Global Environment Centre

GEC'S ECOSYSTEM RESTORATION JOURNEY

WORLD ENVIRONMENT DAY | UN environment programme 50 1972-2022

REIMAGINE RECREATE RESTORE
#GenerationRestoration

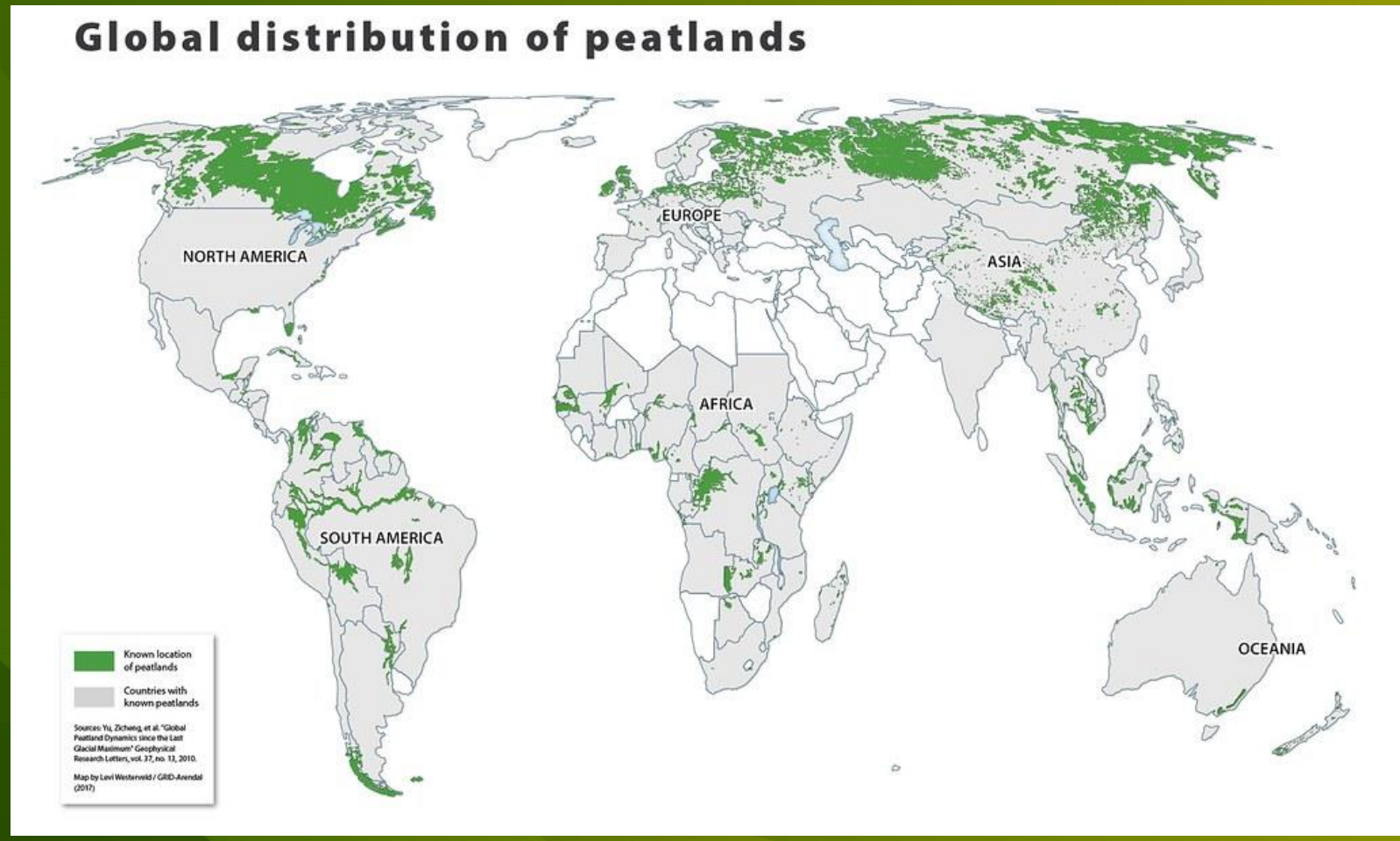
# Restoring and Managing Peatland Ecosystems

By: Lew Siew Yan (Serena)

Peatland Programme, GEC

# Global Peatland Distribution and Formation

- Peatlands are distributed throughout the world (in at least 175 countries) and cover around 4 million km² or 3% of the world's land area
- Peat formation: plant debris accumulation greater than decomposition under the anaerobic environment (high water level)
- Peat accumulates 1-2mm/year (e.g. 3m peat layer in at least 150 years peat forming process)
- Different peatland types/classification: Temperate (moss, bog), Tropical (peat swamp forest, floating peat mats), upland/lowland peat, etc.




Global Environment Centre

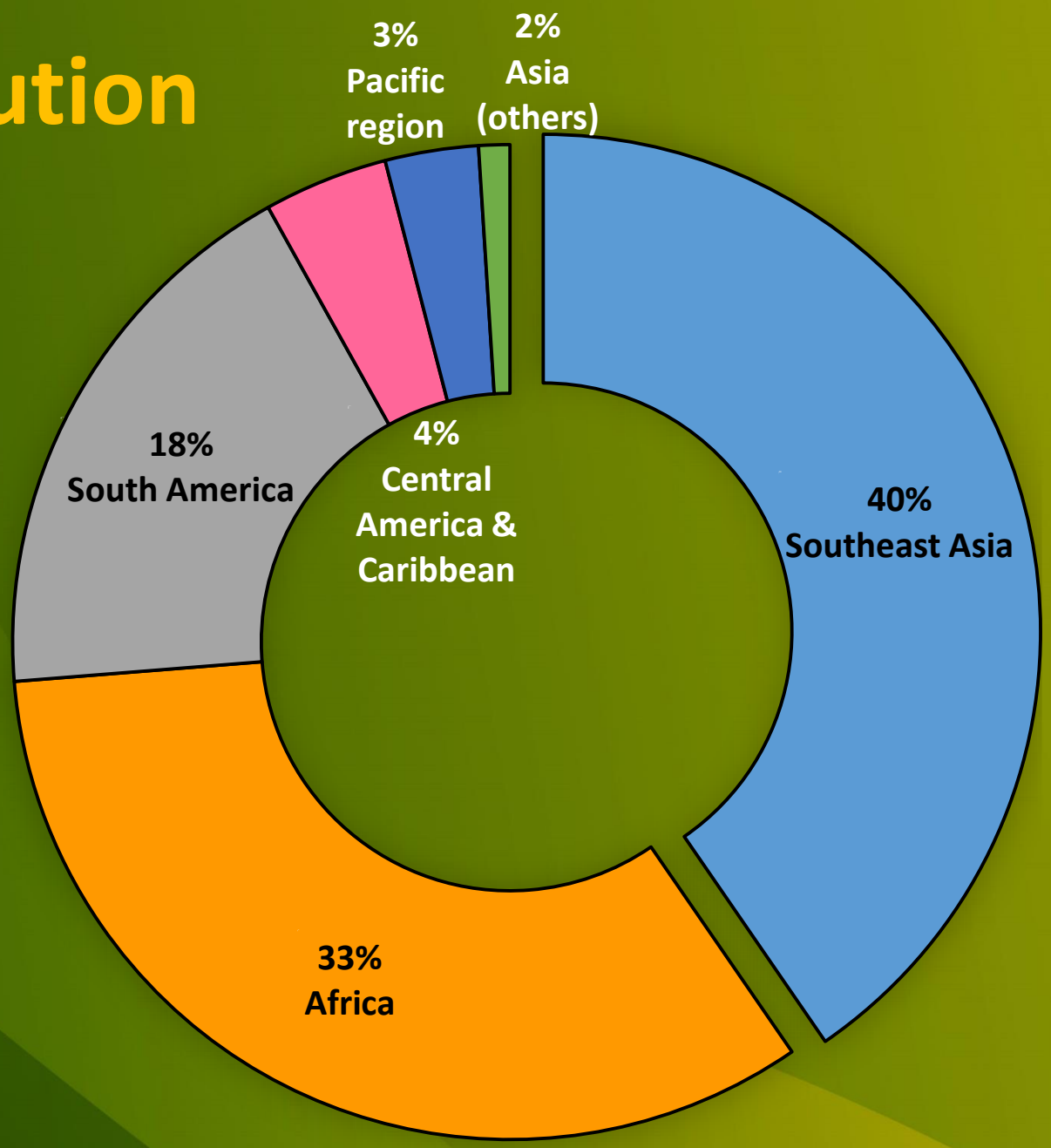
REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

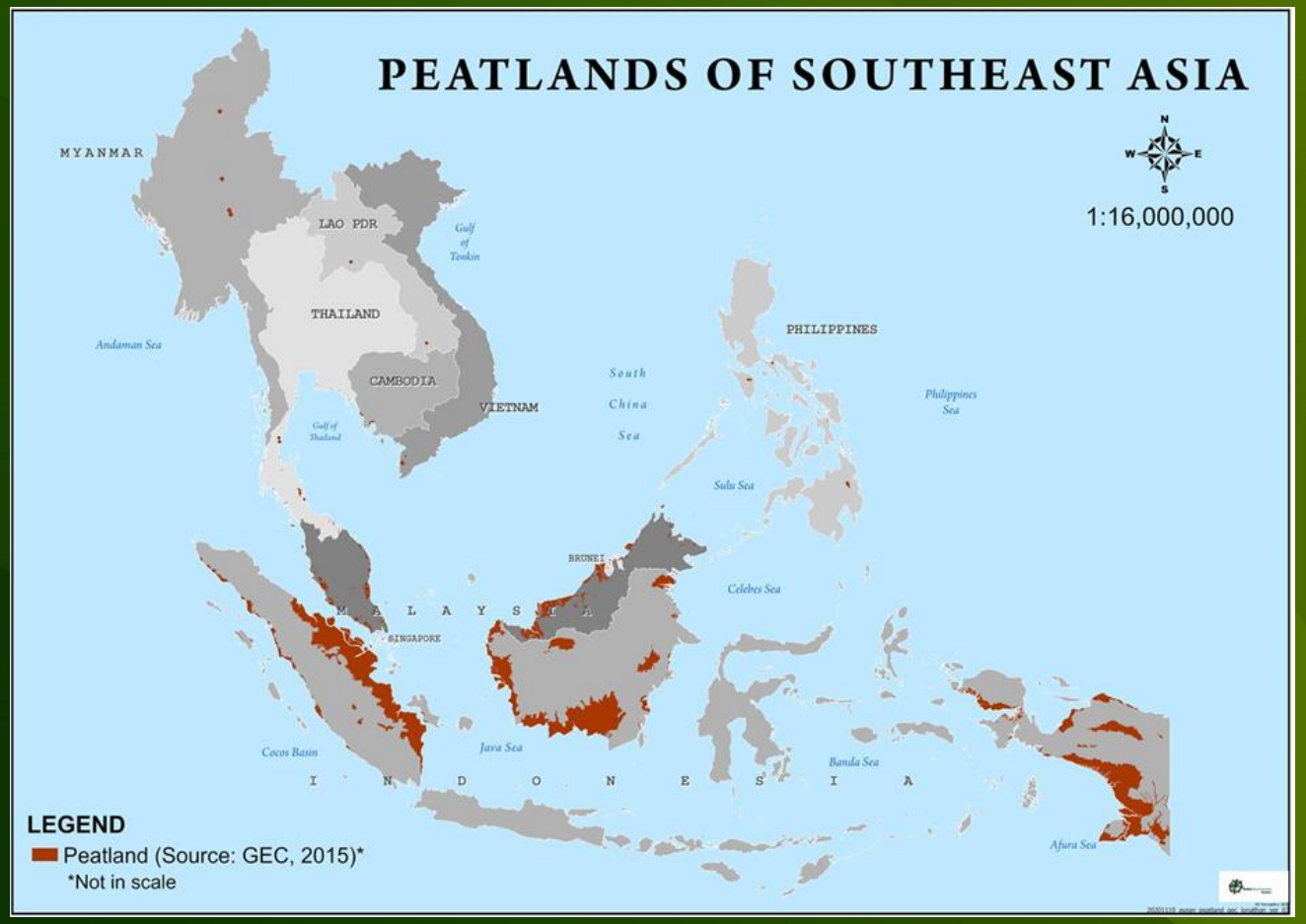
# Tropical Peatland Distribution

- There are an estimated 60 million hectares of **tropical peatland** (~15% of global peatland area)
- The majority of mapped tropical peatlands are in Southeast Asia, which contains 40% of the World's total tropical peatland.

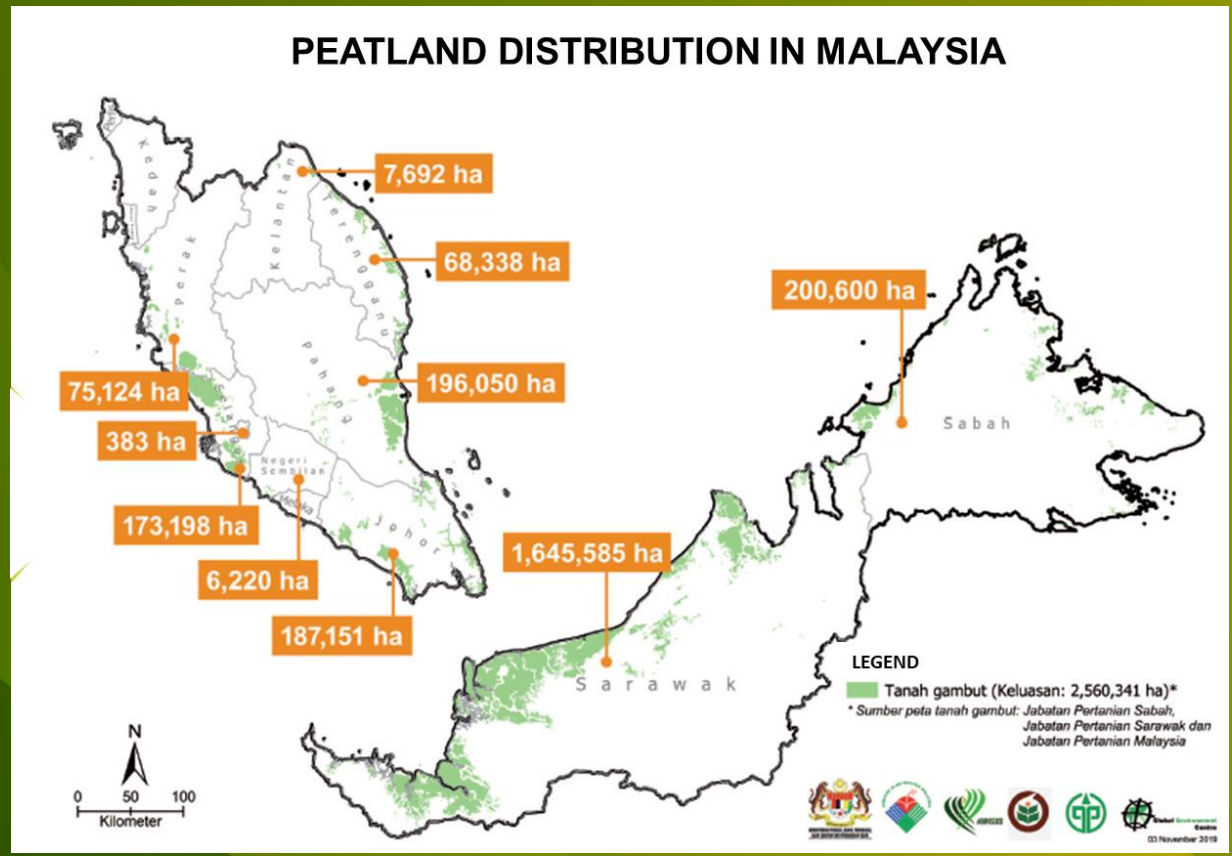



Global Environment Centre

# Peatlands in Southeast Asia and Malaysia




- ASEAN peatlands ~ 23 million hectare (Indonesia ~20 Mha and Malaysia 2.56 Mha)
- Peatlands in Malaysia: ~8% of total land area, the largest peatland area is found in Sarawak.
- Approximately 30% of the total peatland area in Malaysia is found in forest reserves.



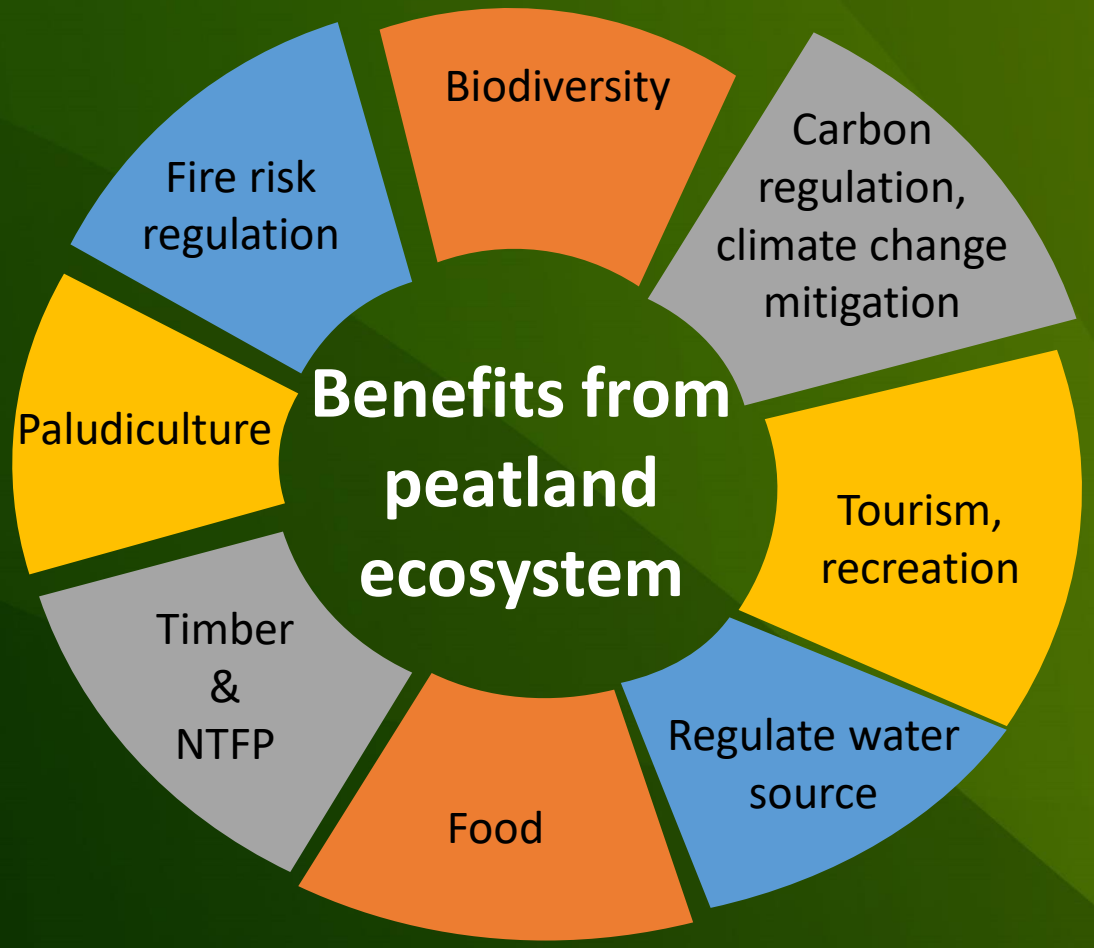

Global Environment Centre

REIMAGINE RECREATE RESTORE

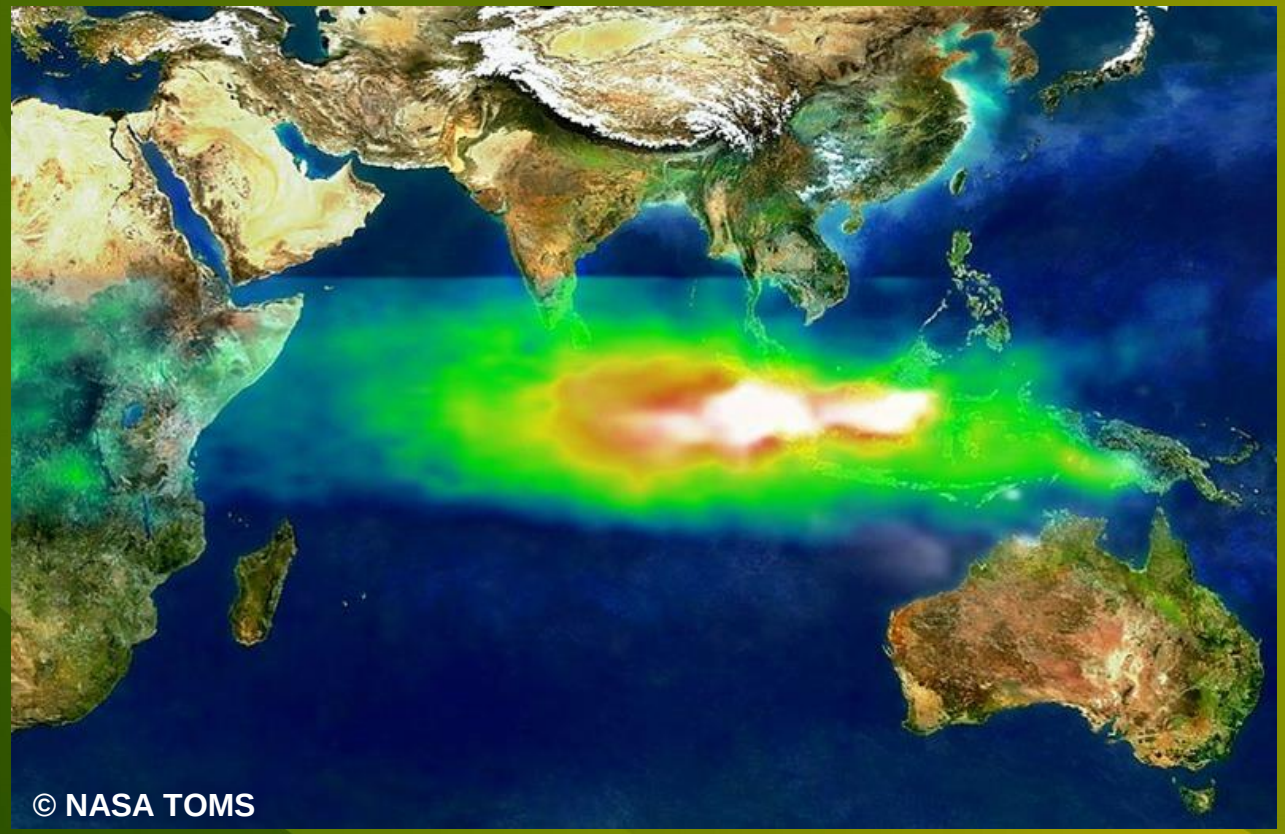
WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

# Peatland Ecosystem Services




- Peatlands are the largest natural carbon store.
- However, when the peat is burning, it becomes a disaster in releasing huge amount of Carbon to atmosphere – destroy peat ecosystem, loss wildlife habitat, damage cultivated land, affect people health, etc.




Global Environment Centre

# Management and Restoration Approaches

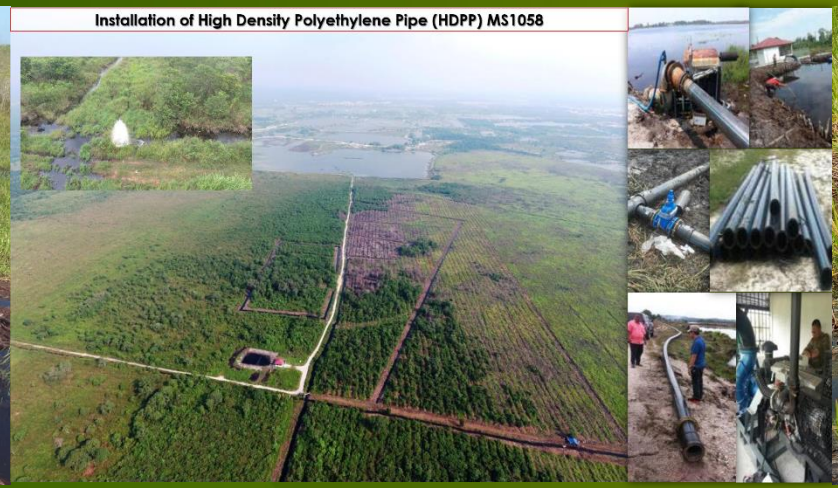
- Initial focus on replanting only – small scale, limited success (lessons learned)
- **Currently 4R approach**
  - **Rewetting** (i.e. blocking drainage channels)
  - **Reduction of fire risk** (stakeholder engagement, zero burning agriculture)
  - **Revegetation** (encouraging natural regeneration, limited replanting)
  - **Revitalisation** (enhancing socio-economy of local communities and other stakeholders linked to the rehabilitated peatland)
- **Experiences in Selangor and Pahang, technical support to other peatland sites/states/countries**

Global Environment Centre

# Recovery of degraded peat forest five years after blocking drains

# Fire Prevention Programme in Selangor – rewetting and fire reduction

Construction of clay dyke




Installation of HDPP


Monitoring the water guage

Installation of piezometer

The peat forest severely degraded by fire in 2014 (left); Regeneration status of the degraded forest in 2020 due to rewetting and replanting programmes (right)

Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

# Revegetation and Natural Regeneration

- Rehabilitation programme in Selangor (since 2008)

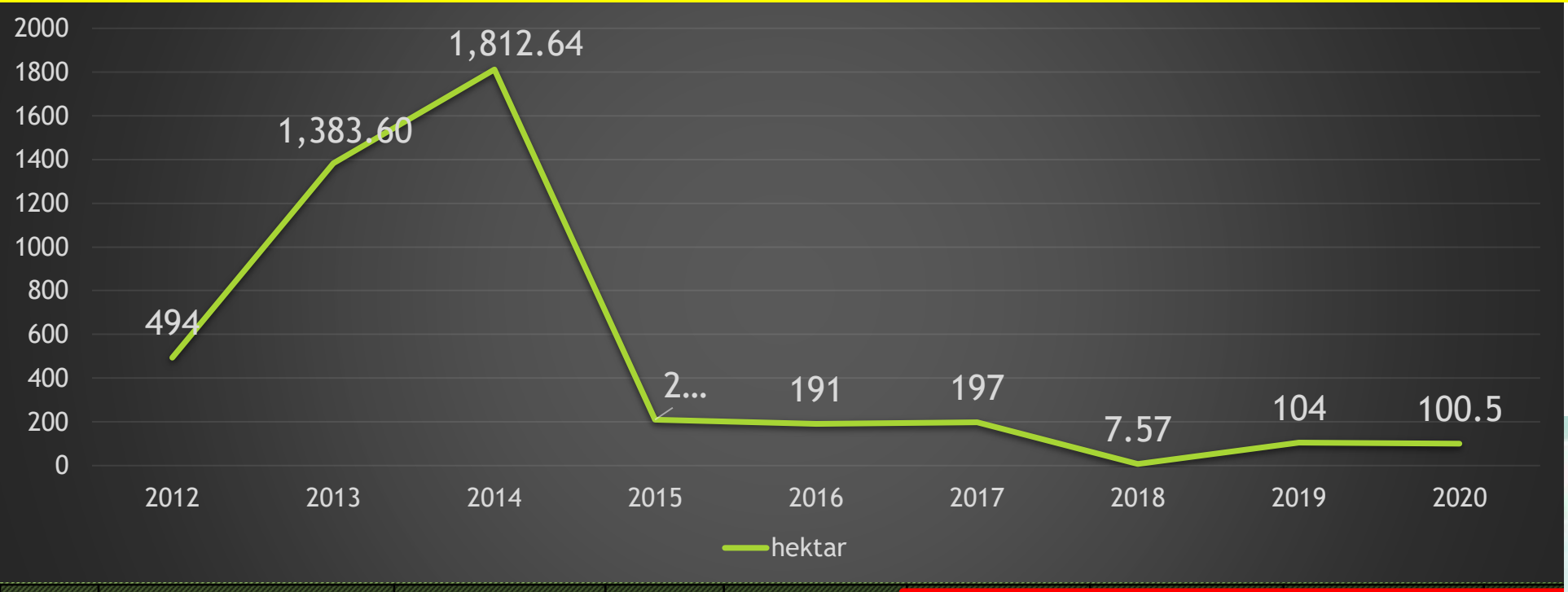


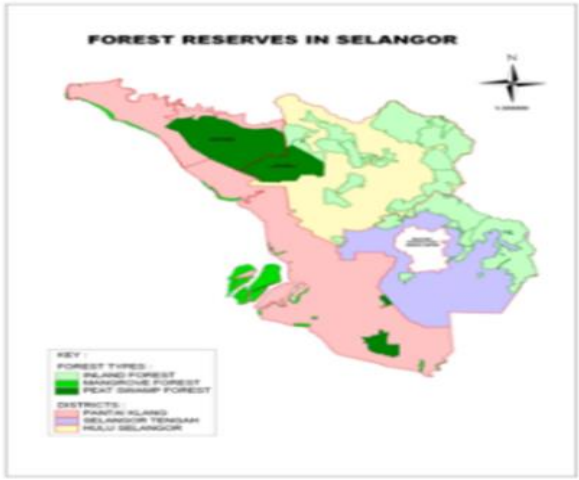

# Revitalisation - Enhance Community Livelihoods

Handicraft/Ecotourism

Forest rehabilitation and Nurseries

# FOREST FIRE STASTISTIC AT NSPSF AND SSPSF 2012-2020

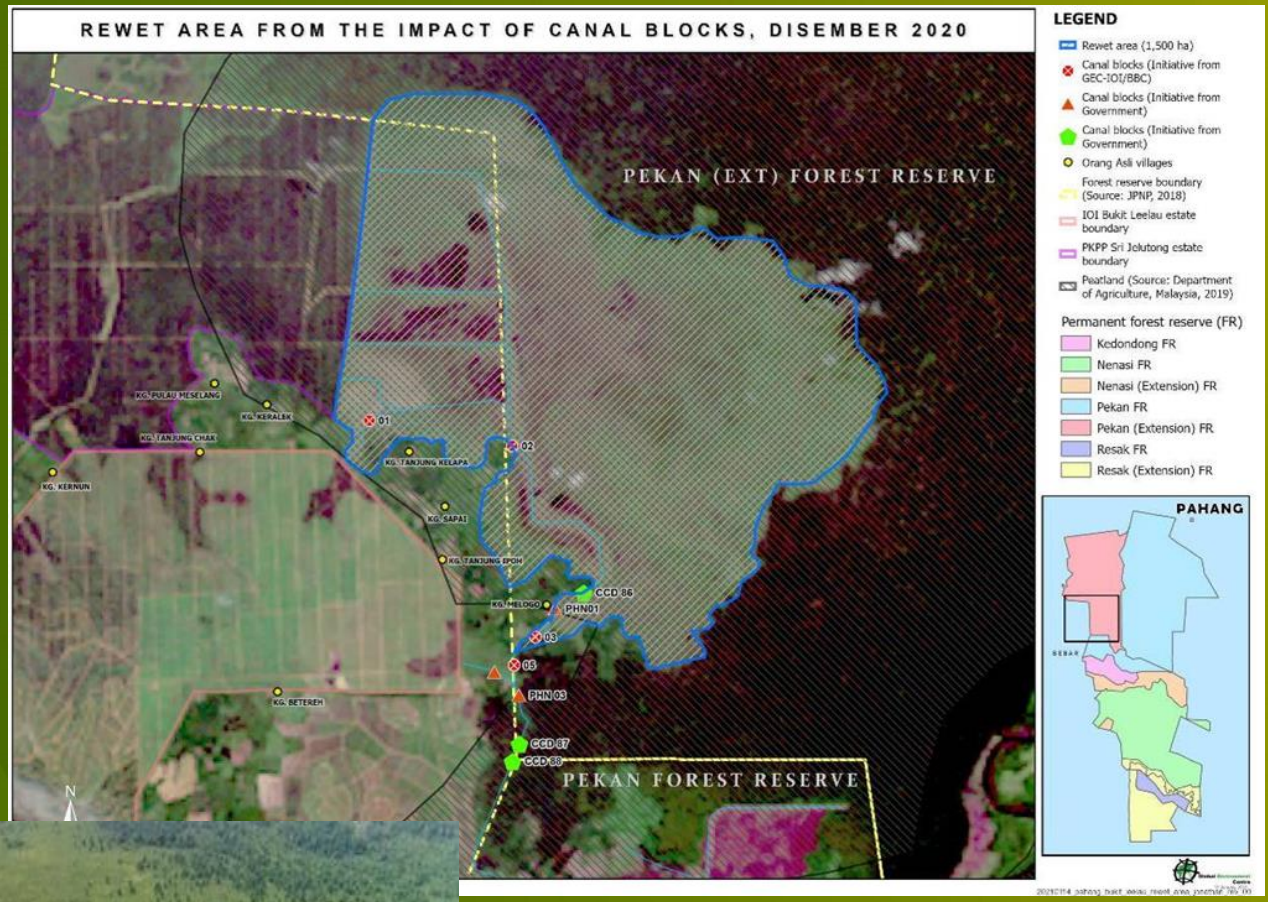



| Num. | Location | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | HS Raja Musa | 407.00 | 690.00 | 1,300.00 | 200.00 | 150.00 | 100.00 | 0 | 9.0 | 0 |
| 2. | HS B. Belata (T) | 0.00 | 19.40 | 210.00 | 0.00 | 0.00 | 0.0 | 0 | 0 | 0.5 |
| 3. | HS Kuala Langat U | 50.00 | 82.00 | 132.00 | 0.00 | 0.00 | 97.0 | 0 | 0 | 0 |
| 4. | HS Kuala Langat S | 37.00 | 563.20 | 152.00 | 10.00 | 40.00 | 0.0 | 1.50 | 95 | 100 |
| 5. | HS Sungai Karang | 0.00 | 29.00 | 12.00 | 0.00 | 1.00 | 0.0 | 6.07 | 0 | 0 |
| 6. | HS Hulu Langat | 0.00 | 0.00 | 5.04 | 0.00 | 0.00 | 0.0 | 0 | 0 | 0 |
| 7. | HS Sg. Lalang | 0.00 | 0.00 | 1.60 | 0.00 | 0.00 | 0.0 | 0 | 0 | 0 |
| **Total (hectares)** | | **494.00** | **1,383.60** | **1,812.64** | **210.00** | **191.00** | **197.00** | **7.57** | **104.00** | **100.5** |

# Rehabilitation Program in Pahang – Rewetting and Reduction of fire

- An estimated of 1500 ha of the degraded peatland area have been rewetted with 10 canal blocks constructed by Government, private sector, GEC and local community
- No fire outbreak since March 2019







Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

# Revegetation and Revitalisation

- **Revegetation** to restore the degraded area by planting fast growing tree species (e.g. *Macaranga pruinosa* and *Melicope lunu-ankenda*).
- **Revitalisation** – Community nurseries of wildings (livelihood through seedling buy-back) to support replanting; community patrolling team (for fire prevention and awareness to peers)


Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

# Peat Matters, We Care

- Harmonising human – environment bonding
- Support community basic necessities e.g. electricity and clean water supply to villages in/adjacent to the peatlands
- Kitchen stove and some food supply
- Additional training – First Aid

Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

# Stakeholder Engagement and Landscape Approach

- Engagement of multi stakeholder is necessary in performing good rehabilitation plan and effort for **a common objective**.
- Understand perceptions of different stakeholders and existing land use and challenges to **identify solutions**.
- Encouraging stakeholders to participate is crucial to ensure project's **sustainability**.
- Establishment of local community groups to ensure **continuity** and uptake of **ownership**, through Free, Prior and Informed Consent (FPIC)



Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022


# Win-Win-Win for all stakeholder


| Stakeholder | Direct Impact |
|---|---|
| **Government** | - Reduced fire outbreak = reduced government budget for fire-fighting<br>- Rehabilitated degraded area = contributing to achieve target of national plans and policies and GHG emission reduction (BUR/NDC) |
| **Private sector** | - Reduced risk/threat to oil palm estates on fire which will affect palm fruit production<br>- Better engagement with other stakeholders |
| **Community** | - Better awareness on importance of peatland ecosystem<br>- Better natural resources management (livelihood options of non-timber forest products, fish, etc.)<br>- Support on welfare – solar system for electricity and water, kitchen set, etc.<br>- Sense of ownership to take care of the surrounding area including the peatland and forest areas |
| **CSO** | - Facilitated multi-stakeholder approach (Share Responsibilities, Share Benefit)<br>- Emphasised on landscape approach (hydrological unit, uniqueness of peatland ecosystem) |

Global Environment Centre

REIMAGINE RECREATE RESTORE

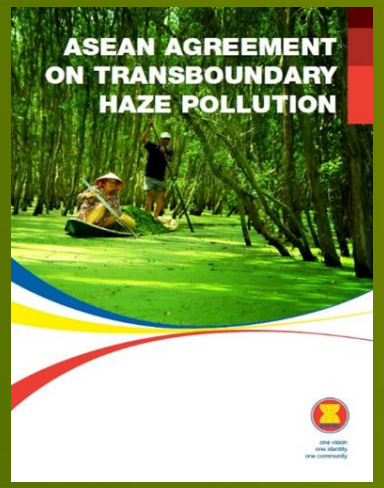
WORLD ENVIRONMENT DAY

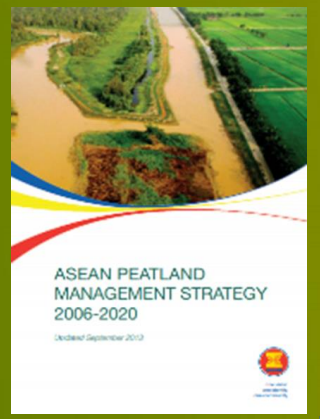
UN environment programme 50 1972-2022

Image from internet

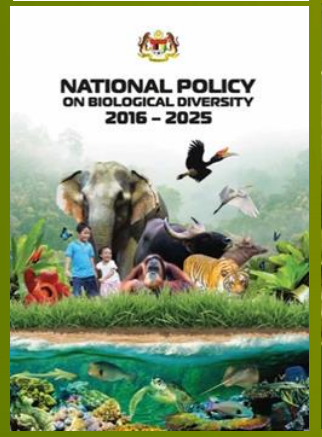
# GEC's Involvement in peatland management and restoration

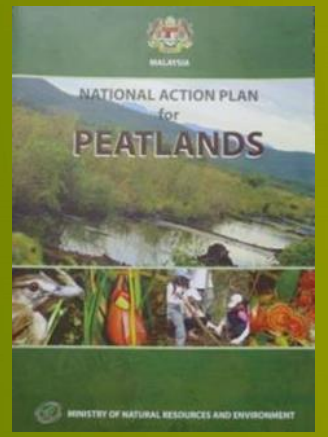
- Site-based project implementation in Malaysia (Selangor and Pahang, expanding) and Indonesia (through GEC's sister organisation – Yayasan Gambut)
- State and National levels policies/plans implementation – National Action Plan on Peatlands (NAPP), National Policy on Biological Diversity (NPBD), Integrated Management Plan for North Selangor Peat Swamp Forest 2014-2023 (IMP NSPSF)
- Technical support ASEAN Member States through regional projects/programme under framework on ASEAN Agreement on Transboundary Haze Pollution
- Partnerships with like-minded organisations for peatland management and rehabilitation programmes in Southeast Asia, China and Africa
- Technical support to oil palm sector in relation to peatland management – RSPO and MSPO Standards
- Member of Global Peatlands Initiative, International Peatland Society, International Mire Conservation Group







MSPO
Malaysian Sustainable Palm Oil

RSPO
Roundtable on Sustainable Palm Oil

Global Environment Centre

REIMAGINE RECREATE RESTORE

WORLD ENVIRONMENT DAY

UN environment programme 50 1972-2022

Global Peatlands Initiative

International Peatland Society

International Mire Conservation Group

# GEC Peatland Partners























































*And other funders and partners…*

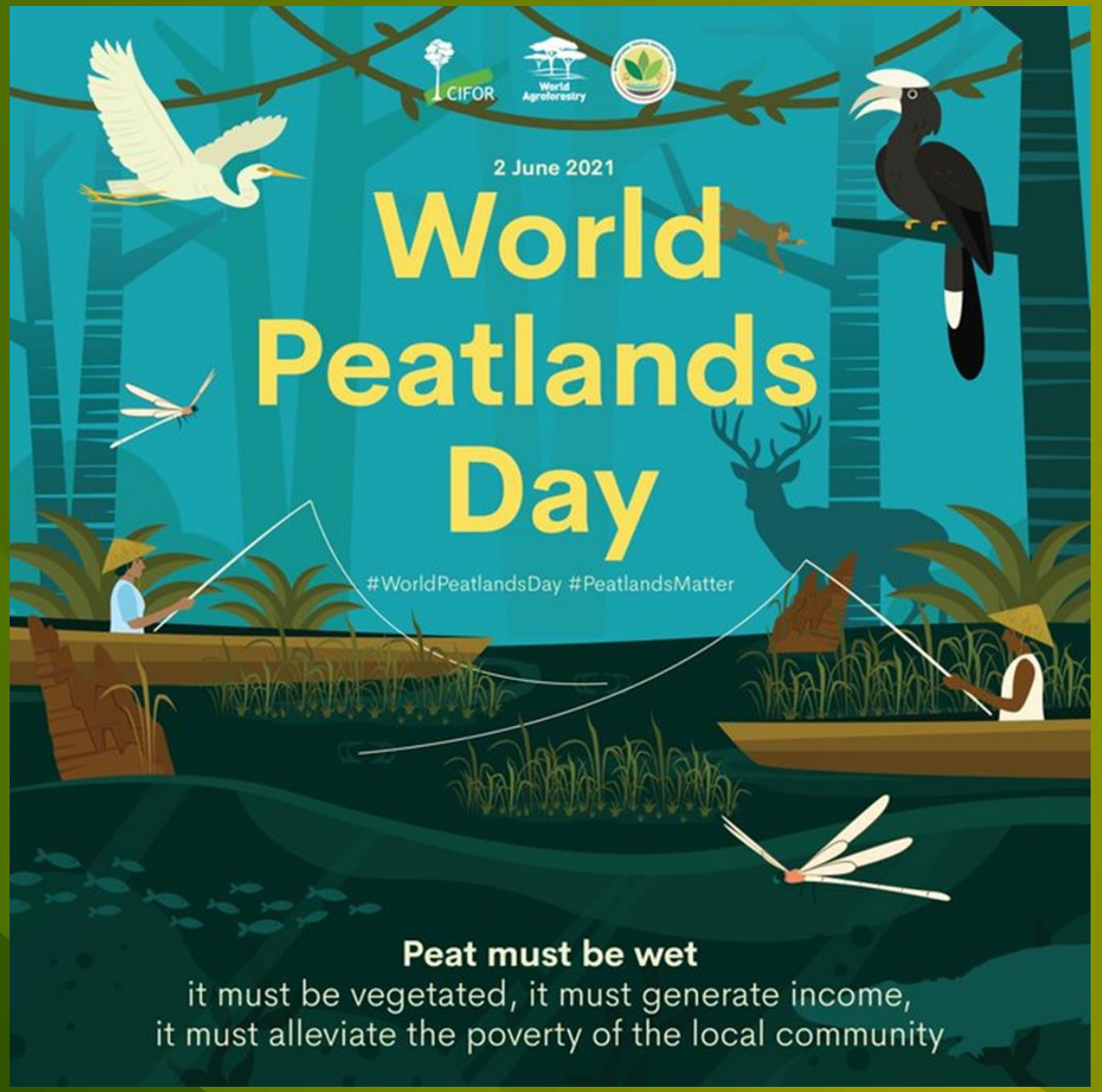
# Thank You for your attention

*serena@gec.org.my; peatland@gec.org.my*

#peatforlife
#peatlands
#peatmatters
#aseanpeat

www.gec.org.my

ASEAN Haze Action Online (https://haze.asean.org/)
ASEAN Peat Portal (http://www.aseanpeat.net/)
Peatland Rehabilitation in Pahang with Orang Asli (https://www.facebook.com/watch/globalenvironmentcentre/863040440906201/)




Global Environment Centre
REIMAGINE RECREATE RESTORE
WORLD ENVIRONMENT DAY
UN environment programme 50 1972-2022