Agricultural Policy and Food Security: Challenges and Opportunities

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ABSTRACT: The green revolution promoted a worldwide industrial form of agriculture. This revolution focuses on development and research, which aims to increase agricultural production. Food and farming frameworks were rebuilt at the end of the Green Revolution through market progression programs and the change from socialism to private enterprise in different locales in the late 20th century. They prompted changes in how individuals got to the food, the sorts and measures of food processing, and the manners by which homesteads are claimed and overseen. These progressions were part of the way determined by underlying change programs during the 1980s, implemented by worldwide money foundations, just as the consideration in 1994 of agribusiness on the planet exchange system. Industrial agriculture's negative impacts on human and environmental health and future food security were unforeseeable during the Green Revolution. However, since the Green Revolution, the costs of industrial agriculture have grown more widely recognized, and alternatives have become more mainstreamed and created. Instead of the many impacts of industrial techniques, modern agriculture has far too many adverse side effects. Comprehensively, however, industrialized horticulture has determined the total humiliation of regular assets and ecological administrations worldwide.

KEYWORDS: Agricultural Law, Food Security, Green Revolution.

I. INTRODUCTION

The Green Revolution is the most important of all agricultural revolutions. It fostered the industrial techniques of agriculture that are prevalent now all over the world. From the 1940s to the 1970s, the Green Revolution was a series of efforts devised by international agencies and industrialized countries. These projects centered on agricultural research and development and technology transfer programs to boost agricultural production, particularly in emerging countries. (*Peter Hazell, 'Green Revolution: Curse or Blessing?,'* 2003) The Green Revolution encouraged the use of high-yielding cultivars, irrigation equipment, and inputs, such as irrigation, fertilizers, pesticides, and other chemical information and access to them. (*Peter Hazell, 'Green Revolution: Curse or Blessing?,'* 2003) The Green Revolution describes as either a miracle that rescued hundreds of millions of lives from famine or a worldwide injustice that exacerbated pre-existing disparities while undermining potential structural change. (Larsen, 2006)

On the one hand, the population of low-income countries nearly doubled between 1966 and 2000, but the Green Revolution raised food production by 125 percent. (Khush, 2001) The implications of industrial agriculture, on the other hand, and the known effect of aggravating pre-existing disparities show that the Green Revolution's contribution to long-term food security is not as significant or favorable as its proponents initially claimed. (Freebairn, 1995)

Food and farming frameworks were rebuilt at the end of the Green Revolution through market progression programs and the change from socialism to private enterprise in different locales in the late twentieth century (Liefert & Swinnen, 2002). They prompted changes in how individuals got to the food, the sorts and measures of food processing, and the manners by which homesteads are claimed and overseen. These progressions were part of the way determined by underlying change programs during the 1980s, implemented by worldwide money foundations, just as the consideration in 1994 of agribusiness on the planet exchange system. (Mckeon, 2011) Industrial agriculture's negative impacts on human and environmental health and future food security were unforeseeable during the Green Revolution. However, since the Green

Revolution, the costs of industrial agriculture have grown more widely recognized, and alternatives have become more mainstreamed and created. (Goodman, 2000)

Instead of the many impacts of industrial techniques, modern agriculture has far too many adverse side effects. Comprehensively, however, industrialized horticulture has determined the total humiliation of regular assets and ecological administrations worldwide. On and off-ranch, environmental change, the increment underway expenses on ranches along these lines influencing ranch pay, general medical problems, and animal brutality. (Kimbrell, 2002) The existing international regulatory system for food and agriculture is well-known to be uneven, imprecise, and ineffectual, with overlapping standards and rules. Scholars, institutional institutions, and non-governmental organizations employ a variety of value-laden notions to examine agriculture and food challenges and related regulatory measures.

Food security is the most critical policy idea and goal at both the international and national levels. It holds that agriculture ought to contribute in the short and long haul to all individuals having physical and financial admittance to sufficient food that meets their healthful requirements. Henceforth, further developing food security at worldwide, public, and individual levels is predictable with generally held natural qualities concerning human endurance and prosperity.

In contrast, food security lies as the ultimate objective of administrative intercessions into agriculture. This paper examines the definition of agriculture and food security, also describes issues and challenges for food security and agriculture. This study blends food security with human rights and environmental norms to address the variety of external drivers interacting with agriculture and food security. This article will focus on a single food system activity (agriculture) and water. It should be an organized, rigorous assessment of international regulations that interface with agricultural systems. As a result, given the project's restrictions, it is designed and analyzed as systems-based as feasible.

II. AGRICULTURE AND FOOD SECURITY

Agriculture is an economic sector and human activity that significantly contributes to food security locally, nationally, and globally. Agriculture influences the nutritional quality and varieties of food accessible by determining the amount of food consumed, generating wealth that allows people and countries to purchase food, and choosing the food consumption. In many developing nations, it is the most critical sector, and it also plays a significant part in the economies of many wealthy countries. (*Top Agricultural Producing Countries*, n.d.) As a result, agriculture contributes to domestic revenue, which may use to pay for food security-related services and activities. Moreover, it is generally perceived that agribusiness associations engage helpless people in creating countries. Despite its importance to food security outcomes, agriculture confronts two interrelated problems that threaten the sector's ability to advance food security in the short and long term. The first issue is supply, or agriculture's ability to produce enough food to feed everyone in the future. The prevalence of unsustainable farming models has harmed long-term food security. Climate change, water scarcity, reliance on non-renewable energy sources, large-scale biodiversity loss, soil fertility loss, and pollution across air, water, and soil are all issues that industrial agriculture is responsible for. (Giovannucci et al., 2012)

In the last thirty years, food security concepts have developed to match shifts in government policy thought. (Edward Clay, 2002) Food security is a lens through which regulators and humankind can comprehend food and agricultural challenges. Food security has traditionally been equal to sufficient calories, and the answer to food insecurity has generally been to raise agricultural output to provide more food. (Simon, 2012) However, ensuring food security and the tools to do so are far more complex than increasing production. As a result, the UN's Food and Agriculture Organization (FAO) and the World Bank have gradually enlarged definitions of food security in many policy statements since the 1970s. (Simon Maxwell, 1996) Food security has become an element of broader security discussions in the previous decade. Policymakers are increasingly combining the notion with other problems arising from the distribution

and depletion of natural resources, such as water and energy insecurity. (*Global Risks 2011, Sixth Edition*, n.d., p. 20) Given the significance of horticulture to food security, this absence of a good assortment of rules with shared destinations and guidelines fundamentally restricts the viability and association of the administration and administrative plans for food and agriculture. (Gonzalez, 2012) Accordingly, this theory maps the current organizational structure for farming. It starts with the guidelines encompassing the regular assets used to deliver food (land, soil, water). Movements to the instruments that impact how ranchers and homestead laborers apply abilities, information, and data sources (e.g., seeds and pesticides) lastly move to the various elements of world exchange that impact how farming items are created and conveyed. Its investigations these instruments by thinking about how they advance or frustrate the result of food security. Policymakers have steadily added additional aspects to the concept of food security since the 1970s. Similarly, stakeholders have increasingly recognized that food security research, regulation, and policy must take a holistic approach to food systems. (Ericksen, 2008) Food systems, in this view, are the foundation for food security outcomes. Food processing, retail, consumption, and other related social, political, and environmental elements are part of food systems.

Food security is the most common policy concept and goal associated with food and agricultural activities at the international and national levels. Agriculture's worldwide regulatory system is a jumble of environmental treaties, human rights agreements, and trade and investment rules. With the rise of regional trade agreements and the expanding regulatory role of non-state entities, this framework is getting increasingly difficult. On the one hand, international law's specialized, independent regimes may encourage focused regulatory actions. On the other hand, fragmented regulatory authorities are incompatible with the determinacy and consistency essential for a rule or regulator to have legitimacy and impact. There is no comprehensive view of the laws that affect agriculture; rules frequently clash, and institutional practices, such as the CFS and the World Bank, differ significantly. (Pauwelyn, 2004)

One element that has precluded integrated responses to food and agriculture's difficulties is the fragmentation of norms, institutions, and regulatory tools that intersect with agriculture. Such a condition contradicts international actors' acknowledgment that global food security is a core goal of the international legal and political system. (*Transforming Our World*, 2018). Given the multifaceted character of food security and the growing recognition of the importance of food systems-based approaches, a holistic approach to the law in this area is not only acceptable but essential. The absence of connection between human rights and environmental agreements and principles was prominent throughout the chapters. Agriculture encapsulates the relationship between human and ecological health; therefore, the lack of integration was especially noticeable.

Scholarly publications, international policy texts, and international declarations are progressively integrating environmental and human rights concerns. Although human rights and ecological accords are not formally or institutionally linked, they share a common focus on future generations, procedural fairness, and better environmental management for human well-being. Another central area of discord was the intersection of international economic law and environmental and human rights law. Subjects regarded outside of trade and investment issues are divided under international trade and investment law. In reality, the World Trade Organization refers to these as "non-trade" problems, whereas investment treaties are only concerned with safeguarding investors against governmental meddling. The impact of the Agriculture Agreement on low-income developing nations' agricultural industries and food security while permitting industrialized countries to maintain market access obstacles.

As a result, the Agriculture Agreement has been formulated and implemented in ways that go against the establishment of specific measures for vulnerable groups mandated by human rights law. The role of social movements, particularly the food sovereignty movement, is crucial in bringing about social change and expressing the interests of farming communities that are otherwise excluded from international policy creation and decision-making. However, as food and agriculture become more globalized, a practical global regulatory framework for the food system

activities that support food security, which includes agriculture, is required. Such bottom-up activities can be facilitated by an enabling international regulatory environment backed by a wide range of interdisciplinary projects and contributes to food security. In general, international economic governance structures have not evolved in lockstep with the massive expansion in global food and agricultural production and distribution during the last fifty years. The failure to govern multinational agricultural corporations at international levels and the out-of-date function of international investment legislation are examples.

According to Korbin, we are in the midst of a transition from an international to a global or post-Westphalian political-economic system. We have yet to create the modes of collaboration, institutions, or even the language required to administer an interconnected world economy. (Stephen J. Kobrin, 2008) In line with Korbin's view, global governance must be scaled up to address the fact that few firms can directly enhance or reduce food security with little third-party scrutiny. The Guiding Principles on Business and Human Rights, as previously mentioned, are a vital first step. (Secretary-General & Enterprises, 2017) Transnational corporations must wear to enforceable international law requirements at the international level. Given the extraordinary story of concentration in this sector and its strong connection to food security and the realization of related human rights, such a development should pay special attention to food and agricultural corporations. (International Assessment of Agricultural Knowledge, Science, and Technology for Development (Project) & McIntyre, 2009) At the same time, global changes should not obscure the necessity for governments, particularly wealthy nations, to improve extraterritorially regulated corporate players.

III. ISSUES AND CHALLENGES

Agricultural and food security issues were once inextricably linked, but they have increasingly been treated as independent entities in the last century. Food issues are frequently incorporated into agriculture strategies in nations where the primary sector has long dominated the economy. The majority of

people in these countries affected by food insecurity are rural and agricultural, and they make up the bulk of the population. Food insecurity is traditionally thought to be caused by a lack of food supply. Hence increasing agricultural production is the primary technique used to combat hunger. (Bricas, 2019) Water is a critical input in agrarian productivity and contributes to food security. Irrigated agriculture accounts for 20% of all farmed land and 40% of all food produced globally. Irrigated agriculture is at least twice as productive per unit of land as rainfed agriculture, allowing for more crop diversification and output intensification. (The World Bank, 2020) Agriculture that is rain-fed is reliant on renewable freshwater sources. Rain-fed agriculture accounts for over 60% of global agricultural output. Therefore, it is the most common method of watering crops. Because enormous gaps exist between the amount of food that could produce and the amount of food produced by rain-fed systems, rain-fed agriculture is sometimes regarded as having enormous and untapped potential. (Wani et al., 2009) Droughts and other weather or climatic disturbances make rain-fed agricultural systems extremely vulnerable. However, Rockstrom et al. discovered that better farm-level water management, which relies on agro ecological soil improvement and land tenure stability, can prevent rain-fed food production from dropping during a drought. (Rockström et al., 2010)

Furthermore, rain-fed agriculture benefits from effective water collection techniques and the utilization of captured water on farms in a way that successfully infiltrates crop root zones. (Critchley et al., 1991) As a result, agriculture will have to be done in a more water scarcity environment, food security will have to be enhanced with less water, and agricultural impacts on water quality will have to be significantly decreased. Farming activities are so reliant on water that they are a significant cause of water scarcity. Agriculture is responsible for 69% of global freshwater withdrawals. (FAO's Global Information System on Water and Agriculture, n.d.) A variety of farming strategies can improve water management on farms. External and on-farm water collection systems, sustainable soil management, agroforestry, crop rotation, mulching, and adequate irrigation are all examples of agro-ecology or improved crop varieties.

A rights-based approach to food security and the human right to water rights are obtained from customary law or legal documents on a domestic level. They might be owned by a corporation, a state, an individual, or a community. (D. E. Fisher, 2010) Since the Committee of Economic, Social, and Cultural Rights issued General Comment No. 15.848 in 2002, progress toward recognizing a human right to water has been steadily increasing at the international level. According to this document, the right to an adequate standard of living, which includes the right to food, should be understood to have a water right. Following that, the United Nations General Assembly established a human right to water in 2010, recognizing "the right to safe and clean drinking water and sanitation as a human right that is necessary for the full enjoyment of life and all human rights." The UN Human Rights Council then recognized the right to drinking water, explaining that it stems from the right to an adequate level of living, which is intrinsically linked to the right to the most significant achievable standard of physical and mental health, as well as a right to life...'. Only non-binding accords recognize the human right to water at the international level, limiting the rights' credibility, influence, and enforceability. Some critics have questioned whether the right to food and food security can coexist with the water right, given that the right to water does not include a right to water for food production. (Chopra, 2011) Given that agriculture is one of the most significant users and polluters of water, the growing human right to water may have ramifications for agricultural water use.

Regulatory interventions to respect, safeguard, and fulfill the right to water for drinking and sanitation, in particular, are feared to harm the water available for agriculture. Nonetheless, it appears that these fears are predicated on the persistence of unsustainable agricultural models. Water for agriculture and water for sanitation and drinking reasons do not have to be traded off with sustainable water management, as mentioned in the preceding two sections. (Mueller et al., 2012) An RBA to FS cannot occur if water is being used unsustainable, as current and future generations will struggle to produce food when water is scarce. In other words, an RBA to

FS is not being implemented if food production infringes on existing or future generations' right to water for drinking or sanitation.

This is acknowledged in General Comment No. 12 on the right to enough food, which stipulates that the right to adequate food must be advanced in methods that are sustainable and do not conflict with the enjoyment of other human rights. It is also supported by Article 11(2)(a) of the ICESCR, which requires states to 'improve methods of production...' by 'developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources, both individually and through international cooperation. Rather than clashing with food security, recognizing a human right to water helps support an RBA to FS. The glory of the water right supports the need for water management that is both sustainable and equitable. Food production must be managed and carried out so that the supply of water for drinking and sanitary purposes is protected. The agricultural policy must strive to limit the influence of agriculture on water quality to maintain and respect the right to water for drinking and sanitation to be compatible with an RBA to FS. In addition, the conditions under which people gain or lose access to water for food security must be based on human rights values, including equity, transparency, and participation.

In a report on the human right to water, the UN High Commissioner for Human Rights stated, "Once a sufficient amount of safe drinking water has been secured for all, allocation among various uses—water for personal and domestic uses beyond this sufficient amount, water to produce food, water to sustain livelihoods, and water to ensure environmental hygiene—remains unclear." However, the water right prioritizes water for drinking and sanitation but provides no additional direction. Given that food is a basic need and a human right, it is plausible that agriculture should be given priority over other industrial uses when it comes to water. Nonetheless, not all farms contribute to food security, particularly industrial, and generate non-food items. Prioritizing agricultural water over other uses may not always be compatible with an RBA to FS. Furthermore, where national food security can be addressed by food imports or family food security can

be reached through food purchases, there is no human rights requirement to provide water for food production. (Lundqvist & J., Grönwall, 2015)

However, based on this conversation, low-income, agricultural-based populations should be given priority access to water, as farmers rely on agriculture for food security. To put it another way, once the right to water for drinking and sanitation has been established, subsistence farmers' water needs should be prioritized. This is in line with CESCR General Comment No. 15, which stated that water rights for personal and domestic use must be given priority in water allocation. Water and water management systems, particularly sustainable rain harvesting and irrigation technology, should be accessible to poor and marginalized farmers, including women farmers. (Inga Winkler, 2012) To minimize agricultural threats to the human right to water for drinking and sanitation, countries experiencing water scarcity may need to focus on importing food and diversifying from agriculture into other tradeable commodities.

The regulation of navigational uses of international lakes and rivers was the beginning of international water law in the early nineteenth century. (Salman, 2007) Since then, attention has switched to non-naval uses of international rivers and lakes. The 1997 UN Water Convention and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, and the 1997 UN Convention on the Law of Non-Navigational Uses of International Watercourses are the two major treaties in this area that have both come into force. Despite their ecological linkages, MPTG combines water quality and quantity concerns, formerly treated as separate matters under international law. Given the dangers to food safety and availability posed by lower water levels and increased pollution, the connection between these water issues is critical for food security. Limiting the amount of water withdrawn from groundwater sources, on the other hand, could have a severe impact on agriculture and food security if rain-fed agricultural methods and technologies are not explored and developed before the limitations are implemented.

Regulation of "intensive agricultural techniques" is one strategy to "avoid, control, and mitigate" transboundary groundwater pollution. This is the

first international instrument to include industrial farming techniques and the necessity to regulate them more stringently to mitigate their impact. Food cultivated with dirty wastewater is projected to feed 10% of the world's population. (Water and Food Security | International Decade for Action "Water for Life" 2005-2015, n.d.) Given the dangers of dirty wastewater to environmental services, food safety, and food security, much more needs to be done to regulate wastewater, especially in light of urbanization. As a result, the Water and Health Protocol is an essential first step in closing significant gaps in worldwide water governance in the context of agriculture and food security.

If an RBA to FS is to be created effectively in international agriculture law, a stricter rule of law is required at the international level. Strengthening the rule of law and governance at the international level entails more than only resolving the fragmentation of international law and increasing state and global institution regulation of non-state actors. It also necessitates a greater involvement of civil society (including farmer and consumer organizations) and business players in developing and implementing international laws. In this context, the Committee on Food Security is becoming a helpful model. Scholars have proposed various options for how a reorganization of international institutions and rules could promote the rule of law at the global level. (bloomsbury.com, 2006) International economic law's agreements and mechanisms, such as trade liberalization and investment treaties, are tools for improving food security and the progressive realization of human rights. (Charles J. Whalen & Hyman P. Minsky, 1996) Protectionist measures linked to agricultural investment and trade should be used as part of an inclusive approach at national and international levels if these tools do not function for food security and the progressive realization of human rights.

IV. CONCLUSION

This paper has given a policy-oriented legal study of international agricultural regulation using a rights-based approach to food security. It started with creating a normative foundation for international agricultural

law and evaluating regulatory measures that connect with agriculture. The public international regulatory instruments that intersect with each element engaged in food production are rigorous investigation. This study looked at how the global agricultural regulatory framework is consistent or incompatible with a rights-based approach to accomplishing the goal of food security. As a result, this paper contributes significantly to Human Rights Law and International Food Policy. A stricter rule of international agriculture law is an obligation at the global level. It addresses the fragmentation of international law and enhances the control of non-state actors by states, and international institutions are not the only ways to strengthen the rule of law and governance at the international level. It also necessitates a greater involvement of civil society (including farmer and consumer organizations) and corporate actors in developing and implementing international regulations.

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