

LAND TENURE, CLIMATE CHANGE MITIGATION AND AGRICULTURE

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Momentum is building to include agriculture in carbon financing initiatives, and the stakes are large – for climate change mitigation, for food security and poverty alleviation. For many smallholder farmers, insecure land and resource rights are a barrier to participation in mitigation programmes, but there are ways forward.

The mitigation potential of agriculture must be tapped.

There is growing recognition that agriculture can play a key role in strategies to address climate change. The sector accounts for 14 percent of global anthropogenic greenhouse gas emissions and is a leading driver of deforestation. On the other hand, the mitigation potential of agriculture is large: the equivalent of around 6 billion tonnes of carbon dioxide per year. About 70 percent of this potential can be realized in developing countries. In fact, most low-income households in developing countries live in areas with greenhouse gas mitigation potential.

How can it be achieved?

According to the International Panel on Climate Change (IPCC), about 90 percent of the agricultural mitigation potential lies in increasing carbon sinks, primarily through sequestering carbon in the soil. Widespread implementation of practices such as agroforestry, improved grazing land management, crop rotations and fallows, residue management, reduced tillage and the restoration of degraded lands can provide a sustainable path to realizing this mitigation potential. Smallholder farmers and local farming communities will play a central role in implementing these practices. What is more, enhancing soil carbon brings valuable co-benefits, such as improved soil productivity and greater resilience of the productive capacities in agro-ecological systems, which can reduce poverty and increase food security for smallholder farmers. That is why up-scaling of climate-smart agricultural practices should be a top development priority. It needs to be supported by coordinated efforts to channel financing, strengthen institutional capacity for natural resource management and improve governance in ways that safeguard social equity. A central challenge in this process involves improving governance of land tenure and rights of access to natural resources.

Tenure systems are complex and come in many configurations.

There are many land and resource tenure systems around the world. These systems are often comprised of bundles of rights that differentiate user and management rights from rights to control over the natural resource. Rights to the same resource may overlap, or vary by season, use, gender, technology or territory. Clearly, the tenure system as a whole can be very complex. In addition, tenure rights themselves are often insecure. In many places, locally established user rights are not legally formalized, such as when land is owned by the state but used traditionally by local communities. Unless the reality of land tenure arrangements are taken into account and adequate tenure security provided for all stakeholders, the introduction of climate change mitigation measures may fail to meet their objectives. Indeed, they may cause harm.

Land tenure security is a prerequisite for successful large-scale implementation of mitigation efforts in agriculture, for several reasons.

- **Long-term soil carbon accumulation and conservation requires foresight:** Without tenure security, it may not make financial sense for farmers to adopt land management practices, such as the cultivation of perennial crops, tree planting or construction of water harvesting facilities, that will yield long-term returns on investment.
- **Benefit distribution mechanisms in financing instruments for carbon storage and other ecosystem services must define who the beneficiaries are:** Incentive measures for climate-smart agricultural practices require identification and coordination of recipients, and ways of ensuring accountability for the mitigating action. In situations with unclear tenure, this becomes unfeasible.
- **Land rights are not only an issue for payments, but first and foremost for livelihoods and resource distribution:** If inappropriately designed mitigation programmes are implemented where tenure insecurity still prevails, local farmers may find their use rights destabilized as the value of the land increases. If food production becomes less economically attractive than other forms of land use, this may lead to displacement of resource dependent users, conflict and increased food insecurity.
- **Investment security:** Unclear tenure arrangements may deter external investors due to the risk of conflict and lack of accountability.

Climate change mitigation instruments must be designed to recognize the nature of agricultural systems.

Existing carbon schemes to support mitigation in agriculture have so far been inadequate. Soil carbon sequestration remains outside the scope of the Clean Development Mechanism (CDM). In addition, an agreed system on how to interpret carbon rights in relation to other resource rights is generally absent. Compared to other sectors, setting up mechanisms for remuneration of carbon sequestration activities in agricultural systems calls for special considerations. There are several reasons for this. The annual mitigation potential per hectare of agricultural land is generally low. The process of stable accumulation of carbon in soils requires a longer time frame than sequestration in living vegetation. When designing mitigation incentives involving smallholder farmers, a large number of individual small holdings must be aggregated. Transaction costs for this type of activity tend to be high, involving considerable expansion of local institutional capacity for coordination. Furthermore, implementation of carbon payment schemes, whether market-based or not, is likely to cause changes in claims on natural resources and influence land prices. These changes can potentially alter existing power structures to the detriment of local communities. Those with the most insecure access to resources, such as secondary or temporary users, face a greater risk of increased vulnerability if equitable resource rights allocation is not considered. To avoid situations where vulnerable groups lose their access to natural resources, carbon programmes should seek to provide equitable opportunities for land users with different types of rights and sizes of land holdings. Clear land tenure is essential to apply the necessary processes for obtaining informed consent in the implementation of mitigation programmes. Furthermore, it must be remembered that for smallholders, cultural aspects of tenure, household dynamics and risk aversion are important factors in land-use decision-making. Direct economic benefits are not the only consideration. In conclusion, due to the many diverse social, cultural and ecological factors, a larger spatial and temporal perspective is necessary when designing mitigation programmes for the agriculture sector.

The diversity of land tenure arrangements and social-ecological contexts demand locally adjusted solutions to agricultural mitigation policies.

To capture the full mitigation potential of agriculture, a portfolio of financing mechanisms flexible enough to be compatible with the diversity and dynamics of local tenure conditions needs to be developed. A first step in identifying suitable approaches should involve determining the mitigation potential of the agro-ecosystems

under consideration and how soil carbon sequestration can be promoted in financially, socially and environmentally viable ways under local conditions. For example, rangelands cover at least 24 percent of the world's terrestrial surface. If appropriately managed, these lands hold a great potential to function as a significant carbon sink while providing livelihoods for millions of (agro-) pastoralists. Land tenure systems that include pastoralists have particular challenges, and appropriate tenure arrangements with adequate security in such contexts may look quite different from those in contexts where sedentary farmers are the only resource users. However, in either case, secure rights to land and natural resources is an important step for promoting natural resource management that can provide the long-term benefits of soil carbon sequestration.

The design and implementation of mitigation policies and financial instruments should be in line with processes to increase land tenure security

Sustainable up-scaling of climate-smart agricultural practices relies on policy and institutional structures that can provide tenure security, sanctions against transgression of rights, appeal and dispute resolution mechanisms, as well as balance the interests of different sectors and land users. In some cases, such improvements of governance will require considerable investments in time and resources. There is a risk that parallel processes of improving land and tenure governance, and the development of climate change mitigation initiatives may not be coordinated, which could jeopardize success. Land tenure is a complex institution, and processes to clarify land tenure have to account for this complexity. Quick-fix or one-size-fits-all solutions rarely work. However, in many places around the world, recognition of local rights and improvement of local governance has been proven to be politically feasible. It has also proven to be a cost-effective strategy for alleviating rural poverty. In some cases, to implement mitigation policies where land tenure is unclear, it may be more effective to provide stronger land rights to managers as a compensation for practicing climate-smart agriculture instead of requiring clear tenure rights as a condition for participating in the programme. Tenure security and climate change are two issues among many, and activities undertaken to address these issues do not operate in isolation. To ensure coherency, the principles of climate-smart agriculture should be incorporated in general agricultural development and investment plans. Equitable rights to natural resources, food security and sustainable livelihoods must remain central objectives to development.

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