

# Climate Change and Forest Biodiversity: Monitoring and Institutional Arrangements

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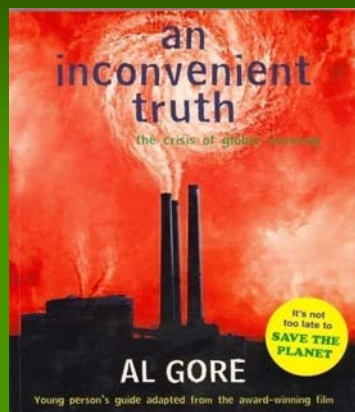
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# Introduction

- Climate change is real and represents a global challenge for humankind and every form of life on planet earth.



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“We must make the rescue of the environment the central organizing principle of our civilization....the environment is much more than a policy position to me; it is a profoundly moral obligation. We have only one Earth. And if we do not keep it healthy and safe, every other gift we leave our children will be meaningless.”

Al Gore, 2007 Nobel Peace Prize recipient

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# IPCC FOURTH ASSESSMENT REPORT 2007

The major finding of the report **reconfirm** that climate change is very much influence by human activities

- ↑ global air temperature
- ↑ global ocean temperature
- ↑ global sea level
- ↓ snow and ice.



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# Linkages between Climate Change and Biodiversity

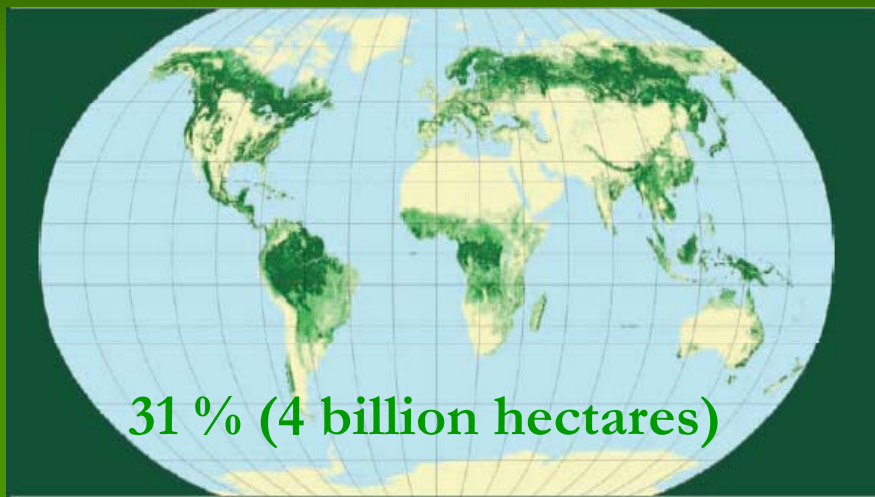
## Global Challenges

- 70% - Water
- 30% - Land
  - 31% - Forest



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## The World's Forests

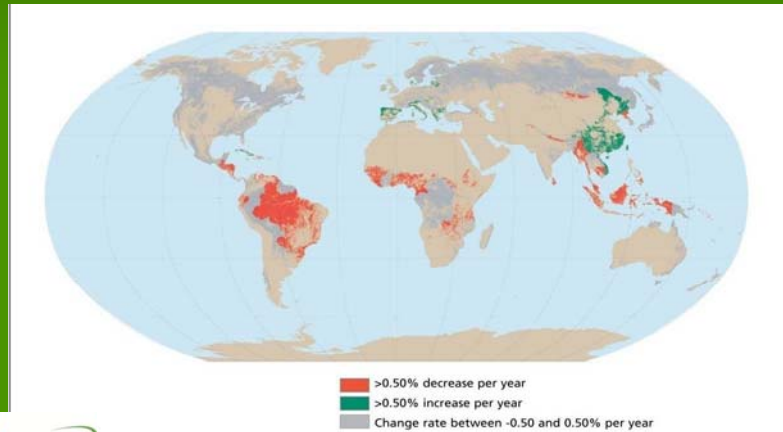


FRA 2010

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# Deforestation

- 1990 – 2000 :- 16 million ha/year
- 2001 – 2010 :- 13 million ha/year



- 80% of the earth plant and animal species are found in tropical forests



## Impacts of Climate Change on Biodiversity

- Impacts on natural ecosystems and species.
- Approx. 10% of species assessed so far will be at an increasingly high risk of extinction
- Predominantly adverse and often irreversible impacts on many ecosystems and their services.
- Vulnerability and impact assessment guidelines.

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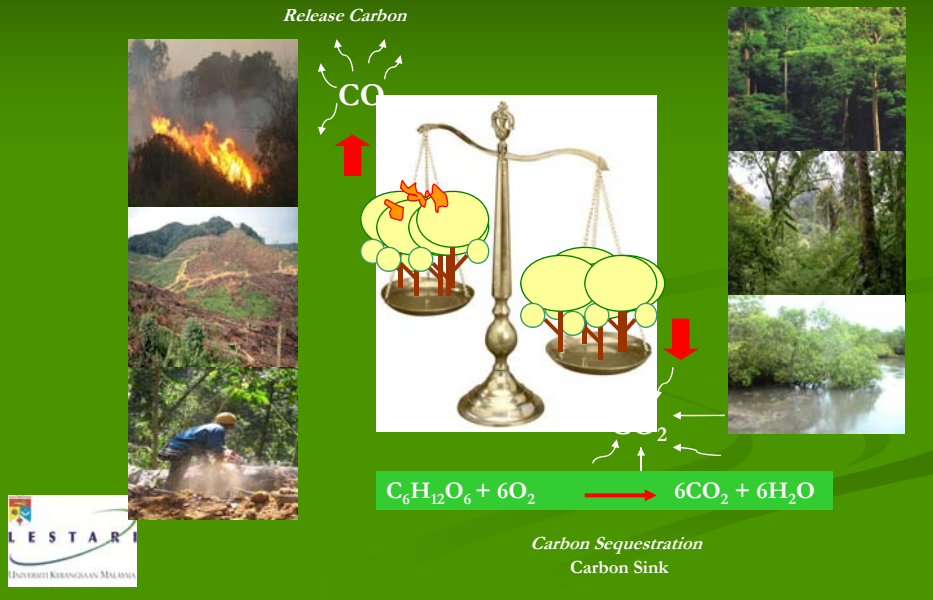
## Impacts of Climate Change on Forests Biodiversity

- Tree composition
- Forest structure
- Forest fragmentation
- Regeneration
- Rotation length, proportion of deadwood and ageing stands
- Forest reserves

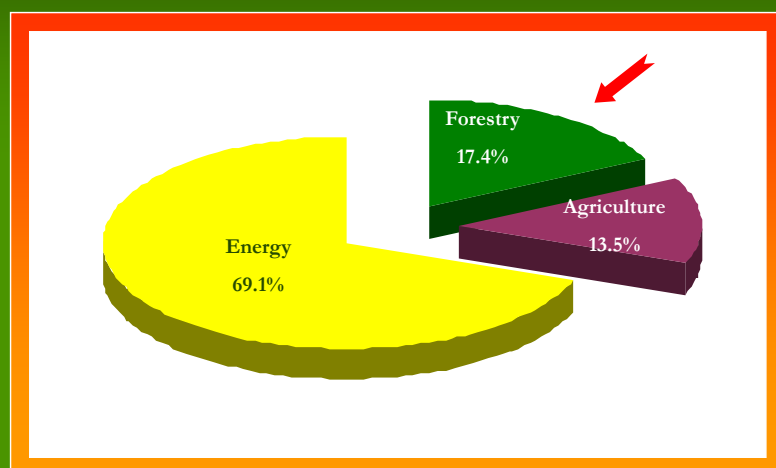
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# Forest and Climate Change



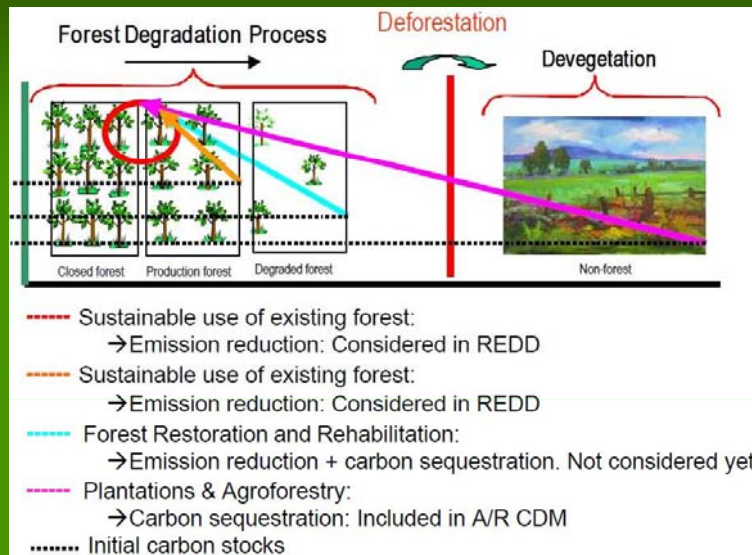
# Global Greenhouse Gas Emissions



# UNFCCC - REDD

**R**EDUCING  
**E**MISSION FROM  
**D**EFORESTATION AND FOREST  
**D**EGRADATION

- © Idea behind Reducing Emissions from Deforestation and Degradation (REDD): Countries that are willing and able to **reduce emissions** from **deforestation**

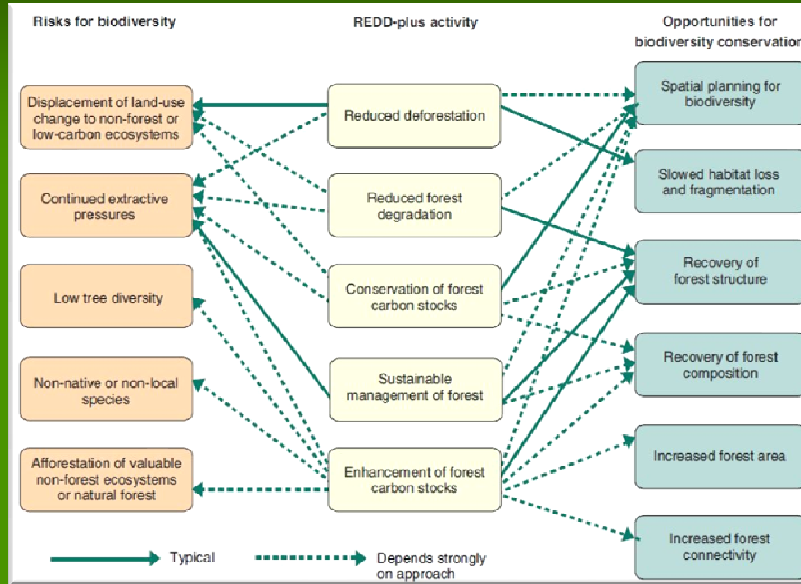


Jorgan Blaser & Robeldo Carmenza, 2007

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# REDD-plus and BioD



L. Miles and B. Dickson 2010

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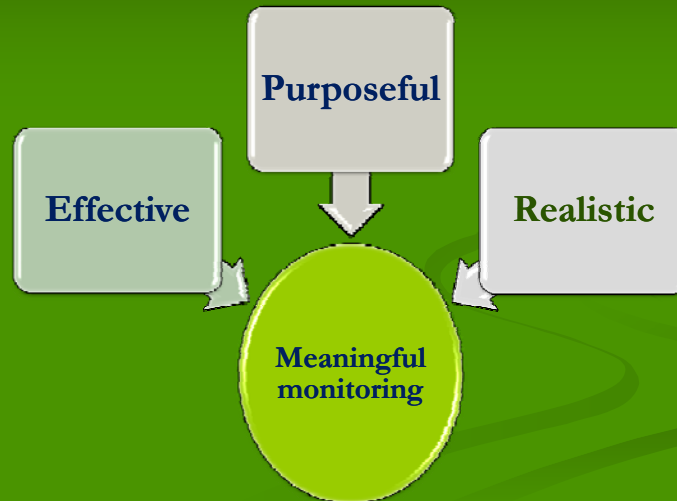
## Monitoring Mechanisms

### Monitoring

“Collection of data and information to enable the detection of changes in the status, security and utilization of biological diversity for the purpose of improving the effectiveness of management”

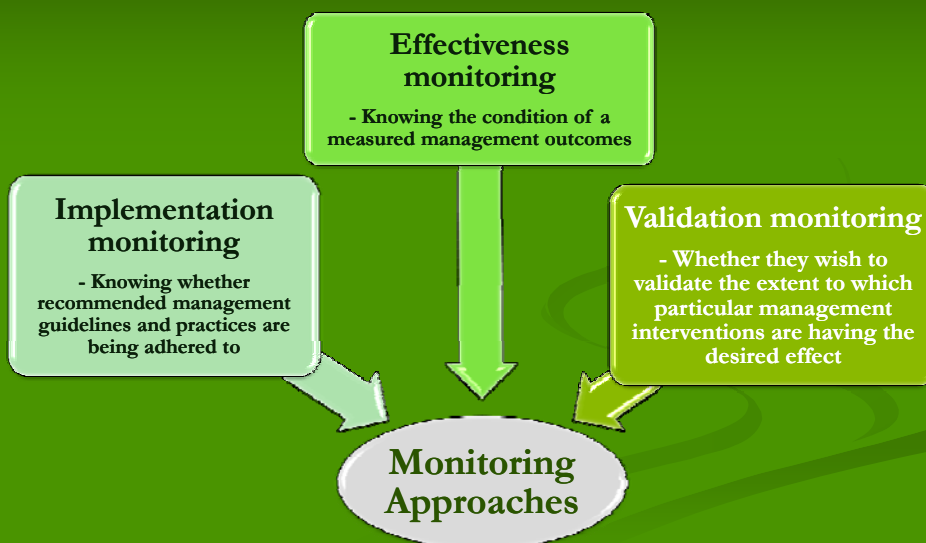
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## Purpose of Climate Change and Forest Biodiversity Monitoring



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## Monitoring Approaches



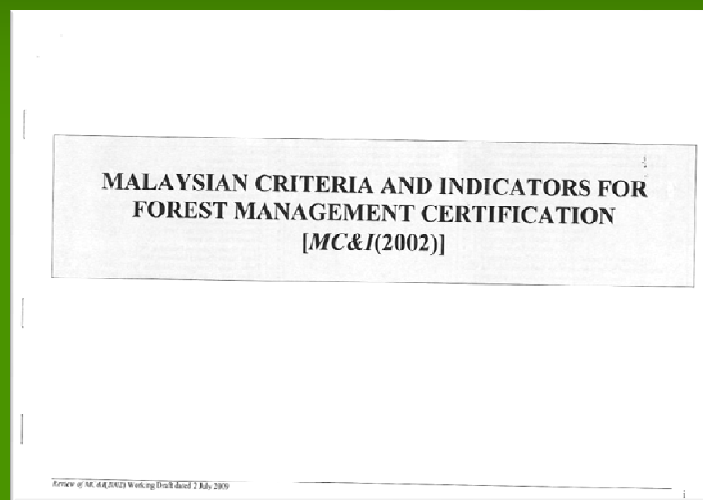
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## Example of monitoring mechanism at global level



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## Example at national level



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## CRITERIA & INDICATORS OF SUSTAINABLE FOREST MANAGEMENT

|               |                                                |
|---------------|------------------------------------------------|
| Principle #1  | Compliance with laws                           |
| Principle #2  | Tenure and Use Rights and Responsibilities     |
| Principle #3  | Indigenous Peoples' Rights                     |
| Principle #4  | Community Relations and Worker's Rights        |
| Principle #5  | Benefits from the forest                       |
| Principle #6  | Environmental Impact                           |
| Principle #7  | Management Plan                                |
| Principle #8  | Monitoring and Assessment                      |
| Principle #9: | Maintenance of High Conservation Value Forests |

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## Principle 6 –Environmental Effects

- Forest management shall conserve biological diversity and its associated values, water resources, soils and unique and fragile ecosystems and landscape, and, by so doing, maintain the ecological functions and the integrity of the forest.

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## Principle 9 – Maintenance of High Conservation Value Forests

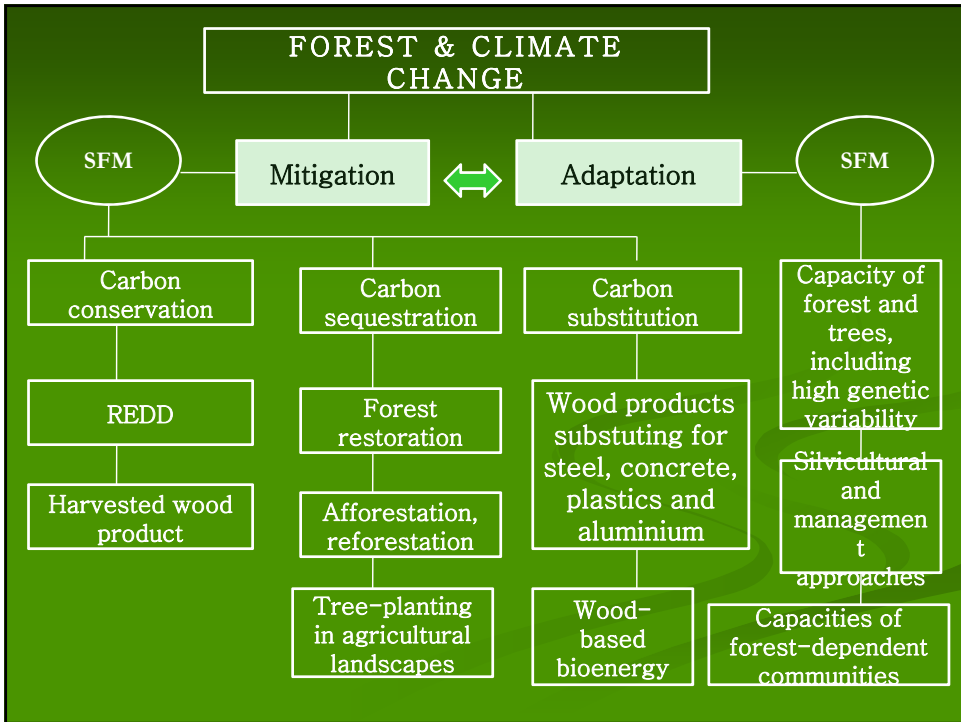
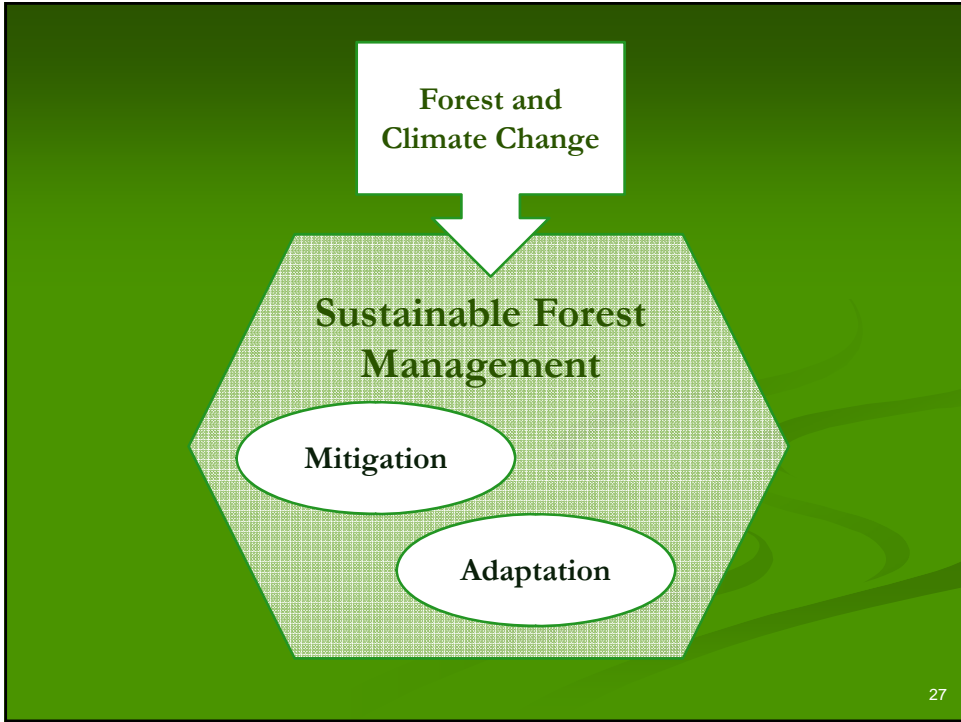
- Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

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## Implementation of MC&I for SFM

- Experience from 1999 – 11 years
- 3.97 ha of Permanent Reserved Forests have been certified

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# Institutional Framework for Implementation

- Globally



COP 10 Nagoya  
October 18<sup>th</sup> – 29<sup>th</sup>

Biodiversity & Climate Change



COP 16 Cancun  
Nov 29<sup>th</sup> – Dec 10<sup>th</sup>

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# International Collaborative Partnership on Forests



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# Policies

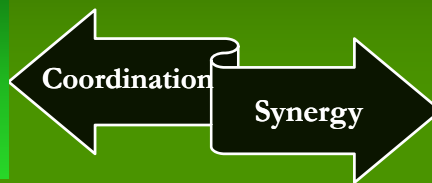


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# National Councils

♦National Biodiversity – Biotechnology Council (NBBN)

- PM Chair
- MB / CM
- NRE
- MOSTI
- MITI
- MA&ABI
- MOPIC
- MOE
- MOHE
- MODTCA
- MOH
- MOEWC
- Chief Secretary
- AG
- Science Advisor to PM
- Secretary General of NRE



National Green Technology and Climate Change Council

Research Input?



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# Main Implementing Agencies

| Ministries/State Agencies                               | Agencies                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ministry of Natural Resources and Environment (NRE)     | Forest Department of Peninsular Malaysia (FDPM)<br>Department of Wildlife and National Parks (DWNP)<br>Department of Marine Park Malaysia (DMPM)<br>Department of Irrigation and Drainage (DID)<br>Department of Environment (DOE)<br>Forest Research Institute Malaysia (FRIM)<br>National Hydraulic Research Institute of Malaysia (NAHRIM) |
| Ministry of Agriculture and Agro-based Industries (MOA) | Department of Agriculture (DOA)<br>Department of Fisheries Malaysia (DOFM)<br>Department of Veterinary Services (DVS)<br>Department of Agriculture – Sabah<br>Department of Agriculture – Sarawak<br>Malaysia Agricultural Research and Development Institute (MARDI)                                                                         |
| Ministry of Housing and Local Government                | Town and Country Planning Department                                                                                                                                                                                                                                                                                                          |

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| Ministries/State Agencies                         | Agencies                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ministry of Plantation Industries and Commodities | Malaysian Palm Oil Board<br>Malaysian Cocoa Board<br>Malaysian Rubber Board                                                                                                                                                                                                                                                                                                                                                          |
| State Agencies                                    | State Forest Departments<br>Department of Agriculture<br>Protected Area Management Authorities: <ul style="list-style-type: none"> <li>• Johor National Parks Corporation</li> <li>• Perak State Park Corporation</li> <li>• Selangor State Park Corporation</li> <li>• Sabah Parks</li> <li>• Sabah Wildlife Department</li> <li>• Sarawak Forestry Corporation</li> </ul> Sabah Biodiversity Centre<br>Sarawak Biodiversity Centre |

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## Way Forward

- Mobilizing and greater collaboration among the scientists and researches.
- Research on indicators and the need for reliable baseline data.
- Enhance synergies between various agencies
- Capacity buildings
- Linkage of climate system, bioD and ecosystem.
- Biodiversity adaptation measures.

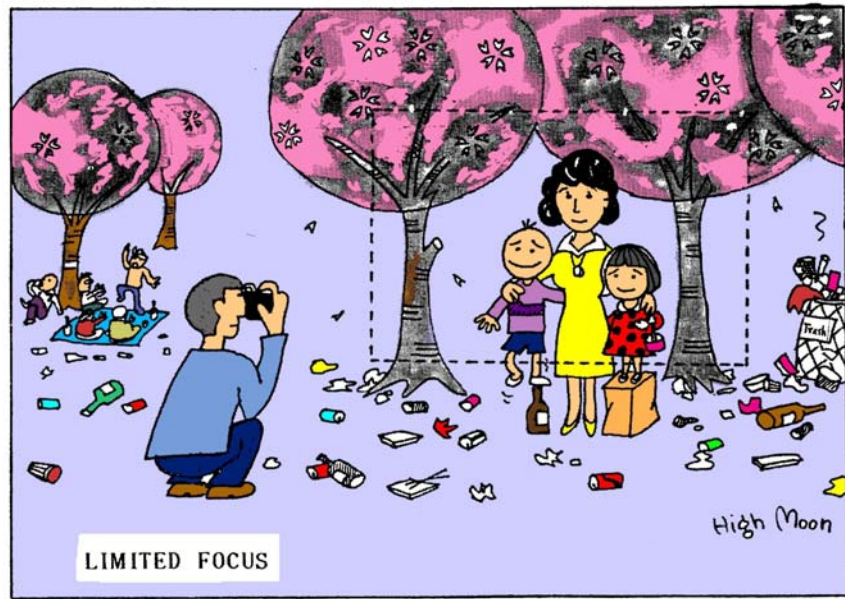
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*“The conservation of biodiversity makes a critical contribution to moderating the scale of climate change and reducing its negative impacts by making ecosystems – and therefore human societies – more resilient. It is therefore essential that the challenges related to biodiversity and climate change are tackled in a coordinated manner and given equal priority”*

**BAN Ki-moon**

**Secretary General of United Nations**

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**“ We remain committed to ensure at least 50% of our land area remain as forests pledged in the Rio Summit. Currently our natural forests and agriculture crop plantation combined, cover 75% of the country’s land area”**

-U.N Climate Change Conference  
2009, 15<sup>th</sup> Conference of Parties  
(COP 15)

# *I THANK YOU!*



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