

Introduction (last updated 27-01-2004)

Peatlands are characterized by the unique ability to accumulate and store dead plant material originating from mosses, sedges, reeds, shrubs, and trees as **peat**, under waterlogged conditions. Peatlands represent 50 to 70 percent of all wetlands of the world and cover more than four million km² – or three percent – of the land and freshwater surface of the planet. They exist on all continents, from tropical to polar zones, and from sea level to high altitude.

Peatlands have a wide international significance and their wise use is crucial to the implementation of the United Nations Framework Convention on Climate Change (UNFCCC), the Ramsar Convention, the Convention on Biological Diversity (CBD), and other international instruments and agreements.

Peatlands are globally important as carbon stores and sinks. They store more carbon than all forests of the world and constitute a global carbon pool of about 412×10^{15} g C as compared to about 694×10^{15} g in all global plant biomass, $1,600 \times 10^{15}$ g in all soils (including peat), and $>700 \times 10^{15}$ g in the atmosphere (Gorham 1995). The present-day sequestering rate of C in global mires is estimated to be $40\text{-}70 \times 10^{12}$ g y⁻¹ (Joosten & Clarke 2002). Both aspects are highly relevant to the UNFCCC. Peatlands contain 10 percent of the global freshwater volume and are significant in maintaining freshwater quality and hydrological integrity. Peatlands furthermore play an important role in maintaining permafrost and preventing desertification.

Peatlands support important biological diversity. They are the refugia of some of the rarest and most unusual species of wetland-dependent flora and fauna. Various mire types develop sophisticated self-regulation mechanisms over time and have an inherent tendency to develop complex surface patterning. This makes them outstanding examples of ecosystem biodiversity (Joosten & Clarke 2002). The CBD-Ramsar 3th Joint Work Plan (2002 – 2006) highlights this contribution of peatlands to global biodiversity.

Under waterlogged conditions peatlands preserve a unique palaeo-ecological record, including valuable archaeological remains. This has been recognized by the Ramsar Convention (2002) and by the European Archaeological Council's 2001 Strategy and Statement of Intent for the Heritage Management of Wetlands, who drew attention to the preservation of these cultural features, and pointed at the common ground in the conservation of peatland biodiversity and cultural heritage.

Peatlands furthermore satisfy many essential human needs for food, fresh water, shelter, warmth, and employment (Joosten & Clarke 2002).

Since 1800, the global area of peatlands has been reduced significantly. Human activities continue to be the most important factors affecting peatlands, both globally and locally. Human pressures on peatlands are both direct, through drainage, land conversion, excavation, and inundation, and indirect, as a result of air pollution, water contamination, water removal, and infrastructure development. With the growing understanding of their ecological importance to the planet, conflicting uses of peatlands are rapidly becoming apparent.

The global community has recently recognized the global significance of peatlands, their vulnerability, and the possible conflicts between various land use options. The Strategic Plan 2003-2008 of the Ramsar Convention (adopted at the 8th Conference of Contracting Parties in Valencia, Spain, November 2002) places special emphasis on the conservation and wise use of peatlands. Moreover the Conference has adopted detailed

Guidelines for Global Action on Peatlands (GGAP) that provide a framework for national, regional, and international initiatives for peatland wise use, conservation, and management. The GGAP recommends a series of priority approaches and activities, that include:

- **Establishing a global database of peatlands and mires** with baseline information on the distribution, size, quality, ecological characteristics, and biological diversity of the peatland resource and the carbon stored in them on the basis of globally standardized terminology and classification;
- **Detecting changes and trends in the quantity and quality of the peatland resource** by on-the-ground assessment and remote sensing techniques. This requires the establishment of a globally standardized monitoring system and the further development of remote sensing tools;
- **Developing and promoting education, training, and public awareness programmes** that explore the ecological, economic, and cultural functions and values of peatlands as well as their importance and relationship with people. The materials developed should include a broad base of understanding, experience and skills, with contributions from local communities, women, and indigenous peoples, particularly in areas where peatlands form a significant component of the landscape and culture;
- **Reviewing of national networks of peatland protected areas**, including - where appropriate - implementing peatland restoration and rehabilitation, to guarantee that the full range of peatland biodiversity is adequately conserved;
- **Developing and implementing peatland management guidelines and actions plans** for ensuring wise and sustainable peatland management on a regional and national scale, through land use planning programmes, particularly those affecting, and implemented by, women, indigenous people, and local communities;
- **Establishing regional centres of expertise and research networks** to improve understanding of the values and functions of the world's peatlands, to share knowledge and information, and to guarantee access to information and training facilities for those responsible for policy related to the wise use and exploitation of peatlands. Special opportunities should be sought for cooperative research into the role of peatlands in mitigating the impacts of global climate change;
- **Stimulating international cooperation on research and technology transfer for peatland wise use.**

This report aims at responding to the first two GAP challenges to provide baseline information on the basis of globally standardized terminology and to monitor trends in the quantity and quality of the peatland resource.

The necessity of such database became apparent during the development of the background report on the Wise Use of Mires and Peatlands by the International Peat Society (IPS) and the International Mire Conservation Group (IMCG) (Joosten & Clarke 2002).

During that process, the extent and condition of peatlands in every country has - time and again - been a matter of dispute. Peatland related terms and concepts are so divers and confusing, and distributional data so divergent, that it appeared to be impossible to use some single references (e.g. Lappalainen 1996 as the most recent global overview) as a basis for the mire and peatland distribution data in the Wise Use document.

Therefore it was decided to try and present an up-to-date international overview, with - per country - the background information and references. Where adequate data on the occurrence of peatlands were absent, we have cited many basic sources. Most of the references quoted we have consulted as original publications.

I thank Alexandra Barthelmes and Stefan Schwill (Botanical Institute Greifswald) for co-browsing the literature, Donal Clarke (Bord na Mona Newbridge) for providing key literature, Vincent van Engelen and Jan Huting (International Soil Information and Research Centre Wageningen) for analysing the world's soil maps, John Couwenberg (Botanical Institute Greifswald) for conceptual-methodical support, and all contributors who provided basic information.

¹Guicciardini² says, that it is not known whether Asia, Africa, or America, contain any mosses, as no search has been made. Degner³ and Dr. Anderson⁴ deny that there are any in these regions. The latter says that he has been assured, from very good authority, that there is not to be found on the whole continent of America a single particle of real and genuine peat moss. The former argues upon this as a fact: „If,“ says he, „forests are converted into moss⁵, the greatest part of Moscovy, Tartary, America, and other woody uncultivated regions would have, ere now, undergone this change, which is not the case.“

To this I reply, 1st, That in woody regions, moss is of little value; it is never in request as a fuel, as the abundance of wood supplies its place. No efforts are made to search for it as a soil or a manure. The former can be produced in abundance; the latter is less requisite. Mosses, therefore, may exist in these regions, though no notice be taken of them.

2. Accordingly, in Russia they abound; many marshes and valleys in that empire are filled with it. This I am assured of from unquestionable authority.

Tooke⁶, in his View of the Russian Empire⁷, says, that in Siberia, there are abundance of morasses of different magnitudes. Towards the shores of the Frozen Ocean, for several hundreds versts in width, is one prodigious watery morass, grown over with moss, and destitute of wood.

In the interior of the country are many smaller: he specifies four different kinds: 1. Low watery land; 2. Swamps which yield turf; 3. Bottomless morasses, which appear to be lakes overgrown; 4. Moss morasses, the deep and useless moss of which will permit neither grass nor shrub to grow.

3. In South America, at least on the Peruvian mountains, it has been discovered. I have also been informed by a gentleman who lived thirty years on the banks of the Mississippi, and had occasionally visited all the United States, that moss is frequently found in the vallies. He mentioned, that it is generally covered with a green surface which conceals it from view; but below this many feet of moss is often found. He said that the skeleton of the bergamot in the possession of Mr Peel⁸, was dug out of moss.

Till it be ascertained beyond a doubt that there is not to be found a particle of genuine peat in these regions, it would be superfluous to offer any reply to this objection, or to attempt to obviate this difficulty.

Rev. R. Rennie 1807. Essays on the natural history and origin of peat moss.
Archibald Constable & Co., Edinburgh, pp. 218 – 220.

¹ Footnotes added by Hans Joosten

² Lodovico Guicciardini (1521-1589)

³ Johann Hartmann Degner (1687 - 1756) in his xxx book xxxxxxxx

⁴ James Anderson (1739-1808) in his 1794 book: Practical treatise on peat moss. Anderson was an agricultural reformer and influential economist who already in 1777 established the “Ricardian” theory of rent. Adam Smith described Anderson as “ a very diligent, laborious, honest Man” and answered on his criticism by revising a “careless expression” in the second edition of The Wealth of Nations. According to Schumpeter (1954, *History of Economic Analysis*), Anderson "had to an unusual degree what so many economists lack, vision." See also: <http://cepa.newschool.edu/het/profiles/jamesanderson.htm>

⁵ A general opinion in those days was, that peat originated from wood.

⁶ William Tooke (1744-1820)

⁷ Tooke, W. 1799. View of the Russian Empire during the Reign of Catherine the Second. 3 vols., London, 1799.

⁸ Sir Robert Peel (1750-1830)?, Member of Parliament and father of the later prime Minister of the same name?