



## Agriculture in the International Climate Negotiations – Supporting Sustainable Development or Just Dubious Emission Reductions?

### Summary

Climate change will have increasingly negative impacts on agricultural activities through fluctuations – and in many world regions a permanent reduction – in crop yields. Through their direct dependence on agriculture, small-scale farmers in developing countries are hit particularly hard by this development. At the same time, agriculture contributes approximately 15 per cent of global greenhouse gas emissions. Mitigation of emissions in agriculture, in contrast to adaptation, is a relatively new topic within the United Nations Framework Convention on Climate Change (UNFCCC). Currently, it is under discussion to establish a work programme that would mainly deal with mitigation, but also with other climate-related aspects of agriculture. A decision on whether to establish it could be taken at the next Conference of the Parties (COP) in December 2012.

Many developing countries are concerned that the process could be biased towards mitigation and its integration into carbon markets, while other aspects of importance to them could be neglected, such as food security, adaptation as well as avoiding trade restrictions. Furthermore, they point out the complexity of the agricultural sector and existing scientific uncertainties concerning the monitoring of emission reductions. The following recommendations for the future role of agriculture within the UNFCCC can be drawn from the analysis of the international discussion:

- Measures for mitigating emissions in the agricultural sector must consider the multiple functions of agri-

culture. More concretely, such strategies should have benefits for food security, economic and social development, adaptive capacity as well as ecosystems and their services. There are many integrated approaches that fulfil these requirements.

- Often, smallholders do not have clear property rights for the land they are using. Increasing competition for land resources must not result in losses for smallholders. Therefore, either guidelines should be developed or existing guidelines developed by the Food and Agriculture Organization of the United Nations (FAO) and the World Bank should be referred to.
- Existing scientific knowledge should be utilised, and links with existing mechanisms within the UNFCCC should be established. Due to the close connection between agriculture and forestry, the experience from the REDD negotiation process in particular should be taken into account.
- Highest priority must be given to improving the methods for measuring emission reductions from agricultural activities. As long as there continue to be great uncertainties that would require significant efforts to overcome – thereby making such methods unrealisable for many countries – agricultural mitigation projects should not be included in carbon markets.
- A work programme under the UNFCCC could, at first, have two lines of focus – one on adaptation, the other on mitigation.

## Agriculture and climate change – adaptation and mitigation

Agricultural activities and climate change affect each other in two ways: on the one hand, changes in temperature and rainfall as well as the increase in extreme weather events such as droughts and flooding will result in a greater fluctuation of yields and a permanent reduction in production. Therefore, agriculture and the people depending on agricultural activities for their livelihoods must be supported in adapting to these new conditions. On the other hand, global agriculture is one of the sectors with the highest levels of greenhouse gas emissions, its share being about 15 per cent. This number does not include its contribution to processes of deforestation.

Smallholders in developing countries in particular suffer from the impacts of climate change, as agricultural activities are a central element of their livelihood strategies and contribute directly to food security. At the same time, they have the least capacity to cope with the negative impacts. Particularly in sub-Saharan Africa, the proportion of households depending on agriculture is the highest of all world regions, while productivity is the lowest. Access to technologies, input (e.g. fertiliser) and financial resources is scarce, and the state of soils and other natural resources is degrading continuously. Additionally, there are hardly any possibilities to generate income from other activities.

Thus, agriculture has to fulfil several functions: it must contribute directly and indirectly to the food security of a growing world population; it is an important sector for economic and social development; and it should not result in negative impacts on other ecosystems. Furthermore, there is growing recognition that agricultural activities should generate as few emissions as possible and that agricultural systems must be prepared for the impacts of climate change, while at the same time production and productivity must be increased. The multiple challenges and difficulties, as well as the close linkages with other sectors (e.g. forestry), illustrates the enormous complexity of the agricultural sector and for potential solutions for sustainable management strategies.

## Agricultural mitigation is so far only of minor importance in the climate change negotiations

Adaptation in the agricultural sector has been on the agenda of the UNFCCC since the establishment of the Nairobi Work Programme in 2005 at the latest. It plays an important role in the National Adaptation Programmes of Action and will presumably also be a central element of the more long-term National Adaptation Plans.

However, agriculture's role in the mechanisms for reducing emissions is miniscule: in land use, land-use change and forestry (known as LULUCF) as well as in the forest sector (Reducing emissions from Deforestation and Forest Degradation – REDD) it virtually does not play any role; in

the Clean Development Mechanism (CDM), agricultural projects are considered only to a very limited extent and are not of interest to the majority of developing countries. However, the proposals for Nationally Appropriate Mitigation Options, which are intended to support low-carbon development – particularly of the poorest developing countries – show that the agricultural sector may, and will, play an important role in many countries, due to its economic importance.

Since 2009, there have been discussions on establishing a work programme for the agricultural sector under the Subsidiary Body for Scientific and Technological Advice (SBSTA). At the last COP of the UNFCCC in 2011, the parties and admitted observer organisations were invited to share their views on the necessity for – and potential topics of – such a work programme. Based on these statements, the next COP in December 2012 could decide on the establishment of a programme that would deal with options for mitigation, but also with other climate-relevant aspects for the agricultural sector.

## Future integration of agriculture – difficulties and options

While it was mainly countries with a high share of agricultural exports and emissions that pushed the process for integrating agricultural mitigation into the UNFCCC, numerous developing countries – but also non-governmental organisations – have had strong reservations. Critics are concerned about the negative impacts on food security in developing countries as well as issues concerning trade barriers. Furthermore, they are worried that smallholder interests and the need for adaptation are neglected in favour of large-scale industrial agriculture and mitigation. The integration into carbon markets would increase the value of fertile land and thus the competition for land resources. This could have negative consequences for smallholders, especially as they often do not have formal property rights for the land they are using.

There are further concerns that the complexity of the agricultural sector and scientific uncertainties would result in high costs, which would impede the feasibility of the programme for developing countries. The complexity becomes apparent when comparing it to the forestry sector, which, as a land-use sector, is very similar to agriculture but is much more advanced in the negotiation process (Negra / Wollenberg 2011): there are diverse land-use possibilities for agricultural plots and there is a higher proportion of land users with smaller plots. Therefore, the sector is more fragmented. Thus, many small plots would have to be aggregated – particularly in the case of smallholder agriculture – in order to reduce transaction costs and to make such projects economically viable. The higher number of relevant greenhouse gases (carbon dioxide, methane, nitrous oxide) also adds to the

complexity of the agricultural sector as well as the larger amount of potentially interested countries, whereas REDD mainly focusses on carbon dioxide in tropical countries. The permanence issue, which describes the risk of a reemission of the sequestered carbon through changes in land use, may reduce certificate prices of agricultural mitigation projects in carbon markets.

The measuring of emission reductions from agricultural activities is afflicted with several uncertainties. Carbon sequestration in agricultural soils has the largest potential to make a contribution to reducing greenhouse gas emissions in the agricultural sector. However, it is a complex and costly challenge to measure this exchange between soils and the atmosphere. From all these constraints, general doubts emerge concerning the economic suitability of agricultural mitigation, which become even stronger when considering the lacking feasibility for smallholders.

These challenges were also reflected in the submissions by the 24 parties (some of them as representatives of country groups) as well as by the 5 international and 25 non-governmental organisations (Murphy / Boyle 2012). The following aspects were highlighted by both developing and developed countries: the importance of food security, as well as the need for an equal consideration of mitigation and adaptation and for more international cooperation, based on already conducted scientific work. It was also emphasised that new approaches in agriculture should be linked with existing mechanisms under the UNFCCC concerning both adaptation and mitigation. Developing countries additionally stressed the connection between agriculture and poverty reduction and the need for financial support. Furthermore, they claimed that in their countries, the focus should be on measures for strengthening their adaptive capacity. All the countries except one (Bolivia) welcomed the establishment of a work programme.

Both developed and developing countries outlined concrete requirements for the programme, expressing the necessity for reducing uncertainties, assessing the impacts of climate change on agricultural systems as well as identifying synergies and trade-offs between adaptation and mitigation.

### Do not lose sight of important aspects

There is general agreement that there are numerous integrated approaches that can make a contribution to both mitigation and adaptation and at the same time have positive impacts on productivity and other ecosystems (Smith et al. 2007). Many have been important strategies for rural development for a long time. These include improvements in nutrient management, as well as irrigation and crop rotation. Integrated approaches such as organic agriculture and agroforestry, which largely avoid external inputs and instead use existing resources more efficiently, offer significant benefits in terms of a multi-

functional agriculture. At the same time, trade-offs with the other relevant functions (adaptation, mitigation, food security, development) must also be identified and avoided. When implementing new practices and technologies, it must be taken into account that they are realisable for smallholders, who are responsible for a major share of the agricultural production, particularly in Africa. For this purpose, efficient extension services and access to technologies and input as well as to financial resources form an important basis. Such support is particularly essential in the implementation phase of a new practice, when investments are needed and/or yield reductions are to be expected, because normally smallholders do not have the financial means to cope with a temporary decline in their livelihoods. Therefore, their readiness to take risks in establishing new approaches is generally weak.

In the case of stronger support for large-scale industrial agriculture, smallholders must be offered alternative income-generating activities. This might turn out to be impossible in many rural areas. Furthermore, unless it is explicitly integrated, such an approach would presumably not be under the responsibility of the work programme.

When integrating agricultural mitigation into carbon markets, fertile land in particular will increase in value. Additionally, agriculture will increasingly have to compete with other land uses such as forests, biofuels and conservation. Also in that case, negative consequences for smallholders have to be avoided. This aspect, which is of critical importance in the case of lacking property rights for the used land, is already being heavily debated in the ongoing discussion on "land grabbing". The development of guidelines is also recommended for the area of climate change, or one could refer to the "Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security" by the FAO and the "Principles for Responsible Agricultural Investment That Respects Rights, Livelihoods and Resources" by the World Bank. Supportive measures – such as certification models, which have been proven to be effective for the economic and social development of smallholders, regardless of difficulties in implementation – should be pursued and expanded.

As highlighted by several parties, the development of suitable mitigation and adaptation measures should refer to the numerous existing insights from international and scientific organisations such as the FAO and Consortium of International Agricultural Research Centres (CGIAR) and analyse their transferability to other regions. The connection to mechanisms within the UNFCCC should also be pursued in order to avoid unnecessary work and redundancies in the results. Because of the close linkages with the forest sector, experience from the REDD negotiation process can and should be used. In the long run, it should be discussed to merge both sectors into one mechanism. However, due to different stages in the negotiation process, such merging should not happen in

the near future, as this would result in delays, particularly for the REDD process.

Due to numerous overlaps, decades of experience in rural development should be drawn upon. On the other hand, new aspects of climate change must also be mainstreamed into rural development and other relevant sectors (e.g. trade, forestry) in order to promote the generation of learning effects and not jeopardise the objectives of development measures. In the trade sector, harmonisation with processes within the WTO should be pursued.

There is general agreement that methods for measuring and monitoring emission reductions and carbon sequestration through agricultural activities have to be improved in order to increase their accuracy and to reduce costs. This is an indispensable precondition for a future integration of agricultural mitigation into carbon markets. Approaches, whose general impacts on emissions and other ecosystem components are not yet clearly defined, and whose feasibility for and impacts on smallholders are unclear, should be subject to strict monitoring procedures and should not be allowed for accounting in any market mechanisms until these uncertainties are resolved. This refers, e.g., to conservation agriculture and the utilisation of biochar.

Finally, the work programme should deal with financing options at different levels (multilateral, bilateral, national) and the utilisation of existing financing instruments within the UNFCCC and the Kyoto Protocol. While in the beginning, the support of best practices will presumably be mainly financed through public funds, in the medium term the involvement of the private sector should also be pursued. However, in this case, it must be ensured that this commitment stays within the limits of guidelines for a sustainable, climate-resilient and low-carbon agriculture that have yet to be developed.

Due to the numerous concerns about the integration of agriculture into the climate regime, and due to different stages of development, negotiations can be expected to become controversial. Therefore, it might be advisable in the beginning to establish two lines of focus within the work programme – one of which would be on adaptation, the other on mitigation. In the medium term, these lines would then merge again. Yet, even when choosing this pathway, integrated approaches with positive effects on a multifunctional agriculture should be preferred. Safeguards for monitoring social and ecological aspects – as is already being discussed in the REDD process – may be helpful tools in this regard.

## Literature

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