INTERNATIONAL MIRE CONSERVATION GROUP

NEWSLETTER

issue 2007/3, August 2007

The International Mire Conservation Group (IMCG) is an international network of specialists having a particular interest in mire and peatland conservation. The network encompasses a wide spectrum of expertise and interests, from research scientists to consultants, government agency specialists to peatland site managers. It operates largely through e-mail and newsletters, and holds regular workshops and symposia. For more information: consult the IMCG Website: http://www.imcg.net

IMCG has a Main Board of currently 15 people from various parts of the world that has to take decisions between congresses. Of these 15 an elected 5 constitute the IMCG Executive Committee that handles day-to-day affairs. The Executive Committee consists of a Chairman (Jennie Whinam), a Secretary General (Hans Joosten), a Treasurer (Philippe Julve), and 2 additional members (Tatiana Minaeva, Piet-Louis Grundling).

Seppo Eurola, Richard Lindsay, Viktor Masing (†), Rauno Ruuhijärvi, Hugo Sjörs, Michael Steiner and Tatiana Yurkovskaya have been awarded honorary membership of IMCG.

Editorial

Again a Newsletter with a special theme. After the last one on 'peat and energy', we continue the series with a special about 'peatlands and biofuels'. 'Energy' and 'climate' indeed affect mires and peatlands in a wide variety of ways: read about the multiple faces of biofuels. The next Newsletter (of October) we envisage to be a special about 'peatlands and windfarms', as a preparation for the IMCG Symposium "Wind Farms on Peatland' to be held in Santiago de Compostela (Spain), 27–30 April 2008. We don't have a good overview yet about where clashes are taking place between wind energy and mire conservation. We know about Spain and on the British Isles, but how widespread are the problems in other countries? What kind of problems are we talking about and what could be the solutions? Please send your information to us or to Olivia Bragg: o.m.bragg@dundee.ac.uk

The December Newsletter we then want to devote to the remaining energy-related threats to mires including mining (of coal and lignite), oil exploration and exploitation, and hydro-electricity. Start preparing your contributions for these specials!

In this Newsletter you will furthermore find the reports on the meeting with the International Peat Society last June and the usual news and views.

Deadline for the next Newsletter: 15 October 2007.

For information, address changes or other things, contact us at the IMCG Secretariat. In the meantime, keep an eye on the continuously refreshed and refreshing IMCG web-site: http://www.imcg.net

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A note from the Chair

Eight IMCG Main Board Members and regional representatives (see minutes in this newsletter) attended the International Excursion in Swedish peatlands, organised by TorvForsk and the International Peat Society from 26-28 June. The excursion included visits to research sites, peatlands with restoration and mires currently being mined. Our Swedish hosts tried to fit in as much as possible during our visit and were generous with their hospitality.

There were three joint IMCG/IPS meetings during the field excursion. A major focus for the meetings was the difference in approaches by the two organisations regarding the use of peat for energy and the fallacious assertion by IPS that peat is a renewable bio-fuel (see June 2007 newsletter for a summary of the different approaches). It is an issue that will have major ramifications for peatland conservation, particularly in Scandinavia. As an introduction to the debate, Hans Joosten presented a clear overview of the IMCG position, responding to points that IPS had used to present its case. John Couwenberg gave a presentation that highlighted the complexities of UNFCCC, the Kyoto protocol, and emissions trading. Donal Clarke presented the views of the IPS.

While there was much discussion between individuals during the excursion about different aspects of the debate, it was not possible to discuss and debate the essential points of the IPS approach at an organisational level, because appropriate IPS experts did not attend the excursion. IMCG expressed disappointment that although we had invested considerable resources in coming to the excursion, prepared to debate the issue, this was not matched by the IPS attendance. Agreement was reached that IPS would provide an overview of its position (similar to that presented by IMCG in the previous newsletter) by October 2007. It was agreed that a small group of experts would use these combined arguments to work towards an agreed position (at least agreeing on what points can be agreed and those that cannot) by the next joint meeting in Tullamore in June 2008. Also agreed was that further representations by either IMCG or IPS to international bodies (such as the IPS approach to European institutions regarding EU policy on the use of peat for energy) would first see IPS/IMCG informed of proposed representations.

So, the next 12 months will be crucial in determining the future of IMCG/IPS collaborations. There are obvious benefits for IMCG to be actively involved with IPS in issues that affect peatland conservation globally and where an agreed position can be reached. This can only work if both organisations are engaged in real consultation and negotiation on these issues. Two successful examples of this collaboration are the joint scientific journal 'Mires and Peat' and the joint publication 'Wise Use of Mires and Peatlands'. Conversely, there could be adverse impacts if IPS attempts to use its collaboration with IMCG to suggest support for proposals that actively undermine peatland conservation.

From the IPS perspective, there are advantages for the organisation to be seen to be working with a group that is recognised as representing international mire conservation, offset by the disadvantage of potentially being 'hindered', in a business sense, by the need to work through issues relating to 'wise use'.

I am committed to assessing the responses of IPS to both peat use in energy and working towards more effective collaboration between the organisations, as agreed in Sweden, over the next 12 months. However, we are also interested in the views of our IMCG members – do you see this collaboration as useful for peatland conservation and research? Should we continue working together, acknowledging that there will be some issues that we are unlikely to agree on, whilst there may be others where we can develop joint positions? What issues do you think should determine the level of future collaboration? You may have a clear opinion on the issue now, or your opinion may be guided by developments over the use of peat for energy. Let either myself or Hans Joosten know your views (see last page for contact details).

This newsletter covers some additional aspects of our position relating to the status of peat as a fuel, but the main focus of this newsletter is on peatlands used to grow biomass fuels. As usual it's also bringing news on peatland issues from around the globe.

Jennie Whinam

REGISTER

Please fill out the IMCG membership registration form.

Surf to http://www.imcg.net or contact the secretariat.

IPS-IMCG meeting Sweden June 2007

This report largely follows the official minutes but has been slightly modified to make it better understandable for non-participants.

Time and date: The meeting took place in three sessions between 26 and 28 June 2007 during the field trip organised by TorvForsk in Sweden.

Attendance:
- Magnus Brandel, Swedish Peat Producers Association
- Olivia Bragg, School of Social Sciences (Geography), University of Dundee, Scotland, Editor of Mires and Peat (joint scientific journal of IMCG and IPS).
- Donal Clarke, Bord na Mona p.l.c.
- John Couwenberg, University of Greifswald
- Dag Fredriksson, Swedish Geological Survey
- Raimo Heikkilä, Finnish Environment Institute
- Hans Joosten, Secretary General, IMCG
- Marie Kofod-Hansen, TorvForsk
- Vesta Kopp, Estonian Peat Association/Enginering Bureau Steiger
- Riitta Korhonen, Geological Survey of Finland
- Lars-Eric Larsson, SVEBIO
- Tapio Lindholm, Finnish Environment Institute
- Elve Lode, Institute of Ecology at Tallinn University, Estonia/Swedish Universtity of Agricultural Sciences Forest Soils Department
- Lars Lundin, Swedish University of Agricultural Sciences
- Tatiana Minaeva, Federal Centre of Geoecological Systems/ Wetlands International Russia Programme
- Helena Ryk, TorvForsk
- Gerald Schmilewsky, Klasmann-Deilmann GmbH
- Jaakko Silpola, Secretary General, IPS
- Andrey Sirin, Institute of Forest Science Russian Academy of Sciences
- Henrik von Stedingk, Swedish University of Agricultural Sciences,
- Ann Wahlström, Swedish Environmental Protection Agency
- Jennie Whinam, Biodiversity Conservation Branch, Tasmania
- Stefan Östlund, Neova AB

1. Donal Clarke opened the meeting at 17:00

2. The agenda as distributed was accepted.

3. Donal Clarke and Jennie Whinam were elected joint Chairs, Jaakko Silpola was elected secretary.

4. Items agreed at Espoo in 2006

Arising from the minutes of the meeting in Espoo on 28 July 2006, the following matters were noted:
- Wise Use book: the IPS Secretariat will check if the book exists in pdf format. It was agreed that the pdf file would be placed on www.mirewiseuse.com with links to both the IPS and IMCG websites. It was agreed that H. Joosten and D. Clarke would check if the Wise Use leaflet should be updated. Either the existing or an updated version should be placed on the websites of the two organisations.
- The existing draft guidelines for the implementation of the WUMP remain on the IPS website for consultation. Peat extraction guidelines are still in the internet for comments. Draft guidelines on agriculture on peatlands have been prepared by Tomasz Brandyk: these will shortly be placed in the IPS website for consultation. Draft guidelines for peatland forestry are being prepared by Juhani Päivänen and those on tropical peatlands by Jack Rieley. The IPS Secretariat will seek to expedite the completion of these drafts and will then place them on the website. When the full suite of draft guidelines is ready the IMCG will see if a basis exists for co-operation on the matter, and if this is agreed the IPS and IMCG will work to finalise the guidelines. In this process the IPS will ensure that the Wise Use process remains a joint project.

5. Discussion on peat and climate.

Differences had arisen between the two organisations on representations made to European institutions regarding EU policy on the use of peat for energy. Hans Joosten outlined the views of the IMCG (see IMCG Newsletter 2007/2 and IMCG website) on the matter, and Donal Clarke outlined the views of the IPS (see below). In order to brief the meeting on some of the complex issues involved, John Couwenberg gave a presentation explaining the UNFCCC, the Kyoto protocol, emissions trading and related topics (see IMCG Newsletter 2007/2).

In the course of the discussion it was suggested that, whereas use of peat as fuel in specific areas might not be unacceptable, the changing of general policies and rules which might lead to unwise use of peat and peatlands was not acceptable.

Hans Joosten expressed the disappointment of the IMCG at the way the meeting had proceeded. While the atmosphere had been good and the excursions interesting, the fundamentals of the issues at stake had not been discussed. The IMCG had invested a great deal of effort in explaining its view on the climate effect of peat combustion. The IPS had frustrated discussion by saying that it did not have experts present. He stated that the interaction between IMCG and IPS cannot proceed in this way. Attendance at these meetings involves great personal and professional effort and therefore the meetings should deal with core issues in some depth. He felt that the time in Sweden had been partially wasted and he felt that it was a sign of weakness on the part of the IPS that it was not able to discuss substantial matters as raised in the recent IMCG newsletter. In the course of the discussion it was suggested that for future meetings clear objectives should be set beforehand, and that the agenda should be agreed more thoroughly and background materials distributed longer in advance.

Following the discussion it was agreed to appoint a small group of experts to examine the arguments on both sides to further work towards an agreed position on this matter, with the group to report back in Tullamore in June 2008. As a first step in this process, IPS will provide an overview of its position

similar to that provided by IMCG, with a target of October 2007.

Both IMCG and IPS representatives recognised that advantages could accrue if they consulted one another before making representations to international bodies of a political nature affecting or of concern to both organisations' members. Arising from a discussion on this matter it was agreed that for a trial period of twelve months neither IMCG nor IPS would make representations of concern to international bodies without first informing the other and allowing the other to see and comment on the proposed representation. This arrangement would not be used to frustrate representations that urgently needed to be made. An evaluation of the trial would be made at the joint IPS/IMCG meeting in Tullamore.

A question was asked as to how the two organisations could co-operate in completing the work of the IPS Climate Change Working Group. The IPS members present agreed to consult urgently with the Working Group so as to maximise co-operation between the two organisations on completing the book.

Arising out of a presentation on wise use of mires and peatlands in Sweden by Magnus Brandel, a number of follow-up questions were asked. The principal matter under discussion was whether or not an increased use of drained peatlands for energy peat constituted wise use.

It was agreed that the Swedish hosts will have the recent Johansson's report on that matter translated into English.

6. Terminology

After discussion on the use of terminology, it was agreed that a small working group would be appointed to develop definitions of some 10-20 peat(land) related concepts or words with policy implications that have caused misunderstandings. It was agreed that Gerald Schmilewski from IPS and Andrey Sirin from IMCG would manage this project. Their task would be to obtain suitable nominations from each organisation and to consult within their respective organisations (using a common letter) on the priority concepts or words to be addressed. The group is to make its report in Tullamore.

7. Progress with *Mires and Peat*

Olivia Bragg provided an update on the development of the journal. Number of papers submitted, number accepted and readership have all increased. The meeting expressed its thanks to the Editor for her excellent work.

8. Update on recent developments, decisions and plans

8.1 CC-GAP:

An update on CC-GAP was presented by Tatiana Minaeva. The essential question to be answered was whether IPS and IMCG should continue working with this group. If the organisations agree to continue, then the next question is who will do the necessary work and which items the two organisations want to have addressed by the next Ramsar CoP (October 2008). The update should be distributed to the Main Boards of both organisations with a view to obtaining feedback to the CCGAP Secretariat to a 2007 deadline.

8.2 South-East Asia:

An update was presented by Hans Joosten. He outlined the current dire situation arising in south-east Asia and the complexity of the issues involved. He specifically addressed issues relating to the cultivation of palm oil on peatlands.

8.3 EU Cost Action:

Olivia Bragg provided an update on issues relating to the promotion of wind farms in the EU leading to their being placed on peatlands, and the possibility of using the EU COST Action mechanism in the context of the implications of energy issues for peatlands.

9. Other items

9.1 13th International Peat Congress in Tullamore 2008

Donal Clarke gave an update on the IPS Congress in Tullamore. The deadline for abstracts is 30th September. There will be reduced fees for student delegates and delegates from some developing countries.

9.2 Peatlands database

IMCG has a database summarising peatland statistics in countries throughout the world. The database is constantly updated. Information is provided to organisations requesting data.

9.3 Next meeting

It was decided to hold the next meeting in Tullamore June 2008.

9.4 Motion of thanks

Both organisations warmly thanked their Swedish hosts for their hospitality and for the well planned and informative excursions.

INTERNATIONAL MIRE CONSERVATION GROUP

IMTG MTO IPS

Statement by IPS-IMCG

Sweden, June 2007

As agreed at Espoo in 2006 the IMCG and IPS held a meeting spread over three sessions between 26 and 28 June 2007. During the meeting discussions took place on a variety of issues as outlined in the minutes. The representatives present at the meeting agreed the following statement:

The two organisations had had serious differences over representations made to the European institutions regarding the treatment of peat within EU energy policy. A representative of each organisation summarised the point of view of his organisation. Following an exchange of views in an atmosphere of mutual respect it was agreed:

- to appoint a small group of experts to examine the arguments on both sides to further work towards an agreed position on climate effects of the use of peat for energy, with the group to report back in Tullamore in June 2008.
- that for a trial period of twelve months neither IMCG nor IPS would make representations of concern to the other to international bodies without first informing the other and allowing the other to see and comment on the proposed representation. This arrangement would not be used to frustrate representations that needed urgently to be made.
- that the IPS would urgently seek to maximise co-operation between the two organisations on completing the climate change book it is preparing.

The meeting took place in the context of an international excursion in Swedish peatlands organised by TorvForsk. The purpose of the excursion was to provide a case study on different aspects of peatland use in Sweden. The excursion took the form of visits to a wide variety of mire types, including mires ditched for forestry and the extraction of peat for energy and horticulture. The mire visits were supplemented by a number of presentations by local specialists on aspects of peatland management.

IMCG and IPS thanked their Swedish hosts for raising issues related to peatland management in a frank and open way. Both organisations acknowledged that the points raised will provide useful material for further discussions.

Other matters covered during the meeting included:

- When a full suite of draft guidelines on the implementation of Wise Use is ready the IMCG will see if a basis exists for co-operation on the matter, and if this is agreed the IPS and IMCG will work to finalise the guidelines. In this process the IPS will ensure that the Wise Use process remains a joint project.
- In relation to the use of terminology, it was agreed that a small working group would be appointed to develop common definitions of some 10-20 concepts or words that have caused misunderstandings.
- It was agreed that the two organisations would examine whether they should continue working with CC-GAP and if so which items the two organisations want to have addressed.
- Serious and complex problems relating to peatlands in south-east Asia were described and noted.

It was agreed that the next joint IMCG/IPS meeting would be held in Tullamore in June 2008.

Presentation on behalf of the International Peat Society at the joint IPS-IMCG meeting: The treatment of peat within EU energy policy

The process we are discussing has involved
- a communication from the IMCG arising from a resolution of the European Parliament;
- a responding communication from the IPS;
- a special edition of the IMCG. Newsletter dealing with issues raised in the IPS communication.

I do not think there is much profit to be gained at this meeting from a detailed discussion of the points made and words used by either side as we in the IPS do not have relevant experts present in Sweden.

The IMCG and the fuel peat members of the IPS have political objectives. The IMCG wishes to protect peatlands, minimise exploitation and maximise mitigation where exploitation has taken place. It uses scientific and other arguments in promoting its point of view.

The IPS is a wide organisation. Energy peat is one part of one Commission among eight Commissions. The energy peat members of IPS are convinced that they have greatly improved their environmental responsibility and behaviour since the dialogue began with the IMCG. They believe that there are aspects to the use of peat for energy which are positive compared with the use of fossil fuels (*pace* the earlier discussion on the use of these words).

Arising from Hans Joosten's statement, the fuel peat industry
- does not claim that peat accumulation makes extraction climate neutral, nor does it claim that accumulation offsets its emissions: it points out that accumulation is an element in lifecycle analysis;
- claims that using peat for energy from peatlands already drained for agriculture does less climate harm than draining a pristine mire for the purpose;
- does not argue that burning peat is, from a climate perspective, 'not bad' but that it may be preferable to some alternatives.

Most of the reasons for the use of peat for energy arise from the need for local energy sources and security of supply. They do not relate to definitions of *fossil* or *renewable*.

The energy peat industry believes that the introduction of carbon taxes and carbon trading has seriously altered competition between fuels used for energy generation. This alteration has forced the peat industry to take steps to prevent it being, as they see it, disadvantaged. In his statement Hans Joosten referred to the industry seeking 'fiscal advantages'. They would see themselves as resisting fiscal disadvantage.

The energy peat industry is open to taking mitigation actions to help compensate for its emissions: discussion on this with IMCG could be positive.

The IMCG special Newsletter devoted to this subject is a positive contribution to dialogue. It is factual in tone without offensive language. It is the view of the IPS that a useful way forward on this issue is to ask a group of experts from both sides to see if we can jointly move forward in dealing with it. What we wish this group to do is examine the arguments on all sides and see if there is a basis for fruitful discussion on the issue between the two organisations.

The IPS Working Group on Climate Change is publishing a book summarising the state of present knowledge on peatlands and climate change. As I said, the IPS does not have relevant experts present here in Sweden and we think we should remit the matter to such experts.

Donal Clarke, IPS vice-chairman
Grangärde, Sweden, 26 June 2007

The Wetlands International Luc Hoffmann Medal

Wetlands International is seeking nominations for the Wetlands International Luc Hoffmann Medal for Wetland Science and Conservation.

The award is presented triennially in honour of Luc Hoffmann, one of the founders of Wetlands International and a continuing source of inspiration and support to many wetland researchers, communicators, educators and managers.

The award will be presented to an individual who has demonstrated excellence in scientific research, in communication, education and public awareness or in wetland management.

We invite you to nominate a worthy candidate. Information on the nomination criteria and requirements is available at http://www.wetlands.org/luchoffmannmedal

The award is open to all wetlands science and conservation practitioners, excepting WI staff and members of its Council. It will be presented to an individual who has shown outstanding leadership and lifetime accomplishment in the area of wetlands science and conservation.

A nomination can be made by any member of the Wetlands International Association of Members. The deadline for nominations is Monday 3rd September, 2007. The award presentation will take place at a reception on the evening of 7th November 2007, after the first day of the Wetlands International Association of Members Meeting in Shaoxing, China.

Peatlands, biofuels, energy: an introduction

by Hans Joosten

We all know by now what the problem is (fig. 1): human activities blow so much CO_2 into the atmosphere that our climate is changing. And we know what the solution is: Reduce the emissions!

Peatlands are part of the problem of CO_2 emissions, because humans:
1) **Burn peat** for energy generation**.** The global CO_2-emission from peat extraction is approximately 60 Megatons per annum;
2) **Drain peatlands** for agriculture, forestry, and peat extraction. Consequently peat is oxidizing and burning over tens of millions of hectares worldwide. Together these activities are responsible for CO_2 emissions of 3 Gigatons (= 3,000 Megatons) per annum.

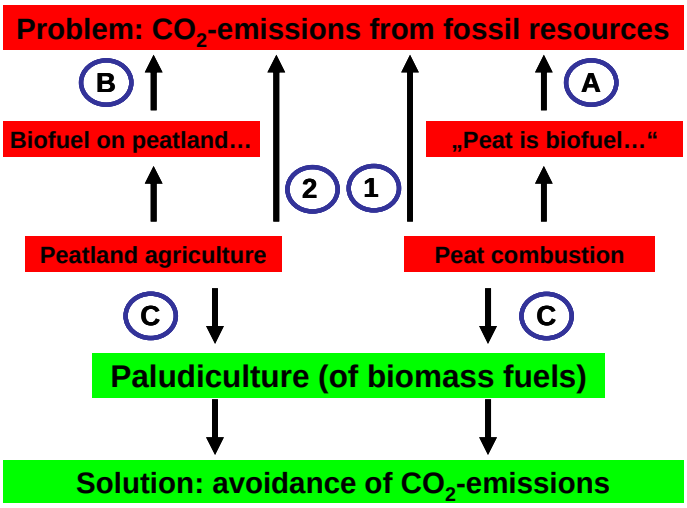

Fig. 1*: The role of peatlands with respect to the CO_2 problem*

In the previous IMCG Newsletter (2007/2) we conclusively rejected the false claim of the peat lobby to 'solve' the first problem by just *calling* peat a 'biofuel' ((A) in fig. 1).

The question whether peat is 'renewable' or 'fossil' is not simply an academic exercise. The prices of CO_2 credits (about € 20 per ton CO_2 on the European ETS market) are *so* high compared to the world market prices for coal and lignite (about € 50 per ton, each ton producing over 3 tons of CO_2), that they decisively influence the competition between various types of fuel. If peat would unjustly be marked as a climatically neutral fuel, this would fundamentally change the position of peat on the energy market and lead to an enormous boom in the use of peat for energy.

Peat is not a biofuel, peat is a fossil fuel! Biofuel combustion burns organic material that anyhow would oxidize by decay in the foreseeable future. In contrast, without exploitation, peat would *not* end up in the atmosphere as CO_2. Similar to other fossil fuels, peat combustion releases Carbon from a long-term store where it would otherwise have remained indefinitely. Raimo Heikilla, Tapio Lindholm and Heiki Simola report in this Newsletter on ongoing discussions on this topic in Finland.

This Newsletter deals with another counterproductive approach to lessening the climate problem: the cultivation of biofuels on drained peatlands ((B) in fig.1).
As a result of worldwide climate concern, the market for biomass fuel is exploding. This leads to a rapidly increasing cultivation of biomass crops on peatlands that are newly or deeper drained for that purpose. Cultivation of biofuels on drained peat, however, generally leads to much larger CO_2-emissions from the oxidizing peat than can be saved by replacing fossil fuels by such 'biofuels'. The contributions of Marcel Silvius and John Couwenberg in this Newsletter illustrate this with examples varying from oil palm in Southeast Asia, sugar cane in subtropical Florida, to maize and miscanthus in the temperate zone.
These perverse developments demonstrate the necessity to come to a rapid certification in order to stimulate the cultivation of renewable biomass resources that really contribute to climate mitigation instead of amplifying the problem. Two recent initiatives are introduced: one of the Round Table on Sustainable Palm Oil (RSPO) that is currently open for comments and a recent proposal for a 'meta-certification system' initiated by the German Agency for Renewable Resources (FNR).
Greenhouse gas emissions from drained peatlands have to be avoided or reduced. An article of Alex Kaat calls for a global finance mechanism to trigger large-scale restoration and management of peatlands, with priority given to tropical peatlands. The benefits would be carbon storage, poverty reduction, and biodiversity conservation. Another example is in the exciting developments in Belarus (report with contributions from Zbig Karpowicz and Martin Flade), where after the rewetting of an initial 42,000 ha of degraded peatlands in a running UNDP project, government and NGOs are jointly focussing on the rewetting of another 260,000 ha (!) as a first phase and an even larger area (!!!) in the longer-term to avoid emissions of several million tonnes of CO_2 equivalents annually. The advanced plans include selling the carbon credits on the voluntary carbon market and using the revenues for the long-term sustainable financing of restoration and management of the re-wetted peatlands and of parts of the protected areas network in Belarus.
The demand for biomass is leading to a new wave of agricultural intensification, to rising land prices, and to changes in ownership of agricultural and forestry

lands. Lands that had been set-aside because of agricultural overproduction are again being occupied. Marginal lands, that had been abandoned, are becoming interesting again.
These larger demands and higher prices create – next to real dangers – also new opportunities for approaches that hitherto were unfeasible, unachievable, and unthinkable. Worldwide possibly as much as 800,000 km^2 of peatlands have been drained, are heavily emitting CO_2 through ongoing peat oxidation, are largely degraded from a standard agricultural point of view, and are mostly futile for nature conservation.
Here the two mortal sins of mire exploitation can be repaired in conjunction: by re-installing wet conditions to diminish greenhouse gas emissions *and* by cultivating crops that substitute fossil fuels and raw materials ((C) in fig. 1).

With such 'paludicultures' (agriculture and forestry under wet conditions), peatland restoration can contribute in two ways simultaneously to climate mitigation:
- by stopping the CO_2 and N_2O emissions from drained peatlands
- by avoiding CO_2 emissions from fossil resources by providing renewable biomass alternatives.

Wendelin Wichtmann and Hans Joosten report from their long experience with developing paludicultures in Central Europe.

Rewetting of drained peatlands does not immediately lead to decreasing greenhouse gas emissions. For several reasons an initial *increase* in emissions might be observed. This should, however, not discourage us: scenario studies of Jürgen Augustin show that rewetting is always better for the climate!

Learn from peatlands!

According to the Stern Review, the report on the economics of climate change commissioned by the British government, fertilisers are the largest single source of emissions from agriculture (followed by livestock and wetland rice cultivation). They bring huge amounts of nitrogen into the soil, which is later emitted into the atmosphere as nitrous oxide. The same report calculates that total agriculture emissions are expected to rise by almost 30 per cent in the period to 2020.
Most peat producing ecosystems thrive under nitrogen poor conditions (bogs even live 'from merely wind and dew of heaven') and still create a biomass surplus that enables vigorous peat accumulation. In Tierra del Fuego we have measured C/N relations of over 200 in bog soils!
Another issue often overlooked is that many agrofuel crops are heavy consumers of water. Irrigation consumes as much as three quarters of the world's fresh water, and agrofuel crops will add a lot to that demand. A March 2006 report of the International Water Management Institute (IWMI) warned that the rush to biofuels could worsen the water crisis. IWMI calculated that, in a country like India, each litre of sugar-cane ethanol requires 3,500 litres of irrigation water.
Most peatland plants are – paradoxically - adapted to low water supply and are able to restrict their transpiration. The reason for that is that they root in permanently water saturated conditions where reduced and very poisonous substances (Fe^{2+}, Mn^{2+}, S^{2-}) abound. Some peatland plants (but not all!) realise high productivities with limited water and in comparison with open water manage to keep water losses to the atmosphere limited. Others with their high evapotranspiration contribute to mesoclimatic cooling. Studies of extensive peatland drainage in the past have shown a warming effect on the climate, e.g. in Belarusian Polesia. It will be interesting to study now the reversal of that process.

Energy policy in favour of peat based on a questionable research report

by Raimo Heikkilä, Tapio Lindholm & Heikki Simola

Many Finnish politicians both in Finland and in the European Parliament are strong advocates of expanding the use of peat for energy production. They argue that peat is a slowly renewable natural resource and that it is, in that respect, different from fossil fuels, such as coal and oil. The aim is to make people see peat as a green, renewable energy source and play down its indisputable role in the greenhouse effect.

Supporters of peat use often refer to the definition of peat as a renewable fuel being based on a scientific study. The said study is the report published by the Ministry of Trade and Industry of Finland in 2000 in Finnish and English, "The Role of Peat in Finnish Greenhouse Gas Balances", authored by **Patrick Crill** (USA), **Ken Hargreaves** (UK) and **Atte Korhola** (Finland). Its key conclusion is that peat

should be assigned its own category, a "slowly renewable biomass fuel". However, the report does not go as far as to deny the fact that the greenhouse impacts of fuel peat are even worse than those of coal. Defining peat as renewable can be seen as a political statement disguised as science. Such confusing use of terms is particularly unfortunate when the impact of carbon emissions on the greenhouse effect is a current concern.

The conclusions of the report have turned downright Kafkaesque on the Ministry of Trade and Industry website (www.ktm.fi/?l=en&s=179), where the following sentences, for example, can be found under the title "Renewable energy sources and peat": *In Finland, peat has been defined as a slowly renewable biomass fuel. …The National Climate Strategy aims to maintain peat as a competitive fuel for cogeneration of heat and power.* Finland has thus quite simply defined black as white, and is preparing for the future by supporting a form of energy that is the worst from the perspective of climate change.

It is true that the peat resources of our country are slowly renewing themselves, since peat is formed on several pristine mires. This process is essentially the same that has resulted in the formation of coal and oil deposits. In this sense, peat should be in the same category with these fossil natural resources: they all represent organic matter that is put aside from the carbon cycle of ecosystems. The key thing is that when peat is burned, carbon is released into the atmosphere mainly from deposits that have been in existence long before the industrial era. It has taken thousands of years for a typical mire to develop, a period of time that by far exceeds all time frames of societal planning and decision-making. As regards preventing climate change, the renewability of peat is a totally insignificant side issue.

In the above-mentioned report, the claim of sustainability of peat use is further justified by stating that pristine mires bind carbon and it is therefore sustainable on a nationwide basis to burn at least an amount equivalent to the annual growth of peat. This reasoning does not stand up to critical examination. It is highly questionable to suggest that a problem caused by human action is compensated by a naturally occurring reverse process. Moreover, with regard to the greenhouse gas balance, pristine peatlands are rather neutral. Even though carbon dioxide is absorbed by mire plants during photosynthesis, peatlands release methane, which has a significant greenhouse impact. Consequently, the carbon absorbed by mires only compensates for their own greenhouse gas emissions.

In principle, emissions from peat burning would only be balanced by regrowing peat on the extraction areas after their closing, and even then, it will take thousands of years to restore the balance. Afforestation or agricultural use will not restore a peat mining area into an ecosystem that would act as a permanent carbon sink. When peat is burned, fossil carbon is released into the atmosphere, and the peat industry cannot establish carbon sinks that could compensate for this. In this respect, peat is not different from coal. With regard to climate change, they are equally problematic.

The conclusions of the report commissioned by the Ministry of Trade and Industry were shot down on scientific forums right after its publication. An example of this is A. J. Schilstra's analysis of the sustainability of the use of peat for energy production in *Ecological Economics*, a journal published by Elsevier, in 2001 (No. 39, pp. 285–293). The heated debate continues to this date (see www.imcg.net). In Finland, this discussion has not received much publicity.

Unfortunately, there is little knowledge about peat and the problems related to its use for energy production within the EU, and most of the member states are not even interested in this issue. The peat lobby most active in Finland and Ireland has therefore been able to promote its cause rather freely, sometimes using questionable methods. The falsehood of the propaganda encouraging the use of peat will, however, be revealed sooner or later. Attempts to manoeuvre peat into a special position in Finnish energy policy under the pretence of ecological sustainability are doing great damage to our country's reputation as a promoter of sustainable development.

The text above was published in Finnish in the journal Tieteessä Tapahtuu (Current Issues in Science) 3/2007, pages 31-32. It was translated into English by ms. Merja Paajanen, because in an email message sent to us by Atte Korhola after reading our article, he mentioned among other things that it was not correct to write it in Finnish only, because Crill and Hargreaves are not able to read it. The reason for our article, criticizing the study of Crill et al. seven years after it was published, was that in Finnish media peat lobbyists and many politicians repeatedly refer to the so-called three wise men calling peat a "slowly renewable biomass fuel". And they tend to forget systematically the word slowly. Debate in the journal "Tieteessä tapahtuu" will continue, because both Atte Korhola and representatives of the state-owned peat company VAPO Oy have sent replies to us. There is also debate going on e.g. in the biggest newspaper "Helsingin Sanomat" and the most important magazine "Suomen Kuvalehti". The article by Hans Joosten in IMCG Newsletter 2007/2 is a great help also in the Finnish discussion about renewability and climate change impact of peat.

Expanding biofuel markets fuel climate change

by Marcel Silvius

Over the last decades, a silent disaster has been taking place in South-east Asia and currently it is rapidly increasing in magnitude as a result of the huge biofuel demands in Europe and Asia. Millions of hectares of tropical peat swamp forests in Indonesia and Malaysia, which used to support a globally important biodiversity, have been logged and drained for various land-uses, but particularly for palm oil plantations. A total of 25% of current palm oil plantations are located on such peatlands, and the Indonesian and Malaysian Government are planning an expansion of 6 million hectares with over 50% on peatlands. These expansions will cater mainly for the biofuel markets. Many large scale developments in tropical peatlands have failed, such as many transmigration schemes that happened in the 1980s and 1990s particularly in deep peat areas of Sumatra, leaving extensive barren and desiccated waste lands. Current biofuel plantation developments are posing a severe threat to the remaining peat swamp forests, but are also fuelling rather than mitigating global climate change.

Other impacts from peatland degradation

- Poverty in peatlands is 2 to 4 times higher than in other regions of Indonesia
- Fire related smog results in hundred thousands of hospitalisations. Millions of work and school days are lost. Over 30% of children in peatland regions are sick, having respiratory diseases and linked stunted growth.
- Indonesian peat fires cause dense smog in other parts of South-east Asia, impacting on the transport and tourism sectors, as well as public health. This creates also international political tension.
- Diminishing water retention capacity of peatlands leads to increased risks of floods and droughts, especially also in down stream agricultural areas, plantations and cities.
- Loss of remaining peat forests due to illegal logging, drainage and fires enhances pressure on remaining natural resources, causing a vicious cycle of environmental degradation and increasing poverty.

Where palm oil plantations are developed on peat soils, these soils must be drained to a minimum of 70cm depth, but often they are drained to 1 meter or more. Drainage of peat soils causes a process of decomposition in which the soil carbon reacts with the oxygen that penetrates the soil to form carbon dioxide (CO_2), a greenhouse gas. In the dry season the dry peat soil in the barren areas catches fire easily. Over the last decades fires, mainly caused by land clearance activities, have regularly covered millions of hectares of drained peatlands but have also affected the adjacent remaining peat swamp forests as well as plantations. Wetlands International and Delft Hydraulics have carried out a comprehensive scientific study resulting in an estimate of the total annual CO_2 emissions from degraded peatlands (Hooijer et al. 2006). The results were shocking, and revealed that Indonesia now has the third largest CO_2 emissions of the world (fig. 1). The estimated minimum total from drainage and fires amounts to 2000 Million tonnes CO_2 per annum (taking the most conservative figures: 632 Mt from drainage and 1400 Mt from fires). During El Niño events the drained peat soils dry out even more and deeper, and peak emissions may contribute over 3000 to 9000 Mt CO_2 in one fire season (Page et al. 2003) or 15 to 40 % of the annual global emissions from fossil fuels.

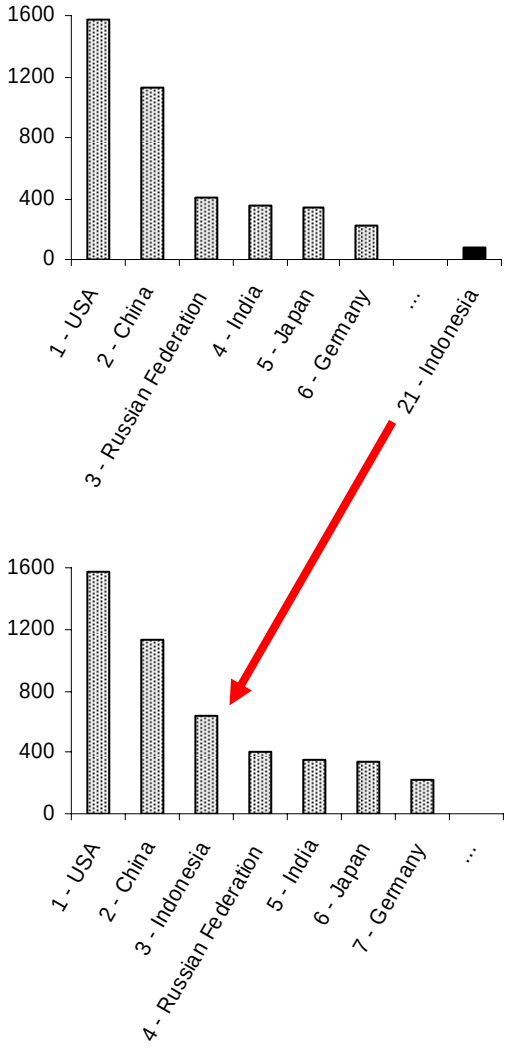

Figure 1: *Emissions from fossil fuel burning (in 10^6 t CO_2-C). Indonesia is the third largest polluter in the world in terms of Carbon emissions if its emissions from degraded peatlands are included.*

These amounts change the global picture concerning carbon emissions. The peatlands of South-east Asia emit more CO_2 than removed by the combined efforts of western countries to reduce greenhouse gases under the Clean Development Mechanism of the Kyoto Protocol. Emissions of peatlands are generally not calculated into official statistics and avoidance of these emissions does not count as a reduction of a country's emission, unlike investments in cleaning up industry and transport sectors. The United Nations Framework Convention on Climate Change (UNFCCC) currently thus lacks any incentives for action.

Carbon economics and carbon trade

Globally huge investments are made to decrease CO_2 emissions.
Some cost-benefit examples:
- Shell + Statoil in Norway: € 1.5 billion for 2.5 Mt/y
- Germany: € 5 billion for 50 Mt/y
- World Bank in China: € 1.5 billion for 19 Mt/y
- UK: € 3 billion for 88 Mt/y

These investments range between € 34 to € 600 and are on average about € 69 per avoided ton of CO_2 emissions. Prices under the Clean Development Mechanism for avoidance of one ton CO_2 fluctuate between € 10 to € 20.
With these prices peatland degradation in South East Asia causes between 20 to 140 billion Euros to literally go down the drain and up in smoke.
Voluntary carbon trade mechanisms are currently in development to create markets in options that may result in strong financial incentives for peatland restoration and sustainable development.

In response to the new scientific data, the Netherlands (which has an annual total emission of 80 Mt CO_2) has made a huge policy turn-around. The last government had allocated over 1.5 billion Euros in subsidies over a period of 10 years to promote the use of palm oil as a biofuel in order to reduce its annual emissions with a few percent. After publication of the new data that imply that use of palm oil as a biofuel will result in significantly increased emissions, all further subsidies were halted. Essent, the largest Green Energy supplier to the Dutch public, has immediately stopped the import of palm oil. This example is being followed by other suppliers. Biox, a company focusing almost exclusively on use of palm oil for power generation, is extremely concerned. Their business will depend on identifying options for obtaining certified sustainable palm oil. However, currently there is no overall certification scheme in place and the complexities of its development under the Round Table on Sustainable Palm Oil (see elsewhere in this Newsletter) are augmented by the fact that palm oil is also produced for the food sector which so far has been less sensitive to climate change impacts. A "Track and Trace" certification scheme will invariably lead to higher costs.

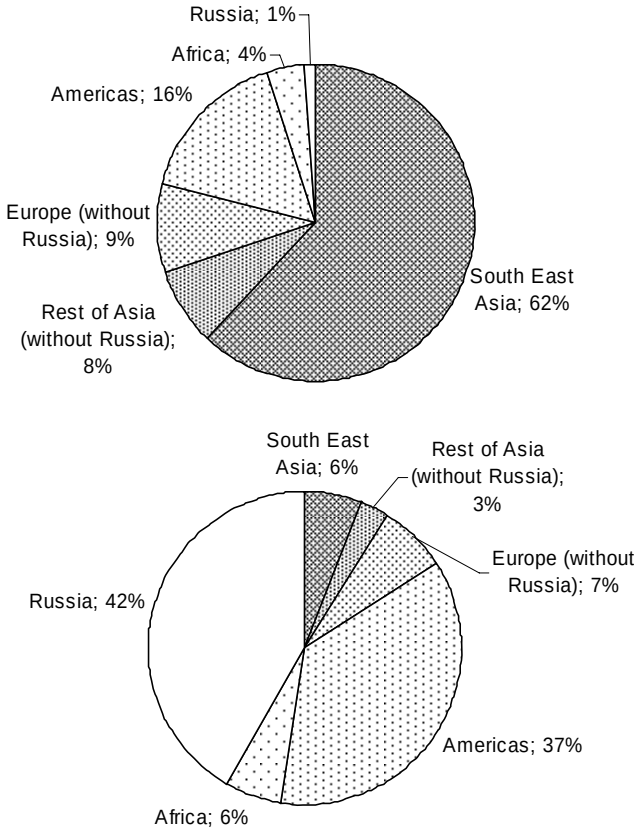

Figure 2: *Top – proportion by region of the total of 887 10^6 tonnes of CO_2 emissions from peatland drainage; bottom – peatland extent by region*

The Indonesian government has not provided an official reaction to the report, but press statements by high officials indicate a reluctance to change current policies and plans for large scale expansion of palm oil plantation on peat. Indonesia will be hosting the next Conference of Parties of the UNFCCC in Bali in December 2007. It remains to be seen how seriously the Indonesian government and the UNFCCC will treat this issue. But with 0.2% of the global land surface contributing at least 8% of global CO_2 emissions (fig. 2) it is inconceivable that this can be further overlooked. In addition, consumer organizations and industry will take note of the implications.

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Biomass energy crops on peatlands: on emissions and perversions

by John Couwenberg

To reduce anthropogenic CO_2 emissions to the atmosphere, fossil fuels are increasingly substituted by biomass fuels. As a consequence, the demand for arable land has grown and with it the pressure on marginal lands, including peatlands. Cultivation of biomass crops on peat soils is usually associated with drainage. Drainage leads to oxidation of the peat and subsequent release of CO_2 to the atmosphere. This of course disagrees with the very reason why energy crops are grown – namely to reduce CO_2 emissions to the atmosphere. In many cases CO_2 emissions from degraded peat soils exceed the amount of CO_2 offset by the substitution of fossil fuels. The use of biomass fuels cultivated on peat soils then leads to a net-increase in CO_2 emissions compared to the use of fossil fuels.

Fuel combustion related emissions are usually expressed in tonnes of CO_2 generated per TJ of energy. Like with any other fuel, the combustion of biomass fuels leads to CO_2 emissions. These emissions are part of a short cycle, however, in which growing biomass removes CO_2 from the atmosphere which is then returned to the atmosphere by combustion. As such, CO_2 emissions of biomass combustion are considered to be zero. It should be noted, however, that some other greenhouse gases may be emitted during combustion. Moreover, climate impact studies must take energy consumption and greenhouse gas emissions during production, transport and conversion of the fuel into account. Whereas such non-combustion emissions contribute only a minor additional fraction to emissions from fossil fuel combustion, they make up the bulk of the emissions in case of biomass fuels.

This article presents some best estimates of emission factors for various biomass crops grown on peat soils that include emissions from associated peat soil degradation. The amount of CO_2 (and N_2O) emitted from drained peat soils depends on i) climate, ii) peat type, iii) type of crop cultivation and iv) drainage depth.

i) Climate: All other things being equal, CO_2 emissions of drained peatlands are larger in the tropics than in the temperate zone, where emissions are again larger than in the boreal zone (Hooijer et al. 2006).

ii) Peat type: All other things being equal, greenhouse gas emissions of drained nutrient rich fen peat soils are larger than of nutrient poor raised bog peat soils (Höper 2002, Kasimir-Klemedtsson et al. 1997). N_2O emissions from bogs are low due to the low pH and low total nitrogen contents. In more nutrient-rich fens, annual N_2O emissions of up to 16 kg N/ha have been observed, equivalent to 7.8 t CO_2/ha (median 5.7 kg N/ha, equivalent to 2.7 t CO_2/ha, Joosten & Clarke 2002).

iii) Type of crop cultivation: All other things being equal, greenhouse gas emissions from row crops on fertilised tilled peatlands are higher than of other types of cultivation (Höper 2002, ECCP 2003, Alm et al. 2007). The kind of crop cultivated has an influence as well. For example, coniferous tree litter can cause cooling and acidification, which reduces peat oxidation and subsequent CO_2 emissions (Laine et al. 1995, Minkkinen et al. 1999); also differences in transpiration characteristics between C3 and C4 plants will affect peat oxidation rates.

iv) Drainage depth: in temperate peatlands the highest mineralization rate is observed with a water table depth of 80-90 cm below surface. Shallow drainage depths of 17-60 cm already lead to large greenhouse gas emissions of 80% of the maximum value (Mundel 1976). At water levels deeper than 90 cm, drought inhibits peat mineralization again (Wild & Pfadenhauer 1997). In the tropics, the relationship is less clear, but emissions increase with drainage depth at least until a depth of 80 cm (Hooijer et al 2006).

Looking at some of the major biomass fuel crops, we arrive at following emission factors (table 1):

“All biofuels from drained peatlands have higher emissions than fossil fuels”

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***Table 1**: Energy yield and emission factor of typical biomass fuel crops on peat soil*

Crop	Net yield [GJ ha^{-1} a^{-1}]	Emission factor (without peat) [t CO_2/TJ]	Emissions from peat [t CO_2-eq ha^{-1} a^{-1}]	Emission factor (with peat) [t CO_2/TJ]
Palm oil (SE Asia)	-	22 [a]	86 [b]	600 [c]
Maize, net energy (Germany)	165 [d]	-	40	240
Maize, biogas (Germany)	45 [e]	-	40	880
Miscanthus, net energy (Germany)	213 [d]	3 [g]	25	115
Miscanthus, hydrogen (Germany)	4 [f] [g]	-	25	625
Sugar cane, ethanol (Brasil)	140 [h]	9 [h]	80	570
Sugar cane, net energy (Florida)	155 [i]	-	55 [j]	350
Coniferous wood, net energy (Scandinavia)	15 [k]	-	3.4 [l]	225

Notes:
[a] Essent 2007, includes transport to EU end user
[b] Hooijer et al. 2006
[c] Essent 2007 arrives at 456 tCO_2/TJ, using peat related emissions of 65 tCO_2/ha
[d] Maier et al. 1998
[e] Bronner, cf. Dreier 1999.
[f] conversion to hydrogen is least efficient; conversion to methanol may yield 95 GJ/ha, resulting in emissions of 315 tCO_2/TJ
[g] cf. Harvey 2007
[h] cf. ESMAP 2005, Macedo et al. 2004
[i] USDA/ERS
[j] Galloway et al. 1999
[k] cf. METLA, Finnish Forest Research Institute
[l] Alm et al. 2007, mean value of below ground litter input and decomposition for two sites of different fertility

***Table 2**: Selected fossil fuel emission factors with and without indirect (fugitive) emissions from mining, transport and conversion*

Fuel	Emission factor [t CO_2/TJ] [a]	Emission factor incl. fugitive [t CO_2/TJ] [b]
Peat	106	-
Coal (anthracite)	98,3	-
Fuel oil	73,3	81,1
Natural gas	52,2	53,9

Notes:
[a] IPCC
[b] Elsayed et al. 2003, Essent 2007.

Biomass fuels are grown to avoid greenhouse gas emissions from combustion of fossil fuels (cf. table 2). Comparing emission factors from table 1 and 2, those for biomass fuels actually exceed those for fossil fuels.

Thus the use of biomass fuels from drained peat soils perversely results in higher emissions than the use of fossil fuels. Conclusion: All biofuels from drained peatlands have higher emissions than fossil fuels – biomass energy crops do not belong on drained peatlands! To reduce greenhouse gas emissions, agriculturally drained peatlands should not be stocked with biomass energy crops, but rather be rewetted to avoid emissions from further degradation. Such rewetted peatlands can then be used for wet forms of agriculture, including cultivation of biomass energy crops (see elsewhere in this Newsletter). In this way, besides reducing emissions from peat oxidation, fossil fuel emissions can be avoided as well (table 3).

***Table 3**: Energy yield and emission factor of alternative biomass fuel crops on wet peatlands. Emission reductions from rewetting are not taken into account.*

Crop	Net yield [GJ ha^{-1} a^{-1}]	Emission factor (without peat) [t CO_2/TJ]	Emissions from peat [t CO_2-eq ha^{-1} a^{-1}]	Emission factor (with peat) [t CO_2/TJ]
Alder wood, net energy (Germany)	67,5	8	-2.4 – 0	-27 – 8
Common reed, net energy (Germany)	140	8	-1 – 0	1 – 8
Reed Canary Grass, net energy (Germany)	100	8	0	8

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“There is simply no escape: we have to reduce energy consumption if we are to survive on this planet. There is no point asking the car companies to make their cars a bit more energy-efficient if the number of cars is going to double and if public policies continue to be geared towards making this happen. There is no point asking people to turn off their lights if the entire economic system continues to be oriented solely towards moving goods around the globe from countries where the corporations producing them can obtain the highest profit margins. This is exactly what is happening with the current agrofuel push. […]

“The FAO calculates that, on average, farmers in industrialised countries spend five times as much commercial energy to produce one kilo of cereal as do farmers in Africa. Looking at specific crops, the differences are even more spectacular: to produce one kilo of maize, a farmer in the US uses 33 times as much commercial energy as his or her traditional neighbour from Mexico. And to produce one kilo of rice, a farmer in the US uses 80 times the commercial energy used by a traditional farmer in the Philippines! This ‘commercial energy’ that FAO speaks of is, of course, mostly the fossil-fuel oil and gas needed for the production of fertilisers and agrochemicals and used by farm machinery, all of which substantially contribute to the emission of greenhouse gases.”

Seedling. Agrofuels special issue: www.grain.org/seedling/?id=485

Palm Oil

by Hans Joosten

Globally vegetable oil production totals about 100 million tonnes per year. One third of this oil is produced by the oil palm, currently probably the world's most important oil crop with the highest oil yield per hectare. Oil palm can only be cultivated in tropical areas.

Oil palm (from Koehler's Medicinal-Plants 1887)

Palm oil is an important and versatile raw material for both food and non-food industries. The past decades have seen rapid expansion in the production of palm oil driven by the increasing demand for edible oils and the emergence of the renewable energy market (fig. 1).

The Anglo-Dutch company Unilever is one of the largest buyers of palm oil in the world, accounting for about 3% of global demand. It uses palm oil in products such as margarine, spreads, oils, soups, sauces and seasonings, ice cream, soap, shampoo and detergents.

From the 1990s to 2006, the global palm oil plantation area has increased by 50%, mostly in Malaysia and Indonesia, the world's largest producers of palm oil (figs. 2 and 3).
Indonesia, which had only about half a million hectares under oil palm cultivation in the mid-1980s, has now over 6 million hectares in production, and plans to plant an additional 20 million hectares in the next two decades. Malaysia expanded oil-palm plantations to 4.17 million hectares in 2006, with the most rapid expansion in Sarawak and Sabah on Borneo. The country is the world's largest producer and exporter of palm oil, with a 45% share in global palm-oil production.
The leading importing countries are the EU, China, and India (figs. 4 and 5).

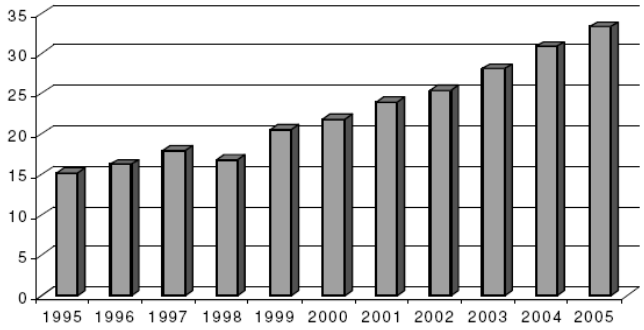

Figure 1: *Exports volumes of palm oil (in million tonnes)*

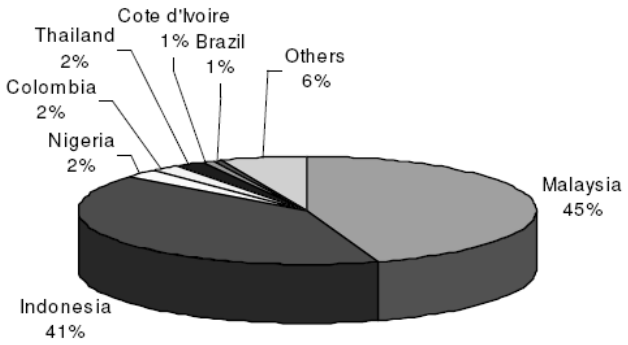

Figure 2: *Palm oil producing countries 2005*

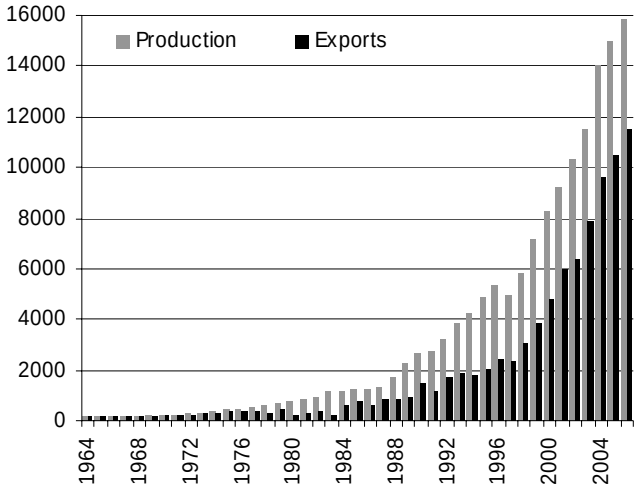

Figure 3: *Palm oil production and exports in Indonesia 1964 - 2006 (metric tonnes x1000)*

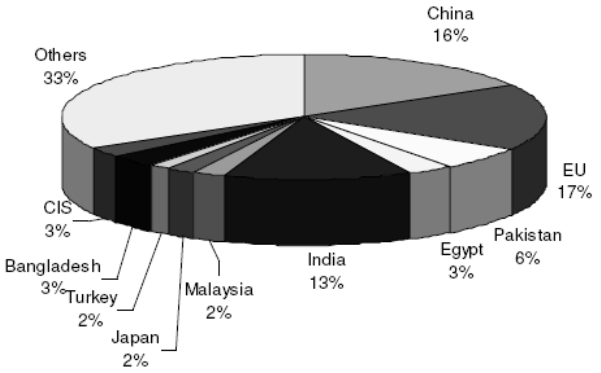

Figure 4: *Palm oil importing countries (2005)*

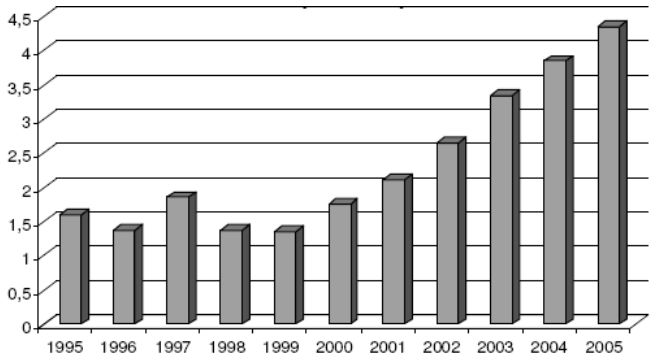

Figure 5: *Palm oil imports into China.*

The development of new plantations has resulted in the conversion of large areas of tropical forests. Use of fire for preparation of land for oil palm planting has contributed substantially to the problem of forest and peatswamp fires.

Round Table

In 2001, WWF gave an assignment to Reinier de Man, a Dutch consultant, to explore the possibilities for a *Roundtable on Sustainable Palm Oil*. In 2002, an informal co-operation started between Aarhus United UK Ltd, Golden Hope Plantations Berhad, Migros, Malaysian Palm Oil Association, Sainsbury's and Unilever together with WWF.

On 8 April 2004, the Roundtable on Sustainable Palm Oil (RSPO) was formally established under Article 60 of the Swiss Civil Code with a governance structure that ensures representation of all stakeholders throughout the entire supply chain. RSPO is composed of Ordinary Members in seven different categories (oil palm growers, palm oil processors and/or traders, consumer goods manufacturers, retailers, banks/investors, environmental/nature conservation NGOs and social/developmental NGOs) and Affiliate Members.

The RSPO will have its 5th Roundtable Meeting (RT5) 20-22 November 2007 in Malaysia where it will present the RSPO Certification System and review the progress made in the production and use of sustainable palm oil.

RSPO
Roundtable on Sustainable Palm Oil

RSPO Statement: Sustainable Palm Oil Certification and Trading Systems

Kuala Lumpur, 26 June 2007: The Roundtable on Sustainable Palm Oil (RSPO) took another step closer towards its stated objective of bringing sustainable palm oil to the market. A Certification protocol with recommendations for a complete scheme for certifying palm oil production against the RSPO Principles & Criteria for Sustainable Palm Oil Production (RSPO P&C, which includes the generic Guidance and Indicators) has been approved by the RSPO Executive Board. Trial or pilot audits using the draft system are already underway. It is expected that results from these audits will be shared at the upcoming 5th Roundtable Meeting on Sustainable Palm Oil (RT5) scheduled during 20-22 November 2007 in Kuala Lumpur. The Certification systems Protocol gives clear guidance to Certification Bodies on how to become accredited (i.e. registered) as RSPO certifiers. This will allow palm oil producers to approach these Certification Bodies with the request to undertake an RSPO audit. The Certification Protocol is now available on the RSPO web site.

Principles and Criteria

The RSPO Principles and Criteria for Sustainable Palm Oil Production, available under www.rspo.org/Key_documents.aspx, were adopted in November 2005 for an initial pilot implementation period of two years. This enabled field testing of the principles and criteria, and improvement of the indicators and guidance.

The review process includes a public consultation period that will run from 13 July 2007 until 12 September 2007. Comments received will be provided as input to the review meeting from 8 - 10 October 2007 in Indonesia. The outcomes from the process will the considered by the RSPO Executive Board and General Assembly in November 2007.

Please send any comments on the current RSPO Principles and Criteria, together with the accompanying indicators and guidance, to Ms. Perpetua George at pep@proforest.net.

Please contact the RSPO Secretariat (rspo@rspo.org) or ProForest (pep@proforest.net) for any further information.

RSPO and Peat

Reference to peat and peatlands in the 53 page long RSPO Principles and Criteria is rare. "*Use of fire on peat soils should be avoided*" (p. 25), "*Extensive planting on steep terrain, and/or on marginal and fragile soils, is avoided*" (p. 41), the latter including

peat soils, and "*Planting on extensive areas of peat soils > 3m deep and other fragile soils should be avoided*" (p. 42). That's all…
There is no conceivable reason to why oil palm cultivation on peat soils of less than 3 m deep would be "sustainable". Similar to lands with more than 3 m the necessary drainage will lead to huge CO_2 emissions. In case of 'thin' peat layers it will not last as long before the whole peat layer will have disappeared, but that cannot be a criterion for sustainability, on the contrary…

Dutch regret subsidized use of palm oil for electricity generation

In August 2006, the Dutch government phased out a subsidy facility – the so-called MEP programme – for green electricity production designed to help realize the Dutch "9% green electricity by 2010" target. Partly as a result of this programme, about 45% of all biofuel used for electricity generation in the Netherlands in 2006 was vegetable oil, mostly palm oil. In December 2006, former Dutch Environment Minister Van Geel publicly stated that he regretted that the government had spent hundreds of millions of euros to subsidize palm oil electricity. Van Geel referred to carbon releases resulting from peatland drainage and deforestation resulting from the expansion of oil palm plantations. "We should not cause one environmental problem by solving another", he was quoted as saying.
In May 2007, the Dutch policy-monitoring institute ("Algemene Rekenkamer") published a damning evaluation of the MEP-programme. The institute found that the programme had failed to take into account environmental risks associated with biofuels, such as carbon emissions resulting from peatland development and deforestation for the expansion of oil palm plantations. The institute also noted that the MEP stimulated conflicting targets, i.e. climate versus biodiversity.

Wilmar
Friends of the Earth Europe has just published two reports on Wilmar International, one of the largest players in the Southeast Asian oil palm sector with an annual turnover of US$ 5.3 billion.
After a complicated take-over and merger plan (which will be finalized the coming months) with the edible oil businesses of the Malaysian Kuok Group and the Asian edible oil businesses of the American agricultural trading company ADM, Wilmar will be the leading agribusiness group in Asia. It will be the largest trader of palm and lauric oils in the world, the largest edible oil refiner in the world (61 refineries with a total annual capacity of 15.0 million tonnes), one of the largest palm biodiesel manufacturers, a significant plantation company in Indonesia and Malaysia (with a total landbank of 573,405 ha) and the largest trader and processor of edible oils and oilseeds and other agricultural products in China.

Zakaria, A., Theile, C. & Khaimur, L. 2007. Policy, practice, pride and prejudice. Review of legal, environmental and social practices of oil palm plantation companies of the Wilmar Group in Sambas District, West Kalimantan (Indonesia). Friends of the Earth Netherlands/ Lembaga Gemawan/KONTAK Rakyat Borneo, July 2007, 98p.
Available under:
http://www.foeeurope.org/publications/2007/Wilmar_Palm_Oil_Environmental_Social_Impact.pdf

van Gelder, J. W. 2007. Buyers and financiers of the Wilmar Group. Profundo, Castricum, 14 p.
Available under:
http://www.foeeurope.org/publications/2007/Wilmar_Palm_Oil_Financers.pdf

For more information:
www.rspo.org
http://en.wikipedia.org/wiki/Oil_palm
http://en.wikipedia.org/wiki/Palm_oil
http://news.mongabay.com/2007/0717-indonesia. html
http://www.foeeurope.org/press/2007/July3_PDC_Wilmar_PalmOil.htm

"A mere substitution of fossil energy resources by renewable resources is a dead-end street as long as typical Western style energy consumption is maintained or enhanced. […] North-America and Europe are currently consuming 63 % of the global mineral oil production and 40 % of the available calories, although they only comprise 16 % of the World's population. […]
A sustainable production of biomass must be embedded in a global energy revolution that is based on
- Sufficiency: a drastic reduction of energy consumption by changed concepts of welfare and lifestyles
- Efficiency: a rational use of energy by modern technologies
- Substitution: a sustainable utilization of all renewable energy resources."
Draft Vilmer Theses on the Production of Biomass, July 2007

Standards and certification

by Hans Joosten

Import of biomass from developing countries is considerably cheaper than growing similar products in the EU or the USA. This is partly because in developing countries environmental standards are generally low and exploitation high. Renewable resources from peat soils, also from domestic peat soils, furthermore hold the danger that their cultivation leads to more carbon being emitted from oxidizing peat than is avoided by substituting fossil fuels (see elsewhere in this Newsletter).
To address these problems, at the moment various standards and certificates are being developed to guarantee that environmental, health and social standards are maintained.
The RSPO Principles and Criteria for Sustainable Palm Oil Production have been discussed already in the contribution on Palm Oil in this Newsletter (see above).
A second example are the Dutch criteria for sustainable biomass (see box below). These state that biomass fuels from drained peatland are excluded as "the loss of carbon in that area can never be compensated by the CO_2 emission reduction of using biomass as fuel".

Recent Dutch criteria for sustainable biomass

Principle 1: The greenhouse gas balance of the production chain and the application of biomass is positive.
Criterium 1.1: The application of biomass must result in a net reduction of the emission of greenhouse gases over the entire chain. The reduction is calculated with regard to a reference situation with fossil fuels.
Indicator 1.1.1: (minimum demand) The emission reduction of greenhouse gases amounts to at least 50-70% for electricity production and at least 30% for biofuels. […]

Principle 2: Biomass production does not go to the detriment of important carbon reservoirs in the vegetation and the soil.
Criterium 2.1: Conservation of above-ground (vegetation) carbon reservoirs when establishing biomass units.
Indicator 2.1.1: (minimum demand) The establishment of new biomass production units will not take place in areas where the loss of above-ground carbon store can not be returned in a period of 10 years of biomass production. The reference date is January 1, 2007, except for those biomass flows for which already another reference date is valid from other certification systems (in development).
Criterium 2.2: Conservation of below-ground (soil) carbon reservoirs when establishing biomass units.
Indicator 2.2.1: (minimum demand): The establishment of new biomass production unites will not take place in areas with a large risk on substantial losses of carbon from the subsoil, such as certain grasslands, peatlands, mangroves and wetlands. The reference date is January 1, 2007, except for those biomass flows for which already another reference date is valid from other certification systems (in development).

Explanation
The reclamation of areas with large above- (vegetation) or below-ground (soil) reservoirs of carbon leads to the emission of large quantities of greenhouse gases. Reduction of greenhouse gas emissions are in this way in many cases offset completely. With respect to peatlands, for example, CO_2-emissions can be ten times higher than the CO_2-revenu of substituting fossil fuels by palm oil. Therefore these areas are excluded from the establishment of new production units for biomass.
The following areas are excluded:
- Areas where the loss of above-ground carbon store can not be returned in a period of 10 years of biomass production.
- Areas with a big risk of substantial carbon losses from the sub-soil, such as specific grasslands, peatlands, mangroves and wetlands.

For peatlands holds, that high CO_2 emissions take place as long as drainage of the area continues. These emissions are to be included in the calculation of the greenhouse gas balance, by which this turns out negative. As a result peatlands are in fact excluded, irrespective of the date that a plantation was established.
The criteria 2.1 en 2.2. complement criterion 1.1 (positive greenhouse gas balance). Criteria 2.1 and 2.2 exclude areas of which it is known that the loss of carbon in that area can never be compensated by the CO_2 emission reduction of using biomass as fuel. These areas are excluded beforehand on the basis of criteria 2.1 and 2.2. Therefore it is also not necessary to calculate the greenhouse balance for biomass from these areas.

www.mvo.nl/biobrandstoffEN/download/Toetsingskader%20duurzame%20biomassa_tcm24-221153.pdf (translation HJ).

Between the clear extremes of oil palm from deeply drained tropical peatlands and wood from undrained peatlands in the boreal zone there is a huge grey zone with much complications. Clearly, deeply drained peatlands always yield biomass fuels that are worse than fossil fuels[1].
Differences in plant productivity and changing balances between CO_2 sequestration and CH_4 emissions may, however, lead to climatic effects rapidly changing with changing water regime, also when the same soils and crops are involved. Alder wood from peatlands in Germany, for example, may be very negative for the climate, slightly negative for the climate, or clearly positive for the climate, depending on whether the mean water level in the forest is 25 cm below floor, 5 cm above floor, or 10 cm below floor, respectively (Schäfer & Joosten 2005). Mind that in this case the climatically most positive is *not* the wettest variant!

Book-and-claim
In general certification of products for environmental and social purposes is a complicated process, certainly when we have to deal with multiple types, sources, and flows. The German Agency for Renewable Resources has therefore commissioned the meó-Konsortium to develop a certification concept for biomass and biofuels that might be more easy to implement (www.nova-institut.de/news-images/20070726-02/Infobrief_07_07.pdf).
The recently published proposal contains four key points:

- In the medium term, certification should become independent from the utilisation of the biomass. This must prevent that sustainable production processes for one type of utilisation lead to a dislocation of the problem (so called "leakage-effects" in which a stop of an unsustainable practise on one site is annulled by a new unsustainable practise on another site).
- The certification is conceived as a meta-system in which already available certification systems are integrated. This allows rapid implementation with low costs and good acceptance.
- Biomasse and biofuels are bulk commodities that are traded globally. Tracking the product back to the origin along the whole chain of trade is only possible partially and with much effort. Therefore a Book & Claim-approach with tradeable certificates is favoured over other trade and control mechanisms (like Inventory & Control, Track & trace, Bulk Commodity, Full segregation).
- To keep biomass production and climatic aspects separated, two different certificates are proposed.

The approach departs from the assumption that the sustainable production of biofuels is attractive for both producers and consumers, as can be stimulated by laws, subsidies, and taxes. The developed trade concept for certificates also enables the biomass producers to share the economic advantages of sustainably produced biofuels.

Two certificates
Two independent certificates are proposed:
The *sustainability certificate* comprises changes in land use, effects on biodiversity, conservation of carbon stores in soils, and social standards (ban on child and compulsory labour).
The *greenhouse gas (GHG) certificate* only considers the GHG emissions of the total production and processing chain of a biofuel. Initially default values for the GHG balance of various biofuels shall be used; later companies will be allowed to get credit for improvements by innovation. The proposed Book & Claim System separates the certificates from the physical product flow. The certificates are registered and traded on a market
The procedure is as follows: The exploiter of a palm oil plantation lets its production be certified by an independent certification company according to agreed standards. He gets certificates for the volume of oil that corresponds to the extent of the plantation. As hitherto he sells the palm oil on the world market; the certificates are sold on a virtual market place. In Europe a biodiesel producer buys palm oil, processes it to biodiesel and sells this to a mineral oil company. The biodiesel producer also buys the appropriate amount of certificates on the virtual market place and hands these over to the mineral oil company.
This system is rather simple, but reliable and cheap. It abstains from concrete tracking of individual product flows. This means that in the individual case no proof can be given of the concrete production conditions of a specific charge, but the options for manipulation are limited. The system can be rapidly introduced and operated on the global market. It has the benefit that it also encourages producers that are not active on the international market to produce sustainably.

Implementation
A pilot phase for implementation of this approach is currently being prepared for the EU 27, Brazil, Argentina, Malaysia and Indonesia. For these countries the development of a practical certification system is planned for some types of biomass and biofuels and will include the establishment of a registration procedure and an electronic trade platform for certificates.
By involving all stakeholders in the development of certification standards and in the first practical certification procedures on-site, it is hoped to learn jointly from the experiences and to arrive at the acceptance that is necessary to implement the system globally.

[1] see the contribution of John Couwenberg in this Newsletter

Carbon stocks in peatlands: a vital gap in the carbon market

by Alex Kaat

While billions of dollars are being invested worldwide to reduce carbon dioxide emissions, no international mechanism exists to prevent the release of huge quantities of precious carbon stocks currently stored in wetlands, especially peatlands. This is despite recognition by the IPCC of the vital importance of protecting peatlands in tackling climate change and growing political pressure from both northern and southern countries to take urgent action. Protecting peatlands from degradation through poor land use would provide a financially efficient way of reducing massive carbon dioxide emissions.

Wetlands International calls for a dedicated global finance mechanism for the protection and restoration of wetlands as an urgent priority in the package of climate change actions. The voluntary carbon trade could play an important role in delivering this.

More and more governments and corporates recognise the importance of safeguarding the world's remaining peatswamp forests. Their huge carbon stocks, equivalent to around 100 years of fossil fuel emissions are a precious global asset. Poor land use is currently resulting in the rapid conversion of these stocks into the greenhouse gas carbon dioxide. The problem of tropical peatswamp forest degradation is preventable – and their conservation and restoration could become a major opportunity for countries like Indonesia.

Bloomberg Media calculated in a recent article, that curbing the drainage of these peatswamps and using their stored carbon to offset emissions elsewhere (carbon trading) could be worth as much as 29 billion euros ($39 billion) per year. This was based on the UN's current estimate that traded carbon is worth € 14.59 per tonne, and on research by WL/Delft Hydraulics and Wetlands International (PEAT-CO2) that shows that 2 billion tonnes of carbon dioxide are being lost from tropical peatswamps each year.

This value highlights the potential of this market, however no international incentive system exists to encourage countries to sustain and restore these threatened carbon stocks. Cuts in carbon emissions made by avoiding peat soil degradation are not covered by the UN-controlled Clean Development Mechanism (CDM), for example. In fact, no official carbon trade agreements include the emissions that are avoided when the carbon locked in soils is kept intact.

Wetlands International calls for a global finance mechanism to trigger large-scale restoration and management of wetlands, with priority given to tropical peatlands. The benefits would be carbon storage, poverty reduction and biodiversity conservation. A dedicated wetlands carbon fund could allow investing companies to compensate for their emissions and could result in trade. The funds generated would be used to sustain the carbon stocks in tropical peatswamps and would also help sustain local livelihoods and conserve a massive biodiversity treasure. A market mechanism of this nature should have a step by step approach, thus begin with relatively small pilot projects and it must be underpinned by commitment of countries like actively to protect and restore a substantial share of their peatlands.

At the last Convention on Biodiversity (CBD-SBSTTA) meeting (2-6 July 2007), 12 countries recommended that the important role of peatlands, particularly tropical peatlands in the global carbon cycle is recognised. They also made clear that peatland conservation and sustainable use could provide a cost-effective tool in the fight against climate change. This new and growing international support for peatland protection and restoration opens the door to possible solutions supported by both the private and public sector. Wetlands International therefore calls for partnerships from private and public investors as well as governmental commitments to develop the fund and implementation mechanisms.

For more information: www.wetlands.org
Publication: PEAT-CO2
Major project: Central Kalimantan Peatland Project
Or contact alex.kaat@wetlands.org

"A kilogram of beef is responsible for more greenhouse gas emissions than driving for 3 hours while leaving all the lights on back home. Akifumi Ogino of the National Institute of Livestock and Grassland Science in Tsukuba, Japan, and colleagues assessed the effects of beef production on global warming, water acidification and eutrophication, and energy consumption. Their analysis showed that producing a kilogram of beef leads to the emission of greenhouse gases with a warming potential equivalent to 36.4 kilograms of carbon dioxide. It also releases fertilising compounds equivalent to 340 grams of sulphur dioxide and 59 grams of phosphate, and consumes 169 megajoules of energy (Animal Science Journal, DOI: 10.1111/j.1740-0929.2007.00457.x). In other words, a kilogram of beef is responsible for the equivalent of the amount of CO2 emitted by the average European car every 250 kilometres, and burns enough energy to light a 100-watt bulb for nearly 20 days.

From New Scientist 2613, 18 July 2007, page 15

Belarus takes the lead in peatland restoration for climate!

by Hans Joosten
(with contributions of Martin Flade and Zbig Karpowicz)

Large areas of drained and degraded peatland urgently require rewetting to counteract greenhouse gas emissions. Accordingly, in various countries in Central Europe restoration programmes are being implemented. The most ambitious of these initiatives is being accomplished in Belarus. Since the start of the UNDP-GEF funded 42,000ha large *Peatland Project* (see IMCG Newsletter 2005/1), Government, NGOs and UNDP are currently pursuing the goal of rewetting hundreds of thousand of hectares in what will become Europe's largest peatland restoration project. The rewetting and the sustainable management of the areas are envisaged to be financed by the commercial sale of credits from avoided carbon emission and restored carbon sequestration.

On 20-21 June 2007, the 3rd- International Conference of the Michael Otto Foundation on Wetland Protection and Climate Change in Minsk (Belarus) explored these innovative ways to improve the protection and sustainable use of peatlands. The Conference, organized in collaboration with the Ministry of Natural Resources and Environmental Protection of Belarus, the National Academy of Sciences, APB/BirdLife and the United Nations Development Programme (UNDP), focused on reviewing the political, scientific and financial bases for rewetting peatlands in Belarus. For the first time finance, climate mitigation and biodiversity came together in an integrated, highly innovative and practical way. The conference focused on how rewetting can maintain peatland carbon stores and recreate carbon sinks and how carbon revenues from such projects can be used for long-term funding of protected areas.

The meeting was chaired by Aliaksandr Apatskiy, the First Deputy Minister of Natural Resources and Environmental Protection of the Republic of Belarus. Alexander Kozulin gave an overview of the international importance, conservation achievements, and management of Belarusian peatlands. Martin Flade pictured the activities of the Otto Foundation in Belarus in the past 10 years and in the near future. Vladimir Loginov discussed the implications of climate change for Belarus, John Lanchbery gave an outline of policy implications for peatlands conservation, and Michael Succow pointed at the importance of restoration to deal with the challenges of global change. Vladimir Tarasenko presented the recent Belarusian developments in implementing the Kyoto Protocol, whereas Bernard Shlamadinger discussed the potential for peat joint implementation projects under that Protocol.

The second part of the meeting became increasingly concrete, with Vladimir Savchenko and Alexander Kozulin presenting the results of a brand new inventory of how many peatland areas would be available for rewetting: 260,000 hectares to start with and much more in the longer-term. Hans Joosten, Nikolay Bambalov and Vyacheslav Rakovich estimated how much avoided carbon emissions that could yield. Paul Goriup and his Belarusian co-workers came with their brand new calculations how large a Trust Fund should be to finance the sustainable management of a protected area network in Belarus in eternity: Sabine Henders reported on the rapid developments of the global carbon markets, compliance markets (incl. Kyoto), and voluntary markets. She concluded that currently the voluntary markets offer the best perspectives for selling carbon credits from peatland restoration and pointed out that marketing, credibility, and applied standards will be the key items.

In the final resolution (see elsewhere in this Newsletter) the Conference participants agreed

- To collaborate on a wetland restoration project aiming at the restoration of 260,000 hectares degraded peatland in the first phase, and an extension of the project to a larger area in the longer-term, equivalent to an area that would avoid emissions of at least several million tonnes of carbon dioxide equivalents.
- To try to raise funds for the restoration and long-term sustainable management of re-wetted peatlands in the Republic of Belarus through selling high quality carbon credits on the voluntary market.
- To look into the possibility of setting up specific instruments (a Trust Fund) for the long-term sustainable financing of the restoration and management of re-wetted peatlands and part of the protected areas network in Belarus.

To stimulate and support these developments in Belarus and internationally, the German Centre for International Migration and Development (CIM) has made available three positions to the Belarusian Birdlife partner APB, two of which will be filled in the coming months.

1) International expert to measure and communicate impacts of land-use change on carbon flux in Belarus peatlands to

- Help identify key peatland sites where re-wetting offers most potential for low cost solutions to conserve endangered wildlife and to avoid emissions of greenhouse gases.
- Help identify appropriate methods and management for rewetting of different peatland types.
- Keep up to date with relevant scientific literature on consequences of land-use and land-use change on greenhouse gas fluxes. Ensure that this knowledge is shared with the Beneficiaries and other relevant stakeholders.
- Devise and deploy a system for monitoring and comparing the greenhouse gas emission from re-wetted and degraded peatlands. Where necessary,

advise on additional measures or changes in management to help avoid further emissions.
- Develop and undertake a programme of capacity building to train Belarusians in the science of storage and fluxes in carbon and carbon equivalents, and in their monitoring.
- Publication of results in the peer-reviewed scientific literature.
- Develop and maintain a good working relationship with Belarusian and international academics working on biodiversity conservation and carbon fluxes in peatlands.

2) International Expert on the Kyoto Protocol with specialisation on carbon storage and credits as provided by restored peatlands to
- Begin the process of building a coalition of countries interested in carbon storage in re-wetted peatlands.
- Put forward a programme of advocacy to the Kyoto process to ensure that the guidelines cover peatlands.
- Work with the relevant governmental authorities and NGO to expand the programme of peatland restoration.
- Act as the Overall Coordinator for the Peatland and Climate Change project.

For more information prospective candidates should contact

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The Centrum für internationale Migration und Entwicklung (CIM) is the human resources placement organisation for German Development Cooperation. CIM places managers and technical experts in Asia, Africa, Latin America, and Eastern and South Eastern Europe, and supports them with services and with subsidies to top up their local salaries.
CIM's partners are independent employers within the countries' civil services, private sectors and civil societies. On their behalf, CIM recruits highly-qualified professionals that the countries could not attract under customary national employment conditions.

The Ministry for Natural Resources and Environmental Protection of Belarus
The National Academy of Sciences of Belarus
The APB-BirdLife Belarus
The United Nations Development Programme (UNDP)
The Michael Otto Foundation for Environmental Protection
The Royal Society for the Protection of Birds (RSPB)
The International Mire Conservation Group (IMCG)

RESOLUTION
of the 3rd International Conference of the Michael Otto Foundation on Wetland Protection and Climate Change in Belarus
Minsk, Belarus, June 20-21, 2007

The Participants of the Conference discussed the issues facing the future of wetlands, and especially peatlands, in Belarus and have taken into account the predicted influence of climate change on the management and long-term conservation of these habitats.

Realising that land use and land use changes are responsible for about 30% of all man-made climate gases,
Acknowledging that natural peatlands are an effective long-term sink and storage of carbon,
Also acknowledging that draining peatland leads to a destruction of the peat layer, resulting in an intensive, long-term release of greenhouse gases,
Acknowledging that the drainage and the industrial utilization of peatlands can start the process of soil degradation and the commencement of a fundamental transformation of landscapes,
Being aware that dry peat after drainage becomes a potential source of fire hazard and when it burns it can lead to catastrophic consequences for people and wild nature and especially the release of radionuclides from contaminated territories,
Being concerned about the on-going extraction and the plans for the potential expansion of peatland exploitation in Belarus and the subsequent consequences for the country's biodiversity, climate and reputational impacts,
Understanding that further degradation of many drained peatlands can be stopped by restoration,
Acknowledging the significance of the UNDP-GEF funded project on restoration of more than 42,000 ha of degraded peatland contributing to the sustainable functioning of protected natural areas in the Belarusian part of Polessie as well as the Small Grant Projects of UNDP-GEF,
Wishing to highlight the commitment to halting the decline of biodiversity by 2010,

Conscious of the global importance of wetlands (particularly fen mires and raised bogs) in Belarus for the conservation of biodiversity,
Acknowledging the leading role of Belarusian science and scientists in peatland ecology research at a European level,
Acknowledging the important role of wetland resources in the development of eco-tourism and as an alternative basis for investments benefiting local communities,
Recalling the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Wetlands Convention (Ramsar Convention), and the Convention on the Conservation of Migratory Species of Wild Animals (CMS, Bonn Convention),

The Conference Participants have agreed:

- To continue working closely together on the protection and restoration of peatlands in Belarus.
- To collaborate on the details of a wetland restoration project aiming at the restoration of 260,000 hectares degraded peatland in the first phase, and an extension of the project to a larger area in the longer-term, equivalent to an area that would avoid emissions of at least several million tonnes of carbon dioxide equivalents.
- To try to raise funds for the restoration and long-term sustainable management of re-wetted peatlands in the Republic of Belarus through selling high quality carbon credits on the voluntary market.
- To look into the possibility of setting up specific instruments (a Trust Fund) for the long-term sustainable financing of the restoration and management of re-wetted peatlands and parts of the protected areas network in Belarus.
- To collaborate on the development of standards and methodologies for peatland carbon projects in Belarus.
- To start developing a monitoring system for verifying greenhouse gas sinks, and avoided emissions in restored peatlands.
- To advocate for an inclusion of greenhouse gas emissions from peatland under the Kyoto Protocol post 2012.
- To share Belarusian experience in the restoration of peatlands with other countries, particularly in the temperate climate zone.
- To consider the development of a fully externally-funded international centre of excellence in peatland restoration and management for the benefit of the global climate and biodiversity.
- To consider including the recommendations from the feasibility study on protected areas financing within the State Programme for Protected Area Development 2008-15.
- To explore the possibilities of expanding the existing World Heritage sites or putting forward nominations for World Heritage status for wetlands of international significance.
- To develop an action plan for raising funds for all of the above activities,
- To strengthen the management structures of protected areas and consider the opportunity to create a centralized management structure for protected areas.
- To explore the possibilities in biomass use (like reeds, high grasses, black elder) of highly productive re-wetted mires while protecting the biodiversity value and maintaining their function as carbon sinks and carbon storage sites.
- To recommend to use degraded peatlands (inefficiently used reclamation systems) but not natural peatlands for peat extraction.
- To support and distribute the experience of sustainable usage of resources of undrained and rewetted peatlands in Belarus.
- To support conferring the status of Ramsar sites to reserves from the shadow list of Ramsar sites.
- To request that the key stakeholders attending the Conference set up a Steering Group to coordinate the implementation of the above listed activities.

The Conference Participants expressed their sincere gratitude to the Michael Otto Foundation for Environmental Protection for funding the Conference and the related activities.

They also expressed their thanks to the Conference organiser APB-BirdLife Belarus and to the United Nations Office in Belarus as well as to the Ministry for Natural Resources and Environmental Protection of Belarus and the National Academy of Sciences of Belarus.

Paludiculture: peat formation and renewable resources from rewetted peatlands

by Wendelin Wichtmann & Hans Joosten

The last years have shown a worldwide increasing demand for biomass. Next to the need for food to satisfy the growing population and prosperity in newly industrializing countries, the markets for biogenic raw materials and biofuels are rapidly expanding. On arable lands the cultivation of industry and energy crops increasingly competes with conventional food production. The shortage of biomass can be observed in rising prices and in the renewed interest to exploit unused land resources, including unreclaimed lands (wilderness), abandoned fields, and low productive areas. This trend creates a new focus on peatlands, such as in the tropics where oil palm and pulp plantations are expanding immensely.

The critical condition of mires in climatic regions that are well-suited for crop cultivation (*cf.* the near extinction of tropical peat domes and of percolation mires in the temperate zone) necessitates a complete ban of biomass cultivation on peatlands that have remained largely untouched. Not only important biodiversity values are at stake there, but biomass production associated with peatland drainage is highly counterproductive from a climate point of view (see contribution of John Couwenberg in this Newsletter). The credo with respect to (near-)natural mires should be: "no new structures, no further destruction".

In the temperate zone, peatlands had just lost their agricultural attractiveness. Difficult handling, low productivity and progressive degradation under intensive use prevented them to effectively compete with the abundant and increasingly productive mineral soils. In fact, immense areas of agriculturally used peatland in Europe had been abandoned in the last decade. Now the expansion of biomass cultivation again throws an eye on these areas. We increasingly observe in West-and Central Europe new deep drainage of peatlands to enable cultivation of 'renewable biofuel' crops like maize (*Zea mays*) and elephant grass (*Miscanthus*).

However, the quest for additional land resources for biomass production can also work out positively for peatland and climate conservation if it is combined with the rewetting of drained peatlands. Drainage (with associated subsidence and soil deterioration) has largely degraded the agricultural value of their soils, they have lost most of their biodiversity values, and they belong globally to the largest greenhouse gas emitters in existence. So, there is little to lose and a lot to be gained. Rewetting drained peatlands will substantially reduce the emission of greenhouse gases (especially CO_2 and N_2O, Joosten & Augustin 2006). It can additionally contribute to avoiding carbon dioxide emissions when the rewetted peatlands are used for the production of biomass to replace fossil raw materials and fossil fuels.

This innovative alternative to drainage-based peatland agri- and silviculture is called '*paludiculture*': the sustainable production of biomass on rewetted peatlands. In this paper we present a short overview of our experiences with paludiculture in Central Europe.

Principles

Paludiculture is the cultivation of biomass on wet and rewetted peatlands. Ideally the peatlands should be so wet that steady (long-term) peat accumulation is maintained or re-installed. The basic principle of paludiculture is to use only that part of net primary production (NPP) that is *not* necessary for peat formation (which is ca. 80-90% of NPP). In the temperate, subtropical and tropical zones of the world, i.e. those zones where high production is possible, most mires by nature hold a vegetation of which the aboveground parts can be harvested without harming the peat sequestering capability. In those areas natural peatlands are largely dominated by cyperaceae, grasses, and trees, i.e. growth forms that realize peat accumulation belowground by ingrowing rootlets, roots, and rhizomes ('replacement peat', Prager et al. 2006).

The quintessence of paludiculture is to cultivate plant species that

1. thrive under wet conditions,
2. produce biomass of sufficient quantity and quality, and
3. contribute to peat formation.

With respect to the first criterion, it is interesting to notice that almost all agriculture focuses on drylands on which substantial tillage is applied. Peatland agriculture simply replicates this mode of operation, although draining and tilling is the most effective way to enhance peat oxidation and to destroy the peatland subsistence base. (*The* exception on the rule is wet-rice, which provides more than one fifth of the calories of the human global diet.)

Peat formation can be assessed by constructing complete carbon balances over long periods (*cf.* Roulet et al. 2007). As this is a complicated and laborious job, the peat forming capability of specific species is generally deduced from peat composition (Succow & Joosten 2001). Macrofossil analysis shows that peats may contain macro-remains of a large diversity of plant species, but that only a limited number of these species contribute substantially to the bulk of peat accumulation. Much more species will probably add to the unrecognizable humus component of peat but organic geochemical research into this aspect of peat formation is still in its infancy. The plant biomass that can be cultivated after rewetting is of varied quality and allows for differentiated uses (Wichtmann et al. 2000).

Examples

Successional plant-communities: The rewetting of degraded fen peatlands often initiates luxurious vegetation development. Depending on trophic state, water regime, seed bank and other site conditions, reed beds of *Phalaris arundinacea*, *Glyceria maxima*, *Phragmites*, or *Typha* and more rarely sedges, but also *Salix cinerea* scrubs establish. The selective cultivation of site-adapted species (Cattail, Sedges, Common Reed, Alder) can provide higher harvest security than the utilisation of wild succession communities (Wichtmann & Schäfer in press).

Table 1: *Productivity of selected reeds and wetlands (after Timmermann 2003)*

Dominant species	Productivity t DW ha^{-1} a^{-1}
Common Reed (*Phragmites australis*)	3.6 - 43.5
Cattail (*Typha latifolia*)	4.8 - 22.1
Reed Canary Grass (*Phalaris arundinacea*)	3.5 - 22.5
Sweet Reedgrass (*Glyceria maxima*)	4.0 - 14.9
Lesser Pond-sedge (*Carex acutiformis*)	5.4 - 7.6
Great Pond-sedge (*Carex riparia*)	3.3 - 12.0
Fallow wet grassland	6.4 - 7.4
High-intensity grassland	8.8 - 10.4

Reed (*Phragmites australis*) has a high potential for biomass production (Table 1). After rewetting of intensively used peatlands it develops by spontaneous succession or can be established artificially (Timmermann 1999). Even at planting densities of less than one plant per square metre, it rapidly forms closed beds (Timmermann 1999). Its ecotypes display genetically fixed differences in habitat demands and productivity (Kühl et al. 1997), which through selection can guarantee high productivity. A sustained harvest of 15 $t \cdot ha^{-1}$ dry matter can be achieved in combination with continuing peat accumulation (Wichtmann 1999a).

Reed can be utilised both as an energy source and as an industrial raw material. Traditionally harvest for roofing material (fig. 1) takes place in winter. Cultivation and application has been described by Rodewald-Rudescu (1974), Wichtmann (1999b), and Wichtmann et al. (2000).

Cattail (*Typha latifolia*, *T. angustifolia*) cultivation may lead to dry-matter harvests of up to 40 $t \cdot ha^{-1}$ (Wild et al. 2001). The industrial uses of cattail range from insulating materials to lightweight construction boards. The optimum water levels for cattail reed-beds are 20 to 150 cm above the surface. Unlike Common Reed, the cattails can germinate during submergence, but fail to form peat. Whether it is possible to establish permanent cattail stands by means of planting has to be investigated in subsequent projects.

Figure 1: *Cultivation of thatching reed on fen peatland in Roswarowo, Poland*

Sedges can also be utilised both energetically and industrially. Experiments in Northeastern Germany resulted in a successful establishment of *Carex gracilis*, *C. acutiformis*, *C. paniculata*, *C. elata* and *C. riparia* (Roth 2000). A dry-matter production of up to 12 $t \cdot ha^{-1}$ can be expected (Table 1).

Alder (*Alnus glutinosa*) produces a valuable wood that, beside as a fuel, is suitable for veneer, carpentry, and the production of high-quality massive wood furniture (Kropf 1985). An alder forest of average productivity yields after 70 years about 550 solid cubic metres of wood per ha (Lockow 1994). The crucial factor for alder forestry is a water regime just under the surface which enables a commercial wood harvest combined with peat formation and a positive climate impact (Schäfer & Joosten 2005, table 2).

Table 2: *The effect on global warming potential of afforesting rewetted fens with black alder (Alnus glutinosa) (after Schäfer & Joosten 2005)*

	Global Warming Potential (GWP: CO_2 equivalents, kg ha^{-1} a^{-1})				
Water level	N_2O	CH_4	CO_2 (peat accumulation)[1]	CO_2 (wood formation)[1]	**GWP total**
5 cm over surface	49	5705	-1683	-3211	**860**
10 cm under surface	492	2539	-1186	-7161	**-5316**

[1] negative numbers denote net uptake into the soil or wood and positive climate impact

Figure 2: *Alder cultivation on fen peatland in NE Germany*

Reed canary grass (*Phalaris arundinacea*) dominated stands developed by natural succession over large areas in restoration projects in NE Germany, where insufficient water was available for complete rewetting. Under such humid to wet conditions peat oxidation is retarded substantially or stopped completely. Unlike normal agricultural use, harvest can be done in winter as lower S, Cl, K concentrations improve the combustion properties (Mortensen 1998, Burvall & Hedman 1998).

Peatmoss (*Sphagnum* spp.) can be cultivated on rewetted cutover peatlands and on agriculturally used bog grasslands after rewetting. The product can replace fossil peat in horticulture (Gaudig & Joosten 2002, Gaudig et al. 2007)

Figure 3: *Experimental Sphagnum cultivation plot in NW Germany*

Biofuels

Biomass from rewetted peatlands (BRP) can be used as an energy source in direct combustion, in biogas plants, and for the production of liquid 'sun fuels'. Energy recovery from BRP depends on the site conditions, especially on the hydrologic and trophic situation. Because of lack of data, the combustion suitability of BRP is often compared with that of cereals and *Miscanthus* that have been cultivated on mineral soils with heavy fertilization. These have much higher ash contents, lower ash melting temperatures and higher sulphur and chloride concentrations in their exhaust fumes compared to wood, which may cause slagging and corrosion in the co-generation power plants. Biomass from peat soils, however, normally has much lower contents of these substances.

Comparison of Common Reed (from near brackish water), Reed Canary Gras (from mineral soil) and spruce wood (including bark) (table 3) shows that the carbon content of these biofuels is comparable. The ash content of the former two is about 10 times higher than that of wood, probably because of the mineral soil and near-brackish origin of these crops.

Table 3: *Combustion related properties of different biomass crops. Values in % dry weight (after Eder et al. 2004, Hartmann et al. 2003, Kastberg & Burvall 1998)*

	Common Reed	Reed Canary Grass	Spruce wood
Carbon content	46 – 47	45,4	49,8
Sulfur content	0.04 – 0.05	0.1	0.015
Nitrogen content	0.24 – 0.30	0.62	0.13
Chlorine content	0.2	0.05	0.005
Ash content	5.12	8.0	0.6
Min. heating value MJ/kg	17.5	16.9	19,5

The ash melting temperature of the investigated Common Reed (1420 °C) is higher than the value for wood and Reed Canary Grass indicating that – in contrast to other grasses and cereals – combustion does not lead to technical problems (Eder et al. 2004, Hofbauer et al. 2001).
If the harvested biomass is intended for energy production the harvesting machines may be less sophisticated and expensive than those for the production of quality reed for roofing or other industrial purposes (Wichtmann 1999b). Transport, for instance, can proceed in big bales. Biomass-to-liquid (BTL) plants, for example require unspecific biomass with high carbon and low water contents (less than 35 % of water). These requirements are easily met by Reed Canary Grass and Common Reed harvested in winter.
Depending on the price of energy the exploitation of less productive stands becomes feasible, especially when the climatic and other benefits are taken into account and adequately remunerated.
An assessment for Northern Germany showed that out of a total of 830,000 hectares of fen peatlands a quarter could be managed for BRP-production (Wichtmann 2003, Wichtmann & Schäfer 2005). With yields of 10 tonnes per hectare and year, about 20 Million tonnes dry biomass would be available, corresponding to the demand of 20 biomass-combustion plants with 20 MW-capacity each (*cf* Thrän & Kaltschmitt 2001).

Biodiversity benefits
Paludicultures will also harbor species that are not directly aimed for. In normal agriculture such species are called ‘weeds’ or ‘vermin’. In paludicultures these will also include species that have become rare and endangered because of the massive decline of their natural wet-humid habitats. The re-establishment of mire and mire-like conditions after rewetting will provide new habitats for these species, whereas biomass harvesting keeps the sites in a suitable succession stage. A nice example is the conservation of the globally threatened Aquatic Warbler (*Acrocephalus paludicola*) in successfully commercially used reedlands in Western-Poland (fig. 1, Tegetmeyer et al. 2007). In *Sphagnum* cultivation plots we find interesting ‘weeds’ like *Drosera* and other bogs plants.
From the viewpoint of species and habitat conservation a rewetting of degraded peatlands and a subsequent use for biomass cultivation generally is to be preferred over keeping the areas in a drained and degraded state.

Additional benefits
Next to the global climatic benefits from rewetting and the production of raw materials for industrial and energy use, paludicultures have several additional advantages, including
- An improvement of regional landscape hydrology because water is kept longer in the landscape
- A mitigation of regional climatic change by providing additional evapotranspiration cooling
- The restoration of habitats for rare mire species and communities
- A reduction of nutrient run-off (e.g. nitrogen) into surface waters
- The prevention of peatland fires (very important in the Chernobyl region where fires lead to re-emission of radio-active substances)
- The establishment of new land-use concepts with minimal damage to the environment
- A revitalisation of rural economies by combining traditional land use with new ways of processing
- The conservation of an open cultural landscape
- An improved economic basis through (eco)tourism, as paludicultures are generally more attractive than degraded peatlands
- An increase in energy political autarchy by local energy production.

Monetarisation of these values would significantly enlarge the visibility of the economic benefits of paludiculture.

Prospects
There are 80 million hectares of drained peatlands worldwide that heavily contribute to the greenhouse effect. Rewetting these peatlands will substantially reduce global anthropogenic greenhouse gas emissions. Additionally, this rewetting can contribute to avoiding emissions by producing biomass for industrial use and for the generation of energy. Given a continuing rise in prices, the utilisation of biomass is becoming more and more attractive and rewetted peatlands may become as valuable as highly productive arable lands. It is therefore advisable to rewet as much peatland as possible, wherever the hydrological conditions permit it.
Paludicultures are still in their infancy because agri-, horti-, and silviculture have traditionally focused on drained sites. Priority is to identify for every climatic zone species suited for paludiculture and variants and clones for optimal cultivation.
Paludicultures may be ideal as hydrological buffer zones around pristine peatlands which themselves should be strictly preserved wherever they have remained.

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Peatland rewetting and the greenhouse effect

by Jürgen Augustin & Hans Joosten

Peatland drainage leads to fast mineralization of the Carbon and Nitrogen stocks in the peat, which transforms the peatland from a strong C and N sink to a potentially very strong C and N source. Since the beginning of the 1990s, socio-economic changes and soil degradation have led to a declining use of drained peatlands in Central Europe. In several countries rewetting projects were started to reduce C/N dynamics in the soil and the huge emissions of greenhouse gases.

Rewetting of drained peatlands leads to higher water tables that lower the peat mineralization rate. Nevertheless, rewetting does not necessarily result in lower emission immediately. Rewetted fen grasslands often show increased CH_4 emissions, while CO_2 emissions may remain high. Water level fluctuations may even cause a drastic increase of N_2O emissions.

Long-term

As rewetting is only taking place since some years, crucial information is lacking on what happens on the longer term. The available evidence indicates that the original sink function for CO_2 is re-established very rapidly. Simultaneously, (extremely) high methane emissions may occur.

In a pilot study to assess the climatic effects of the 42,000 ha large Belarusian Peatland Project (see elsewhere in this Newsletter), we subdivided the project peatlands into four 'emission classes' on the basis of the peat type (bog, fen) and the intensity of current peat mineralization (high, low; derived from the CO_2 release data given by the Belarusian counterparts). We assigned (net) release values for CO_2, CH_4, and N_2O to these classes on the basis of published and own unpublished data. Since no data are available for long-term reflooded peatlands, we used the data for pristine peatlands. The global warming potentials (GWP) of the gases are expressed as CO_2 equivalents, using the IPCC time horizon of 100 years.

We distinguished after reflooding three phases with very different characteristics:

- In the *first phase* extremely high CH_4 emissions occur in connection with a low net CO_2 uptake (accumulation). This initial phase has an extremely negative climate effect.
- In the *second phase*, CH_4 emissions are strongly reduced, whereas CO_2 uptake shows its maximum. This phase has a slightly positive climate effect.
- For the final *third phase* both low CH_4 releases and low net CO_2 uptakes are expected, similar to the situation in pristine mires. This phase has a neutral climate effect.

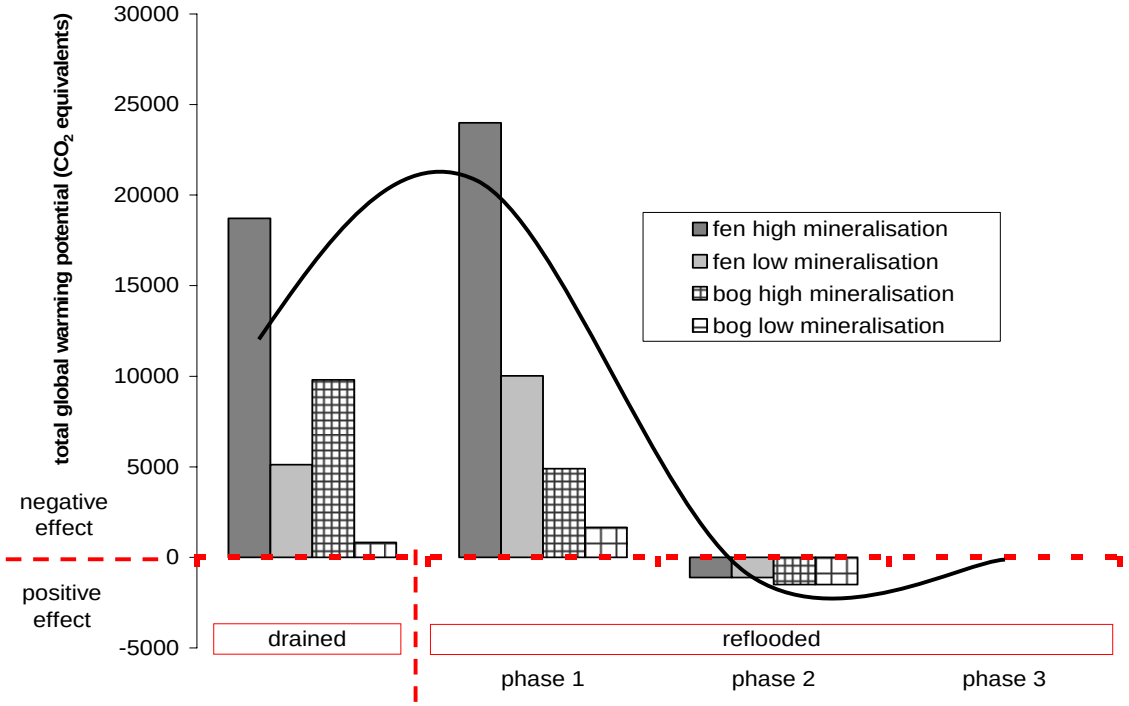

Figure 1: *Estimated changes in total global warming potential of the greenhouse gas release from Belarusian mires after rewetting (in kg CO_2 –equivalents ha^{-1} yr^{-1})*

Whereas in drained fens (phase 0) the global warming potential is – besides CO_2 – also determined by N_2O, the influence of CO_2 and CH_4 dominates in all site types after reflooding. Phase 1 still shows clear differences between the site types, but these have largely disappeared in phase 2 (Fig. 1).

Scenario studies

As no information exists on the duration of the individual phases and how emissions develop within and in between phases, we calculated three scenarios of 100 year:

- In *scenario 1*, phase 1 is taken to last 5 years with a linear decrease over years 1 – 5 of the annual GWP to the level of phase 2; phase 2 lasts 15 years with a constant annual GWP; phase 3 lasts 80 years with a constant annual GWP
- In *scenario 2*, phase 1 is taken to last 20 years with a linear decrease over years 1 – 20 of the annual GWP to the level of phase 2; phase 2 lasts 15 years with a constant annual GWP; phase 3 lasts 65 years with a constant annual GWP
- In *scenario 3*, phase 1 is taken to last 50 years with a linear decrease over years 1 – 50 of the annual GWP to the level of phase 2; phase 2 lasts 1 year; phase 3 lasts 49 years with a constant annual GWP.

The results (Table 1) show, that rewetting of degraded peatlands leads to huge benefits compared to the continuation of the present situation, whatever scenario is chosen.

Even in the most pessimistic scenario 3, rewetting would avoid emission of more than 30 million tonnes CO_2 equivalents over a period of 100 years.

Table 1: *The cumulative global warming potential (GWP, in Ktons CO_2 equivalents) during the next 100 years of the 42,110 ha peatlands without and with rewetting.*

					GWP (Kt CO_2-eq)
Without rewetting					40,560.01
With rewetting	Scenario 1	5 yrs	15 yrs	50 yrs	-6.81
	Scenario 2	20 yrs	15 yrs	65 yrs	2,676.53
	Scenario 3	50 yrs	1 yr	49 yrs	8,705.35
		Phase 1	Phase 2	Phase 3	

The break-even point, i.e. the year after rewetting in which the cumulative GWP-values of the rewetting scenarios undercut those of continuing the present situation, is the 2nd year for scenario 1, the 6th year for scenario 2, and the 12th year for scenario 3. This shows that, even when the initial pulse of elevated emissions lasts long, the positive effects can be expected in a foreseeable future.

Reliability

Our simplifications have ignored the spatial heterogeneity of the degraded sites. Furthermore, we assumed that emission from drained peatland can continue for 100 years, which does not apply when peat layers are thin or when the peat surface subsides to the long-term deepest groundwater level. On the other hand we disregarded the catastrophic emissions resulting from the 3,000 peatland fires occurring on degraded peatlands in Belarus annually. We don not expect that these omissions substantially change the trend of our results.

Research needs

While the qualitative trends after rewetting are thus clear, many questions remain with respect to a quantitatively reliable long-term forecast. These relate to the short existence of rewetted peatlands and to the lack of long-term studies. Comprehensive long-term field studies on gas fluxes are urgently needed for designing optimally effective rewetting methods.

Of special importance is the clarification of the following questions:

- What is the actual emission of greenhouse gases after reflooding for different site types?
- Which factors and processes determine the intensity and duration of the phases?

Which measures and methods can achieve an effective and sustainable reduction of the GWP?

Prospects from own research

Since 2004 we study the long effects of reflooding by field measurements on a former fen grassland in north East Germany (Peene river valley, Polder Zarnekow), complemented by lab incubation experiments.

Our most recent research results indicate that the high initial emission pulses we measured after rewetting are caused by the decomposition of young plant material, especially of Reed canary grass (*Phalaris arundinacea*). In July 2007, i.e. in the third year after rewetting, methane emissions from the flooded sites were for the first time lower than those from the intermittently humid control plots. This indicates that the high initial emissions are probably a transient phenomenon of limited duration.

Several management options are conceivable to restrict such initial pulses, including:

- removal of the easily decayable young biomass before inundation
- optimization of water levels (no deep inundation)
- artificial establishment of key species to reinstall rapid coverage and productivity
- prevention of establishment of strong CH_4 conductive plants.

Anyhow, in the face of these complexities, it will be clear that no simple panaceas can be given: Restoration is a matter of ‘made-to-measure’.

For more details and references to this paper see:

Joosten, H. & Augustin, J. 2006. Peatland restoration and climate: on possible fluxes of gases and money. In: Bambalov, N.N. (ed.): Peat in solution of energy, agriculture and ecology problems. Tonpik, Minsk, pp. 412 - 417.

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Biofuels: Further Reading

The volume of recent articles, papers and other materials on biofuels (or agrofuels) is overwhelming. Below a list of useful, general and easy accessible information (adapted from: www.grain.org/seedling/?id=485)

Websites:
http://www.biofuelwatch.org.uk
Biofuelwatch is currently one of the most active sites bringing together information on the problems with agrofuels. Their "sources" section provides a good list of further reading materials. They also run a list server that you can subscribe to.

Recent publications:
1) Worldwatch Institute, "Biofuels for Transportation: Global Potential and Implications for Sustainable Agriculture and Energy in the 21st Century", 2007. http://tinyurl.com/27fdjz
The first part of this paper, compiled by the Worldwatch Institute for the German government, gives a good overview of the current situation with biofuels. It lists the countries that produce them, the different feedstocks, the different technologies and so on. It highlights economic, social and environmental issues.

2) Corporate Europe Observatory (CEO), "The EU's agrofuel folly: policy capture by corporate interests", Briefing paper, June 2007. http://tinyurl.com/2decyx
Analysis how the corporations set the agenda for agrofuel policy-making in the European Union, explaining who is who, and what the different corporate sectors are up to in Europe, highlighting their direct linkages with the European Commission and their lobbying capacity.

3) Biofuelwatch et al. "Agrofuels – towards a reality check in nine key areas", April 2007. http://tinyurl.com/ypzxwu
A paper highlighting agrofuel impacts in nine key areas, including discussions on climate change, GMOs, biodiversity, food security and rural development. Credibly backed up by scientific evidence.

4) C. Ford Runge and Benjamin Senauer, "How Biofuels Could Starve the Poor", Foreign Affairs, May–June 2007.
http://tinyurl.com/3c6dlt
Discusses the impact of agrofuels on food security, with a special focus on the role and impact of US policies.

5) FBOMS, "Agribusinesses and biofuels: an explosive mixture", Rio de Janeiro, 2006. http://tinyurl.com/2fd3ds
A good publication from the Brazilian Forum of NGOs and Social Movements for the Environment and Development, zooming in on the devastating impact of agrofuel plantations in Brazil.

6) World Rainforest Movement (WRM) Bulletin, 112, November 2006, special issue on biofuels. http://tinyurl.com/2nb4y9
A compilation of articles on the impact of agrofuel plantations, focusing on different issues in different parts of the world, with cases from Cameroon, Colombia, Indonesia and Malaysia.

7) Garten Rothkopf, "A Blueprint for Green Energy in the Americas", Inter-American Development Bank, 2007. http://www.iadb.org/biofuels/
A massive blueprint study from the perspective of the Inter-American Development Bank. Highly positive about agrofuels. With good information about the investment situation in different countries in the Americas, Europe, Asia and Africa.

8) Miguel Altieri and Elisabeth Bravo, "The ecological and social tragedy of crop-based biofuel production in the Americas", April 2007. http://www.foodfirst.org/node/1662
An analysis of the impact of agrofuels in North and South America. Good data on pollution and soil erosion for the main agrofuel crops.

9) David Noble, "The Corporate Climate Coup," ZNet, 8 May 2007: http://tinyurl.com/yrs8jv
Excellent analysis of the corporate campaign that has "safely channelled fears over global warming into corporate-friendly agendas at the expense of any serious confrontations with corporate power". Noble also claims, that this corporate campaign has exaggerated the threat of man-made global warming, a claim that is challenged in a lively debate on the ZNet website. http://www.zmag.org/debatesglobalwarming.html

10) Grist Magazine, "Fill'er Up", 4 December 2006. http://tinyurl.com/2r6k5m
A special web-based issue, somewhat focused on the US, but providing excellent insight into the corporate lobby behind agrofuels and a good general background into the ethanol debate.

Regional News

News from Ireland
Irish Peatland Conservation Council 25 years!

On 29th July 2007 the Irish Peatland Conservation Council celebrated that 25 years had passed since the foundation of the council.
The IPCC wish to acknowledge the thousands of people who made donations, became volunteers or were involved in the hundreds of projects run by the IPCC as part of the Save the Bogs Campaign from 1982 to 2007.
IMCG congratulates IPCC with its anniversary and its achievements in the past 25 years and wishes IPCC and the peatlands of Ireland all the best for the future.

News from the UK
LIFE Active Blanket Bog in Wales Project

The LIFE Active Blanket Bog in Wales project is a new 5 year partnership that will restore and conserve significant areas of the internationally important blanket bog found within two Special Areas of Conservation in North Wales, UK.
It is estimated that 10-15% of the worlds blanket bog occurs in the United Kingdom. Of the 70,000 ha of blanket bog occurring in Wales, in excess of 10% is no longer believed to support blanket bog vegetation, and a significant proportion of the remaining area is not likely to support active blanket bog. The Berwyn and South Clwyd Mountains SAC (c. 27,200 ha) supports the most extensive tract of near-natural blanket bog in Wales, whilst the Migneint-Arenig-Dduallt SAC (c. 20,000 ha) supports the second largest area, after the Berwyn. It is within these two internationally important areas that the LIFE Project is focusing its work.
On the Berwyn SAC, moorland areas dominated by heather declined 43% between 1946- 1984, with afforestation accounting for 14% of this loss, and other factors the remaining 29%. The majorityof the work within the Berwyn SAC will consist of the blocking of moorland drains on the RSPB reserve at Lake Vyrnwy. During the last century, over 100 km of drainage grip were dug on the site to dry out the land to improve grazing. These grips are having a significant impact on the blanket bog by drying out the land and lowering the water table. On the Migneint SAC, the focus of the work will be on restoring afforested blanket bog on FCW managed land.
The project will carry out habitat restoration and protection work that will involve:

- blocking over 90 km of drainage grips, mainly using heather bale dams,
- reseeding over 50 ha of degraded land with heather,
- removing non-native trees from and blocking forest drains on 230 ha of blanket bog
- removing invading rhododendron and Sitka plants from 3000 ha of blanket bog.
- purchasing of 144 ha of upland habitat including 44 ha of pristine blanket bog.
- mowing more than 500 ha of dry heath to help manage fire risk.
- increasing public awareness through educational and community visits
- promoting best practice by local farmers and land managers

Alongside the vegetation, hydrological and parasite monitoring being carried out as part of the project, the project is forming the basis for research by UKPopNet on the impacts of climate change upon terrestrial invertebrates, and the impact of land use change upon vegetation and soil bacteria.
The LIFE project is a partnership between the RSPB, Countryside Council for Wales, Environment Agency (Midlands and Wales) and Forestry Commission Wales. For more information contact gorgorscymru@rspb.org.uk or visit www.blanketbogswales.org

Mike Morris
Active Blanket Bog in Wales
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More windfarms on Lewis?

Scottish and Southern Eberny has applied to build a 57-turbine (205 MW) windfarm on the Pairc Estate, Isle of Lewis. This, the island's third major application, would bring the total number of turbines to around 300. It is the second massive windfarm proposed for the Pairc Peninsula.
The turbines would be 145 metres high and require concrete foundations, hard standings, 45 kms of road, 88 river crossings, 12 open-cast quarries, three laydown areas and a control building. Even SSE's own environmental survey results suggest that the site is highly unsuitable for this scale of industrial development.
The area is dominated by EU-protected habitats including blanket bog and wet heaths with complex systems of fragile valley fens; it has over 120 km of watercourses and supports an internationally important otter population; construction poses a significant risk of peatslides, threatening river ecology (including possible Fresh Water Pearl Mussel populations).
Several bird species protected by EU laws and known to be at risk from wind power developments use the site. SSE predicts that, over the project's lifetime it could kill 76 Golden Eagles, 51 Red-throated Divers and 19 Black-throated Divers. As SSE's bird surveys were conducted before recent increases in White-tailed Sea Eagle numbers, the estimated mortality of two Sea Eagles is likely to be a significant underestimate – Pairc Peninsula now holds 15% of the UK breeding population.
SSE predicts the highest level of adverse impact on the landscape character of the Pairc moorland and significant visual impacts on Lewis communities up to

19 km away and on the north-east sector of the South Lewis/North Harris Wild Land Search Area; it would also be highly visible from the north-east of the South Lewis, Harris & North Uist National Scenic Area.
The company also plans to land a sub-sea cable (the Ullapool-Beaully line) through the village of Gravir on the east coast of Pairc Estate, to export electricity to the mainland from this and the nearby Eishken windfarm. It would require a 4.25 hectare converter station complex on the edge of this scenic village as well as the transmission lines.
Out of 26 relevant measures of public opinion on the Western Isles, not one has found overall support for the major windfarms being proposed for the Isle of Lewis. Over 16,000 objections have already been submitted in response to the huge Eishken and Lewis Windfarm applications.
Please help to stop this unnecessary and environmentally damaging proposal! Send an objection to the proposal quoting 'Pairc Windfarm' to: The Scottish Executive, Energy Consents Unit, 2nd Floor, Meridian Court, 5 Cadogan Street, Glasgow, G2 6AT or email: energyconsents@scotland.gsi.gov.uk
Contact Mòinteach gun Mhuilean email: committee@mwtlewis.org.uk
or visit: www.mwtlewis.org.uk

News from Belgium
50 years Hautes Fagnes reserve

On 21 March 1957, the Belgian minister of agricultural installed the first natural reserve at the Hautes Fagnes, a raised bog complex near the German border. This was the basis for the current reserve, which has grown to five times its initial size, covering almost all of the peatlands in the area. For more information in French, Dutch and German, surf to: www.amisdelafagne.be

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News from Poland
Update on Rospuda

The whole of Poland is talking again about Rospuda but the fate of the valley is still unknown. There was an adjournment of debate from the beginning of March until the end of July – the construction activity was suspended because of the breeding season. When the end of July was coming the atmosphere was being warmed up. NGOs started to organize protests, people from Augustów started to block the road for TIR lorries coming from and to Lithuania. There was a risk of confrontation between conservationists and local inhabitants: the NGOs made a camp close to the valley, scythe-bearing people from Augustów planned to form a human chain around a valley so that no conservationist could enter the construction site and disturb the construction activity. The planned construction site within the Natura 2000 area was guarded by security guards, foresters and police. The government and the General Management of the State Roads and Highways (GDDKiA) stated firmly that the building works in the valley would start on 1 August – such a statement was also sent by the Polish Transport Minister in a letter to the European Commission on 26 July.

Dark clouds over Rospuda mire

The response of the Commission to this letter was quick. On 30 July the European Commission asked the European Court of Justice to order Poland not to start road construction in Rospuda valley. (http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1191&format=HTML&aged=0&language=EN&guiLanguage=en)

EU asks top court to halt Polish motorway project in nature reserve

Monday 30 July 2007

The European Commission on Monday said that it had asked the European Union's top court to halt the construction of a trans-European highway cutting through a nature reserve in Poland.
The commission said that the Polish government had failed to give confirmation that it would refrain from starting to build the disputed bypass through the protected Rospuda Valley.
The EU executive body, which has protested the project as an environmental disaster, said it had asked the European Court of Justice to issue an injunction.
EU Environment Commissioner Stavros Dimas said that Poland's decision to go ahead with building the new road through the EU- protected region was "regrettable" and called on Warsaw to "reconsider its decision before irreparable damage is done."
The Polish government suspended the construction of a bypass in the Rospuda Valley until August 1, 2007, during the bird breeding session. But brushing off protests by the EU and green groups, Warsaw said last week that works would continue.
The commission earlier this year took Warsaw to court over the controversial stretch of highway through the Rospuda region.
The EU executive body said that if its request for interim measures was accepted, the court would issue an order asking Poland not to go ahead with the construction while the case is pending.
A commission spokeswoman told reporters it would be unprecedented for an EU member state to disregard an order issued by an EU court. "This is uncharted territory," she said. "We have not had a case like that before." An EU member state might face hefty fines if it did not comply with the court's judgement, she said.

Unexpectedly, on 31 July morning the Polish Prime Minister Jarosław Kaczyński said in response to the action of the European Commission that Poland would abandon its plans to build the road within the Rospuda valley until the judgment of the European Court of Justice. In consequence the GDDKiA changed its building schedule. Construction activities within the valley (within the Natura 2000 site) are abandoned until the adjudication of the European Court of Justice but the building works along the rest of the planned by-pass road are going to be sped up. According to the GDDKiA the whole period of the road building is not going to extend. Now they are going to build the parts of the road outside the Natura 2000 site. The lacking - crossing the Rospuda valley - section of the road is going to be built after the adjudication. The GDDKiA is convinced that the European Court of Justice will give a permission to build the road across the Rospuda mire…

Also the Rospuda mire defenders are convinced what the verdict of the European Court of Justice is going to be… They believe deeply that the European Court of Justice is not going to permit to build a road across the Rospuda mire. The conservationists have also broken the camp and are going to wait for the verdict. They only wonder what GDDKiA would do with two fragments of road ending on the forest border on either site of the Rospuda mire.

It seems that both the GDDKiA and the NGOs are optimists. Not so optimistic are people living in Augustów who do not want to wait eternally for a by-pass road. They protest in Warsaw and are going to protest in Brussels. More and more worried are Baltic countries and Finland because the by-pass road of Augustów is a part of the Via Baltica connecting these countries with the rest of Europe. As it is hard to imagine that the verdict of the European Court of Justice will come up to expectations of the GDDKiA as well as of the NGOs, let's hope that judgment will be at least given quickly.

Ewa Jablonska: ewa@metrolog.home.pl

News from Bulgaria: Most important spring fen complex under threat

One of the most important Balkan wetland complexes lies under the marble part of the Pirin Mountains near the towns of Razlog and Bansko. Water recharging in permeable calcareous bedrock of the Pirin Mts discharges in the foothills and conditions a large complex of open calcareous springs alternating with grazed mesophilous and subxerophilous grasslands. The area covers a territory of ca 5 square kilometers, the part with the most valuable spring fens covers ca 1,5 square kilometers in an altitude of about 1100 m a.s.l.

The fens have not developed a thick peat layer; instead they are rather initial with a sparse herb layer, streams and small hollows. Superficial tufa precipitation occurs in many places. Springs are very specific with unaffected hydrology, and host many relic species that occur in only a single locality in Bulgaria (*Ligularia sibirica, Valeriana simplicifolia, Polygala amarella, Laserpitium archangelica*), species occurring in two or three localities (e.g. the moss *Drepanocladus cossonii*), many other rich fen species (*Eleocharis quinqueflora, Eriophorum latifolium, Parnassia palustris, Epipactis palustris, Utricularia minor, Carex paniculata, Blysmus compressus, Triglochin palustris*) including endemics (like *Pinguicula balcanica* and the snail species *Orculella bulgarica*) and Natura 2000 fen snails (e.g. *Vertigo angustior*). The adjacent grasslands also harbor some important species (*Dianthus superbus, Thalictrum simplex* subsp. *rhodopaeum, Gladiolus communis* etc.).

From a vegetation point of view, the spring fens can be assigned as calcareous fens, including tufa-forming ones, belonging mostly to the *Caricion davallianae* alliance. Despite a great floristic importance and despite a certain effort of Bulgarian conservationists, the site was neither protected as a Nature Reserve nor included into Pirin National Park. However, it was selected as a Natura 2000 site.

Building activities at the site

During the last years, a great building boom started in the towns of Bansko and Razlog. The region becomes the largest tourist centre in Bulgaria. Extraordinary high investments from all of Europe presently come to Bansko and Razlog. The speed with which hotels are constructed is extremely fast. During this year, dozens of hotels and other buildings (golf playgrounds, new roads) started to be built directly in the Krusheto locality. The complex destroyed only some smaller springs so far, but just now hotel construction approaches the very margin of the most important part of the Krusheto locality, where the largests and best preserved rich fen sites occur. I am not informed about other plans of works, but it seems that the spread of the tourist centre will continue and will destroy all valuable sites. Water pumping and waste-water disposal can also destroy this unique Nature 2000 site. I would like to ask all relevant persons and institutions to help with saving the Krusheto spring fens.

Despite their priority protection by the Natura 2000 system, the Krusheto spring fen system is another important fen site in the new member countries of the European Union presently damaged. The cases of the

petrifying spring fen near the village of Stankovany in Slovakia or Rospuda mire in Poland (see elsewhere in this Newsletter) are already known, but no positive solution has been achieved in these cases.

Krusheto fen is not the only important fen complex in Bulgaria. Several other important fen sites, harbouring many relic, range-margin, single Bulgarian and endemic occurrences of plant and animal species, are still not protected and they are potentially strongly endangered by the ongoing building boom in Bulgaria. I can note the Dunavci fen near the town of Kazanlak (e.g. *Sesleria uliginosa, Schoenus nigricans, Cladium mariscus*, endemic snail *Bulgarica lozekii*), the Cerklivci fens near Godetch (e.g. *Salix rosmarinifolia, Carex buxbaumii* s.s., *C. appropinquata, Pedicularis palustris, Lathyrus palustris*), fens near the Batak reservoir (e.g. *Carex lasiocarpa, C. buxbaumii, Eriophorum gracile*) and near the Smolyan lakes in the Rhodopes (e.g. *Carex limosa*, *Lycopodiella innundata*) or fens near the town of Samokov (*Carex buxbaumii* s.s., *C. hartmanii, C. appropinquata, C. lasiocarpa, C. caespitosa, Pedicularis palustris*).

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News from Tasmania: Buttongrass moorland management workshop July 4-6th

This year is the 25th anniversary of the enscription of the Tasmanian Wilderness on the IUCN World Heritage Area list. One quarter of the Tasmanian Wilderness WHA (TWWHA) is vegetated by buttongrass moorland which comprises a mosaic of wet heathy sedgeland and Restionaceae rushland in which the Australian endemic sedge *Gymnoschoenus sphaerocephalus* is a key stone species.

A buttongrass moorland management workshop was held in July, as part of the celebrations for the 25th anniversary of the TWWHA. Scientists and managers were invited to present recent research results and case studies highlighting the significant values of the blanket moorlands and the management issues of greatest priority. More than 80 people attended the three-day workshop with the key Tasmanian Government departments and corporations as well as independent scientists from Tasmanian and interstate well represented.

The key note speaker Professor Geoff Hope from the Department of Archaeology and Natural History at the Australian National University spoke about the value and problems of using palaeoecological data to interpret fire histories in bog vegetation. Professor David Bowman of the Botany Department at the University of Tasmania presented a stimulating comparison of the pyrogenic *Triodia* grasslands of tropical Australia and buttongrass moorlands. Dr Jon Marsden- Smedley from the School of Geography and Environmental Studies at the University of Tasmania presented data on buttongrass moorland fire history and weather. The final key note speaker was Professor Peter Clarke of the Department of Botany at the University of New England who presented data supporting the case that buttongrass moorlands are a very resilient vegetation type that are capable of withstanding high fire frequencies with little deleterious impact.

The workshop allowed landmanagers and scientists to openly discuss the future management of fire, disease and recreational management of the buttongrass moorland ecosystem in the context of global climate change and the world heritage values of this and surrounding ecosystems. Maj-Britt di Folco (a PhD student at the University of Tasmania) suggested that most of the soils characterising this ecosystem and strongly determining vegetation structure and floristics are in fact not strictly speaking “peats” (as their organic content and thickness are often too low) but formed a variety of organosols. Proceedings from the workshop will be published.

Jaine Balmer

News from Canada: Road construction through the lagg zone of Burns Bog (British Columbia, Canada)

The uniqueness of the Burns Bog peatland in the Fraser Valley is well documented by the Burns Bog Conservation Society and the goods and services from this peatland in the context of the Valley are rather highly valued. The Society has expressed 3 major concerns in their position statement regarding the South Fraser Perimeter Road:

- Potential below grade disruption of the water hydrology and thus the lifeblood of the Bog;
- Potential SFPR traffic generated fugitive dust and water spray penetrating the Bog proper; and
- Potential wildlife disruption.

A 4th concern is the long term pernicious effect of the drainage that will come with the construction of a road in the lagg zone of the peatland. It will not be visible within 10 to 20 years after drainage, but giving time for trees to develop and positive feedbacks will kick in to further dry up the peatland. Research into ditch effects has demonstrated that a drain will affect the surface of a peatland at distance greater than 140 m (see Poulin et al. 1999) where living plants are found. This effect is reduced to 40 m for the catotelm layer, that is the deeper, permanently anaerobic peat layers. A historical study has shown that agricultural ditches neighbouring peatlands stimulate tree growth with time (see Pellerin 2003). The closing up of the canopy of an originally open peatland has been shown to reduce the diversity of plants and birds (see Lachance, D., C. Lavoie & A. Desrochers 2005. The impact of peatland afforestation on plant and bird diversity in southeastern Québec. Écoscience 12: 161-171). With this in mind and the context where Burns Bog is located, the South Fraser Perimeter Road should keep clear of the lagg (natural margin) zone of the peatland.

Line Rochefort, line.rochefort@plg.ulaval.ca

News from USA: Everglades restoration becomes more expensive

Cost estimates for the Everglades restoration plan have increased by 28 percent to at least $19.7 billion last year from $15.4 billion in 2000. Still the true price tag is yet unclear as many key projects are still in the conceptual phase.

Most projects are outlined in the Comprehensive Everglades Restoration Plan, or CERP, the multibillion dollar partnership between Florida and the federal government. Some delays happened because projects lacked congressional authorization and federal money.

There are 222 projects that make up the South Florida ecosystem restoration effort. Of those, 43 have been completed and 107 are being implemented. The remaining 72 haven't started.

A report by the Government Accountability Office found that decisions on most projects were driven by availability of funds, not by importance or impact. Yet the report failed to acknowledge the pressing need for federal authorization and appropriations required to fulfill the 50-50 state-federal partnership needed to restore the Everglades.

Source: Gannett News Service

New and recent Journals/Newsletters/Books/Reports/Websites

New LIFE website now online

With the kick-off of the new LIFE+ programme just around the corner (expected publication of the first call for proposals: mid-September 2007), the EU LIFE website has been completely renewed, with a more thematic approach and user-friendly look and feel.

The new design was influenced by the findings of an online user survey carried out in mid-2006.

http://ec.europa.eu/environment/life/

IPA database online

The IPA database currently holds information on Important Plant Areas in Belarus, the Czech Republic, Estonia, Poland, Romania, Slovakia and Slovenia. Soon data on IPAs in Bulgaria, Croatia, Montenegro, Macedonia FYR and the UK will be included.

The site offers the following information (in English) on IPAs in these countries:

- Location dot maps of IPA - individual sites or all the sites in one country
- Fact sheets for individual IPA (with information on their location, the species and habitats within them, the threats to the sites and their management
- Threats to IPAs
- Habitats found within the IPA network by country
- Species groups found within the IPA network.

If you are intending to carry out an IPA project in your country and you would like to use this database to make IPA site data available on-line please contact the IPA programme through the site. There is no cost associated with using it, only the time spent in training and setting up. IPA partners can see all the data in the database and download their country data for analysis. In the coming months/years Plantlife hopes to work with partners beyond Europe to enlarge the database so that it can accommodate data from other continents.

Surf to: http://www.plantlife.org.uk/international/plantlife-ipas-euro.htm – and click on the orange link at the top of the page.

Business.2010

The third issue of the Convention on Biological Diversity Secretariat's newsletter on business and biodiversity has been posted on the CBD website. This issue focuses on 'business, biodiversity and climate change' and can be downloaded at the following addresses:

http://www.cbd.int/doc/newsletters/news-biz-2007-05-high-en.pdf (for a high resolution version) and http://www.cbd.int/doc/newsletters/news-biz-2007-05-low-en.pdf (for a low resolution version).

Aquatic Conservation: Marine and Freshwater Research

Special edition of the journal on Satellite-based radar tools for Wetland management, based on a symposium held at the INTECOL Wetland Symposium, Utrecht, 2004, that was an outcome of the JAXA space agency Kyoto & Carbon project that itself was tied to the Ramsar Convention.

CARBOPEAT News

The first issue of the CARBOPEAT newsletter is now available online. The News contains updates on the CARBOPEAT project plus read about the world's second smallest fish: http://www.geog.le.ac.uk/carbopeat/ media/pdf/news1june2007.pdf

Mitigation and Adaptation Strategies for Global Change. 12, 1, January 2007

Special issue on Southeast Asia with emphasis on forest and peatland fires in relation to climate, ecosystems and humans.

http://www.springerlink.com/content/102962/

European Commission 2006. Nature and biodiversity case. Ruling of the European Court of Justice. Luxembourg: Office for Official Publications of the European Communities. 128 pp.

A very interesting analysis of all rulings of the European Court of Justice on the Birds and Habitats Directive. Available under:
http://ec.europa.eu/environment/nature/nature_conservation/useful_info/documents_publications/pdf/ecj_rulings_en.pdf

Wetlands, poverty reduction and sustainable tourism development: Opportunities and constraints

The development of tourism is increasingly considered as a solution to poverty in wetland areas, but there are threats as well as opportunities. To address these issues, Wetlands International has launched the 20-page brochure Wetlands, poverty reduction and sustainable tourism development: Opportunities and constraints in English, French and Spanish. This has been developed through cooperation between Wetlands International, IUCN Netherlands Committee (IUCN NL), the Dutch development organisation Cordaid, the travel organization TUI Nederland, the Secretariat of the Ramsar Convention, and the Tourism & Environment Group of the Wageningen University and Research Centre. Together these organisations, along with many others, support the wise use and conservation of wetlands and the alleviation of poverty, through - among other means - the development of sustainable tourism.

You can download this publication as a PDF file here http://www.wetlands.org/publication.aspx?ID=8d31d63c-edef-4daa-b309-9674d6af52fa

A web page that brings together a range of materials on sustainable tourism can be found under http://ramsar.org/about/about_sustainabletourism.htm

Morgan-Jones, W. Poole, J.S, Goodall, R. 2005. Characterisation of Hydrological Protection Zones at the Margins of Designated Lowland Raised Peat Bog Sites. JNCC, Peterborough. PDF 87 p.

This report provides a method that can be used to define the optimal width of a hydrological protection zone for lowland raised peat bog sites in the United Kingdom providing the site is not already degraded beyond restoration potential.

It provides a set of generic guiding principles for making reasoned judgements about the limits of hydrological influence within and around lowland raised peat bogs in order to assist with in conservation and restoration management work particularly considering designated Sites of Special Scientific Interest (SSSIs) or Areas of Special Scientific Interest in Northern Ireland (ASSIs).

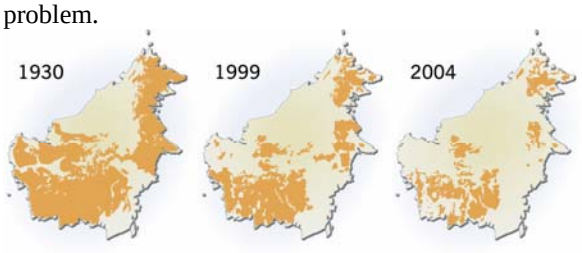
The report and plenty appendices are available here: http://www.jncc.gov.uk/page-3495

Nellemann, C. Miles, L. Kaltenborn, B. P. Virtue, M. Ahlenius, H. (eds) (2007) The Last Stand of the Orangutan - State of emergency: illegal logging, fire and palm oil in Indonesia's national parks. UNEP/GRID-Arendal, Arendal, Norway.

UNEP rapid response assessment prepared for the 2007 UNEP Governing Council. The survival of orangutans and other rain forest wildlife in Indonesia is seriously endangered by illegal logging, forest fires including those associated with the rapid spread of oil palm plantations, illegal hunting and trade. Forest fire and deforestation in Indonesia are also resulting in substantial emissions of carbon dioxide, in addition to the decrease in habitat for Orangutan and other keystone species of the rain forests of Borneo and Sumatra. The smoke from the burning forests are spreading over Southeast Asia in the summers. As burnt forest areas are left open, they are commonly claimed for rubber and palm oil plantations, thus permanently reducing the available habitat.

Illegal logging has recently taken place in 37 of 41 surveyed national parks in Indonesia, with some also seriously affected by mining and oil palm plantation development. The use of bribery or armed force by logging companies is commonly reported. Timber from the Indonesian rain forests are exported to the international markets, primarily other locations in Asia, such as China and Japan, but also Europe and North America. In the export process, the illegal timber often undergoes re-labeling, in a way similar to money-laundering - the point of origin is changed and also the species - to avoid export restrictions. A cubic metre of prime hardwoods can amass over USD 1000 on the international markets.

The enforcement regime for protected areas on Borneo and Sumatra needs to be strengthened to curb these illegal activities. The Indonesian initiative of better training and equipment of park rangers, including the development of Ranger Quick Response Units (SPORC – Satuan Khusus Polisi Kehutanan Reaksi Cepat) is a promising countermeasure, but requires substantial strengthening to deal with the scale of the immediate problem.



Orangutan distribution on Borneo

The report is available under:
http://www.grida.no/_documents/orangutan/full_orangutanreport.pdf (20 MB)

King. K., Ramkissoon, J., Clusener-Godt M. & Adeel, Z. (eds.) 2007. Water and Ecosystems: Managing Water in Diverse Ecosystems to Ensure Human Well-being'.

Based on the outcomes of the UNU-INWEH - UNESCO MAB-IHP International Workshop on 'Water and Ecosystems: Water Resources Management in Diverse Ecosystems and Providing for Human Needs' UNU-INWEH, Hamilton, Canada 14-16 June 2005.

The case studies contained in this book have been developed, following up on the recommendations made during the workshop. Available under www.inweh.unu.edu/inweh/publications.htm

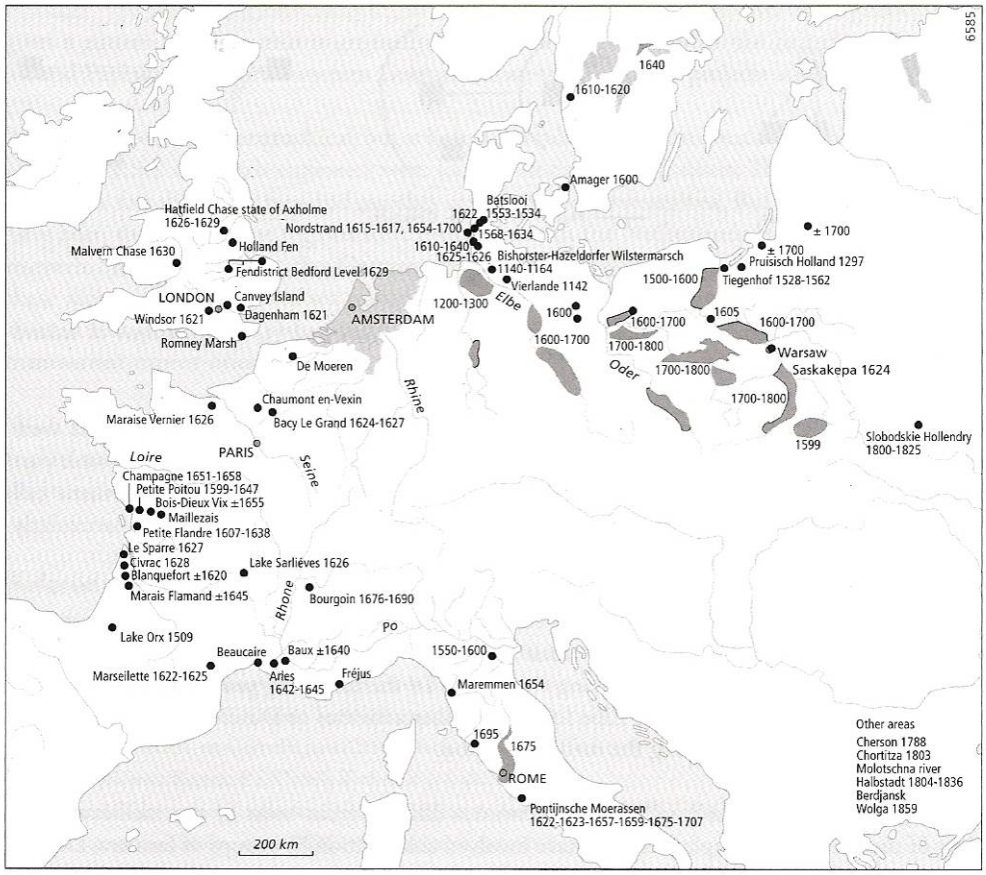
Guidelines for catchment management strategies – Towards equity, sustainability and efficiency. Department of Water Affairs and Forestry South Africa. PDF 179 p.

In South Africa, a vital component of Integrated Water Resources Management (IWRM) is the progressive devolution of responsibility and authority over water resources to Catchment Management Agencies, or CMAs. The scale of operation for the CMAs is that of Water Management Areas, or WMAs; 19 WMAs have been delineated in South Africa. The management of water resources is to be detailed in Catchment Management Strategies (CMS) that must be developed for each of the 19 WMAs. Over the past decade, the Department of Water Affairs & Forestry (DWAF) has developed a suite of guideline documents aimed at facilitating IWRM in South Africa. These guidelines for the development of a CMS are part of this process. However, they differ somewhat from many of the existing guidelines in that they do not deal with a single issue or topic. In effect they draw on all aspects of IWRM and aim to present an overview of the different strategic processes associated with managing water resources at the level of the WMA.

Download at: http://www.dwaf.gov.za/Documents/Other/CMA/CMSGuidelineFeb07.asp

Danner, H.S., J. Renes, B. Toussaint, G.P. van de Ven & F.D. Zeiler (eds.) 2005. Polder pioneers. The influence of Dutch engineers on water management in Europe, 1600 – 2000. Netherlands Geographical Studies 338, KNAG, Utrecht, 177 p.

With special attention to wetland/peatland drainage and reclamation in the Netherlands, England, Denmark, Germany, Italy, France and Poland.



Fenland reclamation by the Dutch

IMCG Main Board

UPCOMING EVENTS

See for additional and up-to-date information: http://www.imcg.net/imcgdia.htm

2nd International Field Symposium West Siberian Peatlands and carbon Cycle: Past and Present
26-30 August 2007, Khanty-Mansiysk, Russia
For more information see IMCG Newsletter 2006/4 or visit http://www.edu.ugrasu.ru/conferences/?cid=2

International Symposium and Workshop on Tropical Peatland
27-31 August 2007,Yogyakarta, Indonesia
See previous Newsletter or visit:
http://www.soil.faperta.ugm.ac.id/CT/

Monitoring the Effectiveness of Nature Conservation Programmes
03-06 September 2007, Birmensdorf, Switzerland
for more information visit:
http://www.wsl.ch/event_07/monitoring/

WETPOL 2007 – 2nd International Symposium on Wetland Pollutant Dynamics and Control
16-20 September 2007, Tartu, Estonia
for more information visit:
http://www.geo.ut.ee/wetpol2007

Bringing the Bogs back to LIFE
4 - 5 October, 2007, Westport, Co. Mayo, Ireland
Conference outlining the results of this important habitat restoration project, for more information: http://www.irishbogrestorationproject.ie/conference_information.html

Climate protection through mire conservation?
5 - 6 October 2007, Freising, Germany
For more information download documentation:
http://www.imcg.net/docum/dgmt_climate_07.pdf or visit: http://www.dgmtev.de

Peat and Peatlands 2007 - Peat in horticulture and the rehabilitation of mires after peat extraction
8. - 11. October 2007, Jura, France
For more information see IMCG Newsletter 2007/1 or visit: http://www.pole-tourbieres.org

History of mires and peat
18 - 20 October 2007, Laon, France
For more information:
http://ghzh.free.fr/Colloque_tourbe_oct_2007.pdf

Wetlands for tomorrow: conservation within a developing environment
22 - 26 October 2007, Gauteng, South Africa
for more information visit:
http://www.gdace.gpg.gov.za/html/NationalWetlandsIndaba2007.htm

IMCG Symposium on Windfarms on peatland
27 April - 02 May 2008, Santiago de Compostela, Spain
For more information, read IMCG Newsletter 2007/2

13th International Peat Congress After Wise Use - The Future of Peatlands
9. - 15. June 2008, Tullamore, Ireland
for more information, visit ipcireland2008.com

IMCG Field Symposium and Congress
27 August – 11 September 2008, Georgia/Armenia
For more information see IMCG Newsletter 2006/4

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