

Peatlands

International

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New Commission Chairs and Expert Groups

More than 150 Peat and Peatland Experts at the Annual Convention in Aberdeen, Scotland

The Global Peatlands Initiative and IPS / The Global Landscapes Forum - Peatlands Matter: IPS Contributions

Peat and sapropel - synergy of production, science and environment in the context of effective resource use

The harmony between old Japanese culture and children in a wetland area, Sarobetsu Mire, Hokkaido, Japan

Regenerating Tropical Peatland Societies and Transforming Environmentally Vulnerable Societies

The Laboratory for Mire Ecosystems in Petrozavodsk, Russia

What saves a peatland from development in Ireland?



Growth



Substrates



Potting Soils



Raw Materials



Energy



Renewable Energy

Keeping an eye on our responsibility as we continue to grow

Our substrates ensure the growth of fruit, vegetables, ornamental plants, trees and shrubs worldwide. We turn our renewable resources into climate-friendly energy sources. The key criterion for our activities is sustainability. And we are pursuing ambitious plans for the future.

Klasmann-Deilmann is one of the global market leaders to have emerged from Germany's medium-sized businesses, and we are at home all over the world.



we make it grow

Editorial

One month after the excellent IPS Annual Convention in Aberdeen, it is a great pleasure to write this editorial. You'll find more detailed reports of both the Convention and the people involved in the new IPS structure on the next pages, but I cannot stop myself from reporting that **there are now tens of peat and peatland researchers, enthusiasts and business people around the world** in our new Commissions and Expert Groups.

All of these people are willing to give their knowledge and time to promote the core work of the IPS: to promote the responsible management of peat and peatlands.

Personally, I think that the Aberdeen convention was the first step on a new path towards **better high-level international understanding** and responsible decision-making on peatland management. Perhaps this may sound a little bit inflated. However, I very much think that all of the presentations, posters and discussions with world-class researchers, as well with their students, showed that our **common idea of bringing scientific data into the discussions**, instead of mis- or sometimes even disinformation, is now stronger than ever. And luckily, we have the IPS as a platform to do it.



Executive Board members Jack Rieley, Guus van Berckel, Gerald Schmilewski and Samu Valpola in Aberdeen (left to right). Photo: Susann Warnecke

Even though the building up and staffing of our new structure has been a slower process than many of us - including myself - thought, we have together managed to do it now.

At the same time, over the last year we have managed to bring the IPS **back to international level tables**, where we can really can promote and present solid scientific data.

The more we can do this, the more we can show that it is worth doing, and the more people will be willing to participate. It is essential that IPS can

Peatlands International is the global magazine of the International Peatland Society (IPS). It provides the almost 1,500 individual and corporate members of the Society with up-to-date information on peat and peatland matters, reports and photos of conferences and workshops, background reports and publication reviews.

To serve all of our members, we provide always a good balance between economic, social and environmental points of view. To receive Peatlands International in your email every three months, visit www.peatlands.org/join-us and sign up as a member.

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Cover: Netherley Red Moss Restoration Site, Scotland.
Photo: Susann Warnecke
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provide not only the platform, but also the opportunity for new people to stand up and take their positions representing IPS in conventions, meetings and working groups. And that is the way we are going to work.

But it is not only about the work, but also about the **sharing of information and the results** of that work. The main challenge during the following summer and autumn will be to generate channels and ways to share, and to provide the results and information of IPS activities and actions to all our members.

This is the key to demonstrate what most of us already know: working with IPS is the way to achieve the **responsible management** of peat and peatlands.

Samu Valpola

IPS 2nd Vice President
Chair of the Scientific Advisory Board
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Sod peat production in Scotland.
Photo: Nick van de Griendt



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More than 150 Peat and Peatland Experts at the Annual Convention in Aberdeen

Responsible Management of Peatlands – Symposium and Workshops

The 2017 International Peatland Society Convention was held in Aberdeen, Scotland, UK during the last week in May. The venue, Marriott Hotel, is near Aberdeen International Airport.

The Convention consisted of a 'Brainstorming' session on key peatland issues, a 'Symposium with four Workshops' on the importance and effects of different land uses on peatlands in different regions of the world and a special session on 'Restoration of Tropical Peatland' followed by 'Focus Groups Action Planning'.

The Convention offered an excellent opportunity for scientists, policy makers, regulators and peatland and industry managers to meet, share and discuss current and emerging knowledge and experience on all aspects of peat and peatlands.

The meeting presented the most recent scientific research, technical developments and practical activities related to agriculture and forestry on peatland, and responsible peat production. It also considered best practices for peatland after use



Not the conference venue, but one of the excursion destinations: the legendary Dunnottar castle. Photo: Susann Warnecke



Professor Susan Page opening the conference on 29th May. Photo: Susann Warnecke

including rewetting and revegetating to reinstate peat formation and provide economic and leisure possibilities.

155 Participants from 18 countries registered for the Convention. Of these 125 booked for the full four days while the rest attended on a daily basis. At the opening event on Monday 29th May we were honoured to have seven members of the Indonesian Parliament (Senators) in attendance.

Pre-Sessions

The Convention commenced after lunch on Sunday 28th May with a 'Brainstorming' session on current and emerging issues relevant to the three new IPS Commissions – Peatlands and Environment, Peatlands and Economy and Peatlands and Society. The Brainstorming started in a plenary session introduced by Scientific Advisory Board Chair Samu Valpola who explained the rationale behind this IPS organisational change and invited participants to join in the Commissions and Expert Groups.

This was followed by a status report on various IPS projects. Following the plenary participants opted to join one of the three concurrent sessions - Economy,

Environment and Society all of which were well attended.

Opening

Brief speeches of welcome were given by Professor Susan Page, Convention Chair, Professor Jack Rieley, Chair of the Convention Organising Team, Gerald Schmilewski, IPS President and Professor Bjorn Hånell, Vice Chairman of IUFRO and past President of IPS.

Susan Page read a message from Professor Juhani Päivänen, Honorary President of IPS who was unable to attend.



Summarizing their workshops: Catherine O'Connell, Donal Clarke, Russell Anderson, Bambang Setiadi and Roxane Andersen. Photo: Susann Warnecke



Paul Gaffney happily accepted his Allan Robertson Grant 2017 in Aberdeen. Photo: Susann Warnecke

The Convention was formally opened by the Lord Provost of Aberdeen, Barney Crockett. The opening was followed by five keynote presentations given by experts in a wide range of peatland expertise from different countries. These keynotes were related to the themes of the four workshops that commenced in the afternoon and

the session on Restoration of Tropical Peatland that took place on Wednesday 31st May.

Keynotes

Professor Chris Evans, Centre for Ecology and Hydrology, Bangor, Wales, UK:
The potential of responsible peatland management to reduce global soil carbon losses and greenhouse gas emissions.

Professor Carl C. Trettin, Centre for Forested Wetlands Research, USDA Forest Service, Cordesville, SC, USA: Responsible management of forested peatlands

Mr Joe Lane, Head of Business Transformation, Bord na Mona, Ireland: Responsible Peat Production and prospects for the peat extraction industry

Professor Line Rochefort, Industrial Chair in Peatland Management, Université Laval, Québec, Canada: Peatland Restoration in Canada: more inclusive of all impacts and several regulations under development

Mr Nazir Foead, Head of Peatland Restoration Agency, Republic of Indonesia: Mandate of the Indonesia Peatland Restoration Agency



Audience during the opening session of the Annual Convention. Photo: Susann Warnecke



Attendees of the Annual Assembly from China, Malaysia, the United Kingdom, the Netherlands, Sweden, Finland, Latvia, Canada, Japan, Indonesia, Estonia, Ireland, Germany and Indonesia. Photo: Susan Page

Workshops

The Convention Symposium consisted of four concurrent Workshops each dealing with a major aspect of drained peatlands, followed by question, answer and interactive participant involvement and special sessions on restoration of tropical peatland, peatland surveying and monitoring and Sphagnum farming.

Workshop A: Carbon management & monitoring:
Facilitator: Catherine O’Connell; Rapporteur: David Wilson

Workshop B: Forestry: Facilitator: Sakari Sarkkola and Bjorn Hånell; Rapporteur: Russell Anderson

Workshop C: Responsible Peat Production:
Facilitator: Jaakko Silpola; Rapporteur: Donal Clarke

Workshop D: Peatland Restoration and After Use:
Facilitator: Roxane Andersen; Rapporteur: Mark McCorry

Excursions and Dinner

There was a choice of four different excursions on Tuesday 30th May to places of peatland, nature conservation, landscape, stately home

and malt whisky interest. Each of these provided the opportunity to view the beautiful northern Scottish landscape and learn something of its history.

Feedback and Assembly

The final day of the Convention, 31st May, started with a special session on ‘Restoration of Tropical Peatlands’. This was followed by a plenary feedback from the four concurrent workshops that took place on Monday 29th May at which the four



Bernd Hofer and Marie Kofod-Hansen are Chairs of the new Commissions on Peatlands and Environment and Peatlands and Society. Photo: Susann Warnecke

rapporteurs gave their reports which were followed by a general discussion and recommendations for future action.

The IPS Round Table of National Committees and the 2017 Annual Assembly took place after lunch. For those not involved in these business meetings there

were additional side event meetings on Peatland Survey and Monitoring, Sphagnum farming and Round Table on Tropical Peatland.

Social Programme

Several fantastic social events accompanied the scientific and technical programme of the Convention. This provided opportunity to meet old friends and make new ones in a relaxed and convivial atmosphere. The social activities kicked off with an ‘ice-breaking’ event on Monday evening 29th May complete with welcome drinks and canapés. This was followed by a buffet-style dinner to the sound of music played by a Scottish fiddler quartet and dancing.

The Gala Dinner was the highlight of the Convention. It was held on the evening of Tuesday 30th May in Haddo House, a stately home, built in Scottish architectural style and now owned by the National Trust for Scotland. The evening commenced with a cocktail reception in the main house by kind invitation of the Chairman of the National Trust for Scotland Sir Moir Lockhead. The dinner was held in the banqueting suite with Scottish Music and dancers to entertain during the



Field excursion to the Netherley Red Moss restoration site. Photo: Susann Warnecke

meal and a Scottish Ceilidh of dance, music and song for all to join in afterwards.

The proceedings of the Symposium “Responsible Management of Peatlands” are available in print from the IPS Secretariat (€15 including mailing costs, ips@peatlands.org) and single abstracts will be published on the IPS Intranet this summer.

Jack Rieley

UK National Committee
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Gala Dinner at Haddo House. Photo: Susann Warnecke



New IPS Commission Chairs and Expert Groups

*Your chance to
participate!*

The following persons were officially introduced as new IPS Commission Vice Chairs and Expert Group Coordinators at the IPS Convention in Aberdeen. We wish you luck in completing your teams and ask all IPS members to actively contribute to these groups. For more information and to join, contact the Chairs:

Commission 1 Peatlands and Economy:

Chair: **Dr Guus van Berckel, Netherlands/Germany, vanberckel@griendtsveen.de**
1st vice-chair: Dr Maurice Doyon, Canada
2nd vice-chair: Professor Meng Xianmin, China

Expert Groups (so far):

Peatlands for agriculture: Dr hab Ryszard Oleszczuk, Poland
Peatlands for forestry: Dr Sakari Sarkkola, Finland
Peat harvesting techniques and technology: Paul Riordan, Ireland (proposal)
Peat for growing media and energy: Hannu Salo (proposal)

Commission 2 Peatlands and Environment:

Chair: **Bernd Hofer, Germany, hofer@hofer-pautz.de**
1st vice-chair: Dr Maria Strack, Canada
2nd vice-chair: Professor Budi Indra Setiawan, Indonesia

Expert Groups:

Peatlands and Climate Change: Dr David Wilson, Ireland
Peatlands and Biodiversity (Eco, Hydro & Geology): Dr Lydia Cole, United Kingdom
Peatland Restoration: Dr Roxane Andersen, Canada/UK

Commission 3 Peatlands and Society:

Chair: **Marie Kofod-Hansen, Sweden, marie.kofodhansen@gmail.com**
1st vice-chair: Dr Kirsi Laurén, Finland
2nd vice-chair: Dr Rachel Carmenta, UK/Indonesia

Expert Groups:

Peatlands Education, Communication & Publicity: Dr Catherine O'Connell, Ireland
Peatlands, Governance and Conventions: Professor Jack Rieley, United Kingdom
Peatlands and Culture: Dr Anne-Jelle Schilstra, the Netherlands
Peatlands and People: Dian Novarina, Indonesia

The Global Peatlands Initiative and IPS

What is the Global Peatlands Initiative?

The Global Peatlands Initiative (GPI) was launched in November 2016. IPS is a Partner of the GPI. The GPI coalition of partners is led by UN Environment and “aims to increase the conservation, restoration and sustainable management of peatlands in countries with significant peat deposits. GPI will work together within their areas of expertise to improve peatland management and to contribute to the objectives of Sustainable Development.”

The GPI is a time-bound targeted effort by leading experts and institutions to protect peatlands. GPI aims to reduce global GHG emissions by increasing knowledge of peatlands and their use (extent, changes, peat layer thickness, etc.) in order to influence policymakers and decision takers regarding the use, conservation, restoration and management of peatlands. The main GPI objectives are to:

- Exchange experiences between key peatland countries
- Discuss methods and techniques for measuring and assessing peatland area and peat layer depths
- Improve knowledge of hydro-management and rewetting/restoration techniques
- Exchange information regarding the sustainable use of peatlands and their management
- Increase global awareness of peatland issues



The GPI logo indicating land (green), water (blue) and peat/peatlands (brown). Source: GPI

The Role of IPS in the GPI

Following the 2nd GPI Partner Meeting in Jakarta from 15th to 17th May 2017, which was attended by most GPI Partners including the IPS, IPS President Gerald Schmilewski was invited to become a member of the GPI Steering Committee. The Steering Committee will be composed of five members representing

1. Country partners
2. Civil society
3. International partners
4. Private sector
5. Scientific partners

IPS sees its role as a GPI Partner in the unprejudiced exchange of information on peatlands and peat based on facts and figures. To achieve this, IPS will rely on the knowledge of its members, in particular on that of its three Commissions and their Expert Groups. As

Sustainable Development of peatlands is a GPI focus, IPS will engage in messaging the importance of all three pillars of Sustainable Development (economy, environment and society) related to peatlands.

GPI Rapid Response Assessment

A first output of the GPI will be a Rapid Response Assessment (RRA), which will focus on the status of peatlands, their importance in the global carbon cycle and the importance of peatlands for national economies.

The RRA will be a public document and will target policy analysts and decision takers. IPS is contributing to this assessment and will give input to future GPI projects.



During the GPI field trip to Riau (a 1.5 h flight and 2 h bus trip from Jakarta) on 16th May, IPS President Gerald Schmilewski was asked to plant a durian tree (*Durio zibethinus*) which is native to Indonesia and grows edible fruits. Photo: a young villager

GPI Steering Committee

Following the 2nd GPI Partner Meeting in Jakarta, UN Environment has invited the IPS to be one of five representatives on the GPI Steering Committee.

The tasks of the Steering Committee will be to:

1. Provide guidance and oversight in ensuring that a well-scoped work plan is in place with achievable milestones for the best possible outcomes and in line with the level of resources.
2. Authorize use of the GPI logo and initiative branding.
3. Sign off formal records of major meetings.

The first session of the Steering Committee will be on 4th August 2017 in Cambridge, hosted by UN Environment.

A second meeting is planned for November 2017 during the UNFCCC COP 23 in Germany. The 3rd GPI Partner Meeting will be held in Brazzaville, Republic of Congo, in early 2018.

Gerald Schmilewski

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The Global Landscapes Forum – Peatlands Matter

*IPS Contributions to the GLF Event on
18th May 2017 in Jakarta, Indonesia*

This event took place immediately after the 2nd Partner Meeting of the Global Peatlands Initiative. The forum was led by the Center for International Forest Research (CIFOR).

Coordinating partners were UN Environment (UNEP) and the World Bank. Funding partners of the event were the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BUMB), the Consultative Group on International Agricultural Research (CGIAR) and the Asia-Pacific Rainforest Partnership.

What is the Global Landscapes Forum (GLF)?

The GLF sees itself as the world's largest platform on integrated land use (including peatland use) and contributes to the achievement of the Paris Climate Agreement. Founded by CIFOR, the World Bank and UN Environment, the GLF convenes stakeholders from all sectors to identify priority areas and best practices. GLF also wants to be acknowledged as a global accelerator of best practices for building sustainable landscapes, with the focus on improving food security and

livelihoods, strengthening rights, restoring landscapes, increasing access to sustainable financing mechanisms and measuring the progress of these efforts.

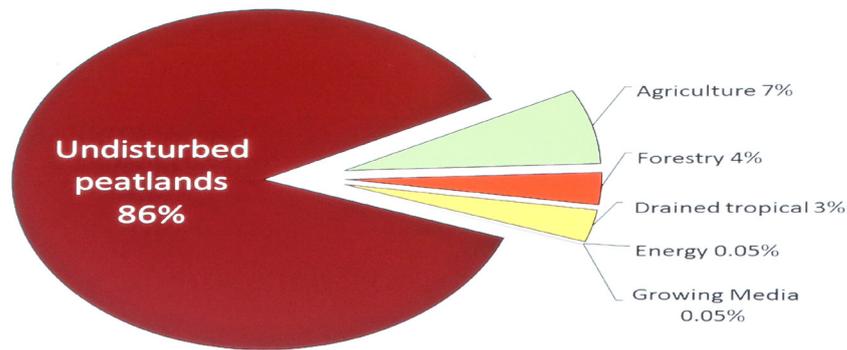
This thematic event in Jakarta provided the opportunity for 440 peatland stakeholders, policymakers, scientists and private sector actors to convene. In addition, the organizers recorded over 1,000 views via Livestream and more than 9,000,000 people were reached through Twitter. It was a community-first and people-centred approach to peatland management, with the focus on tropical peatlands and a global perspective.

IPS at the GLF Meeting

Following a call for NGO contributions and an invitation to participate in a plenary session entitled 'Peatlands around the world – challenges and opportunities', Gerald Schmilewski talked about historical peatland developments in Europe and interpreted the concept of peatland restoration, a term that does not mean the same in all expert communities.

The full session can be viewed at www.landscapes.org/peatlands-around-world-challenges-opportunities; Gerald's statements can be viewed from minutes 0:41 to 0:50 and 1:18 to 1:21.

Uses of the peatlands worldwide



Strack 2008 / IPC 2008

5



The discussion panel during the plenary session 'Peatlands around the world – challenges and opportunities' at the 'Global Landscapes Forum - Peatlands Matter' on 18th May 2017 in Jakarta. From left to right: Gerald Schmilewski, Nazir Foad (Head of the Indonesian Peatland Restoration Agency BRG), representatives from Indonesia, Republic of Congo and Peru and the moderator. Photo: CIFOR

Furthermore, IPS was invited to an interview on the event itself and other IPS matters. Gerald took the opportunity to talk about the IPS, responsible peatland management and the uses of peat. This interview can be viewed at www.landscapes.org/gerald-schmilewski-talk-plenary-session-glf-2017.

The 'Peatlands Matter' event saw a committed effort across the range of stakeholders to ground discussions about peatlands use and their management with respect to local-level experiences, challenges, governmental aspirations, expectations and feasibility.

More information can be obtained from www.landscapes.org/peatlands.

Gerald Schmilewski

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Key Takeaway Messages

Peatlands mean different things to different people. Dialogue is crucial.

Restoration must operate within the ecological constraints of peatland systems and meet environmental, economic and social demands.

Peatland rewetting/rehabilitation/restoration in Indonesia is at an early stage and can only be achieved through the combined efforts of governmental institutions, companies and local people.

The envisaged timescale (restoration of 2.4 M ha by 2020) is not realistic.

Peat and sapropel - synergy of production, science and environment in the context of effective resource use

Peat and sapropel are among Latvia's largest and most important natural resources. The volume of peat deposits is estimated at about 1.7 billion tonnes, while there are approximately 170-190 million tonnes of sapropel.

These organogenic peatland and lake sediments, which were formed during the postglacial or Holocene period (the last 11,700 years) and accumulated in a wetland environment (peat) or in the aquatic environment of lakes (sapropel), are

important resources both in economic terms and from the perspective of natural history and nature conservation.

In the last century, Latvian peat was an important part of economic life and widely used both as a fuel and for agriculture. Only 4% of all peatland areas have been excavated in the course of peat extraction; however, taking into account the slow rate of peat accumulation, changes in technology and use, and environmental requirements, it is



Figure 1: Students of the Mire Science course at the Geographical and Earth Sciences Faculty, University of Latvia, while undertaking peatland field studies at the Lielsala Mire, conducted by I. Cuprunis, Ltd. and Pindstrup Latvia. Photo: Kristaps Kiziks



Figure 2: Peat and sapropel researchers, government institutions, the nature conservation sector and producers attend the session on “Peat and sapropel - synergy of production, science and environment in the context of effective resource use” during the 75th Scientific Conference of the University of Latvia. Photo: Oskars Purmalis

innovative use of Latvia’s natural resources (peat and sapropel), environmental impacts and mitigation solutions.

clear that such a valuable deposit as peat remains to be effectively used, such that, in the future, its utilization should not be restricted to existing uses.

Peat and sapropel resources should be wisely managed and protected if they are to be preserved for future generations. As such, it is necessary to apply new, modern processing methods, develop the creation and introduction of new, innovative products, and make effective use of exhausted or partially exhausted peatland areas. To achieve this, it is necessary to carry out scientific research and experiments involving close cooperation between scientists, producers, conservationists, and peatland and lake area managers, as well as teach students to understand peatland as an important nature resource (Figure 1).

For 10 years now, the plenary session and sessions in the environmental section of the University of Latvia’s scientific conferences have served as a platform for such cooperation and the general exchange of information on research results, opinions and the vision for practical applications, bringing together actors involved in the research, use, protection and restoration of peatland and lake sediments.

The conference sessions, which cover a wide range of scientific research, are aimed at promoting cooperation between researchers, government institutions, the nature conservation sector and producers (Figure 2). The conference themes include the possibilities for the sustainable and

During the 75th Scientific Conference of the University of Latvia, in the first part of the session entitled “Peat and sapropel - synergy of production, science and environment in the context of effective resource use”, representatives of the Latvian Peat Association (I. Krīgere, U. Ameriks, R. Skudra) reported on the achievements, sustainability and challenges of the peat industry. Scientists discussed important studies on, for example, greenhouse gas emissions and absorption of CO₂ in managing wetland soils (A. Lazdiņš), and peat humic substances and their application possibilities (O. Purmalis).

Special attention was given to the data analysis of peat deposit quality, accompanied by recommendations for its improvement and how to prepare a national strategy framework document. The leader of the LIFE Restore Project in Latvia, Kaspars Paberzs, reported on progress in restoring sustainable management activities for degraded peatland.

Results from sapropel investigations were also presented: from research to application, such as using sapropel as lime binders, and the potential





Figure 3: Sections of peatland showing changes in drained peat properties.
Photo: Inārs Dreimanis

to use hemp as composite concrete. Several oral and poster presentations presented the findings of research conducted by researchers, students and practitioners on peat and sapropel.

Peat, which is regarded as one of Latvia's most important natural environmental resources, has so far been used extensively, albeit ineffectively, largely because of a lack of understanding of peat qualities and the possibilities of its use in modern, innovative products.

Lately, there has been a greater focus on research into peat properties and the possibilities of their application. This largely relates to the aspects of protecting raised bogs, as well as the recultivation of exhausted peat fields and changes in peat properties in drained peatlands (Figure 3). Special attention has been paid to the qualities of peat as a substrate and the possibilities of using it for modern, innovative products.

Another important direction in peat research concerns the peat formation process and analysis of the conditions that affect the properties of peat. Considerable interest has been focused on how the humification process affects the properties of humic substances.

However, in modern science, the peat mass is considered to be an important material for the study of past processes, such as how man-made load and metal emissions have changed, since they accumulate and are retained in the peat mass. Similarly, peat botanical composition can allow us to trace vegetation development and the characteristics of peat accumulation under the impact of climate changes and human activities.

However, it must be noted that research into the properties of peat is still somewhat behind where it should be, given that more detailed studies are

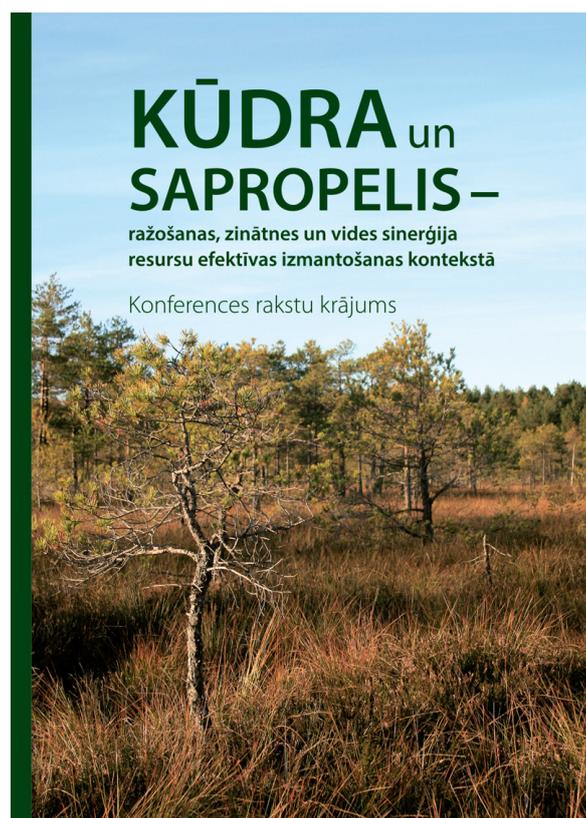


Figure 4: Cover of the proceedings for the “Peat and sapropel - synergy of production, science and environment in the context of effective resource use” session during the 75th Scientific Conference of the University of Latvia. Photo: Oskars Pūrmalis

lacking. The most important directions in peat research are as follows:

1. Interconnections between peat composition and formation conditions
2. Characterization of the process of biomolecule transformation during humification
3. Studies of new opportunities for the use of peat

To ensure that the information and discussion provided in the sessions reaches the widest possible audience, summaries of the reports are published, as well as collections of articles.

Extended summaries of the papers presented at the "Peat and sapropel - synergy of production, science and environment in the context of effective resource use" session, during the 75th Scientific Conference of the University of Latvia, are published in a special collection.

This allows for the issues addressed in the reports, along with supporting video and presentation

materials, to be accessible to the general public - which will help to raise awareness of these natural resources, their formation and their use (Figure 4).

The questions discussed at the conference and the available material will foster cooperation between researchers, government institutions, the nature protection sector and producers, as well as foster engagement with a wider range of specialists and interested parties. Together, they can find the best solutions for the sustainable management and preservation of these unique and important natural resources from Latvia – peat and sapropel.

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We all have peat on the plate...

In only 1 m³ peat substrate it is possible to produce up to 350,000 vegetable seedlings. Without peat efficient commercial horticulture is not conceivable. And our plates were nearly empty.



The Laboratory for Mire Ecosystems in Petrozavodsk, Russia

The Laboratory for Mire Ecosystems was established in the city of Petrozavodsk at the Institute of Biology, part of the Karelian Research Centre at the Russian Academy of Sciences in 1951. Mires are studied in the Republic of Karelia and neighbouring regions of Northern European Russia, which represent an extensively paludified territory (around 30%) with diverse wetland ecosystems.

Topics studies by the laboratory are wide-ranging: flora, vegetation and its classification, typology of mire massifs and their mapping, mire stratigraphy and dynamics, functioning of mires of various types, ecology and resources of wetland plants, and conservation and protection of wetlands in the region. In addition, the laboratory has, for more than 50 years, been engaged in palaeogeographic research aimed at reconstructing the dynamics



of the region's natural environment and ecosystems during the Late Glacial and Holocene periods, as well as studying the bryoflora of Northern European Russia and its meadow ecosystems.

The laboratory has collected and summarized a considerable amount of material on the nature of the region's mires, with original classifications developed for vegetation (topological-ecological), peats (peat types), peat deposits, types of mire biotopes, mire massifs and mire ecosystems.

Detailed maps of vegetation have been compiled for a majority of Karelian mires (scales of 1:25,000 and 1:50,000) using data from ground surveys and decoded aerial photographs (1950s), while a mire vegetation map of Karelia (scale of 1:600,000) was created with a legend that includes 13 types of massifs and five types of mire system (1968).

The latter is, in fact, the world's first mire map covering such an extensive region and offering a typology of mire systems. The laboratory has also participated in mapping peat deposits of Karelia, combined with the assessment of peat properties and reserves (1957, 1979).

Multidisciplinary mire studies at permanent sample plots in the south boreal zone (middle taiga in Russian biogeography) during the 1970s and 1980s yielded important results and knowledge about the main types of mire ecosystem in the region, as well as their structure, biological productivity, peat deposition rate and nutrient cycling. Other aspects investigated in the course of these surveys included the seasonal development of many wetland plants and the biology and stocks of berries and medicinal plants. At the same time, vegetation monitoring was set up in both natural mires and those drained for forestry, which continues to this day.

Secondary pools on a kettle bog.
Photo: Pavel Ignashov



In the 1970s, active arrangements for mire protection began in Karelia, necessitated by the rapid and extensive drainage of mires and paludified forest (30,000-50,000 ha a year), which commenced in 1965.

Following the laboratory's proposals, the first mire reserves were established in the republic in 1972 and 1974. At present, around 160,000 ha of mires are protected in Karelia within protected areas of different categories (strict nature reserves/*zapovedniks*, national parks, specialized nature reserves/*zakazniks*). There are five wetland reserves and 65 wetland nature monuments. The

network of protected wetlands in the republic does not yet fully reflect their actual diversity, but this will continue to grow.

The laboratory is proud to be the birthplace of a long-standing Karelian mire science school. Since the beginning, the country's leading mire scientists, who have also enjoyed a global reputation, have worked there, such as Ekaterina Galkina (1897-1993), creator of the aerial and ground-proofing method of mire surveys, Leon Lepin (1888-1974), Valentin Lopatin (1908-1997), Nikolai Pyavchenko (1902-1984), Galina Yelina (1929-2015), and Tatyana Yurkovskaya (1930-), who now works at the Komarov Botanical Institute in St. Petersburg. At different times, Lepin, Lopatin, Pyavchenko and Yelina also headed the laboratory. Since 1988, the laboratory has been headed by Dr. Oleg Kuznetsov (1952-).

The laboratory today employs 10 scientific and five technical staff. The scientific staff members include botanists, whose research is focused on the study of the flora of vascular plants and mosses, the vegetation of natural and disturbed

mires and meadows, mire genesis and dynamics, palaeovegetation, and mire and flora protection arrangements in the region. The laboratory is known widely across Russia as it is the only one within the Russian Academy of Sciences to have carried out comprehensive mire studies and employed highly qualified specialists in the pollen and botanical analyses of peat, as well as the systematics of Sphagna.

Specialists from many Russian regions regularly come to the laboratory on study trips or for consultations. The laboratory has also organized several international symposia on the wetlands of Northern Europe and Fennoscandia.

For many years, the laboratory has closely collaborated with mire scientists and botanists from Finland within various programmes and projects, with the results of these collaborations having been disseminated via joint publications.



Hummock-hollow bog (kettle bog) in the glaciofluvial landscape of south Karelia, Russia. Photo: Pavel Ignashov



Given that Karelian nature attracts botanists and ecologists from many countries, almost every year, the laboratory organizes field excursions, lasting between three and 10 days, for students and professors from the universities of Finland and Greifswald University in Germany, as well as for botanists and mire scientists from Finland, Sweden and Denmark.

We welcome every kind of cooperation with mire researchers from different parts of the world.

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Mesotrophic sedge fen (pure fen) in south Karelia. Photo: Victor Mironov

What saves a peatland from development in Ireland?

Kirsty Paterson, a master's student in Global Change at University College Dublin, on work experience with the Irish Peatland Conservation Council (IPCC) investigated the work done by IPCC to protect blanket bogs from windfarm developments over the last 10 years.

The growing awareness of climate change and the need to change our energy sources has stimulated the development of the renewable energy sector globally. In the Republic of Ireland there is an overlap between the areas with the highest annual wind speeds and the occurrence of upland blanket bog habitat.

While IPCC supports the need to develop the renewable energy sector in an effort to combat climate change, it cannot support developments that result in destruction of peatlands of conservation importance. Windfarm development negatively impacts the integrity of peatlands. It provides access for other degrading activities such as dumping, drainage and turf cutting. During construction carbon dioxide is released as the peat deposit is disturbed.

Since 2007, IPCC has carried out 87 separate actions across 70 sites regarding windfarm developments. These include responses to 53 scoping reports, 15 An Bord Pleanála (the national

planning body) actions and 19 County Council (local authorities) objections (see Table 1).

In total 7 sites were saved from development during the period under review. The longest running case was that of Knockranny in Co. Galway, which is highlighted in a case study inset. This case is on-going today.

The IPCC cannot respond to all of the scoping requests it receives, but will if there is a threat to peatlands of conservation importance. With regard to scoping responses, the IPCC receives no feedback on the information sent.

I followed up with consultants to ascertain how the information was used. I discovered that observations made by the IPCC were deemed important in the progression of a project particularly in designing the field surveys. However, no site-specific information relating to IPCC submissions was forthcoming.

Steps in Casework

When carrying out casework a checklist is followed to investigate all aspects of a development (see Table 2). Following this comprehensive checklist ensures the protection of peatlands and allows for other concerns to be raised.



Figure 1: The proposed location of Knockranny windfarm, which lies north east of Moycullen, Co. Galway. As can be seen the site is located within an extensive intact blanket bog landscape. The site is a designated archaeological landscape. Source: Google Maps, 2017.

Moving Forward

The IPCC now requests feedback on responses to scoping reports and has set up a 30 day reminder system to follow up on submissions.

Conclusion

This investigation was necessary, as the IPCC has not had the time to follow up on its casework. Most of the reasons for refusing planning permission tend to be un-related to the goal of protecting peatlands of conservation importance.

Water pollution and the presence of the freshwater pearl mussel (*Magaritifera margaritifera*) provide the strongest case for planning refusals and to a lesser extent the interests of sustainable development and resource

use. Thus information provided by the IPCC may lead to project redesigns or the decision not to pursue a project further.

Hopefully requesting or conducting a follow up within a shorter timeframe will bring this information to light. It is undeniable that every submission, observation or objection is essential in reminding environmental consultants and planners of the importance of peatlands and the need to conserve this special landscape.

Case Study: Knockranny Wind Farm, Galway

In 2010 the IPCC received a scoping request for a 16 turbine windfarm at Knockranny, Galway (see Figure 1, for location), little did they know the case

Table 1. Summary of Case Actions made by the IPCC in Ireland relating to Blanket Bog Habitats of Conservation Importance from 2007 to 2017. Note: in Ireland the planning system works on two levels. With the correct documentation a developer applies to the locally-based County Council unless the project is large scale and regarded as Strategic in which case it goes directly to the national Planning Authority (An Bord Pleanála). Developments can be commented on by making submissions to the Local Authority. The decision of the Local Authority can be appealed to the national Planning Authority (An Bord Pleanála).

County Council (Local Authority) Objections Total = 19	An Bord Pleanála (National Planning Authority) interventions Total = 15	Response to Environmental Impact Scoping (EIS) Reports Total = 53
10 granted permission	6 County Council decision appeals	28 no record of an application in the planning system as of February 2017
5 withdrawn from planning	4 observations on cases	10 granted permission
2 refused permission	3 responses to further information requests from the Planning Authority	9 unclear as these were recent responses and planning may be applied for in the future
2 unclear as made in Northern Ireland (a different planning system)	2 objections on Strategic Infrastructure Development cases, both refused permission	5 refused permission
		1 withdrawn from planning

would undergo a High Court judicial review by 2016. The IPCC highlighted their concerns and said they would oppose the development.

Planning permission was sought in August 2011 with a revised design of 14 turbines. True to their word the IPCC made an objection to Galway County Council highlighting 3 key concerns;

1. The proximity to Connemara Bog Complex SAC.
2. The impact on the protected monument on Knockranny Hill.
3. The proposals’ contradiction of the Galway County Biodiversity Plan which highlights the value of peatlands.

Conditional permission was granted, which was quickly appealed to An Bord Pleanála by a third

party. The IPCC submitted an observation in support of the appeal. The proposal was rejected in August 2012, but the possibility of a windfarm on the site was not ruled out.

An Bord Pleanála were not satisfied that the risks of peat slippage had been fully resolved. Additionally, it was felt that the existing design would be detrimental to the archaeological and cultural heritage of the area.

In 2013 the process began again this time under the name Cnoc Raithní. The proposal design was reduced to 11 turbines. Despite the changes the IPCC sent an objection as the issues with the previous proposal remained unresolved. Once again Galway County Council gave conditional permission in early 2014, which the IPCC appealed to An Bord Pleanála.

Permission was granted in February 2016, however the result has now been brought to a high court judicial review on the basis of inadequacies of the Appropriate and Environmental Impact Assessments, Irish language issues and that the decision was irrational with respect to previous planning refusals.

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Figure 2: Windfarm situated on formerly intact upland blanket bog. Source: www.johnsmyth.net



Table 2. IPCC Casework Checklist

1. Check satellite map of physical landscape.
2. Check the roadmap of site location.
3. Check site location against Special Areas of Conservation, Special Protection Areas, National Heritage Areas and proposed National Heritage Areas maps.
4. Check for designations on land neighbouring the site.
5. Check for red listed species from the IPCC's database for the area.
6. Check archaeology.ie map for recoded monuments at the site.
7. Check the bats indicative map.
8. Check the SEAI wind energy indicative map.
9. Check the IPCC frog database.
10. Look up relevant published reports on the development issue.
11. Check the IPCC action plan to assess peatland resources in the county.
12. Check the plans against the county development and biodiversity plans.
13. Check the Census for bird and mammal species in the site.

IPCC would like to thank our friends of the bog for supporting site casework through their membership subscriptions. We also wish to thank Kirsty Paterson and University College Dublin for allowing her to work with us on a placement and carry out this investigation.

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The harmony between old Japanese culture and children in a wetland area

Sarobetsu Mire, Hokkaido, Japan

The origins of the Japanese Karuta game can be found in Tanka poetry and a game known as Kaiawase. A Tanka is a short poem of 31 syllables consisting of two parts, which was popular among a wide cross-section of Japanese people from the ordinary classes to high society, including the Emperor, from the middle of seventh century onwards.

Kaiawase, which has a similarly long history, involves competing players trying to be the quickest to match the two separated parts of clamshells. The connection with Tanka doesn't end

there, both parts of the poem were written on the inside of clamshells, although Kaiawase was mostly played throughout history by those in high society.

After the card games of Southern Europe were imported to Japan by the Lusitanians in the middle of the 16th century, cards were used instead of clamshells. The Japanese word, Karuta, is derived from "carta", which means card in Portuguese.

The card version of Karuta became very popular in Japan, as well as diversified. Indeed, a combination



Enjoying the Karuta game: one person reads the proverb card and players compete to be the fastest to find the relevant picture card. Photo: Junko Inagaki

of Karta and Tanka has proven to be very effective in the education of young people, given that Tanka poems represent an important period of classic literature in Japan.

The I-ro-ha Karuta, which uses popular proverbs instead of the second half of a Tanka, is typically played by children during the New Year holidays in Japan. The I-ro-ha Karuta is also useful for the education of children as it employs 48 Japanese syllabics in addition to the proverbs, which help to teach common sense relevant to their everyday life.

The Ramsar network of wetlands on Hokkaido, which are registered under the Ramsar Convention, conducted a unique programme in 2015.

They put out a call for a new I-ro-ha Karuta game inspired by the wetlands on the Japanese island. In response, children submitted 254 proverbs

with pictures, 48 of which were selected for the wetlands game.

One of the cards selected for inclusion in the new I-ro-ha Karuta was created by a girl living near Sarobetsu Mire in Northern Hokkaido. The girl attends elementary school, while her parents are dairy farmers near the mire.

She submitted the proverb, “Mount Rishiri is watching you”, together with a picture card she created featuring typical landscape elements of the Mount Rishiri area (bean geese, daylilies, Japanese irises and cows, see also www.env.go.jp/en/nature/nps/park/rishiri/guide/view.html).



Daylilies in Sarobetsu Mire and a distant view of Mount Rishiri. Photo: Hidenori Takahashi



Hidenori Takahashi

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Two of the new I-ro-ha Karuta cards:
left picture card, right proverb card.
Photo: Junko Inagaki

Regenerating Tropical Peatland Societies and Transforming Environmentally Vulnerable Societies

The destruction of tropical peat swamp forests is a major contributor to global greenhouse gases and an urgent international health crisis in Southeast Asia. It is estimated that about 20% of global soil carbon (89Pg) is accumulated in tropical peat swamp forests (Page et al., 2011), which are primarily found in Southeast Asia. Carbon dioxide (CO₂) emissions from fires in Indonesia during July to November 2015 exceeded CO₂ emissions from fossil-fuel use in Japan during the whole of 2013 (www.globalfiredata.org/updates.html).

Due to their physical characteristics, tropical peat swamp forests have been difficult to utilize, and therefore spared from development for a long time. However, drainage associated with plantation development of fast-growing and oil palm trees has led to a decrease in groundwater table levels and the drying of peat swamp forests. This, in turn, has resulted in an increase in (CO₂) emissions by peat decomposition, and frequent fires (Hirano et al., 2009, 2012, 2014).

In Indonesia alone, an estimated 2.1 million ha of forests, most of them peatlands, were burned in 2015. The ensuing haze caused incalculable damage to the economy and has impacted the health of not only local people but also those as far away as Malaysia and Singapore. In 2015, 0.5 million people in the region were diagnosed

with upper respiratory infections, and child asthma rates continue to rise. Haze has become a transborder environmental, economic, and political issue.

In Indonesia most peatland is classified as state land. State appropriation of forests that originated centuries ago has created contested, overlapping, and insecure forest tenure conditions (RRI 2008, RRI 2012,). Companies that were given concessions in peatland areas developed plantations, roads, and canals under weak state regulations, attracting people to move in. As plantations were established, the peat swamp dried up, became degraded, and the fires began.

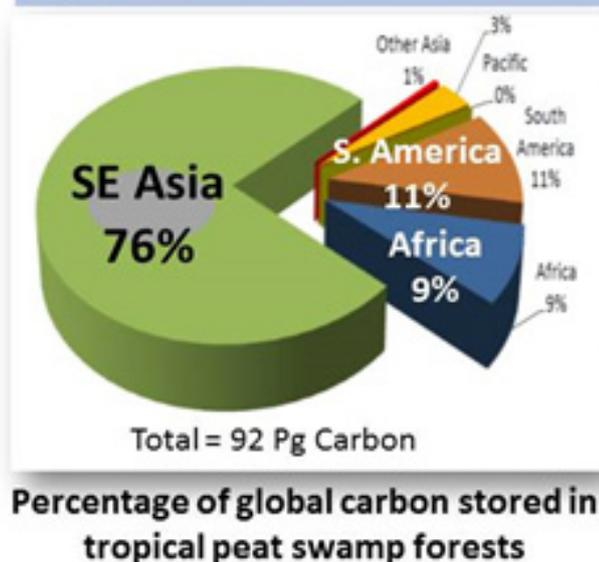
How can society develop institutions to control and manage these fires and mitigate degradation?

Our five-year research project titled “Toward the Regeneration of Tropical Peatland Societies: Transformability of Environmentally Vulnerable Societies and Establishment of an International

Tropical Peat Swamp Forests

Tropical peat stores 20% of global soil carbon

- *Peat swamp forests store more carbon and water than tropical rain forests
- *Southeast Asian peat swamp forests are the largest on the earth, covering an area of over 440,000km², which is 76 % of tropical peatlands



Background: Tropical peat swamp forests and carbon.

Research Network”, which starts full scale in April 2017, and with headquarters at RIHN (Research Institute for Humanity and Nature) Kyoto Japan, will conduct transdisciplinary research on the socio-ecological systems in tropical peatlands to understand and address their vulnerabilities.

Through collaboration with local stakeholders, the research will integrate scientific findings with local practices to establish mitigation and adaptation strategies to achieve sustainable (low carbon) use and conservation of peatlands. Ultimately the project intends to elucidate the transformability of environmentally vulnerable societies. This project treats peatland degradation as a global environmental problem that needs to be understood in its social and ecological contexts. Therefore our project will conduct transdisciplinary research based on the considerations and realities of peatlands societies.

The Social, Corporate, and Governance Group will conduct field research on the socio-economic

aspects and historical background of peatland societies. The study will focus on livelihood strategies, land tenure, and resource use to identify factors that cause peat degradation, and work with local institutions and organizations at the village level to establish mitigation and adaptation practices such as paludiculture (Figure 1, sustainable peatland livelihood activities). National, subnational, and local governance structures, private company initiatives, and environmental finance mechanisms such as REDD+ and PES will be reviewed for efficacy.

The Material Cycling and Ecosystem Group will conduct intensive multidisciplinary research, particularly on water and material cycling, in several representative peatlands in Southeast Asia for the integration of natural and social scientific mapping to better understand peatland ecosystems. The group will create a “Tropical peatland characteristics map” based on hydrological, geophysical, and social information of peatlands for integrated management.

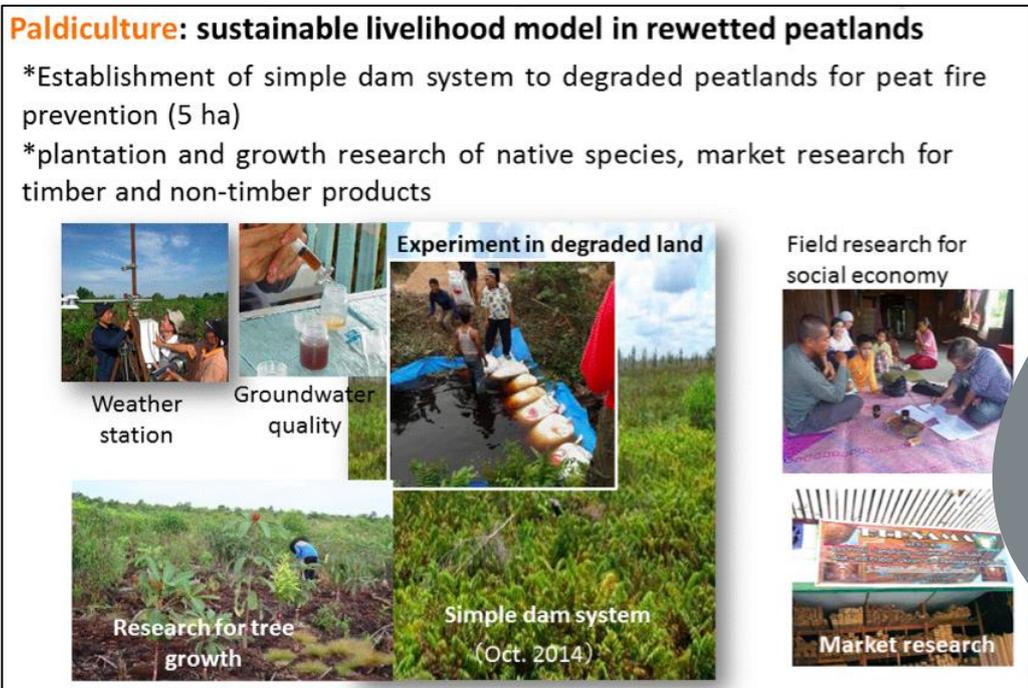


Figure 1: Paludiculture: sustainable livelihood model in rewetted peatlands.

The International Research and Implementation Hub Group will establish an international research and implementation collaboration hub for coordinating research and integrating experiences on sustainable peatland management. This group comprises Asian and European universities, and international and local organizations. Coordinating partners include Riau University and Bogor Agricultural University in Indonesia, the University of Malaysia, Sarawak, the Research Institute of the Peruvian Amazon (IIAP), UNDP, CIFOR, Walhi, AMAN, and Sawit Watch.

The research topics include:

- The creation of an integrated tropical peatlands map that focuses on the depth of the peat layer and hydrology, land titles, and the connection between land use and peat fire,
- Rewetting and integrated hydrological study focusing on the KHG hydrological system and peatland fire prevention, and reforestation with peat swamp indigenous tree species and analysis of its impact on curbing peatland fire,
- Investigation of peatland management by the government, companies, and local people, as well as strategies for peatland fire prevention; monitoring of transborder pollution (haze) and its impacts on human health (Figure 2),
- Examining financing options for rewetting and reforestation of peatland, such as micro financing, green financing, and REDD+;

conducting a community study for the development of paludiculture, paying special attention to land rights and differences between indigenous people and migrants and among different ethnicities,

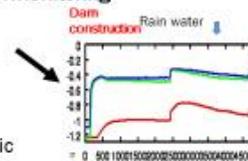
- Improvement of livelihoods in local communities by rewetting and paludiculture; sales of paludiculture products from both raw and processed trees, plants, and fish, and water quality improvements (Figure 1),
- Study of the phaseout of monoculture production activities by companies, and a comparative study on the history of peatland development,
- Field survey for material cycling in pre- and post-disturbance peat swamp forest in Central Kalimantan and Riau Province, Indonesia; and an integrated field survey on material (carbon and nutrient) cycling in peat, water quality in groundwater and riverwater, and greenhouse gas (CO₂ and CH₄) dynamics in those areas (Figure 2)

Through these studies, we shall seek to demonstrate the transformability of peatland-based societies, and thus their future prospects, through the phasing out of monoculture production activity, the development of paludiculture, and the expansion of protected peatland areas. The project research will examine several livelihood strategies addressing

Monitoring key data changes

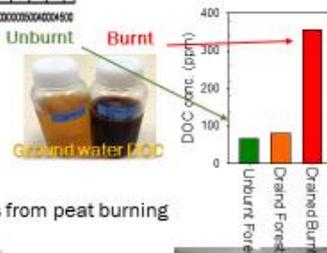
• Precipitation, evapotranspiration, water level monitoring

→ Hydrology of abandoned peatland
Simple dam installation in collaboration with local community for water control



• Water quality before and after peat fire

→ Peat fire changes physical structure, organic matter content, and groundwater quality



Groundwater DOC

• Haze research (Emission of Greenhouse gases and PM_{2.5})

→ To obtain higher accuracy of GHG, aerosol, and VOC emissions from peat burning



Haze in Singapore (left), Haze monitoring (right)



Figure 2: Monitoring key data changes.

the environmental and social vulnerability of tropical frontier societies, thus advancing global environmental studies.

“Catastrophe and Regeneration in Indonesia’s Peatlands: Ecology, Economy and Society” was published as a book by the National University of Singapore Press in 2016. In this volume, the project team members provide interdisciplinary analyses of peatland degradation based on fieldwork and historical studies from the viewpoint of sustainable humansphere and using the concepts of the survival motives of local people, profit motives of companies, and conservation motives of the government and nongovernment organizations.

The book showcases the potential solution of “the people’s forest,” or rewetting and reforestation. The book has been reviewed by multiple media, including leading international academic journals. Our project will build on this research and add new insight to the understanding of tropical peatland management.

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