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PEATLANDS
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Editorial

Jaakko Silpola

The International Peat Congress as IPS flagship

Dear member and reader of the Peatlands International magazine,

This fresh copy of Peatlands International, which you are holding in your hands right now, is the business card of the International Peat Society.

The magazine is delivered not only to IPS members all around the world, but also to all delegates of the IPS International Peat Congress 2012 in Stockholm. And what is the Peat Congress – it is the bright flag of the IPS! So, dear reader, have a look at both the magazine and the International Peat Congress around you, and you will find plenty of arguments why to be or to become a member of the Society!

For peat and peatlands, the IPS is the only global organization binding all kind of stakeholders together. This is what you can see and hear also at the Peat Congress with hundreds of presentations dealing with environmental, social and economical use of peat and peatlands.

The same wide field of different IPS activities is provided by our "all delegates welcome" meetings of different IPS Commissions, by fifteen different field trips on Wednesday, and by the special session about the IPS Strategy for Responsible Peatland Management on Friday morning, as well as the IPS Annual and General Assemblies on the same day. You are very welcome to attend.

IPS truly serves all peat and peatland friends willing to provide a way to responsible use and protection of these important landscapes and resource, with the expertise of all IPS members and stakeholders. Come and join us and give your input, in your special field of interest and in general.

At the same time, I would like to show a bit of the future of IPS event activities. The IPS Malaysian National Committee is going to host next the IPS International Peat Congress in Sarawak, Borneo during 15 - 19 August 2016! The preparations of that major conference have already started and you can see and experience Malaysian input also at the Stockholm Peat Congress! Another event to pay attention to already now is the International Peat Technology Symposium 2014 in Riga, Latvia.

All these activities would not be possible without active National Committees and devoted members. I am - together with the whole Society - most grateful for the enthusiastic attitude and hard work you organizers have shown for many weeks and months. At the same time, the IPS would like to thank all sponsors and partners working in co-operation with us.

Without you these marvellous events would not be possible. I am positive that current and future conferences will be most successful when we have such a splendid network behind us!

Finally, with the support of the above mentioned examples, I would like to encourage peat and peatland actors from all fields to establish new National Committees in your country. And, if you already have one, please support its activities and invite new members into your local association.

A fully open, "all stakeholders welcome" National Committee is an incredibly important tool to discuss national questions dealing with peat and peatlands.

More information on this can also be found in the Annual Report 2011 in this magazine.

However, if you do not yet have a National Committee in your country, and you are not able to join other people to establish one, please join the IPS directly. You can do it online anytime via www.ips.org/join-us.

With very best regards,

Jaakko Silpola
Secretary General of the IPS
email: jaakko.silpola@peatsociety.org

From the President's Desk

Donal Clarke

Farewell and new beginnings

This is the last time I will pen a letter from this lofty desk. I am tempted to reminisce about what has happened since that sunny Friday in June four years ago in Tullamore, reviewing the many activities of the IPS since then. However, I would prefer to take this opportunity to look to the future.

I can combine looking to the future and celebrating what we have achieved by saying that I am eagerly anticipating the review session of the Strategy for Responsible Peatland Management which is scheduled during the 14th Congress in Stockholm. The development of the Strategy was the most significant achievement of the last few years. It involved the participation of a large number of colleagues and has had a significant impact on peatland policies being developed by several countries and organisations. It underpins the future projects which I mention below.

Organisationally, we are now facing into the biggest change in the working of the Society since 1991. The IPS has had to struggle to survive financially, like many bodies that have lived through the last few years which have seen recessions in many countries. It has been sustained by the support of its National Committees and individual members, of its industry sponsors and through the activities of its Commissions.

As I explained in my letter this time last year, from the summer of 2012 the IPS will no longer share offices and staff with the AFPI and we will have a stand-alone Secretary General. These changes will increase our costs by about Euro 20,000 per year, but they also offer us a chance to re-look at how we do things.

We are fortunate in looking forward that Jaakko Silpola will remain with us in the new-look role of Secretary

IPS Executive Board and Scientific Advisory Board at work in Dublin in March 2012. Photo: Susann Warnecke

Jyväskylä has been the hometown of the IPS Secretariat for two decades now. Photo: Susann Warnecke

Members of the IPS Executive Board, Scientific Advisory Board and IPS staff at the spring meetings of IPS in Dublin. Photo: Susann Warnecke

General and will bring his energy and experience to bear on the new-look IPS. I expect the new Executive Board (EB) which will be elected in Stockholm to take advantage of this opportunity to revise and update the Society's Strategy.

The present EB has initiated a number of projects which I think will give valuable impetus to the work of the Society. To me the most immediate of these is the development of the website. When further progressed, the website will make a large body of published material available to members and will greatly improve the services given to them.

In the last year the IPS has progressed the drafting of the Practical Guidelines for the Implementation of Wise Use. A consultation on a new draft which concluded in December 2011 produced suggestions for radical changes in the document and these have been largely incorporated in the draft. This amended version is being circulated in a new consultation phase beginning in April 2012.

One of the great IPS projects of the 1990s was the publication of Lappalainen's Global Peat Resources. This now needs further updating as new sources of information have become available. The first steps have been taken by the IPS to prepare a revised database not only of the extent, but also of the uses, of peatlands. In progressing this project funding will naturally be a determining issue.

The IPS is also examining the compilation of a worldwide peatland rehabilitation guide. It is currently expected that it will take the form of a restoration and rehabilitation map on the IPS website. Work has begun on developing this map.

Also in the pipeline is a peat conference to be organised in June 2014 in Latvia to follow up on the successful meetings held in Jyäskylä in 2010. It is hoped that this will lead to useful exchanges of information and views with extensive contributions from Eastern European colleagues.

In concluding I would like to express my heartfelt thanks to Jaakko Silpola, our Secretary General, and Susann Warnecke, our Communications Manager, for the enthusiasm and effectiveness with which they have supported the Society during my period of office. I wish them well as they operate in the new structures which will be in place following Stockholm.

I have greatly appreciated the work of the Executive Board over these last years. To those members who are leaving, and to those who are staying, I say "very many thanks". I have a particular word of thanks to the First and Second Vice Presidents who have greatly assisted me with advice.

The excellent innovation brought about at the Tampere Congress, the establishment of the Scientific Advisory Board (SAB), has continued to prove its worth in the last four years. I thank the members for their vigorous contributions, with special thanks to the SAB Chair, Jack Rieley.

Finally, I would like to wish my designated successor Björn Hånell every success in the next four years. Björn, you should have been more careful of what you wished for, as it will take up a big chunk of your life, but you will love it.

Donal Clarke

IPS President
email: donalcke@indigo.ie

New Strategy and Work Programme for the IPS

A proposal to the Annual Assembly and all IPS members

Photo: Susann Warnecke

Objectives and Tasks

Research and development:

Objective: To promote research into peatlands, peat and their use, including both conservation and non-use, and to disseminate the information obtained.
Tasks:
1. To promote research on, and survey of, peatlands and peat, and to encourage innovation and research in peatland science, technology, conservation and restoration.
2. To promote the development of environmentally sound techniques and their application to agriculture, forestry and industrial use of peatlands and to the management of cut-over areas.
3. To promote national and international standards for the classification of peatlands and peat.
4. To promote the certification of peatlands and peat.

Public policy:

Objective: To cooperate with governmental, intergovernmental, and international organisations and to provide them with science-based information relevant to policies directly or indirectly affecting peatlands and peat and their use.
Tasks:
1. To advise local, national, and international authorities and other organisations on public policy matters relating to peatland conservation, scientific and technical research, and wise use of peatlands and peat.
2. To participate in international fora to represent and promote the wise use of peatlands and peat.
3. To foster, monitor and report implementation by governments of international and national programmes related to the wise use of peatlands and peat.
4. To support and promote the need to consider 'Responsible Peatland Management'.

Responsibility to members:

Objective: To assist its members through communication regarding education, research and advocacy in matters related to the members' business, scientific and environmental activities.

Task: To provide fora where members can meet and discuss, internet communication and publications.

Communications:

Objective: To communicate pro-actively within IPS membership and beyond, providing information on the role of peatlands and peat in the environment and the economy, and their wise use.
Tasks:
1. To promote appropriate conservation of peatlands.
2. To promote the use of peatlands and peat as an important community and economic benefit.
3. To promote responsible restoration, reclamation and after-use of developed peatlands.
4. To collect and disseminate information on meetings, including seminars, conferences and congresses, dealing with peatlands and peat.

Partnerships:

Objective: To work proactively through partnership, networking and cooperation.
Task: To promote cooperation and partnership with and among research institutes, companies, other organisations and individuals involved in the study, conservation, utilisation and responsible after-use of peatlands.

Strategic Plan

Identity: The International Peat Society (IPS) is a non-governmental, non-profit multidisciplinary organisation of scientific, industrial and regulatory members both individual and institutional.

Vision: The vision of the IPS is to be the authoritative international organisation on all aspects of peatlands and peat.

Mission: The mission of the IPS is to bring people and organisations together to foster the advancement, exchange and communication of scientific, technical and social knowledge and understanding for the wise use of peatlands and peat.

Photo: Dirk Röse

Near-term projects

The following near-term projects will be pursued.

Development of the website

The IPS will proceed with the development of its website. Additional Congress Proceedings and other publications will continue to be added and the facilities available to members will be continuously improved. IPS presence on social networking services will be maintained.

Next version of the Practical Guidelines for the Implementation of Wise Use

A consultation on a new draft concluded in December 2011. The recommendations received suggested radical changes in the shape of the document and these changes are being incorporated and a new version will be circulated in spring 2012.

Extent and uses of peatlands

The IPS is investigating the possibility of preparing a revised database of Global Peat Resources. A professional specification for such a project in being drafted, to cover terms of reference, manpower and possible sources of funding.

Sustainable use of peat in horticulture

The IPS is participating in talks towards a Dutch sustainable horticulture certification process and in the consultation process regarding the UK Government's policy to phase out the use of peat in horticulture in England.

Global Peatland Rehabilitation Guide

The Strategy for Responsible Peatland Management states the importance of planning for after-use of peatlands and sets out the objectives of restoration and the actions needed to achieve these objectives. The IPS is examining the compilation of a worldwide peatland rehabilitation guide. It is currently projected that it will take the form of a restoration and rehabilitation map on the IPS website. Work has begun on developing the map.

Conservation and Management of Peatlands in Emerging Nations

The IPS is considering a proposed project to sponsor an analysis of the management of peatlands in the southern hemispheres including the status of conservation there. In the context of the Strategy for Responsible Peatland Management the project would concentrate in particular on the examination of the status of the peatlands in the southern hemisphere that are being managed for protection/ conservation.

Industrial technology transfer

A peat conference will be organised in June 2014 in Latvia to follow up on the successful meetings held in Jyäskylä in 2010.

Ecosystem Services

Following a presentation made by Professor Jean-Pierre Reveret in Quebec in June 2011 on Ecosystem Services of Peatlands, the IPS is beginning work on the development of a follow-up policy.

National Committees

The 14th Congress will be used by the Executive Board and Secretariat as an opportunity to strengthen those National Committees which have become dependent on a small number of members, and to encourage the establishment of National Committees in countries which have numbers of individual members but no Committee.

Communication and Review of the Strategy for Responsible Peatland Management (SRPM)

A review session will take place at the 14th Congress. The Secretariat will continue to promote the Strategy and to distribute the document at as many international events as possible.

Welcome to the "peat family"!

New IPS Members

We welcome the following individual persons, institutes, companies, non-government organisations and/or their representatives as new IPS members. Updates in their membership lists are provided by our National Committees as soon as they occur, or at least at the end of each year on request of the IPS Secretariat (status 4 May 2012).

Corporate + Institutional Members

Canadian Sphagnum Peat Moss Association (CSPMA): Marc Bourgoin (Berger Peat Moss), Eric Brissette (Premier Tech Systems), Brian Bullock (Marsh Canada), Jaime Farrah (Keltic Transportation Inc.), John Hill (Sun Gro Horticulture, USA), Kirk Johanson (Sun Gro Horticulture, USA), Rami Soufi (Scotts Company, USA), Paul Thebeau (Sparta Innovations), Michael Watcher (ASB Greenworld Ltd.)

German Peat Society (Deutsche Gesellschaft für Moor- und Torfkunde, DGMT): G. Faltermeier (Alpenflor Erdenwerke GmbH & Co. KG)

Irish Peat Society: Martin Kelly (IPCC), Eamonn Maher (Bord na Móna), Ger Nagle (Klasmann-Deilmann Ltd.), Miles Newman (IPCC), Maurice Eakin (National Parks and Wildlife Service), Judit Kelemen (National Parks and Wildlife Service), Conor O'Raghallaigh (National Parks and Wildlife Service)

Latvian Peat Producers Association (Latvijas Kūdras ražotāju asociācija): Gunars Cankalis (Olaines Kudra JSC), Dans Ciscakovs (Klasmann-Deilmann Latvia), Andis Gredzens (Seda JSC), Valdis Polmanis (Compaqpeat Ltd.), Hendrih Robert Zomer (Galenieki Ltd.)

Lithuanian Peat Producers Association (Lietuviškos durpės): Valdas Astromskis (UAB Poraiste), Algimantas Barkauskas (UAB Renavo durpynas), Irmantas Chrimlis (UAB Mabre LPC), Bernd Hofer Hofer & Pautz GbR, Germany), Andrej Kirillov (UAB Presto durpes), Alvydas Lauzikas (UAB Rekyva), Ricardas Nemanis (UAB Didysis tyrulis)

Malaysian Peat Society: Supie Saupi bin Hj Mansor (Multi Maximum Sdn Bhd), Abdul Hamed bin Sepawi (Ta Ann Holdings Bhd), Choo Tad Lim (Ta Ann Plywood Sdn Bhd), Shannon Chong Hee Yii (Mega Bumimas Sdn Bhd)

Polish National Committee: Kazimierz Tobolski (Adam Mickiewicz University in Poznan), Agnieszka Wagner (Warsaw Agricultural University)

UK Peat Society: Chris Hartfield (National Farmers Union England), Jamie Robinson (Westland Horticulture Ltd)

Individual Members

Finnish Peatland Society (Suoseura): Pia Högmander, Juha Ovaska, Marja-Liisa Seväkivi, Kaisa Silvan, Niko Silvan, Suvi Silvennoinen

German Peat Society (Deutsche Gesellschaft für Moor- und Torfkunde, DGMT): Werner Burkart, Ludger Elverich, Hannsjörg Frank, Anke Günther, Andreas Herrmann, Ingo Holz, Ellen Kiel, Michael Kosinowski, Uwe Lange, Beate Lezius, Hans-Joachim Neelsen, Herman Oosterkamp (NL), Siegfried Ostermaier, Ellen Ploss, Theodor Poppen, Uwe Riegel, Heike Stegmann, Jutta Walter, Ulrike Winkler, Michael Zauft

Irish Peat Society: John Connolly, Ian Lumley, Caiomhe Muldoon, Jane Whitaker

Malaysian Peat Society: Edward Baran Aeries, Kasing Apun, Lionel Thian Loi Bong, Tong Yiew Chee, Sing Yun Chin, Daniel Huong Chen Ding, Philip Kian Sin Ho, Hon Chong Jee, Kee Mou Jin, Angelyn Melaya Kloni, Seng Lau, Sharon Yu Ling Lau, Hong Hin Lim, Peter Kim Huan Lim, Sulim Lumong, Auldry Chaddy Petrus Rudut, Len Talif Salleh, Deniel Sang, Peter Sawal, Alexander Kiew Sayok, Ting Chuan Siaw, Aileen Kai Fang Sim, Angela Che Ing Tang, Ngen Chung Teng, Annie Ting, Adrian Ling Yung Wong, Kie Yik Wong, Kuo Hea Wong, Patrick Haw Yeong Wong, Shahrakbah Yacob

Russia: Evgeniya Golovatskaya

Japan: Yasuhiko Koike

UK Peat Society: Neal Wright

US National Committee: David J. Cooper

Student Members

German Peat Society (Deutsche Gesellschaft für Moor- und Torfkunde, DGMT): Joanna Dornia, Christian Heller, Sylvia Hipp, Vytas Huth, Maria Knüpffer, Ana Carolina Rodriguez Martinez, Judith Walter

UK Peat Society: Louis-Pierre Comeau, Pan Gong, Jodie Hartill, Lauren Parry, Nicole Sanderson

Please note that not all National Committees offer student membership yet. However, they often have reasonable membership fees for individual members - just ask.

You are very welcome to join us, too! Please visit www.peatsociety.org/join-us, contact the National Committee in your country (addresses at our website and in the Annual Report) or fill in the membership application ->>>

Why to become a member of the IPS?

The International Peat Society is open to all individuals and organisations dealing with peat and peatlands. Would you like to be one of our 1400 active members in 37 countries all over the world?

The IPS is bringing together mire scientists, peatland enthusiasts, universities and research centres as well as professionals of the peat industry, horticulture and energy under one roof, in a worldwide association. To foster information exchange, education and dialogue, we are regularly organising conferences, meetings and symposia on all matters related to peat and peatlands.

Our members receive our montly email newsletter Peat News, the half-yearly printed magazine Peatlands International and have full access to the scientific online journal Mires and Peat, our social media services and the publications database at our website. IPS Members benefit also from significant discounts on registration fees at our events, and can edit their own entries at the IPS member databank.

Membership Benefits

As member of the International Peat Society, you can benefit from:

- access to the events of the International Peat Society, such as meetings, workshops, congresses and symposia
- significant discount on registration fees and certain publications
- free subscription of the magazine “Peatlands International”, published twice annually and containing about 60 pages of reports from peat and peatland events, research results, background stories etc.
- free subscription of the monthly e-mail newsletter “Peat News”
- access to IPS publications on peat and peatland business, research and related fields
- access to the six-language online peat dictionary
- access to the IPS membership list (you will see only those members that have agreed to show their information)
- networking opportunities with more than 1,400 specialists in peat and peatland science and industry
- local activities via National Committees in currently 17 countries.

Fill in the application form below or call your National Committee - and do not hesitate to contact us in case you have any questions.

Membership Application Form

Hereby I apply for membership in the International Peat Society. Please forward my application to the National Committee in my country (Canada, Czech Republic, Estonia, Finland, Germany, Hungary, Indonesia, Ireland, Latvia, Lithuania, Malaysia, the Netherlands, Norway, Poland, Sweden, United Kingdom, United States, differing membership fees) or accept me as member associated with the IPS Secretariat in countries without an IPS National Committee (e.g. annual fee € 47 individual, € 280 organsations, € 23 student members in 2012). Further details and an online application form can be found at www.peatsociety.org/join-us.

O individual O corporate O research institute O government institute O student

Name:

Organisation:

Address:

E-mail:

Phone: Fax:

GSM: Website:

Place, date: Signature:

send to: IPS Secretariat, Kauppakatu 19 B,
40100 Jyväskylä, Finland, e-mail: ips@peatsociety.org

International Peat Technology Symposium

Peat in the 21st century - innovative approaches in peat extraction, usage and scientific research

International Peat Society | IMTG MTG

KRA

Photo: Rigas Nami, Latvian tourism development agency

Riga, Latvia in June 2014

Election of the IPS Executive Board 2012 at the International Peat Congress in Stockholm on 8 June

The Annual Assembly of the International Peat Society will elect a new Executive Board during the International Peat Congress in Stockholm.

The elections will be carried out according to the Statutes and Internal Regulations of IPS in the order of the positions during the Annual Assembly on Friday, 8 June. All Congress participants are very welcome to attend, also the National Committee Round Table on the evening before, although only official IPS National Committee representatives have the right to vote.

Elections are held for up to seven upcoming vacant posts on the Executive Board: President, First Vice President and Second Vice President 2012-2016 and 3-4 ordinary members. Valerijs Kozlovs from Latvia, Erki Niitlaan from Estonia and Lech Szajdak from Poland will continue as ordinary members on the EB until 2014.

The following proposals for EB members were received from the IPS National Committees (in order of positions and then alphabetically):

For President:	Björn Hånell, (Sweden)
For 1st Vice President:	Björn Hånell, Guus van Berckel (Netherlands/ Germany), Lulie Melling (Malaysia)
For 2nd Vice President:	Guus van Berckel, Lulie Melling, Jack Rieley (UK), Lech Szajdak (Poland)
For Ordinary Members:	Björn Hånell, Guus van Berckel, Lulie Melling, Jack Rieley, Donal Clarke (Ireland), Paul Short (Canada), Samu Valpola (Finland)

It is the task of the IPS Executive Board to decide on administrative and strategic matters of the IPS. The Executive Board meets 3-4 times a year to discuss and agree on items brought forward by the members of the Society, in close cooperation with the IPS Secretariat, the Scientific Advisory Board (Chairs of the Commissions) and the National Committees.

Please attend the Annual Assembly, invite your colleagues, and meet the future important decision makers for the Society.

New contact details of the IPS Secretariat

As of July 2012, the Secretariat of the International Peat Society will have a new address. Please save these for further reference:

International Peat Society
Secretariat
Kauppakatu 19 B
FIN-40100 Jyväskylä
Finland
www.peatsociety.org
ips@peatsociety.org

Secretary General
Jaakko Silpola
Phone: +358 50 406 4836
Email: jaakko.silpola@peatsociety.org

Communications Manager
Susann Warnecke
Phone: +358 40 418 4075
Email: susann.warnecke@peatsociety.org

We look forward to hearing from you.

Member Access to the IPS Website – Log in for more!

Since the end of 2011, all IPS members have the possibility to see and edit their own member information on the IPS website, even if they have joined IPS via one of our 17 National Committees.

Member IDs and passwords were sent out by email in December, and here is how to log in and retrieve your information in case it got lost: Visit www.peatsociety.org, and click on “log in” in the upper left corner. Then you can log in using your email address (usually the one to which we send Peat News) and your personal password – or click the tab “Request new password” if you do not have your original password. Members from **Germany** and the **Netherlands**, who receive Peat News via their local office, can send their email address to susann.warnecke@peatsociety.org to get access.

Please do not open a new account/register if you are an IPS member already, e.g. receive Peatlands International and Peat News. In case you are not sure about your membership status or need additional help, just contact us.
Much information on the IPS website is now available to members only, such as more and more IPS conference proceedings, other publications, the peat dictionary and the list of members that have opened their contact data by clicking the “show my information” box in their personal member profile. Have a look!

15th International PEAT Congress 2016

Sarawak, MALAYSIA

Organized by

Malaysian Peat Society

In Partnership with

International Peat Society

15 -19 August 2016

MALAYSIAN PEAT SOCIETY

IPS

SARAWAK CONVENTION BUREAU

Jumpa lagi, 2016 Sarawak, Malaysia

The 15th IPS International Peat Congress, 2016

Sarawak, MALAYSIA

Theme:- Peatlands in Harmony – Agriculture, Industry & Nature

Personal Invitation

3rd June 2012

Dear Future Delegates,
Welcome to Sarawak, Malaysia!

It is our great pleasure and honour to invite members from around the globe to the 15th IPS International Peat Congress, to be held in 2016 in Sarawak, Malaysia. This prestigious quadrennial convention, hosted by the Malaysian Peat Society (MPS) in partnership with the International Peat Society (IPS), will be held for first time in the International Peat Society's long history in a location outside Europe and North America.

The 15th IPS Congress will be themed 'Peatlands in Harmony – Agriculture, Industry & Nature'. Presentations will relate to an integrated global perspective for the sustainable utilisation of peatlands and the preservation of their unique dynamics and natural biodiversity. The Congress will also provide researchers, academics and practitioners an ideal forum to congregate, share information and discuss their scientific results and experiences, with particular reference to peat and peatlands in the tropics.

Sarawak, Malaysia's largest State and known as the **Hidden Paradise of Borneo** and the **Land of the Hornbills**, is lavishly endowed with impressive natural landscapes, cultural diversity a friendly and welcoming denizens. Less well known is the fact that the State also offers up-to-the-minute convention facilities and technology. As such it is the perfect destination for delegates to confer, network, gain inspiration, take in the local scene (including some interesting peatlands) and relax. The Sarawak State Government, the Federal Government of Malaysia and the corporate sector nationwide are fully committed to providing the Congress with their full support.

On our part, I can assure you that the Malaysian Peat Society has already determined that the 15th IPS International Peat Congress will set a new standard for IPS International Peat Congresses.

I believe that this Congress will provide you with a fruitful intellectual experience as well as a memorable visit to Sarawak. We look forward to seeing you on our shores!

Dr. Lulie Melling
Congress General's Message

Peatlands and the Canadian Horticultural Industry

Text: Paul Short

Introduction

This is a report on the activities by the Canadian horticultural peat industry, represented through the Canadian Sphagnum Peat Moss Association (CSPMA), the Quebec Peat Producers Association (APTHQ) and the New Brunswick Peat Producers Association (NBPPA) in the development of responsible peatland management, life cycle analysis, certification and peatland research within Canada.

Strategy for Responsible Peatland Management (SRPM)

The Canadian industry has endorsed in principle the Strategy for Responsible Peatland Management and recognizes the document as a foundational element for improving the overall global accountability of peatland management. As the Wise Use Guidelines document provided a critically important decision making framework for peat use, the SRPM provides a key basis for the recognition and proper management of this important natural resource.

The Canadian industry has promoted the document extensively throughout the Federal and Provincial governments and has encouraged the adoption of the tenants of the Strategy within these jurisdictions.

Sustainability Statement

"The Canadian horticultural peat industry contributes to society's well being through its products and activities from peatlands to consumers. The members are committed to a sustainable management and development approach that provides: Environmental Responsibility, Economic Viability and Social Accountability"

Natural bog in Dosquet Québec. Photo: Gilles Ayotte

Sustainability Canadian Horticultural Peat Industry Position Paper

Linked to the advancement of responsible peatland management the Canadian industry prepared a Position Paper outlining its commitments and accountabilities for a Sustainability program. The Paper provides our Sustainability Statement, and outlines the industries intent to communicate in a transparent and traceable manner our achievements in meeting the sustainability measures important to the industry and stakeholders.

The following presents key elements and commitments as to how the industry proposes to account for these core values.

ENVIRONMENTAL RESPONSIBILITY

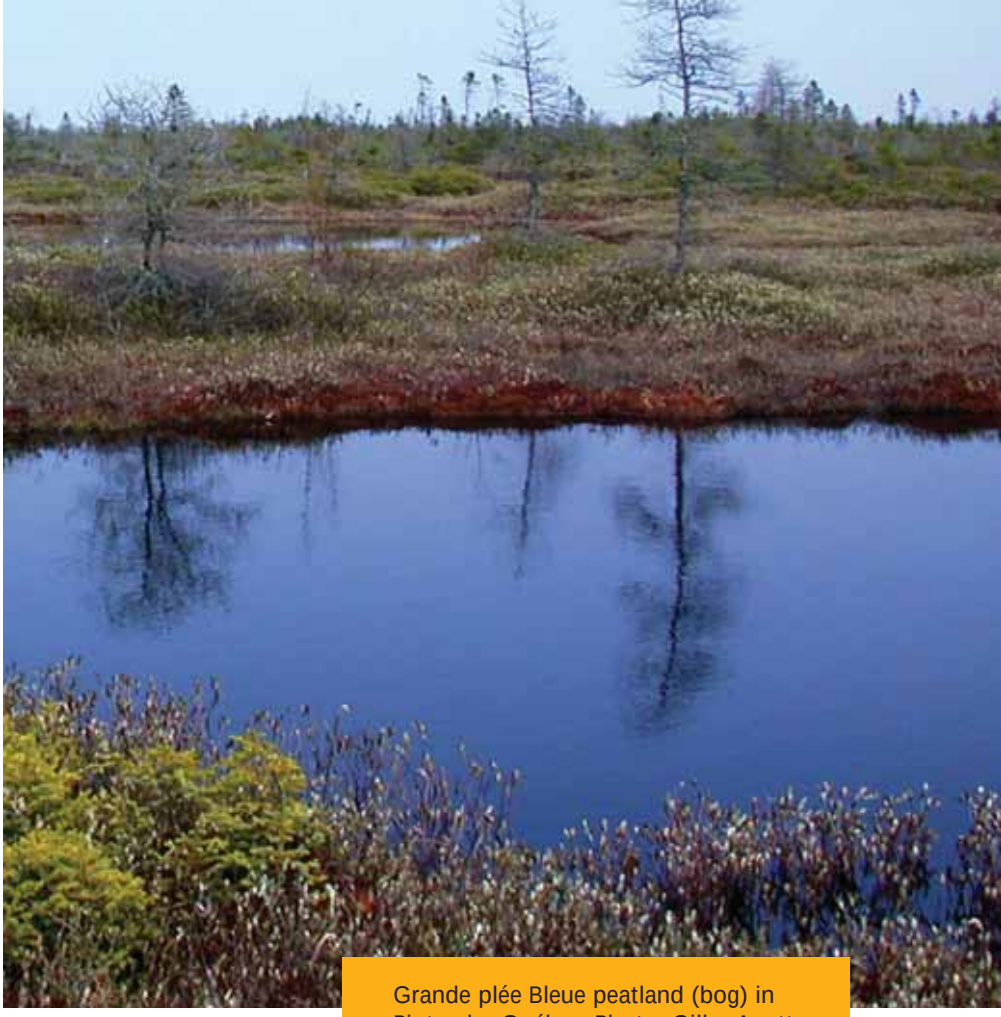
Peatlands are biological resources created as a result of natural science and processes, i.e. a natural resource with ecosystem functions and need to be managed respecting these functions.

Protection/Conservation

Canadian peatlands need to be set aside under management for protection and conservation. It is estimated that 89,910,000 hectares or 81% of Canada's peatlands remain undisturbed. These peatlands support fish and wildlife, conservation values, biodiversity, cultural and other ecosystem values. We encourage additional areas be established under national or provincial legislation that protects or conserves their existing ecosystem values from development following integrated management planning processes. Cultural values of Canada's Aboriginal peoples must also be accounted for in all management decisions respecting the use and allocation of peatlands.

Economic Value

Peatlands are being developed throughout the nation for a full range of development interests. Nationally, it is estimated that 19% of the peatlands are under some form of development. Peat moss production accounts for approximately 17,000 hectares or 0.016% of Canada's peatland resource. Continued responsible management to ensure sustained horticultural harvesting opportunities, balanced with social and environmental values are strongly supported by the Canadian Sphagnum Peat Moss Association (CSPMA).



Grande plée Bleue peatland (bog) in Pintendre Québec. Photo: Gilles Ayotte

Regulations

Nowhere in Canada are peatlands permitted to be used for horticultural purposes without thorough environmental evaluations and rigorous regulatory approval. We encourage greater harmony and consistency in the regulatory and administrative processes for the allocation and development of the commercial horticultural peat resources throughout the nation.

Peatlands: A Renewable Resource

Peatlands are renewable both from a natural disturbance response and an anthropogenic (peat harvesting) impact. The rate of recovery and the degree of biodiversity may differ but the renewal of the peatlands is not in dispute.

The peat industry's commitment to restoration or reclamation emulates to a degree the renewal patterns of peatlands following a natural disturbance such as wildfires. The work of the Industrial Research Chair in Peatland Management has provided the industry with the science and methods to begin the renewal of peatlands following the completion of harvesting activities.

The evidence from this research demonstrates that the restoration efforts of the industry can return a peatland that has been harvested for horticultural use to a functioning ecosystem within a period of 7-10 years.

HORTICULTURE

- Geological research
- Resource calculation
- Residual reserve estimation
- Quality control
- Biological survey

OUR PROMISE TO YOU

“Our experts, armed with international experience and up-to-date knowledge of the peat industry, will carry out the best and most sustainable solutions for you.”

- Environmental impact assessment
- Extraction project
- Production plans
- Water treatment and drainage projects
- Recultivation projects

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ENERGY

Carbon sequestration and sink/source relationships within peatlands can vary between peatlands disturbed by natural occurrences and peatlands harvested for horticultural use. In both cases sequestration begins shortly after restoration has been completed, the source/sink balance however, can take longer for harvested peatlands.

It is fully recognized that during a human lifetime the rate of peat accumulation in a restored peatland will not replace the volume of peat that existed prior to the commencement of harvesting activities. It is however our commitment to reestablish the natural ecosystem's processes, which over an extended period of time can be expected to regenerate the peat biomass that previously existed in the peatland. We believe that it is the success or failure of these efforts to reestablish the natural ecosystems processes that should be used to measure the results of the industry's restoration and rehabilitation activities.

In summary, peatlands are a renewable resource. Peat biomass, on the other hand, is a slowly renewable resource. While peat biomass continues to accumulate beneath restored peatlands, the rate of accumulation is a multi-generational process and, therefore, not renewable as that term is commonly understood.

ECONOMIC VIABILIY

The second pillar of the industry's sustainability strategy is economic viability. It is our belief that by maintaining an economically strong industry we can meet the expectations of major stakeholders, including customers, lenders, and investors. Financially viable companies are best able to provide a basis for sustainable development and continual improvement.

An economically viable industry produces a greater degree of benefit for society. The single most important component of economic viability is being competitive on an international scale and retaining a strong customer focus. Through this it is our intention to deliver quality products and services to meet present and future market requirements.

Natural bog in Kouchibouguac New-Brunswick. Photo: Vicky Bérubé

SOCIAL ACCOUNTABILITY

Conducting our business with integrity and reflecting changing societal values in our performance will provide assurances to not only the market but communities and employees of the industry. Economic opportunities and a safe and productive work environment for our employees and clients are social benefits that will strengthen our overall sustainability performance.

We will engage our stakeholders in a proactive and transparent manner and be respectful of their interests. In this manner our communities and those affected directly or indirectly in our business will be recognized. The industry will contribute to the economic and social well-being in communities where we operate, as well as regionally and nationally. Communicating the status, action plans and outcomes of steps taken by the industry as part of its Sustainability Program for all three pillars is an essential step.

Awareness of our initiatives must be communicated to all of our stakeholders in a transparent and traceable way. Accountability for delivering this messaging is shared collectively through the respective Associations as well as by each of the corporate members. The following reporting obligations are committed to by the industry.

Industrial Sustainability Reporting (ISR)

This applies to the industry as represented by their respective Associations (CSPMA, APTHQ and New Brunswick Peat Producers). All associations will produce an Industrial Sustainability Report (ISR) outlining the sustainability accounting for their respective jurisdictions.

The Report is to be based on Environmental, Social and Economic benchmarks that measure the respective national or provincial values of the horticultural peat industry. It is proposed that the Report should be issued every three years showing the changes in the industry's sustainability indicators.

Corporate Sustainability Reporting (CSR)

Each horticultural peat company is committed to producing their own Corporate Sustainability Report that:

La Grande river region, sector LG1, James bay; 53° 47' 20'' N – 78 ° 56' 10'' W. Photo: Michelle Garneau, Université du Québec à Montréal

- Positions the company where it is at present regarding its environmental/economic/social accounting.
- Sets out its Action Steps to be taken to improve its outcomes for these sustainability measures.
- Reports on the changes over time that occur in achieving the improvements.

Life Cycle Analysis (eLCA, Social LCA)

The industry endorsed the examination of a cradle-to-grave Environmental Life Cycle Analysis which includes the processes and activities pertaining to the production, conditioning, distribution and end of life of Canadian sphagnum peat. Because peat is but one component within a greenhouse or garden system, its environmental impact at the use stage is difficult to isolate from the whole. Peat interacts closely with other mix constituents as well as with other environmental components of the greenhouse or garden. Considering its very complex nature, the use stage was excluded from the eLCA.

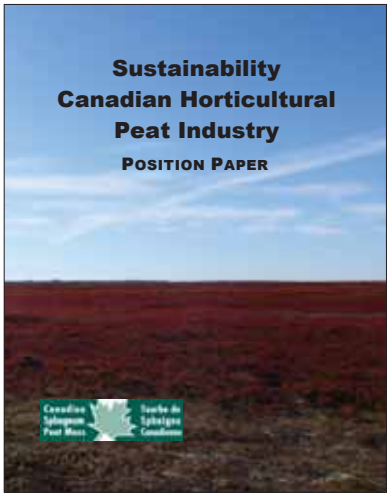
The eLCA takes into account all business activities and operations that occurred in Canada, in 2006. At present the LCA (Environmental) identifies the environmental account for peat harvesting and the "hot spots" that need improvement. This information will assist the industry in its improvement of environmental impacts and form part of the accounting reported on through the Corporate Sustainability Reporting.

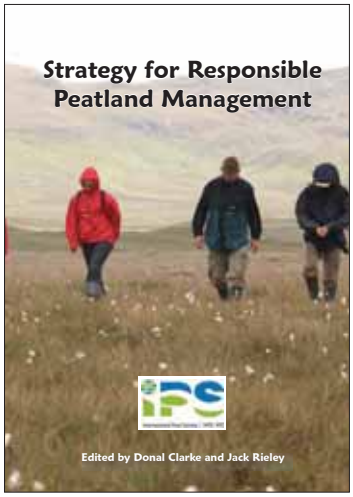
We are continuing to identify the Social LCA of our industry as well as improving our Economic LCA information. This work is currently underway and the results are anticipated this summer (2012).

Certification: VeriFlora

The industry embraces the need for third party certification of its peatland management practices. Members support the certification system developed by Scientific Certification Systems (SCS) of California. The VeriFlora® Certified Peatland Products for Responsible Peatland Management (www.tourbehorticole.com/en/pdf/veriflora.pdf, www.tourbehorticole.com/en/responsible-production/index.php) is currently the only peatland management certification system in the world. The achievement of certification under this standard is considered an important component of the industry's commitment to its sustainability accounting.

Certification was discussed by industry groups in 2008, but delayed until a global strategy could be created several years later with the adoption of the Strategy for Responsible Peatland Management (SRPM). SCS gathered input by contacting peatland stakeholders and holding public consultations in order to embrace the elements of SRPM and relate to ISO standards. A comprehensive set of criteria, based





Left: CSPMA Position Paper, Canadian Sphagnum Peat Moss Association www.peatmoss.com; right: Strategy for Responsible Peatland Management, IPS, www.peatsociety.org

in part on the ISO 9001 (Quality Management Systems) and ISO 14001 standards (Environmental Management Systems), as well as key environmental protection, social responsibility, and product quality issues was developed. At present, more than half the North American peat producers have become Veriflora certified.

Research

It is the Canadian industries commitment that science must be the basis for sound responsible management of peatlands. Environmentally the Canadian industry has been engaged in the scientific research necessary to understand the ecosystems relationships and environmental functions of these peatland natural resources for over 20 years.

It is our full intent to continue this research with a focus on the biodiversity, climate change and hydrological functions of natural and restored peatlands. The industry is currently negotiating to maintain its commitment to the National program and to expand its research outreach to new areas of our Nation.
In conclusion it is our intent to promote continued improvement in the understanding of what is required for truly responsible peatland management.

Our harvest practices, restoration, rehabilitation and where needed reclamation activities will be carried out in full cooperation with the agencies whose responsibility it is to govern the use and management of these peatlands.

We encourage the many national and international stakeholders to engage with us in the free exchange of ideas that support the full and responsible management of our global peatland resources.

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RHP Peat Bog Flora; a pocket-size edition

The RHP Peat Bog Flora is interesting for every employee in the chain of peat production up to and including applications in professional horticulture. This book is meant to identify weeds at an early stage easily. The book helps answering questions like: do I leave the plant, can I mow or does the plant have to be pulled out including the roots?

Growth of plants on a peat bog can be both a blessing as well as a disaster. This has been known for years in the companies that produce peat for the horticultural industry. The difficulty always appears to be; what is good and what is bad? In order to determine this, RHP published the RHP Peat Bog Flora in 2011.

Identifying; leaving or removing

One of the biggest enemies of a grower is weeds in his crop. Weed problems can arise from the surroundings of the nursery, but also from the peat substrate delivered. The damage can be large. Apart from expensive labour to remove the weeds, there is also an increasing chance on pests and diseases. So a grower wishes for a clean peat substrate, which can only be achieved with clean peat raw materials.

For the employees at the peat bogs, it is always very difficult to determine which kind of plants must be removed and which not. The fact is, that there is a large group of plants which are not a danger. This especially refers to the original peat vegetation. These plants can be left. More than that, they shouldn't be removed, because they prevent growth of the real weeds. Besides, it is a pity to invest in labour unnecessarily.

But how do we know, what must be removed and what not? For this purpose the Peat Bog Flora has been written. Knowledge, which RHP has collected over the years, has been published in a handy book.

For whom?

The RHP Peat Bog Flora is fit for employees on the peat bogs and their managers. In addition to that, it can be used in judging the weed complaints of growers.

86 Different plants are described in total. This is supported by more than 290 photographs! In addition to a number of important plant properties, it is stated where you can find the plant in the peat field and what must be done with the plant. The RHP Peat Bog Flora has been written in English (book size 21 cm. x 10 cm., in spiral binding; so easy to use on the bog). The plant names are also stated in Estonian, Finnish, German, Latvian, Lithuanian, Polish, Russian, Swedish and Dutch.

The RHP Peat Bog Flora amounts to € 30 and can be ordered through www.rhp.nl or send an e-mail to: info@rhp.nl

Green rehabilitation opportunities for hazardous waste sites

'Do not engineer against nature. Work with the capacity of nature itself to solve environmental problems'

Text: Paul Stook, Wouter Pronk, Marten van der Wijk and Harm Hubbeling

To mark the completion of two decades of remediation work at the former hazardous waste dump called Volgermeerpolder - using peat, the heir to the Dutch throne, Prince Willem Alexander, officially opened the site on 19 April 2011 as a wetland nature reserve.

Following the festivities, engineering firms Tauw and Witteveen+Bos, who designed the remediation works, organised a conference to explore opportunities for further development of green rehabilitation concepts used in Volgermeerpolder.

Many countries are struggling with environmental problems as a legacy of industrial development. Green Rehabilitation and Natural Cap concepts offer great potential to contain and even decompose chemical waste in an economically efficient way. This was reflected by one of the key resolutions of the conference: 'Do not engineer against nature. Work with the capacity of nature itself to solve environmental problems'.

The conference brought together international experts with backgrounds in sustainable waste management, green rehabilitation, wetland ecology, innovative techniques in remediation projects and sustainable management of persistent organic pollutants. A combination of all these fields of expertise was needed to produce the final design of the Volgermeerpolder remediation, so it was important to assemble such a heterogeneous group for the conference.

To achieve this goal, Tauw and Witteveen+Bos prepared the conference from the outset in cooperation with partners from the government, scientific institutes, nature conservation and environmental organisations, and businesses. Organisations involved in preparing the conference included the Dutch Ministry of Infrastructure and the Environment, North Holland Landscape Foundation, the International HCH and Pesticides Association, Vista Landscape Architecture and Urban Planning, the Soil Project Department of the Municipality of Amsterdam, Euro Demo, Milieukontakt International, and the Center for Wetland Ecology and Green Cross Switzerland.

Past fear of an environmental and social disaster

A growing fear of a looming environmental and social disaster resulted in a complete halt to waste disposal at one of Western Europe's largest hazardous waste dumps in 1980. It was thought to be only a matter of time before toxic waste from the heavily polluted Volgermeerpolder site near Amsterdam would spread uncontrollably into the environment – a true chemical time bomb. Plans were made and measures were taken over a period of two decades, but no comprehensive approach was designed and adopted and thus the time bomb continued to tick.

Today, the situation looks far healthier. Under the name of Adviescombinatie Volgermeerpolder (ACV), consulting engineers Tauw and Witteveen+Bos joined forces in 2001 to design and supervise remediation of the site. During the remediation they developed the 'natural cap' concept, a sustainable solution with huge potential for dump site remediation, both in the Netherlands and abroad.

Green rehabilitation and natural cap opportunities

Four sessions were organised to allow participants in the Volgermeer conference to exchange their experiences with green rehabilitation and natural caps. After being welcomed by representatives of different departments of the City of Amsterdam, Paul Stook from Tauw looked back on lessons learned from the Volgermeerpolder remediation. A key finding from two decades of intensively searching for ways of tackling the environmental threats of the Volgermeerpolder was that 'the natural peat underground of the polder has a viable capacity for contaminant migration control'. Stook said the processes were

complex and needed further research, but they could be engineered and used for contamination filtration, hydraulic control, carbon capture, water storage and renewal of the natural landscape.

Natural approach

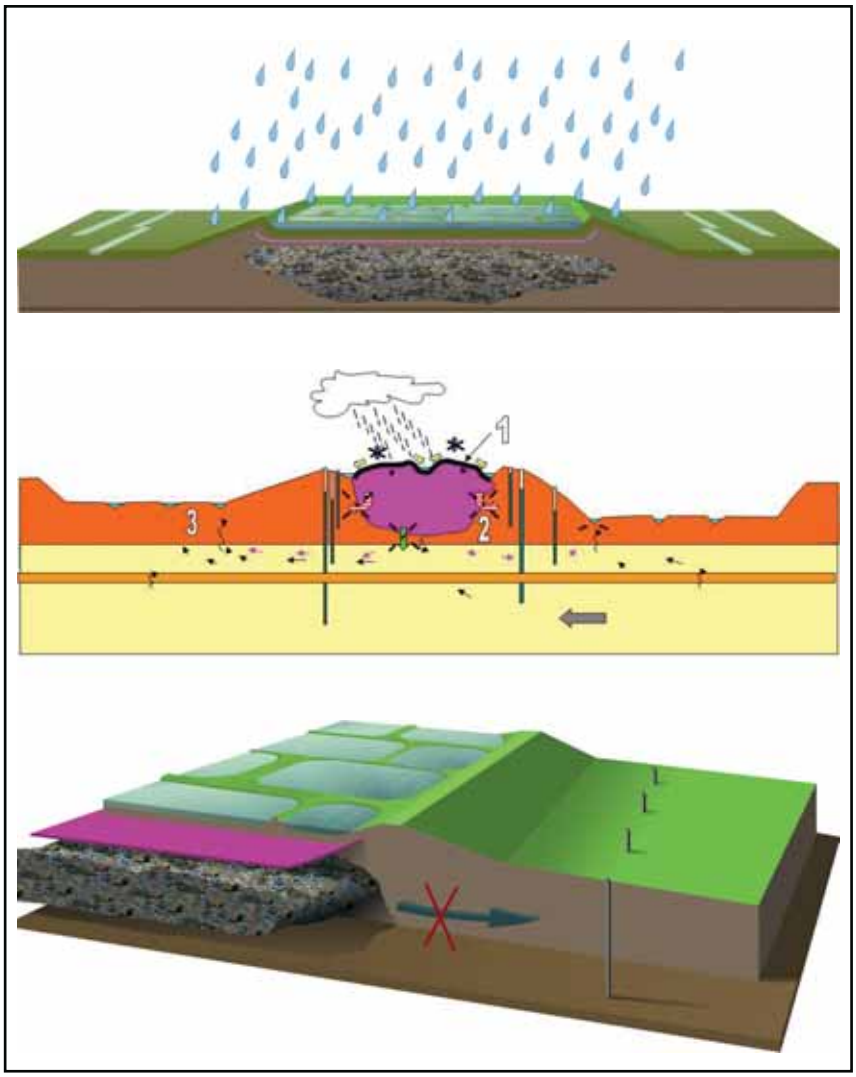
Roelof Kruize, CEO of the Waternet water board and former project director of the Volgermeer remediation project for the Amsterdam Soil Department, compared the Volgermeerpolder project to the remediation of Diemerzeedijk, another major remediation project of a hazardous waste dumpsite near Amsterdam.

Engineers used totally different remediation concepts in the two projects. Looking back, Kruize said he was strongly in favour of the green rehabilitation option. More traditional remediation techniques with concrete and curtains of sheet piling were used for remediation of Diemerzeedijk. These technical building materials need to be maintained and Kruize concluded that this was more expensive and less sustainable than the natural approach adopted to Volgermeer.

Wetland research

The Center for Wetland Ecology unites the worlds of fundamental research and management implementation regarding wetlands and water bodies in the Netherlands and Flanders. CWE experts look especially for optimum conditions for peat recovery. At present CWE is starting up an extensive field-scale research programme for Volgermeerpolder to study the restoration of peat. It will also give a major boost to regional water management, storage of carbon from the atmosphere and abatement strategies for land subsidence and flooding risks. In cooperation with Deltares, ACV will examine the capacity of peat to contain hazardous waste so as to validate the Natural Cap concept through scientific research. Proof of the

Aeral view of the area and artist impression of the final situation of the Volgermeerpolder.



Cross sections of the Volgermeerpolder.

Natural Cap principle will have to be delivered by laboratory and field tests.

Peat bog landscape

To achieve this goal, it is imperative to obtain a better understanding of how peat bog landscapes work. The North Holland Landscape Foundation has considerable experience with peat land conservation and restoration. In Ilperveld, a nature reserve on a former landfill of peat meadows and turf ponds, the organisation is establishing a research site to study the best conditions for peat bog restoration. A properly functioning peat bog landscape prevents peat oxidation, enhances biodiversity and restores the ecological functions of peat, i.e. carbon sink, water and nutrient retention and water purification.

Obsolete pesticides

International organisations estimate that 500,000 to 1,000,000 tonnes of obsolete pesticides contaminate the environment throughout the world. The often sub-standard storage of persistent chemicals poses a serious threat to nature, the environment and public health. Many of the storages have been abandoned or are in disrepair due to the economic crisis and the poverty of local communities living near the sites. Most of the former storages still contain large quantities of obsolete and prohibited Persistent Organic Pollutants (POPs), pesticides such as DDT. The chemicals leak into the soil and pollute agricultural lands and ground water. The Stockholm Convention is a global treaty to protect human health and the environment from these long-lasting chemicals by restricting and ultimately eliminating their production and use.

Environmental movement

As part of their corporate social responsibility programmes, Tauw and Witteveen+Bos are involved in remediation projects that are tackling the serious worldwide problems with obsolete pesticides. In a consortium with the International HCH and Pesticides Association, Milieukontakt International and Green Cross Switzerland, the two firms are carrying out projects to train local teams in inventorying the problem, assessing the risks, repackaging the pesticides according to international safety standards and ultimately destroying the stocks and remediating storage and dump sites. Milieukontakt director Jerphaas Donner highlighted in his presentation some of these pilot projects in countries like Kyrgyzstan, Tajikistan, Moldova and Ukraine. Donner said this NGO consultant cooperation was working really well because 'there is an environmental movement within Tauw and Witteveen+Bos'. The experts are highly motivated to work in a less commercial setting than usual and to find solutions to the serious threats posed by obsolete pesticides.

POPs pesticides

Besides the Volgermeerpolder site in the Netherlands, the Rudna Góra landfill in the town of Jaworzno in southwest Poland is a good example of an unsolved industrial legacy problem with POPs pesticides. The case was raised by Mariusz Kalisz of the Katowice Institute for Ecology of Industrial Areas. Rudna Góra has 180,000 tonnes of buried hazardous waste.

They contain large quantities of HCH, DDT, cyanide, trichlorobenzene, lindane and other dangerous chemicals. Although the Polish government put Rudna Góra on a hot spot list of dangerous sites back in 1980 and is doing a lot to tackle

Volgermeerpolder at the end of 2010. 15 hectares of this location is now being used for peat studies. At the moment it is, according to the authors, the biggest study project concerning peat in the world, managed by the Centre of Wetland Ecology and ACV, the advisors of the Volgermeerpolder.

the country's environmental legacy problems, there are not yet any feasible financing mechanisms to solve the landfill problems.

Natural Catch

Controlling the leakage of pollutants is one of the major challenges for the long-term management of hazardous waste sites. Traditional sheet piles or synthetic covers may solve the problem in the short term, but wetland ecosystems offer more sustainable potential to contain and decompose hazardous substances. Natural attenuation can occur in wetlands via various physical, chemical and biological processes. They include biodegradation by plant uptake, anaerobic and aerobic degradation by micro-organisms and adsorption to organic matter. In recent years ACV has been working on new concepts to incorporate the potential of natural resources into the management of hazardous waste sites.

Wetland remediation

As Rob Dijcker of Witteveen+Bos explained, the working mechanism of these constructed wetlands is twofold: reduction of flux through implementation of physical or organic barriers and improvement of the conditions for biodegradation.

ACV is applying the Natural Catch principles at two places in the Netherlands, namely the Rhoon and Philipinne landfills. 'It is really important to start off with field tests in Natural Catch projects', he said. 'Field tests enable you to fine-tune the design of the wetland remediation system according to the needs of the local situation'.

Do not engineer against nature

The Georgswerder landfill in Hamburg – 45 hectares of hazardous waste – has a history similar to that of Volgermeerpolder. A major scandal erupted in 1983 when the potential dangers of the site where discovered. Under enormous public pressure, the City of Hamburg decided in1985 to start remediation as soon as possible, despite several unknowns with respect to the long-term performance of engineered landfill covers and technologies like seepage extraction. A multi-layered landfill cover system was installed in the ten years that followed. To minimize the risks, the project engineers decided not to rely on a single barrier layer, but to use multiple components, i.e. vegetation, topsoil, drainage, geo-membrane High-density Polyethylene (HDPE), clay barrier and gas ventilation. Monitoring of the site shows that the design had worked perfectly since its construction.

Sustainable solutions

Due to the unknowns regarding the long-term performance of cover systems, it was decided in 1985 to spend federal money on a research and development programme to study the performance of different cover systems in large-scale lysimeters. Dr. Stefan Melchior of melchior + wittpohl Ingenieurgesellschaft found that the clay barriers and geosynthetic clay barriers failed

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after only a few years due to plant root penetration, formation of desiccation cracks and ion exchange unless they were protected by a geo-membrane. But natural processes like evapotranspiration from topsoil and vegetation and lateral unsaturated water transport in capillary barriers can be used very effectively to reduce or prevent the vertical percolation of rainfall within cover systems. Melchior: 'An important lesson learned from this was that the combination of material use, geotechnical properties and natural hydrological processes is of great importance to find sustainable solutions: Do not engineer against nature!'

Volgermeerpolder, Amsterdam, The Netherlands

Client: Municipality of Amsterdam, Projectbureau Bodem
Definitive design/ documentation: 2000-2010
Realisation: 2005-2010
Size: 100 hectares
Total budget: 7.300.000 Euro
In cooperation with: Iwaco, Tauw, Witteveen+Bos

Amsterdam Natural Cap principles

The presentations highlighted above are just a few examples of the vibrant and enlightening conference aimed at coming up with new ways of dealing with the legacy facing modern society because of economic development. Examples from all over the world were discussed, including former Eastern European waste sites, mine tailing sites and pesticides dumps in Asia and Africa. We cannot summarise all of them in this article, but at the ACV website www.naturalcap.eu you can download all presentations given at the Volgermeer conference.

The conference ended with participants making a combined effort to encapsulate the lessons in six guiding principles for addressing the complex problems of dealing with heavily polluted waste sites, the Amsterdam Volgermeer Principles:

1. Do not engineer against nature. Work with the capacity of nature itself to solve environmental problems.
2. Search for a well balanced combination of civil engineering and green rehabilitation measures to design a sustainable and cost-effective remediation plan for hazardous waste sites.
3. Let time be a friend (do not overreact). Take the first steps necessary to mitigate uncontrolled pollution and build upon them over time in order to create sustainable solutions.
4. Recognise that it is essential to exchange knowledge (bio-geo-chemical-civil engineering) within the project setting and also on a broader scale.
5. Involve the public because genuine interaction with all stakeholders is really important in terms of finding solutions and acceptance of the final remediation measures.
6. Make sure there is a socioeconomic incentive. Let improvement of the socioeconomic situation be a powerful driving force for any chosen solution.

Special thanks for Guus van Berckel, chairman at Griendtsveen AG. The knowledge of Guus van Berckel and his colleagues, Johann Brinkmann and Johan van Schie, were essential in the development of the peat as filter material. Several lab experiments and a full scale test were realized and gave lots of new possibilities in using peat to help the environment. More information is also available at ww.naturalcap.eu.

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2nd Asia Forum on Carbon Update 2012

Bandung, West Java, Indonesia, 15-17 February 2012

Text: Hendrik Segah, Kazuyo Hirose and Mitsuru Osaki

More than at any point in our history, the global community requires rapid deployment of innovative policies and incentives to combat climate change. The most immediate and cost effective solutions must be harnessed to begin our global transformation to low carbon, sustainable development.

Success in tackling a highly complex climate change problem will require strong will, great policy skills, looking-forward, vision and a global commitment to fairness and justice based upon the principle of common but differentiated responsibility and respective capabilities among nations. Asian countries are at the heart of this challenge:

- Population size of more than 4 billion people (60% of the world population) and the potentials of rapid economic growth and large trade surplus with the rest of the world
- The annual mean warming would be about 3°C in the 2050s and about 5°C in the 2080s (IPCC Third Assessment Report).
- Exacerbate the threat to biodiversity due to land use and land cover changes and population pressure.

The other challenges as tropical peatland preserves rich biodiversity and it stores huge amount of carbon (80-90Gt) in the world. Especially Indonesia has more than 60% of tropical peat carbon (50-60Gt). However, this has been changed to an emission source by drainage and land development which causes serious oxidation of peat and wild fires. In 2005, 0.8Gt of CO_2 was emitted from peatland in Indonesia and it is estimated it will grow more.

Welcome remarks and keynote speech delivered by Prof. Rachmat Witoelar, President's Special Envoy for Climate Change/Executive Chair of DNPI.

The 2nd AFCU-2012 also focused on current topics related to peatland mapping, management and researches.

A need to encourage collaborative efforts, particularly for the developing countries of Asia, where impacts of climate change are likely to be felt most severely because of resource and infrastructure constraints. Mainstreaming climate change issues into planning, designing and implementing development activities may lead to a better life in the near future.

Asia Forum on Carbon Update

(AFCU) is an annual forum among key stakeholders in the Asian region organized by the National Council on Climate Change, Indonesia (DNPI) and Hokkaido University, supported by the Japan International Cooperation Agency (JICA) and the Japan Science and Technology Agency (JST). Its aims are:

- To share ideas and experiences on the implementation of low carbon economy by elaborating various technical/practical issues.
- To update the on-going initiatives and progresses on Asia's mitigation actions to reduce GHG emission, particularly the most recent issues such as REDD+, MRV, climate financing and capacity building.
- To develop any potentials collaborative efforts among Asian countries in seeking viable mechanisms in tackling climate change issues.

The 2nd AFCU 2012 was attended by more than 500 participants from 28 countries with 129 oral presentations and 54 poster presentations in 23 parallel sessions and 11 special sessions. More information about the AFCU network could be seen at www.afcunetwork.net.

The participants came from the representatives of key agencies in Asian countries (plus some African countries), UN agencies (UN-REDD, FAO, UNEP, UNDP), research communities (universities, R&D institutes, private individuals, etc.), NGOs (Conservation International, WWF, IGES, etc.), industry associations/companies (Perum Perhutani, Sumitomo Corporation, Dell Indonesia, ESRI South East Asia, etc.) and donor agencies.

We really appreciate and take this opportunity to express our gratitude for active contributions and knowledge sharing from all speakers/ participants and are very proud of this successful event of 2nd AFCU 2012.

Our colleague and participant from Uganda, Mr. Paul Walakira, sent his comments about the forum as: "....my participation in the 2nd AFCU 2012 programme has somehow improved technical capacity on carbon related issues in my country in general and my organisation in particular. I normally conduct both internal and external training. Through the internal training of staff, the immediate beneficiaries of the acquired knowledge will be my fellow employees in the technical department".

Moreover, Dr. Chay Chetha, Deputy Director of the Forest-Wildlife Research and Development Institute, Cambodia told: "...actually, the 2nd AFCU is important for me and my institution/country. I could share my experience related to REDD+ to all participants and I also could learn from this 2nd Asian Forum".

For further information, please contact:

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Photos: Hendrik Segah (Hokkaido University), Jannata Giwangkara (DNPI), Logo of AFCU: DNPI

The plenary session of the 2nd AFCU 2012: Country Update.

Poster session at the 2nd Asia Forum on Carbon Update (AFCU) 2012.

The Keljonlahti power plant in Jyväskylä, Finland

Maximizing local fuels to minimize oil consumption

Text: Elina Laiho-Logrén and Raimo Sopo

Combined heat and electricity generation reduces environmental load and has made Jyväskylä one of Finland's top cities in utilizing renewable energy resources. Keljonlahti power plant started as the main heat supplier of the city in autumn 2010.

Jyväskylä with its 133,000 inhabitants is the largest city of the province Central Finland and forms one of Finland's largest centres of growth. Construction of a new power plant became actual because of increased demand for district heat. District heating in Jyväskylä started already in the year 1960. The need for district heat rises evenly around 3% per year. Today the length of the heating network is ca. 400 kilometres. About 80% of buildings on potential areas along the network have been connected.

The decision makers of Jyväskylä were motivated also by the urge

The new CHP plant at Keljonlahti in autumn 2011. Photo: Jyväskylän Energia Ltd

to change the consumption of environmentally burdensome oil and coal to domestic fuels. Earlier local oil-burning peak demand plants around the city were started one by one every time as the temperature sank to plus 5 °C – which, in Finland can occasionally happen even in summertime.

The investment caused a vivid debate in Jyväskylä. The planned location was regarded to locate too near residential area, or it was claimed that a new one could be founded by the very same lakeside. The City Council approved the construction place in November 2005. In 2007 the construction investment of Jyväskylän Energia was sealed by the councillors. The main owner of the Keljonlahti plant is Jyväskylän Energia Ltd, 100% of which is owned by the city itself.

The older CHP plant at Rauhalahti with the city of Jyväskylä in the background. Photo: Jyväskylän Energia Ltd

CHP guarantees energy efficiency and economy

Finland is a world leader in CHP, i.e. combined heat and power production and technology. Found to be a reliable and economic solution in the industry starting from the 1920s, it is nowadays widely utilized to meet the energy needs of households and enterprises. Already 2.6 of 5.4 million Finns live in houses using district heating. Currently, nearly 80% of district heating is produced by CHP plants.

Jyväskylä is one of the pioneer cities to utilize the large scale benefits of CHP. Rauhalahti power plant was commissioned in 1986, thus today Jyväskylä has two big CHP plants maximizing energy efficiency. “Combined heat and power production is the back bone of our production strategy. It allows us to reach material efficiency levels not matched by any other available technology of this scale. It also gives to us and our customers the opportunity to be the forerunners in the utilization of renewable and domestic energy sources, as the share of wood based fuels is continuously increased, while milled peat works fine as a complementary fuel for wood. No more do we support heavy fuel oil and coal imports as we used to do”, says Tuomo Kantola, the CEO of Jyväskylä Energy Ltd.

Keljonlahti power plant utilizes modern CHP technology, in which district heat and electricity are produced in the same process in an environmentally-friendly manner. In practice, this means that the steam generated during heat production is also used to produce electricity for consumers, households and the industry.

The benefits of CHP are based on high performance. In the Keljonlahti power plant, the energy efficiency of the fuels used - peat and wood - is about 85%. CHP technology saves fuel and cuts emissions remarkably compared with producing the same amount of energy separately.

Keljonlahti power plant caught nationwide attention in Finland, because the new plant is able to produce in addition to CHP power also condensing power – the power plant can alternatively drive also

Keljonlahti power plant - modern technology

End products: district heat and electricity
District heat efficiency: ca. 260 MWth
Electric power: ca. 215 MWe
Fuels: peat and wood
Start-up / support fuel: heavy oil
Price: ca. 284 million Euros

Main suppliers:

Boiler: Foster Wheeler Energy Ltd
Turbine: Consortium Energico Ltd & Power Machines
Generator: Consortium Energico Ltd & Power Machines
Solid fuel feeding equipment: Raumaster Energy Ltd

either pure CHP or mere condensing power. The maximum numbers are alternatively 160 MW CHP or 215 MW condensing power.

Jyväskylän Energia Ltd founded a new company, Jyväskylän Voima Ltd, to build and run the power plant. Several electricity cooperation partners obtained shares of the condensing power production of the plant in order to ensure their share of domestic energy production. Jyväskylän Energia owns 68.7% of the shares, including the CHP production capacity.

Utilizings local energy resources

The Keljonlahti power plant utilizes local energy resources, mainly milled peat and energy wood. The combined use of peat and wood works extremely well in the power plant. The use of peat has a significant effect on the regional economy. It also improves the burning result and balances the quality variations of the wood fuel.

Wood chips, consisting of tree stumps and branches gathered during forest rejuvenation from timber cutting sites, as well as milled peat obtained from the numerous peat bogs of Central Finland generate high-quality compound fuel that produces heat and electricity efficiently.

Wood is carbon dioxide neutral: when it is burned, approximately the same amount of greenhouse effect enhancing carbon dioxide is released as is bound by it when it grows in the forest. In addition, wood fuels do not generate sulphur dioxide.

In Finland, the use of domestic fuels in energy production helps to replace expensive imported fuels such as coal and oil that are a burden to the environment. Local fuels strengthen the delivery reliability and price stability of the produced energy. The increased employment caused by the use of domestic energy sources should also not be forgotten.

Stumps from local forests

The boiler of the Keljonlahti power plant is 42 m high, 24 m wide and

This is how heat and electricity are generated

Conveyor belts transport the fuel from the fuel storage into the boiler silos. They also feed the fuel from the silos to the furnace feeding screws.

When peat and wood is burning in the boiler, heat energy is released and transferred into the water flowing in the boiler piping. Thus, water vaporizes at high temperature and pressure.

The boiler type is a circulating fluidized-bed boiler equipped with steam reheating. The boiler is equipped with a drum and it is functioning on the principle of natural circulation at a fixed pressure.

The steam runs the turbine and thereby the generator, which is on the same shaft, and turns the mechanical kinetic energy into electric energy. Using a transformer, the electricity is transferred from the generator into the network of Jyväskylän Energia Ltd and from there via the Nordic electricity market Nord Pool to the consumers.

The heat energy obtained from the intermediate bleeding of the turbine is transferred into the district heating water flowing in the pipes of the district heat exchanger. It is pumped into the city district heating network by district heating pumps. If the turbine is not in use, the district heating reduction station and heat exchanger manage the district heat production.

If no district heat is needed, the steam that has passed through the turbine is conducted into a condenser. Using the water of the Lake Päijänne, the steam is cooled down so that it condenses back to condensate and then into the steam circuit of the power plant. The water that has condensed in the district heat exchanger and/or condenser is pumped back into the feed water tank after purification, and from there into a new cycle from the boiler into the turbine.

In order to improve efficiency, the condensed water is heated with low-pressure pre-heaters before the water goes into the feed water tank. Correspondingly, the feed water is heated with high-pressure pre-heaters before the water goes into the boiler. The heating steam needed by pre-heaters is taken from the intermediate bleedings of the turbine.

The efficiency of the Keljonlahti plant is improved also by heat recovery of flue gases using a plastic tube exchanger. The heat recovered is used to pre-heat the air for combustion.

The flue gases generated in burning peat and wood are purified in an electrostatic precipitator and cooled in the heat recovery of flue gases before entering the stack.

8 m deep. While the power plant produces energy at its maximum thermal heat output of the boiler (480 MWh), it might use e.g. 40% wood fuels (2000 GWh/a) and 60% (3000 GWh/a) peat. To transport that amount of fuel, approximately 100 trucks are required per day – or if using railway lines, 80 waggons would be filled.

Fuel logistics are quite a challenge in a country, where both in autumn and in spring countryside roads suffer from snow, ice and ground frost and in winter the temperature sometimes falls to lower than minus 35 °C. Remarkable material storages have to be gathered waiting on terminal areas for their final transportation to the power plant.

Every loading and unloading on the way from forests or peatlands to the boiler raises the price of the fuel. To avoid extra loadings, an investment of € 8 million has been made on an onsite crusher. Trial use has proved that it can easily handle 6 m long and over 20 cm thick logs as well as shorter stumps and forest residues.

In January 2012, the proportion of wood in the fuel flow was raised to 40%. In autumn this year, a development project will start aiming to raise the share of wood to 70%. Reducing the amount of peat requires input of sulphur feeding to ensure process efficiency and a safe use of the boiler.

The use of ash components previously regarded as waste material have been under intensive research and development in Finland. Earlier they have been used in a smaller scale in landscaping and road construction, among others. Today ash is transported from Keljonlahti 100 kilometers to Viitasaari as raw material for fertilizer production. Even more interesting is the pilot project starting in the autumn, which includes producing fertilizers on-site at the power plant.

The most beautiful power plant place in the world?

The massive Keljonlahti power plant stands quietly humming on the bank of a bay only a few kilometres from the city centre.

Collection of wood fuel from local forests. Photo: Jyväskylän Energia Ltd

All cooling water needed in the plant is taken from Lake Päijänne. The water is purified mechanically – before cooling circulation – and later returned back into the lake. As the cooling water is returned to the lake, this water is less than 10 °C warmer than it was while being taken in, and it has not been in contact with the power plant's own process waters.

The power plant is located on a narrow land strip between steeply raising bedrock and the lake. As a detail it is worth mentioning that a small flying squirrel population lives on the plant site and its vicinity.

Earth-work on the site took nine months. A total of 94.000 lorry-loads of earth and rock materials were transported and a total of 228 tons of explosives were used to break the bedrock and remove earth material. The foundation work required 25,000 cubic meters of concrete and 2,000 tons of steel reinforcement.

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Milestones of the Keljonlahti CHP plant

- November 2005: Jyväskylä City Council decided that the power plant will be built on Keljonlahti shore
- May 2007: Jyväskylä City Council approved the investment of the power plant
- October 2007: Building permission was granted
- October 2009: Permissions needed for start up were probated
- March 2010: Jyväskylän Voima Ltd produced electricity for customers for the first time
- May 2010: Keljonlahti power plant took over the warming load of district heating in Jyväskylä
- August 2010: Commercial use begins

From peatland to textile:

Text and photos: Papu Marjatta Pirtola
Translation: Miika Pirtola

Peat fiber felt as a construction material: Ugric sauna in Turku 2011

The producers of the Alkumeri festival, which was one of the events in the Turku 2011 European Capital of Culture (ECC) celebrations, contacted me and proposed that a sauna, similar to my earlier sauna project, would be built near Samppalinna's outdoor pool.

In 2003 I had designed and built a peat material sauna in Töölönlahti, Helsinki. The sauna was built of heavy blocks of peat and was a sturdy construction. The sauna attracted lots of visitors, and was maintained until 2007. However, the proposed schedule was not sufficient to build an exactly similar sauna construction, which lead me to suggest that a different type of sauna, a tent sauna, would be constructed, this time of finnsheep wool and hare's tail cottongrass fibre.

I designed the sauna together with Janne Inkeroinen, who also built a supporting frame out of aspen. The roof and the walls of the sauna were felted in Koroinen, Turku, during a period of two weeks, a task in which about twenty people from the voluntary workers of the Turku 2011 ECC also participated. Most of them had never done felting before.

As the materials for sauna there were about 100 kilograms of finnsheep wool with colours of white, black, semi-brown and some of it dyed with natural dyes. The wool was bought from Haltiala manor in Helsinki. Part of the wool was carded in Musta Lammas mill; part of it was carded with a manually operated carding machine, and part of it was used uncarded.

There was about 20 kilograms of hare's tail cottongrass fibre, from which about half was provided by Vapo, and half was hand-picked from Keski-Pohjanmaa. The peat fiber was carded together with the wool so that in each piece to be felted there was around 10 to 20 percent of peat fiber.

It has to be noted that the peat fibre cannot be felted by itself, but the wool as it gets felted will contain the peat fibres inside it.

Finnsheep wool felts very easily, and its other properties, such as flexibility, softness, shininess and curliness make its processing easy and enjoyable. Unwashed wool also contain its natural fats, which makes the felting process even easier. Additionally, wool and peat fiber together insulate and repel water effectively. As felting aides we had drain pipes 2 to 3 meters in length, tarpaulins, plastic bags, round sticks, gauze fabrics, rope, water buckets, olive oil soap, and liquid pine soap.

As the weather allowed, we could work outside. We spread a tarpaulin on the ground, and placed a large gauze fabric on top of it. The wool and peat fibres were spread on top of this in layers. There were from four to five thick layers. With a diagram cut out of plastic bags we shaped out the wall rugs into about 2 x 1,5 m sized pieces, where the upper part was narrower.

The layers were covered with gauze fabric and wrapped around a drain pipe, and attached to it with a string to form a firm roll, which was

then first rolled as dry, and then as moistened with soapy water.

The rolling took place on a flat yard on top of a tarpaulin, and as an aide, two ropes were wrapped around the roll, which were pulled by two to four persons back and forth in turns, with the roll moving steadily in between. This technique proved to be very easy, light and fast compared to the rolling performed using hands or feet only. At times the roll was opened, the felted material was checked, creases were straightened, and water and soap was added. When the rug was firm enough, it was lifted to the rinsing area, where it was rinsed with cold water until all the soap was washed out. After this, the rug was placed on a string to dry.

Twelve wall rugs in total were needed for the tent sauna. The first ones were the most difficult ones, and it took one or two days to make them. As the process got familiar, the rest could be prepared even with the rate of two pieces a day.

The materials shrink during felting. For example, the size of the roof rug was four meters in diameter in the beginning of the felting process, and after the process it was three meters in diameter. The roof rug was also the most challenging of all of the rugs. It was circle shaped, and there was a black spiral on a white base, with a yellow solar cross on a black base outside. Its manufacturing took the longest.

The sauna was built on the hill of the Samppalinna outdoor pool area in two days, from which the most was used in putting the wooden parts in place and on creating the stove. The stove was built with the help of the volunteers, and the process was led by Janne Inkeroinen. When the framework and the stove were finally ready, the wall rugs were sewn into place, but the roof rug was left detached, because it is a piece that has to be removed during the heating of the sauna. The sewing took a few hours, after which the sauna was finally ready, and a test heating was made.

The official heating of the sauna took place in the morning, and it took approximately four hours. The rainy weather hindered the bathing a little. During two days, the sauna was heated up a few times, and over 100 people took a bath in there. It arose much admiration and wonder, and people enjoyed the bathing.

After the festival the sauna was taken down in a couple of hours. The rugs were taken off, dried and stored along with the wooden parts to wait for the next instalment.

Additional redings

Kloss, J. 1987. Die Herstellung von Textilprodukten aus Torffasern. Telma 17: 299 - 301

Korhonen, R., Pirtola, M. 1998. Research and Use of Cottongrass Peat Fibers in Finland. In Sopo, R. (ed.) The Spirit of Peatlands. IPS

Lappalainen, E. & Hänninen, P. 1993. Suomen turvevarat. Tutkimusraportti 117. GTK, Espoo

Pirtola, Marjatta. 1998. Turvetekstiilit. In Vasander, H. (Toim.) Suomen suot. Suoseura ry

Schliehe, Beate. 1994. Die Textilfaser Torf im Moor- und Fehnmuseum Elisabethfehn - eine textildidaktische Untersuchung. Schriftliche Hausarbeit Zur Prüfung für das Lehramt an Realschulen Oldenburg, Deutschland

This article is also published in the book of the ProNatMat Project of Turku University of Applied Sciences in 2012. More information: Promoting Natural Material Know-How, www.pronatmat.eu.

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Scientific Workshop: “Peatlands in a transformed landscape – functioning and protection” in Wawrzkowizna, Poland, June 2011

Text: Sławomir Zurek
and Jacek Forysiak

On 1-3 June 2011, a scientific workshop was held on the subject: “Peatlands in a transformed landscape - functioning and protection”. It was organised by the University of Łódz, and held in the Sports and Recreation Centre in Wawrzkowizna near Bełchatów, central Poland.

The organisational committee, representing three organisational units: Prof. Krystyna Turkowska (Department of Quaternary Research, University of Łódź), Prof. Leszek Kucharski (Department of Nature Conservation, University of Łódź), and Ph.D. Maciej Ziułkiewicz (Laboratory of Geology, University of Łódź), prepared the schedule involving data and field works. The members of IPS took part in this workshop.

The meeting began with the introductory session including presentation of brief, approximately 30-minute long lectures concerning various aspects of functioning of peatlands. Prof. Kazimierz Tobolski presented the state of peatlands in view of the history of pollen analyses in Europe and Poland, peatlands being the first objects in Poland subject to such analyses. He postulated the necessity of carrying out new analyses on the peatlands, and taking care of their state and relevant protection.

He discussed results of studies by B. Szafran, who published the first pollen analysis in Poland in 1925. The study determined the age of the Pakosław peatland near Iłża, followed by works by J. Trela (1927) on the age of the peatland in Wolbrom. He also mentioned papers by A. Paszewski (1928) on the Linje peatland, on the Bielawskie Błoto in the coastal zone of the Baltic Sea, and in the Noteć River valley. Only some of the objects (Linje, Wolbrom, Bielawa) were subject to detailed new analyses.

Prof. Sławomir Żurek discussed relations occurring between the relief and lithology and the process of development and functioning of peatlands, on the basis of his own long-lasting field research. The studies were carried out in NE Poland, mainly in the Biebrza and Narew River valleys. He presented his classification of peatlands based on their relation to relief, lithology, hydrology, and other wetland formations.

Prof. Jerzy J. Małecki indicated the significance of peatlands and their deposits of organic substances for the chemistry of surface and underground waters. Prof. Leszek Kucharski presented the vegetation of peatlands of central Poland, its current state, threats, and protection of peatland assemblages and species. Mgr. Mateusz Grygoruk, on his own behalf and on behalf of Prof. Tomasz Okruszko, discussed hydrological aspects of the functioning of wetland areas in river catchments.

In the scope of further meetings, participants of the workshop presented results of their own studies in relation to a wider scope of issues of modern telmatology, or emphasising the cognitive character of the new studies. Among a number of interesting presentations, it is worth emphasising the proposal of modification of classification of biogenic formations in the Troels-Smith system in relation to organic-carbonate deposits of wellhead peatlands, made by Ph.D. Radosław Dobrowolski. The proposal aroused discussion, but was accepted.

The issue of floating peat islands was also presented and discussed (Ph.D. Grzegorz Kowalewski, Ph.D. Artur Zieliński), as well as the

Bełchatów, Lignite Mine. Photo: Sławomir Zurek.

significance of numerous analyses of biogenic formations occurring within peatlands: dendrochronological (Ph.D. Anna Cedro), palaeobotanical (Prof. Marek Kloss), fossil testacea (Ph.D. Mariusz Lamentowicz), or geochemical analyses (M.Sc. Bartosz Bieniek, representing the research team of Prof. Ryszard Borówka).

Several presentations strongly emphasised the geological and geomorphological aspect of peatlands from various parts of Poland, such as the Orawa-Nowy Targ Valley and Bieszczady Mountains (Prof. Adam Łajczak), Świętokrzyskie Mountains (Ph.D. Małgorzata Ludwikowska-Kędzia with her team), and the Łódź Region (Ph.D. Juliusz Twardy and Ph.D. Jacek Forysiak). A number of speeches concerned the issue of the modern state of wetland areas, emphasising problems with their protection (among others: Ph.D. Adam Bogacz, Ph.D. Dariusz Woronko, Ph.D. Małgorzata Ruszkiewicz-Michalska, M.Sc. Piotr Niedźwiedzki with his team, M.Sc. Joanna Nowakowska, and M.Sc. Dorota Bernacka).

A similar scope of issues was presented during the poster session, chaired proficiently by Ph.D. Dorota Nalepka. Twenty four works were presented. Posters by Ph.D. and M.Sc. students were evaluated in the scope of a competition, considering their substantive and graphic values, as well as manner of content presentation. The competition jury selected the work by M.Sc. Aleksandra Majecka (University of Łódź) as the best one, and distinguished the poster by students of the Adam Mickiewicz University (Poznań): Maciej Jędrzejczak and Natalia Olejnik.

During the lecture session, preceding the field trip on the second day of the workshop, issues concerning peatlands of central Poland were presented: their hydrochemical differentiation (Ph.D. Maciej Ziułkiewicz), and examples of degradation of habitats on selected peatlands (Ph.D. Dominik Kopeć, Ph.D. Dorota Michalska-Hejduk,

Korzen Peatland.
Photo: Sławomir Zurek

as well as Ph.D. Joanna Żelazna-Wieczorek and Ph.D. Beata Woziwoda). Issues related to the functioning of the opencast brown coal mine in the vicinity of Bełchatów were discussed concerning hydrological relations (Prof. Zygmunt Maksymiuk) and vegetation in the area (Prof. Leszek Kucharski with his team).

The workshop schedule also included presentations of objects in the field. Three trips were planned: Before the official opening of the workshop, a faculty trip to the Bełchatów Opencast Brown Coal Mine was organised, where Ph.D. Jan Goździk together with M.Sc. Anna Skórzak presented the outline of geological construction and currently visible situation concerning the opencast mine, emphasising interesting outcrops in the salt dome zone Dębina. Next, Ph.D. J. Goździk presented fossil biogenic accumulation reservoirs (among others: Kuców).

The second trip took place on the second day of the workshop, and included presentation of peatlands of the Szczercowska Valley. One of them is located in the village of Podwódka (in a glacial valley), where a system of springs with interesting hydrological character and diatom microflora was presented, along with preliminary results of analyses of peat deposit developed in the valley.

The second site was the Korzeń reserve in the Widawka River valley, where a wide range of results from studies conducted were presented, concerning both the current functioning of the peatland, and organic deposits filling the oxbow system in which the peatland developed. Geomorphological and geological features were discussed along with hydrochemistry of waters, diatoms, vegetation, botanical composition of the peat, pollen analysis, chemical composition of sediments, and composition of Cladocera. A further site was the area of degraded wetlands in the vicinity of the village of Trząs, located in the zone of the depression cone of the opencast mine.

Materials from the workshop will be available in the electronic version on websites of units organising the meeting. Full versions of the speeches will be published in a separate publication, currently under preparation.

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Symposium on Peloid Therapy in Inpatient and Outpatient Medical Care: Observations and Evidence

Hattingen-Blankenstein, Germany, 9-10 March 2012

On March 9th and 10th, 2012, a symposium to discuss peloid therapy was held at Clinic Blankenstein in Hattingen, Germany, under the direction of Prof. Dr. med A.-M. Beer, Hattingen, Germany, and Dr. med. S. Fetaj, Vlotho, Germany, in cooperation with:

- The Ruhr-University, Bochum,
- Section VI of the German Peat Society (DGMT),
- The Study Group for Medical Hydrology, Physiotherapy, Rehabilitation and Acupuncture, a section of the German Society of Gynaecology and Obstetrics,
- The German Spa Association and
- The Institute for Applied Physical Therapy in Vlotho.

More than 18 speakers presented their findings on the therapeutic effects of healing soil, sapropel, silicon dioxide, mud and chalk.

G. Caspers, Hanover, Germany, gave an overview of the classifications of peloids from a geological perspective. A presentation by A.-M. Beer showed that the chemical effects of peat therapy are increasingly being researched and its application gaining in clinical importance.

It was previously thought that the thermal-physical effects were of primary importance but it has become increasingly evident that both the chemical and the thermal-physical effects are of equal importance.

Beer urged that, in the future, indications and contraindications of peat therapy be revised and findings be included in peloid analysis. And also, based on the limited resources available, that close communication should be maintained within the small community of scientific researchers dealing with these topics and that results be openly shared in order to achieve optimal, mutual benefit concerning this research.

J. Lukanov, Sofia, Bulgaria explained the chemical effects of peat. The biologically active substances found in peat have specific effects on the α_2-adrenergic, D_2-dopamine-and H_1-histamine receptors. Furthermore, Lukanov explained that peat has a cyclooxygenase effect which dictates the indications for peat therapy.

Test results on the effect of peat baths on cytokines were presented by J.E. Goronzy and M. Ehnert of the Kerckhoff Clinic, Bad Nauheim, Germany (Department of Rheumatology and Immunology).

Prof. Dr. med. A.-M. Beer.

The participants of the symposium.

Dr. Gerfried Caspers, also Chair of the IPS German National Committee (DGMT).

Their investigations were carried out in collaboration with the Weserland Clinic in Bad Seebruch. It was found that peat baths inhibited pro-inflammatory cytokines and stimulated anti-inflammatory cytokines.

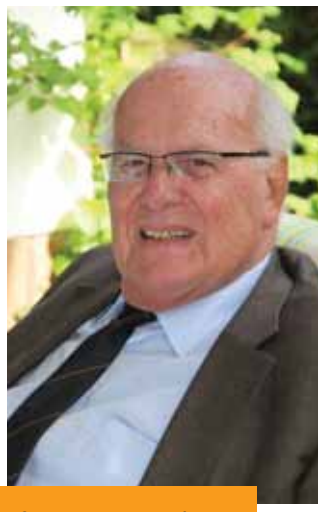
K.R. Wiebelitz and N. Matthew, Hattingen, Germany, presented two clinical studies on a peat cream (Professor Lukanov, Psoriasum, Comp.). It was found that the peat cream showed significant efficacy in the treatment of swelling in inflammatory diseases such as Gonarthritis. In addition, the peat cream, when used on rare diseases such as torticollis, proved to be more effective than the placebo effect.

M. Goertz, Bad Kohlgrub, Germany, presented the concept for research practiced in the local resort spas of the Ammergau Alps. The study is currently recording, among other things, how many peat baths the average spa guest is taking during their stay and for what indications. The effects of peat baths on infertility patients are also being investigated.

K. Stankeveca, Riga, Latvia, showed, in a chart presentation, that the use of sapropel is becoming increasingly important in medical hydrology treatment in Latvia.

H. Gerlach, Buhla, Germany, showed in her presentation that the contents of the newest edition of the German treatment catalogue allowed for only two medical conditions to be treated by peloid therapy and is the reason why it is rarely being used in daily practice.

A. Kiefer, Koblenz, Germany talked about the chemical aspects of silicon dioxide, also a peloid, and K.R.

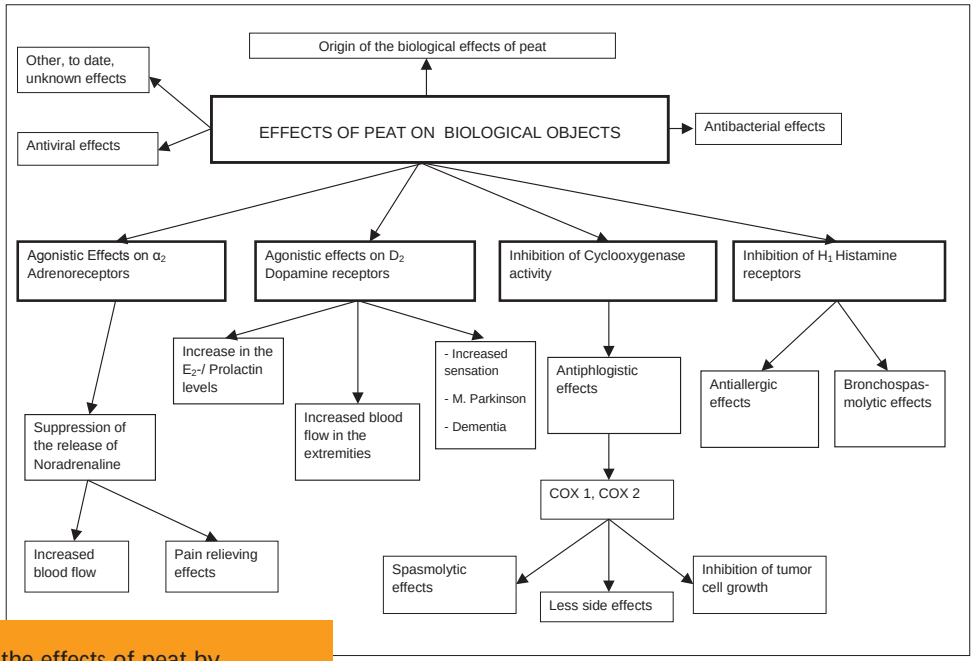


Prof. Dr. C.B. Goecke
*1931 - †2012

Wiebelitz discussed the effectiveness of silicon dioxide as an adsorbent and stool hardener in cases of severe diarrhoea.

B. Uehleke, Charité Berlin, Germany, highlighted the results of two studies on the healing soil product from the Luvos Company, Germany, which has proven to be beneficial in the treatment of dyspepsia, irritable bowel movement and blemished skin.

Following that, A. Layer from Karlsruhe, Germany, introduced a new form of healing soil/clay from



Overview of the effects of peat by Prof. Dr. med. habil. J. Lukanov.

the salt lakes in the Crimea, Ukraine (ALNOVA Comp.).

A. Jerchel, Ruegen, Germany, reported on the application of medicinal chalk used on the island of Ruegen. It was reported that 400,000 tons of medicinal chalk are produced annually, however only 50,000 tons of which, are used for medical purposes. Scientific evidence of the positives effects of medicinal chalk are pending. The speaker pointed out, however, that, in the foreseeable future, studies to document the therapeutic effects of chalk could be expected.

R. Klöcking, Erfurt, Germany, presented results of a Federal Institute for Education and Research (BMBF) project on the mechanism of the effects produced by humic substances. One part of the project showed that humic substances have an effect on the coagulation process. Another part of the project studied the anti-inflammatory effects of humic substances.

The investigations of Lukanov, Sagortchev and Beer, showed that humic substances specifically effect α and dopamine receptors. The key factor was that synthetic humic substances, such as caffeic acid, demonstrated specific effects similar to that of natural occurring peat substances. Which means that synthetic humic substances could be used in future therapy.

The symposium was dedicated to Prof. Dr. Claus Botho Goecke (* 1931 - † 2012), medical hydrologist, gynaecologist and mentor to Prof. A.-M. Beer, who died in January of this year and had rendered outstanding service in furthering the cause for peat therapy procedures.

Finally, a guided tour was provided by the Department of Naturopathy, Clinic Blankenstein, which was enjoyed by many of the participants. The event was considered to be, by both the participants and organizers, a total success.

Prof. Dr. med. habil. J. Lukanov, Bulgaria.

The location of the next conference in 2014 will soon be announced.

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Peat in English Horticulture - The Carbon Story

Text and photos: Jack Rieley

Introduction

The UK Government has adopted a policy to stop the use of peat in England in the garden and hobby market by 2020 and the commercial horticulture sector by 2030 (DEFRA, 2010). The rationale is based on biodiversity loss, CO_2 emissions, damage to heritage and historical artefacts and destruction of scientific information.

Upland blanket bog in Scotland.

Most of the damage to England's lowland raised bogs, however, has occurred over centuries through conversion to agriculture and forestry, use of peat for cattle and horse bedding and domestic fuel. Peat extraction for horticulture only started on a commercial scale in the 1960s when there was a major increase in the use of growing media to satisfy the demand for containerised plants (Alexander et al., 2008) but its impact has been small compared to other uses.

Planning consents covering an area totalling 4,250 ha (James Hayes, pers. comm.) in England were obtained by 1995 under planning legislation dating from the 1940s and predated subsequent legislation establishing National Nature Reserves (National Parks and Access to the Countryside Act 1949), SSSIs (Wildlife and Countryside Act 1981) and SACs (European Commission The Habitats Directive 1992).

At present because some peat extraction sites have ceased production, others have been given to or purchased by the Government conservation agency, Natural England, only 920 ha out of a total of 680,000 ha of peatland in England are currently subject to extraction and this may be reduced by almost half if the results of the Public Inquiry on Chat Moss lead to cessation of peat extraction on 350 ha in the Greater Manchester area.

Cranberry Moss, a floating bog in the Midlands of England.

This account provides information on the area of peatland in England, its estimated carbon store and CO_2 emissions from the 99% that are degraded and no longer peat forming. These are compared with the CO_2 emissions that can be attributed to peat extraction in England for horticulture and discussed in the context of climate change and possible mitigation through restoration re-wetting and estimated abatement costs and benefits.

Area of Peatland in UK by country

There is considerable confusion and disagreement on the areas of peatland and organic soils in the UK largely because the definition of peat and methods used to determine the

Table 1: Areas of different peatland types in the UK (ha) derived from soil, geological and habitat maps (derived from JNCC, 2011)

UK BAP Priority Habitat	England	Wales	Northern Ireland	Scotland	Total
Blanket Bogs	255,308	70,000	139,796	1,759,000	2,224,104
Raised Bogs	17,411	1,830	21,106	13,000	53,347
Lowland Fens	8,000	6,200	3,000	8,585	25,785
Total	280,719	78,030	163,902	1,780,585	2,303,326
%	12.2	3.4	7.1	77.3	100

Table 2: Areas of peatland types in England and their carbon stores (based on NE, 2010 and JNCC, 2011)

Peatland type	Total area (ha)	BAP priority habitat area (ha)	Actively peat forming area (ha)	Peat forming as % of total area	Carbon store (Mt C)	% carbon store
Blanket bog and upland valley mire	355,300 (29%)	255,308 (97%)	4,468 (78%)	1.3%	138.0	23
Raised bog	35,700 (3%)	17,411 (2%)	338 (6%)	1%	57.5	10
Lowland fen (deep)	95,800 (8%)	8,000 (1%)	572 (10%)	0.6%	144.0	25
Lowland fen (wasted)	192,200 (16%)		341 (6%)	0.2%	186.4	32
No data	900 (0.1%)		4 (0.1%)	0.4%		
Total deep peatland	679,925 (56%)	280,719	5,723	0.8%	525.9	90
Shallow peaty soils	527,200 (44%)				58.5	10
Total	1,207,100	280,719	5,723	0.5%	584.4	100

area of the resource differ between England, Scotland, Wales and Northern Ireland (Lindsay & Immirzi, 1996; Lindsay, 2010; JNCC, 2011).

Different inventories have been made for a variety of land uses and are often partial or incomplete. The most recent information published by the Joint Nature Conservation Committee (JNCC, 2011) estimates the total area of bogs and fens in the UK to be 2,303,300 ha, which is much more than the earlier estimate of 1,581,841 ha (Robertson & Jowsey, 1968). In his review of 'Peat Bogs and Carbon', Lindsay (2010) provides a range from 1,472,700 ha (Immirzi et al., 1992) to 5,042,700 (Burton, 1996; Shier, 1996). The former is based on peat probably at least one metre thick and the latter contains shallow peaty organic soils.

An area of 2,303,326 ha of deep peatland in the UK has been identified as priority habitat under the UK Biodiversity Action Plan (Table 1) but only about 1% of this is actively forming peat (Table 2). The largest area of deep peat is blanket bog (97%) while raised bog and fen contribute only 2% and 1% to the total, respectively.

The latest estimates for the area of peatland in England are provided in Table 2 (NE, 2010; JNCC, 2011). These areas are greater than the BAP areas shown in Table 1 and include upland valley mires, 'wasted' lowland fens and shallow peaty soils.

Estimated carbon stock in peatland in the UK and England

In order to calculate the amount of carbon stored in an area of peatland it is necessary to compute the volume of peat using values of peat thickness and incorporate bulk density and carbon concentration

Alder fen at Cranberry Moss, England.

Eroded blanket bog on Bein Eighe in Scotland.

values. As with peat area these other parameters are not known with any degree of precision and in the UK there has been no systematic approach to their measurement (Lindsay, 2010).

Determinations have been very few relative to the large area of peatland and have mostly been obtained from the work of individual researchers with main interests in other aspects, e.g. vegetation, hydrology and nutrient budgets.

The thickness of peat on blanket bog varies between 30 cm and 6 m and there is no reliable information on what the overall areas might be of different ranges of thickness. Raised bog peat can be up to 10 m thick and sometimes more. Microtopographic variations and erosion features such as gullies make it difficult to arrive at 'average' thickness values (Lindsay, 2010).

Average peat thicknesses on blanket bogs derived from a limited number of determinations has resulted in values between 2.1 m and 2.4 m and the latter is commonly applied although other sources suggest it is only 1.5 m. The uncertainty about peat thickness is a major drawback in knowing with accuracy the carbon store in UK peatlands.

Bulk density (g cm^{-3}), according to Clymo (1992), varies from 0.03 to 0.12 g cm^{-3} in UK peat although values of 0.2 and even higher have been used in estimations of peat carbon content. Bulk density varies down peat profiles and across the surface depending on microtopographic variations (hollows and hummocks), land use (especially drainage) and degree of degradation (decomposition).

Most bulk density measurements, however, have been determined only for the upper 50-100 cm of the peat profile and for deeper peat little is known. The value of bulk density used has a major influence on the magnitude of the carbon content while the range of values obtained contributes to the large uncertainty of peat carbon stock estimates.

There is no general agreement on the minimum amount of organic matter in a soil that leads to its classification as 'peat'. Some authorities require it to be in excess of 80% by dry weight while others accept as low as 20%; the former include all ombrotrophic (rain dependent) blanket and raised bogs while the latter are Histosols with an organic surface layer less than 30 cm and mineral soils with a high surface organic content.

The carbon concentration in a soil depends on the ratio of organic to mineral material contained within it and, in general, the higher the mineral content the lower the carbon concentration in a standard volume of dry soil.

It may seem that owing to the large degree of uncertainty in all of the contributory components required to calculate the carbon stock in peatland that it is pointless to do the exercise. Determinations, however, are usually based on means of ranges and evaluation of the 'best' values to use following fairly rigorous assessment of their validity.

Even so, large differences occur, for example, Bain et al. (2011) estimate the carbon stock in UK peatlands

Section through peat in a drainage ditch for peat production in Northern Ireland.

to be 3,200±300 Mt (equivalent to 11,744±1,101 Mt CO_2) while Lindsay (2010) suggests it is a minimum of 3,121 Mt C (11,454 CO_2) although it could be much larger.

These two estimates appear to be similar but a detailed study of carbon in organic soils in Scotland and Wales (ECOSSE, 2007) provides a combined estimate of 2,931 Mt C and if that for England of 584 Mt C (NE, 2010) and 121 Mt C for Northern Ireland are added there is a combined total for the UK of 3,636 Mt C (13,344 Mt CO_2e). This overall picture of carbon stock in UK peat and organic soils is complicated further by the results of Milne & Brown (1997) that show that 'Scottish peat' alone contributes 4,523 Mt C (16,600 Mt CO_2) to the total carbon store, although they do not provide similar data for the other UK countries.

According to Natural England (NE, 2010) the estimated total carbon stored in all of the deep and shallow peaty soils in England is 584.4 Mt (Table 2) or nearly five times England's total CO_2 emissions. DEFRA quite correctly points out that 'lowland raised bogs in England are concentrated stores of carbon, estimated to contain 57.5 million tonnes' (DEFRA, 2010). They claim this is equivalent to around 40% of the UK's total annual emissions if it were all released at once but that is an inappropriate comparison since it is highly unlikely that this would happen.

Estimated CO_2 emissions from degraded peatlands and peat extraction for horticulture in England

The data on CO_2 emissions from England's bogs and fens are confusing and imprecise and estimates are based on emissions factors from a range of different sources and not from primary research studies (NE, 2010; Worrall et al., 2011). Greatest emissions on a unit hectare basis are from peatland that is being cultivated or laid down to temporary grassland. Undegraded peatlands may be net sinks of carbon but their area is very small. Total greenhouse emissions obtained by scaling up to the total area of different peatland uses, combined with the various emissions factors, suggests that the total CO_2 emissions from England's degraded peatlands are 3.0-3.5 Mt CO_2 a^{-1}. These include estimated emissions of 20,000 t CO_2 from the bare surface of peat extraction sites. The largest source of peatland emissions is from fens, followed by shallow peaty soils, blanket bog and raised bog (Table 3)


Peatland restoration in Ireland.

The emissions factors for some land uses may be high but because the area affected is small the overall impact on total England GHG emissions is insignificant. This is the case for peat extraction, which has an emissions factor of 4.87 (NE, 2010) derived from the IPCC (2006) Tier 1 list that places it in 7th place in terms of peat land use emissions while on an area basis it is equal 12th and hardly any other land use is lower.

In 2012 the area of peat extraction in England is estimated to be 920 ha of which 350 ha is on hold pending the outcome of a public inquiry (Hayes, pers comm). The annual CO_2 emissions attributable to this area extracted to a depth of 20 cm is less than 200,000 tonnes. The total UK emissions for 2010 were 590.4 Mt and, assuming that 80% of these were from England, the emissions from peat extraction in England amount to only 0.04%. According to NE (2010) CO_2 emissions from degraded bogs in England are at least 3Mt per year meaning that CO_2 emissions from peat extraction in England are equivalent to only 7% of this large 'natural' loss.

Potential carbon offsets as a result of peatland restoration rewetting

Much is currently being made of the need to 'restore' the UK's degraded peat bogs and there is a priority target of 845,000 ha (Bain et al., 2011) out of a total estimated area of 2,300,000 ha (37%). 99% of all UK peatland (2.277 Mha) is degraded to some degree and no longer CO_2 sequestering or peat accumulating

Table 3: Estimated greenhouse gas emissions from England's peatlands (Mt CO2e a-1) (from NE, 2010)

	Blanket bog	Raised bog	Fen peatlands		Shallow peaty soils	Total
			(deep)	(wasted)		
Total estimated CO_2 emissions losses (Mt a^{-1})	0.35	0.28	1.40	0.55	0.40	2.98

Drain blocking at Chartley Moss National Nature Reserve, England.

(Table 2; NE, 2010; Lindsay, 2010; JNCC, 2011).

The guide price for rewetting degraded peatland is £1500 per hectare at 2012 prices (Holden, 2008) making the cost of rewetting the IUCN target area £1.3 billion and £3.4 billion for all degraded peatlands in the UK. There are variations of this model that suggest that restoring 'gripped' blanket bogs is cheaper but the severe erosion of others presents a much greater financial challenge (Moxey, 2011).

The perceived outcomes of peatland restoration are two potential climate change mitigation benefits, restored CO_2 sequestration and avoided emissions, which could provide carbon abatement of up to 3.65 Mt CO_2 a^{-1} after it is all completed (this estimate is for England but it is not possible from the published information to separate out England, Wales, Scotland and Northern Ireland from overall UK data).

The downside is the slow rate of peatland restoration and the high cost. Peatland restoration areas are measured in 100s of hectares whilst the area targeted by IUCN UK is almost one million ha.

If 800 ha (an over ambitious figure) were 'restored' every year it would take over 1,000 years to rewet the IUCN priority target. This small area will provide an initial CO_2 abatement of only 2000 tonnes (2.5 t ha^{-1}) and it will take 100 years of continual peatland restoration at the same rate to reach 200,000 t CO_2 that is still less than 10% of the IUCN UK (Bain et al., 2011) predicted savings.

Whilst it may be desirable to restore degraded peat bogs we should not be deluded into thinking this will make a significant contribution towards reducing overall greenhouse gas emissions. After 100 years the total abatement CO_2 emissions from peatland restoration at a rate of 800 ha a year would only be 0.04% of present total UK emissions.

The predictions of cost savings computed using current and future predicted 'shadow' prices of carbon seem to be over optimistic and based on restoration of the entire targeted degraded peatland area (Moxey, 2011) and do not provide comparison with the earlier years.

For example, the cost benefit of restoring 800 ha of degraded peatland could provide a saving of £100,000 (at a shadow price of £50 per tonne of CO_2). The cost of this restoration would be, however, in the region of £1.2 million and it would take at least 10 years to break even, but only if restoration is successful.

English Peatlands and Climate Change

The predicted impact of climate change on England's peatlands is that degraded peatlands will become drier, as temperatures increase and rainfall decreases (Clark et al. 2010b; House et al. 2010; Worral et al., 2010).

Climate change is also likely to change the species composition thereby affecting biodiversity, reduce water quality and increase greenhouse gas emissions, although it is not yet possible to determine the rate at which these might occur (Clark et al. 2010a). Peatlands may respond to changes in climate by changes in peat forming vegetation from domination by sphagna to moss species more tolerant of drier conditions with reductions in the rate of peat accumulation and carbon storage (Dise 2009; Lindsay 2010).

As climate warming takes effect the rate of peatland degradation in England is likely to increase with consequent increase in CO_2 emissions making it more difficult to achieve GHG abatement savings and therefore the cost benefits suggested by NE, IUCN, JNCC and others may not be realised.

Climate change is an emotive and political topic that is a matter of great concern for international conventions, national governments and individuals. Most developed countries have committed to making major reductions in their greenhouse gas emissions by 2050; the UK Government plans to reduce its GHG emissions by at least 80% (Climate Change Act, 2008). This will mostly be achieved by substantial reductions by the major emitters, for example, energy generators and other heavy industries.

The CO_2 emissions attributable to peat extraction in England are only some 200,000 tonnes a year compared to the 24 million tonnes emitted by the agriculture industry (0.8%). The use of peat in horticulture contributes a mere 0.04% to England's total annual

greenhouse gas emissions. No other sector of industry or society is being asked to reduce its GHG emissions by 100% so why is the horticulture industry being forced to do so?

Researchers at Chartley Moss, England.

References

Alexander, P.D., Bragg, N.C., Meads, R., Padelopoulos, G. and Watts, O. (2008) Peat in horticulture and conservation: the UK response to a changing world. Mires and Peat, Volume 3, Article 08. www.mires-and-peat.net

Bain, C.G., Bonn, A., Stoneman, R., Chapman, S., Coupar, A., Evans, M., Gearey, B., Howat, M., Joosten, H., Keenleyside, C., Labadz, J., Lindsay, R., Littlewood, N., Lunt, P., Miller, C.J., Moxey, A., Orr, H., Reed, M., Smith, P., Swales, V., Thompson, D.B.A., Thompson, P.S., Van de Noort, R., Wilson, J.D. & Worrall, F. (2011) IUCN UK Commission of Inquiry on Peatlands. IUCN UK Peatland Programme, Edinburgh.

Burton, R.G.O. and Hodgson, J.M. (1996) Lowland peat in England and Wales (Special Survey No. 15) Harpenden. Soil Survey of England and Wales.

Clark, J., Gallego-Sala, A., Allott, T.E.H., Chapman, S.J., Farewell, T., Freeman, C., House, J., Orr, H., Prentice, I. & Smith, P. (2010a) Assessing the vulnerability of blanket peat to climate change using an ensemble of statistical bioclimatic envelope models. Climate Research, 45: 131-150. www.int-res.com/articles/cr_oa/c045p131.pdf

Clark, J.M., Orr, H.G., Freer, J., House, J., Smith, P. & Freeman, C. (2010b) Assessment of projected changes in upland environments using simple climatic indices. Climate Research, 45: 87-104. www.int-res.com/articles/cr_oa/c045p087.pdf

Clymo, R.S. (1992) Models of peat growth. Suo, 43(4-5): 127-136.

DEFRA (2010) Consultation on Reducing the Horticultural Use of Peat in England. United Kingdom Department for Environment, Food and Rural Affairs, London. Online at: http://archive.defra.gov.uk/corporate/consult/peat/101217-peat-condoc.pdf

Dise, N. (2009) Peatland response to global change. Science, 326: 810-811.

ECOSSE (2007) Estimating Carbon in Organic Soils Sequestration and Emission. Scottish Executive, Edinburgh.

Holden, J., Walker, J., Evans, M.G., Worrall, F. & Bonn, A. (2008) A compendium of peat restoration and management projects. Report to Defra SP0556. http://randd.defra.gov.uk/Default.aspx?

House, J., Orr, H., Clark, J., Gallego-Sala, A., Freeman, C., Prentice, I. and Smith, P. (2010) Climate change and the British Uplands: evidence for decision making. Climate Research, 45: 3-12.

Immirzi, C.P. and Maltby, E. with Clymo, R.S. (1992) The Global Status of Peatlands and Their Role in Carbon Cycling. Friends of the Earth, London.

IPCC (2006) IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use. http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html

Lindsay, R. (2010) Peatbogs and Carbon: a Critical Synthesis to Inform Policy Development in Oceanic Peat Bog Conservation and Restoration in the Context of Climate Change. University of East London.

Lindsay, R.A. and Immirzi, C.P. (1996) An Inventory of Lowland Raised Bogs in Britain. Scottish Natural Heritage Research, Survey and Monitoring Report No. 78. Scottish Natural Heritage, Perth, Scotland.

JNCC (2011) Towards an assessment of the state of UK peatlands. Joint Nature Conservation Committee report No 445. http://jncc.defra.gov.uk/page-5861#download

Milne, R. and Brown, T.A. (1997) Carbon in the vegetation and soils of Great Britain. Journal of Environmental Management, 49: 413-433.

Moxey, A. (2011) Illustrative economics of peatland restoration. Report to IUCN UK Peatland Programme. www.iucn-uk-peatlandprogramme.org/scientificreviews

NE (2010) England's peatlands: Carbon storage and greenhouse gases. Report NE 257, Natural England, Sheffield. ISBN 978-1-84754-208-3 [online]. Available from: http://naturalengland.etraderstores.com/NaturalEnglandShop/NE257.

Robertson, R.A. and Jowsey, P.C. (1968) Nature and extent of Scottish Peatlands. Acta Agraria Fennica, 123: 233-241.

Shier, C. (1996) The peat resources of Ireland. In: E. Lappalainen (Ed.) Global Peat Resources. Pp. 95-96. International Peat Society, Jyväskylä, Finland.

Worrall, F., Chapman, P., Holden, J., Evans, C., Artz, R., Smith, P. & Grayson, R. (2010) Peatlands and climate change. Report to IUCN UK Peatland Programme, Edinburgh. www.iucn-uk-peatlandprogramme.org/scientificreviews

Worrall, F., Chapman, P., Holden, J., Evans, C., Artz, R., Smith, P. & Grayson, R. (2011) A review of current evidence on carbon fluxes and greenhouse gas emissions from UK peatlands. JNCC research report 442, Peterborough. http://jncc.defra.gov.uk/pdf/jncc442_webFinal.pdf

Additional Online Information

Climate Change Act (2008) Online at: www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.aspx

European Commission (1992) The Habitats Directive. Online at: www.eur-lex.europa.eu/LexUriServ.do?uri+CELEX:31992L0043:EN:NOT

National Parks and Access to the Countryside Act (1949) Online at: http://www.legislation.gov.uk/ukpga/Geo6/12-13-14/97

UK Biodiversity Action Plan (1999) Lowland Raised Bog. Online at: www.ukbap.org.uk/UKplans.aspx?ID=20

UKBAP PRIORITY HABITATS DESCRIPTIONS [online]. Available from: http://www.ukbap.org.uk/newprioritylist.aspx.

Wildlife and Countryside Act (1981) Online at: http://www.legislation.gov.uk/ukpga/1981/69

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Working towards Peatland Restoration in the UK

Commission of Inquiry from IUCN National Committee UK Peatland Programme

The enormous importance of our peatlands for people and wildlife has been highlighted with the recent publication of the findings of the IUCN (International Union for Conservation of Nature)UK Commission of Inquiry on Peatlands: www.iucn-uk-peatlandprogramme.org.

The 18 month inquiry was supported by one of the largest reviews ever undertaken for peatlands in the UK and involved over 300 individuals and 50 organisations from academia, policy and practice. The findings present clear consensus on the multiple benefits of peatland ecosystems including biodiversity, climate change, water and a historic archive.

The Inquiry found that much of the UK's peatland area has been damaged, with consequent loss of biodiversity, largely due to past drainage, agriculture and forestry activities. As a result, a significant amount of carbon is leaking into the atmosphere.

This is particularly alarming as a loss of only 5% of the carbon stored in peat would equate to the UK's total annual green house gas emissions. Damaged peatlands can also impact on the quality of drinking water at source, leading to discolouration and associated increased treatment costs for water companies and consumers.

The good news is that this Inquiry has shown that peatland restoration not only benefits wildlife, but has measureable carbon savings, and can quickly reduce the cost of treating drinking water.

The Inquiry report identifies a clear strategy for action to bring our peatlands back from the brink, pointing the way forward to avoid the social and environmental costs of further deterioration. New opportunities for funding peatland conservation are identified but the need for a high level policy steer and coordinated action is also highlighted.

As a visual accompaniment to the Inquiry, award winning photography collective 2020Vision have produced a stunning visual short film clip funded by the IUCN UK Peatland Programme and the Rural Economy Land Use (RELU) Programme, which can be viewed on our website along with inquiry report and contributing materials, www.iucn-uk-peatlandprogramme.org.

Sphagnum. Photo: Laurie Campbell

We have worked closely with parliaments and assemblies across the UK which have shown strong support for peatlands. The Scottish Government Minister for Environment & Climate Change, Stewart Stevenson, met the Inquiry team to discuss taking forward the Government's manifesto commitment "to take action to protect and restore peatlands".

Northern Ireland Assembly Department of Agriculture and Rural Development Minister, Minister, Michelle O'Neill said: "Farmers and landowners in agri-environment schemes are already taking conservation action through the sensitive management of almost 51,000 hectares of peatland here. I endorse the need for a coordinated approach to manage these important habitats for the future". The Inquiry was also well supported at a House of Lords event in March 2012 with Lord Jamie Lindsay as host.

There is an established case for investing in the future of our peatlands for wildlife and now we can see the even wider benefits for our economy. We know how to restore and enhance peatlands and really just need to get on with it. With the UK having world-leading expertise in peatland restoration, we have a great opportunity to show leadership.

Moving forward we are currently focusing on our joint symposium with the British Ecological Society' Investing in Peatlands – Demonstrating Success' on 26-28 June 2012 at Bangor University in Wales, UK, www.BritishEcologicalSociety.org/2012symp.

The symposium will bring together experts from science, policy and practice from a wide range of backgrounds to highlight and debate the importance of peatlands from an ecological, social and economic perspective and will assess socio-economic tools to embed peatland conservation in practice and policy.

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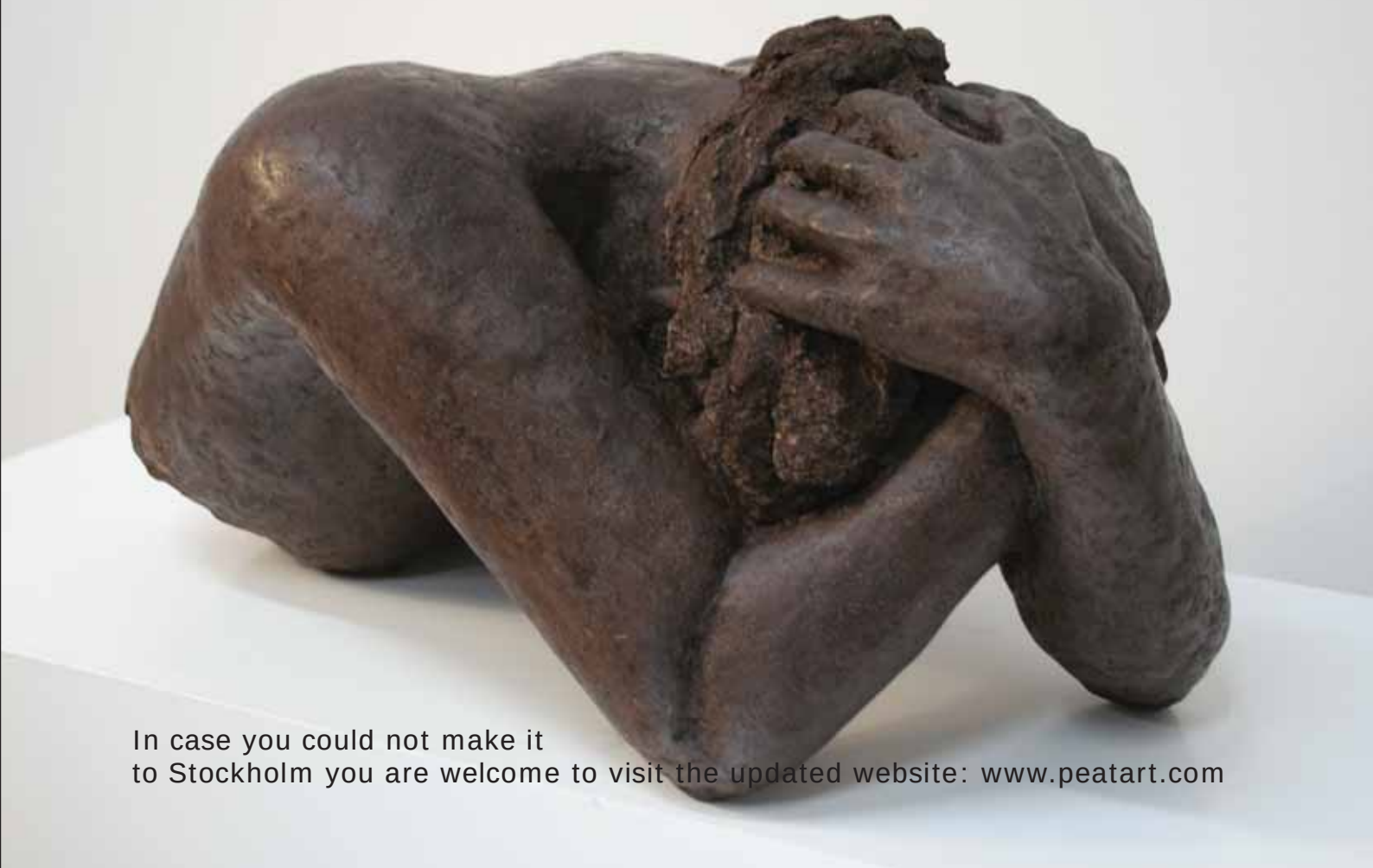

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70 years Finnish peat industry - from pioneers to environmental concerns

Text: Raimo Sopo

This article is based on the presentation of Mr. Raimo Sopo delivered at the Jubilee Symposium "150 years of Estonian Peat Industry" in Pärnu Estonia, on 8 December 2011.

What do Finns know about peatlands?

Although one third of Finland's land area is covered by peatlands, peat as a raw material has been largely unknown to our people. Most Finns have had their contact with peatlands walking on the surface of peat bogs. Very few persons have got an opportunity to make excavations in order to get an idea of how the world under the surface looks like.

Ignorance concerns especially peat as an energy source, whereas horticultural peat, which is commonly used in Finnish gardens, is as a consumer product better known. Another reason is, that peat production sites are mainly located in remote areas, which make it difficult for everyman to get a realistic picture of how peat is extracted from the bog, and how the life-span of the bog looks like.

This ignorance about the use of peat has reflected negatively in the public opinion in our country and elsewhere in Europe, which has during the past 20 years caused many problems for the industry.

Peat extraction started from Eastern Finland

First attempts to use peat as industrial fuel were made in Värtsilä at the end of 19th century. At that time our metal industry was based on melting of lake ore. Limonite lakes were common in Eastern Finland, where Värtsilä is located. Factory owner Klas Arppe started to use machine turf in his ironworks in 1876, and this year is regarded as the beginning of industrial use of peat in Finland.

In the beginning of the 20th century, attempts were made by the state to develop peat production. For instance, the Finnish Bog Cultivation Society got financial aid from the state in order to engage a fuel peat engineer for the years 1901-1903. In 1903, there were four active production sites, the total capacity of which was 8,300 tons of fuel peat.

At that time, experiments were made to use peat as fuel in locomotives. These studies included geological surveys of peat deposits, located in the vicinity of four major railway sections in North, West and South Finland.

There were even attempts to design a power station for the production of electricity for the Finnish railways, using peat powder as fuel. Electrification measures did not lead to concrete results, but in the 1920s there were eight companies, which

The HAKU-method was developed during the 1980s and 1990s. Photo: AFPI

produced 15,000 - 20,000 tons of sod peat for the Finnish Railways. The 60 year long period since the beginning of industrial peat extraction till the end of 1930s, can be regarded as a period of gradual rooting of the idea of peat industry in Finland.

Establishment and end of the Association of Finnish Peat Industries

At the end of 1930s, when the international situation deteriorated, the State of Finland started to evaluate seriously the role of peat in the national energy strategy. After the Winter War 1939-1940, the use of domestic fuels radically increased and compensated for the lack of imported fuels. In the years of the Continuation War 1941-1945 and long after it, imports of fuels were almost nonexistent.

A big part of the home front, including women and children, were mobilized to cut timber in order to get firewood for heating of homes and as power source for the industry. As a result of national efforts, 20 - 25 million m^3 of firewood per year were cut and transported, mainly by aid of horses, to population centres in the 1940s.

Simultaneously with increasing firewood usage, World War II caused a big boom in the peat industry. The period from 1940 onwards till the end of the 1960s meant a significant step forward for the peat industry, although, as every peat expert knows, expansion of peat production is a time consuming process. Good results were achieved in the field of research, technical innovations, geological survey of peatlands, as well as in the development of production methods, peat machinery and in boiler construction.

The development of peat harvesting machinery based on agricultural tractors took off in the 1970s. Photo: AFPI

In this period, big change took place, for instance, in peat production technology. If sod peat had been the major peat product earlier, at the end of the 1960s milled peat cut sod peat out, gaining gradually about 90% of the total peat production. A lot of measures have been taken since the 1970s to develop economically feasible sod peat technology.

However, sod peat has never become a mass product in Finland and the use of it is limited to small boilers and minor central heating plants.

At the initial phase of this time period, peat production was based mainly on private entrepreneurship. In 1943, there were 37 private companies producing sod peat. In the same year, it was considered inevitable to unite efforts in the protection of the interests of the new industry. Discussions lead to the establishment of the Association of Finnish Peat Industries (AFPI) on 23 January 1943. The number of peat producers reached its peak of 40 private companies in 1953. In the following decades, the number of producer members of the AFPI gradually decreased, being today less than 20 enterprises.

Today the story of a standalone Association of Finnish Peat Industries has, after almost 70 years of activity, ended in the abolition of the society as an independent stakeholder of the Finnish industrial world. This measure took place in Jyväskylä at an annual meeting of the AFPI on 12 April 2012. Today the role of

Peat production involved hard work in the early days and later on. Photo: AFPI

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the AFPI is carried out by the peat division of the Finnish Bioenergy Association, the head office of which is located in Helsinki.

The role of the state in the development of the Finnish peat industry

In Finland the Parliament, the Government and the Ministry of Trade and Industry have played an important role in the development of peat use. In order to start peat production, an act of Parliament was issued in 1942 for compulsory purchase of peatlands for industrial purpose. In the 1940s, the state regulated fuel peat prices and defined a guaranteed price for peat.

When these statutes expired at the beginning of the 1950s, a subsidy of two Finnish marks per cubic meter of sod peat was paid to the producers. This subsidy was in force until the use of peat fuel in locomotives ceased in 1957. The state financially supported the Peat Commission, including training of personnel, construction of machinery, boiler manufacturing, geological survey of peatlands etc.

The role of the state became even more important at the end of the 1960s, when a gradual rise in oil prices took place on the world market. In 1969, the then State Fuel Centre (Vapo) bought the shares of the Suo Oy company, founded in 1941. When the Finnish Parliament authorized Vapo to this measure, it gave Vapo the responsibility of increasing production and use of peat as a fuel.

By purchasing Suo Oy, Vapo got some 30,000 ha of peatland to its own use in Western Finland, of which area some 500 ha were ready for production. Because the increase in oil prices continued in the beginning of the 1970s, the Parliament of Finland granted financial resources to Vapo for the realization of the 1st Peat Development Program.

A target was set to raise peat production to 10 million m^3 per annum by the end of the 1970s. In realization of this task, Vapo benefited from valuable lessons learned during the past three decades within the peat industry. Simultaneously with peat production, also the energy use of peat started to develop. The first peat-generated municipal CHP plant was built in the City of Kuopio in 1972.

As soon as this door was opened in the beginning of the 1970s, a huge development process was started by Vapo in order to achieve the target set by the Government. The intensive development work was hardly beginning, when an international oil crisis struck by full force in the energy markets in 1973-1974. As a consequence, Vapo's target was doubled in 1974. The target of the 2nd Peat Development Program was exceeded in less than 20 years, and a few years later peat production capacity was at its highest with over 30 million m^3.

The role of environmental issues grows

The 2nd Peat Development Program brought with it a massive change in the role of peat as an energy source in Finland. Big municipal and industrial CHP plants burning peat were built in all major population and industrial centres. Peat consumption rose upwards in proportion as new production sites were opened all over Finland, including northernmost Lapland and on the south coast near Helsinki.

The price of peat fuel has been stable and competitive year by year compared with coal, natural gas and heavy fuel oil. In this millennium, wood is again gaining foothold in our national energy policy. This development means that the role of peat in our domestic fuel markets will gradually decrease. Although practice has proven that combustion of peat together with wood is in many boilers vital from a technical point of view, it is obvious that ever growing pressure against peat extraction and burning will sooner or later close down the peat industry in Finland.

In the beginning of the 1970s, when there was an international energy crisis going on, decisions made in our Parliament in order to start peat development, were unanimous. Political parties understood that we have to reduce our dependence on imported fuels. At that time no major resistance from environmental organizations occurred against peat utilization.

Discussions with the Finnish Association for Nature Conservation, the Finnish Peatland Society and the industry were carried out in a business-like manner in order to choose peatlands suitable for extraction. The first ten years of the Peat Development Program were relatively peaceful, and the industry could concentrate by full force in its work.

However, summer 1981 meant a turning point for the peat industry. In that summer precipitation was highest since 1950. In one of the peat production sites, an embankment broke down and huge amounts of peat flew down to the watercourse below the site.

I was at that time personally responsible for information at Vapo and remember those difficult moments, when I stood together with reporters looking at the broken dam. This very event labelled our peat industry guilty of polluting Finnish lakes, and this label the industry has never succeeded in clearing of.

The 1980s can be regarded as a decade of water protection, when the environmental authorities began to concentrate their attention on the peat industry. Regardless of many efforts of the industry to improve water quality from peat sites and to construct expensive and efficient purification systems, discussion has continued with ever increasing intensity. Quite recently, very aggressive articles have been published in different newspapers against the peat industry and claims have been presented to totally cease peat production.

Former peat production area of Turveruukki, now in re-use as wetland. Photo: Kai Tirkkonen

IPS as the basis of international co-operation

Since the 1990s, climate change has put increased pressure on peat utilization not only in Finland but also in other European countries. The International Panel for Climate Change (IPCC) is nowadays a ruling organization, which in practice determines preconditions for commercial peat utilization.

Emission trade and increasing CO_2 based taxation of peat in our country complicate peat business and force energy companies to raise their product prices. How long this development lasts in Finland, we do not know. Anyway, there are many signs in the air, which are not very favourable for the peat industry. For instance land acquisition has become more and more difficult due to the permission procedure.

In conclusion, I would like to highlight the importance of international co-operation for our country in the development of the peat industry. Numerous delegations have made study tours to Estonia, Sweden, Germany, Denmark, Ireland, Canada, United Kingdom, Russia, Ukraine and Belarus in order to learn about the experience of other industries in peat production and utilization. Purchase of machinery from Germany, Denmark, Sweden and Russia has been of great importance for us in the first decenniums of our industry. Only in the 1980s did the Finnish peat industry gradually reach independence in peat production technology.

In the realization of this valuable co-operation, interaction within the framework of the International Peat Society (IPS) has played a decisive role. Without IPS' awareness of all aspects of peat utilization, geology, mire and peatland science would not be at such a high level as it is today, both nationally and internationally.

After active international cooperation, long lasting practice, and intensive training, Finnish peat producers have learned their lessons in controlling peat production and utilization. However, it seems today most likely that the life span of the Finnish peat Industry is gradually ending mainly due to present environmental policy.

Whether shutting down of the peat industry helps in the future to guarantee local heat supply to our population under extreme weather conditions or supply of growing media to private consumers and the European horticultural industry, is a subject of another discussion.

Raimo Sopo
Former Managing Director
of the Association of Finnish
Peat Industries and Secretary
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In the 1970s a lot of people were employed without practical experience in peat production in Finland. In the initial stage of the Ist Peat Development Program, intensive training of personnel was started. As part of the training program, Mr. Raimo Sopo participated in 1973 in a few months studies at the Technical University of Kalinin (present Tver, Russia), financed by a scholarship of the Ministry of Education of Finland. A group of students from the Tver University met Mr. Sopo at the headquarters of Vapo in 2010 donating him a painting drawn by the granddaughter of Mr. and Mrs. Kopjonkin, teachers of Mr. Sopo in peat chemistry and technology.

Way of life and heritage of

Professor Lydiya Arsenovna Christeva

Text: L.M. Stepchenko and L.W. Szajdak
Photos: private

In December 2007, the centenary birthday of Professor Lydiya Arsenovna Christeva, former Vice Chairperson of Commission IV of IPS, an outstanding scientist and founder of the scientific school for the investigation, action and practical application of biologically active humic substances from peat, was celebrated. Her way of life was thorny, but fruitful, full of creativity and enthusiasm for new scientific ideas and hypothesis. She has built a brilliant career and left a unique mark in the science.

Lydiya Asenovna Christeva was born in 1907 in Bolgrade, Odessa region, Ukraine. In 1928, she earned her M.S. at the Kharkov Agricultural Institute and became an employee at the Agro-enterprises, Agricultural Research Institute, Higher Educational Institutes in several regions of the Soviet Union.

Her work focused on the biological activity of humic acids from peat and their application as organic fertilizers. At that time, not only did she acquire a background in utilization of humic acids for fertilization, but she also acquainted with the application of organic compounds of unknown structure from peat on the growth and development of plants. Since 1956, she has been working at the Dnepropetrovsk State Agrarian University (former Dnepropetrovsk Agricultural Institute), where she

Professsor Lydiya Asenovna Christeva and co-workers in 1982.

has headed the Department of Botany and Physiology of Plants. Her professional interests lay in fundamental investigations and practical utilization of the results. She dealt with the problem of genesis of humic substances from peats and brown coal, their physical and chemical properties and the relationship between the chemical structure of peat organic compounds and their physiological properties.

Professsor Christeva and colleagues researching the impact of humic substances from peats on plants.

Moreover, her work centred on the creation of new methods and technologies for the preparation of peat humic fertilizers for agriculture and animal husbandry. Her new technologies were very efficient and significant increased the yield of cultivated plants and animal husbandry. Moreover, she proposed new interpretations of existing data.

In addition, her research focused on the different mechanisms of the biological action of humic substances from peat, such as:

- metabolism of carbohydrates and oxidation-reduction processes in cells and their growth and development,
- cell energy potential and electron transport in chloroplasts and mitochondria's,
- activation of photosynthesis,
- oxidation of phenols,
- phosphorylation of peptides,
- syntheses of DNA, RNA, proteins, and enzymes,
- metabolism of nucleic acids,
- anti stressful, adaptogenic and dynamic anti cumulative protection,
- frost and drought resistance,
- role of chemical compounds in the resistance mechanism of plants against pests, pathogens and weeds noxious to agricultural crops,
- metabolic pathways of residual quantities of pesticides.

Professor Christeva has published more than 400 scientific papers. The scientific achievement of her Department has been summarized in 9 volumes of "Humic fertilizers. The theory and practice of their application".

Two doctors and 45 candidate dissertations (Russian system of education) under guidance of L.A. Christeva have been prepared. Her results on biological properties and function of humic substances from peat were presented during numerous scientific and industrial seminars for scientists and experts of agriculture.

Moreover, she promoted the ideas, hypothesis and data during conferences and congresses in the Soviet Union, (Moscow, Leningrad, Ufa, Minsk, Vilnius, Riga), and in Czechoslovakia (1961, 1963, 1971, 1979), Bulgaria (1966, 1972), Germany (1967), Vatican (1968), Finland (1972), Poland (1975), USA (1980), Ireland (1984).

In 1988, Professor Lydiya Arsenovna Christeva sadly passed away. She was well known by the scientists of the peat family and by many of her generation as one of the warmest persons, a great scientist and a wonderful woman.

Professor Christeva won the respect and admiration of everyone for her quiet and efficient service to the community. She was always cheerful and happy to give a helping hand to everybody.

Currently the scientific school created by L.A. Christeva is continued and developed by Professor L.M. Stepchenko. The ideas and investigations are focused on the biological activity of peat humic substances. Her scientific interests are mainly in the following fields:

- new generation of biologically active preparations from peat,
- monitoring of biological activity of raw materials from various peat deposits,
- application of humic substances of unknown structures in agriculture (grain crops, vegetables, garden cultures), and animal industries, including cattle, pig and sheep breeding, poultry and ostrich farming.

Moreover, the immunomodulatory, adaptogenic and anti-stress activity of these compounds is evaluated.

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Future IPS Meetings and Symposia

International Peat Society | IMTG MTO

Finnish Peat Society (Suoseura ry)
Autumn excursion: Eastern Lapland's Aapa mires
Rovaniemi, Finland 3 - 5 September 2012
More info: www.suoseura.fi

Estonian, Latvian and Lithuanian National Committees
Baltic Peat Forum 2012
Estonia, 5 - 7 September 2012
More info: www.turbaliit.ee

German Peat Society (DGMT)
Mires and their catchment areas
Schorfheide-Chorin, Werbellinsee, Germany
6 - 8 September 2012
More info: www.dmtev.de

Mires and peat as a raw material
GeoHanover 2012
Hannover, Germany, 1 - 3 October 2012
More info: www.dmtev.de

Industrieverband Garten
German Peat and Humus Day
Bad Zwischenahn, 18 October 2012
More info: www.ivg.org

ISHS-IPS "International Symposium on Growing Media and Soilless Cultivation"
17-21 June 2013 in Delft, the Netherlands
More info: www.grosci2013.nl

Lithuania Peat Association
Baltic Peat Producer Forum 2013
Lithuania 2013
More info: www.asocdurpes.lt/en

International Peat Technology Symposium
Riga, Latvia, May/June 2014

15th International Peat Congress
Kuching, Malaysia, 2016

Last minute updates and further events can be seen at our website, www.peatsociety.prg/events and at www.facebook.com/peatsociety.

Events of related organisations

AEBIOM Focus 2012: EU legislation, sustainable feedstock supply and market opportunities
Brussels, Belgium, 25 - 26 June 2012
More info: www.aebiom.org

Joint BES IUCN Symposium 2012
Investing in Peatlands – Demonstrating Success
Bangor University, United Kingdom, 26 - 28 June 2012
More info: www.tiny.cc/r5l51

BIOGEOMON 2012
7th International Symposium on Ecosystem Behavior
Maine, USA, 15 - 20 July 2012
More info: www3.villanova.edu/conferences/biogeomon

Ramsar COP11
Bucharest, Romania, 6 - 13 July 2012
More info: www.ramsar.org

5th International Meeting on the Biology of Sphagnum
Estonia and Latvia, 10 - 19 August 2012
More info: http://natmuseum.ut.ee/Sphagnum2012

Nordic Water 2012
Catchment Restoration and Water Protection
XXVII Nordic Hydrological Conference
Oulu, Finland, 13 - 15 August 2012
More info: http://nhc2012.oulu.fi

Bioenergy from Forest Conference and Exhibition
Jyväskylä and Jämsä, Finland, 27 - 31 August 2012
More info: www.bioenergy.finbioenergy.fi

IMCG Field Symposium 2012
Andes, September 2012
More info: www.imcg.net

International conference of the LIFE Project SEMEAU
How to combine Forest Management,
Local Development and Protection of Surface and Groundwater
Vulcania, Clermont-Ferrand, France, October 2012
More info: www.life-semeau.eu

A frequently updated list of IPS events and symposia of related organisations is posted at www.peatsociety.org. To inform us about future happenings of interest for IPS members, please contact ips@peatsociety.org.

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