

# NAPC: Networked ASEAN Peat Swamp Forest Communities

MOHD FADLEE A RASID

for

JASTIP

17<sup>th</sup> October 2018

**WIPNET**

WIRELESS & PHOTONICS NETWORKS

RESEARCH CENTRE OF EXCELLENCE  
FACULTY OF ENGINEERING



**UPM**  
UNIVERSITI PUTRA MALAYSIA

# About This Project....

- **Project Title:**

- NAPC: Networked ASEAN Peat Swamp Forest Communities

- **Project Fund:**

- ICT Virtual Organization of ASEAN Institutes and NICT (ASEAN IVO)

- **Project Members:**

- Wireless and Photonic Network Research Centre (WiPNET), UPM Malaysia
- Institute of Tropical Forestry and Forest Products (INTROP), UPM Malaysia
- MIMOS Berhad, Malaysia
- School of Computing and Informatics, Universiti Teknologi Brunei (UTB), Brunei
- Faculty of Forestry, Bogor Agricultural University, Indonesia
- NICT Asia Center, Chulalongkorn University, Thailand
- Japan International Research Center for Agricultural Sciences (JIRCAS), Thailand
- Posts and Telecommunications Institute of Technology (PTIT), Hanoi, Vietnam



- **Duration:** July 2018 – June 2020 (2 years)

# Project Objectives



- **Deploy IoT-based solution for peat swamp forest monitoring with the communities**
- **Technological innovation: to deploy, analyse and disseminate information using an IoT-based peat swamp forest monitoring system**
- **Social innovation: to conduct social programs for peat swamp forest communities such as educational and entrepreneurship events related to the peat swamp forest**



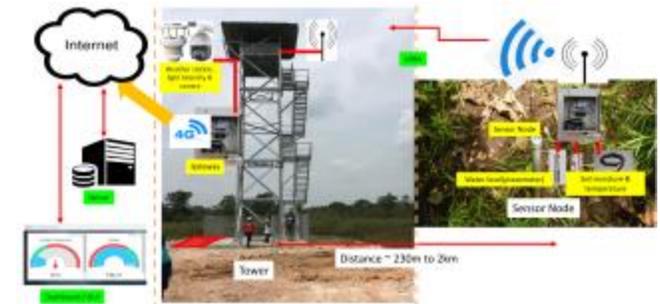
**SCOPE**



**Technological Innovation**



**Social Innovation**



Data Analytics





# Broader Impact

➤ **Enable connectivity for IoT-based monitoring system in peat swamp forest areas in four ASEAN countries**

➤ **Enable forest management community & researchers to understand more on peat swamp forest ecosystem by way of analyzing data gathered**

➤ **Serve as a peat swamp forest fire monitoring system for immediate human or automated interventions**

➤ **Serve as pilot projects for social innovation of underprivileged people living in peat swamp forest areas in these ASEAN countries**

# Proposed 4 Project Locations in ASEAN



	NAME		LOCATION
	<b>MALAYSIA</b>	<b>Raja Musa Forest Reserve</b>	<b>Selangor</b>
	<b>BRUNEI</b>	<b>Badas Peatland</b>	<b>Brunei</b>
	<b>VIETNAM</b>	<b>Ca Mau Peat Swamp</b>	<b>U Minh Ha</b>
	<b>INDONESIA</b>	<b>Sebangau Park</b>	<b>Central Kalimantan</b>



**PROJECT LOCATION IN MALAYSIA:  
RAJA MUSA FOREST RESERVE (RMFR)**

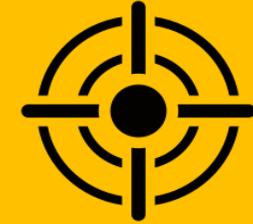


# Project Location

- Size of Raja Musa Forest Reserve (RMFR) = 23,486 hectares
- "Integrated Management Plan of the NSPSF (2001 - 2010)"
  - 70% of RMFR is classified as production forest
  - 27% as forest sanctuary for wildlife
  - 3% as research forest
- Values of RMFR - Source of natural products, source of freshwater supply, regulation of hydrology / flood mitigation, biodiversity conservation, carbon storage and ecotourism

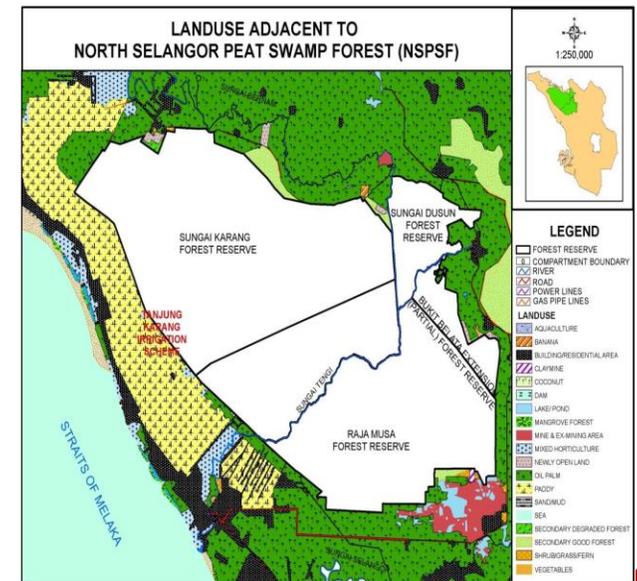


Raja Musa Forest Reserve (RMFR)



AREA

North Selangor Peat Swamp Forest (NSPSF) is located in the north western part of the Selangor State



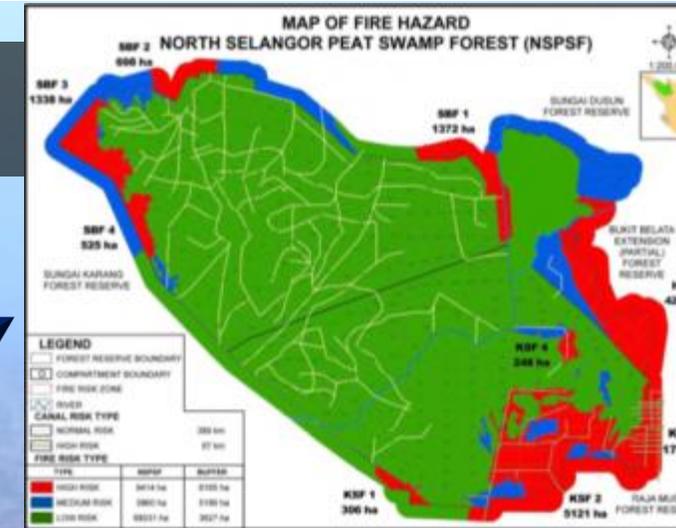
# Major Issue at RMFR: Forest Fire

Frequent fires during prolong dry spells in months of February - March and June - August every year

Due to burning of agricultural waste outside the FR, illegal clearing for settlement and agriculture activities and other encroachment activities

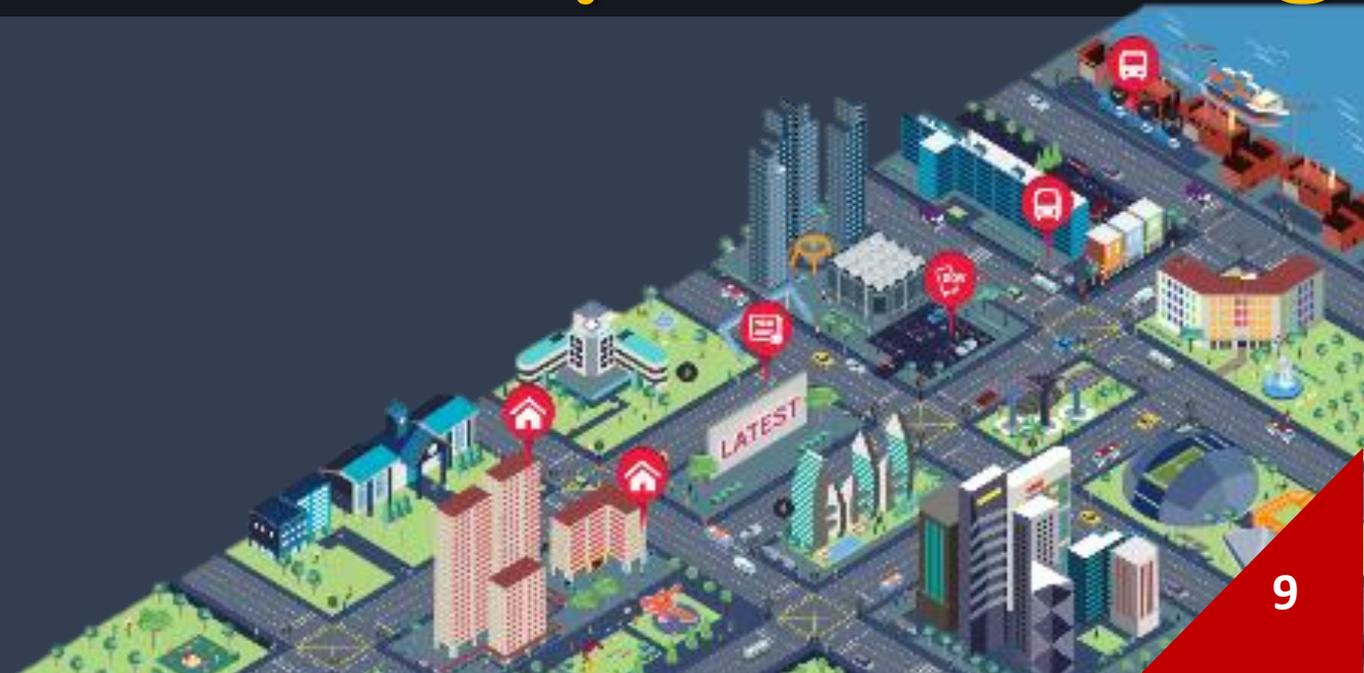
An area covering 6500 hectares bordering the southern part of the Raja Musa FFR is directly affected and has been severely degraded by fire in 2012

Based on Fire Hazard Map of NSPFR, the specific site of the project will be at the high fire risk zone





# PROPOSED IoT Based Peat Swamp Monitoring



Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length: 12,478.00 Meters

Ground Length: 12,478.09

Heading: 69.54 degrees

Mouse Navigation

Save Clear

HRRM\_P6001 HRRM\_TOWER



HRMM\_VWP\_COE



Site A (Near CoE)

Gateway at COE:  
Light intensity, anemometer sensor

Sensor:  
Piezometer, temperature, humidity,  
– Near dam

Site B (Near tower area)

Gateway at Tower:

- 1.Compact weather station (wind speed, wind direction, rainfall, temperature, humidity, atmospheric pressure)
- 2.Light intensity
- 3.Camera

Sensor Point:

1. Water level (piezometer)
2. Soil moisture & temperature

Actuator Point:

-Water pump starter (diesel or electric)

*Fakulti*

**KEJURUTERAAN**



**UPM**  
UNIVERSITI PUTRA MALAYSIA  
BERILMU BERBAKTI



[www.eng.upm.edu.my](http://www.eng.upm.edu.my)



**Faculty of Engineering,  
Universiti Putra Malaysia**



[facultyofengineering\\_upm](https://www.instagram.com/facultyofengineering_upm)

***Thank You***

