REDUCING THE IMPACT OF CONFLICT ON FOOD CHAINS

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The United Nations Special Rapporteur described the right to food as the following:

> The right to have regular, permanent and free access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensures a physical and mental, individual and collective, fulfilling and dignified life free of fear.

The authors of the Atlantic Charter emphasized the importance of free trade, sovereignty, and disarmament. Particularly, the purpose of the predecessor to the United Nations Charter was to create a post-war world “free of fear and want” (Kelly, 2021). United States President Franklin Delano Roosevelt was a major contributor to the Atlantic Charter. He described the freedom from fear of want to the American people as an “economic understanding which will secure to every nation a healthy peacetime life for its inhabitants” (1941). However, by the year 2030, nearly 660 million people are projected to be food insecure (United Nations, 2023). The populations affected by food insecurity live in constant fear of not having enough food and not having access to nutritious food. Having access to food is *not* the minimum. Modern states must ensure all populations, particularly the vulnerable such as women and children living in rural areas, have access to all nutritious minerals and vitamins, not just access to a base minimum of calories (The Office of High Commissioner for Human Rights, 2023). This is also recognized as a necessity in the 1966 International Covenant on Economic, Social, and Cultural Rights. So why do so many populations run the risk of not having enough food nor having access to nutritious food?

FACTORS OF FOOD SUPPLY AFFECTING FOOD INSECURITY

Conflicts encourage the destruction of critical agricultural land and displacement of people. This is especially relevant for women and girls because they play a key role in the farming industry as they hold positions as food producers, traders, consumers, and caretakers. “Conflict and violence were the primary causes of hunger, malnutrition, and famine” (Human Rights Council, 2023). The immediate effects of political and armed conflicts include but are not limited to injuries, displacement, destruction of capital, destruction of assets, and fatalities (Mahler et. al, 2021). These immediate effects have a long-lasting impact, however. Political and armed conflicts make social and economic circumstances more difficult, resulting in not only lower wages, but less access to food with nutritional value (Drewnowski, 2022). Decreases in Gross Domestic Production (GDP) are directly linked to a higher percentage of food insecurity. Some researchers argue that starvation only makes up 10% of total deaths during times of conflict, famine, and natural disasters; the other 90% result from a lifetime deprived of nutritional food due to limited access (The Office of High Commissioner for Human Rights, 2023). Due to the significant decrease in GDP post conflict, many families are forced to purchase cheaper, less nutritious foods. In some circumstances, adequate food supply may not be available as a result of destroyed agricultural lands or the breakdown of sensitive supply chains. This causes families to face a lifetime of deprivation from nutritious food. Through the ongoing Russo-Ukraine War, states have witnessed firsthand how conflicts negatively affect the global community along with the populations directly at war. Access to crude oil, fertilizer, coal, natural gas, grain and other food sources have been at the forefront of this conflict. Russia successfully blockaded Ukrainian ports in the beginning of the war, furthering massive disruptions to an already fragile supply chain post the Coronavirus-19 Disease (COVID-19). Effects of this maritime war tactic were felt all over the world, as it not only left Ukranianes unable to access critical imports or export large contributors to their GDP, but the blockades also caused higher shipping costs overall. Cargo ships had to be rerouted, which in turn caused massive congestion and delays of almost all shipping routes. This caused products such as grain to increase 60% in price in 2022 (Logistics Blogs, 2022).

There are several moving parts to the supply chain issue not originating from the

Russo-Ukraine war, however. On average, it's taking an estimated four days longer to ship goods from Europe to the United States than pre-pandemic transit times (Harapko, 2023). The transportation sector had just started to recover from sky high prices caused by COVID-19 when effects of the war were first felt globally. The rising supply chain prices have caused a domino effect, impacting all parties down to the consumers. Semi-trucks full of agricultural goods were waiting at ports to be shipped out, while several empty containers were at different ports waiting to be filled. This cost ports and logistics companies an even higher price just for their stock to sit at blocked ports. Some countries, such as the United Kingdom, have banned Russian ships entering their ports, while others are implementing thorough inspections of Russian cargo, furthering shipping delays or causing reroutes altogether (Kay, 2022). These blocked ports act as bottlenecks, unable to move enough cargo to let new shipments come in. These bottlenecks have had devastating effects for local, national, and international economies (Person & Jones, 2022) due to the wasted resources it takes to hold cargo at ports and major shipping hubs. East African countries such as Kenya, Somalia, and Ethiopia depend on Russia and Ukraine for over 90% of their grain (International Rescue Committee, 2023). These blocked ports will result in famine for these already at-risk countries if this issue is not resolved soon. These countries are receiving recently reduced food rations at a time when they are requiring more food. Other countries where conflict has been ongoing are being adversely affected by the Russo-Ukraine War. Yemen has been facing a seven-year war with over 19 million people food insecure, and their food sector is dependent on Russia and Ukraine for almost half of its grain imports (International Rescue Committee, 2023). Unfortunately, due to the humanitarian crises occurring in Russia and Ukraine at the time of war, aid and attention is being shifted away from these fragile East African countries who are on the brink of famine. With Ukraine being the "bread basket of the world," the blockades have had knock-off effects felt globally, but these effects are especially prevalent in fragile states who are fighting world hunger. The United Nations signing the Black Sea Grain Initiative was a major step in stabilizing local and global economies, as well as leveling some food prices. The Initiative specifically allows for the safe passage of commercial food and fertilizer exports from three crucial Ukrainian ports (Beacon on the Black Sea, United Nations). However, Russia pulled out of the deal in July after they decided that their demands were not being met. This has had disastrous

effects for those facing food insecurity and dependent upon Ukraine exports.

The air freight sector has also negatively been impacted due to Russia closing its airspace to over thirty countries, forcing airlines to plan different air routes costing more money, time, and energy (Kay, 2022). Unfortunately, a major contributor to the breakdown of the supply chain was the increase in fuel prices as it now costs carriers more to ship goods. They offset these expenses by charging the shipper more (Becker Logistics, 2022), who then passes these expenses down to the consumer. The US, UK, and EU sanctions placed on Russian crude oil, coal, and natural gas have made the global community, especially suppliers, realize how dependent they are on Russian hydrocarbon industries due to their own countries' gas prices skyrocketing (Oil and Gas Blogs, 2022).

Supply chains not only faced the issue of transporting goods but also the production of goods. Circling back to one of the many consequences of conflict already discussed in this paper, agricultural lands play a massive part in the supply chain issue. Starting at the base level, agricultural producers were faced with a reduction in farming supplies and/or a cost increase for these items–if their land wasn't destroyed by existing conflicts. Seeds, pesticides, and fertilizers have had massive reduction due to China and Russia being main suppliers as well as the issue of transportation to receive these inputs (Tackling Coronavirus, 2022). These are critical factors for farmers to yield large crops, and without them farmers are unable to provide for large populations and face a significant revenue decrease. Agriculture production faces a 12.3% decrease yearly during times of conflict (Adibe et. al, 2014). Farm labor is also negatively impacted as many crops rely on generous amounts of labor. A large sector of farm labor comes from seasonal workers. With conflicts causing displacement of many, farmers do not have enough labor to yield large crops.

CONSIDERATIONS

Countries, developing and developed, can shift their focus towards achieving some level of food autonomy. If countries can eliminate almost complete reliance on other countries for basic food production, it will create a more food secure nation as well as act as a buffer from political

tensions and conflicts felt from other countries. By stepping up funding for agroecology farming principles, not only would countries benefit from providing more autonomous food, they would also be protecting their limited natural resources. However, having positive trade relations with multiple countries is beneficial as home countries can decide resource allocation and where there are comparative and absolute advantages. Having free trade and an open economy is essential for the welfare of consumers and, therefore, limits the potential of conflicts arising. Mutually beneficial trade between states is believed to reduce the incentive for conflict between the states (Barbieri, 2005). Having multiple sources of materials will lower labor and production costs as well as promoting greater flexibility for logistics companies (GEP, 2016). Having global supply chains, companies and economies can quickly react to consumers' needs as well as political conflicts. Global supply chains have also opened new sources of revenue for developing nations which have benefitted these struggling economies greatly. These developing nations having more sources of revenue and being active trade partners with the rest of the global community has assisted with poverty reduction and growth of economies (Koopman et al., 2022).

Conflicts encourage the displacement of people and/or the encroachment of other countries' resources due to the shortage of natural resources and inhabitable lands. Many countries feel the stress of such a large human population and will use fast farming techniques in order to get as many people fed as possible with the resources they have, which is the first step in reducing food insecurity. However, agriculture already uses excessive water and resources, promoting the carbon emission crisis. It strips the land of vital resources and oftentimes farming does not use their vast resources efficiently which results in a massive waste of energy. Developing states are pressured to implement climate safe agriculture methods while still catering to the large influx of humans' food needs to combat the food and climate crisis in these states. Agroecology farming principles would assist in reducing carbon emissions and promoting recycling (Ciempa, 2023). Adopting healthier and more sustainable farming practices such as drip irrigation, adapted crops, more productive livestock, and agroforestry can help nations deal with conflict-induced shocks. The goal of implementing these sustainable agriculture practices will alleviate the burden on future generations of running out of food and space for agricultural goods to be produced (Ciempa, 2023). Developing countries would benefit from the implementation of

such programs significantly because these nations understand and respect the usage of their land far better than foreign nations do. States ask members of the international community to step up funding for the implementation and research of sustainable agriculture and farming principles in their own countries, as well as supporting less developed countries. With more funding provided for both developed and developing countries, farmers will be able to condense the usage of nonrenewable energy and save natural resources. We, as a global community, need to make a commitment to the health of the land so it can continue to be used for future generations. It is critical the international community finds a balance between protecting the environment at all costs and ensuring food insecurity is being eliminated, all by 2030. Therefore, protecting the environment and reducing the impact of conflicts on the food chain go hand in hand.

LONG-TERM CONSIDERATIONS

Life does not return to normal once the fighting has ceased. The shock to the economic sector, as well as the displacement of people, starts a fixed cycle of fragility for these communities after the fighting has stopped, lasting decades. These populations are now faced with a new dilemma: the war on poverty and fragility, if they weren't already facing it pre-conflict. Unfortunately, this war is not so easily won due to the lack of resources needed to break it such as financial means, connections, and education. A household unable to afford adequate nutritious food due to low wages and/or unemployment, directly links to poverty which is defined as "the state of being extremely poor." Sustainable Development Goal (SDG) 3 talks about ensuring healthy lives and promoting well being for everyone at all ages, meaning ending poverty in its entirety, as it is more than just lacking financial means to a sustainable life. Poverty includes, but is not limited to: hunger and malnutrition, lack of access to adequate education, social discrimination and exclusion, and the lack of ability to make decisions (Global Issues- Ending Poverty, 2023). Global poverty was decreasing pre-covid, but the global extreme poverty rose from 8.4% in 2019 to 9.3% in 2022 (The World Bank, 2022). The world's lowest incomes decreased by double as opposed to the world's highest incomes. The poorest civilians also faced a major setback in healthcare and education, furthering their degrading living conditions. Extreme poverty is most felt in Sub-Saharan Africa where conflict is extremely present.

Conflicts promote poverty in already fragile communities due to the destruction of what limited resources were available. Although humanitarian aid is essential to help alleviate those burdens felt by conflict, it cannot be the answer to these problems. Peace must be the answer, as it will pressure the fighting parties to come to the table. SDG 16 is the promotion of peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable, and inclusive institutions at all levels. Implementing SDG 16 is critical in order for conflicts to be reduced, if not resolved entirely. Preventing conflicts is one of the most, if not the most, effective ways to prevent famine and further food insecurity (Torero, 2023). The countries of East Africa, South Sudan, Ethiopia, and Yemen all face extreme food insecurity due to their fragile political and economic states. States suggest these countries try to come to a peaceful negotiation and attain mass funding for the root of the problem as opposed to the surface level. Developed nations providing funding simply to get more food into the nations are helping citizens with their everyday lives, but, unfortunately, it is not enough to prevent further food insecurity. By providing funding to go towards agroecology farming principles, the developed nations can assist the developing nations for a future of success through climate safe agriculture processes and building resilience towards an economy based largely on imports.

CONCLUSION

The number of people living in close proximity to conflict has now doubled worldwide since 2007, meaning these populations are largely affected by the lack of access to adequate and nutritious foods. Addressing fragility and conflict is not only vital for poverty goals but also SDG 2 of eliminating world hunger by 2030. Even once conflict ceases, the impacts of conflict are felt decades later, even generations later (Mahler and Vishwanath, 2021). These sustainable goals are intended to be met by 2030, but economic growth needs to meet social inclusion and environment protection in order for this to happen.

QUESTIONS TO CONSIDER

1. How has your country dealt with the supply chain issues originating from Covid-19 as well as the Russo-Ukraine War?
2. How can the global community discourage hunger as a tactic of war?
3. Are there other international bodies, such as the World Bank, World Food Programme, and the World Trade Organization, that can encourage the stability of the food supply? And, if so, how can they achieve this?
4. How can the United Nations motivate developing nations to consider plans for agroecology farming principles?
5. If your country is pursuing food autonomy, what specifically is being done?
6. What advantages and risks does your country face if they choose to proceed with achieving a level of food autonomy?
7. To what extent should your country have to ensure their own citizens are cared for before providing some form of funding for other food insecure nations?
8. How can the United Nations encourage ending poverty and conflicts while achieving SDG 2?
9. What other factors or events contribute to food insecurity globally that weren't addressed in this paper?

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CLIMATE-SMART AGRICULTURE FOR A MORE SUSTAINABLE FUTURE

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Climate change, as a result of human actions, is threatening the agricultural systems that provide food for people worldwide. There are ongoing concerns over global soil nutrition, desertification, water scarcity, and more. At the same time, though, agricultural technology is rapidly advancing to address these concerns. The expansion of climate-smart agriculture, mostly on the back of new technology, has allowed for more sustainable agriculture practices while maintaining or improving productivity. These are global problems, though, and the United Nations plays an key role in ensuring all countries can adapt to climate-smart agriculture equally.

This document will begin by covering the background of the United Nations actions on climate-smart agriculture and climate change. It will then discuss three select topics and what actions can be taken: soil health, water scarcity, and emerging agricultural technology.[1]

BACKGROUND

The passage of the 2030 Agenda for Sustainable Development in 2015 was a watershed moment for climate-smart agriculture. The 2030 Agenda established the Sustainable Development Goals (SDGs) which emphasised general sustainability, especially within food systems and agriculture. This focus is highlighted in particular in SDG 2 – “End hunger, achieve food security and improved nutrition, and promote sustainable agriculture” (United Nations General Assembly [UNGA], 2015). Under SDG 2 there is Target 2.4 which states:

[1] These topics are not all encompassing to the complexity of climate-smart agriculture and there are many more. The FAO has published a 600-page tome, the “Climate-smart Agriculture Sourcebook,” in 2013, that attempts to address every issue and propose solutions.

> "By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality" (UNGA, 2015).

Later in the same year, the Framework Convention on Climate Change (FCCC) was established by the signing of the Paris Agreement. This FCCC does not explicitly deal with agriculture, but it does set limits on greenhouse gas emissions, establish a 2°C rise in global temperature as a goal limit, and establish a framework for financing sustainable projects globally (FCCC, 2015). In conjunction with each other, the FCCC and SDGs position climate-smart and sustainable agriculture at the forefront of the fight against climate change.

The United Nations relies heavily on the Food and Agriculture Organization (FAO), one of its internal agencies, when dealing with climate-smart agriculture. In 2010, the FAO set about defining climate-smart agriculture, stating that it is any agricultural practice that "contributes to…sustainable development goals" and integrates "the three dimensions of sustainable development (economic, social and environmental)" in a way that both continues to provide a stable supply of food and mitigate or address climate change (FAO, 2013). The FAO also laid out three pillars of climate-smart agriculture:

1. Sustainably increase agricultural productivity and incomes;
2. Build resilience and adapt to climate change; and,
3. Reduce and/or remove greenhouse gas emissions, where possible (FAO, 2013).

The FAO has promoted the three pillars as not only concerning climate-smart agriculture, but has also published interlinkages between them and all 17 of the 2030 SDGs (2019). The FAO Council has also passed CL 170/4 Rev. 4, titled the FAO Strategy on Climate Action, regarding how the FAO will continue to support Member States in developing climate-smart agriculture, help advocate for the spread of new technologies, and advance the SDGs (2022b).

SOIL HEALTH

Soil is the bedrock of global agriculture, providing "the provision of food, fibre, and fuel, carbon sequestration, water purification and soil pollution reduction, climate regulation, nutrient cycling, habitat for organisms, a source of pharmaceuticals and genetic resources, and flood regulation" (Brevik et al., 2017). The loss of soil nutrients, desertification of arable land, and soil erosion have prompted fears for the sustainable future of global soils and the agriculture that relies on them. To deal with this there is the Global Soil Partnership (GSP), a body within the FAO tasked with promoting sustainable soil management through the Intergovernmental Technical Panel on Soils (ITPS) and a global network of regional soil partnerships (FAO, 2023).

The greatest threat to global soils is the loss of soil nutrients, as this would make crops both more difficult to grow and less nutritious to eat. In 2022, the FAO, working through the GSP and ITPS, convened the Global Symposium on soils for nutrition (GSOIL4N) to draft and publish recommendations addressing threats to soil nutrition. The GSOIL4N report made several recommendations to improve soil nutrition, including more precise fertilizer application through technology, using more holistic management and modelling approaches, and promoting linkages between soil, environmental, and human health (FAO, 2022d). The UN General Assembly has since passed A/77/449 that explicitly acknowledges the work of the GSP and calls for sustainable soil management and conservation (2022).

The threat of desertification to soil and agriculture is another great challenge that compounds loss of nutrients and productivity with drought and increased erosion. In 1994, the UN Convention to Combat Desertification (UNCCD) was established to promote conservation work against desertification, particularly in the Sahel region of Africa and other vulnerable regions (1994). In the convention text, desertification is defined as "land degradation in arid, semi-arid…areas resulting from various factors, including climatic variations and human activities" (UNCCD, 1994). The greatest achievement in combating desertification—and, arguably, in conserving soil, water, and agricultural land in general—is the Pan-African Great Green Wall Initiative. This initiative is a partnership of African nations, the African Union, and the United Nations to reforest, dig natural wells, and promote sustainable agricultural practices across the Sahel region (UNCCD, 2020). This effort, like many efforts in developing countries, has

encountered issues with funding and governance, as well as the conflict that has characterised the Sahel in recent years (Orakwue, 2020).

WATER SCARCITY

Aside from soil, water is the other foundational component of agriculture. Water scarcity is beginning to affect agriculture globally, while, at the same time, agriculture is continuing to degrade water quality through runoff. The FAO Council passed CL 171/6 in 2022, regarding water resource management in the face of climate change to begin tackling these issues. Water scarcity in the form of drought has been an issue going back decades, but scarcity is "caused not only by the physical scarcity of the resource, but also by the progressive deterioration of water quality" through pollution, particularly agricultural runoff, that makes water unusable for many uses (UNCCD, 1994; FAO, 2022c). The potential solutions to physical scarcity include reusing treated wastewater, crop varieties adapted or modified to be drought-resistant, and smarter irrigation practices like drip irrigation or computerized precision spigots (UNGA, 2022; FAO, 2022c). The problem of runoff and degraded water quality is more dispersed, but solutions may include precision fertilizer application to reduce the buildup of excess nutrients, reduced irrigation, and greater vegetation buffers of native species in riparian areas to filter the water (FAO, 2022c; FAO, 2022d).

EMERGING TECHNOLOGY

The issues of agriculture are not going to be easy to address, particularly as the world's population grows and climate change moves the goalpost for what climate resiliency really means. However, advances in technology are beginning to offer solutions for everything from nutrients to water. These new technologies spurred the General Assembly to pass A/RES/77/320 to promote the adoption of new technology to advance the SDGs (2023). The FAO Council also has acted, passing CL 170/5 to establish the FAO Science and Innovation Strategy, a framework strategy to use the FAO's capacities to help encourage innovation and facilitate the spread of climate-smart agricultural technology globally (2022a). The FAO once again included three pillars as a part of their plan:

1. Strengthening science and evidence-based decision-making;
2. Supporting innovation and technology at regional and country level; and
3. Serving Members better by reinforcing FAO's capacities (FAO, 2022a).

The most promising advances exist in the field of precision agriculture. Precision agriculture is the use of geolocated data, derived mostly from remote sensing or tractors equipped with sensors, to identify deficiencies in crop fields and tailor fixes for specific areas (Dougher & Gettel, 2023). One form of precision agriculture works by feeding aerial imagery from satellites, or even drones, into advanced models that can produce maps of crop fields and identify differences in soil or crop moisture and various nutrient levels with precision that can be less than foot (Farms.com, 2023). Maps like those can then inform computerized irrigation systems and hoppers to allow for precise irrigation to reduce water usage and precise fertilization to reduce water use and prevent fertilizer buildup (FAO, 2022d; FAO, 2022e). Other promising technology includes genetic modification for drought resistance and specific engineered fertilizer with only needed nutrients (FAO, 2022c; FAO, 2022d). The issue with new technologies, though, is that they are expensive or unavailable in developing countries, or even rural areas, which is why the FAO has promoted a regional approach for technology expansion (UNGA, 2022; FAO, 2022a).

OTHER ISSUES

Climate-smart agriculture is a complex issue, and while it includes soil, water, and the use of emerging technology, there are many other topics that pervade. There are concerns over biological diversity, supply chains, and social attitudes, as well as specific conditions within local areas and slightly different considerations for different types of agriculture (livestock, agroforestry, aquaculture, etc.). One unifying factor of all these issues, though, is that these are global, and the United Nations must play a role in the response. There is no way to know what new issues may come from climate change, but adopting climate-smart agriculture practices globally can help make agriculture more resilient and promote a more sustainable future.

QUESTIONS TO CONSIDER

1. Why should countries invest in climate-smart agriculture? How can the UN push for and guide this investment?
2. What are the primary issues associated with soil health? What are possible solutions?
3. What are the primary issues associated with water scarcity? What are possible solutions?
4. How can countries cooperate to address the issues of soil and water? What kind of role should the UN play in this?
5. What emerging technologies could help climate-smart agriculture? What obstacles are there to deploying them globally? Is the UN in a role to help deploy them?
6. How can the UN and individual countries be more prepared for emerging threats to agriculture?

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