

The Question of Sustainable Agriculture

Forum: Economic and Social Council

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Introduction to the Committee

As one of the six primary councils established in 1946, the Economic and Social Council serves primarily to address impending social and economic issues internationally. They focus on ensuring that modern practices by countries reflect sustainable growth for both the nation and the surrounding environment. Their agenda is primarily based on the 2030 Agenda for Development, serving to establish sustainable development for the economy and the environment. The Council has the decision to table debate on particular socio-economic issues for the General Assembly.

Under the Council, there are eight commissions functioning to provide expertise in addressing specific issues and their appropriate solutions to that end. Some committees focus on women's rights, others on narcotics, to list a few as an example.

In 2013, the General Assembly passed the Resolution 68/1 which further strengthened the Council's power to dictate and direct the coordination between sub-committees within the United Nations System. They were specifically provided authority to address issues in the "economic, social, and environmental fields" and continue to serve as such.

Agenda Introduction

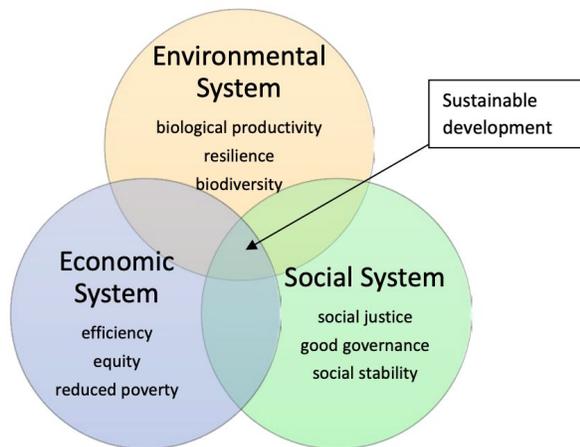
In 2009, top officials of the United Nations Food and Agriculture Organization (FAO) stated the necessity of Sustainable Agriculture as a means to meet the growing population and the impacts of climate change. 11 years have passed since, for which 800 million more residents reside within the world and the impacts of climate change have expedited. This same sentiment was reverberated in 2018 when the FAO chief once again reiterated that the



issue of long-term food security can be only resolved by sustainable practices of agriculture. And truly, in an age with a plethora of activism for climate change, the need for immediate improvements to our food supply chain cannot be understated.

In the Paris Agreement was agreed upon in 2015, calls for a reduction of agricultural emissions by 1 gigatonne of carbon dioxide per year by 2030 to achieve the goal of limiting global temperature rises to 2 degrees celsius. Agricultural practices have come under increased scrutiny by intergovernmental organisations and national governments regarding their sustenance for future generations. There is clear concern regarding the immediate impacts of climate change with rising sea levels and the destruction of flora and fauna - showing the progressive degeneration of the world. And with the development of new technologies like Genetically Modified Organisms (GMOs), there is no shortage of options for farmers though they all come at a cost. With issues of climate change combatting all areas within the agricultural processes, it is necessary to determine adequate steps to reduce the carbon footprint of the agricultural sector.

However, that is not the only issue that surrounds outdated agricultural practices. With the growing population and increased urbanisation trends, there has been a greater emphasis on adequately providing food security for all citizens. Unsustainable practices that result in a decrease in agricultural productivity would lead to increased poverty rates - which already comprises 793 million people around the globe. Reports from the FAO have noted the recent slowdown in increase of agricultural production - a sign worrying many regarding the sustainability of economic growth in developing countries, especially in Africa.



It is hence the role of the delegates to determine the most suitable solutions to an impending problem, taking in account the economic and social viability of such solutions. An outright abandonment of all environmentally perilous activities may compromise the overall production of food within the nation. Delegates should balance and compromise to achieve realistic yet ambitious solutions to the issue.

Definition of Key Terms

Sustainable Agriculture:

According to the Food and Agricultural Organisation (FAO) of the United Nations, sustainable agriculture is defined 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."

For the purposes of this agenda, sustainable agriculture will be utilised as agricultural practices that limit its effects on the environment and satisfies the food insecurities of the populous.

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Food Security

Food Security exists when “all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.”

Climate (Change):

Though there are no explicit definitions per the United Nations regarding climate change, the UN Framework on Climate Change in 1992 describes it as a change “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.” Relevant issues include the impact on rising sea levels, average temperature increases, and the resultant change in our ecosystems.

Environment:

According to the Organisation for Economic Cooperation and Development, environment is defined as “the totality of all the external conditions affecting the life, development and survival of an organism.” For the purposes of this agenda, it will describe the entire natural and human environment affected by agricultural practices.

Ecosystems:

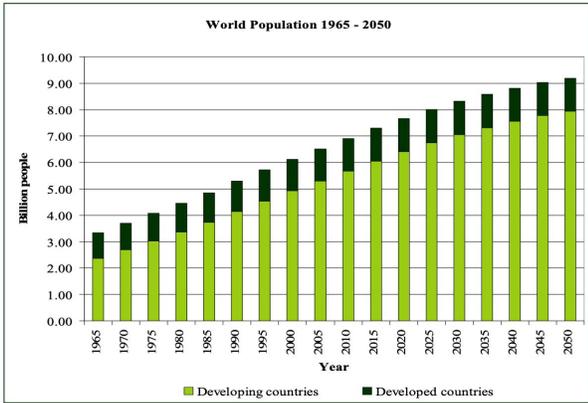
An ecosystem, according to United Nations Water, “includes all living things (plants, animals and organisms) in a given area, as well as their interactions with each other, and with their non-living environments (weather, earth, sun, soil, climate, atmosphere).” The concern of this agenda is the alteration of such an established ecosystem and the effects that has upon the surrounding local and global community.

Greenhouse gases:

The OECD states that greenhouse gases refer to “carbon dioxide, nitrous oxide, methane, ozone and chloro—fluorocarbons occurring naturally and resulting from human (production and consumption) activities, and contributing to the greenhouse effect (global warming).

Background

To understand the full extent for which agricultural production influences society, a brief understanding of international demographics is vital. There are currently 7.7 billion people alive today and the United Nations World Population Prospects reports anticipates a rise to nearly 10 billion people by 2050. While traditional technologies may have sufficed for previous generations, increasing the population by a few billion threatens food security throughout the world. The increase is centred around Africa with half of the projected 2 billion person growth predicted to occur in Africa. With their lacking infrastructure and conservative nature of agriculture, without immediate



change, the growing urbanisation patterns and industrialisation may come to a halt, threatening the economic growth of such nations. The World Bank has estimated that agricultural production will require an estimated 50 percent increase by 2050 to meet the demands of the growing population. However, considering that much of the population growth in history occurred within the twentieth century, there is cause to believe that the established production systems may suffice for these changing population dynamics.

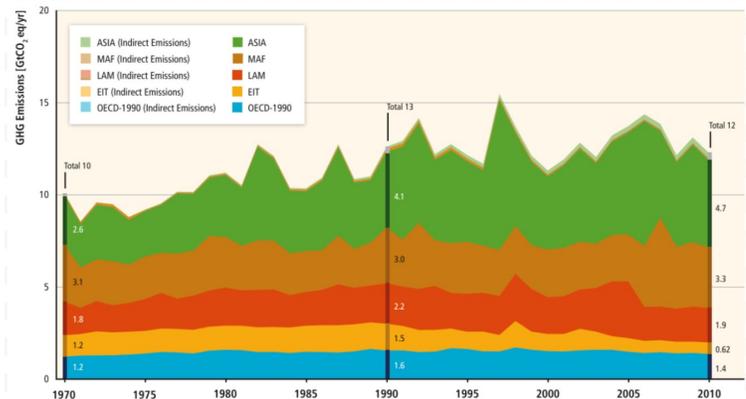
In addition, there have been devastating repercussions on the environment, with agriculture accounting for an estimated 5.0~5.8 giga-tonnes per year of carbon dioxide for the years 2000~2010, 10~12% of the greenhouse gas emissions, according to the Intergovernmental Panel of Climate Change. Most of these emissions originate from deforestation, livestock, and soil nutrient management. Anthropogenic forest degradation and biomass burning represent similar contributions. There are increasingly worrying factors as the sector is highly resistant to change from established traditional methods. As such, bioenergy and similar mitigation strategies play a critical role in shaping the future of the environmental impact of agriculture.

Issues Raised

There are a variety of increasingly worrying factors as the agricultural sector is highly dependent on energy-dense resources that are often scarce. In addition, the use of fertilizers and chemical additives to increase productivity has yielded several devastating consequences upon the local environments.

The use of resources and energy:

The World Bank estimates that approximately 70% of freshwater is used for agriculture, with most regions exceeding that threshold. Waterways are often redirected for irrigation purposes and there are other inputs via flood preventive measures and others to ensure successful harvest. Especially in Asian cultures, where rice farming is often the primary crop, water usage is enormous for harvest. Paddy rice cultivation accounts for 9~11% of total



AFOLU (forestry and agriculture) emissions from 1970 to 2010

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greenhouse gas emissions attributed to the agricultural sector and 11% of the global production methane gas, according to the IPCC.

However, other aspects of the industry contribute significantly to increased emissions as well. The use of fertilizers, crop burning, manure deposited on pasture, and the sector's heavy reliance on the combustion of fossil fuels.

Here, the concern regarding organic and conventional farming come into play. The FAO marks that the average energy use of organic farming is 15% less than that of conventional farming though the reverse is true for livestock industries. These factors, however, do take in account the environmental cost that burdens the ecosystem and do not directly impact the farmer. Nevertheless, the intentions of conventional farming to increase energy efficiency through increased crop production via the use of fertilizers and pesticides is not substantiated.

Primary differences such as the use of chemically produced nitrogen as fertilizer show that such chemicals are not as energy efficient as organic alternatives including manure.

Regarding production yield, most studies show a smaller yield from organic farming. Regardless, organic farming has been analysed as economically viable due to the lower input cost than conventional farming. Concerns about profitability remain in developing countries in which the price premium from organic farming is not an option for most citizens.

Deforestation:

Historical reliance on the destruction of forestry to provide land for agriculture has resulted in several alarming concerns on carbon emissions. According to the UNDESA, 80% of deforestation can be attributed to agriculture. The Food and Land Coalition (FOLU) provides that 12% of total emissions - 5.6 gigatonnes of CO₂ from 2000 to 2009 were attributed to destructive practices in the forestry industry mark an alarming figure. The entirety of these figures cannot be solely marked for the purposes of clearance for agriculture as illegal logging and forest fires contribute a significant amount. However, the drainage of peatlands - wetlands that store pockets of carbon - for agriculture use and for land repurposing marks an alarming increase from 1.06 in 1990 to 1.30 gigatonnes of CO₂ emissions in 2008. Constant clearing of forests may be necessary to increase agricultural production but it comes at a significant cost to the environment, especially in forest-dense areas in South America.

Additionally, the practices of soil, stone and tree root extraction have shown to increase carbon emission through the lack of carbon sequestration. This sort of degradation will result in "Around 12 million hectares of land lost each year [of arable land]. In addition to harming the well-being of at least 3.2 billion people, land degradation costs more than 10% of annual global GDP in lost ecosystem services," according to the Director-General of the FAO.

Greenhouse gases:

The most apparent concern of abusive agricultural practices is the increase in greenhouse gas emissions. All of the aforementioned factors contribute highly to emissions that come back to create

changes throughout the ecosystems, compromising the long term food security of all nations involved. Smog, an example of short-term greenhouse gas production, has been a critical health concern in many states with high linkage to respiratory and cardiovascular diseases.

The increase of the global CO₂ emissions by 0.7% per year over the last 40 years serves as a dangerous precedent as damaging the environment. Per the FAO, climate-change induced malnutrition will require investments of 7.1 to 7.3 billion, marking the economic costs of continued fossil fuel use and other perilous activities. Though the intention may be to continue increasing

production, current methods must be reconsidered as to satisfy a sustainable level of agricultural growth for the future.

The FAO marks the dangers of GHG emissions through the following statement, “ Higher temperatures eventually reduce yields of desirable crops while encouraging weed and pest proliferation. Changes in precipitation patterns increase the likelihood of short-run crop failures and long-run production declines.”



International Involvement

United Nations involvement:

There have been significant attempts by the United Nations to address the issue of climate change induced by agricultural practices. The Kyoto Protocol and the Paris Climate Agreement in 2015 marked two vital international efforts to curb the influence of climate change. Though these weren't explicitly intended towards the agricultural sector, it established that net carbon emissions worldwide must reach 0 by 2050 - a goal that requires mitigation efforts from all economic sectors. In addition, it has close relevance to the 17 Sustainable Development Goals set in 2015 as goals to be achieved by 2030. Food security is a vital factor in eradicating poverty, hunger, and creating sustainable climate change. Sustainable agriculture has been lauded as a vital concept by the FAO and the United Nations to ensure net zero emissions worldwide and to ensure the food security of the future generations.

In 2015, the UN General Assembly passed Resolution A/70/472 - Agricultural technology for sustainable development - to encourage transnational cooperation regarding the spread of new agricultural technologies that may mitigate its impact on climate change. The World Trade Organisation has helped facilitate national government policy to encourage “mainstream gender into agricultural policies, encouraged to develop youth-focused agricultural projects and invited to promote agricultural cooperatives.” There have been hindrances, however, as there are a number of states worried about the difficulties of the implementation within developing economies.

There have been efforts under the coordination of the Food and Agriculture Organisation to balance food productivity with this impact on climate change but it remains a difficult issue. Under

the World Food Summit (WFS) Plan of Action, there have been additional efforts to ensure food security for all while retaining the level of social and environmental cost at a minimum.

European Union

Outside the scope of the United Nations, the European Union is noted for its participation in avant-garde style agricultural policies to curb the influence on climate change. They have established protected areas under a common policy with respect to biodiversity and placed additional restrictions on the use of pesticides. However, there remains noted concerns on the universal implementation of strict government policy when many developing states are currently in a difficult state to invest resources into this area.

Suggested Solutions

Below are several solutions that have been attempted or outlined in previous cases to potentially alleviate the environmental impact of agricultural production whilst simultaneously providing for specific nutritional needs of nations.

Alteration and improvement of irrigation systems:

Irrigation systems are vital for increasing agricultural productivity and have been an oft-used tactic, with arable land increasing by 12% over the last forty years. However, some practices have seen negative environmental impact, such as dams and other mechanisms for waterway redirection. The UN has implemented small-scale irrigation projects, including that of “Adapting irrigation to climate change (AICCA).” This project has intended to increase agricultural productivity and ensure food security whilst ensuring that the environmental impact will be minimal. A national or global implementation may be useful for developing countries with the use of appropriate technologies.

Use of Genetically Modified Organism (GMOs) on a transnational level

After years of concerns regarding the biosafety of genetically modified organisms, there has



Golden Rice

been a recent push towards the use of all available technology to assist food security and climate change. The United Nations instituted safety guidelines in 2004 and continues to examine the viability of this new technology. The use of GMOs can especially ramp up the process as it significantly reduces the use of resources like water, adds nutrients to the plants, and can help combat hunger. E.g., golden rice, a GMO created by German researchers, has been claimed to potentially provide provitamin A which may be necessary for an estimated 250,000 to 500,000

children undernourished and at risk of losing sight within 12 months due to vitamin A deficiency.

However, there remains concerns on the safety of these newly developed products and governments ought to strictly regulate GMOs before their commercial use. In addition, most of this biotechnology is owned by private firms who have the ability to turn off a plant's ability to germinate for a second time, potentially creating a monopoly that drains profits from the farmers. Publicly, large biotech companies like Monsanto and AstraZeneca have announced they would not use this "Terminator" technology but it remains a concern for governments. Intellectual Property Rights and their proper protection universally remains another concern where implementation is difficult.

Governmental control and subsidization of agricultural production

As shown above, the most adequate method of production differs greatly based on the type of crop and area of farming. Hence, to combat the use of conventional farming in certain industries, it is required that governments provide a form of incentive for farmers to take up the optimal method. European nations and the United States, under these forms of national subsidies, have satisfied and induced methods that limit the environmental cost that the government and the people must pay. The Czech Republic and a number of other European states have implemented organic farming subsidies with 277 million Koruna (11 million USD) invested for these means.

There remains a large amount of barriers for conversion from conventional to organic agriculture as listed below:

- High cost of conversion
- Lack of knowledge regarding organic farming
- Lack of institutional support
- Lack of marketing infrastructure
- Low profitability, especially in developing economies where the premium for organic agriculture may no exist

Questions a Resolution Must Answer (QARMA)

- How are the solutions financially viable for developing economies? What methods will be used to ensure the successful implementation of the proposed resolution (loans, aid, etc.)?
- How does the resolution incentivise other nations to participate? What sort of mechanisms are in place to promote cooperation with nations currently not abiding by such? How will the resolution prevent economically beneficial but environmentally devastating practices like deforestation?
- Which measures should be used to address concerns about soil degradation and unsustainable resource management? Which past agreements can support these measures?
- How will the resolution make use of questionable technology where some uncertainty may exist - such as GMOs?

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