-Guidelines-on-Consumer-Protection.aspx</u>
- UN DESA. The 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) (2014). <u>https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1444&</u>

menu=35