

IPEWGW Meeting 13

22-24 October 2019

Summary Report

Overview

1. Peatland research program update: A full day of the meeting was spent on an update on the Peatland Research Program. This included:

- Papers for publication: a series of papers are at different stages of development for publication in peer-reviewed journals. These cover subsidence, fire, GHG emissions and modelling.
- Update on field experiments and modelling: The experimental setup is now very comprehensive including a field set up with flux towers, subsidence measurements, water table trials, lysimeters and native species trials.



2. APRIL Vision 2030: APRIL is in the process of developing its 2030 vision and provided IPEWGW with an overview of the proposed vision, and an opportunity to provide input into both the overall approach and the specific targets being discussed.

3. IPEWGW Phase 3: This meeting was the final meeting of IPEWGW's second two-year phase. Therefore, a focus of the meeting was to discuss within IPEWGW and with APRIL staff and management what the role and objectives for IPEWGW should be in the third two-year phase, building on the strengths and achievements of the group in the first two phases while also recognizing limitations.

APRIL management confirmed that they will support the continuation of IPEWGW for a third two-year period, and IPEWGW agreed that the role should continue to be to support the implementation of SFMP 2.0 and also the emerging APRIL Vision 2030 and specifically, in line with the IPEWGW Roadmap, phase 3 should include:

Science-based understanding: continue to support the APRIL Peatland Science team with research, analysis and dissemination of excellent peatland science, with a stronger focus on dissemination. The current research program, including the flux towers, water table experiment, lysimeter experiment, native species trials and subsidence monitoring, now provides a comprehensive setup which will be producing large amounts of information over the coming months and years, all of which will only be useful if it is systematically and effectively analyzed and reviewed by APRIL scientists supported by IPEWGW. In addition to analysis, dissemination of the resulting information will be a priority including:

- Within the **company**, through internal discussions, simplified briefs and summaries of key findings and with **other companies** (e.g. oil palm managers operating on peat) through discussions, meetings and sharing information;

- Within the **Indonesian scientific community** through holding meetings and seminars with other scientists and related practitioners in Bahasa Indonesia to share research questions and findings and discuss the implications for policy and practice;
- With the **global scientific community** through peer reviewed papers and conferences;
- With **customers and investors**, through briefing notes and updates on the science being undertaken and its role in shaping best management practices and the longer term vision.

Peatland operations: Continue to support the translation of research outcomes into operations, achieving greater effectiveness by focusing on specific issues and questions starting with:

- Managing **water tables** and peat moisture content to balance the need to minimize subsidence and emissions and to maximise tree stability and yields, in particular by reducing water table fluctuation with optimum peat moisture content at the average water tables.
- Understanding **flood risk** through modelling and developing **rehabilitation** strategies starting with practical approaches for plantation areas already prone to repeated flooding.
- Improved understanding of managing long-term **nutrition** needs, and particularly the implications of higher water tables (and therefore slower decomposition and release of nutrients from peat)
- Improved **GHG modelling** to understand APRIL's carbon footprint and the implications of different operational strategies
- Science-based guidance on the implications and potential of **management options for existing, undeveloped areas** on existing areas of degraded peat
- Improved understanding of **fire management** including the role of water table depth versus peat moisture content

Long-term vision: It is clear that the long-term vision for peatland management needs to be part of a wider vision developed by APRIL and other affected stakeholders. Therefore, the role of IPEWG will be to support APRIL with the development and implementation of their Vision 2030, as well as growing engagement with Landscape Initiatives in districts where they manage peatlands.

Next steps: It was agreed that a revised ToR and 2 year workplan will be developed and agreed between IPEWG and APRIL.

- The workplan will include a strong emphasis on internal and external dissemination including technical briefings and having workshops or meetings with local scientists and practitioners
- IPEWG physical meetings will include (a) a 'science week' where researchers can spend more time in the field or analyzing and discussing data, as well as including a seminar or workshop with external researchers and (b) a more formal IPEWG meeting where progress can be monitored and discussions with operations, sustainability and senior management will be more of a focus.
- IPEWG will also have regular short Zoom meetings to discuss progress and any issues
- Indonesian IPEWG members will regularly attend the SAC and APRIL will provide routine updates on peatland-related questions from customers, investors and other stakeholders which IPEWG can help to respond to.

A summary of the past four years of IPEWG work will be developed to provide a review of progress

Meeting Notes

Participants

IPEWG: Dr Ruth Nussbaum, Prof. Supiandi Sabiham, Prof. Susan Page, Prof. Chris Evans, Prof. Ari Lauren, Prof. Dwi Astiani & Prof. Fahmuddin Agus.

SAC: Joe Lawson, Al Azhar

Observers: Dr Haruni Krisnawati and Mr Wahyu Catur Adinugroho, FORDA MoEF and International Tropical Peatlands Center (ITPC) Secretariat

APRIL: Praveen Singahvi, Lucita Jasmin, Mark Werren, Tim Fenton, Taufan Chrisna, Dr Chandra Deshmukh, Dr Luke Esprey, Yogi Suardiwerianto, Adibtya Ayshari, Sofyan Kurnianto, Riyadin Hendratno, Riri Yuliani.

IPEWG Secretariat: Susilo Sudarman, Craig Tribolet.

Discussion Overview Notes

1. Peatland Research Program: Scientific papers in preparation for publication

The group discussed the following papers:

Subsidence Paper (CE): Paper is a well-developed draft and will be shared with APRIL for comment in the next few weeks. Notes: Best subsidence monitoring data-set in the world (> 300 pts). The real rate of subsidence ranges from <3 – 5cm/yr (Plantation: 4cm/yr; Forest < 300m: 4cm/yr; Forest > 300m: 2cm/yr). Questions on Forest > 300m is a function of long-term trends or an impact of drainage. Clear relationship between subsidence and CO₂ and CH₄ levels. Raising the Water Table from 70cm to 40cm could reduce overall plantation subsidence to between 25-40 cm, as well as substantial amount of CO₂ emissions by 2050. Trade-off of raising water table with tree growth, however, need to be discussed and as such, and ideal situation for environment and production can be recommended.

Methane Paper (CD): Paper has been submitted to a journal. Currently 2 years of emission data. Starting to develop estimates for emissions factors which is important data moving forward.

Peatland Fires (SP): Review paper is under development. Mind map on the complexities of peatland fire. Recognised that a lot of the peatland fire information is based on lab results and not field data which is much more heterogeneous. Water Tables have been used as a proxy for MC and there are some questions about the accuracy and value of remote sensing data as the most easily available data can provide information of hot spots, but there are gaps between hotspots, forest (biomass) fire, and the area and depth of peat burned scars.

Plantation Simulator (AL): Paper is well-developed draft. No confidential data in the current paper. Growth is linked to nutrient supply and WT – raising WT decreases decomposition rates as well as decreasing subsidence and CO₂ emissions. Model tests how much nutrient (NPK) compensation is required as a result of raising WT. At 80cm WT there is a practical balance but at 40cm WT there is a significant requirement for Phosphorous (10kg/ha/rotation).

2. Peatland Research Program: Updates on field experiments and modeling

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The APRIL Peatland Science Team provided updates on the following:

Lysimeter Trial: assessing peatland hydrological processes, water balance and the effect of WT on tree growth (40cm, 80cm and control plots). IPEWGW - questions about the impact of using C rich water from adjacent canals on C flows, relationships between Soil Moisture Content and water availability and leakage rates from the trial.

High WT Trial: measuring 10 separate parameters, data is analyzed and reported monthly. Data is showing consistent trends across the trials responding to current dry season. Soil Moisture increases with peat depth and responds quickly to rainfall events. High WT lowers early growth and survival as well as impacts in tree form (lean). IPEWGW – questions about initial flooding and ability to distinguish this within the trial.

WT impact on growth and yield: only initial data available but 40cm WT tree heights are significantly lower than 60cm and 80cm WT.

Flood Risk Modelling: MIKE-SHE landscape level flood risk model. Flood risk linked to rainfall and subsidence as well as sea-level rise. The PPD model shows limited change over 50 years. Next step is the Kampar model which is currently being calibrated.

GHG Flux: measuring net balance of all existing CO₂ sources and removals. Ecosystem exchange = gross primary production + ecosystem respiration. Methane contributes only about 3.5% of the overall emissions. Plantations are a currently a source for 8 – 10 months after planting and then are neutral. IPEWGW – questions about the impact and seasonal variation of root respiration, including the possible pulse of CO₂ emission due to fresh organic matter inputs following harvest.

Carbon Footprint: Life Cycle analysis as per the SFMP 2.0. Process includes Raw materials – Manufacture – Distribution through to End of Life. Initial (year 1 focus) is one Raw Materials and Manufacture stages. APRIL is applying the GHG Protocol Corporate Standard and Agriculture Guidance as well as the WinRock Method. Request for IPEWGW inputs into factors and methods.

Conservation Forests: IPEWGW – rates of change analysis worth including in the overlay as well as the Risk Map. Need to take a broader SH overview. Review other participatory mapping exercises.

Fire Management: seasonal impacts driven by Indian Ocean Dipole. Fires in Riau (in managed landscapes) occur 'on' peat and limited evidence of fires 'in' peat. IPEWGW – need to include remote sensing (hotspots) comment in the fire paper.

3. Engaging with the wider landscape

IPEWGW was provided with updates providing an overview of key strands of APRIL's external engagement:

1. Siak Green District and Riau Green Province
2. APRIL's community engagement program
3. APRIL's internal and external communication program

The group discussed each topic and focused in particular on its relevance to peatland science and management. It was agreed that a key component of the next phase of IPEWGW should be dissemination of

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information on peatland science and improved operations within the Indonesian scientific community and, where useful, with other stakeholders including practitioners, government, civil society and local communities. It was agreed that this would need some planning and would need to translate scientific concepts and results into more accessible ideas and language, and that it needs to be undertaken in Bahasa Indonesia.

4. Vision 2030

APRIL shared the draft Vision 2030 for input on both the overall approach and the specific targets and KPIs. IPEWGW members were positively impressed with both the overall direction and the level of ambition of the proposed Vision 2030. There was discussion about some of the specific targets relevant to peat, as well as a wider discussion about the Vision as a whole.

5. Supporting science-based peatland operations

Workshop with IPEWGW, APRIL plantations senior management and APRIL sustainability and research senior staff to discuss how to more effectively incorporate findings from the peatland research program into operations. The group explored whether it would be more effective to do this via review and revision of SOPs and work instructions or through addressing specific issues. The pros and cons of both approaches were reviewed, and it was agreed that addressing specific issues seemed a more promising approach, given the limited practical operational experience of IPEWGW members. The following five issues were identified as priorities for the phase 3 workplan for IPEWGW:

- Managing water tables to balance the need to minimize subsidence and emissions and to maximise tree stability and yields, in particular by reducing water table fluctuation with higher average water tables.
- Understanding flood risk through modelling and developing rehabilitation strategies starting with practical approaches for plantation areas already prone to repeated flooding.
- Improved understanding of managing long-term nutrition needs, and particularly the implications of higher water tables (and therefore slower decomposition and release of nutrients from peat)
- Improved GHG modelling to understand APRIL's carbon footprint and the implications of different operational strategies
- Science-based guidance on the implications and potential of **management options for existing, undeveloped areas** on existing areas of degraded peat

In addition, previous discussions on fire had also raised the importance of further developing improved understanding of fire management including the role of water table depth versus soil moisture content

6. Feedback to management

1. IPEWGW fed back (a) how impressed all the members have been with the development of the peatland research team over the last year and (b) the positive impression from the draft Vision 2030
2. There was confirmation from APRIL top management of the commitment to a third 2-year phase of

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IPEWG, and broad agreement with a summary of the priorities discussed. The following actions were agreed: A revised ToR and 2 year workplan will be developed and agreed between IPEWG and APRIL.

- The workplan will include a strong emphasis on internal and external dissemination including technical briefings and having workshops or meetings with local scientists and practitioners
 - IPEWG physical meetings will include (a) a 'science week' where researchers can spend more time in the field or analyzing and discussing data, as well as including a seminar or workshop with external researchers and (b) a more formal IPEWG meeting where progress can be monitored and discussions with operations, sustainability and senior management will be more of a focus.
 - IPEWG will also have regular short Zoom meetings to discuss progress and any issues
 - Indonesian IPEWG members will regularly attend the SAC
 - APRIL will provide routine updates on peatland-related questions from customers, investors and other stakeholders which IPEWG can help to respond to.
3. A summary of the past four years of IPEWG work will be developed to provide a review of progress