

Forum: SPC 3-Environment

Issue: Balancing Sustainable Climate Goals with agriculture in the context of the Uprising Farmer Protests

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Introduction

All around the world, governments are establishing ambitious climate goals to decrease greenhouse gas emissions, support renewable energy sources and save natural ecosystems. Frequently, these goals include reducing agricultural emissions through the use of fertilizers, decreasing animal methane emissions and preserving land for carbon sequestration. The effects of these measures on the economy concern farmers. Policies restricting the use of pesticides and fertilizers, enforcing the reduction of livestock, and converting farmland for conservation may pose a risk to farmers' profit and production. Farmers also often believe that their contributions to the rural economy and food security are underappreciated.

The intersection of agricultural practices and sustainable climate goals has become a contentious issue, especially with governments across the globe stepping up their efforts to address climate change. This issue has shown itself in several farmer protests in recent years, where members of agricultural communities express their concerns and fight against laws they believe would negatively impact their methods of livelihood. Finding a middle ground between ecological imperatives and farmer well-being is becoming more and more important as climate regulations tighten. Creative solutions, comprehensive communication and adaptable methods that may meet the demands of all parties involved are needed to maintain this delicate balance.



Definition of Key Terms

Sustainable agriculture:

"Sustainable agriculture is farming in such a way to protect the environment, aid and expand natural resources and to make the best use of nonrenewable resources" (National Agricultural Library). According to the Legal Information Institute, for agriculture to be considered "sustainable", it has to meet a few requirements over the long-term. These are:

- "satisfying human food and fiber needs,
- enhancing environmental quality and the natural resource base upon which the agriculture economy depends,
- making the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls,
- sustaining the economic viability of farm operations,
- enhancing the quality of life for farmers and society as a whole".

Climate goals:

"Goal 13 calls for urgent action to combat climate change and its impacts. It is intrinsically linked to all 16 of the other Goals of the 2030 Agenda for Sustainable Development. To address climate change, countries adopted the Paris Agreement to limit global temperature rise to well below 2 degrees Celsius" (United Nations).

Greenhouse gas emissions:

Gases such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) trap heat in the atmosphere which contributes to global warming and climate change. Agriculture is a significant source of methane and nitrous oxide.

Carbon sequestration:



"Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change" (United States Geological Survey). Agricultural practices like reforestation and no-till farming can increase carbon sequestration.

Regenerative agriculture:

Regenerative agriculture is a system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds and enhances ecosystem services, focusing on the regeneration of the soil and environment.

Precision agriculture:

Precision agriculture includes technological advancements in farming that use data and automation to optimize field-level management regarding crop farming. Techniques include GPS-guided equipment, remote sensing and soil sampling to increase efficiency and reduce environmental impact.

Agroecology:

"Agroecology is sustainable farming that works with nature. Ecology is the study of relationships between plants, animals, people, and their environment - and the balance between these relationships. Agroecology is the application of ecological concepts and principals in farming" (Soil Association).

Farmer protests:

Farmers' demonstrations and actions opposing policies or regulations they perceive as harmful to their economic interests are often sparked by new environmental regulations or changes in agricultural policy.

Ecosystem services:



Ecosystem services are benefits provided by ecosystems such as pollination, water purification and climate regulation which are essential for human survival and well-being. Sustainable agriculture aims to enhance these services.

Economic incentives:

Economic incentives are financial mechanisms such as subsidies, grants and carbon credits designed to encourage farmers to adopt sustainable practices and compensate for any potential loss in income during the transition.

Nationally Determined Contributions (NDCs):

Each participating country must submit their own plans for reducing greenhouse gas emissions, known as NDCs. These plans are reviewed and updated every five years to increase ambition and reflect new scientific findings.

Carbon dioxide equivalent (CO₂e):

"Carbon dioxide equivalent or CO₂e means the number of metric tons of CO₂ emissions with the same global warming potential as one metric ton of another greenhouse gas..." (U.S. Environmental Protection Agency).

Background Information

Rising greenhouse gas emissions are causing climate change which poses serious risks to human health, economic stability and world ecosystems. Agriculture both contributes to and is affected by climate change. Methane (CH₄) from livestock and rice paddies, nitrous oxide (N₂O) from fertilized soils and carbon dioxide (CO₂) from deforestation and soil degradation make up a significant portion of the sector's greenhouse gas emissions. The goal of sustainable agriculture is to provide society's demands for food and textiles without endangering the capacity of future generations to supply their own. It includes actions that protect human communities,



the environment, public health and animal welfare. Crop rotation, integrated pest management, conservation tillage and organic farming are commonly used practices.

International agreements such as the Paris Agreement set ambitious targets to limit global warming. These agreements often necessitate national policies that reduce emissions from all sectors, including agriculture. Policies might include emissions caps, taxes on carbon emissions, and incentives for adopting cleaner technologies. Countries have also implemented various strategies to meet their climate commitments.

Farmers frequently believe that they are burdened unfairly in comparison to other industries, such as transportation, energy and industry, which may not be subject to the same strict regulations. Farmers believe that in policy talks and decision-making processes, their crucial role in food production and their contribution to rural economies and communities are underappreciated.

Agriculture's impact on greenhouse gas emissions:

Greenhouse gas emissions from agriculture include methane, nitrous oxide and carbon dioxide. Emissions of the latter two gases can be converted to "carbon dioxide equivalent" (CO₂e) based on their relative contributions to climate change in order to evaluate their overall impacts. In contrast to emissions from burning fossil fuels, greenhouse gas emissions from agriculture are the product of complicated and difficult to measure natural processes.

"Methane comes primarily from livestock digestion (known as enteric fermentation) and the way livestock manure is managed. It contributes the most to agricultural emissions of greenhouse gases. The second largest contributor is nitrous oxide, which results mostly from agricultural fertilizer application to soils and from manure management. Carbon dioxide emissions come from increased decomposition of plant matter in soils and from converting lands to agricultural uses.



Those emissions are partially offset by the increased plant matter stored in cropland soils" (Joiner and Toman).

Planting extra crops (also known as cover crops) outside of the main growing season can help reduce carbon dioxide emissions. Reducing carbon dioxide emissions can also be achieved by using farming techniques that disturb the land less. Limiting the amount of fertilizer applied and not applying it when conditions are more suitable for nitrous oxide generation are two ways to reduce the formation of nitrous oxide. By using manure management techniques that enable the capture and utilization of methane emissions, such as an anaerobic digester, methane emissions from waste can be decreased.

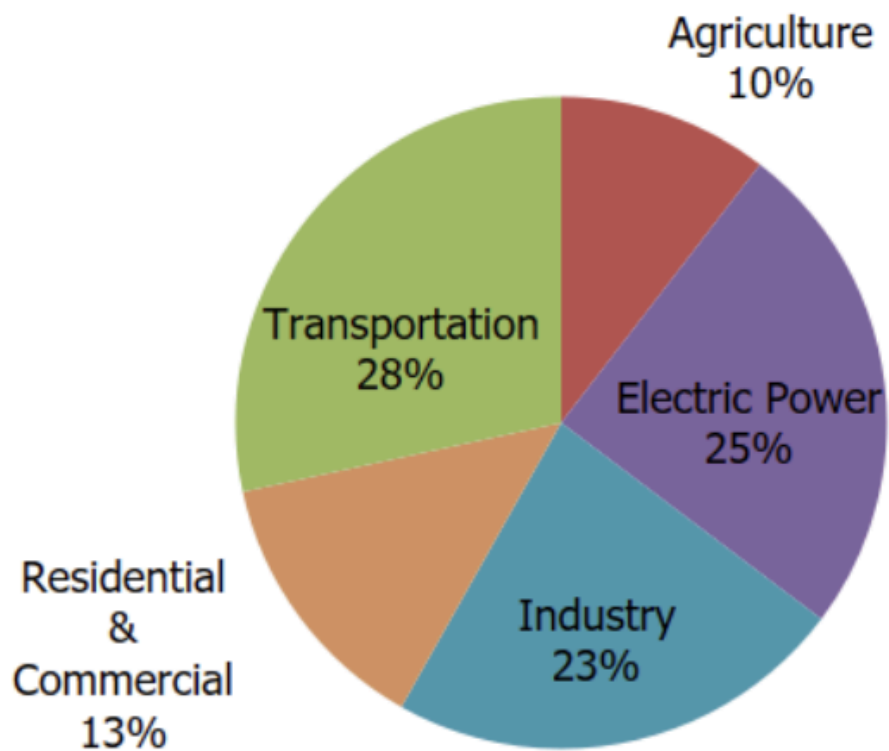


Figure 1: Total U.S. Greenhouse Gas Emissions by Economic Sector in 2022



Impact on farmers:

Farmers might face higher costs as a result of regulations restricting the use of chemical pesticides, fertilizers and other inputs. Due to these inputs' limitations, farmers are forced to choose more costly or labor-intensive alternatives. These inputs frequently increase productivity and lower labor costs. In order to reach emission reduction targets or environmental requirements, farmers might be required to pay additional expenditures in order to meet the new rules. Examples of these costs include infrastructure, technology and equipment purchases.

Restrictions on these inputs have the potential to directly affect farmers' income by lowering crop yields and increasing losses due to pests. Reducing the number of animals is typically necessary for policies aimed at reducing methane emissions, which has a direct negative impact on livestock farmers' productivity and profitability. These regulations can also affect market dynamics. Reduced harvests can cause changes in supply, which can affect pricing and the stability of farmers' incomes. If environmental laws are more strict than in other regions or nations with looser rules, farmers may find it difficult to stay competitive.

Significant decreases in agricultural productivity could threaten the security of local food supplies, especially in areas where local farming is a major source of food. Large agricultural product suppliers may experience a decrease in their export capacity, which could result in a global shortage of food and higher costs. Some policies may encourage or require farmers to shift away from traditional crops to more sustainable or less resource-intensive ones, which could impact the availability and prices of certain food items.

Farmers who are under financial pressure due to lower profitability and rising expenses may experience severe stress and mental health problems. Anxiety and hesitation to participate in long-term innovations or improvements might be increased by uncertainty about future rules and market conditions. Population loss in rural areas can result from financial hardship and declining farming profitability when



farmers leave their properties in search of more secure employment elsewhere. Economic stress can cause social fragmentation, conflicts over land usage and resources and disruption of community unity.

Shifting the switch to sustainable farming methods calls for new knowledge and abilities that some farmers may not have, especially those who work in rural or underdeveloped areas. The lack of access to the latest technologies necessary for regenerative farming or precision agriculture by small and medium-sized farmers might worsen the divide between larger agribusinesses and smaller farms.

Major Countries and Organizations Involved

United States of America:

U.S. Department of Agriculture (USDA) implements programs like the Conservation Reserve Program (CRP) and Environmental Quality Incentives Program (EQIP) to support sustainable agricultural practices. Environmental Protection Agency (EPA) regulates environmental standards impacting agriculture such as emissions and water quality. The United States has a "Farm Bill" policy which includes various provisions and funding for conservation and sustainable agriculture initiatives. The United States also proposed the "Green New Deal" which includes agricultural components aimed at promoting sustainable farming and reducing emissions.

European Union:

The European Commission oversees the implementation of the European Green Deal and the Common Agricultural Policy (CAP). European Environment Agency (EEA) provides data and analysis to support sustainable agricultural practices. "European Green Deal" aims to make Europe climate-neutral by 2050, with significant implications for agricultural practices. European Union's "Farm to Fork



Strategy" aims to create a sustainable food system by reducing chemical use and promoting organic farming.

People's Republic of China:

Ministry of Agriculture and Rural Affairs implements policies to promote sustainable agriculture and reduce emissions. The Ministry of Ecology and Environment coordinates environmental protection efforts, including those related to agriculture. China's "Ecological Civilization Policy" emphasizes sustainable development and integrates ecological considerations into economic planning. Also, China's Five-Year Plans include targets for reducing chemical fertilizer and pesticide use and promoting organic farming.

India:

Ministry of Agriculture & Farmers Welfare oversees agricultural development and sustainability initiatives. Ministry of Environment, Forest and Climate Change coordinates climate policies impacting agriculture. India's National Action Plan on Climate Change (NAPCC) includes the National Mission for Sustainable Agriculture (NMSA) which promotes resilience and sustainability in agriculture.

Food and Agriculture Organization (FAO) of the United Nations:

Aims to achieve food security for all and ensure that people have regular access to enough high-quality food to lead active and healthy lives. Provides guidelines and tools for policymakers and farmers, promoting sustainable land management practices and fostering partnerships for climate-smart projects. Implements integrated landscape management, improving resource use efficiency and supporting the development of sustainable value chains. Recognizes and promotes sustainable practices and systems that have evolved over millennia by supporting local communities and enhancing agrotourism and education.



International Fund for Agricultural Development (IFAD):

Aims to invest in rural people, empowering them to increase their food security, improve the nutrition of their families and increase their incomes. Provides financial and technical support for climate adaptation projects, promoting climate-resilient farming practices and integrating climate risk management into rural development programs. Supports diversified livelihood strategies, strengthens social safety nets and improves access to markets and financial services. Develops financial products and services that facilitate investment in agricultural enterprises, improving financial literacy and enhancing the impact of remittances on rural livelihoods.

United Nations Framework Convention on Climate Change (UNFCCC):

Aims to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. Facilitates the submission and review of NDCs according to the Paris Agreement, supports countries in implementing their climate plans and promotes international cooperation. Organizes workshops, provides technical guidance and facilitates knowledge sharing among countries to improve agricultural resilience and reduce emissions. Mobilizes funding for climate projects, including those in the agricultural sector, enhancing the capacity of countries to access GCF resources and ensuring the effective implementation of funded projects. Provides technical assistance, fosters innovation and promotes the dissemination of climate technologies in agriculture and other sectors.



Timeline of Events

1992	The United Nations Framework Convention on Climate Change (UNFCCC) was established at the Earth Summit in Rio de Janeiro.
1997	The Kyoto Protocol was adopted.
2005	The Kyoto Protocol came into effect.
2007	IPCC Fourth Assessment Report was published which highlights the significant impact of agriculture on climate change.
2010	Cancun Agreements
2015	The Paris Agreement was adopted at COP21.
2019	European Green Deal was announced.
2020	Farmer protests in the Netherlands



2020	Farmer protests in India
2021	COP26 in Glasgow
2023-2024	Farmer protests continue in Belgium, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Spain and Romania.

Relevant UN Resolutions and Other Documents

- Sustainable Development Goals - Goal 13: Take urgent action to combat climate change and its impacts

<https://www.un.org/sustainabledevelopment/climate-change/>

- United Nations Environment Programme - Climate action

<https://www.unep.org/topics/climate-action>

- The Intergovernmental Panel on Climate Change (IPCC)

<https://www.ipcc.ch/about/>

- The Sustainable Development Goals Report 2023: Special Edition



https://unstats.un.org/sdgs/report/2023/?_gl=1*1uefnlg*_ga*MjQoMTEoNzA1LjE2NDU4MDcwOTI.*_ga_TK9BQL5X7Z*MTcxNjI4MjM1Mi4xNi4xLjE3MTYyODI0NTEuMC4wLjA.

- United Nations Climate Change - What is the Paris Agreement

<https://unfccc.int/process-and-meetings/the-paris-agreement>

- United Nations Climate Change - What is the Kyoto Protocol?

https://unfccc.int/kyoto_protocol#:~:text=In%20short%2C%20the%20Kyoto%20Protocol,accordance%20with%20agreed%20individual%20targets.

Previous Attempts to Solve the Issue

Previous attempts to address the issue of balancing sustainable climate goals with agriculture have involved a variety of strategies, policies, and initiatives. Countries and organizations have attempted to realign agricultural subsidies in order to support conservation techniques, organic farming and agroecological systems by redirecting funding towards research and development of sustainable agricultural technology. Initiatives supporting agroforestry and land restoration aim to enhance soil health and carbon sequestration, while conservation plans like the US's Conservation Reserve Program (CRP) have been put in place to compensate farmers for converting environmentally sensitive property to conservation zones.

Agroforestry systems and the adoption of crop types resilient to climate change have been supported by the introduction of climate-smart agriculture (CSA) techniques such as precision farming, crop diversification and water-efficient irrigation techniques. To encourage farmers to plant trees, protect natural ecosystems and absorb carbon in their soils, incentive mechanisms including carbon



markets and payments for ecosystem services (PES) have been established place. High-value ecosystems have been preserved while agricultural productivity has been maximized through the adoption of integrated land use planning and zoning laws in sustainable land use planning.

International agreements and partnerships, such as the Global Alliance for Climate-Smart Agriculture (GACSA) and the Paris Agreement, have promoted cooperation between nations in tackling worldwide issues of agriculture and climate change. The development of drought-tolerant crops, low-emission animal breeds and crop varieties that are adaptable to climate change are the main goals of research and innovation initiatives. Digital technologies like precision agriculture and remote sensing are also being promoted. Through extension services, training programs and farmer field schools, education and capacity-building activities give farmers the information, abilities and resources they need to implement sustainable practices. Even if there has been progress, there are still obstacles to overcome in order to fully implement these programs, provide fair access to resources and deal with the socioeconomic factors that affect agricultural decision-making.

Possible Solutions

First of all, promoting sustainable farming practices is the best idea. This can be done by encouraging the adoption of climate-smart agricultural practices such as agroforestry, crop diversification, conservation tillage and integrated pest management; providing training, technical assistance, and financial incentives to farmers to implement sustainable farming techniques; and supporting research and development efforts to improve the effectiveness and scalability of sustainable agriculture technologies.

Secondly, encouraging nations to invest in agricultural infrastructure that enhances resilience to climate change, such as water management systems, irrigation infrastructure and weather-resistant storage facilities might be a good idea. Nations supporting the development of climate-resilient crop varieties and livestock



breeds that can withstand extreme weather events and changing climatic conditions would help the issue.

Thirdly, protecting and restoring natural ecosystems such as forests, wetlands, and grasslands, which provide critical ecosystem services such as carbon sequestration, water regulation, and biodiversity conservation is important. Delegates can think about implementing sustainable land use planning strategies that prioritize the conservation of high-value ecosystems and biodiversity hotspots.

Strengthening the agricultural policies and regulations is also essential. This can be done by reforming agricultural subsidies to incentivize sustainable practices and discourage environmentally harmful activities; implementing regulations and standards that promote sustainable agriculture, reduce greenhouse gas emissions, and protect natural resources; and developing and enforcing land-use policies that balance agricultural production with environmental conservation objectives.

Last but not least, international collaboration and knowledge sharing is key. Fostering international collaboration and knowledge sharing through platforms such as the UNFCCC, FAO and regional agricultural organizations can be considered. Mobilizing financial resources, technology transfer and capacity-building support to assist developing countries in addressing the challenges of climate change and sustainable agriculture is a good idea.



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