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**NATIONAL SPACE AGENCY** • MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

# REPORT TO GEOSS AP SYMPOSIUM: Initiatives Towards Green Growth in Malaysia

Mustafa Din Subari  
& Noor Azawani Wahab

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National Space Agency  
(ANGKASA)

# Content

- Purpose of Report
- Background
- GEO-Related Initiatives Report
- Situational Analysis
- Summary

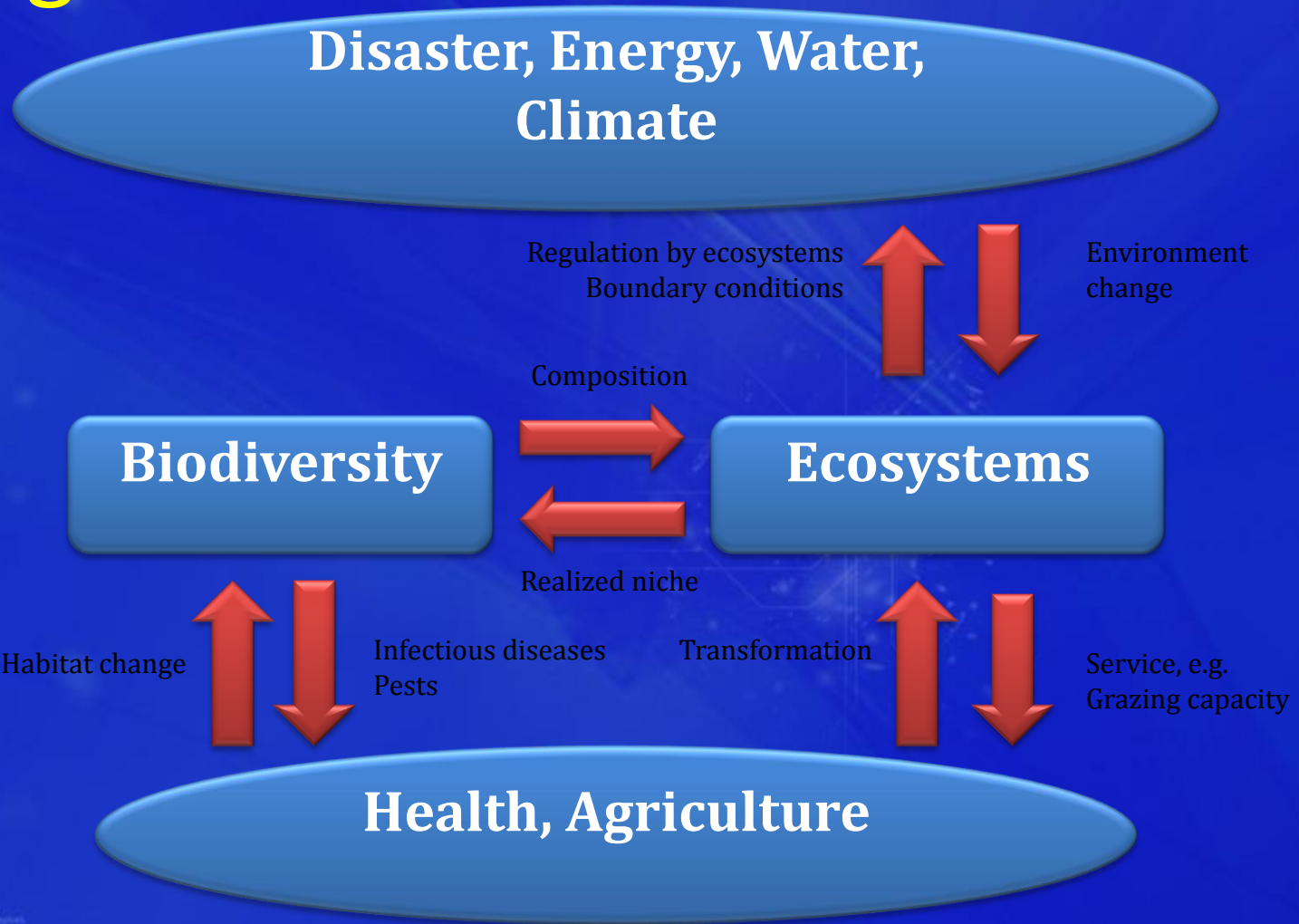


# Purpose of Report

- To report on the country's progress in implementing GEOSS since the last APS in Indonesia 2010
- GEO-Related Activities in Malaysia (2012-2015)



# Background



**Simplified schematic of the links between 9 Societal Benefit Areas**

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Malaysia's space program is a government-led initiative to develop the country's space capabilities and contribute to the global space community. The program is managed by the National Space Agency (ANGKASA) under the Ministry of Science, Technology and Innovation.

# Multitude of Parties and Involvements

- Various Ministries, agencies and programs related to GEO Initiatives;
- Prime Minister Department – National Security Council
- MOSTI – space science, technology and applications – ANGKASA, ARSM, JMM, NOD, ATSB
- Ministry of Energy, Green Technology & Water
- Ministry of Natural Resources & Environment
- Ministry of Agriculture and Agro-based Industry

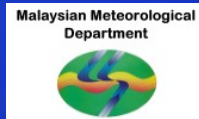


# Ministry of Science, Technology and Innovation (MOSTI)

## - the Sea-to-Space (S2S) Cluster



- National Space Agency (ANGKASA)



- Malaysian Meteorological Department (MMD)



- Malaysian Centre for Remote Sensing (MACRES)



- National Oceanography Directorate (NOD)



- Astronautic Technology (M) Sdn Bhd (ATSB)



Meratikan diri kepada keutamaan negara

di dalam kelang angkasa dengan cara yang terbaik dan berkesan

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Kementerian Sains, Teknologi dan Inovasi // Ministry of Science, Technology and Innovation

Putrajaya dan Kuala Lumpur, Malaysia

# Thrust Areas of Common Endeavour under S2S Core Strategy

- Earth Observation
- Disaster Management
- Technology & System Development
- Awareness & Outreach



# GEO-Related Initiatives Report

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Agensi dan pejabat Malaysia Antariksa



# Earth Observation Programme

- Space-and Air-borne Remote Sensing Technology Development & Applications
- Water and Ocean Monitoring and Forecasting
- Marine Exploration
- Seismic Activity & Tsunami Monitoring
- Meteorology-Oceanographic Interaction
- Sun-Earth Relationship

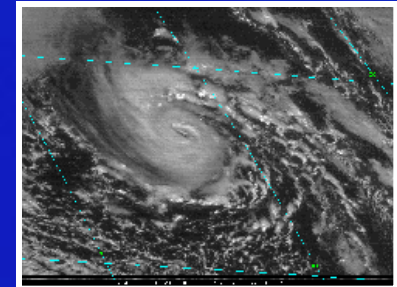
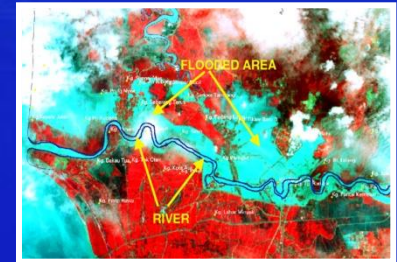


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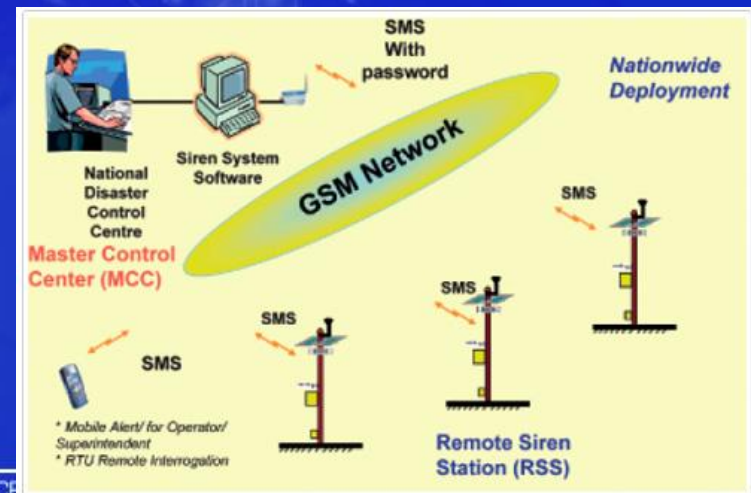
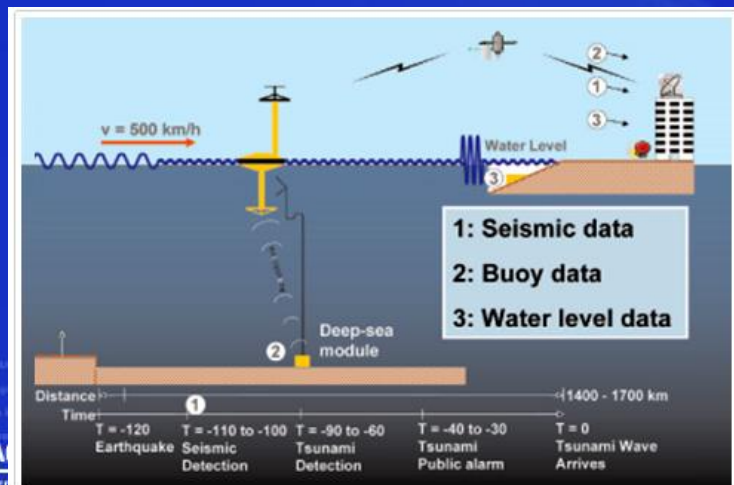
# Disaster Management Programme

- Earthquake Information
- Tsunami Early Warning
- Forest Fire / Haze Monitoring
- Flood Monitoring
- Landslide Monitoring
- Oil Spills Monitoring
- Industrial “Hot” Installations Monitoring

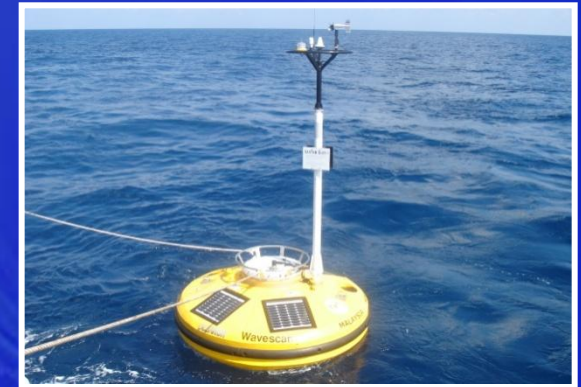


# Tsunami Early Warning System

- Real-time continuous monitoring of earthquake and tsunami on 24-hour basis
- Issuance of information, advisory, notice, early warning and warning on the occurrence of earthquake and tsunami that threaten the security and safety of a country.
- Integral part of regional and global tsunami warning systems coordinated by the Intergovernmental Oceanic Commission (IOC), UNESCO.



# Tsunami Early Warning System



- First tsunami buoy near the Andaman Sea off Rondo Island, Indonesia
- Second tsunami buoy at Pulau Layang-Layang, South China Sea
- Third buoy will be deploy within east of Sabah.



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# Flood Management - InfoBanjir

Malay | English
AAA
♿



## Public InfoBanjir

Jabatan Pengairan dan Saliran Malaysia



**LATEST INFO**

- ▶ FLOOD EVACUATION CENTERS
- ▶ JPS FLOOD OPERATION CENTERS
- ▶ FLOOD STATUS
- ▶ INFOBANJIR (TECHNICAL)
- ▶ JPS MALAYSIA



Flood | Water Level: Alert | Danger | Rainfall: Alert | Danger

**LATEST ANNOUNCEMENTS**

Flood Warnings
WL Warnings
RF Warnings
Flood Forecasts
Station Data

**River Level Warnings**

Location	River Level Status
<b>State: Sarawak</b>	
Salim District: Sibul masa: 15/03/2012 - 11:00	 <b>Amaran: Air sungai telah melebihi aras amaran.</b> Penduduk di kawasan sekitar diminta berjaga-jaga. Aras Air: <b>3.80 (m)</b> [ <a href="#">Graf Aras Sungai</a> ]   <a href="#">Peta lokasi</a> ]
Permai Jaya District: Sibul masa: 15/03/2012 - 11:00	 <b>Bahaya: Air sungai telah melebihi aras bahaya.</b> Kawasan sekitar dikuatirina dinaiki air. Penduduk di kawasan sekitar diminta berjaga-jaga. Aras Air: <b>4.05 (m)</b> [ <a href="#">Graf Aras Sungai</a> ]   <a href="#">Peta lokasi</a> ]

**Heavy Rainfall Warnings**



**Makluman: Tiada amaran hujan lebat yang terkini!**  
Masa: 15-03-2012 - 11:10

**RAINFALL INTENSITY MAP**

Last Hour Rainfall Intensity  
( based on Rain Gauge )  
Time: 15-03-2012 10:00



Papar Peta: Keamatan hujan 24 jam terakhir

Rainfall (mm)

40: Moderate



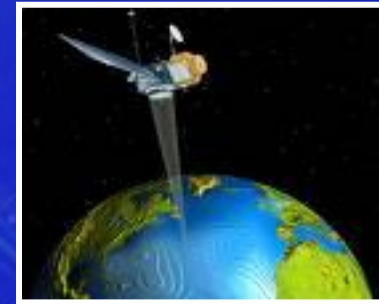
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# Technology & System Development

- Sensors & Payloads
- Remote Sensing Satellites
- Communication Satellite
- ROV's



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kegiatan ini untuk meningkatkan  
kemampuan dan kompetensi  
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kemampuan dan kompetensi  
sumber daya manusia.

# Awareness & Outreach Programme

- Public Awareness & Education, in Particular Schools & Rural Communities.



Beliau ialah orang yang paling berkesan dan berprestasi

bagi membangunkan dan memajukan teknologi angkasa

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dan membangunkan ilmu pengetahuan untuk memajukan pembangunan

negara dan rakyat Malaysia khususnya

# Situational Analysis

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# Earth Observation: Gaps in the Current Provision of Climate Services in Malaysia

- **Climate data are limited** - sparse or the lack of sufficient meteorological observation records;
- **High cost of instruments, communication and the maintenance** of the meteorological observation system;
- **Lack of methodologies and tools** to generate climate product applications for local use of products;
- **Low accuracy and skill in monthly and seasonal climate prediction;**



# Earth Observation: Gaps in the Current Provision of Climate Services in Malaysia (cont.)

- **Coarse spatial resolution** of products from seasonal climate prediction for local details and national use;
- **Limitation of climate change projections** for effective communication to decision makers and end users;
- **Limited expertise** in climate science and socio-economic impact assessment; and
- **Lack of awareness of communities** to climate variability and climate change issues.



# Enhancing and Developing National Climate Services in Malaysia

The climate services required for climate related risk reduction and management in Malaysia are:

- Climate data, application and products;
- Information and predictions on climate variability & change, and their impacts;
- Seasonal climate to decadal scale climate prediction;
- Climate change projections for impact and vulnerability assessment; and
- Expert advice tailored to specific sectors and user requirements on climate matters.



# National Global Climate Observation System (GCOS) Coordination

Long term climate and climate related observations and monitoring are needed for:

- Climate change detection and attribution;
- Operational climate prediction on seasonal to inter-annual time scales;
- Research to improve prediction of the climate system;
- Assessment of the impacts, vulnerability and adaptation to climate variability and climate change; and
- Development of climate services and applications.



# GEO Programmes 2012 - 2015

- 1. Infrastructure
- 2. Institutions and Development
- 3. Information for Societal benefits
  - Disasters
  - Health
  - Energy
  - Climate
  - Water
  - Weather
  - Ecosystems
  - Agriculture
  - Biodiversity



Wakil MAM untuk

meningkatkan dan memajukan kesihatan negara

dalam bidang angkasa dengan cara yang terbaik dan berkesan

bagi memajukan dan meningkatkan taraf hidup rakyat

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# IN-01 Earth Observation Systems

- RazakSat satellite operations
- RazakSat2 development



# IN-02 Earth Data Sets

- Dept of Meteorological Malaysia - satellite images for weather and related predictions
- Malaysian Agency of Remote Sensing – Remote sensing images



# ID-01 Advancing GEOSS Data Sharing Principles

- Drafting the 'Malaysian Geospatial Act'

Hubungan  
dan kerjasama  
antara  
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negara

Hubungan  
dan kerjasama  
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negara



Hubungan  
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# THE LOCAL GEOSPATIAL DEVELOPMENT

Malaysian National Spatial Data Infrastructure (NSDI)

Malaysian Geospatial Data Infrastructure (MyGDI)

Malaysian Center for Geospatial Data Infrastructure (MaCGDI)

Spearhead

Implement

develop



Malaysia's space program is a key element of the country's economic and social development strategy.

ANGKASA NEGERA is committed to providing space services to the public and to the private sector.

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Putrajaya, Malaysia

# DI-01 Informing Risk Management and Disaster Reduction

- Asian Disaster Reduction Center (ADRC) -The National Security Council (NSC)
- Sentinel Asia Step-2 as Data Analysis Node (DAN) - ANGKASA
- Tsunami/Weather/EQ Early Warning System - Malaysia Meteorological Department (MMD)
- Flood Early Warning System - Department of Irrigation and Drainage (DID)
- Landslide Information - Public Works Department Malaysia (PWD)
- Air Pollutant Index - Department of Environment (DOE)



Malaysia 2020 Vision

Malaysia 2020 Vision

Malaysia 2020 Vision

Malaysia 2020 Vision

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Malaysia 2020 Vision

# DI-01 Informing Risk Management and Disaster Reduction

## ■ Some Activities :

- The 4th Joint Project Team Meeting Of Sentinel Asia Step-2 (JPTM2011), 12-14 July 2011 with APRSAF, JAXA and UNESCAP, Putrajaya
- Workshop on DRM for local government officials, 14-16 Feb 2012, Kuala Lumpur
- Malaysia National Disaster Awareness Day 2011 and National Launching of UNISDR World Disaster Reduction Campaign, 18-19 Feb 2011, Malacca
- Workshop on Community-based Disaster Risk Management in Malaysia, 21-23 Sept 2010, Kuala Lumpur



Malaysia 2020  
A government  
that makes  
progress together

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# EN-01 Energy and Geo-resources Management

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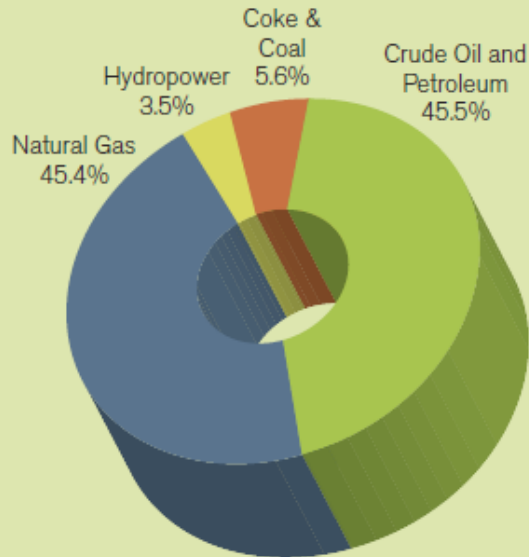


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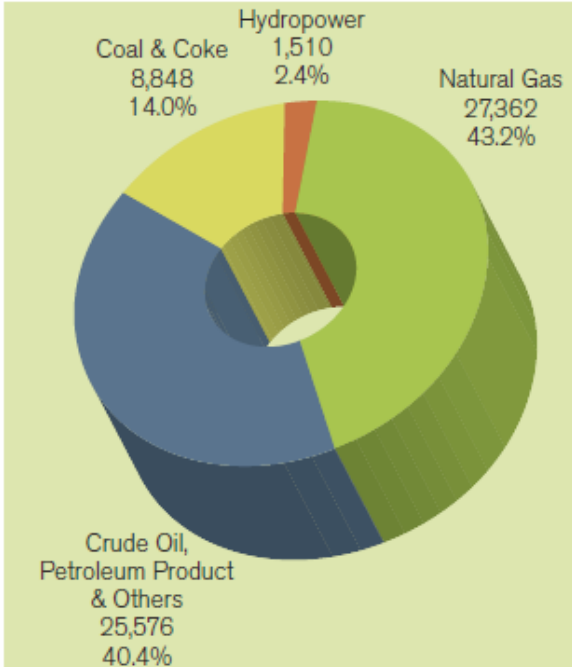
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### Malaysia: Commercial Energy Supply, 2000 (ktoe)



Source: Ministry of Energy, Green Technology and Water (2008)<sup>16</sup>

### Malaysia: Commercial Energy Supply, 2007 (ktoe)



Source: Ministry of Energy, Green Technology and Water (2008)

Malaysia Commercial Energy Supply (2000 and 2007)

### Renewable Energy Programmes

Year	Programmes
1980s	Photo Voltaic (PV) System for Rural Electrification Programme.
1998	First PV Grid Connected System Application.
2001	Formulation of Fifth Fuel Policy, Small Renewable Energy Power Programme (SREP).
2002	Biomass Power Generation and Co-Generation Project (BIOGEN)* .
2004	1st SREP Projects completed: Jana Landfill Project – Puchong, Selangor (Biogas – 2MW) TSH Bio Energy Project – Kunak, Sabah (Biomass – 10MW)
2005	Malaysia Building Integrated Photovoltaic Project (MBIPV).
2006	National Biofuel Policy.

Malaysia Renewable Energy Programmes



# WA-01 Integrated Water Information (incl floods and draught)

– Report by NAHRIM

Hubungi kami untuk  
keperluan maklumat  
pembelian atau  
perkhidmatan kami

Hubungi kami untuk maklumat  
mengenai perkhidmatan kami

Hubungi kami untuk maklumat mengenai perkhidmatan kami

Hubungi kami untuk maklumat mengenai perkhidmatan kami



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Hubungi kami untuk maklumat mengenai perkhidmatan kami

# WE-01 High Impact Weather Prediction and Information

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# BI-01 Global Biodiversity Observation (GEO BON)

– Report by FRIM

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# CL-01 Climate Information Adaption

- Climate Observation Stations in Malaysia operates by MMD
  - Climate Observation Stations (42 principal station)
  - Global Atmospheric Watch (GAW) Stations since 1998
    - Baseline GAW Station at Danum Valley, Sabah
    - Regional GAW Station at Tanah Rata, Cameron Highland
    - Urban GAW station in Petaling Jaya at MMD Headquarters, Petaling Jaya



# Other Important Initiatives

- The National Space Policy
- The Oceanography Policy
- The Green Technology Policy



# The National Space Policy



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# The National Space Policy

## VISION

Embracing space as a strategic sector for national well-being towards achieving Vision 2020 and beyond.



## MISSION

The National Space Policy aims to develop the country's potential in the space sector to support the development of the new economy, and strengthening the national security.



# The Objectives

To build up space infrastructure and industry for economic benefit and safeguarding the nation's sovereignty.

To empower the civil society in enriching their quality of life through information from innovative application of space technology.

To capitalize/harness on space as the frontier for new knowledge generation towards contributing to scientific and technological advancement.

To ensure critical mass of talent in space related sector to support the realization of the space policy.



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Malaysia  
Bersekutu Bertambah Mutu  
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# 8 Policy Thrusts

1. Space industry development to sustain economic growth and enhance quality of life
2. Space technology and infrastructure development for economic benefit and safeguarding national security
3. R&D, application and commercialization of space technology
4. Space as the frontier of knowledge
5. Effective governance to ensure peaceful, safe and secure utilization of outer space
6. Human capital and talent development
7. International relations and diplomacy
8. Gaining stakeholder acceptance and confidence



di dalam lintang angkasa dengan cara yang terbaik dan berkesan

bagi mencapai kemajuan pembangunan Malaysia

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dan memajukan ilmu pengetahuan untuk memajukan pembangunan

agensy dan rakyat Malaysia Malaysia

# The National Ocean Policy

- Malaysian National Ocean Policy: Final Draft
- Provides the new policy directions, strategies and programmes that will enable the country to emerge as a high-income nation.
- The Ocean Policy interprets the six National Key Results Areas, outlined in the Government Transformation Programme, the National Key Economic Areas of the Economic Transformation Programme and economic reforms in the New Economic Model as they apply specifically to the marine and coastal geographic area, ocean governance and marine industries.



Wakil MAM untuk

meningkatkan dan mencapai kemajuan negara

dalam bidang angkasa dengan cara yang terbaik dan berkesan

bagi memajukan dan memperkukuh Malaysia

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dan memajukan lima perindustrian utama melalui sains, teknologi

dan inovasi dan rakyat Malaysia ke hadapan

# 3 Policy Thrusts

- Covering 3 thrusts with 8 EPP:
- Thrust 1: Sustaining Oil and Gas Production
  - *EPP 1: Rejuvenating Existing Fields through Enhanced Oil Recovery*
  - *EPP 2: Developing Small Fields through Innovative Solutions*
  - *EPP 3: Intensifying Exploration Activities*
- Thrust 2: Enhancing downstream growth
  - *EPP 4: Building a Regional Oil Storage and Trading Hub*
- Thrust 3: Making Malaysia the Number One Asian Hub for Oil Field Services
  - *EPP 6: Attracting Multinational Companies to Bring a Sizeable Share of their Global Operations to Malaysia*
  - *EPP 7: Consolidating Domestic Fabricators*
  - *EPP 8: Developing Capabilities and Capacity through Strategic Partnerships and Joint Ventures*



BERKUALITI DAN BERKEMAMUAN  
MELAKSANAKAN TRANSFORMASI NEGARA

Menjadi salah satu agensi yang paling terkemuka dan berprestasi

bagi memajukan dan membangkitkan Malaysia

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Menyediakan ilmu pengetahuan untuk memajukan masyarakat

amnya dan rakyat Malaysia khususnya



# The National Green Technology Policy

- Launched on 24<sup>th</sup> July 2009
- Policy statement:

Green Technology shall be a driver to accelerate the national economy and promote sustainable development



# 4 Pillars of NGTP

- Energy - Seek to attain energy independence and promote efficient utilisation;
- Environment - Conserve and minimize the impact on the environment;
- Economy - Enhance the national economic development through the use of technology; and
- Social - Improve the quality of life for all.



MISI AAM ialah untuk mewujudkan

kelestarian dan kemajuan teknologi negara

dalam bidang angkasa dengan cara yang berkesan dan bersejarah

bagi memajukan dan memperkukuh pembangunan negara

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# Objectives of NGTTP

- To reduce the energy usage rate and at the same time increase economic growth;
- To facilitate the growth of the Green Technology industry and enhance its contribution to the national economy;
- To increase national capability and capacity for innovation in Green Technology development and enhance Malaysia's competitiveness in Green Technology in the global arena;
- To ensure sustainable development and conserve the environment for future generations; and
- To enhance public education and awareness on Green Technology and encourage its widespread use.



Malaysia 2020  
Bersejarah  
Berprestasi  
Berkeadilan

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# 5 Policy Thrusts

- Covering 5 thrusts:
- **Strategic Thrust 1: STRENGTHEN THE INSTITUTIONAL FRAMEWORKS**
- 
- **Strategic Thrust 2: PROVIDE CONDUCTIVE ENVIRONMENT FOR GT DEVELOPMENT**
- 
- **Strategic Thrust 3: INTENSIFY HUMAN CAPITAL DEVELOPMENT IN GT**
- 
- **Strategic Thrust 4: INTENSIFY GT RESEARCH AND INNOVATIONS**
- 
- **Strategic Thrust 5: PROMOTION AND PUBLIC AWARENESS**



berkeadilan dan mampan kelestarian negara

dalam bingkai agama dengan cara yang beradab dan beretika

bagi memajukan dan memperkukuh Malaysia Madani

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dan memajukan lima perindustrian utama melalui transformasi

ekonomi dan rakyat Malaysia ke hadapan

# Summary

- Disaster, Energy, Water, Climate, Biodiversity, Health, Agriculture, Environment – precious elements of living
- Sustainable policy framework is needed
- GEO Initiatives could assist

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MISI AAN ialah untuk meningkatkan  
kemampuan dan kompetensi rakyat negara

dalam bidang angkasa dengan cara yang berkesan dan bersejarah  
bagi memajukan negara dan masyarakat Malaysia

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# Thank-you

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