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Submission on behalf of Wetlands International

To the Subsidiary Body for Scientific and Technological Advice (SBSTA)

29 August 2013

Concerning methodological issues under the Kyoto Protocol: Land use, land-use change and forestry under Article 3, paragraphs 3 and 4 of the Kyoto Protocol and under the clean development mechanism (SBSTA)

This submission is in response to the invitation in the draft conclusions proposed by the Chair (FCCC/SBSTA/2013/L.5, paragraph 5, dated 12 June 2013) for:

Views on specific possible additional LULUCF activities under the CDM and specific alternative approaches to addressing the risk of non-permanence under the CDM.

This submission re-introduces the proposal made by Wetlands International in September 2012 to add the new activities "Avoided drainage" and "Rewetting" to the CDM and provides the rationale behind this proposal. The submission highlights:

- The rationale for adding "Avoided drainage" and "Rewetting" as additional LULUCF activities to the CDM;
- The definition of the new activities "Avoided drainage" and "Rewetting" under the CDM;
- Methodological guidance;
- Applicability conditions.

For more information

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Using the Clean Development Mechanism to mitigate emissions from peatlands:

"Avoided drainage" and "Rewetting" as new CDM activities

Introduction

Currently, the only land-use, land-use change and forestry (LULUCF) activities that are eligible under the Clean Development Mechanism (CDM) are afforestation and reforestation (A/R), which allow for the generation of credits by net removal by sinks. This could include afforestation and reforestation of wet organic soils (peatlands), e.g. with peatswamp forest tree species.

Conservation, rehabilitation and improved management of (non-forested) peatlands are currently not eligible under the CDM, although the potential for reducing high greenhouse gas emissions is large. Including avoided peatland drainage and peatland rewetting in the CDM would therefore cover an important gap and provide an incentive for very effective and low cost measures for climate change mitigation. In addition, these projects would deliver significant non-carbon benefits in terms of ecosystem services, biodiversity, indigenous people's rights, and prevention of soil subsidence and fire hazards.

For the CDM to become a more useful tool to reduce emissions from peatlands, Wetlands International proposes to expand the range of applicable activities by two new activities under the CDM: "Avoided drainage of peatland" (cf. avoidance of deforestation under REDD+) and "Rewetting" (cf. the Kyoto Protocol art. 3.4. activity Wetland Drainage and Rewetting – WDR).

Rationale for adding Avoided drainage and Rewetting as additional LULUCF activities to the CDM

On only 3% of the world's land surface, peatlands hold 30% (550 GT carbon) of all soil carbon, an amount equivalent to 75% of all atmospheric carbon and twice the carbon stock of the entire forest biomass of the world. The vast majority of the carbon in peatlands is stored below ground, in the peat soil. This carbon is released to the atmosphere when the peatland is drained, when vegetation is (partly or totally) removed, and when peat fires occur.

Most conventional land use practices on peatlands require drainage. Peat oxidation due to drainage leads to the release of the stored carbon back into the atmosphere as CO_2. Due to the enormous size of the peat carbon pool, drained peatlands have become one of the major global sources of GHG emissions. Altogether the global CO_2 emissions from drained peatlands (covering a mere 0.3% of the global land surface) amount to some 2 Gigatonnes CO_2 annually, equivalent to almost 6% of the global anthropogenic CO_2 emissions, representing almost 25% of the total carbon emission from the LULUCF sector. Unlike the emissions from forest clearance (which are largely instantaneous), the emissions from drained peatlands continue for decades and even centuries as long as the land remains drained and the peat continues to oxidise.

Because drained peatlands are a hotspot for GHG emissions, ensuring that peatlands remain wet (through avoiding drainage of wet and rewetting of drained peatlands) is one of the most cost-efficient measures to mitigate climate change. Conserving and rehabilitating peatlands does not mean that these areas become off-limits to economic activity. Several options for sustainable use of wet peatlands exist, and local communities have made use of such opportunities for centuries. In addition, peatlands can be cultivated with crops adapted to the wet soil conditions – a practice known as *paludiculture*.

The drainage of peatlands has other significant impacts besides GHG emissions. Key among these is soil subsidence, a phenomenon whereby peat soils loose height due to drainage and resulting peat oxidation, shrinkage and compaction. Initial subsidence in newly drained areas may reach 50 cm per

year. After a few years, the subsidence rates vary between 1 and 10 cm per year. The process continues as long as drainage continues, until all peat is gone. Subsidence leads to increasing costs of drainage, increased vulnerability to flooding and salt intrusion, and often results in significant land loss. Peatland drainage also results in habitat destruction with significant implications for local biodiversity, productivity and ecosystem services. The occurrence of peat fires, resulting from increased susceptibility to fire due to drainage, has not only led to losses of timber and other natural resources, but has also profoundly affected regional public health and caused major economic losses in transport and tourism, due to transboundary haze pollution.

Maintaining peatlands in good condition can provide local communities with enhanced economic and biodiversity benefits, contributing to sustainable development. Well-functioning ecosystems such as peatlands also have greater resilience to climate change which will aid in their natural adaptation.

In light of the above, Wetlands International proposes to expand the range of applicable LULUCF activities to the CDM by adding the following activities:

"Avoided drainage of peatland" and "Rewetting"

These new activities should be applicable to all organic soils across all agriculture, forestry and land use (AFOLU) categories and should involve:

- Avoided drainage of peatland;
- Rewetting of drained peatland (also including A/R and other land use, provided that the land is rewetted and is kept wet).

Practices that increase or maintain the level of drainage or that convert or clear native ecosystems must **not** be eligible for these new CDM activities.

Practises that could be allowed under these new activities would include:

- Conservation;
- Rewetting and rehabilitation of degraded peatlands;
- Paludiculture;
- Reducing drainage depth to a level that substantially reduces CO_2 emissions and choosing crops that are adapted to high soil moisture;
- Peat fire prevention.

Definition

The proposed definition of the new CDM activities is informed by the KP art. 3.4. definition of "Wetland drainage and rewetting" (Decision 2/CMP.7, Annex A 1. (b)):

"Avoided drainage" is the avoidance of drainage on land with organic soil that covers a minimum area of 1 hectare, where drainage is the direct human-induced lowering of the soil water table.

"Rewetting" is the direct human-induced partial or total reversal of drainage on land with organic soil that covers a minimum area of 1 hectare.

Applicability conditions

As GHG emissions from drained organic soils may be substantial under each land category, 'Avoided drainage' and 'Rewetting' may be beneficial under each land use category. Therefore this new activity should be applicable to all organic soils across all agriculture, forestry and land use (AFOLU) categories.

Practices that could be allowed under this new activity would include:

- Conservation of intact peatlands;
- Rewetting and rehabilitation of degraded peatlands;
- Paludiculture;
- Reducing drainage depth to a level that substantially reduces CO_2 emissions and choosing crops that are adapted to high soil moisture;
- Peat fire prevention.

Conservation of intact peatlands

Conservation of the remaining peatlands in their natural wet state is the best option to avoid globally significant emissions through peat oxidation and fires.

The major obstacle to conserving intact peatlands is the lack of recognition of their multiple ecosystem services and their biodiversity. This lack of recognition results in a situation whereby short term economic gains from conversion of peatlands to plantations or other forms of drainage-dependent use supplant the long term gains in terms of climate change mitigation and other ecosystem services. The new activities “Avoided drainage” and “Rewetting” under the CDM could address this stumbling block.

Keeping intact peatlands undrained does not mean that they cannot be used – sustainable gathering of plant products, hunting and fishing are perfectly compatible activities with peatland conservation as well as biodiversity conservation and eco-tourism.

Rewetting and rehabilitation of drained peatlands

The rewetting of drained peatland involves the partial or entire reversal of former anthropogenic drainage by elevating the average annual water table. The aim is to achieve permanent water saturation of the entire peat body, by raising the water table to close to the peat surface and by reducing the amplitude of the water level fluctuations.

Rewetting is achieved by reducing water losses from the site (by reducing superficial drainage, surface runoff, sub-surface seepage, groundwater extraction and evapotranspiration) and by, where relevant, increasing water supply from the catchment. Water availability and relief are often the major factors that determine the feasibility of rewetting an area, and these may have changed to an extent where optimal rewetting has become impossible. Partial rewetting will in these situations still reduce environmental risks such as peat fires and erosion, as well as decreasing the rate of GHG emissions.

Peatland rehabilitation aims at revitalising the peat accumulation process. Rehabilitation always involves rewetting. Rehabilitation often requires complete hydrological systems (full peat domes, sub-domes, other integral hydrological units) to be available for rewetting and aims at restoring and preserving the ecosystem services at the landscape level. In addition to rewetting, in the tropics reforestation with indigenous tree species, fire prevention and establishment of fire control capacity are critical for successful and sustainable peatland rewetting and rehabilitation.

Paludiculture

Keeping or making peatlands wet prevents and reduces environmental impacts, but implies that the area is lost for standard agricultural use, since most conventional cultivated plants require low water tables and heavy machinery is not adapted to water logged conditions.

Paludicultures are land management techniques that use biomass from wet and rewetted peatlands under conditions that maintain the peat body, facilitate peat accumulation and provide the ecosystem services associated with natural peatlands. Paludicultures allow to stop peat oxidation and simultaneously to provide sustainable harvests from peatlands. Paludicultures use only that part of net primary production that is dispensable for peat formation. Paludicultures, thus, may have a double positive climate change mitigation effect: they avoid greenhouse gas emissions (by preventing peatlands being drained or by rewetting drained peatlands) and the biomass produced may replace fossil raw materials and fossil. Besides for food, feed, fibre, and direct combustion, the biomass from

paludiculture can be used as a raw material for industrial biochemistry, for producing high quality liquid or gaseous biofuels and for synthesizing pharmaceuticals and cosmetics. For rewetted sites, the sale of 'carbon credits' from emission reductions by rewetting can provide income in addition to the earnings from the biomass production for energy itself. For more information on paludiculture see: Joosten, H., Tapio-Biström, M. and Tol, S. (eds), 2013, *Peatlands - guidance for climate change mitigation by conservation, rehabilitation and sustainable use*. Second edition. Rome, FAO and Wetlands International (available on www.wetlands.org/peatlands-guidance).

Peat fire prevention

Millions of hectares of drained peatlands in the world have such low productivity and have become so degraded that they have been abandoned. In these peatlands, the old drainage systems continue working long after abandonment which causes the peat to remain dry. In the absence of management, abandoned drained peatland sites are very susceptible to fires and once a peat and/or forest fire occurs, large amounts of CO_2 are released into the atmosphere.

Peat fires usually have an anthropogenic cause. A peatland is prone to fire if it is:

- drained and dry;
- abandoned (without regular surveillance); and
- regularly visited by people (e.g. for hunting, gathering, recreation).

Peatland fires can only be prevented when peatlands have a clear economic value (which provides for appropriate management) or when they are effectively rewetted. As long as rewetting and regular economic use are not implemented, fire control must attempt to prevent hazards. Effective fire control includes:

- monitoring by satellite or airborne observation, watchtowers and ground patrols;
- intensive control of fire hotspot areas
- establishing hydrants or ponds to guarantee water availability;
- stand-by of sufficient fire brigades;
- training in fire prevention/suppression and disaster management; and
- adequate communication structures and coordination.

It must be noted that the high costs of maintaining an operative fire control infrastructure, combined with the abundance of lightly inflammable fuel make fire control in drained and abandoned peatlands a less than optimal solution. It furthermore does not solve the problem of continuing greenhouse gas emissions from microbial peat oxidation. Whereas the costs of rewetting may initially be high, in the longer run rewetting is always preferable.

Non-applicable projects

Projects that lower or maintain the level of drainage or that involve conversion from native ecosystems are not eligible. Some forms of biomass production on peatland (i.e. paludicultures with mosses, alder, papyrus, reeds, sedges, and willow) are compatible with rewetting and may even lead to peat accumulation in the long run. It should be noted that by decision of the CDM Board (Sept. 2010), plantations on peat soils are no longer supported by the Clean Development Mechanism.

Due to the existence of extensive local, regional and global markets, projects that avoid peat mining are likely to suffer significant (and potentially 100 percent) leakage and therefore are not eligible. Projects that serve the demand side and avoid peat mining by providing alternatives for peat as fuel or substrate, are outside the scope of AFOLU but may qualify under another sectoral scope.

Methodological guidance

In recent years significant research has been conducted which now allows for monitoring GHG emission savings from peatland rewetting and conservation based on variables that are easy to measure.

Accounting for the new CDM activities 'Avoided drainage' and 'Rewetting' shall be based on estimation methodologies for wetlands, lands converted to wetlands and land use on drained organic soils in the Intergovernmental Panel on Climate Change (IPCC) guidelines most recently adopted or encouraged by the Conference of the Parties, and any subsequent clarifications agreed by the Conference of the Parties. The latter will include the guidance currently under preparation by the IPCC, including the '2013 Supplement to the 2006 IPCC Guidelines: 'Wetlands' and the '2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol', once adopted by the Conference of the Parties in 2013.

Additionality

As all CDM projects, Avoiding drainage as well as Rewetting projects must be additional. Additionality can be demonstrated using the Voluntary Carbon Standard (VCS) Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (VT0001) or similar tools to be developed under the CDM. The VCS tool includes 1) identification of alternative land use scenarios to the AFOLU project activity, 2) investment analysis to determine that the proposed project activity is not the most economical or financially attractive of the identified land use scenarios or 3) barrier analysis and 4) common practice analysis.

Permanence

Avoiding drainage as well as Rewetting projects under the CDM must demonstrate the permanence of the peat carbon stock. Following the practice established under VCS, the maximum quantity of GHG emission reductions that may be claimed by the project is limited to the difference in peat carbon stock between project and baseline scenario after a 100-year time frame. This limit is established to allow CDM projects with substantial emission reductions in peatlands that cannot be fully rewetted or where a slow but continuous peat loss remains also under natural and fully restored conditions (as in the Indonesian Mega-Rice Project area, cf. Dommain, R., Couwenberg, J. & Joosten, H. 2011. Development and carbon sequestration of tropical peat domes in south-east Asia: links to postglacial sea-level changes and Holocene climate variability. Quaternary Science Reviews 30: 999-1010).