19 June

Peatlands International

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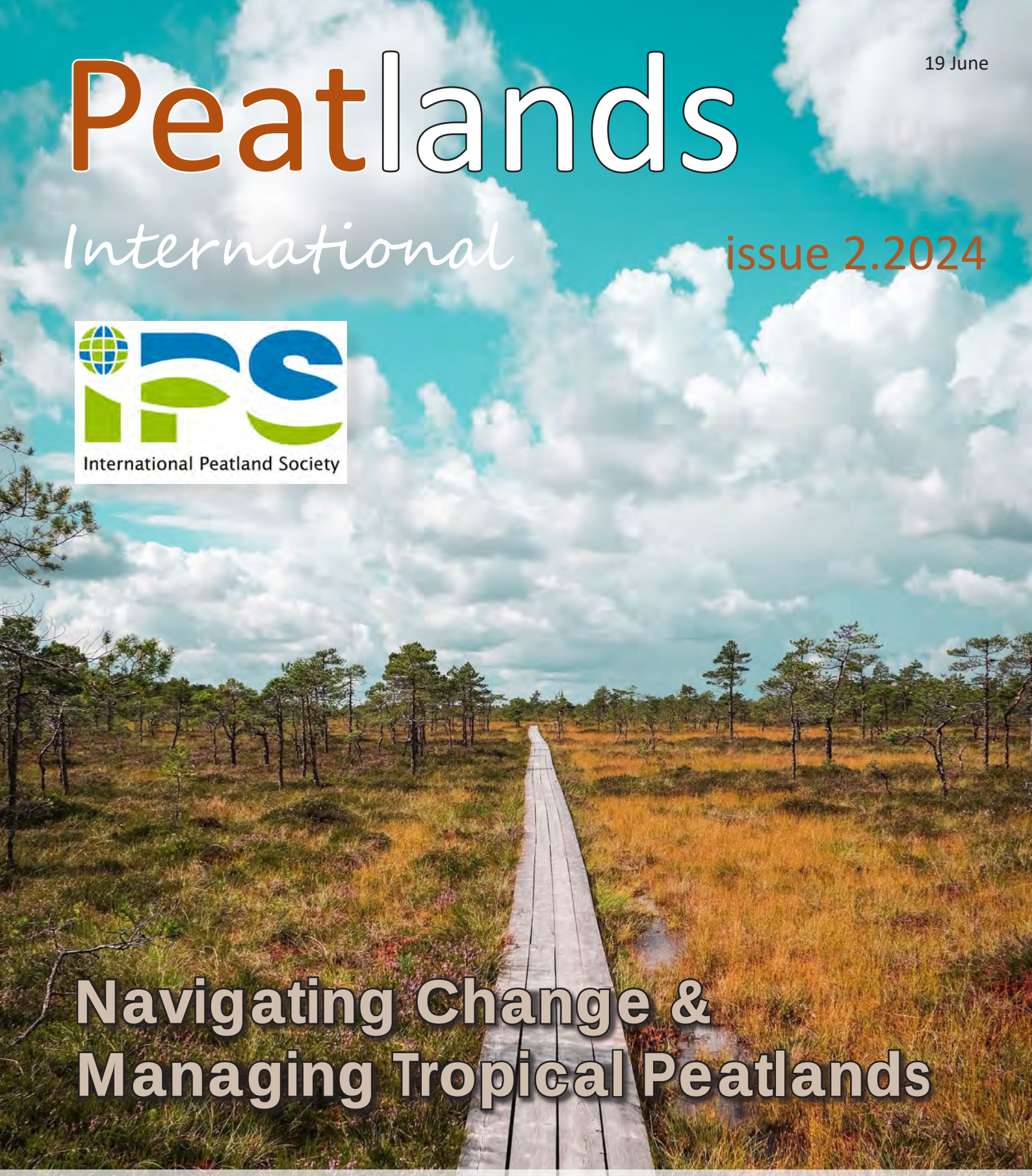
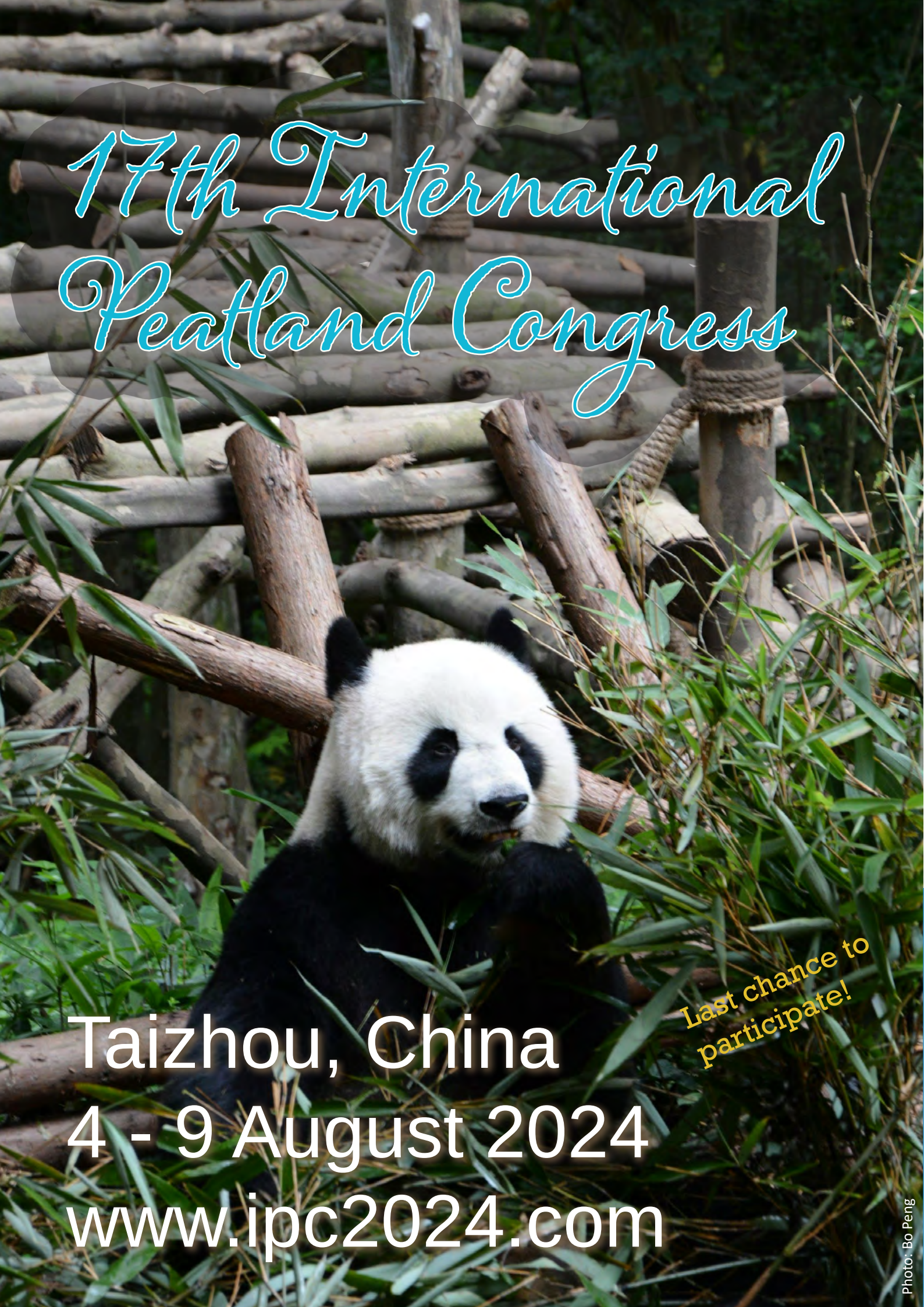
International Peatland Society



Navigating Change & Managing Tropical Peatlands


17th International
Peatland Congress
Last chance to participate!
Taizhou, China
4 - 9 August 2024
www.ipc2024.com
Photo: Bo Peng

Editorial

Summer of Changes

Nature changes throughout the year and year-by-year. We who visit peatlands see these developments during the year and also between the years - how cottongrass blooms and fruits, but then starts to turn yellow as autumn nears. The timing of heather and marsh rosemary blooming, both this year and in previous years. Our industry members also have such conceptions regarding production starting times, and the development of production sites - from preparation of the site, production and later restoration actions and, even further down the line, vegetation returning on those sites.

Similar changes to those occurring in peatlands are taking place in IPS, especially this summer. Two stalwarts of IPS and recent honorary members, Donal Clarke and Jack Rieley, are leaving active positions. We appreciate the tremendous work they have done over the past decades for IPS and their youthful energy and interesting stories during events.

At the 17th International Peatland Congress in Taizhou, China, important meetings for IPS are taking place, including the elections of the new

Executive Board meeting in Riga last November. Photo: SW

President, Vice Presidents, and several new Executive Board members. These developments in challenging times define the needs of the organisation and provide the possibilities to mould it to fulfil the current expectations of its members. The topic of the congress, “Peatlands in a Changing World” is especially appropriate in this case.

Changes are also taking place in the professional environment around us. Climate and biodiversity are the ‘hot’ topics of environmental science and policy, especially in field of peatland management. Being the lighthouse in terms of peatland and related climate concerns have been a major part of IPS since the publication of the first *Peatlands and Climate Change* book in 2008.

Now, with the second edition published in 2023, it is time to stand more firmly at the forefront of these issues to ensure that policy development and other important decisions related to peatland management are conducted based on real, updated and science-based facts and figures. In the time between the two *Peatlands and Climate*

Peatlands International is the global magazine of the International Peatland Society (IPS). It provides the more than 1,500 individual, institute 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. Opinions are those of the authors. To receive Peatlands International in your email every three months, visit **www.peatlands.org/join-us** and sign up as a member - or easily **subscribe** for € 59/year, email ips@peatlands.org.

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Are you interested? Contact us!

Cover: Karjasoo, Viljandi, Estonia, Mirko Bozic.

Change book editions, many changes have taken place in peatlands - wide application of rewetting and restoration activities, emphasis on their responsible management, changing peat use from energy to horticulture and so on. In addition, much new data and analyses have been published in scientific journals over the recent years.

IPS has done wonderful work with conventions and other international agreements over the years, and this should be continued in the field of peatland biodiversity, but the logical flow would be starting this work also in the climate sector, especially as more and more members, and also our Scientific Officer Dr. Örjan Berglund, are active in this field.

Peatlands, from the climate, management and biodiversity focal points, are also the recurring topics of the 17th International Peatland Congress.

I hope to meet you in Taizhou, and see our members actively participating in the changes and developments in peatlands and IPS.

Best regards,

Anna-Helena Purre

IPS Executive Board member
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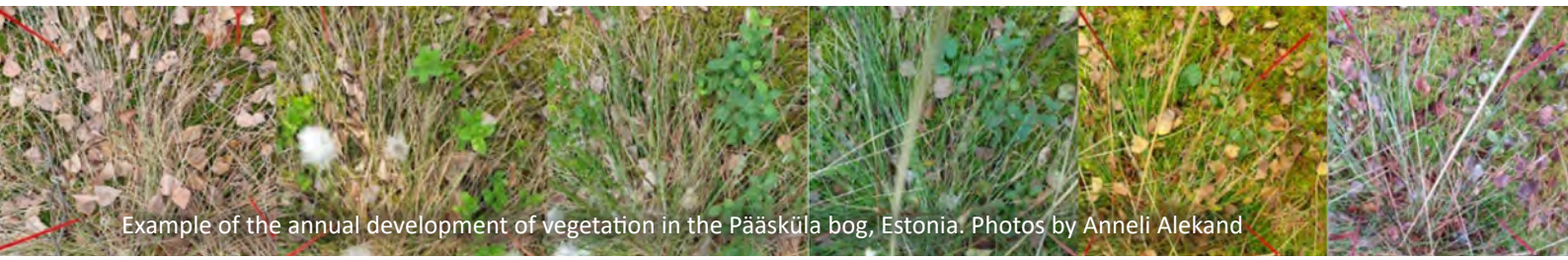

Example of the annual development of vegetation in the Pääsküla bog, Estonia. Photos by Anneli Alekand

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Navigating Change - but how?

Results of the IPS member funding survey

As outlined in numerous statements over the previous months, the future of the IPS is not as secure as we would like it to be. We are thus "Navigating Change" as the topic of the year 2024 underlines.

Contributions from the peat extracting industry, which have so far amounted to about 70% of IPS' funding, are and will be decreasing. Last year, when we employed Dr Örjan Berglund as IPS' first Scientific Officer, this was part of the position paper "Implementing Change" which included a significant increase in industry association contributions over 2022-2025. In practice, this was never achieved.

While the Annual Assembly approved the higher amounts, reductions appeared soon after actual invoices were sent. Amounts further reduced when the Secretariat investigated extraction figures for 2023 on which our industry fees are traditionally based. Energy peat became excluded and amounts of peat and cash were reduced one country after another, which further continued in spring 2024 when the others' reductions became apparent. It is further challenging that these major funding countries are only six of previously almost all National Committees.

To our deep regret, consequently the amount that we are able to present to the Annual Assembly is only €118,000 instead of the envisaged €189,000 for 2024. Of course, this puts a strain on the expense side of IPS' finances, which was to be used for the 1.5 members of staff and essential travelling, including the International Peatland Congress and convention participation - leading to deficits of €70,000 in both 2024 and 2025. As you can imagine, using previously accumulated funds to plug this gap cannot continue for more than two or three years.

EB members brainstorming in Vantaa. Photo: Susann Warnecke

To deal with this massive challenge, the Executive Board agreed to hold an "open sky" workshop in Helsinki on 11 April. Options were discussed which included strict cost reductions, re-organisation, project work, even the closing of IPS and the establishment of a new organisation. All of them are not easy to achieve, especially as voluntary input is much more difficult to obtain than in the past.

One possible idea was a shift from industrial and National Committee funding to general member funding - as has been discussed several times already in the past - which would mean the release of the National Committees and thus enlarging the funding base for IPS. This would also allow a democratic shift to either a more commercial or more environmental focus of the Society, or in between, as has happened in the National Committees, for instance in Germany and Finland.

We know that this would present significant challenges. Not all members are interested in international cooperation or conventions, many are mainly focused on regional activities and publications in their own language. In addition, administration and payment procedures might become more complex and require special solutions to be found, to mention just a few issues that may arise.

Switching the Secretariat from one country to another on a regular basis, as was also suggested, might collide with official tax, employee and registration policies, and require a fully new level of commitment.

Nevertheless, it was calculated that, in theory, in the case of current membership figures remaining as they are, a contribution of €100 from each individual and €500 from each corporate member would be sufficient to maintain the current activities of IPS.

We are aware that €100 is a very different sum depending on your location, occupation and family situation, and that €500 is too small for a company that earns millions of dollars by selling growing media, but quite a lot for a small NGO. However, it was worth a try - so why not simply ask our 1,595 members?

The survey was sent on 24 April, and by 20 May 2024, 92 persons had replied (5.77%). As we feared, the results were not very promising, but they gave a very interesting perspective into the thoughts of our researchers, company representatives and other members. In addition to the amounts they would be able to spend, they also explained, how important - or not important - IPS is and was for them, and why, and what they would improve.

The survey also revealed a few misconceptions about IPS and the way it works, its structure and funding, and voluntary nature. We need to communicate these better in the future.

Replies came from 20 of 38 member countries, with most participants from Finland, Germany, UK, Ireland and the Netherlands as well as the United States. Most persons who replied were in their 40s, 50s and 60s. Their background can be seen in the word cloud on page 11. Thanks to all who made up their minds for us!

When dealing with the single questions, it is important to note that some results were misleading, as some individuals answered as organisations, and the other way round - or for both. In addition, we did not have the email addresses of all our members, and those in organisations might have answered via several persons. The survey was also shared via social media thus including additional, potential members.

Nevertheless, the results give some direction. In total, the amount available was about €30,000 which would not allow any staff or facilities and therefore place IPS fully on a voluntary footing, including administration and communications.

Here are the results in detail:

Of 39 respondents (we have 205 corporate members, 33 institutes and six NGOs), 69% would not pay the envisaged €500 contribution for **organisations**, and 31% would. Some of those who would not, indicated a higher amount, though.

For the question in relation to the amount they felt would be suitable, 24% of the 29 respondents agreed, unfortunately, to zero, 21% to €300 and 10% to both €100 and €50. A few organisations would be ready to pay €1,000 to €5,000 or on the current or an agreeable level, or depending on the work of IPS for the industry.

For **individual members** (we have 1,351 in total), 78 persons replied, with 33% agreeing to a contribution of €100, and 67% opposing the amount (graphs on page 9).

The individuals (56 replies) would be willing to invest mostly an amount of €50 (45%), followed by €40 (13%), €60 and €30 (both 9%) as well as higher and smaller amounts up to €120. Seven per cent would not contribute at all.

For both questions, an assumption for total membership readiness to pay is difficult to make, as we have to assume that those who did not reply are even less interested in supporting IPS financially.

Of great interest were the other proposals and thoughts which are listed below, in alphabetical order, with some grammatical corrections. They are truly revealing and we thank each of you for thinking the issue through thoroughly.

Some proposals and questions were familiar while others came up only via this survey. A part of them could be easily resolved via National Committees or Executive Board members, others via Expert Groups, but most not by IPS staff alone. Some are long-term considerations.

Others are already implemented but possibly not known to all members, such as our role as umbrella organisation. We are maybe one of the oldest peat(land) organisations, but no longer the only one. Voluntary input, bilateral communication AND sufficient finances are, in the current setting, the key to IPS's success.

Question: Do you have any other proposals? What are your first thoughts on IPS' transformation? Please give us feedback:

First question to member organisations.

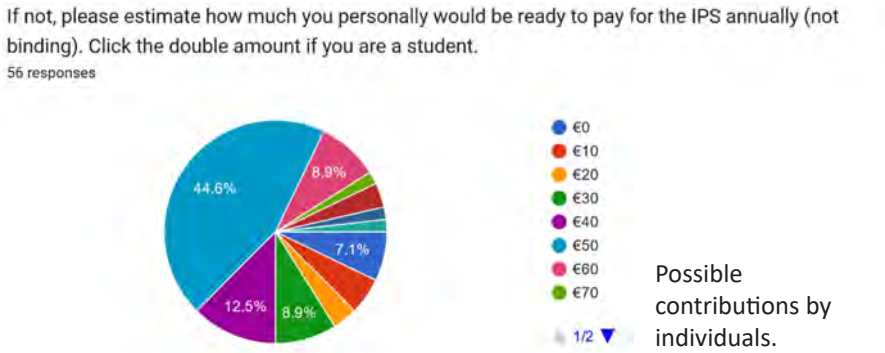
Second question.

- €100 annually is very high compared to other societies and organisations from which I receive more member benefits
- Absolutely necessary
- As a academic scientist/ member I am unable to contribute (donate) funds to IPS.
- As an association, we cannot assume any costs here. We assume among our members. A model with direct industry membership is certainly conceivable. However, it would be better not to be financed only by industry.
- Be more present in the single countries - merge more with the national peatland societies
- Better keep many active

members even if fewer staff. If companies wish their objectives to be followed, they should pay; academic members may work for IPS in their employer's working time (although even this is not guaranteed for research institutes).

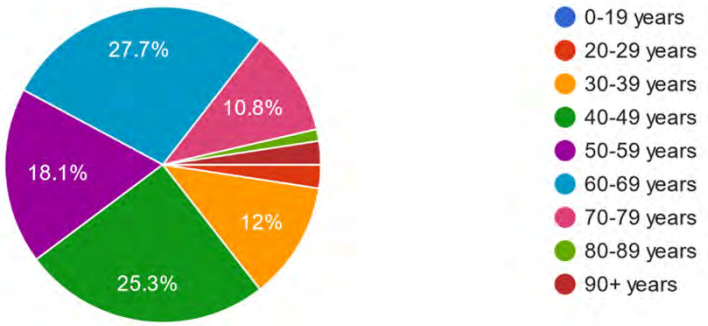
- Clarifying the niche of the IPS in the eyes of the different audiences that the society is serving, and thinking about how best to add value to each audience. Perhaps being clearer about the campaigns that the society is working on and building relationships with those organisations doing the same. I appreciate the IPS is trying to do this, constantly, but has very limited capacity with the availability of time of few paid staff and voluntary workers.
- Difficult times. Good luck.
- For those of us in Malaysia we have paid lifetime membership fee to Malaysian Peat Society - so we dont have to continue to pay annual fees to MPS or IPS. With new IPS direct payment then we are at a big disadvantage as we haver already paid in advance to MPS. If there is a direct payment to IPS it should be different for NGOs (lower) and private companies (higher). Can also do different contribution level based on organisation turnover - ie less for small NGO versus global NGO like WWF. If funds go directly to IPS - how about the viability of the National Committees or organisations?
- Generally the transformation idea is OK. But would current members of national committees need to pay yearly membership fees to their National Committees as well?
- Having direct membership without transfer of contributions by a National Committee does not mean that National Committees are no longer necessary. If appreciated by national members, NC's can continue to organise peatland related events in their country.
- I am a researcher. My organization does not pay fees to IPS or other organizations. However, I can ask my organization to reimburse fees (in most cases not successful!)

Third question, directed at individual members.



Possible contributions by individuals.

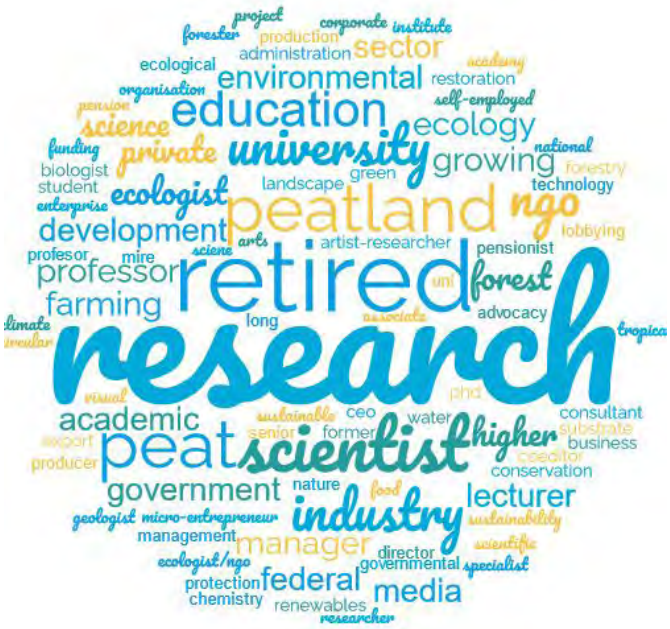
- Corporate members (industrial members, peat producers) have most interest in the lobby in e.g. the EU. I think they do not always understand that they need IPS for this lobby. Note that "Greifswald" had a very successful lobby and more or less wrote the peat paragraph in the Nature Protection Law. Where was IPS? And if IPS did something: why don't the members know that?
- I think a direct membership of corporate members is a good idea. I doubt a bit about whether it is a good idea for individual members. I don't understand why you propose €500 for all members. It is peanuts for most corporate members and end of story for researchers like me. In my opinion it should depend on the size of the industrial member/ peat producer. For those it should at least €500 and much more for large compagnies.
- For me as a researcher my main interests are: national meetings/presentations, active European/international scientific committees on my topics, a small (and cheap) conference of such a committee every 4 years, an IPS conference every 4 years, however, be aware of the costs! A conference in China is not very attractive in that respect.
- The mailing of Peatland Snippets and Peatlands International is good! Why not the same for



Mires and Peat?

- I believe individual membership payment will loose a large number of individual members due to inertia or lack of interest. Also, administration and collection of individual payments will become difficult. I am a retired peat industry employee and have continued IPS contact through my national association. I probably would not continue as an individual member.
- I have not been involved directly in IPS for a few years, have been at some of your conference in the past, and would have participated in national events. I appreciate that your remit may have to cater for existing peat extraction. With the now well established value of peatlands for a wide variety of environmental benefits from water quality, water flow management, carbon sequestration, archaeology, biodiversity etc., there will be a requirement for independent measurement and verification where rehabilitation/restoration is undertaken, so this might be something IPS could consider providing. I would also like to see peatlands under agriculture (grasslands) included in your wise use.
- I think it is a pity that industry funding is declining. Many are still working the peatlands, just not exploiting them as much. However, I also think that moving to a subscription membership would make the organisation much more democratic and less beholden to the industry and thus, maybe able to recommend "harder" less industry friendly concepts.
- I think that the number of members who will personally pay will be quite low, that's the way in Finland, because now the national peatland society gets some funding from another society for the international membership fee
- If IPS wants to continue to fulfill its function, then, in my opinion, continuity must primarily be ensured. Susann, if you stop then it will be 'the end of the exercise for IPS'. Even if there are financial resources for, e.g. two full time positions, it remains a weak position for the future. Has it ever been considered joining or merging with a larger organisation such as Wetlands International (more capacity, more resources, paid projects, etc.). IPS can then represent the specialty 'peatlands' in the broader world of 'wetlands'. Such a step can be seen as a loss of face for IPS, but ultimately it is about the content and preservation of the platform for the ‘peatland-community’ and the specific knowledge of all 1.500 members involved.
- It is not clear to me, what kind of changes does this transformation cause to the work of national organisations like the Finnish Suoseura and its funding.
- Let's introduce new research focus areas. For instance, peat farming option.
- More involvement in projects (as Merlin)
- Necessary to follow the changing world. Difficult times will give more room for an NGO like IPS, which can responsibly promote all three pillars.
- Needed. Hopefully we get some positive results from this poll.
- No direct fees from members except there is no National Comittee, National Committee pays fee as usual
- Organisations together should pay more than indicated in their survey, compared to the individual members' rate. There could be different levels in organisations' fees, e.g. for very small who need to 'count every penny' but still want to support, the default rate, and then a high one for large organisations with paying capacity and high activity in the peatlands sector ('key interest groups'). Of course, one needs to carefully think about unambiguous criteria for such classes so there is no room to contest. Or then maybe larger fees for all organisations that could partially be compensated by in-kind contributions, but arranging that usefully for IPS' needs could easily turn consuming more than it produces.

- Reduced costs needed for developing country and student members, plus members with lower means.
- Retired people pay reduced rate.
- Sympathy with the problem.
- The amount could be splitted into months, at least in the marketing.
- The influence of IPS regarding the peat extraction industry is not visible. Looks like IPS is concentrating on main stream --> renaturing of peatlands.
- The IPS has competition as an organization. It is good for people on the science-practice interface, but there are many other venues for us to present our work. For example, the recent European Geophysical meeting in Vienna had more papers on peatland restoration and biogeochemistry than most IPS meetings. Maybe scientific partnerships might be worthwhile.
- The IPS should focus on restoration and keeping the planet alive. Instead they are a lobby-organisation focused on peat extraction. Times have changed, so should you!
- The project based funding could be applied.
- There is little information about 'the transformation' except for cost. Forgotten link to the mentioned Position Paper "Embracing Change"? Maybe should be careful about wording that suggests you think voluntary inputs are not professional. The volunteers needed could be 'day-job' professionals who can fit an unpaid IPS function into the job description?
- There must be more focus on the benefit of the end product for humanity, then you can probably get more people on board
- This change will make a lot of national IPS organisations disappear. This is a pity, but ...
- This seems appropriate given our financial status. The other place we could possibly increase rates is for IPC registration.
- Transformation will be necessary and obvious. Main thing is to keep IPS going!
- Understandable. If the peat industry is not willing to transform, it's their problem. The phase out of horticultural peat use is ongoing, necessary and unstoppable on the long run, they have to accept that. So if they don't want to support the IPS any longer, it tells a lot about how they really care about peatlands... But it is very important, that the IPS exists and continues its work!



Occupations of those who replied, as single word cloud.

- What does did mean for the national organization in my case Dutch Veengenootschap? Will these organizations suffer from less income if IPS earns directly. I am member from Veengenootschap.
- What happens to the national associations? Must I pay for two organisations in the future?
- With peat industry contributions falling, the IPS will need to restructure and become a leaner society.
- Your organization is quite influential and should receive support through local associations. That way, it wouldn't be biased towards the manufacturers and adds credibility to what you're doing.

We are very grateful to each of you who contributed. The results were also shared with the Executive Board, whose new members will deal with the matter over the following months. Last but not least, excuses for this rather superficial and non-scientific analysis - but I believe we heard what you said.

A person from Ireland has won the copy of the *Peatlands and Climate Change* book - check your text messages!

Susann Warnecke

IPS Secretary General
susann.warnecke@peatlands.org

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New Members of the IPS

New members (or new contact persons for organisations, in brackets) are mainly approved by our sixteen National Committees. For all other countries, the approval is made by the Executive Board of the IPS.

Each National Committee is asked to compare their membership list to that of the IPS at least once a year (status below as of 18 June 2024). In some countries, IPS has both a National Committee and an industry association as a member.

In countries without a National Committee, member applications can be sent directly to the IPS Secretariat or online via **www.peatlands.org/join-us**.

Members are currently not accepted from Belarus and Russia. Membership fees are invoiced for the first year immediately, after that in June/July, this year in August. Beware of scam emails.

Non-government organisations

Ireland: Doug McMillan, Filipa Ferraz, Karine McMillan, Bastiaan Molleman (Green Restoration Ireland Cooperative Society)

Individual members

Australia: Shelomi Doyle, Samantha Grover
Canada: Jacynthe Dessureault-Rompré, Carson Loveless
Finland (Suoseura): Egle Köster, Amanda Laatikainen, Xuefei Li, Otto Liutu, Elisa Männistö, Elmiina Pilkama, Jussi Sivonen, Jouni Sorvari, Varsha Srivastava
Ireland: Anthony Blanchfield
Portugal: Svetlana Tsymliakova

Students

Finland (Suoseura): Saana Janhila, Heli Koponen, Marja Kotakorpi, Noora Rämö
Norway: Emmanuel Aduse Poku

More info and membership form:

www.peatlands.org/join-us

Membership benefits:

4 issues of Peatlands International / year | 10-12 issues of Peatland Snippets / year | Science Wire Significant discounts at IPS events, congresses and symposia & the IPS online store. | Excellent networking possibilities with peatland science and peat-related industry.

Supporting the only peatland organisation worldwide that involves members from all sectors. Welcome and enjoy your stay.

Forested peatlands - An Excursion to Liesjärvi National Park in Finland

The Finnish Peatland Society, Suoseura, invited its members as well as guests of the Forest Biology Club on a one-day excursion to Liesjärvi National Park on 8 May 2024. The trip started in the morning at Pasila railway station in Helsinki and also ended there at 4pm. The adventure started as soon as everyone had found their place on the bus.

Liesjärvi National Park is a Natura 2000 area located in southern Finland in the municipality of Tammela. The park was established in 1956 and, with its lakes, forests and mires, is now an important nature destination for the capital region. The moraine-based upland has always been a barren and sparsely populated area in the centre of fertile farmlands. The aim of the excursion was to visit rewetted forested peatlands and to see the preparation for new sites.

Harri Vasander introduced us to the park in general before the walk started. In some parts of the manifold Liesjärvi area, old forest drains have been blocked and filled with peat to allow water and thus the original peatland vegetation to return to the levels they were at before drainage. Trees were also girdled and felled to produce more decaying wood, which benefits many birds, insects and fungi. Spruce mires are also important for biodiversity.

The first stop was at the 13 ha **Soukonkorpi** peatland, which was rewetted in 1995. Liisa Maanavilja of the Geological Survey of Finland gave an excellent introduction to the area and the success of the restoration up to now. We heard that the first ditches originated from the 1930s, and the peat thickness is commonly 80 cm or more.

Originally the mire was drained to foster tree growth for timber production. In Finland approximately 5 million ha of peatlands have been drained, most of them for forestry, with only approximately 1% being rehabilitated so far.

In some places, the ground was still frozen, so only the upper layer could be investigated. Our plant ecologists were excited to find a few typical northern mire species, such as *Sphagnum wulfianum* with its soft, ball-shaped top, which are gradually replacing the forest mosses. Birches still occur more than originally expected, but it is hoped that spruce will take over with time.

Peat coring in Soukonkorpi. Photo: Susann Warnecke

The second site, **Rottasniitunsuo**, is a forest on peatland that is currently being prepared for rewetting. To monitor its progress and success, a 22 m high micrometeorological measurement station was built in 2022 by the Institute for Atmospheric and Earth System Research (INAR) of the University of Helsinki, which measures greenhouse gas emissions automatically. Observations are conducted in the air and via chambers for CO_2, H_2O and CH_4, as well as air temperature and humidity, soil temperature, heat flux and moisture, water level height, and radiation.

At the measurement station in Rottasniitunsuo. Photo: Susann Warnecke

Kari Minkkinen of Helsinki University explained all the specifications in great detail and patiently answered our questions. Trees have been cut for better water management, and ditches will be filled next year. So far, the site has been a small CO_2 sink, due to tree growth vs peat emissions, and the ditches emit some methane.

The site is part of the "Forests on peatlands - solutions for reducing emissions and increasing of carbon sinks" (TURNEE) project, which investigates the climate impacts of the afforestation of cutover peatlands and restoration of fertile peatland forests. It also belongs to the "Quantifying the potential of boreal peatland rewetting for climate change mitigation" (RESPEAT) project.

On the bus we also heard an inspiring speech by Jenni Hultman of the Natural Resources Institute Finland (Luke), who introduced us to the organisms that actually cause the emissions - microbes within the plants and peat, which are invisible and difficult to monitor, but still very important. Due to the wonderful weather and interesting talks, we managed only two of the three planned destinations, but that did not harm the learning and networking process at all. Warm thanks to the organisers!

Susann Warnecke

IPS Secretary General
susann.warnecke@peatlands.org

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Principles of Management & Rehabilitation of Tropical Peatland

Published in honory of Dr. Bambang Setiadi who passed away in December 2023.

- Founder and Former Chairman of Indonesia Peat Society (HGI)
- Former Expert Committee of Peatland Restoration Agency of Indonesia (BRG)
- Former Indonesia National Committee Representative to International Peatland Society (IPS)
- Vice Chair of International Peatland Society Environment Commission

1. Tropical Peatland

Peatlands are distributed throughout the tropical world, with the majority occurring in SE Asia. Tropical peatlands contribute to climate change processes as a result of inappropriate management, and they will be affected by climate change. Peat plays an important role as a global source of fresh water, so its destruction will affect millions of people and have a major impact on climate change.

Diverse tropical peatlands.

Most tropical peatlands are formed by highly productive rainforests known as Peat Swamp Forests (PSF). Partially decomposed remains of these trees - roots, branches, leaves and reproductive parts - have accumulated as peat over thousands of years. In many respects, making the peat very different from that encountered

in boreal and temperate zones of this planet.

These forests are similar to other tropical rainforests, in the size and density of large trees, although species may differ. Peat swamp forests can also be palm-dominated, such as the Sago swamps of southern Papua, Indonesia and in the upper Amazon basin of Peru. However, unique biological communities are specially adapted to thrive in the flooded, oxygen poor environment (Warren, 2015).

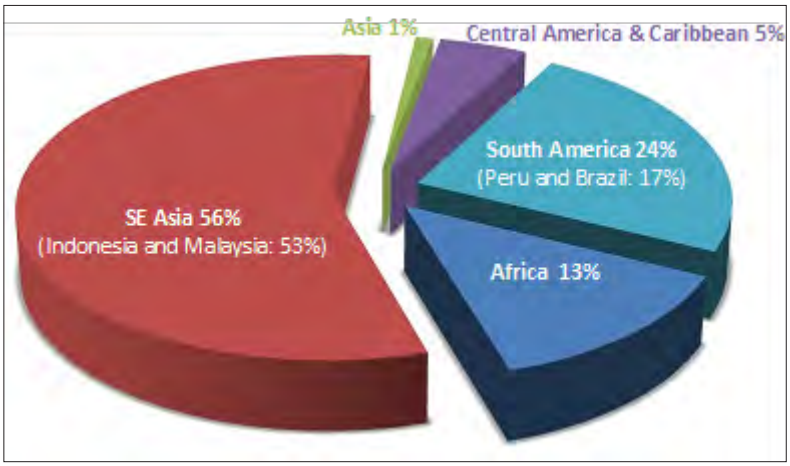

Figure 1: Peatlands are distributed throughout the tropical world, with the majority occurring in SE Asia.

The strategy that has been produced and prepared by policy makers in Indonesia in the wise use of peat is formulated in the peatland restoration and rehabilitation system. Indonesia has a peatland area of 20.6 million hectares, which is half of the world's peatland area in the tropics. Area of peatland in Indonesia:

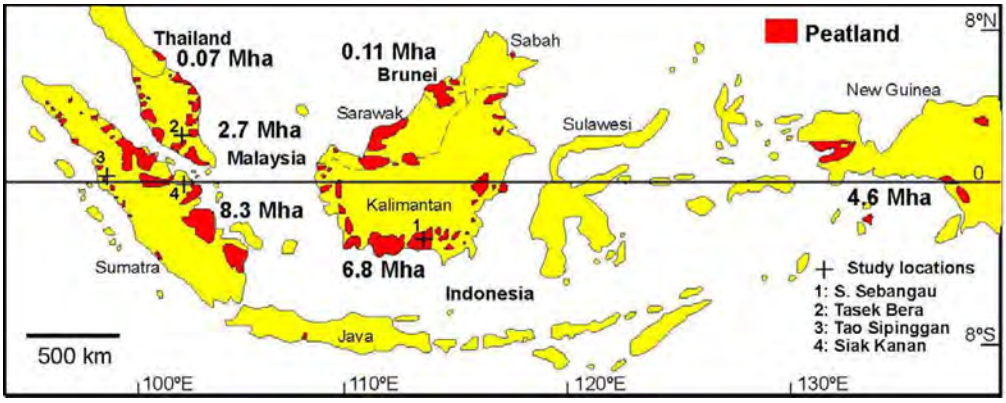

Figure 2: Distribution of peatlands (in million ha, after Rieley et al., 1996).

Peatland evolution in SE-Asia (Wust et al, 2007) occurred throughout the late Pleistocene but was absent during the Late Glacial Maximum when conditions may have been drier and more seasonal.

Although peatlands developed and accumulated organic material rapidly during the last 14,000 years, most large lowland peatlands of SE Asia started forming only after the mid-Holocene sea level high stand around 6,000-5,000 years ago.

However, even thereafter, up to 11 metres of peat accumulated within those systems since accumulation rates often exceeded 1 mm yr^{-1} (Neuzil, 1997). Because tropical peatlands represent such large carbon sinks, and deforestation and land use changes have had such an adverse effect on them (e.g. increasing risk of peatland fires and hence increased atmospheric greenhouse gas emissions), urgent action is needed to identify environmentally sound and sustainable ways of managing these ecosystems.

Key question is about ecological constraints as follows:

Peatlands in Indonesia have a high biodiversity value and are known as habitats for specific flora and fauna of high economic value, such as ramin (*Gonystylus bancanus*), jelutung (*Dyera custulata*), meranti (*Shorea* spp.), orangutans, and many others. In addition, they also contain biodiversity

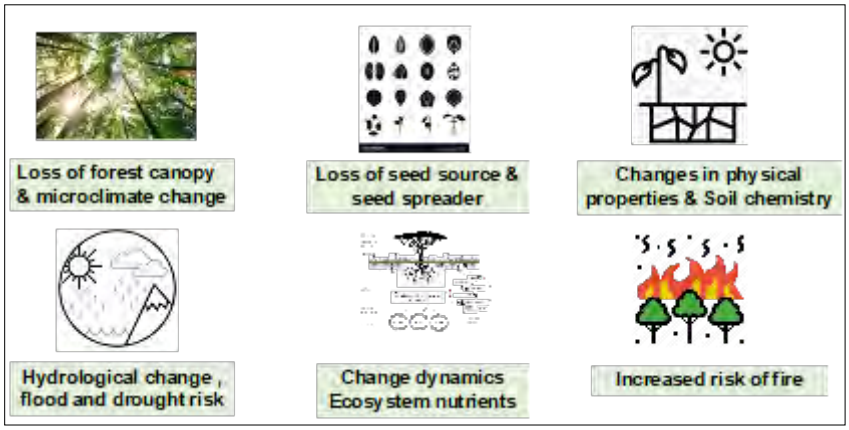

Figure 3: Key ecological constraints of tropical peat ecosystem.

Fig. 4: Species of trees growing in peatlands. Photo: Iwan Tri Cahyo W/Doc WI-IP

and scientific information, and have an important ecological role and the ability to store water and carbon.

Tropical peatlands supply numerous ecosystem services, including provisioning, supporting, regulating and cultural (Warren, 2015).

Figure 5 : Ecosystem Services of Tropical Peatland. Adapted from: Guidelines on integrated management planning for peatland forests in Southeast Asia. ASEAN Peatland Forest Project. www.aseanpeat.net (Warren, 2015)

The strategy that has been produced and prepared for policy makers in Indonesia for the wise use of peatland and peat focusses on restoration and rehabilitation of degraded peatlands as a result of the lack of ecological attention to drainage, illegal logging and peat fires.

Peat fires continue to increase alarmingly. Official reports of forest fires that occurred in Riau in 2014 show that 21,914 hectares of peatland burned, destroying 2,398 ha of biosphere reserve, at a cost to the economy of US$ 700 million.

Around 58,000 people in the community contracted respiratory tract infections; The cost of fire control was Rp. 15 billion that did not include other fire affected areas in Central Kalimantan, West Kalimantan, Jambi, Palembang and Aceh.

Fig. 6: Motorcycle riders cross a road filled with haze from forest and land fires, in Pekanbaru, Riau, 15 March 2014.

2. Sponge, Peat Dome, and Fresh Water

Pangrango mountain in West Java, Indonesia, is a water source to 60 rivers. The function of the mountain to detain and retain water in nature is similar to the function of a peatland, its peat and peat dome. The mountain serves to accommodate and absorb water, and in peatland areas, such as Kalimantan, Sumatera, and Papua, this is replaced by peat which contains a large amount of carbon and has the ability to act like a sponge by containing and retaining water in rainy seasons and releasing it slowly in dry seasons.

The most important ecosystem service role of peatlands, peat forests, peat, and peat swamps, is provision of freshwater to nature, landscapes and communities.

For example, in Indonesia, Air Hitam, in Pedamaran, Sumatera Province, is a natural lake of 500 km square, surrounded by peatland of peat thickness up to 6.5 metres, of volume approximately 2.0 x 109 to 3.25 x 109 m^3. If the ability of the peat to absorb water is estimated to be 300%, there is 6.10 x 1011 to 9.75 x 1011 m^3 of water available for land fisheries, local fishing, and agricultural water use.

compared to peatland drained and developed for crop cultivation and industrial plantations on peat.

Peatlands are highly strategic ecosystems in regulating freshwater in Indonesia. Peat domes in Kalimantan, Sumatera, and Papua act like dams holding millions of cubic metres of rainwater. This water is distributed by rivers for human needs throughout the year. The sustainable role of peat as a freshwater resource will be lost if: there is disharmony between peat natural functions and human activities, especially changes to the diverse economic system in the landscape adjacent to peat domes as a result of increase in agriculture, forestry, and farming activities.

Development of tropical peatland, and particularly peat domes, should be regulated the same way as used to limit their utilisation or prevention as industrial or residential areas, or restrict agriculture and farming activities.

The relationship between tropical peat, people and its development can be described as a relationship between Source of Change of Tropical Peat connected to Source of Change of Human System. Both changes occur due to the change in the human system that influences the change in tropical peat which ultimately affects human life. Therefore, Donal Clarke, former President of the International Peatland Society, emphasised in his

Figure 7. (A) 3D representation of the peat dome located between Kahayan and Kapuas rivers, Central Kalimantan, Indonesia. (Setiadi, 2015). (B) and (C) Peat dome.

Consequently, the greatest threat in managing tropical peatland is the ability to contain and maintain this large freshwater reservoir (and others). However, peatland water reservoirs are considered to have much less economic value

speech at the 2008 Workshop on Tropical Peat in Yogyakarta, that if there is a plan to develop tropical peatland then important questions need to be answered. The plan must include project objectives, project scale, level of influence, rehabilitation, and monitoring achievement of the project.

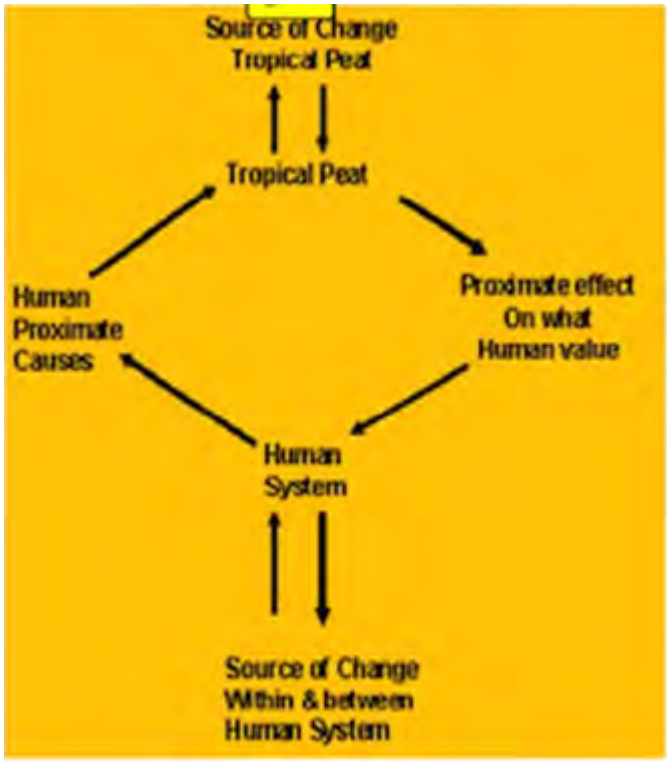

Figure 8: Donal Clarke's Thesis.

Moreover, there is bioclimate disharmony in peat dome regions, and lack of appreciation and understanding of the important role of peat domes. Therefore, it is time to think about repositioning the view of peat utilisation, specifically peat domes, in landscape economy and management.

Firstly, repositioning regulation of peat and peat dome utilisation. Secondly, repositioning economic value of water in peat domes. Thirdly, repositioning the utilisation of water from peat and peat domes. Disruption of peatland hydrology as a result of misutilisation, illegal logging of peat swamp forest, and inappropriate canal construction on peat domes will affect habitats, human economic and social life, and climate in the region.

Peat is a layer of the earth's crust with a huge amount of carbon which poses a direct threat to climate change through carbon dioxide emission as a result of drainage and fire. A report by UNEP, GEF, and Wetlands International concluded 1) Peatland has a major role as provider of global freshwater resources; 2) damaged peatlands affect millions of people globally; 3) peatlands have direct relationship with climate change; 4) water management in peatlands is the priority to reduce carbon dioxide emission.

3. Tropical Peat Dynamic, Complexity and Components

Peatlands, peat forest, and peat swamp have social and dynamic advantages. The dynamics of peat consists of peat functions (hydrology, biochemistry, and ecology), peat processes (physical, biology, and chemistry), and peat ecosystem structures (geomorphology, hydrology, lands, flora, and fauna).

Well-controlled peat dynamics can bring social value benefits in terms of services (flood control, water quality, and food chain) and materials (wood, trees, fish, and other fauna). Other peat values include biodiversity, culture, and knowledge. The main benefits of peat for humans are commercial values and support to sustain life.

Peat, peatlands, and peat forests are natural features that should be preserved, respected, and specially treated like how people in Bali respect the mountains. Balinese highly respect mountains that, until now, have never lacked water because they treat water springs properly. They have a policy that prevents mountains from becoming residential areas. Peat and particularly peat domes, should be regulated in a similar way to limit their utilisation or even to stop people using the region as residential areas, or undertaking agriculture and farming activities.

The complexities of the tropical peatland ecosystem can be simplified into three main components, namely carbon, biodiversity, and water. If the peatland region is well maintained and controlled, all three components will support each other. Maintenance and utilisation of the region which do not follow the basic principles of responsible peatland ecosystem management could disturb the ecosystem at local, regional, and

global scales through processes related to climate change.

4. Reclamation and Low Soil Fertility

Constructing small canals in a haphazard manner is the first step to peat destruction, because a basic principle of peatland management is, “do not make canals unless it is known where the water goes”. If this principle is broken, then there is only one thing that will happen, namely water from the peat will come out uncontrollably. As a result, the functions of peat will no longer exist, leading to loss of its benefits and services.

In agriculture and plantations, soil fertility and large amount of freshwater availability are major issues. According to Andriesse (1992), there are two main issues in utilisation of peat. The first is connected to land reclamation, that involves access, tree removal and clearance, drainage construction, tree stump removal, and subsidence as a result of lowering and controlling water level.

The second is related to agronomy, because low soil fertility brings low crop yields, requiring intensive fertilisation schemes (quantity, time, interaction, cost and efficiency), and peat soils have heavy metals deficiency (causing empty grains and pods, disease and physiological plant resistance), firm grip root in peat, land control practice, surface change as result of moisture change, and irreversible drainage. Poor understanding of peat drainage processes leads to peatland destruction.

Research must be undertaken to find new crop varieties with high economic value that can be cultivated outside of peatland areas, ones that are able to live under high tropical sunlight. Modern genetics science could play an important role for such purpose. It is important to learn from mistakes, that developing peatland is much more dangerous than similar activities on non-peatland.

5. The One Million Hectare Tropical Peatland Development Disaster - A Hard Lesson Learned

On December 26, 1995, Indonesian President Soeharto, issued Presidential Decree No. 82, One Million Hectares Peatland Development for Food Crop Agriculture in Central Kalimantan. The purpose of which was to provide new land for rice cultivation as replacement for one million hectares of paddy in Java island lost to commercial and industrial development over a period of years.

Also, as a result, President Soeharto lost the medal he has been awarded by the UN Food and Agriculture Agency (FAO) in 1985 when Indonesia had become self-sufficient in its rice production.

Failure occurred because of misconduct in the planning and implementation processes. For example, an Environmental Impact Assessment (AMDAL) was not carried out before the project started and major drainage and construction works were carried out. Proper consideration was not given to land physical conditions, basic data limits, or socio-cultural conditions.

Many of the project implementation activities failed to deliver their objectives, including flawed water management, inexperienced transmigration assignment, poor land management, lack of sectoral coordination. In addition, infrastructure

Figure 9: One Million Hectares Peatland Development for Food Crop Agriculture

development and sustainable agriculture were lacking, resulting in low land productivity, low on-farm yield, low community building, and environmental destruction.

Rieley (1999) related the reason for these issues and failure of the project to lack of knowledge and understanding of peatland, peat habitats, peat, peat hydrology, and incidence of fire and illegal logging.

In June 1991, the peatland area designated for the Mega Rice Project covered 2,406,732 hectares, of which 1,560,377 hectares (64.8%) were peat swamp forest. But, by May 1997, the peatland area remaining was reduced to 1,377,442 hectares (57.5%), and in June 2000, peat swamp forest left was only 1,110,151 hectares (45.7%). The Impact of the peatland development reached 1.5 million hectares; 112 km of canals were built.

The basic design of the canals was to connect two large rivers, Kahayan River and Barito River, that bordered the main one million hectares of peatland. The expectation was that the canals would facilitate flow of freshwater into the project area during the rainy season. It would be stored there as a mayor reservoir until the following dry season when it would be used for crop irrigation.

Unfortunately, the canals were not designed according to this concept, and because of the peatland dome, freshwater did not enter the project area, and instead, the canals cut-down into the peat dome drained water out of the peatland and into the rivers and on to the Java Sea. As a result, this drainage of the surface peat and its subsequent drying in dry seasons led to the massive fire in 1997 and in many subsequent years thereafter.

On April 14th to 15th, 1999, the Indonesia Agency for the Assessment and Application of Technology (BPPT) organised a “Wise Use of Peatland and Re-evaluation of The Mega Rice Project Area” workshop that was attended by 35 institutions and 175 participants, to review the 1 million hectares Mega Rice Project peatland area and its status.

The participants were asked to address six questions in the workshop: 1) Did Presidential Decree 82/1995, Presidential Decree 83/1995 and Presidential Decree 74/1995 need to be revoked, changed, or continued? 2) Did canals that had been built need to be closed? 3) What should be done to deal with illegal logging? 4) How could a Preservation and Conservation Strategy restore the damaged peatland ecosystem back to its previous condition? 5) What should be the project funding strategy. 6) What is the best scenario to develop the Block B, C, D, and E regions?

Conclusions of the workshop were discussed in an Indonesian Government cabinet meeting and decided that the project would be terminated.

6. STRAPEAT

An international research cooperation involving five institutes and universities in Europe: Wageningen University, Netherlands; Nottingham University, United Kingdom; Leicester University, United Kingdom; Helsinki University, Finland; Remote Sensing Solutions (linked to Ludwig Maximilians University, Munich), Germany, and seven partners from Southeast Asia:

These were Gadja Mada University, Indonesia; University of Palangka Raya, Indonesia; Sriwijaya, University, Indonesia; Agency for the Assessment and Application of Technology, Indonesia; University Malaysia, Sarawak, Universiti Sains, Malaysia; and Cantho University, Vietnam.

They worked together in a strategic project funded by the European Union, Strategies for Implementing Sustainable Management of Peatlands in Borneo (STRAPEAT) from 2001 - 2004.

This research provided scientific papers, national and international peat expert graduates, rehabilitation, biodiversity conservation, and promoted scientific studies until 2007. Siegert (2003) verified by satellite imaging that peat forest illegal logging escalated by 44% during excavation of small canals by the loggers to remove timber.

Statements released on Wise Use of Peatlands in Central Kalimantan, Indonesia (November 2004) at workshops held in Palangka Raya and Jakarta stressed that “Wise use of the peatlands of Central Kalimantan necessitates economic development to improve the livelihood of local people through rehabilitation of peat swamp forest and restoration of peatland resources”.

Figure 10: STRAPEAT and CIMTROP of University of Palangka Raya, Indonesia.

7. Prospects for Tropical Peatland

In 1998, WWF reported that in Sumatera the loss by fire in peatland was up to 1.5 million hectares, and in Kalimantan it was 3 million hectares.

Most of the burnt objects were grass, plant litter, bushes, and non-wood plants around the swamp, instead of the peat forest. The location of fire was mostly close to residential areas, roads, and rivers. A large amount of carbon dioxide and other gases were emitted to the atmosphere where it contributed to acid rain, ozone depletion, and climate change processes, causing hazards to humans, plants, and animals.

Air pollution rose far above normal in Sumatera, Kalimantan, Sarawak, and Brunei. People suffered from respiratory, skin, and eye diseases. Schools and offices were closed for days and even weeks. Sarawak declared a national disaster at the peak of the 1997 crisis. Air, land, and sea transportation experienced serious problems as a result of limited visibility, closed airports, while accidents increased because of thick haze. Up until today (2021), peat forest and peat fires have occurred periodically.

Peatland drainage and deforestation, particularly in South East Asia coastal regions, has increased to a level never experienced before for agricultural purposes. Drainage and deforestation increase peat oxidation, and subsequent carbon loss as CO_2 influences global warming. Another impact is increasing subsidence of the peat surface threatening peatland sustainability.

A report on the impact of drainage on subsidence of lowland tropical peatlands showed from six studies in Sumatera and Kalimantan that 57 ± 22% of peatlands will have drainage problems in 25 years after conversion from peat swamp forest to another land use.

Within 50 years, 53 ± 21% of these regions will experience prolonged flooding. Eventually, all coastal peatland areas in Indonesia with peatland (about ~ 250,000 km^2) will have subsided to just above or below sea levels and be extremely susceptible to permanent flooding.

Figure 11: Subsidence of tropical peatland.

7. Management and Rehabilitation of Tropical Peatland

In 2007, an international symposium and workshop was held in Yogyakarta, Indonesia on Carbon-Climate Human Interactions on Tropical Peatland: Carbon Pools, Fire, Mitigation, Restoration and Wise Use (Rieley, Banks and Radjagukguk, 2007).

It was attended by peat experts from around the world. A Statement agreed in the end of the meeting mentioned that there must be a hydrogeological approach to rehabilitate peatland. This reaffirmed the conclusions and recommendations of the previous workshop on "Wise Use of Peatland and Re-evaluation of The Mega Rice Project Area" that was held in April 1999 by the Indonesia Agency for the Assessment and Application of Technology (BPPT), at which 175 participants from 35 institutions were asked the question, "Should the Mega Rice Project canals be reclaimed?"

The answers from the audience were in general agreement with blocking but different in the detail according to future land use and expectations as follows:

1) Block over specific distances. 2) Block completely. 3) Use for conservation and rehabilitation. 4) Block entrance to canals to prevent illegal logging. 5) Block over certain area to rewet and reverse damage caused by drainage and reinstate rainwater containment areas. 6) Block everywhere except any special region. The overall consensus is that drained, degraded tropical peatland should be restored by rewetting and revegetating.

The problem, however, is how to make rehabilitation with water the main concern? In 2010 (revised 2019) the International Peatland Society published the "Strategy for Responsible Peatland Management" (Clarke and Rieley, 2019) for: 1) Applying "Wise Use of Mires and Peatland" principles to management of all peatlands globally, 2) ensuring that high conservation value peatlands are identified and conserved, 3) Preparing strategic action plans for implementation. In this guide, rehabilitation is defined as repairing ecosystem processes, services, productivity and utility of all peatlands, but it does not mean to re-form the previously existing biotic units, their composition, types, and community structures.

Restoration is defined as the process to help damaged peatland recover to as close as possible to the original natural condition. These are two closely related concepts in the strategic approach of wise-use peat utilisation both of which put water, biodiversity, and carbon as the main issues.

It is an Indonesian National Duty to rehabilitate peatlands to fulfil President Soesilo Bambang Yudhoyono's 2010 promise to reduce carbon emissions by 26% by 2020. The promise was enshrined in a national plan to reduce greenhouse gas emissions. Forest and peat sectors were targeted for highest reduction, by 0.672 giga ton from a total of 0.767 giga ton CO_2.

The Government Departments responsible for achieving this target were Ministry of Agriculture, Ministry of Forestry, Ministry of Public Works, and Ministry of Environmental Affairs. The plan is legalised and clarified in Presidential Regulation No. 61, September 2011: National Action Plan to Decrease Greenhouse Gas Emissions.

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An extensive orbituary for the author of this text, Dr. Bambang Setiadi, was published in Peatlands International 1.2024. Let's continue to care for our tropical peatlands, together and from wherever we are.

UN June Climate Meetings in Bonn Take Modest Steps Forward

The Bonn Climate Change Conference concluded on 13 June after two weeks of intensive work across a range of issues where progress is needed on the path to the UN Climate Change Conference (COP29) this November in Baku, Azerbaijan.

"We've taken modest steps forward here in Bonn," said UN Climate Change Executive Secretary Simon Stiell in his closing speech. "[But] too many items are still on the table. We've left ourselves with a very steep mountain to climb to achieve ambitious outcomes in Baku."

Areas of progress in Bonn include:

- Parties streamlined content going into the New Collective Quantified Goal on Climate Finance. Clear options and the substantive framework of a draft decision must be finalized before COP29.
- Parties took steps towards adaptation indicators that are forward-looking, effective, and scientifically sound.
- Progress was made towards a better functioning international carbon market, but further work remains to be done.
- Parties worked together for transparency and supported each other in planning stronger climate action plans.

The June meetings were held in Bonn, Germany from 3 to 13 June 2024. Photo: UN Climate Change

A New Collective Quantified Goal on Climate Finance

The June Meetings hosted a technical expert dialogue (TED10) to enable in-depth examination of the elements of the New Collective Quantified Goal on climate finance (NCQG) - including how to make sure it is: ambitious, optimally structured, transparently reported on, and improves the quality of climate finance to developing countries.

Parties also spent several days working on developing a substantive framework for a draft negotiating text for consideration at COP29, outlining the text here in Bonn.

Stiell also noted the need for further progress on climate finance issues outside of the UNFCCC process, including by the G7. “Advanced economies have multiple levers to pull, including as shareholders in development banks.”

The Co-Chairs invited Parties to submit their consolidated and updated views on the NCQG so that they can produce a new input paper with options for TED11 and the third meeting of the ad-hoc work programme, which will be held back-to-back in October. A high-level ministerial dialogue on the NCQG will also be held in October to help pave the way for an outcome at COP29.

UN Climate Change Executive Secretary Simon Stiell. Photo: UN Climate Change

Progress on Building Resilience and Adaptation

At COP28 in the United Arab Emirates last December, Parties agreed measures for the Global Goal on Adaptation which created thematic targets that highlight forward-looking global priorities.

At the June UN Climate Meetings, Parties took important steps towards indicators in each of these thematic targets which will be inclusive, transparent and scientifically sound. Notably, Parties made progress on what is needed next, including how these indicators will be decided, as well as technical work ahead.

As part of the outcome of the Global Stocktake, UN Climate Change is urging Parties to develop National Adaptation Plans (NAPs) by the end of 2025, and to make progress in implementing them by 2030. Only 58 developing countries have submitted a NAP.

The secretariat has asked more countries to have a plan by 2025 and make progress on implementing them by 2030. Over the coming months, UN Climate Change will work directly with countries to accelerate the formulation of NAPs, including through its Regional Collaboration Centres.

Progress Made on International Carbon Markets Under Article 6

Delegates made important strides on key technical aspects of Article 6, including carbon credit authorization, activity scope, the international carbon market registry and more.

Constructive discussions in Bonn clarified positions on Article 6.2 and 6.4 ahead of COP29. Delegates also agreed to hold a workshop to further progress technical work on Article 6.2 and 6.4 ahead of November. As a result, they will be better placed to meet in Baku ready to finalize an outcome and move towards better carbon markets.

In the lead up to COP29, additional work on Article 6.4 will move forward. The UN Body responsible for operationalizing a new global carbon market under the Paris Agreement will meet twice ahead negotiations in Baku, to finalize recommendations on methodologies and emission removals. Feedback gathered from Parties and stakeholders at an engagement event during the June Climate Meetings will be incorporated into these recommendations.

The Supervisory Body also aims to finalize a Sustainable Development Tool in the run up to


Displays in the foyer of the venue. Photo: UN Climate Change

COP29, to establish environmental and social safeguards. Completing the remaining elements on Article 6 in Baku will unlock further funding for national climate plans and adaptation.

Increasing Transparency

The incoming COP Presidency asked Parties to submit their Biennial Transparency Reports (BTRs) ahead of COP29 in Baku. These reports will help Parties build the stronger evidence base for ambition.

Several events took place during the June Meetings on the support available to developing countries, including the In-person Workshop on ETF Support and the In-session Facilitative Dialogue on ETF Support.

Later this month, UN Climate Change will deliver new Enhanced Transparency Framework (ETF) reporting tools that integrate tracking of greenhouse gas inventories, action, and support. In partnership with Microsoft, UN Climate Change is also developing a new Climate Data Hub to bring this data to life.

UN Climate Change has already trained more than 1,100 experts from 150 countries, building the capacity of thousands of practitioners, including across other intergovernmental organizations. Training sessions on the new reporting tools will be held in the Africa and Latin American and the Caribbean regions ahead of COP29, as well as at COP29.

Raising Ambition in Nationally Determined Contributions

Parties are required to deliver their next round of Nationally Determined Contributions (NDCs) early next year, aligned with the 1.5 °C limit, and covering all sectors and all greenhouse gases.

At the June Meetings, UN Climate Change and the NDC Partnership launched the NDC 3.0 Navigator, to help Parties access information that can help them develop new NDCs with a focus on implementation.

Other Issues and Events

- The final review of the implementation of the enhanced Lima work programme and its Gender Action Plan (GAP) was initiated at the June Meetings - identifying progress, challenges, gaps and priorities in implementing the GAP, and further work to be undertaken. The discussions started at this session set the scene for developing the tools to embed gender in forthcoming NDCs, NAPs and transparency reports.
- The Standing Committee on Finance advanced preparations for the 2024 Forum on gender-responsive financing. Taking place from 2-3 September in Arusha, Tanzania, the Forum will highlight the critical importance of gender-responsive finance in achieving low-emission climate-resilient development and poverty eradication that will be equitable and inclusive.
- The Ocean and Climate Change Dialogue took place over two days at the June Climate Meetings, with a focus on two key topics -

marine biodiversity conservation and coastal resilience, and ocean energy technologies.

- The Action for Climate Empowerment (ACE) Hub hosted an event to bring young people together for skills-building and knowledge-sharing. The focus this year was on local action. Fifty young people - 25 from around the world and 25 from Germany - came together to develop the skills they need to lead climate initiatives in their communities.

Work in progress. Photo: UN Climate Change

- The High-Level Climate Champions, Nigar Arpadarai (Azerbaijan) and Razan Al Mubarak (United Arab Emirates), organized a series of events that explored how businesses, cities, regions, Indigenous Peoples and civil society are working alongside governments to deliver ambitious climate action ahead of COP29.
- The third Glasgow Dialogue on loss and damage at the June Meetings discussed the coordination arrangements for the Fund responding to loss and damage, assessed progress made and developed further recommendations.
- Delegates at the June Meetings took part in the first annual dialogue on the Global Stocktake to help inform the preparation of Parties' next round of NDCs.
- The third Global Dialogue and Investment-focused Event held under the Mitigation Work Programme focused on reducing the greenhouse gas emissions of cities and urban buildings.
- The first Dialogue under the United Arab Emirates Just Transition Work Programme took place at the June Climate Meetings with speakers highlighting the need for whole-of-society approaches to a sustainable future, that are inclusive, equitable and just.

More information

- Watch UN Climate Change Executive Secretary Simon Stiell's closing speech on YouTube https://www.youtube.com/live/-kP2oYOs03A
- Follow UN Climate Change Executive Secretary Simon Stiell on X and on LinkedIn: https://x.com/UNFCCC and https://www.linkedin.com/company/unclimatechange
- All UN Climate Change social media accounts can be found at https://unfccc.int/sb60/social-media
- COP29 will take place in Baku, Azerbaijan, from 11 to 22 November 2024.

You can find the original press release including all links and abbreviations at https://unfccc.int/news/june-climate-meetings-take-modest-steps-forward-steep-mountain-still-to-climb-ahead-of-cop29.

For further information on UN Climate Change, visit https://unfccc.int. IPS will not be in Baku, due to lack of resources and volunteers, but follow preparations and developments.

UN Climate Change

UN Campus, Bonn, Germany
press@unfccc.int

Eco-hydrological and biodiversity effects of vehicular access roads in the context of forestry removal for restoration and infrastructure development

The following is a progress report since obtaining the IPS Allan Robertson Grant for Research Students and Young Professionals (2023). My PhD explores how linear infrastructure affects the wider peatland ecosystem through their effects on ecosystem hydrology, peat mechanics, vegetation and predator-prey dynamics and to use that information to support the active restoration of unpaved roads back to functioning peatland.

To monitor predator activity, we use a combination of scat (animal feces) counts and camera traps

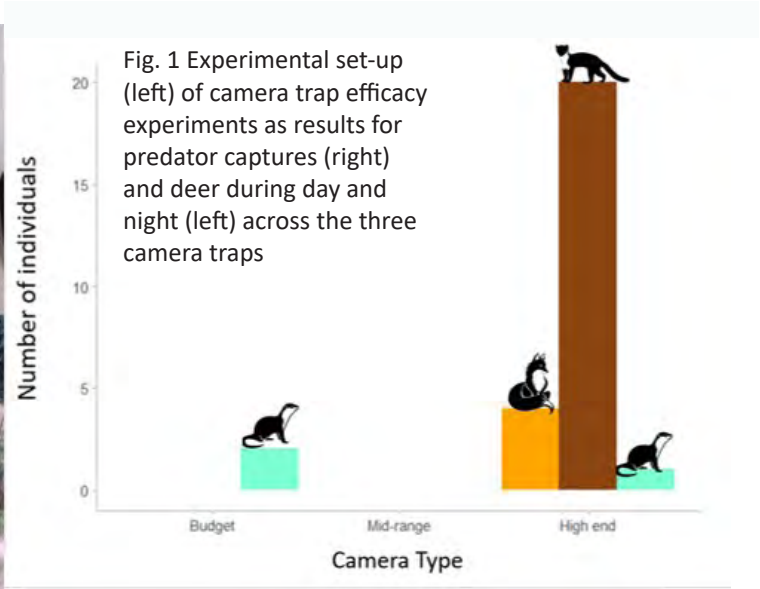
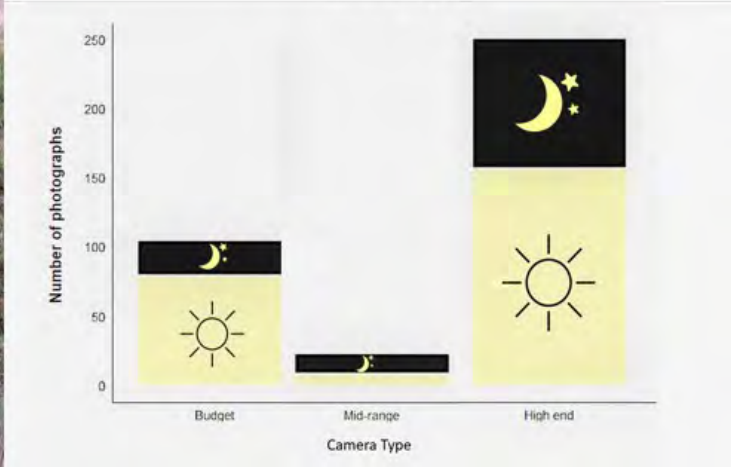


Fig. 1 Experimental set-up (left) of camera trap efficacy experiments as results for predator captures (right) and deer during day and night (left) across the three camera traps



stationed along and adjacent to these roads.


Fig 2. Preparing to Install a dip well and water level logger near a peatland road destined for restoration.

To quantify the effect of linear infrastructure on peatland hydrology and health, we have applied a combination of Interferometric Satellite Aperture Radar (INSAR) and traditional in-situ ground truthing using automatic water level loggers to the area surrounding existing floating roads and intact peatland within the Flow County and are continuing to observe these effects as roads are restored toward peatland.

Acquiring this grant has released funds that have enabled me to purchase high end cameras that have been the subject of a camera trap efficacy experiment (Fig. 1), that has produced a scientific paper currently in the process of submission to a scientific journal. These cameras have a greater capture rate than the previous camera traps and replacing those has substantially increased the number of predators we are capturing in images, facilitating a much more substantive assessment of predator activity across different areas of the peatland ecosystem.

Further we have sequenced DNA from scats collected in the breeding season which has allowed us to gauge the accuracy of our scat identification as well as examine the prey taxa consumed by fox and pine marten in the peatland ecosystem.

On the eco-hydrological aspect of my PhD, I have installed dip wells (Fig 2.) complete with automatic water-level loggers to monitor real time changes in peatland water-level, one proxy for peatland health, and observed associated changes as roads have been removed and are in the process of restoration toward peatland. We have purchased Interferometric Synthetic Aperture Radar (INSAR) for our peatland study sites to see the past effects of roads and wind turbine bases on peatland health.

The preliminary results of much of this work has been presented at three international conferences since receiving this grant; and has stimulated discussion in this area of peatland restoration among researchers and practitioners.

I would like to thank the International Peatland Society for this grant and the opportunities it has afforded to me to advance my research and develop my skills in science.

Rob McHenry

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Pine marten (*Martes martes)*. Photo: Getty Images

Peat and Peatland Events

IUFRO World Congress 2024
Stockholm, Sweden
23 - 29 June 2024
https://iufro2024.com

IMCG Field Symposium and General Assembly
Freising to Greifswald, Germany
26 July - 9 August 2024
www.imcg.net/pages/events.php

17th International Peatland Congress
Peatlands in a Changing World
IPS Annual Assembly & General Assembly
Executive Board meetings 142 and 143
Taizhou, China
4 - 9 August 2024
https://ipc2024.com

14th European Conference on Ecological Restoration
Tartu, Estonia
26 - 30 August 2024
https://sere2024.org

Baltic Peat Producers Forum
Birstonas, Lithuania
18 - 20 September 2024
www.balticpeatproducersforum.eu

Peatlands and Ecosystem Functions
Freising, Germany
18 - 21 September 2024
https://www.hswt.de/en/newsroom/event-calendar

DGMT Forest Peatlands Conference
Laußnitz, Bautzen, Germany
20 - 22 September 2024
ww.dgmtev.de

15th International Sago Symposium
Kuching, Sarawak, Malaysia
23 - 26 September 2024
https://sagosymposium.com

World Biodiversity Summit 2024
New York, USA
26 September 2024
www.worldbiodiversitysummit.org

UN Biodiversity Conference #COP16
Cali, Colombia
21 October - 1 November 2024
https://www.cbd.int

UNFCCC COP29
Baku, Azerbaijan
11 - 22 November 2024
https://unfccc.int/cop29

IVG Sector Day Soils & Substrates
Bad Zwischenahn, Germany
21 November 2024
https://ivg.org/veranstaltungen

Ramsar Scientific and Technical Review Panel (STRP) 27th Meeting
2 - 5 December 2024
Gland, Switzerland
www.ramsar.org

IPS Annual Convention 2025
North of Uppsala, Sweden
First half of June 2025

ISHS-IPS II International Symposium on Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation
Freising, Germany
7 - 12 September 2025
www.ishs.org/symposium/837

Paludiculture 2025: 4th international RRR conference on Renewable Resources from Wet and Rewetted Peatlands
Greifswald, Germany
23 - 26 September 2025
www.rrr2025.com

Send your events to the IPS Secretariat, susann.warnecke@peatlands.org!

More at: www.peatlands.org/events

DEADLINE EXTENDED

15TH INTERNATIONAL SAGO SYMPOSIUM

Unlocking the Potential of Sago Palm: Towards Sustainable Food Systems and Environmental Restoration

23rd – 26th September 2024

SARAWAK TROPICAL PEAT RESEARCH INSTITUTE
KUCHING, MALAYSIA

Important Dates

Abstract Submissions Closed	30 June 2024
Notification of Acceptance	15 July 2024
Early-bird Registration Ends	30 July 2024
Submission of Camera-ready Paper	15 August 2024

Scan for more information

Organised by:

MPS MALAYSIAN PEAT SOCIETY

Sarawak Tropical Peat Research Institute (TROPI)

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SSPS The Society of Sago Palm Studies

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Next issue...

A few instructions for authors

Articles should be sent as text file (500-2,000 words, no pdfs, no full cap lines, no embedded links) with author contact details; photos and illustrations (jpg files with the names of the photographers, you need to have copyrights & persons' consent) and advertisements (pdf, prices according to Media Kit) to susann.warnecke@peatlands.org. Proofreading will be carried out via **www.englishproofread.com**

Submission deadline: PI 3.2024: 2 September

IPS is also blogging for you. Click here to read!

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22nd Baltic Peat Producers Forum in Lithuania

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