



Wetlands in the 2006 IPCC Guidelines

WMO Geneva

19-21 October 2010

What is a wetland?

“This category includes areas of peat extraction and land that is covered or saturated by water for all or part of the year (e.g., peatlands) and that does not fall into the Forest Land, Cropland, Grassland or Settlements categories. It includes reservoirs as a managed sub-division and natural rivers and lakes as unmanaged sub-divisions.”

2006 Guidelines provide methods for:

1. **Peatlands cleared and drained for production of peat for energy, horticultural and other uses.** The estimation methodology, ... now includes emissions from the use of horticultural peat.
2. **Reservoirs or impoundments, for energy production, irrigation, navigation, or recreation.** ... now includes CO₂ emissions from all lands converted to permanently Flooded Lands. Flooded Lands exclude regulated lakes and rivers unless a substantial increase in water area has occurred.

UNFCCC Request

- ... should explore the need and ways to clarify, improve and provide updated information, as appropriate, related to, inter alia ... the methodological guidance in those areas for which gaps are identified in **table 7.1** of chapter 7 and gaps related to some uses of wetlands which are currently not fully covered, for example the **drainage of wetlands, the rewetting of previously drained wetlands or wetland restoration**;

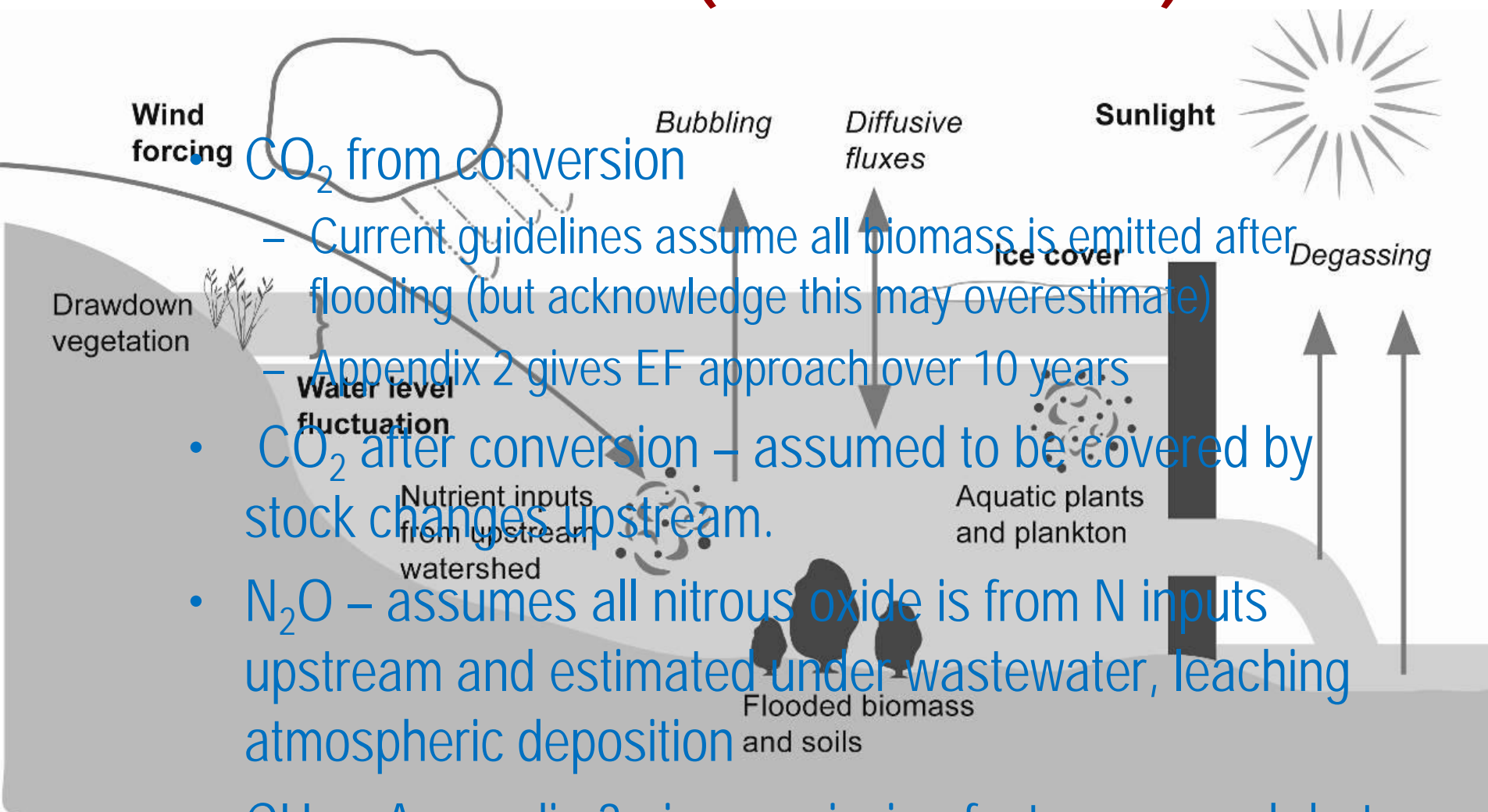
Table 7.1

Land-use category/GHG	Peatlands	Flooded Land
Wetlands Remaining Wetlands		
CO ₂	Section 7.2.1.1	No Guidance ¹
CH ₄	No Guidance ²	Appendix 3
N ₂ O	Section 7.2.1.2	No Guidance ³
Lands Converted to Wetlands		
CO ₂	Section 7.2.2.1	Section 7.3.2.1 and Appendix 2
CH ₄	No Guidance ²	Appendix 3
N ₂ O	Section 7.2.2.2	No Guidance ³
<p>NOTES:</p> <p>¹ CO₂ emissions from <i>Flooded land Remaining Flooded land</i> are covered by carbon stock change estimates of land uses and land-use change (e.g., soils) upstream of the .Flooded Land</p> <p>² Methane emission from peatlands is negligible after drainage during conversion and peat extraction.</p> <p>³ N₂O emissions from are included in the estimates of indirect N₂O from agricultural or other run-off, and waste water.</p>		

Table 7.1 - Interpreted

Land-use category/GHG	Peatlands	Flooded Land
Wetlands Remaining Wetlands		
CO ₂	Section 7.2.1.1	Included Elsewhere ¹
CH ₄	Negligible ²	Appendix 3
N ₂ O	Section 7.2.1.2	Included Elsewhere ³
Lands Converted to Wetlands		
CO ₂	Section 7.2.2.1	Section 7.3.2.1 and Appendix 2
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Flooded Lands (inc reservoirs)



Source: Mäkinen et al (2010), Adapted from McCully et al., 2006 and Sourdis et al., 2005.

Peatlands

- Coverage just of clearance and drainage, not rewetting or restoration
- Only 3 broad classes are given for Emission Factors:
 - “boreal and temperate” & “nutrient rich”,
 - “boreal and temperate” & “nutrient poor”, or
 - “tropical”
- CO₂ – steady emission assumed until all peat gone
- CH₄ – emissions assumed negligible after drainage (however higher tiers need this checked)
- N₂O – 2 EFs – boreal and temperate nutrient-rich or all tropical peats

Wetlands managed for other uses

Land-use category	Volume/Section in these Guidelines
Wetlands already converted or being converted to:	
Cropland, including “bogs” for cranberry and other ericaceous fruits	Volume 4, Chapter 5 (Section 5.3)
Managed Grassland	Volume 4, Chapter 6 (Section 6.3)
Managed , including drained or undrained forested wetlands according to national definitions	Volume 4, Chapter 4 (Section 4.3)
Rice cultivation	Volume 4, Chapter 5 (Section 5.5)

Ramsar Classes of Man-made Wetlands

RAMSAR class	Corresponding wetlands sub-categories in the IPCC terminology	Methodological guidance in wetlands chapter
Aquaculture	Flooded Land	No
Ponds	Flooded Land	No
Irrigated land (if cultivated)	Cropland	No
Seasonally flooded agricultural land	Rice Cultivation	Yes (Vol. 4, Ch 5)
Salt exploitation sites	---	No
Water storage areas	Flooded Land	Yes
Excavations (partly)	Peatlands managed for peat extraction	Yes
Wastewater treatment areas	"Constructed wetlands" or Waste Sector	No
Canals and drainage channels, ditches.	--	No

Time series

- If we propose the development of new methodologies:
 - What can we say about constructing time series for any new methodologies we propose?
 - Is this practical? How far back in time can we go?
- In the UNFCCC “wetland management” has been proposed:
 - In order to account for this they may need a base year
 - Can estimates for 1990 be made, if not when?

Wetlands Questions

- Can guidance be given on:
 1. Wetland Restoration
 2. Re-wetting Peat lands
 3. Wetlands Drainage
 4. Wetlands used for wastewater treatment
 5. Any other wetland sector
- Can/should the guidance in the 2006 guidelines be updated?
- Are there more information for EFs, defaults or for EFDB?

Literature

- The TSU has conducted a limited literature search for papers related to wetlands.
- Time and funds were limited but we hope it gives examples of what is available
- The results are available to inform the meeting

Presentations

- GHG emissions from reservoirs – where is the truth?
 - Joel Goldenfum (IHA)
- Emissions from peat soils
 - John Couwenberg (Wetlands International)
- Science advances and estimation of peatland emissions
 - Dominique BLAIN (Canada)



Any Questions?