SUBMISSION ON FURTHER ADVANCING THE DURBAN PLATFORM FOR ENHANCED ACTION (ADP)

Opportunities for actions with high mitigation potential, including those with adaptation and sustainable development co-benefits.

Wetlands International, 30 March 2014

The ADP invited Parties and admitted observer organizations to submit to the secretariat, by 30 March 2014 and regularly thereafter, information on Opportunities for actions with high mitigation potential, including those with adaptation and sustainable development co-benefits, as referred to in decision -/CP.19 "Further advancing the Durban Platform, paragraph 5(a), including their mitigation benefits, costs, co-benefits and barriers to their implementation and strategies to overcome those barriers, including finance, technology and capacity-building support for mitigation action in developing country Parties. Wetlands International welcomes the opportunity to contribute to the thinking on the organisation of future work of the ADP.

This submission stresses the need for enhanced action with respect to *the protection and restoration of natural ecosystems* in efforts to reduce greenhouse gas emissions. About one quarter of all human induced emissions come from agriculture, forestry and other land use (AFOLU), mainly from land use change, fertilizer use, livestock and peatland degradation.

Peatlands

With this submission, we highlight the mitigation potential of peatlands (~organic soils). Peatlands in drained state cause 5% of current global emissions, while these drained peatlands cover only 0.3 percent of the global land surface. This means that peatlands should be treated as hotspots for emissions reductions; i.e. as areas of land with very significant emissions, but which enables to concentrate MRV investments. The trend of conversion is very rapid, especially in the tropics. Worldwide, CO2 emissions from drained peatlands have increased by 25% since 1990. More than 50% of emissions are derived from peatland conversion and land-use in just a few specific countries, such as in Southeast Asia[1].
Besides its mitigation potential, the wise use of peatlands also has strong benefits for increasing resilience to climate change and for sustainable development. The conservation and restoration of peatlands should therefore be one of the priorities to be addressed in order to effectively deliver on the mandate of the ADP as per Decision 1/CP.17 to launch a work plan on enhancing mitigation ambition pre- and post 2020 to identify and to explore options for ensuring the highest possible mitigation efforts by all Parties.

Peatlands are wetlands with a thick water-logged organic soil layer (peat) made up of dead and decaying plant material. Peatlands include moors, bogs, mires, peat swamp forests and permafrost tundra. Peatlands provide a range of ecosystem services, which are relevant for climate change adaptation (e.g. water regulation) and mitigation (e.g. carbon storage).

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[1] Joosten, H. 2009. The Global Peatland CO2 picture. Peatlands status and emissions in all countries of the World. Ede, Wetlands International. 10pp (available at http://tinyurl.com/yaqn5ya)

Peatlands worldwide hold 30 percent (550 GT carbon) of all soil carbon, an amount equivalent to 75% of all atmospheric carbon and twice the carbon stock in the entire forest biomass of the world. The 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, because the carbon stored in the peat layer oxidizes at such processes and is released as CO2. Agriculture and forestry (crops such as maize, palm oil and pulp wood), peat mining (extraction for growing media and to burn for energy), and overgrazing have so far destroyed about 25% of the peatlands on Earth[2].

High concentration of emissions on small areas of land

Emissions from drained peatsoils are disproportionally large. While peatlands cover 3% of the world's land surface, drained peatlands cover a mere 0.3 % of the global land surface. Globally, annual emissions from drained and degraded peatlands, including from peat fires, amount to around 2 gigatonnes of CO2[3] or about 5% of total anthropogenic CO2 emissions. Unlike the emissions associated with forest clearance, which are largely instantaneous, the emissions from drained peatlands continue for as long as the peatland remains drained and the peat keeps oxidizing; i.e. for decades and even centuries. When drained, deforested or degraded, peatlands release the peat carbon several magnitudes faster than it has been sequestered.

The largest amounts of emissions stem from drained tropical peatland forests in Southeast Asia. But emissions from peatlands are also high in Europe, China, US, Papua New Guinea, and Uganda. Countries such as Canada, the Asian Part of Russia, and Brazil have large primarily intact peat stocks which should be protected. The global peatland status and drainage related emissions are documented in The Global Peatland CO2 Picture.[4]

Figures from e.g. the EU make the case that peatlands should be treated as a key category or hotspots for reducing emissions from the land use sector. CO2 emissions from peatlands represent over 95% of the CO2 emissions from agricultural land use in the EU (soil emissions), although peatlands only make up about 6% of the total agricultural land in the EU[5]. 75% of EU crop and grazing land related emissions is from peatland (organic soils: 54 484 gG CO2-eq and all soils: 72 556 gG CO2-eq[6]. This pertains to only a minute area of agricultural and grazing land: 1.6% of croplands and 2.8% of grasslands and combined 2% of croplands/grasslands[7].

Reducing emissions from peatlands

Emissions from peatlands can be avoided and reduced. The key rule to avoid emissions is to keep peatlands in wet condition. Once drained, emissions can be reduced or halted by

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[2] Parish, F., Sirin, A., Charman, D., Joosten, H., Minaeva, T. & Silvius, M. eds. 2008. *Assessment on peatlands, biodiversity and climate change*. Kuala Lumpur, Global Environment Centre and Wageningen, Wetlands International. 179 pp.

[3] Joosten, H. 2009. The Global Peatland CO2 picture. Peatlands status and emissions in all countries of the World. Ede, Wetlands International. 10pp (available at http://tinyurl.com/yaqn5ya)

[4] Joosten, H. 2009. The Global Peatland CO2 picture. Peatlands status and emissions in all countries of the World. Ede, Wetlands International. 10pp (available at http://tinyurl.com/yaqn5ya)

[5] Derived from UNFCCC EU country reports: http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php

[6] Table 5C National Inventory Report (NIR) for the EU, submission to the UNFCCC 2012: http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php

[7] See Tables 5B and 5C, columns C and D of same publication

rewetting. The key management options both for cultivated and uncultivated peatlands are[8]:

1) **Priority: conserving peatlands in their undrained state**. Maintaining peatlands in their wet condition, i.e. refraining from draining peatlands, allows the accumulation and maintenance of the enormous stocks of soil organic carbon that we call peat. It is one of the most cost-effective ways to avoid new emissions. Given the limited area peatlands cover and the huge carbon stocks they contain, this strategy would benefit from a globally focused programme. Conservation avoids expensive investments needed for (sometimes unsuccessful) repair.

2) **Applying land use that are compatible with wet conditions.** Conserving and rehabilitating peatlands does not mean that these areas become off-limits to economic activity. Where natural peatlands are already in use or have to be converted to productive uses, land use options that are compatible with wet conditions, so-called paludicultures could be developed and implemented. Paludicultures help stop peat oxidation and simultaneously provide sustainable harvests from peatlands. Various options for site-adapted land use on wet and rewetted peatlands have been developed and tested, including traditional forms of land use. Low intensity grazing is also practiced as a sustainable land use and can, at the right level, deliver food and fiber while maintaining a vegetation cover and the carbon store and the related multiple benefits. Also local communities have applied sustainable use of wet peatlands for centuries such as fisheries, hunting, the cultivation of low-intensity crops and the collection of wild berries and mushrooms.

3) **Rewetting drained peatlands.** Peatlands that are drained and currently used for drainage-based agriculture or forestry should be rewetted and rehabilitated. This is especially easy in areas where peatlands have already been abandoned or where economic benefits of current use are low or even negative.

4) **Adapting management of drained peatlands in productive use.** In existing drainage based land use, negative environmental and socio-economic impacts can be restricted by minimising drainage, avoiding land clearing by fire, limiting fertilization, avoiding ploughing, cultivating permanent crops whose shade reduces surface temperatures and crops that are adapted to high soil moisture.

A combination of the above approaches is necessary to reduce emissions. Conservation alone will merely maintain annual GHG emissions on the status quo level, because emissions from already drained peatlands will continue. Therefore, a combination of conservation, peatland rewetting and reforestation of already degraded and drained peatlands is necessary to decrease annual emissions from peat.

<u>Co-benefits</u>

Avoiding land subsidence and flooding.
An ignored issue is that the oxidation of peat soil, as a result of drainage, leads to soil subsidence, or lowering of the peat soil. When drained, the peat oxidizes and all peat above the

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[8] Joosten, H., Tapio-Biström, M., Tol, S., (eds.), 2012. Peatlands – guidance for climate change mitigation through conservation, mitigation and sustainable use – second edition. Mitigation of Climate Change in Agriculture series 5. FAO and Wetlands International, available at www.wetlands.org.

drainage level will eventually be lost, which causes increased flooding risks in low lying peatlands all over the world, as well as salt water intrusion in coastal lowland peatlands. Subsidence and the related flood risk is a well-known and inevitable phenomenon in all places in the world where lowland peatlands have been converted to drainage-dependent land-uses. Peat soil subsidence is faster in the tropics due to higher temperature and flood risks are more severe because of the high precipitation. If current drainage based land use on tropical peatswamps in Southeast Asia is not changed radically, subsidence and flooding of lowland peatlands will become unavoidable with tremendous land loss and subsequent socio-economic consequences. Pump-operated drainage and extensive dike systems will likely not be possible in the wet tropics; both in an economic sense and practically it does not seem feasible, considering the extensive areas involved and the huge quantities and peaks of precipitation. Mitigation costs will surpass the revenues of current land use.

Water regulation
Peatlands are also critical for water regulation. Peat soil consists of 90% of water. Peat soils are generally meters deep and they store and maintain large quantities of water in the soil and within the surface micro relief. Therefore, peatlands play an important role in protection against floods after heavy rainfall and in ensuring a supply of clean water in dryer periods in the year.

Biodiversity conservation
Peatlands also provide a home to many endemic plant and animal species, including species that are classified as critically endangered and only found in peatlands. Furthermore, they contribute to food security and poverty reduction.

Finally, well-functioning peatlands have greater resilience to climate change which will aid in their natural adaptation.

<u>Costs</u>
Conservation of undrained peatlands is a very cost-effective management option. It keeps ecosystems intact and avoids expensive investments needed for (sometimes unsuccessful) repair or expensive investments to protect against flooding. The fact that such a large amount of emissions stems from such a small area of land indicates that tackling emissions from peatlands will be cost-efficient and has a minimum impact on the agricultural sector, while bringing about several additional benefits in terms of biodiversity, water regulation and other ecosystem services. For many areas peatlands need to be mapped and delineated.

A reasonable overview of major peatlands occurrences in the tropics can rapidly and relatively cheaply be accomplished by combining modern remote sensing techniques with a review of the dispersed literature and limited ground truthing. The Joint Research Centre (JRC) is preparing for the development of the Global Peatland Atlas.

Funding peatland conservation and restoration entirely through climate financing mechanisms (e.g. REDD, NAMA's) could be problematic in case the short-term gains from the conversion of peatlands (e.g. to oil palm cultivation) cannot be matched by carbon credits. However, if the long-terms costs to society from the loss of land and flooding (due to soil subsidence) and land degradation (becoming wastelands) are added on top of the costs of high emissions, this provides good reasons for conserving the remaining undrained peatlands.

Additional funding can for instance be created through development initiatives when linking climate change mitigation with securing livelihoods and providing new and sustainable income options for local people. Importantly, conserving and rehabilitating peatlands does not mean that these areas become off-limits to economic activity. While drained based activities will no longer be possible, the private sector can gain as well by developing land use options that are compatible with wet conditions (paludiculture).

Barriers to implementation and strategies to overcome those barriers

Monitoring emissions and emissions reductions from peatlands
Peatland GHG fluxes are dependent on a wide spectrum of site parameters that vary strongly over the course of year, including water level, temperature, vegetation growth and land use. These fluxes must be quantified for reporting and for accounting possible emission reductions. In recent years, much progress has been made in quantifying GHG fluxes from peat soils. Credible methods for measuring, reporting and verifying (MRV) emissions and emissions reductions from peatlands are available and various assessment methodologies are under development and being tested. The Verified Carbon Standard (VCS) has published guidance for projects that aim for the Rewetting of Drained Peatlands and for Conservation of Undrained or Partially drained Peatlands. Methodologies under this guidance explain step-by-step how a project can estimate its emissions reductions or removals. The Intergovernmental Panel on Climate Change (IPCC) provides methodological guidance in this area and a *Supplement to the 2006 Guidelines for National Greenhouse Gas Inventories: Wetlands* (the "Wetlands Supplement") has been adopted in 2013[9].

Several assumed gaps in data availability do not exist or are not unique to peatlands. To monitor greenhouse gas fluxes from peatlands, organic soils and the relevant emission factors; no data are required on the peat depth as only the top – drained – soil layer contributes to the emissions. The data on the extent and location of drained peatlands are easily available in Annex 1 countries from maps and information on land use activities that are well registered in developed countries. Data for abandoned lands can also be easily derived from the previous mentioned information on land use activities, because emissions continue after termination of land use until all the peat is gone or the drainage system collapses. Since degraded peatlands (organic soils) only make up 0.3 percent of the global land surface, the additional effort of improved completeness of reporting should be limited.

Use of proxies
Peatlands do have particularities that make monitoring challenging, including their mix of greenhouse gases and the fact that carbon stock changes cannot easily be used as a proxy for greenhouse gas fluxes. This challenge is however not unique to peatlands and organic soils, but applies also to other activities in the land use and other sectors. Detailed methodologies exist for monitoring all greenhouse gas fluxes (emissions and removals) that occur before, during, and after an intervention in a peatland, but these methodologies are generally too complex and too expensive for widespread monitoring. Therefore, indirect methods – via so-called proxy

[9] http://www.ipcc-nggip.iges.or.jp/home/wetlands.html

variables or “proxies” – are used for assessing the fluxes[10]. Three methodologies (based on water level, vegetation and subsidence) allow for immediate baseline setting and monitoring, because the proxy data can be immediately mapped and translated into greenhouse gas flux estimates. The accuracy of the estimates may later be enhanced after improved calibration of the proxies. Several German federal states, for example, have already presented detailed, comprehensive assessments of the actual greenhouse gas fluxes from their entire peatland area. Whereas the capacity for monitoring greenhouse gas fluxes from peatlands is rapidly increasing, in some countries and situations, in other countries the overall estimates may not yet be very accurate. In such cases, the principle of conservativeness could be used (already applied in the Kyoto Protocol), which means that reductions are estimated at the low side of the range in the baseline accounting and at the high side of the range in the commitment period. This principle contributes to climate integrity as it means that accounting for emissions reduction from peatlands does not lead to overestimated emissions reductions, while it will stimulate countries to increase the quality of reporting and develop methodologies for assessing emissions and removal more accurately.

Capacity-building support from mitigation action in developing country Parties.
The fact that some countries lack capacity should not be an obstacle for reducing emissions from peatlands. Capacity building should provide Parties support for identifying their mitigation potential from land use such as peatlands and for taking the necessary steps to reduce the emissions from these ecosystems. This includes mapping and specific MRV guidance for peatlands. Expert review teams of inventories of emissions and removals should also be fully aware of the emissions behaviour of peat soils. This is in particular relevant because of the fact that - unlike the emissions associated with forest clearance, which are largely instantaneous - the emissions from drained peatlands continue for as long as the peatland remains drained and the peat keeps oxidizing. This can continue for decades and even centuries and this needs to be taken into account when estimation the annual emissions from drained peatlands and, consequently, the adoption of reference level scenarios, guidance for planning, policy review and development.

<u>Policy recommendation:</u>
To address the huge emissions from land use and land use change, the Durban Platform should work towards comprehensive reporting and accounting for the AFOLU sector. Parties should reliably and mandatorily account for all significant sources, sinks, pools and gases from land use and land use change. The Durban Platform should stimulate countries to take early action on opportunities for action with high mitigation potential or so-called key categories, i.e. the areas of land with most significant emissions and least MRV investments, such as peatlands. Reducing emissions from peatlands is already possible under the Kyoto Protocol activity ‘Wetland Drainage and Rewetting’ or under the other land use activities when they take place on organic soils. In the REDD+ agreement it was already agreed that Parties’ reporting and accounting should be complete, covering all significant sources and sinks, as well as all significant pools (including below ground carbon, including peat) and gases for which methodologies are provided in the 2006 IPCC Guidelines or for which supplementary methodologies have been agreed by the COP.

[10] Joosten, H. & Couwenberg. J. 2009. Are emission reductions from peatlands MRV-able? Ede, Wetlands International, 14 pp. (available at http://tinyurl.com/mud9a9).

Completeness also means the full geographical coverage of the sources and sinks of a country. When considering enhanced ambition under the Durban Platform, all ecosystems should be identified for climate change mitigation across AFOLU. With regard to peatlands, these would include organic soils across other land categories than forest land, such as peat soil drained for agriculture or peat soils that degrade as a result of overgrazing.

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