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## **IMPLEMENTATION OF INTEGRATED MANAGEMENT PLAN FOR NORTH SELANGOR PEAT SWAMP FOREST 2014-2023 (IMP-NSPSF 2014-2023)**

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### **SUMMARY**

Peat swamp forests cover more than a third of the total permanent forest reserves in Selangor. These forests are vital to the balance of our ecosystem. However, rapid development and booming population have significantly put peatlands in Selangor under threat. Since peat swamp forests have complex ecosystem, there is a need for an integrated landscape approach to deal with this matter. North Selangor Peat Swamp Forest comprises of Raja Musa Forest Reserve, Sungai Karang Forest Reserve, Sungai Dusun Forest/Wildlife Reserve and part of Bukit Belata Forest Reserve Extension and adjacent areas of stateland forest. It covers an area of 81,304 hectares and is the second largest contiguous peat swamp forest in Peninsular Malaysia. Over the years, NSPSF had faced with many challenges (i.e. recurring fires and forest degradation) both from inside and outside the forest reserves. In 2014, an IMP-NSPSF 2014-2023 (Vol. 1 and 2) was developed by the Forestry Department Peninsular Malaysia, Selangor State Forestry Department with support from Global Environment Centre and International Fund for Agricultural Development - Global Environment Facility (IFAD-GEF), funded by ASEAN Peatland Forest Project and European Union supported SEApeat Project which is implementing under the framework of the ASEAN Peatland Management Strategy 2006-2020 (APMS). It was adopted in December 2014 by the Selangor State Government. The paper will highlight the implementation progress made on IMP-NSPSF 2014-2023 in North Selangor with the support and collaboration of NGO and public.

**Keywords:** *complex ecosystem, integrated landscape approach, many challenges, collaboration of NGO and public*

### **INTRODUCTION**

Selangor is endowed with a diversity of forest types such as Inland Forest, Peat Swamp Forest and Mangrove Forest. The total area of peatlands is limited to 177,947 ha (22.4%) (Faculty of Forestry, UPM, 2014) of the total 793,020 hectares of state land (Federal /TUP, 2009). The total area of Peat Swamp Forest Reserves in Selangor is 91,080 hectares. It is located in the North Selangor Peat Swamp Forest (81,304 hectares) and South Selangor Peat Swamp Forest (9,776 acres) (Selangor Forest Management Plan 2011-2020 [Mid-term review, 2015]).

The North Selangor Peat Swamp Forest (NSPSF) is situated on the west coast of Peninsular Malaysia about 50km Northwest of Kuala Lumpur. The North Selangor Peat Swamp Forest (NSPSF) is located on a flat coastal plain in the north western part of the State of Selangor and approximately covers an area of 81,304 hectares. Before being constituted as forest reserve in 1990, the forests were state lands and have been selectively logged on a rotational basis. The first logging operation started about 65 years ago. In the previous Integrated Management Plan NSPSF (2001-2010), NSPSF was described as including only two forest reserves - namely Raja Musa Forest Reserve & Sungai Karang Forest Reserve. Based on the assessment for the revision of the IMP as well as stakeholder discussions it is proposed that Bukit Belata (extension) Forest Reserve and Sungai Dusun Forest Reserve/Wildlife Reserve (Hulu Selangor District) have to be included as part of NSPSF. With this, the strategies are developed will be applied on both the forest reserves to manage and protect the forests and biodiversity from further threats. Tables 1 give details of the NSPSF which is made up of four Forest Reserves.

North Selangor Peat Swamp Forest comprises of Raja Musa Forest Reserve (35,656 ha), Sungai Karang Forest Reserve (37,417 ha), Sungai Dusun Forest/Wildlife Reserve (5,091 ha) and part of Bukit Belata Forest Reserve Extension (4,342 ha) and adjacent areas of stateland forest. It covers an area of 81,304 hectares and is the second largest contiguous peat swamp forest in Peninsular Malaysia. Over the years, NSPSF had faced with many challenges (i.e. recurring fires and forest degradation) both from inside and outside the forest reserves.

In 2014, an IMP-NSPSF 2014-2023 (Vol. 1 and 2) was developed by the Selangor State Forestry Department and Forestry Department of Peninsular Malaysia with support from Global Environment Centre and International Fund for Agricultural Development - Global Environment Facility (IFAD-GEF), funded by ASEAN Peatland Forests Project and European Union supported SEApeat Project which is implemented under the framework of the ASEAN Peatland Management Strategy 2006-2020 (APMS). It was adopted in December 2014 by the Selangor State Government.

This Plan significantly updates an earlier Integrated Management Plan (IMP) previously prepared with support from DANCED in 1999. The current plan will cover the next 10 years from 2014 – 2023 and incorporates the findings from a number of studies and activities undertaken through the Smart Partnership programme of the APFP Malaysia (involving the Forestry Department of Peninsular Malaysia and other partners including Forestry Department Selangor, Department of Agriculture, Department of Irrigation and Drainage, Malaysian Meteorology Department, Forest Research Institute of Malaysia, University Putra Malaysia, Malaysian Nature Society, Sahabat Hutan Gambut Selangor Utara and the Global Environment Centre) between 2011 – 2014.

The overall management objective for the ten-year planning period is —*to maintain the geographical extent and integrity of the North Selangor Peatland Forest to sustain and rehabilitate the functions of the ecosystem as provider of goods and services for the benefit of the local and global communities.*” Meanwhile, we have set some of specific Management Plan Objectives as follows 1) Re-establish the hydrological functions and the natural water balance of the NSPSF. 2) Prevent all fire occurrence and associated haze in and adjacent to NSPSF. 3) restore the forest ecosystem of NSPSF by encouraging natural forest regeneration and where necessary supplement with planting in severely degraded sites. 4) Establish a buffer zone of at least 500m width along the entire outer boundaries of the NSPSF to minimize impacts of activities in adjacent areas. 5) Develop and promote sustainable use of NSPSF including eco-tourism, harvesting of NTFP, recreation and environmental awareness, education and research. 6) Promote conservation of peatland biodiversity and ecosystem functions. 7) Maintain and enhance carbon stock, minimize GHG emission and develop options for carbon financing. 8) Promote multi- stakeholder participation in the implementation of the IMP.

## METHODS

### *Purpose*

The updating of the NSPSF Integrated Management Plan (IMP) has been made necessary due to several factors. One is the end of the timeframe for the existing document; and the other is changes that have happened over the years, creating a need for an updated management plan. For example, an indefinite moratorium was put into place in 2010 to stop all logging activities in Selangor State.

In addition the prevalence of forest fires within and adjacent to NSPSF has increased linked to increasing pressure for development of adjacent lands. Significant experience has also been gained over the past 10 years on the options for rehabilitation of degraded portions of the forest. Furthermore, the cooperation with several governmental agencies and local communities had been strengthened, which should be incorporated into the management plan. The definition of North Selangor Peat Swamp Forest area has also been expanded in this IMP to include Bukit Belata extension and Sg Dusun Forest Reserve so as to create a complete and more effective management unit.

The 2<sup>nd</sup> National Physical Plan (NPP-2) adopted in 2005 and the Selangor State Structure Plan 2025 (SSSP 2025) adopted in 2007 have both specified the need for a 1km wide buffer zone around the NSPSF where development activities are restricted. This important requirement needs to be incorporated in to the management plan.

### *Approach*

The IMP was prepared using a participatory approach. The plan preparation was guided by the Selangor State Forestry Department and Forestry Department of Peninsular Malaysia with specific inputs from a number of agencies working under the APFP Smart Partnership Programme. Five stakeholder consultations were organized at state and district level between November 2013 and June 2014 to enable inputs to be provided by a broad range of state and local stakeholders. Stakeholder participating in the meetings included Respective District Offices and District Township Councils (Kuala Selangor, Hulu Selangor and Sabak Bernam), Department of Wildlife and National Park, Malaysia, Economic Planning Unit, Federal Department of Town and Country Planning Peninsular Malaysia,, Fire and Rescue Department, Minerals and Geoscience Department, Malaysian Palm Oil Board, Public Work Department, Department of Environment, Department of Veterinary and Services, Selangor Agriculture Development Corporation, FELDA, LUAS, IADA, Kumpulan Darul Ehsan Bhd, Kumpulan Semesta Sdn Bhd., Sime Darby Plantation and Peers Consult (M) Sdn Bhd.

The scope of the review was as follows:

1. Review and update the Integrated Management Plan for North Selangor Peat Swamp Forest (2001-2010) as a guide for the preparation of the Integrated Management Plan for North Selangor Peat Swamp Forest (2014-2023);
2. Evaluation of fire prone areas and propose preventive and remedial measures. Identify fire-prone areas to confirm the signs of fire and identify new hotspots;
3. Preparing a rehabilitation plan for North Selangor Peat Swamp Forest, including buffer zones, especially for degraded areas (encroached and fire prone areas);and
4. Gather relevant secondary data from 2011 to 2013 for the preparation of the Integrated Management Plan for North Selangor Peat Swamp Forest (2014-2023).

**RESULTS**

*Identified the buffer zone activities or current land use*

NSPSF is surrounded by state land and private land that is largely cultivated for agricultural purposes (see Fig. 1). The main land-uses adjoining the forest reserve are Tanjung Karang Rice Irrigation Scheme to the Southwest and West, sand and clay mining in the South, in the oil palm plantations in the south east and north. The forest is separated from the irrigation scheme to the Southwest by the Main Irrigation Canal whereas the Bernam River forms the Northern boundary. Sungai Tenggi acts as the natural divider between Sg Karang Forest Reserve and Raja Musa Forest Reserve. NSPSF is under the jurisdiction of three civil districts in Selangor State, namely Kuala Selangor District, Sabak Bernam District & Hulu Selangor District.

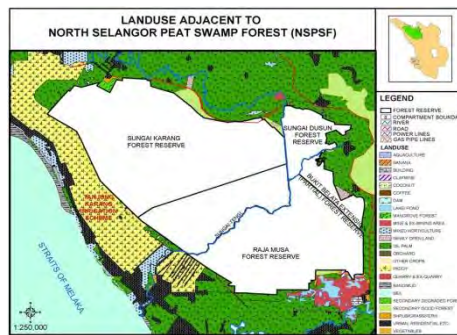


Figure 1: Landuse Adjacent to North Selangor Peat Swamp Forest (NSPSF)

*Identified the Management Zones in NSPSF*

The studies and inventories conducted during the project showed that some parts of the forest are particularly suitable for pursuing certain objectives such as bio-diversity conservation. A total of 7 categories of zones that have been identified as in need of specific management as follows i) Biodiversity Conservation (25,027ha), ii) Water Catchment Forest (22,594ha), iii) Rehabilitation Zone (18,547ha), iv) Recreation, Eco-tourism and Education (8,299ha), v) Sg. Dusun Wildlife Reserve (5,091ha) vi) Agro-Forestry Zone (1,521ha), and vii) Community Forestry (226ha).

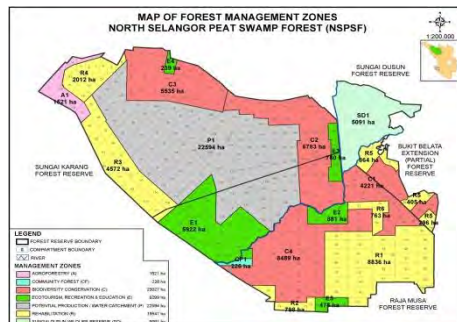


Figure 2: Map of Forest Management Zones in North Selangor Peat Swamp Forest

### Identified Fire Risk Area in NSPSF

Several areas within the NSPSF are heavily drained by either canals or the surrounding mining activities creating pockets of the forest to be dryer in the dry season and more susceptible to fire starts. This has proven to be true as past fire incidents often occurred in these areas. A fire risk map has been prepared as part of this plan to detail areas of high, medium and low fire risk which will prioritise activities and works needed to further prevent fires. The area have been identified as fire risk area requires immediate attention and placing of forest guards to prevent illegal clearing, burning and crop growing.

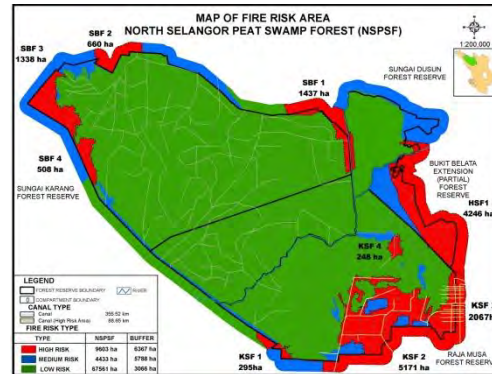


Figure 3: Fire Risk Map of NSPSF

### Identified the potential rehabilitation area with appropriate actions

Over the last 30 years, large portions of NSPSF had been degraded due to a few factors including: widespread commercial logging, illegal land clearing, drainage and fires. The combination of these factors has resulted in large areas of NSPSF- close to 20,000 hectares being degraded, although degree of degradation varies greatly from site to site. At the southern portion of NSPSF, most areas had been burned repeatedly that the area had been severely degraded, it is largely void of trees and only covered in grass/ lalang (*Imperata cylindrica*). There were three important steps had been identified in rehabilitation of the degraded area namely hydrology restoration, fire prevention and re-vegetation. These 3 aspects are inter-linked closely and omitting any would not achieve the desired outcome. Therefore, priority has been given to rehabilitate the severely degraded areas in NSPSF. Fig.2 (Map of Forest Management Zones in North Selangor Peat Swamp Forest) has shown the potential rehabilitation area in NSPSF.

## DISCUSSION AND CONCLUSION

The IMP-NSPSF 2014-2023 provides a key framework for the management of the largest peatland landscape in North Selangor. This plan will enhance the efforts in preserving the pristine of North Selangor Peat Swamp Forest as they have high potential in payment for ecosystem services (PES), ecotourism and to safeguard the human well-being. The prioritised activities include blocking many abandoned logging canals, preventing fire and rehabilitating degraded forest, and enhancing the engagement of local community and other stakeholders. Combined these measures will significantly reduce GHG emissions and help control further climate change.

This plan includes three key supporting documents which form the backbone of Integrated Management Plan as listed below:-

- d) The Cooperative Fire Management Plan provides guidance for multiple stakeholders to work together to prevent, prepare for, respond to and recover after fires
- e) The Rehabilitation Plan focusses on facilitating natural regeneration of forests by restoring the hydrology and ecology
- f) The Buffer Zone Plan covers an area of 15,000ha in a strip 1km wide around the forest reserves. The buffer zone plan aims to reduce and mitigate the negative influences of the activities taking place adjacent to the Forest Reserve

## REFERENCES

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