Wetlands International
6700 AL Wageningen
The Netherlands
Tel: +31 318 660910
Fax: +31 318 660950
post@wetlands.org
www.wetlands.org
Reg. No: 09099028

Submission on behalf of Wetlands International

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

Concerning methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries ("REDD+")

September 2011

The draft conclusions proposed by the SBSTA Chair[1] at Bonn in June 2011 invited Parties and accredited observers to submit to the secretariat, by 19 September 2011, their views on amongst others:

- methodological issues including modalities for measuring, reporting and verifying ("MRV") and
- modalities relating to forest reference emissions levels and forest reference levels,

as referred to in appendix II to decision 1/CP.16 ("the Cancun Decision").

This policy submission provides input to methodological guidance to REDD **specifically on the issue of peatlands**, which differ in relevant aspects from forests on mineral soil. This information is relevant to peatswamp forests as well as to non-forested peatlands, which have a similar high mitigation potential.

We recommend, on the basis of the arguments brought forward in this submission and considering that peatlands are a "key category" for climate change mitigation, that SBSTA facilitates - among all Parties represented in the SBSTA discussions on REDD - the full understanding of the particularities of peatswamp forests and other, non-forested peatlands (or organic soils) in the context of REDD and AFOLU at large.

We therefore suggest that a session will be organised for sharing technical expertise specifically on peatlands. This would be consistent with the LULUCF session specifically on 'wetland management' (now titled 'drainage and rewetting' under article 3.4 in FCCC/KP/AWG/2010/CRP.4/Rev.4), which was organised for negotiators at the UNFCCC session in Bangkok, 2009.

Contact information
Wetlands International, Susanna Tol
Susanna.tol@wetlands.org
+31 318 660933

For further information: www.wetlands.org/peatclimate

[1] FCCC/SBSTA/2011/L.14 dated 16 June 2011;

About peatlands & REDD

Peatlands are ecosystems where - under conditions of permanent water saturation - dead and decaying plant material has accumulated to form a thick organic soil layer (peat). They play a critical role in climate regulation. Peatlands contain 30 percent (550 GT carbon) of all soil carbon; this is equal to 75% of all atmospheric carbon, and twice the carbon stock in the forest biomass of the world. In natural peat swamp forests, the forest provides the plant material and facilitates the wet conditions for peat formation, carbon sequestration and carbon storage.

The majority of the carbon in peatswamp forests is stored below ground, in the peat soil. This carbon will be released to the atmosphere when the peatland is drained, when the tree cover is (partly or totally) removed, and when peat fires occur. When drained, deforested or degraded, peat swamp forest release the peat carbon much faster than it has been sequestered (Couwenberg et al. 2010, Dommain et al. 2010, 2011). Emissions from drained peatsoils are disproportionally large. Drained peatlands, covering a mere 0.3% of the global land surface, are responsible for some 6% of total global anthropogenic CO_2 emissions (Joosten, 2010).

REDD+ activities in peatlands are those activities that reduce or avoid greenhouse gas emissions by conservation of undrained peatsoils and by rewetting and revegetation of drained peatsoils.
These activities are urgent, as peatlands are being drained and cut at an alarming rate, especially the peatswamp forests in SE Asia. In a business as usual scenario (without REDD+ activities) almost all remaining undrained and slightly drained peatswamp forests in SE Asia will within the next 2 decades be converted to deeply drained plantations, with massive additional carbon dioxide emissions as a result.

The key priorities and mitigation potentials for reducing emissions from peatlands are:
1. Stop conversion of 12 million ha remaining peatswamp forests in SE Asia (net gain 1 Gt CO_2)
2. Restore half of the already drained peatswamp forests in SE Asia (net gain 0.5 Gt CO_2)[2]
3. Restore half of the degraded peatlands in the temperate zone (net gain 0.2 Gt CO_2).

The above priorities should be part of the overall priority of conservation and restoration of other forest types of the world and of reducing emissions from other land uses such as agriculture. Across AFOLU, peatlands should be treated as **"hotspot"** or **"key category"** for climate change mitigation since they occupy a very small land area but have enormous mitigation potential.

In the LULUCF negotiations in Cancun consensus was achieved among negotiators on a new accounting activity 'rewetting and drainage'. Under this activity, accounting for emissions (related to drainage) and removals (related to rewetting) from organic soils under LULUCF would be applicable to all land use categories (forest land, cropland, grassland, wetlands, settlements and other land).

[2] Note that while rehabilitation of drained peatlands should be strongly encouraged, rehabilitation of drained peatlands doesn't justify new conversion of pristine or further drainage of already degraded areas for reasons such as biodiversity conservation, socio-economic impacts and significant challenges related to defective restoration, in particular of severely drained peatlands.

Reference levels in relation to peatlands

Input to **Annex II (b)**:

Request to the SBSTA to develop modalities relating to **paragraph 71 (b**): **71 (b):** A national forest reference emission level and/or forest reference level or, if appropriate, as an interim measure, subnational forest reference emission levels and/or forest reference levels, in accordance with national circumstances, and with provisions contained in decision 4/CP.15, and with any further elaboration of those provisions adopted by the Conference of the Parties;

There are a number of particularities to peatlands that need to be taken into account when setting baselines and reference (emission) levels for REDD, NAMA's or other mechanisms:

Emissions from peatswamp areas: different from forests on mineral soils
A fundamental error is often made by not differentiating sufficiently between emissions resulting from clearing a forest and the ongoing emissions from peat soils that continue after clearing and draining. Emissions from clearing a forest primarily involve the removal and oxidation of forest biomass. These emissions can be considered to be more-or-less instantaneous: they stop very soon after clearing stops (and may be promptly reversed by subsequent forest regeneration). In contrast, emissions from peatland drainage ***continue*** until the drained area is effectively rewetted (reinstalling water level + revegetation) or the entire peat is depleted – i.e. emissions may continue for decades, or even centuries, after clearing and draining. This has important consequences for estimating emissions and stocks for recording progress towards meeting emission reduction targets (see also figure 1):

- If the rate of peatland conversion decreases, the emissions from converted peatlands still increase, because the newly converted sites *add to* the continuing emissions from the earlier converted sites. Hence, simply reducing conversion rates will only slow down the *increase* in emissions, but *not result in emission reductions nor in the conservation of carbon stocks*.

- If the rate of peatland conversion is reduced to zero (= no further conversion), the emissions from drained peatswamps do *not decrease* and the peatswamp carbon stock *continues to decline*.

- If drained and degraded peatswamps are reforested without rewetting, net carbon emissions *continue*, because the carbon losses from the drained peat soil exceed carbon sequestration in the new forest biomass. As a result the peatswamp carbon stock *continues to decline*.

- Only by stopping conversion of undrained peatswamps ànd simultaneously rewetting and reforesting already drained and degraded peatswamps, the emissions from drained peatswamps can be reduced.

- Unless at least 80% (40 million ha) of the drained peatlands are adequately rewetted, the world's peatlands will continue to be net CO_2 emitters and the global peatland carbon stock will continue to decrease.

- As to provide incentives to avoid new emissions from new drainage AND reduce emissions from already drained peat areas, national and sub-national *baselines should include emissions estimates from a country's forested, degraded and entirely deforested peatsoils* (the latter being 'temporarily destocked' forests as they will naturally regenerate to forests in the absence of active management and fires). If existing emissions from already deforested and drained areas are not included in the baseline, emissions will continue but no incentive will be provided to reduce them. Furthermore, agriculture and forest plantations will preferentially move to these lands leading to deeper drainage and larger emissions (leakage!).

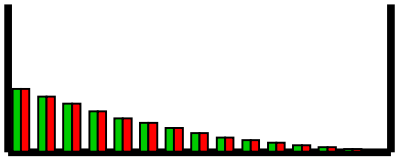
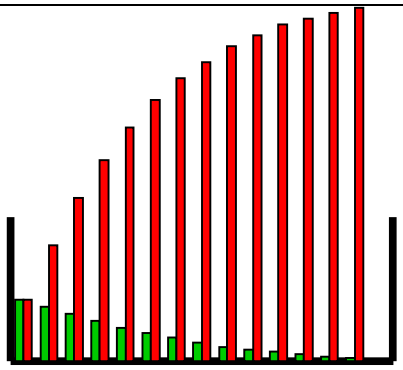
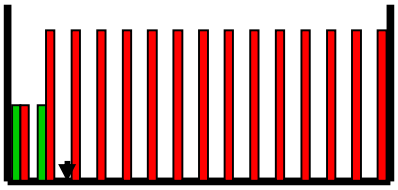
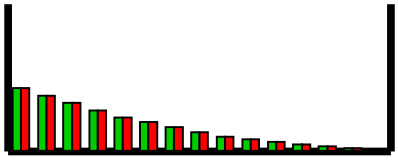
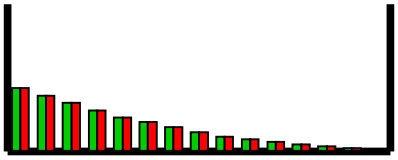
Forest biomass	Peatland soil
1  A **decreasing** rate of deforestation and forest degradation **decreases** annual GHG emissions.	2  A **decreasing** rate of peatland conversion and drainage ***increases*** annual GHG emissions because the emissions from newly drained peatland add to those of already drained peatland.
3  **Stopping** deforestation and forest degradation **stops** GHG emissions.	4  **Stopping** peatland conversion and drainage expansion does not decrease GHG emissions because existing drained peatlands will ***continue*** emissions at the same level.
5  Decreasing the **rate of deforestation** and forest degradation is indeed Reducing Emissions from Deforestation and forest Degradation.	6  But only ***decreasing the absolute area*** of drained peatland is Reducing Emissions from Deforestation and Degradation.
REDD+: STOP DEFORESTATION	**REDD+: STOP NEW DRAINAGE + REWET**

Fig. 1: The relation between annual land use change ([1]-[5]) / land use ([6]) (ha/year, green) and total annual emissions (tonne of CO_2 eq./year, red) when considering forest biomass only (left) and when considering peat soil (right).

Modalities for MRV-ing emissions and emissions reductions from peat

Input to **Annex II (c):**

SBSTA develops as necessary, modalities for measuring, reporting and verifying anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, forest carbon stock and forest area changes resulting from the implementation of activities referred to in paragraph 70 of this decision, consistent with any guidance for measuring, reporting and verification of nationally appropriate mitigation actions by developing country Parties agreed by the Conference of the Parties, taking into account methodological guidance in accordance with decision 4/CP.15, for consideration by the Conference of Parties at its seventeenth session.

MRV-relevant particularities of peat swamps

SBSTA should ensure that stocks and emissions from peatlands are adequately reported in REDD+ reporting and accounting:

- Each non-Annex I Party should account for all changes in peat forest soils except when transparent and verifiable information is provided that the pool is not a source.

- SBSTA shall establish criteria and procedures by which a pool or greenhouse gas source may be determined to be not significant and therefore does not have to be accounted for.

- The major carbon stock in peat swamps is in peat, hence below ground. This carbon will be released to the atmosphere when the peatland is drained, when the tree cover is (partly or totally) removed, and when peat fires occur. Thus all peatland should be monitored as part of REDD, including primary peat swamp forests, degraded peat swamp forests, secondary peat swamp forests, deforested peatland areas, agricultural areas on peat, plantations on peat and abandoned agricultural areas on peat.

- Peatlands are sensitively balanced systems in which various parts are connected by water. A change in water level in one part of the peatland will therefore affect the eco-hydrological balance and thus impact every other part of the peatland and its emission characteristics. This spatial eco-hydrological interdependency must be considered when developing a MRV system for peatlands.

- In peatlands a strong interdependency exists between vegetation, peat and water, far tighter than in dry land ecosystems. As a consequence deterioration of any of these components leads to the degradation of the overall system, and in peatlands this relates directly to emissions. Because of the interdependence, each of these components can be used as an indicator for the conditions of the entire system.

- The Cancun agreement makes reference to CP.4/15 to use the latest adopted IPCC guidelines. Current IPCC work, on request of SBSTA, on the “2013 Supplement of the IPCC 2006 Guidelines” related to “wetlands with focus on rewetting and restoration of peatlands” will have a high impact on emission figures for countries with peatlands. Current emission factors are in a number of occasions far from realistic. Therefore we strongly recommend that REDD activities are reported in accordance with the most recently adopted IPCC Guidelines *and any subsequent revision or clarifications agreed by the Conference of Parties*.

Practical, ready implementable MRV system for peatlands

Peatlands have unique emission features that make them significantly different from other types of ecosystems. The complexity of monitoring emissions from peatland ecosystems may tempt to develop complex and sophisticated MRV methodologies. On the other hand, there is the intrinsic tendency of peatland emissions to increase if no radical stop of peatland conversion and further degradation is achieved (see section on reference levels related to peatlands). The latter urges to come to a practical, readily implementable MRV system. Certainly with respect to reducing emissions from peat swamp

degradation we should take care that 'the perfect does not become the enemy of the good'. In particular in SE Asia, the peatswamp forests will - without rapid adequate action – have been decimated in 2020.
An *increase of emissions* of peat swamp areas may take place in three ways:

a. by removing (substantial) tree biomass from a peatswamp;
b. by increasing drainage from the peatlands;
c. by fire.

All these activities and processes can easily be monitored in the framework of REDD+ because they are associated with changes in crown cover of forests on peat soil and/or expansion or alteration (intensification) of drainage structures (canals/ditches) in peatlands.
A simple yet meaningful system of monitoring peatlands at the national level can be based on (existing) maps or atlases, extended with higher resolution data. This information can be combined with

- wall-to-wall remote sensing of land use and land cover change using high-resolution satellite imagery[3],
- simple conservative algorithms for assessing the emission effects of land use change, and
- default emission factors for the identified types of land use/cover that can be extracted from the rapidly expanding and increasingly consistent literature data (Couwenberg et al. 2010, Jauhiainen et al. 2011).

On a district and project level, this system could be refined further, e.g. by using (direct) water level and subsidence measurements to *assess emission reductions and carbon removals related to rewetting and reforestation activities*. Further knowledge gain will over time enable further refinement of the monitoring system.

References

Couwenberg, J., Dommain, R. and Joosten, H. 2010 Greenhouse gas fluxes from tropical peatlands in southeast Asia. Global Change Biology 16: 1715-1732

Dommain, R., Couwenberg, J. and Joosten H. 2010 Hydrological self-regulation of domed peatlands in south-east Asia and consequences for conservation and restoration. Mires and Peat, Article 05, 1–17

Dommain, R., Couwenberg, J., and Joosten, H. 2011 Development and carbon sequestration of tropical peat domes in south-east Asia: links to post-glacial sea-level changes and Holocene climate variability. Quaternary Science Reviews, 30: 999-1010

Jauhiainen, J., Hooijer, A. and Page, S.E. 2011 Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia. Biogeosciences 8: 8269–8302

Joosten, H. 2010 The Global Peatland CO2 Picture. Wetlands International, Ede, 33 pp.

[3] In dry land forest where most carbon stock is in the vegetation, remote sensing can be used to estimate changes in carbon stock. This applies also to the above ground carbon stocks in peat swamp forests (which are also hydrology relevant). Similarly, deforested peatland areas can be monitored by using remote sensing techniques focused on detecting and monitoring drainage ditches. The latter is easy in case of large-scale systematic drainage systems as in plantations. But also illegal logging channels that are dug without fully removing tree cover can be detected using decreased forest cover as a proxy, because all illegal logging in peat swamp forests is associated with the construction of transport canals.