Climate Change

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FSP Best Practices 02
March 2020

A best practice is a method or technique that has been generally accepted as superior to any alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things. This document is part of a series of reports from the Food Security Portal on best practices for emerging topics in agriculture and food security policy.

Introduction

Climate change presents both unique challenges and unique opportunities for global agriculture and food security, particularly in developing countries.

Agriculture interacts with climate change in a number of ways. Changes in the climate can drive more frequent extreme weather events and unpredictable growing seasons, thus increasing the challenges farmers face in producing enough food to sustain the world's growing population. At the same time, agriculture itself is a large contributor to the greenhouse gas emissions (GHGs) that cause climate change.

Research and policies must address both these avenues of interaction in order to help producers adapt to and mitigate climate change in ways that increase crop yields sustainably and ensure future food security in a changing environment.

The following list provides some specific recommendations for best practices for climate

change adaptation and mitigation for agriculture in developing countries, based on recent research.

Overall Lessons

Several overarching practices need to be taken into consideration, regardless of whether a policy is aimed at climate change mitigation or adaptation.

Take local contexts into consideration.

As with any other type of program or policy, climate change-related policies need to be tailored to local needs and conditions in order to be effective. Researchers in Maharashtra, India, a highly agro-ecologically diverse area prone to climate risks, provided a comprehensive framework with which to identify and implement climate-smart agricultural policies that are suitable for specific local contexts.[1] The framework includes the identification and evaluation of CSA interventions using a participatory approach that involves local producers. It also looks at the cost of implementation, inclusivity, potential barriers to adoption, and potential incentives. Finally, the framework took into consideration the roles of a range of stakeholders, from key government agencies, private sector actors, community-based organizations, and producers themselves.

Make policies gender-smart and inclusive.

Research has found that large gaps remain in integrating gender into the design and implementation of climate-smart agriculture programs.[2] Specifically, organizations need to focus on increasing staff capacity to address issues of gender inclusion, increasing funding for support of gender integration, and increasing understanding of local socio-cultural constraints. Efforts to increase evidence and data to support gender integration in climate change policies include the CGIAR Research Program on Climate Change Agriculture and Food Security (CCAFS)'s Gender and Climate Change Survey Data, which seeks to understand gendered climate change perceptions, impacts, coping and adaptation strategies, and constraints to adaptation in sites in Kenya, Senegal and Uganda, and the Gender, Climate Change and Nutrition Integration Initiative (GCAN), which aims to include the cross-cutting issues of gender and nutrition into climate change initiatives and research.Actively engage with target recipients.

Cole and Fernando (2014) also showed the power of offering a dialogue with program participants rather than just the one-way provision of information. In a case study of a program in Kenya, Langat (2017) highlighted how giving producers the opportunity to voice their needs can lead to significant outcomes. In this DFID-led project, local climate change planning committees work directly with producers to establish climate change adaptation strategies; in one neighborhood, a women's cooperative expressed the need for detailed, reliable weather information so that they could plan when to dry their produce. This request led to an agreement with Kenya's Meteorological Department to send daily, localized weather forecasts to cooperative members' mobile phones. According to Langat (2017), this service has reduced women's losses.

Cooperation

Climate change is a global threat, and its impacts cross national and regional boundaries. Governments and other stakeholders cannot address the challenges of climate change in isolation. Cooperation is needed, both among countries and among governments, the research community, and the private sector.

The largest collaborative action on climate change has come from the UN Intergovernmental Panel on Climate Change's Framework Convention on Climate Change and the annual UN Climate Change Conference (COP).

The framework has near universal membership and reached a landmark decision in 2015 at the Convention of the Parties in Paris. The Paris Agreement's main goal is to keep global temperature increases in the 21st century below 2 degrees Celsius above pre- industrial levels, and to try to limit increases even further to 1.5 degrees Celsius. The most recent Convention of the Parties, held in Madrid in 2019 (COP25), reinforced the role of the IPCC in providing scientific input to parties to strengthen their response to climate change. COP25 also focused on the encouragement of new sources of clean energy and the markets- based concept of emissions trading.

Platform for Climate Action in Agriculture (PLACA)

This regional agreement among 11 Latin American and Caribbean countries aims to coordinate and strengthen joint solutions for member countries' agricultural sectors in the context of climate change. PLACA will aid in countries' design, implementation, and evaluation of policies related to climate change, agricultural development, and food security and will help member countries share

knowledge and best practices and formulate national and regional goals. The agreement also draws on the research community, specifically the CGIAR Program on Climate Change, Agriculture, and Food Security (CCAFS), the World Bank, the Economic Commission for Latin America and the Caribbean (ECLAC), and FAO.

Mitigation

Utilize renewable energies.

According to research on renewable energy, similar to the explosive growth in mobile phone penetration, many developing countries currently have a significant opportunity for growth in low-cost, reliable, renewable energy sources, such as solar and wind, that can both reduce greenhouse gas emissions and increase access to electricity in rural areas.[3]

Invest in and enable good forest management.

Deforestation and forest degradation can be significant drivers of climate change. When forest land is cleared for agriculture and industrial activities, carbon dioxide and other greenhouse gases that are typically captured and stored by trees is released, thus contributing to emissions. In addition, deforestation can exacerbate natural disasters like landslides and flooding. Forest management programs, such as the UN's Reducing Emissions from Deforestation and Forest Degradation (REDD+), can help mitigate these negative impacts. Making such programs effective and inclusive, however, will require significant buy-in from governments, private sector actors, and local communities; according to a recent UN REDD+ study in Zambia[4], implementing REDD+ and other similar policies will take broad-based participation and partnership that include all stakeholders, including women, youth, and vulnerable groups, from design through implementation. Such partnerships will allow programs to take into consideration issues such as land rights and prevent further environmental degradation.

Explore financial incentives for mitigation practices.

Some mitigation practices, such as carbon sequestration, can both help slow the progression of climate change and directly improve agricultural productivity, particularly in areas where soil quality has been degraded due to overfarming. Providing payments to low-income and smallholder farmers who engage in carbon sequestration farming methods, such as no-till farming and cover cropping, can help increase the uptake of the mitigation activities. Various programs for payment for ecosystem services (PES) are already in place around the world, including Mozambique's Sofala Community Carbon program.[5]

Recognize that climate change mitigation can aid in economic growth.

A study of Malawi, Mozambique, and Zambia found that global climate change mitigation policies, such as limits on carbon emissions, can help reduce climate impacts, promote economic stability, and spur economic development in low- and middle-income countries, if such countries are exempt from emissions curbs for a period of time.[6] The study found that a modest overall global efforts to reduce emissions could result in a GDP increase of between 2 and 6 percent.

Adaptation

Use innovative financial tools to help producers adapt.

Recent IFPRI work discusses highlighting the potential for financial tools, such as weather-based index insurance, to help farmers adapt to and increase resilience to climate change and extreme weather events.[7] By insuring against risk, these tools can encourage producers to invest in higher value and more climate- resilient crops. As this research shows, however, more data is needed to design tools that are accessible and useful in different local contexts. In addition, cooperation is needed among insurance companies, governments, and development practitioners to make these financial tools affordable for low-income populations.

Invest in a range of climate-smart agricultural interventions, not just one or two.

In a study of CSA interventions in Africa south of the Sahara in mixed crop-livestock systems, researchers identified a range of constraints that can reduce producers' uptake of climate-smart practices: access to technology, high initial investment costs, access to information and data, technical know-how and capacity, and socio-cultural norms, to name a few.[8] The study concludes that policy design needs to take local constraints into consideration and that doing so will often require investment in multiple context-driven CSA interventions rather than just one standard, across-the-board policy recommendation.

Consider role of markets and trade.

A 2017 study examined the impact that markets and trade have on the adaptation of global food systems to climate change. They found that increased trade generally strengthens the ability of the global food system to adapt to climate change and ensure sustainable food security.[9] Increased trade drives economic growth, creates income and employment opportunities, supports agricultural productivity and investment in agricultural R&D, and allows for the movement of agricultural goods from surplus areas to areas of deficit. Protectionist and other trade-limiting policies, on the other hand, could magnify the negative effects of climate change by further reducing the resilience of both smallholder producers and consumers to climatic shocks. The authors suggest that global trade needs to be managed in ways that maximize the benefits of increased market access, minimize risks from market volatility and international competition, and reduce environmentally destructive practices such as deforestation.

Incentivize adoption among communities, not just individuals.

Researchers looked at the use of financial incentives to increase adoption of conservation agriculture practices in Malawi.[10] They found that while financial subsidies did help to increase uptake of such practices, whether a person's neighbor used conservation agriculture also had a strong impact on uptake. Thus, programs aimed at increasing adoption of climate-smart agriculture and climate change adaptation interventions should focus both on incentivizing farmers and on spreading information about good practices among communities.

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