

CLIMATE CHANGE STARVING THE WORLD'S POOREST: CLIMATE CHANGE, HUMAN RIGHTS AND THE RIGHT TO FOOD

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ABSTRACT

Climate change threatens to alter almost all the aspects human life, including the food essential for human sustenance. Food systems all over the world are getting affected by the unpredictable nature of the effects of climate change. Climate change is predicted to have adverse effects on food-security, access to safe-drinking water, right to life and health and the overall standard of living for thousands of people and vulnerable communities all over the world. Climate change is a 'threat-multiplier' that exacerbates the existing vulnerabilities of the current food systems around the world. This article will examine the threat that climate change poses to food security, and try to understand the relationship between the two. Food Security is one of the central aspects of the definition of 'human security'. And in this context any discussion about food security in a world facing climate change, either implicitly or explicitly, draws upon the human rights discourse. In the last few decades human rights discourse has permeated the discussions about numerous issues, including the discussions about climate change. The present article will briefly examine the relationship between climate change and human rights. While acknowledging the negative impact of climate change on 'food security'; The present article will also attempt to delve into some policy responses available to help tackle climate-induced food insecurity.

Keywords: Climate Change, Food Security, Human Rights, Right to Food.

- I. Introduction**
- II. Climate Change and Human Rights**
- III. Climate Change and the (Human) Right to Food: Understanding the Relationship between Climate Change and Food Security**
- IV. Conclusion: What can be done?**

I. Introduction

DECADES AFTER the first warning was sounded by the scientific community about the threat of global warming; climate change continues to be one of the gravest and the most complex challenges faced by the human race. Climate change will slowly but incrementally make various regions on the planet unsustainable for human life- disturbances in rainfall patterns will lead to frequent crop failure and hence food insecurity; the rise in sea-levels will

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threaten food, housing and vocation in small-island nations as well as coastal areas; the coastal storms and cyclones are predicted to increase in frequency as well as intensity; all of which will wreak havoc on peoples' lives. Climate change is predicted to have adverse effects on food-security, access to safe-drinking water, right to life and health and the overall standard of living for thousands of people and vulnerable communities all over the world. Climate change puts added stress on the already limited resources. Access to food and safe drinking water is essential to health and is consequently essential to the full realisation of the right to life for any community. This article attempts to look at how the effects of climate change affect 'food security'¹ in a community. "Observed climate change is already affecting food security through increasing temperatures, changing precipitation patterns, and greater frequency of some extreme events".² It is important to examine the effects of climate change on food security; because the ability of any community to protect its food systems from the negative impacts of climate change stems from their understanding of the risks and vulnerability of their food systems to the impact of climate change.

Food is essential to human life, and thus the 'Right to Food' is central to the 'Right to Life'. In the last few decades, the international human rights law discourse has entered the discussions about various issues including climate change. Therefore, any discussion about access to food in a world facing climate change, either implicitly or explicitly, draws upon the human rights discourse. In the first section of this article we will try to understand the interaction between the effects of climate change and the internationally guaranteed human rights.

The predicted effects of anthropogenic climate change will prove to be one of the most pervasive threats to the full realization of human rights. In addition to the effects of climate change posing a threat to human rights; the manner in which the international community as well as individual nation states respond to this challenge of climate change shall also have far-reaching human rights implications. That is to say that climate action –including both

¹ "Food security is defined as a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". (IPCC)

² IPCC, "Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems" (2019). "This is the second Special Report in the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Cycle (AR6). It has been jointly produced by IPCC Working Groups I, II and III in association with the Task Force on National Greenhouse Gas Inventories."

mitigation efforts as well as adaptation efforts- should be designed keeping in mind their human rights implications. Here, this article will explore how human rights law in general and ‘right to food’ in particular can be used to advance the cause of ensuring ‘food security’ in a changing global climate.

However, the harms of the ‘development’ that led to our contemporary conundrum are unjustly distributed to the people who did not receive any benefits from it. As Gordon Walker enumerated that the effects of climate change will highlight the historical patterns of inequalities and injustice in the development of the global north and global south.³ This pattern of injustice further informs the need to have a human rights-based approach to climate change policy and climate action. Although climate change is a global phenomenon, however due to the differences in the adaptive capacities and access to resources; the exposure and vulnerability of a community will vary between countries and sometimes within the country as well.⁴ The developing countries of the Global south are especially vulnerable to the negative effects of climate change. And in this context this article will also examine the differential vulnerability of various communities and their food security to the effects of climate change.

Building upon the human rights implications of climate change many scholars argue that, the prospects of the degree of ‘human security’ experienced by a community is closely linked to its vulnerability to the effects of climate change. Human Security can be defined as an amalgamation of various aspects which together determine the quality of human life in a community. Human security as defined by the United Nations in its UNDP (United Nations Development Program) report “can be said to have two main aspects. It means, first, safety from such chronic threats as hunger, disease and repression. And second, it means protection from sudden and hurtful disruptions in the patterns of daily life”.⁵ In this article we will focus on the aspect of ‘threat of hunger’ i.e. food insecurity.

Climate change is a ‘threat-multiplier’; as the planet warms due to unbridled carbon emissions, scientists predict that various regions in the world will face- water-shortages, disruption in rainfall patterns, floods, heat-waves and extended periods of dry-seasons- all of these will lead to frequent crop-failures affecting the communities’ access to food. In this

³ Gordon Walker, *Environmental justice: Concepts, evidence and politics* (Routledge, 2012).

⁴ Thomas, Kimberley, *et al.*, "Explaining differential vulnerability to climate change: A social science review." 10 (2) *Wiley Interdisciplinary Reviews: Climate Change* (2019).

⁵ UNDP, United Nations, “Human Development Report” (1994).

article we will look at the relationship between climate change and access to food; and how climate change affects the realization of the human right of ‘right to food’; further this article will also discuss how the human rights regime in general and the ‘right to food’ in particular can be used to help shape the climate change narrative to inform policy making in the said field.

II. Climate Change and Human rights

To study the relationship between climate change and the ‘right to food’, we will have to understand the relationship between climate change and human rights more broadly. Thus this section of the article attempts to examine this relationship. Climate change is predicted to have such profound impact on all the aspects of human life that as a phenomenon it is being studied from all possible angles and lenses- from ecological to economic. Many regions in the world will experience extreme weather events ranging from heat waves, to unusually heavy rainfalls leading to floods, to droughts making the land to dry to till i.e., making life untenable for the communities living there; thus forcing people to migrate. These catastrophes are predicted to progressively increase both in their frequency as well as intensity. It is also accepted now that these events will increasingly be a result of human-induced climate change leading to a collapse of various ecological systems all over the world.

Therefore, it is important to take a human rights view of the climate change crisis because adverse effects of climate change are going to spell human catastrophe. And this human catastrophe has a source in the human activities i.e., climate science in the past few decades has identified human beings (GHG emitted by them) to be the cause of climate change (IPCC Reports). Further, like any other aspect of human life, the study of the effects of climate change is also a question of justice and equity. That is to say that there is a ‘differential vulnerability’ to the effects of climate change; due to lack of infrastructure and adaptive capacity the poorest communities of the world are going to face (and in many cases are already facing) extreme effects of climate change.

Climate change is increasingly being viewed as a complex threat to the full realisation of the internationally recognised human rights. The human rights discourse formally entered the discussions about climate change after two major events. In 2005 the Inuit people (of Alaska and Canada) filed a petition in the Inter-American Human Rights Commission; they claimed that the unbridled effects of climate change are resulting in human rights violation of the Inuit

people.⁶ The Inuit are the indigenous people of the arctic region⁷, with a shared unique heritage and culture; they inhabit (or have roots in) a region that is facing severe consequences of the effects of climate change (i.e. their homeland is melting away). In 2005 their petition was not allowed by the commission, i.e. they were not allowed to bring formal action against the US government for its past and present carbon emissions (its contribution to climate change) however they were allowed to present their argument on how the effects climate change is violating their human rights. The Inuit petition came to be the first time that people sought to hold the nation states accountable for their carbon emissions on the grounds of human rights.

The second major event that led to a change in the manner in which the international community came to view the issue of climate change was the Male' Declaration; in 2007 several small-island nations came together to issue the first joint intergovernmental statement on the human rights implications of the effects of climate change.⁸ It stated that "climate change has clear and immediate implications for the full enjoyment of human rights"⁹. The Male' Declaration further called upon the United Nations and the international community to recognize the human rights implications of climate change. The government of Maldives, an archipelagic nation in the Indian Ocean, along with other Small-Island Nations moved the United Nations Human Rights Council to adopt a resolution to this effect. Resolution 7/23 of the Human Rights Council was the first UN resolution where the members expressed concern that "climate change poses an immediate and far-reaching threat to people and communities around the world and has implications for the full enjoyment of human rights"¹⁰. Pursuant to the said resolution the OHCHR published a report with a comprehensive analysis linking the effects of climate change and human rights; this report is one of the initial attempts made by the United Nations to broaden the scope of climate change debate, from its traditional focus on environment, science and economics to its human and social dimensions.¹¹ The OHCHR

⁶ *Petition to the Inter- American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States*, Petition No P- 1413- 05 (December 7, 2005).

⁷ The Inuit Circumpolar Charter defines Inuit as "indigenous members of the Inuit homeland recognized by Inuit as being members of their people and shall include the Inupiat, Yupik (Alaska), Inuit, Inuvialuit (Canada), Kalaallit (Greenland) and Yupik (Russia)".

⁸ The Male Declaration on the Human Dimension of Global Climate Change, 2007

⁹ *Ibid.*

¹⁰ United Nations Human Rights Council, *Human Rights and Climate Change*, A/HRC/RES/7/23 (March 28, 2008).

¹¹ Human Rights Council, OHCHR, *Report of the Office of the United Nations High Commissioner for Human Rights on the relationship between climate change and human rights*, A/HRC/10/61 (January 15, 2009). "The present report is submitted pursuant to Human Rights Council resolution 7/23 in which the Office of the United

report in 2009 recognised the complex multidimensional linkages between the effects of climate change and the realisation of a wide range of internationally recognised human rights. This report was formulated after taking into account numerous submissions by both governmental and non-governmental organizations along with various academic bodies as well as individual experts.¹² The OHCHR affirmed that the observed effects of climate change are already undermining the human rights of numerous vulnerable communities and the same is predicted to get progressively worse in tandem with the intensification of climate change. Here the report asserted that even though climate change will adversely affect the full realisation of a wide range of human rights due to the interconnectedness of these rights. However there are certain rights which will be particularly implicated by climate change. The report highlighted the right to life, right to health, right to safe drinking water, right to food, right to adequate housing and ultimately right to self-determination, to be especially vulnerable to the effects of climate change.¹³

Following the above mentioned developments in the climate change discourse, human rights became the lens with which the scholars started viewing the social dimensions of the effects of climate change. The Human Rights actors have built the relationship between climate change and human rights in two main dimensions: the first premise being that the effects of climate change are a threat to the full realisation of a number of human rights; and the second premise is that the human rights can act as a tool or means to formulate a just and sustainable climate action policy.¹⁴ The vulnerable communities (like the Inuit people, or the Small-Island nations like Maldives etc) have used the human rights narrative as a means to insert a new impetus and a sense of urgency in the climate change negotiations; and thus by bringing in a new perspective to attract more resources to the task of building resilience against climate change. The Human rights argument within the field of climate change, has witnessed a substantial expansion in the realms of both research as well as advocacy. Experts from the field of economics, development, political sciences and law have focused on advancing the

Nations High Commissioner for Human Rights (OHCHR) was requested to conduct a detailed analytical study of the relationship between climate change and human rights, taking into account the views of States and other stakeholders.”

¹² *Ibid.* “Written submissions were received from States, intergovernmental organizations, national human rights institutions, non-governmental organizations, and individual experts. OHCHR also organized a one-day open-ended consultation on the relationship between climate change and human rights, held on 22 October 2008 in Geneva. The inputs received during the consultation process have informed the preparation of this report.” These submissions are available at: <http://www2.ohchr.org/english/issues/climatechange/study.htm> (Last visited on March 14, 2022)

¹³ *Ibid.*

¹⁴ Anne Saab, *Narratives of Hunger: Feeding the World in Times of Climate Change* (Cambridge University Press, 2019).

human rights argument. The communities that are most vulnerable to the effects of climate change have been approaching domestic as well as international courts and Human Rights Committees with the human rights argument to impel their government(s) into action against climate change.

The Inuit Case¹⁵ also known as the first climate change case, paved way for the question of justiciability of the issue of climate change in human rights courts. In 2019 a group of Torres Strait islanders¹⁶ filed a petition with the United Nations Human Rights Committee against the Australian government¹⁷; the plaintiffs allege that the Australian governments' inaction (in the face of climate change) is violating their fundamental human rights guaranteed under the International Covenant on Civil and Political Rights (ICCPR).¹⁸ More recently in October 2021, another group of Torres Strait islanders filed a class-action lawsuit against the Australian government alleging that the government has failed to protect these indigenous communities from climate change, which threatens to destroy their homes, food system, livelihood etc, making life untenable in these low-lying islands. The rising seas are already worsening the floods and salt-ruined soils are destroying food sources for the islanders. One of the plaintiffs in this case Mr. Paul Kabai says that he fears that climate change will force

¹⁵ *Supra* note 6.

¹⁶ "The Torres Strait Islands constitute an archipelago of about 150 islands in shallow open seas, and form part of the state of Australia. Torres Strait Islanders are an indigenous community distinct from mainland indigenous Australians, with their own customs, language, culture and identity. Most islanders live in villages only marginally above sea level and are already experiencing the impacts of climate change. More extreme weather events, combined with rising seas already threaten fresh water supplies and have worn away sacred sites. As the land they occupy is slowly eroded, so is a part of their social and cultural cohesion." See, Dr. Miriam Cullen, "Climate change and human rights: The Torres Strait Islanders' claim to the UN Human Rights Committee" (2019), blog post *available at*: <https://grojil.org/2019/06/27/climate-change-and-human-rights-the-torres-strait-islanders-claim-to-the-un-human-rights-committee/>, (Last visited on March 16,2022); also see, Miriam Cullen, "'Eaten by the sea': human rights claims for the impacts of climate change upon remote subnational communities" 9(2) *Journal of Human Rights and the Environment* (2018).

¹⁷ *Torres Strait Islanders v Australia*, Communication 3624/ 2019 (submitted May 2019). It is currently pending before the UN Human Rights Committee (*Torres Strait Islanders' case*).

¹⁸ "A group of eight Torres Strait Islanders called the Torres Strait 8, with the legal representation from Client Earth (a UK based environmental law charity) submitted a claim to the UNHRC; according to materials released by the plaintiffs, the complaint alleges that Australia's insufficient action on climate change has violated the following rights under the ICCPR: Article 27 (the right to culture), Article 17 (the right to be free from arbitrary interference with privacy, family and home), and Article 6 (the right to life)." See, Reuters, "Islanders complain to U.N. over Australia's climate change inaction" (Reuters, 2019) *available at*: <https://www.reuters.com/article/australia-climatechange-idINKCN1SJ0A6>, (Last visited on March 16,2022); Client Earth website, "Australia doubles down on climate inaction in final step of Torres Strait complaint" (September 29, 2021), *available at*: <https://www.clientearth.org/latest/latest-updates/news/australia-doubles-down-on-climate-inaction-in-final-step-of-torres-strait-complaint/> (Last visited on March 16, 2022); also see, ABC News, "Torres Strait Islander complaint against climate change inaction wins backing of UN legal experts" (December 11, 2020), *available at*: <https://www.abc.net.au/news/2020-12-11/torres-strait-islander-complaint-against-climate-change-inaction/12972926> (Last visited on March 16, 2022).

him, his children and his children off of their island, becoming “refugees on our own land”.¹⁹ “Becoming climate refugees means losing everything: our homes, our culture, our stories and our identity” he said.²⁰ This lawsuit is reportedly modelled on the ‘Urgenda Foundation case’ brought against the Dutch government, where the Dutch High Court directed the government to reduce their emissions faster and deemed the government’s initial pledge to be insufficient.²¹

Citizens all over the world are turning to courts with human rights arguments in order to drive their slow-paced governments into climate action; however, climate change litigation and the jurisprudence coming out of courts in this regard warrants a comprehensive analysis elsewhere. In this article however, having elucidated the relationship between climate change and human rights in general, we will now move on to analyse how climate change affects how we feed the world in the face of this complex threat to food security of any region.

III. Climate Change and the (Human) Right to Food

Understanding the Relationship between Climate Change and Food Security

Food is an essential condition for life, and the climate is an essential condition for the production of food i.e. agriculture is a highly climate-dependent activity; consequently, the existing food system is under stress due to climate change. In the preamble to the Paris Agreement the international community “*recognized the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change.*”²² In this section of this article we will look at the relationship between climate change and global food security; how the

¹⁹ ABC News, “Rising sea levels push Torres Strait Islanders Paul and Pabai to take legal action against the Australian government” (October 26, 2021), *available at*: <https://www.abc.net.au/news/2021-10-27/australian-government-sued-for-failing-to-take-climate-action/100569558> (Last visited on March 16, 2022); See, Reuters, “Islanders sue Australia for inaction on climate change” (November 3, 2022), *available at*: <https://www.reuters.com/business/cop/islanders-sue-australia-inaction-climate-change-2021-10-26/>, (Last visited on March 16, 2022).

²⁰ France24 News, “Indigenous Australians sue government over climate change” (October 26, 2021), *available at*: <https://www.france24.com/en/live-news/20211026-indigenous-australians-sue-government-over-climate-change> (Last visited on March 16, 2022).

²¹ *Urgenda Foundation v. State of the Netherlands* (2015). “A Dutch environmental group, the Urgenda Foundation, and 900 Dutch citizens sued the Dutch government to require it to do more to prevent global climate change. The court in the Hague ordered the Dutch state to limit GHG emissions to 25% below 1990 levels by 2020, finding the government’s existing pledge to reduce emissions by 17% insufficient to meet the state’s fair contribution toward the UN goal of keeping global temperature increases within two degrees Celsius of pre-industrial conditions.” See, *Urgenda Foundation v. State of the Netherlands* (2015), Summary *available at*: <http://climatecasechart.com/climate-change-litigation/non-us-case/urgenda-foundation-v-kingdom-of-the-netherlands/> (Last visited on March 16, 2022).

²² The Paris Agreement (December 12, 2015), adopted at 21st session of the Conference of the Parties.

observed and future climate change poses a threat to world food security; and will build arguments in favour of a more resilient and sustainable development. The United Nations member states adopted the 17 Sustainable Development Goals (SDGs) as a part of the 2030 Agenda for Sustainable Development²³; this document aims to provide a comprehensive plan of action for the people and the planet to achieve this universal agenda. In this universal agenda, the international community pledged to end ‘poverty and hunger’. The SDG goal number two ‘Zero hunger’ aims to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”²⁴; here, it recognizes the inter-linkages between the goal to end hunger and the need to promote sustainable agricultural practices and, the issue of climate change.²⁵ Climate Change poses a threat and an obstacle to the achievement of this goal.²⁶

Climate change negatively affects food security by affecting the food production in terms of crop growth and quality, health of the livestock, land degradation; climate change will also lead water scarcity and disturb rainfall patterns in various regions which further diminishes food production. In this context climate change affects food systems and the consequent food availability resulting in food insecurity. The diminishing food production will result in price hike of the essential food grains hence making it especially difficult for the vulnerable sections of the society to have access to adequate food. Therefore, climate change will negatively affect food systems and will make it difficult to achieve the universal goal of ‘Zero hunger’ as pledged by the international community in the Sustainable Development Goals (SDGs) 2030.

Food system of any region –which includes “production, transport, processing, packaging, storage, retail, consumption, loss and waste”,²⁷ is interwoven with that region’s economy and

²³ UN General Assembly, “Transforming our world : the 2030 Agenda for Sustainable Development”, (October 21, 2015).

²⁴ *Ibid.*

²⁵ The SDG 2 Zero Hunger Challenge calls for:

- Zero stunted children under the age of two
- 100% access to adequate food all year round
- All food systems are sustainable
- 100% increase in smallholder productivity and income
- Zero loss or waste of food

²⁶ Mugambiwa, Shingirai S., and Happy M. Tirivangasi., "Climate change: A threat towards achieving ‘Sustainable Development Goal number two’ (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) in South Africa." 9(1) *Jambá: Journal of Disaster Risk Studies* (2017).

²⁷ IPCC, “Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems” (2019).

policies as much as it is linked to its ecosystem.²⁸ Thus the food system is affected by a number of climatic as well as non-climatic stresses. Therefore, it is not always simple to separate climate change from the other non-climatic stresses; however, climate change is what the scientists and scholars call a ‘threat multiplier’, i.e. it amplifies the stresses to a region’s food system. Climate change is exacerbating the problem of hunger in an already resource constrained world. The rise in temperatures, the rising seas leading to salinity of soil, increased intensity and frequency of droughts and floods etc. all of which are attributed to the effects of climate change have been detrimental to food production and food security.²⁹ Climate change is placing additional pressure on the already scarce water sources, which directly affects the level of food produced.

Climate change affects the rainfall patterns in various regions, making it uncertain and uncertain to predict. Farming communities in the developing world like Asia and Africa which depend on rainfall for their crops will be especially affected by the effects of climate change. Low rainfall along with increasingly high temperatures in these regions due to climate change is resulting in diminishing of agricultural produce. Climate Change is leading to a shift in the natural climatic patterns of the planet; for example the persistence of La Nina (an ocean-atmosphere event) in 2022 summer is being linked to the intense heat-wave that is prevailing in India.³⁰ These unusual high temperatures affect production of various crops in these already vulnerable regions. The crop production major staple food grains in the various regions of Asia, Africa and Latin America is already getting negatively affected by the recent effects of climate change; the produce of wheat rice, maize, sugarcane etc have declined in the recent past.³¹ Although, climate change affects food production all over the world, however, in the developing countries effects of climate change have joined hands with the prevailing poverty to present a situation far worse for food security in these countries.

²⁸ Polly J. Ericksen, “What Is the Vulnerability of a Food System to Global Environmental Change?” *Ecology and Society* (2008).

²⁹ *Supra* note 27.

³⁰ Akshit Sangomla, “Are Earth’s natural climatic patterns changing? An uncharacteristic La Nina may be a sign”, *Down to Earth* (June 14, 2022). “During a La Nina event, cooler-than-average sea surface temperatures prevail over the east and central Pacific Ocean, due to which the trade winds above the sea surface change in character because of a difference in the wind pressures. This change in character of the trade winds is then carried all around the world affecting different regions in different ways. Many regions become colder and wetter, while many others become hotter and drier.”

³¹ Deepak Ray, Paul C. West, *et.al.* “Climate change has likely already affected global food production”⁴ (5) *PLoS One* (2019). “Among the top three global cereals, recent yields have decreased for rice (-0.3% or ~-1.6 million tons (MT) annually) and wheat (-0.9% or ~-5.0 MT annually) and increased negligibly for maize (0% or ~0.2 MT annually). This translates to an annual 0.4%, 0.5% and 0.7% decrease in consumable food calories available from rice, wheat and maize respectively globally. Recent climate change generally decreased yields across Europe, Sub-Saharan Africa and Australia, increased yields in Latin America, and had mixed responses in North and Central America and in Asia”.

Environmental activists like the Nobel laureate Wangari Maathai linked environmental degradation with poverty and argued that both these issues overlap to push the poorest in a dismal state; she once said that “The more you degrade the environment, the more you dig deeper into poverty.”³² In this context the SDG 1 ‘No Poverty’ and SDG 2 ‘Zero Hunger’ are connected; and strategies to achieve these two must go hand-in-hand along with the adaptation and mitigation efforts to tackle the issue of climate change. All three are undeniably inter-linked in the aim to achieve global food security.

Food security is defined by its four pillars-‘availability, access, utilisation, and stability.’³³ And all four of these elements are vulnerable to climate change in their own ways. The Green Revolution that led to rapid growth in agricultural production in the 1960s, has developed the current food system which is ironically, both one of the major drivers of climate change and is also extremely vulnerable to the effects of climate change.³⁴ This vulnerability is a function of a number of climatic as well as non-climatic conditions; therefore, we witness inequity in the manner in which climate change affects food security in any community. As mentioned earlier in this article, the human rights discourse has come to be closely linked with the deliberations about climate change.

Therefore, when dealing with the issue of hunger in the face of the effects of climate change, it is often articulated as an issue of the (human) right to food. The Kenyan environmental activist Wangari Maathai is considered one of the pioneers in linking environmental protection with human rights; she established the ‘Green Belt Movement’ in Kenya in response to deforestation, environmental degradation and food insecurity in rural Kenya. Maathai recognised that behind all these issues faced by the rural poor, are deep rooted issues of disempowerment of the local communities and loss of their traditional values; the Green Belt Movement raised awareness amongst the rural Kenyan women that environmental degradation is the root cause of their lack of food, lack of firewood to cook food, lack of access to water.³⁵ During this movement the women were encouraged to plant trees, and

³² Kingsley Ighbor, “Wangari Mathai, the woman of trees, dies”, *Africa Renewal*, available at: <https://www.un.org/africarenewal/web-features/wangari-maathai-woman-trees-dies> (Last visited on June 14, 2022).

³³ *Supra* note 27.

³⁴ *Id.*, at 441.

³⁵ The Green Belt Movement, *Our History*, available at: <https://www.greenbeltmovement.org/who-we-are/our-history> (Last visited on June 15, 2022).

communities were ‘empowered to grow indigenous food crop’ so as to improve food security in every household.³⁶

Hilal Elver³⁷, the UN Special Rapporteur on the right to food stated that “Climate change poses severe and distinct threats to food security, and could subject an additional 600 million people to malnutrition by 2080.”³⁸ Ms. Elver warned that the climate change will negatively affect crop productions, farm livestock etc which will have a substantial impact on right to food.³⁹ Further she recommended a shift from ‘large-scale production oriented agricultural model’ (which makes the current food system a major driver of climate change) to a more environmentally sustainable agricultural model that respects indigenous knowledge and traditions; supports food democracy; and protects the small-scale farmers to ensure food security.⁴⁰ The large-scale industrial agricultural model has led to a loss of agro-biodiversity; which not only leaves the food system vulnerable to wide-spread crop failure but also takes away the plant genetic diversity which may help tackle the climate related stresses (*i.e.*, there could be plant varieties that can resist higher temperatures or lack of moisture).⁴¹

Therefore, indigenous knowledge about these plant varieties can be an important tool to tackle the climate change related stresses on agriculture. Further recognising the urgency for climate action, the Special Rapporteur urged the international community to be mindful of the ‘right to food’ along with other human rights while deliberating on mitigation and adaptation efforts for climate change. Thus numerous reports coming from various experts and international organizations like the OHCHR, World Food Programme (WFP), Food and Agriculture Organization (FAO) recognize that climate change will either directly or indirectly exacerbate the issue of hunger in the world.⁴²

³⁶ Green Belt Movement Blog, “The Green Belt Movement on food security at household level” *available at*: <https://www.greenbeltmovement.org/who-we-are/our-history> (Last visited on June 15, 2022).

³⁷ “Hilal Elver (Turkey) is a distinguished Global Fellow at Resnick Food Law and Policy Program at UCLA Law School. She was appointed Special Rapporteur on the Right to Food by the Human Rights Council in 2014. As Special Rapporteur, she is independent from any government or organisation and serves in her individual capacity.”

³⁸ United Nations Office of the High Commissioner for Human Rights, ‘Climate Change Poses Major Threat to Food Security, UN Expert Warns’, (November 3, 2015), *available at*: <https://www.ohchr.org/en/press-releases/2015/11/climate-change-poses-major-threat-food-security-warns-un-expert?LangID=E&NewsID=16702>, (Last visited on March 16, 2022).

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ Suman Sahai, “Agro-Biodiversity as a Resource” 54(28) *Economic & Political Weekly* 15 (2019)

⁴² World Food Programme, ‘How Climate Change Affects Hunger’, *available at*: www.wfp.org/climatechange, (Last visited on March 17, 2022); FAO, “The State of Food Security and Nutrition in the World 2017: Building Resilience for Peace and Food Security” (Rome: FAO, 2017).

In addition to recognising climate change as a threat to global food security, it is also recognised that the impact of climate change on food security will be experienced differently by different communities. Thus highlighting the inherent inequity in the distribution of resources in the world; the countries which we call the global south- Sub-Saharan Africa, parts of Asia, the small-island nations have had to bear a severe blow to their goal of achieving ‘food security’ at the hands of climate change (a large portion of their population is already battling undernourishment, and now climate change worsens their condition). In this context, the human rights perspective and human rights actors provide an added value to this debate by promoting a rights-based approach to this issue and the ‘right to food’ plays a pivotal role here. In 2001, PUCL, an Indian NGO file a writ petition in the Supreme Court of India asking the apex court to protect the food security rights of the citizens of the country and ensure that the vulnerable communities have access to food.⁴³ The apex court of India held that the ‘right to food’ is an undeniable part of the ‘right to life’ guaranteed under Article of the Indian Constitution. The court held that the government must ensure sufficient stock of food grains with the Food Corporation of India (FCI) and that the same shall be accessible to the marginalised sections of the society. This case and the Right to Food campaign gave the impetus for the enactment of the National Food Security Act, 2013 in India, which entitled the Indian people to demand access to food; although this act is yet to achieve its intended goals in entirety, it is still an important step in the recognition of right to food.

Therefore, notwithstanding the enormity of the task of achieving it, ‘right to food’ finds a strong footing in the universally guaranteed and inalienable ‘right to life’. International human rights conventions like the ICCR and UDHR guarantee ‘right to life’ to all as a basic human right; and ‘right to food’ cannot be separated from it. Thus ‘right to life’ includes right to live with dignity and free from starvation. In this context ‘right to food’ has a strong jurisprudential basis as part of the basic human right of ‘right to life’.

Narratives to understand hunger

How we understand an issue will inevitably inform how we will try to resolve it. Thus before we discuss ways to resolve the issue of hunger (or food security) it essential is to look at the way we perceive it. There exist two contemporary narratives to understand the issue of

⁴³ *People’s Union for Civil Liberties v. Union of India (Right to Food case)* Writ Petition (Civil) No. 196 of 2001.

hunger – the neoliberal narrative and the food sovereignty narrative.⁴⁴ Most simply put, in the context of how climate change causes hunger- the neoliberal narrative is concerned with food production (i.e. climate change is leading to decline in food production); and the food sovereignty narrative on the other hand envisions food as a right and not just as a commodity (this narrative is reflected in the ‘access’ aspect of food security). These two narratives are also reflected in the works of two scholars whose writings informs the current understanding of the issue of issue of hunger- Thomas Malthus⁴⁵ and Amartya Sen⁴⁶. The Malthusian understanding is reflective of the neoliberal narrative; for Malthus (who was primarily examining population growth) the issue of hunger is an issue of ‘availability of food’ i.e. not having enough food to feed the growing population.⁴⁷ The Senian understanding on the other hand reflects the ‘food sovereignty’ narrative; with a focus on ‘access to food’ as central to the issue of hunger.⁴⁸ Here, we have to acknowledge that the above is but a simplified account of the more nuanced works of these scholars, taking only the elements that are relevant to this study. However, their writings (though written in different times) reflect the two primary narratives about understanding the issue of hunger and the ideas central to their perspectives that still dominate the discussions around hunger and food security. Though these two narratives are often viewed as oppositional; however, both of these perspectives have to be taken together to understand the effects of climate change on food security and also to tackle the issue of hunger in the world.

The supporters of the ‘food sovereignty’ narrative do not deny the need to tackle the issue of declining crop yield in the face of climate change; however, they point out that increased

⁴⁴Anne Saab, *Narratives of Hunger: Feeding the World in Times of Climate Change* (Cambridge University Press, 2019).

⁴⁵ Malthus, an eighteenth-century British cleric and scholar, his work was primarily concerned with population growth (his famous work entitled: *An Essay on the Principle of Population*, 1872), and they are extrapolated to understand the issue in the context of the stress a growing population puts on food supply. However, the Malthusian understanding faced widespread criticism on the grounds that it seemed to blame the hungry for their hunger. The Eithiopian Famine in 1973 became the harbinger of sea change in the understanding about hunger, during this time the world was producing enough food globally however, a significant portion of its population did not have ‘access’ to food. Thus the flaws in the Malthusian narrative were highlighted during this famine that claimed the lives of 300,000 people due to starvation. See, John R. Butterly and Jack Shepherd, *Hunger: the biology and politics of starvation* (UPNE, 2010). See also, Eric Holt-Giménez et al., “We Already Grow Enough Food for 10 Million People . . . and Still Can’t End Hunger”, *Journal of Sustainable Agriculture* (2012).

⁴⁶ Amartya Sen is the contemporary development economist, his understanding of the issue of hunger is one where hunger is not due to lack of food; it is a consequence of the socio-economic deprivation of a significant portion of the human population. Sen wrote that “starvation is the characteristic of some people not having enough to eat. It is not the characteristic of there being not enough food to eat.” See, Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation*, (Oxford: Oxford University Press, 1981)

⁴⁷ *Supra* note 44 at 5.

⁴⁸ *Id.* at 5, 6.

food production will not be enough to tackle the issue of hunger. If the policy actions focus only on the physical aspect of crop yields and neglects the other aspects like ‘equitable access and distribution’, they will fail their objective. And the reconciliation of these seemingly oppositional narratives can be found in the human narrative in general and ‘right to food’ in particular. To put simply ‘Right to Food’ as a normative framework includes both the aspects i.e. the physical availability of food (addressing food production) and the socio-economic access to food (addressing inequity in food distribution). Thus in this context the human rights (right to food) narrative becomes a tool to both help define and address the issue of food security in the face of climate change.

Climate change affects more than one aspect of food security; the observed effects of climate change leads to substantial decline in crop yields. This affects the physical availability of food; the decline in food production leads to increase in the food prices (in accordance with the basic principles of economics) and this negatively affects people’s economic access to food therefore causing hunger.⁴⁹ Therefore, climate change affects food security both directly (declining crop yield) as well as indirectly (by affecting economic access); in addition to these the climate change mitigation and adaptation efforts may also divert resources from agricultural policies. It is important to note here that food security is not a function of just two factors – food production and the mouths to feed. There are a number of factors that determine food security in any region, the physical production of food can be overshadowed by inequity in distribution. Food system includes the processes of ‘production, transport, processing, packaging, storage, retail, consumption, loss and waste’⁵⁰; and therefore, policies related to all of the mechanisms are interconnected and will also have an impact on food security. In light of the above we can conclude that the relationship between food security and climate change is not a simple one; it is a complex-multidimensional relationship.

Differential Vulnerabilities: Climate change and the world’s poorest

In addition to the above, the effects of climate change on the food security of a region will vary depending upon the varied adaptive capacities of the region in question. The socio-economic conditions of a community will define their resilience and adaptive capacity to the adverse effects of climate change on their food security. Due to these complex

⁴⁹ Porter, John R., et al. *Food security and food production systems*, (Cambridge University Press, 2014); Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation*, (Oxford: Oxford University Press, 1981).

⁵⁰ *Supra* note 2 at 441.

interrelationships between various factors affecting food security, it becomes somewhat difficult to discern a direct causal link between climate change and food security (or to identify climate change as the cause for hunger). Although it is difficult to establish a precise causal link, however, it is well-established that agricultural activities are highly climate-dependent; and sudden climatic shocks/disasters like cyclones, storms, floods and slow on-set disasters like droughts, sea-rise, soil-salinity all have detrimental impacts on food production in any region. Climate change is predicted to increase both the intensity and frequency of these events; thus developing a scholarship -both scientific and socioeconomic along with reports and policy papers that acknowledges the link between climate change and hunger.⁵¹ These then further interact with the adaptive capacity and resilience of a community based on their socio-economic resources and leads to hunger and suffering, especially in the poorest communities of the world.

In October 2021, the United Nations World Food Programme (WFP) warned that Madagascar may be facing the world's first climate change famine; more than one million people in the southern Madagascar are living with extreme food insecurity.⁵² Madagascar has been tormented by consecutive droughts in past four years, with the ongoing drought being the worst in the last four decades. The WFP estimates that thousands of people are facing the highest level of internationally recognised food insecurity i.e. level five.⁵³ However, in December 2021, a report published by an international research collective World Weather Attribution- said that their analysis could not establish a clear link between climate change and the food crisis in Madagascar, and poor infrastructure, rain-fed agriculture are the bigger factors that contributed to their food crisis.⁵⁴

⁵¹ IPCC, "Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems" (2019); see also, FAO, IFAD, UNICEF, WFP and WHO, "The State of Food Security and Nutrition in the World" (2019); see also, Food and Agriculture Organization, International Fund for Agricultural Development, and World Food Programme, "The State of Food Insecurity in the World 2015. Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress" (Rome: Food and Agriculture Organization, 2015); see also, UN World Food Programme (WFP), WFP Annual Report (2009).

These are some examples of the numerous reports published by many international organisations acknowledging the effects of climate change on global food security.

⁵² UN News "Madagascar: Severe drought could spur world's first climate change famine", *available at*: <https://news.un.org/en/story/2021/10/1103712> (Last visited on March 20, 2022).

⁵³ Andrew Harding, Africa correspondent, BBC News "Madagascar on the brink of climate change-induced famine" (BBC News, August 25, 2021), *available at*: <https://www.bbc.com/news/world-africa-58303792> (Last visited on March 20, 2022).

⁵⁴ Reuters, "Madagascar food crisis caused more by poverty, natural weather than climate change – study" (Reuters, December 2, 2021), *available at*: <https://www.reuters.com/business/cop/madagascar-food-crisis-caused-more-by-poverty-natural-weather-than-climate-2021-12-01/> (Last visited on March 20, 2022).

Notwithstanding the above report and the complexity of determining a precise causal link between climate change and hunger, this ongoing crisis serves as an example of the existing vulnerabilities of countries like Madagascar to climatic stresses, which will only worsen with predicted climate change. An example of which was witnessed by Madagascar just a couple of months after, the island nation was marred by a series of storms in February 2022,⁵⁵ the tropical storms named- Emnati, Dumako, Batsirai and Ana- made landfall in Madagascar in early 2022. These storms led to large scale destruction of crops and agricultural land; crippling the food-supply in the country, increasing the food prices and intensifying hunger. These storms can be seen as ‘another manifestation of the country’s vulnerability to climate extremes’.⁵⁶ Brian Lander, WFP’s Deputy Director of Emergencies said that “What we are seeing in Madagascar is extreme climate impacts – a series of storms and prolonged drought affecting hundreds of thousands of people.”⁵⁷ Despite their minimum contribution to the world’s carbon emissions⁵⁸ these people are facing one of its worst consequences. As UN World Food Programme's Shelley Thakral puts it, “*This is unprecedented. These people have done nothing to contribute to climate change. They don't burn fossil fuels... and yet they are bearing the brunt of climate change,*”⁵⁹

Climate change is a ‘threat multiplier’ which amplifies the existing vulnerabilities of any community. The interplay of the concepts like risk, vulnerability and resilience will together decide the intensity with which the effects of climate change will affect a country/community.⁶⁰ Risk is the potential climatic shocks; and vulnerability is the propensity of these climatic shocks to have an adverse impact on the community in question. However, these two will have to be analysed in the context of the resilience and the adaptive capacity of community to absorb and adapt to the climatic shock and to rehabilitate the basic functionality of the system.⁶¹ Therefore, due to inadequate adaptive capacity and lack of resources to ‘weather the storm’ so to speak; climate change will amplify the issue of food

⁵⁵ WFP, “Extreme weather and climate events heighten humanitarian needs in Madagascar and around the world”(WFP, February 25,2022) , *available at*: <https://www.wfp.org/news/extreme-weather-and-climate-events-heighten-humanitarian-needs-madagascar-and-around-world> (Last visited on March 20, 2022).

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

⁵⁸ Madagascar contributes 0.01% of the world’s annual carbon emissions (WFP).

⁵⁹ World Economic Forum, “Madagascar is suffering from a climate change famine” (September 3, 2021), *available at*: <https://www.weforum.org/agenda/2021/09/how-climate-change-is-causing-famine-in-madagascar/> (Last visited on March 20, 2021).

⁶⁰ Innocent Chirisa, Verna Nel, *et.al.*, “The Food-Water-Health-Energy-Climate Change Nexus: Pivot for Resilience in the Cities of the Global South”, in Innocent Chirisa (ed.), *Dialogues in Climate and Environmental Research, Policy and Planning: A Special Focus on Zimbabwe* (African Books Collective, 2020).

⁶¹ *Id.* at 212.

security in the global south. The developing countries of Sub-Saharan Africa, South Asia, Small-Island Nations—are expected to be worst hit by the effects of climate change. The dry areas will face longer dry seasons with the rising temperatures; the small island nations will face more intense and more frequent storms, soil salinisation; increase in the incidence of floods etc. All of which will wreak havoc on their food production and food supply; a number of these countries are already battling malnourishment, and lack of socioeconomic access to food amidst their population. There are significant numbers of small-land holding farmers in these countries with monsoon-dependent agriculture, making them ill-equipped to face the climatic shocks. Thus climate change will intensify hunger especially in the poorest parts of the world.

IV. Conclusion: What can be done?

As mentioned at the outset of this article, the aim of this piece of writing is to examine the relationship between climate change and global food security, in the light of the latest report by the IPCC, where the primary UN body studying climate change, once again warned the world about the future of ‘unavoidable multiple climate hazards’ due to global warming.⁶²In its sixth assessment cycle, IPCC also published a special report⁶³ highlighting the adverse effects of climate change on food security. Notwithstanding the complex nature of their relationship, it is now well established that both the observed and predicted effects of climate change threaten the food security of millions of people around the globe.

Further in this article we have also examined the two popular ‘narratives of hunger’ employed to understand the issue of food security. It is imperative to study these, because how we understand an issue, determines our vocabulary and our attitude towards it; which in turn determines the manner in which we will seek to resolve the issue. And although the ‘neoliberal narrative’ and the ‘food sovereignty narrative’ are often placed in contradistinction from each other; however, the complexity of the relationship between climate change and food security demands a response that is a combination of both. To put simply food security is not just an issue of food production i.e. an issue of physical access to

⁶² IPCC, “Climate Change 2022: Impacts, Adaptation and Vulnerability” (February 27, 2022), *available at*: <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/> (Last visited on March 20, 2022). The UN Secretary-General António Guterres, called this report “an atlas of human suffering and a damning indictment of failed climate leadership.”

⁶³ *Supra* note 2.

food crops; but it is also an issue of socio-economic access to food.⁶⁴ Climate change puts all the four pillars of food security (availability, access, utilisation and stability) under threat. Therefore the solutions we devise must address all four. It is the human rights narrative in general and right to food in particular that can provide the normative framework to reconcile both the narratives of hunger, and address the issue of both physical availability of food as well as socio-economic access to food.

To feed the world in the face of climate change requires that we attempt to enhance the resilience of the food system to its effects. Diversification of the food system appears to be the best bet to enhance resilience of the food system to the effects of climate change. The more diverse the food system; in terms of the variety of crops, agro-biodiversity, use of indigenous fruit and crop varieties, the more resilient it becomes in enhancing food security in the face of climatic stresses.⁶⁵ The Green revolution in the 1960s though enhanced the food production manifold; however it also led to the loss of agro-biodiversity, and the over-production of commercial crops led to loss of nutrients from the soil.⁶⁶ Promoting the agro-biodiversity along with the indigenous knowledge associated with it can become a valuable resource to enhance the resilience of the aspect of food production of any food system.

In the discussions around enhancing the adaptive capacity of the food system to increase food production in the face of climatic stresses, one often hears ideas about developing ‘climate-ready seeds’. These climate-ready seeds are genetically engineered and purported to have certain traits like- drought tolerance, flood tolerance, temperature tolerance etc. These climate-ready seeds are often associated with the neo-liberal narrative. This idea is criticised by the proponents of the food-sovereignty narrative on the grounds that the corporate control over these genetically engineered seeds (via patent rights), will make them inaccessible to the small-holding farmers of the developing countries. However, promoting the natural agro-biodiversity of crops in any region can provide a solution to this.

The natural agro-biodiversity of crops not only resolves the issue of resilience to climate change, but along with the indigenous knowledge associated with it; it will also give the local community control over the decision making. This will not only enhance the crop-resilience

⁶⁴ The Food and Agriculture Organization (FAO) defines food security as a “situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. (FAO, “The State of Food Insecurity in the World 2001” (Rome, 2002).

⁶⁵ *Supra* note 2 at 468.

⁶⁶ *Ibid.*

and improve food production in the face of climate stresses, but it will also help in improving ‘access’ to food by empowering the local communities. As Hilal Elver, the UN Special Rapporteur on the right to food, highlighted in her report that, “There is a need for a major shift from industrial agriculture to transformative systems such as agro-ecology that support the local food movement, protect small holder farmers, respect human rights, food democracy and cultural traditions, and at the same time maintain environmental sustainability and facilitate a healthy diet.”⁶⁷

As previously acknowledged in this article, how the effects of climate change affect the food security of any region or community will depend upon the resilience and adaptive capacity of the region in question. Therefore, as indicated in the very title of this article the poorest regions of the world are the most vulnerable to the effects of climate change in general and climate-induced hunger in this particular context. Climate change is a threat-multiplier that exacerbates the existing vulnerabilities of the food system in any given region; and in most cases (as that of Madagascar) these vulnerabilities are but a result of centuries of inefficient (even exploitative in some cases) policies. Since the relationship between climate change and food security is not simple, with multiple socio-ecological dynamics and historical patterns of policies at play simultaneously, hence the solutions we seek (to climate-induced food insecurity) cannot be simple either. There is a need for a systematic response to a systematic problem; climate stresses are without a doubt tampering with food production and distribution.

However, any policy-solution that we devise must be mindful of the historical pattern of agricultural policies that have led to the existing vulnerabilities of the current food system; the locally consumed food crops must be encouraged; policies must be developed to encourage and promote the indigenous genetic varieties of crops to restore the genetic diversity of seeds/crops. The traditional/indigenous knowledge of the farming community must be accessed by the policy-makers to discern the varieties of crops that have properties like drought resistance, temperature tolerance which makes them resilient to the effects of climate change. The local traditional knowledge can become a resource to help adapt to the effects of climate change on food security; for example, the farmers in Nepal have always

⁶⁷ *Supra* note 38.

preferred a local variety of barley that has a short growing period because the cold climate of the high-altitude mountains gives them a short growing window.⁶⁸

Therefore, climate change presents itself as one of the most formidable challenges to the global food security till date; it also exacerbates the existing vulnerabilities and highlights the rampant inequities in the current food system. Hence the solution to the problem of food insecurity in the face of climate change requires an equally comprehensive and formidable policy making. The international community must invest in adaptation efforts to make the vulnerable communities climate-resilient. That is to say that, there is need to invest in policies that help these communities to ‘prepare for, respond to and recover from climate shocks and stresses.’⁶⁹ These policies include programmes like the WFP’s ‘integrated risk management system’, which provided insurance to small-scale farmers and helped train them to adopt climate-adapted agricultural practices in the Ambovombe and Amboasary districts of southern Madagascar.⁷⁰ Such efforts must be scaled up at both the national (domestic policies to aid small-scale farmers) and the international level (by increasing financial/material assistance to agencies like the WFP). Therefore, the study of the concept of global food security highlights that climate change is a threat to achieve food security especially for the world’s poorest communities. And the efforts to overcome this shall be multifaceted- these include encouraging indigenous knowledge of the farming communities to preserve the agrobiodiversity and indigenous food crops (the Green Belt Movement is an example of such efforts); providing emergency assistance for the health (veterinary) and feeding concerns of the livestock in the face of extreme weather conditions (WFP); developing better irrigation facilities so as to make agriculture less dependent on shifting rainfall patterns; improving access to and accuracy of weather predictions which can help become an important tool in the hand of the farmers to better prepare and mitigate against climatic shocks and stresses. All these efforts should be undertaken simultaneously at both national and international level especially for the vulnerable communities living at the frontlines of climate crisis. It is imperative to recognise the need to build resilience against the observed and predicted effects of climate change to achieve the goal of food security.

⁶⁸ *Supra* note 2 at 469.

⁶⁹ *Supra* note 52.

⁷⁰ *Ibid.* “The programme saw a US\$350,000 payout during the rainy season and a US\$157,500 payout during the dry season in 2021”.