

# A Discussion on the Role of Financial Institutions in Fighting Climate Change

Qiyu Yan

Queen Mary University of London, School of Law, Mile End Road, London E1 4NS, United Kingdom

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**Abstract:** The climate change crisis is now a serious issue for the future of human life. This paper analyses the global food and energy crises from a green finance perspective. First, the author provides relevant research and evidence as a preliminary step and, based on relevant facts and reports, proposes adjustments to financial institutions and the distribution of financial resources, respectively, to achieve effective outcomes for future climate change crises.

**Keywords:** Climate Change Crisis; Global Hunger; Energy Crisis; Green Finance.

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## 1. Introduction

In September 2015, the United Nations adopted the SDG (Sustainable Development Goals), providing 17 different goals for nations to follow in the future – one of them being climate change issues (UN, 2015). The climate change crisis is a significant global problem because the perpetuation of the problem is slowly causing myriads of secondary problems that develop into more significant crises. Such is the enormity of this situation that it is no longer sufficient for financial institutions to look into their investments in companies and sectors that directly solve the climate change problems. Both public and private financiers worldwide today have to take a multi-pronged approach toward solving the issues. The most important are addressing the global food and hunger crisis and the energy crisis (Raj et al., 2022; Papadis and Tsatsaronis, 2020). Studies have been increasingly pointing out that the various global crises are forming giant overlaps that augment our troubles manifold (Raj et al., 2022; Papadis and Tsatsaronis, 2020; FAO, 2015; CFS, 2020). This paper focuses on the impact of world hunger and the growing energy crisis. These issues are important enough to be directly linked to the causes and effects of the growing climate change crisis and seek to demonstrate that the world's financial institutions can contribute to the fight against climate change by working together to address both crises.

## 2. Importance of Meeting the Food Availability and Accessibility for Fighting Climate Change

Climate change and food are directly linked with each other in many different ways. According to FAO (2020), climate change will affect food security. There are multiple pathways through which these crises have been deepening. Especially in poorer countries dealing with land arability and production losses due to extremes of climates, food security and hunger are increasingly becoming contingent issues (Raj et al., 2022).

Further, the need to produce more food in limited agricultural lands is causing a massive increase in environmental pollution. According to Miraglia et al. (2009), traces of mycotoxins and pesticides have been found in agricultural lands. These beliefs have contributed vastly to the climate change effects in Europe. Greenhouse gas emissions (GHG) from agriculture, as well as the food business, are fast

growing to become the most significant single source of GHG emissions across the world. If no mitigation measures are made in the sector, agriculture, forestry, and land use change account for about a quarter of global greenhouse gas emissions, and this percentage is only predicted to climb in the future (McKinsey 2020). Livestock production has the highest emission rate among all other agricultural subsectors, coming in at 31%. This is followed by crop yields, which account for 27%, and the change of land use, which accounts for 24%. (Poore et al., 2018). In addition, differences in production methods, resource consumption, and agricultural intensity can be observed when comparing agricultural emissions across regions. Agriculture is the primary contributor to BRICS countries' net greenhouse gas emissions, which account for an average of 18% of the total. BRICS countries are the most significant economies still in development (IPCC 2019). Five major countries, including India, China, the USA, Indonesia, and Brazil, are responsible for approximately 42 percent of the total greenhouse gas emissions produced by agriculture worldwide. These five countries each produce more than 200 million metric tons of carbon dioxide equivalent annually from their agricultural practices (Richards et al. 2015).

Recent research on reducing greenhouse gas emissions has focused on agriculture and related businesses. This study has investigated several strategies that have the potential to significantly cut emissions of greenhouse gases from the world's food chains. By avoiding the transfer of land to other uses and restoring ecosystems that have been destroyed, it may be possible to achieve significant reductions in greenhouse gas emissions and increases in the amount of carbon that is sequestered (Herrero et al. 2016). In addition to technical breakthroughs, agronomic (cultivation, fertilization, irrigation, weeds, and energy management) and breeding advancements offer a great deal of potential for reducing agricultural greenhouse gas emissions. Livestock accounts for up to half of the technical mitigation potential in agricultural output, forestry, and land use. A decrease in consumer demand for animal products, in addition to various mitigating efforts in the livestock business, such as improved feed and waste management, grazing optimization, and the creation of silvopastoral systems, are all possibilities (Grossi et al., 2019).

## 3. Financing in Agriculture

The above facts show that fighting climate change will

have to fight the rudimentary and polluting machinery still in use in food production – animals and plants. Further, there has to be greater attention to be paid to improving food availability and accessibility to fight climate change and climate change effects (World Bank, 2022). Obtaining the necessary funding constitutes one of the most significant challenges we face while attempting to enhance our food system. In order to enable the transition to food systems that are more efficient and sustainable, it is necessary to efficiently mobilize the financial resources of both the public and private sectors. The Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), and the World Food Program concluded that an additional 140 billion dollars were required each year to invest in agriculture and rural development in order to eliminate poverty and hunger (FAO 2015). The Blended Finance Taskforce (2020) estimates that approximately 350 billion dollars will need to be invested annually worldwide by the year 2030 in order to make the required adjustments to the food and land use systems of the world. Scaling up public finance for healthy and sustainable food systems has become even more challenging due to increased budgetary pressures induced by the need to counteract the economic impacts of the COVID-19 outbreak. In order to close the enormous financial gap, it will be required to reorient the finance program and make structural adjustments. This will be done in order to stimulate private as well as public investment in the process of transforming the food business.

According to the OECD (2020) report, two-fifths of the \$708 billion that was spent annually by 54 countries to support their food security during the period 2017-2019 was provided by policies that arbitrarily preserved domestic farm prices, and another 9% was provided by payouts connected to production. These figures are based on the fact that the food security of these countries is a priority for these nations. When subsidies are related to production, they do not necessarily encourage prudent management of sustainable resources and practices. Incentives for variable production inputs contribute to an increase in the overuse of resources such as groundwater, fertilizers, and pesticides (ADB, 2021). The need of the hour right now is to increasingly invest in the infrastructure for the transport and storage of food, to improve the accessibility and availability of food globally, and to improve the prospects of livelihoods dependent on agriculture through green financing (ADB, 2021; World Economic Forum, 2020). There is a gap between the market price of groceries as well as the expense of production and distribution that reflects implicit environmental consequences, providing farmers with no or little motivation to adopt sustainable agriculture and the conservation of natural resources without incurring considerable expense or loss of income. Due to the lack of a universally acknowledged valuation technique, investors cannot factor natural resources and environmental and economic advantages into their financing decisions. Public payments to private stakeholders for the augmentation of ecological services, free trade among private resource users underneath a regulatory ceiling or floor for the amount of usage or investment in natural capital, and Eco-labeling the product are some of the factors which need to be considered while making incentive policies (Scherr et al. 2004).

#### 4. Case Study of Kenya

Livestock and grassland land management are factors in the

Kenyan and Colombian investment scenarios. Kenya's nationally appropriate mitigation actions (NAMA) focus on the dairy industry, which is responsible for roughly 12.3 Mt CO<sub>2</sub>e/yr emission (FAO 2017). Kenya has a substantial potential for reducing greenhouse gas emissions by deploying a strategy incorporating improved feed practices, dairy plant retrofitting, and manure management. With the World Bank (2022b) approving loans of \$250 million for Kenyan small-scale farmers involved in nine value chains across 26 countries, the financial body is taking positive steps toward eradicating food accessibility and availability issues. However, the gap between rural (population mainly involved in agriculture) and urban financing in Kenya continues to be huge, and mitigating this gap is the main aim for financial institutions for the country in the future.

#### 5. Significance of the Energy Sector in the Fight Against Climate Change

It is a known fact that the last two have recorded the warmest years in the Earth's existence (Sanchez-Lugo, 2018). Studies show growing concerns regarding climate change and how the global crises are converging to exacerbate further the problems (Papadis and Tsatsaronis, 2020). The decarbonization of the energy sector is believed to be one of the most critical identified solutions for fighting climate change. Luderer et al. (2019) have concluded that to achieve the current goal of reducing the global rise in temperature below 2°C annually, decarbonization of the power sector is essential. The electricity supply sector is responsible for 40% of global energy-related CO<sub>2</sub> emissions (Blanco et al., 2014). While a majority of the world concentrates only on the greenhouse gas emissions of the energy sector, the sector is responsible for myriads of other adverse environmental impacts, including air and water pollution, land occupation, ionizing radiation, and nuclear waste, water wastes, etc. (Luderer et al., 2019). Tackling this issue is of enormous importance for the global climate change crisis.

Role of the financial institutions in the energy sector:

Decarbonizing the energy sector requires a complete overhaul of the current fossil-fuel-based energy sector to transform it into a renewable energy-based energy sector. This decarbonization process, however, is rife with many different challenges. The current conceptual foundations of ESG (environmental, social, and governance – leading to stakeholder capitalism) are weak and provide only cosmetic change (Armstrong, 2020). However, many investors are increasingly investing in these features without solid returns. According to Xu and Gallagher (2022), the energy sector transformation is heavily constrained by four main factors – i) the overall ubiquitous entrenchment of fossil fuels in the energy sector, ii) too many energy-intensive industries which continue to have unmet energy demands, iii) weak production capacities of renewable energies and iii) lack of infrastructure to carry out the energy transformation. The role of financial institutions in these aspects is expected to be vast and momentous.

Indeed, the energy transition in renewable energy power supply is only a part of the problem. Other immediate requirements include re-engineering the entire infrastructure for the creation of intelligent grids, electrification of entire industries, introducing electric mobiles to stop the usage of fossil fuels in transportation, and digitizing the energy sector (Heiligtag et al., 2019).

Overall, the financial institutions' contribution to the energy sector will boil down to these three activities (White Paper, 2019);

### **5.1. Growing the Renewable Technology Industry:**

In the past, due to a lack of carbon accounting, the financial sectors had been indirectly causing considerable deficits in the fight against climate change. The financial institutions' need for incorporation of the risks associated with the high carbon footprint in the fossil-fuel-based energy sector has impeded the energy transition into RE for a long time (Waite, 2020). As the prices of renewable energy are decreasing with time, the amount of investment in the renewable energy sector is increasing tremendously (Heiligttag et al., 2019); (White Paper, 2019). The costs and risks associated with the renewable energy sector compete directly with fossil fuels. As more economies become low-carbon economies, fossil-fuel plants' importance is decreasing. The financial sector is thus seeing an increasing divestiture from investments in fossil-fuel plants. As the risks of renewable resources become better understood, pension funds and other financial institutions are increasingly investing in renewable energy sources.

### **5.2. Expansion, Growth, Development and Digitization of the Energy Grids:**

While investment in RE is necessary and produces many synergistic impacts in the SDG, it is essential to understand that not all places of the world are equally accessible through energy or power grids. There are immense needs for financing in the growth, expansion, and development of the grids and, in some cases – micro-grids to make the energy and power supply accessible to everyone. Developing African countries will significantly benefit from such developments (Schwerhoff and Sy, 2016). Further, vast amounts of financing will be required to digitize electricity grids which have tremendous potential to fight climate change (White Paper, 2019). Modern technologies, including the Internet of Things (IoT), have numerous applications in the energy sector – including activities like energy supply, transmission, distribution, and demand (Motlagh et al., 2020). A range of financial instruments can be employed to help businesses and nations set up better connectivity through the grids, create more micro-grids, and digitize the energy sector (White Paper, 2019).

### **5.3. Network Orchestration and Platforms:**

Digitization can be helpful not just for interconnectivity issues but it can also for creating opportunities for many different needs. Energy could platforms, including the Integrated Distributed Energy Resources (IDER), Building-to-Grid (B2G), Transportation-to-Grid (T2G), the Internet of Energy (IoE), Transactive Energy (TE), Neural Grid, and Smart Cities, have tremendous potential for financial investment and generation of value through meeting energy solutions through the secondary and tertiary routes (2019). Value can be generated in many ways – including increasing the efficiency and accessibility of energy, reducing maintenance costs, increasing reliability, and reducing the problems of hierarchy in power generation and associated risks in the energy sector (Motlagh et al., 2020).

## **6. Conclusion**

Current research shows that climate change exacerbates the hunger and energy crisis in several ways. Drier weather is causing irreversible production losses in the poorest countries. Greenhouse gas emissions are much higher than previously thought. Although many financial investors are beginning to understand the concept of green finance and accept the potential challenges, there is still much to be done. In the energy sector too, there is a need not only to focus on decarbonization options but also to consider other adversities and drive the transformation of the energy sector through three key activities: the development of the renewable technology industry, the expansion, growth, development, and digitalization of the energy grid; and grid coordination and platforms. The involvement of financial institutions is necessary. The growing awareness of these issues among financial institutions and increasing public concern are encouraging and offer hope for rapid and effective results in the fight against climate change.

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