

Climate Finance for Agriculture and Livelihoods

This brief addresses the major challenges and opportunities to financing climate change mitigation and adaptation pathways for smallholder farmers in developing nations. It underlines the need for an innovative and integrated approach to climate finance that can connect rural farmers to public and private finance at the global level. Lastly, it provides recommendations for future actions that can meet adaptation, development and mitigation aims.



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Farmers working in the field, Kabaune Village (Giaki), Kenya

Introduction

A major challenge of the 21st century is to help developing nations undergo a shift to low-carbon, climate-resilient and sustainable agricultural pathways. Farming practices exist that should enable poor smallholder farmers to adapt to climate change, increase agricultural productivity and improve their food security and livelihoods, while simultaneously contributing to climate change mitigation through carbon sequestration.¹

Despite sharing little responsibility for global warming, smallholder farmers in developing nations are the group most vulnerable to climate change and will disproportionately suffer from its effects. Global finance will be necessary to enhance farmers' resilience to increasing climate variability and shocks and insurance mechanisms for adaptation are already being explored.

Key messages

- Up-front public sector finance will be necessary to reduce the investment risk associated with smallholder agricultural projects, overcome the initial investment gap and leverage private capital towards sustainable agriculture.
- Building upon pre-existing local development institutions, strengthening the capacity of community-based organizations and securing land tenure can ensure that project benefits reach farmers and are distributed equitably, increasing project success.
- Investment in smallholder agriculture should take a holistic approach, focusing on the issues of food security and livelihoods and foster mitigation as a co-benefit.
- To increase the effectiveness of recent climate change adaptation schemes, focus should be placed on key areas such as the development of pro-poor insurance markets, addressing issues of affordability for poor farmers, building human resource capacity and using far-reaching, efficient distribution channels.
- Using a networked financing approach that combines many and diverse investments in land can overcome the high risk associated with smallholder farmers and drive investment to promote sustainable practices on a large scale.
- Scientifically robust research frameworks are needed to quantify how management practices can reduce climate risk and attract investment in climate change adaptation projects.

Climate finance has the potential to drive this transition to sustainable agriculture practices that meet mitigation, adaptation and development aims. It comprises both mitigation and adaptation finance, and public and private sector finance to support sustainable development, reduced climate risk and the reduction of greenhouse gases from the atmosphere. This brief examines the constraints and opportunities to financing mitigation and adaptation through private-public investment. Its focus is on the need for climate finance to address mitigation and adaptation in integrated ways, using a series of case studies to highlight lessons learned and future needs.

MITIGATION FINANCE – LOOKING BEYOND CARBON IN BIOCARBON PROJECTS

Mitigation finance supports activities that reduce greenhouse gas emissions or increase sequestration. It includes market- and funds-based carbon finance, both of which have evolved over the past 10 years and show considerable sophistication. In the specific case of biocarbon projects, which sequester or conserve carbon in forests, agricultural systems and other landscapes, most payment schemes have been developed in the forestry sector. In the agricultural sector biocarbon projects are beginning to emerge, but are still limited in number. A recent analysis of seven pro-poor biocarbon projects in Eastern Africa outlined several lessons from project experiences.²

The volume and timing of carbon revenues depends on project type.

Two examples of carbon finance include: Reducing Emissions from Deforestation and Forest Degradation (REDD+) and Agriculture, Forestry and Land Use (AFOLU). While REDD+ schemes can achieve significant reduction of emissions in the initial years and begin selling carbon credits early in the project's lifespan, AFOLU projects can take up to 16 years to reach break-even points.³

Public funding up-front is critical for agricultural projects. At current carbon prices, financing agricultural biocarbon projects from the sale of carbon credits alone is not financially viable.^{2,3,4} Net Present Values (NPVs) for projects targeting smallholder farmers in the Sahel are estimated to be negative at current carbon prices, meaning that the projects would not be worth undertaking financially. Even at high carbon prices (above US\$10-15 per Mg CO₂-eq), these projects are likely to run at the margin of profitability.⁴ To be financially viable to project developers, projects therefore need to secure high levels of up-front funding in order to overcome initial costs.

Up-front funding could be achieved by securing funding from donors during the project planning phase and agreeing on a select number of ex-ante credits to be bought.² However, because international investors are deterred by the high risk in biocarbon projects and few private lenders will wait 15 years or more for a return on investment, these projects rely heavily on public sector support. Without public funding, most agricultural biocarbon projects are not financially viable.

Public-private partnerships are one potential solution. Combining public and private finance in the form of public-private partnerships (PPPs) is one strategy for bridging the financing gap. PPP consists of a contract between a public agency and one or more private companies to deliver a public service or project. By pooling finance and skills, PPPs can share risks, provide loans and credit, or deliver training and hence encourage investment.⁵ Private sector investors who would otherwise be deterred by high risk or low investment returns, are thus more likely to invest.⁵

Ensuring Benefits for Farmers

A fundamental prerequisite for the success of carbon projects is their ability to provide immediate and clear benefits to farmers. Farmers face constraints on financial, institutional and legal fronts, including high costs of initial adoption, poor local institutional capacity, insecure land tenure and significant risks associated with investment in new practices.⁶ Carbon projects must overcome these barriers and secure benefits for farmers in both the short- and long-term.

Not for the carbon

Carbon payments are insufficient for the long-term success of carbon projects.² Model simulations of carbon projects in the Sahel show that farmer NPV, or the perceived sum of revenue over 25 years, would be between US\$36 and US\$71 for smallholder farmers at a carbon price of US\$20 per Mg CO₂-eq, assuming a discount rate of 12%. At a more realistic discount rate of 40%, NPVs would range from US\$0.54 to US\$28.00.⁴ While carbon finance per se offers few benefits to farmers, it is necessary to fund projects by paying for high establishment and maintenance costs.

Since carbon payments are generally not sufficient to encourage farmers to join these projects, the non-monetary benefits from improved practices are the real

keys to project success. These livelihood benefits include increased productivity of annual crops; income from poles, timber and other marketable tree products; improved family health from tree fruits; availability of fuel and firewood; reduced labour; erosion control; soil fertility; and improved water and nutrient efficiency. Many of such benefits serve to both improve farmers' food security and reduce their vulnerability to climate variability and change.

Local institutional capacity is key

The success and efficiency of a carbon project often hinges on the communication and trust that exists among the different players.⁶ Smallholder community projects benefit from strong community groups since they can improve communication, community participation and the provision of extension services.⁷ From the farmers' perspective, partnering with strong, well-established groups that understand local conditions can ensure that their needs are considered throughout project development and implementation, and that they have access to project benefits.⁶

From a project perspective, having strong relationships in place between NGOs and local communities and building on existing projects can accelerate project establishment and lower initial investment and transaction costs.⁷ Working with pre-existing groups of farmers can save developers time and money that would otherwise be necessary to establish critical relationships.⁶ Shifting governance to local communities and partnering with

other institutions or projects can also help increase project viability and reduce high staff and administrative costs.²

Securing tenure can ensure farmer benefits

Unclear or insecure land tenure can prevent farmers from receiving benefits for practices that sequester carbon. In addition to denying smallholders access to financing, tenure issues can lead to conflict within local communities over who owns carbon rights.⁸ In many cases, women and other marginalized groups or populations may not receive an equitable share of carbon revenue where it is

provisioned.⁶ Once financial potential is realized on a landscape, such as in the case of restored lands, projects also run the risk that government agencies and other large interests will claim lands where tenure is not secure.⁶ Furthermore, potential investors in carbon projects may be dissuaded by the risks associated with unclear tenure^{6,9} or expect shorter returns on their investments.⁸ Involving local community members in the development of systems to secure tenure and distribute benefits can promote equity and prevent tenure conflicts.¹⁰

Case Study: Lessons Learned from Western Kenya

Launched in September 2010, the Sustainable Agriculture in a Changing Climate (SACC) project in western Kenya focuses on supporting adoption by smallholder farmers of agroforestry practices that increase farm productivity, sequester carbon and build resilience to climate change. Originally framed as a carbon project, SACC is now evolving into an approach that puts primary emphasis on farm production and climate change adaptation, with mitigation regarded as an additional benefit. The project aims to reach 50,000 farmers within 10 years. Across all elements of the SACC project and its learning agenda, particular emphasis is given to the potential benefits, costs and risks to women and other marginalized and/or vulnerable social groups.

While the project is only in its initial stages, several key lessons stand out so far:

- Farmers' income from tree products alone (fuelwood, poles, timber) during the life of the project is expected to be at least 50 times greater than carbon revenue, which is estimated at only US\$77 over 25 years. In addition, farmers receive indirect benefits from reduced labour to collect firewood, soil improvement, etc.
- Financing the SACC project from carbon credits alone is not viable; instead this initiative and other similar projects will require a combination of carbon and other financing. Considering the full range of socio-economic benefits can greatly increase the overall return on investment.
- Carbon accounting methodologies that are poorly suited to the realities of smallholder farming systems – which require flexibility in planting, management and harvesting – can compromise outcomes for farmers, increase drop-out rates and fail to capture substantial volumes of carbon sequestration.
- Cultural norms can constrain women's participation in decision-making and access to project benefits; measures should be taken to enhance the participation of, and benefits to women.

INSURANCE FOR CLIMATE CHANGE ADAPTATION

Investing in sustainable agricultural practices presents a formidable barrier to smallholder farmers who lack access to credit and information, have high personal discount rates and tend to avoid risks.¹¹ A key component of adaptation is to reduce climate risk sufficiently so that farmers can take a chance on investment. Access to affordable risk mitigation instruments, such as crop or index insurance, can encourage farmers to invest in sustainable agriculture, thus achieving mitigation aims and increasing their resilience.^{8, 11}

Weather index insurance, which covers weather risks such as droughts or floods, is one adaptation measure that should protect rural farmers from climate risk, allowing them to use high-risk but higher production crop varieties. Compared to traditional insurance, weather index insurance has low transaction costs, is very simple to administer and is objective. While traditional crop insurance is centred around damage to crops, index insurance is based on weather patterns such as rainfall. This bypasses the cost of assessing farm damage and removes any incentive for farmers to neglect their farms in order to receive payouts. However, several challenges remain in the expansion of weather index insurance to manage climate challenges:

- **Affordability.** Poor farmers are often a) cash constrained and unable to make upfront payment for the insurance premium; and b) financially illiterate, requiring financial education and training for successful uptake.



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Ugandan woman carrying firewood

- **Supply.** Poor farmers generally are not attractive markets for insurers as the premium per farmer is very low.
- **Data.** Weather data is the key input variable, yet poor data infrastructure often exists in remote agricultural areas or fails to capture local weather variations.
- **Capacity.** There is a considerable human and material capacity gap for expansion of the product to cover multiple weather risks and agricultural products.

- **Basis risk.** Index insurance pays out when a climate-related indicator passes a threshold, independent of whether real losses have occurred, meaning that farmers' vulnerability might not be reduced.

While index insurance is an important innovation, it is not a comprehensive product and cannot eliminate all risks. It should be considered as one component of a holistic risk management mechanism that covers multiple risk types, and should focus

on enabling farmers to adopt new practices that can substantially increase their productivity and income. Incorporating a complementary risk reduction mechanism in combination with the risk transfer (index insurance) has been proven to be a successful strategy in achieving scale. In addition, delivery through existing institutional frameworks and distribution channels has been key to successful implementation.

Weather Index-based Insurance in Action

The Horn of Africa Risk Transfer for Adaptation (HARITA) programme in Ethiopia is an example of a successful weather index-based insurance mechanism. Launched by Oxfam America and the Relief Society of Tigray, together with Ethiopian farmers and several other local and international partners in 2009, the programme enables smallholder farmers to strengthen their food and income security through a combination of risk reduction, drought insurance, credit and savings.¹² The project has scaled up from 200 to nearly 19,000 households since its inception¹², with 2012 drought conditions resulting in over 12,000 farmers receiving insurance payouts.¹³

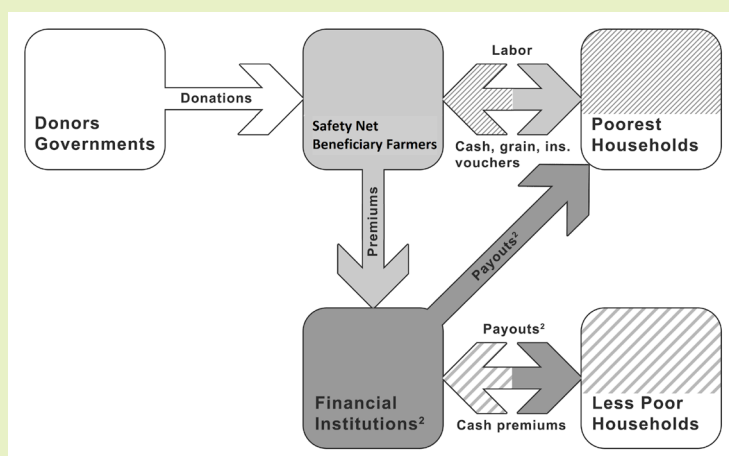


Figure 1. Within the HARITA approach, insurance is integrated with an existing government safety net programme, which provides farmers with cash or food for work. ²Payouts occur when weather index is triggered.¹⁵

HARITA takes a holistic risk management approach, using insurance to complement risk reduction activities such as composting, small-scale water harvesting and improved agricultural practices.¹⁴ To overcome the issue of affordability, it allows the poorest households to exchange labour on risk reduction activities to pay for insurance through an innovative “insurance-for-work” programme.¹² Farmers are organized into village savings groups where they save and borrow from the pool as per their bylaws. In addition, farmers have access to credit for income generating activities through a local cooperative. Furthermore, HARITA actively engages communities in project design, using a team of peer-elected members and focus group discussions to provide community feedback and suggestions.¹⁴ Building on HARITA's success, Oxfam America and the UN World Food Programme have launched the R4 Rural Resilience Initiative, which will scale up the model across Ethiopia, Senegal and other developing countries over the next three years.¹²

PRIVATE INVESTMENT IN SUSTAINABLE LAND MANAGEMENT: A GLOBAL PERSPECTIVE

Within the current global financial system, investment in sustainable agriculture is constrained by the high levels of risk, small-scales and diversity of many agricultural practices. Credit rarely reaches farmers in developing countries, or imposes terms of investment that limit farmers' flexibility and restrict them to maximizing short-term production. A public-private investment model developed by the Munden Project and partners, called Inari, proposes a networked financing approach to deliver investments in sustainable agriculture and forestry that can overcome these barriers and drive sustainability at larger scales.

Risk reduction through diversification. By investing in sustainable practices across a wide range of countries, landscapes, farm types, crop cycles and sizes, in both the developed and developing world, the Inari system reduces the risk from any single project. This risk reduction can provide capital at lower interest rates and longer maturities, while offering investors a high rate of return and smooth cash flows.

Enabling producers. Inari's diverse portfolio offers three key advantages to producers: lower payment amounts to investors,

longer maturity credit and a flexible payment schedule that allows farmers to adjust the size and timing of their payments depending on the year. Together, these benefits give farmers the flexibility to adopt practices that require start-up time or do not cash flow as predictably, to invest in improving or expanding their operations, and to innovate.

The Munden Project has developed a trial model that will be tested in 2013.

THE PUBLIC DOMAIN

- Public investment has an important role to play in financing sustainable agriculture, provided that it is done intelligently. Smart public investment should include clear roles and due diligence, integrating adaptation and mitigation finance with other finance for developing countries to avoid parallel programmes and overlaps, and subsidizing only to the point of financial viability. Investment by multilateral banks (e.g. World Bank), regional development banks and other international financial institutions in a networked finance platform could also reduce interest rates sufficiently to leverage private investment.

RECOMMENDATIONS

Research gaps

- Attracting investment in climate change adaptation projects will require the development of metrics for adaptation and adaptive capacity that are distinguishable from development indicators. For example, justifying public investment requires showing added value over official development assistance (ODA). Demonstrating adaptive capacity will require scientifically robust research frameworks that quantify how management practices can increase resilience to climate variability and shocks across temporal and spatial scales.
- There is a need to test different monitoring, reporting and verification (MRV) systems for evaluating carbon stocks in landscapes, such as comparing inventories with remote sensing estimates in calculating tree biomass. A key aspect is reducing the complexity and cost of MRV in line with treating mitigation as a co-benefit rather than primary goal, and funds-based carbon finance that is not offset-based.

Can Climate-Smart Agriculture Make Insurance Affordable?

Research conducted in Nyando District of western Kenya has shown that farmers are currently unable to cope with climate-related stresses in a sustainable way, often resorting to coping strategies that are detrimental in the long-term. Farmers interviewed identified improving their general standard of living as the most effective way to adapt. Agroforestry can reduce farmers' food insecurity, and hence reduce climate risk, in a number of ways, including: improving farm productivity, increasing environmental sustainability, increasing household wealth, providing opportunities for income diversification and providing several specific coping strategies in the face of droughts and floods.¹⁶ An important area for research is whether selling index insurances in combination with improved management practices could reduce premiums due to the lower climate risk.

Public and private investment

- Public sector finance will be necessary to reduce the investment risk associated with smallholder projects, bridge the up-front funding gap and attract private investment in sustainable agriculture.
- Investment in smallholder sustainable agriculture should take a holistic approach by focusing on the issues of food security and livelihoods, and regarding mitigation as a co-benefit.



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Woman selling African plum in a Cameroon market

Adaptation insurance

- Index insurance is at its early stages and could benefit from: development of sustainable insurance markets that address the risk management needs of low income households; increasing affordability by providing different payment mechanisms for poor farmers; increasing awareness about the role and benefits of insurance; building human resource capacity to minimize basis risk and enhance effectiveness; using remote-sensing technologies and satellite weather data; and encouraging insurance companies to provide insurance products through distribution channels that have extensive outreach.
- Index insurance should be considered as one component of a holistic risk management mechanism, and should focus on enabling farmers to adopt new practices. Incorporating a complementary risk reduction mechanism in combination with the risk transfer can help cover multiple risk types.

Improving local institutional capacity

- Building upon previous development work, engaging with pre-existing groups of farmers, securing land tenure and empowering farmers on the ground by strengthening the capacity of community-based organizations can ensure that benefits reach farmers and are distributed equitably, thus increasing project success. Developing extension services and options tailored to the specific needs and constraints of the poor will be critical to maximizing participation of poorer farmers.

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