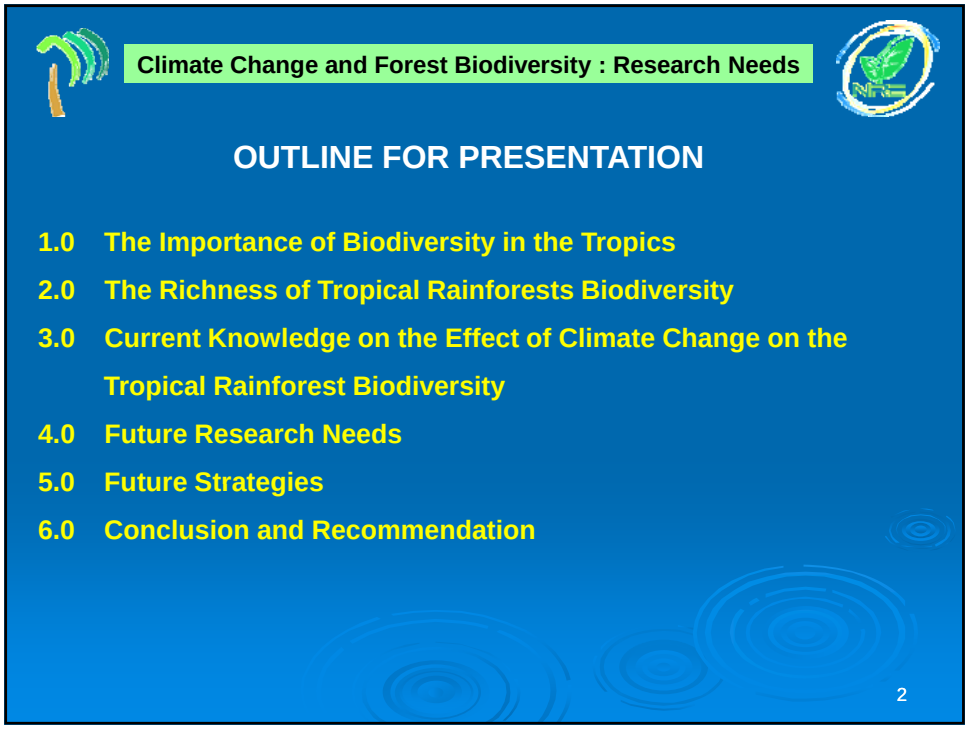

Workshop On Climate Change And Biodiversity : Mobilizing The Research Agenda,
13 – 14 December 2010, UKM Bangi, Selangor
CLIMATE CHANGE AND FORESTS BIODIVERSITY : RESEARCH NEEDS
DATO' DR.ABD.RAHMAN BIN ABD.RAHIM; and
JALIL BIN MD. SOM
Forestry Department of Peninsular Malaysia
14 December 2010
1


Climate Change and Forest Biodiversity : Research Needs
OUTLINE FOR PRESENTATION
1.0 The Importance of Biodiversity in the Tropics
2.0 The Richness of Tropical Rainforests Biodiversity
3.0 Current Knowledge on the Effect of Climate Change on the Tropical Rainforest Biodiversity
4.0 Future Research Needs
5.0 Future Strategies
6.0 Conclusion and Recommendation
2

Climate Change and Forest Biodiversity : Research Needs

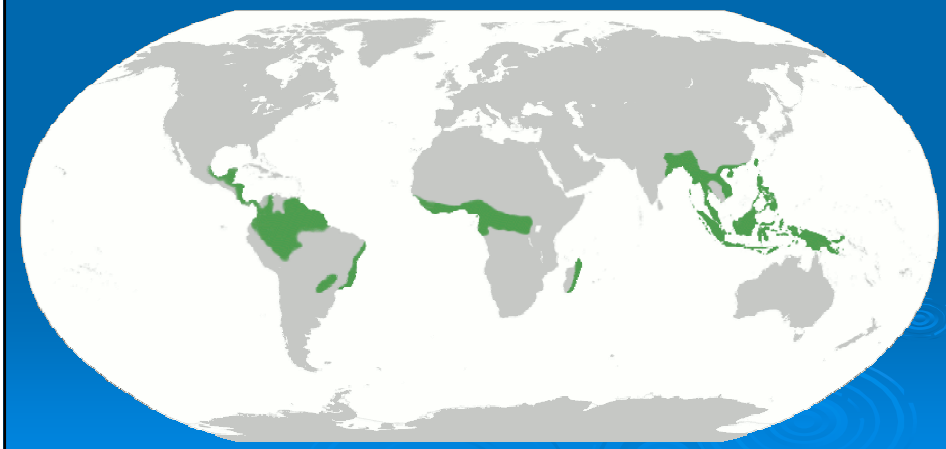
1.0 The Importance of Biodiversity in the Tropics

- Biodiversity has been defined as the degree of variation of life forms within a given ecosystem, biome, or in an entire planet.
- In term of terrestrial ecosystem, the tropical rainforests biodiversity has been considered as one of the most complex forest ecosystem in the world.
- Biodiversity can be used as one measure of the health of ecosystems.
- Malaysia is very fortunate to be endowed with large tract of tropical rainforests, which is rich in wide variety of flora and fauna.

3

Climate Change and Forest Biodiversity : Research Needs

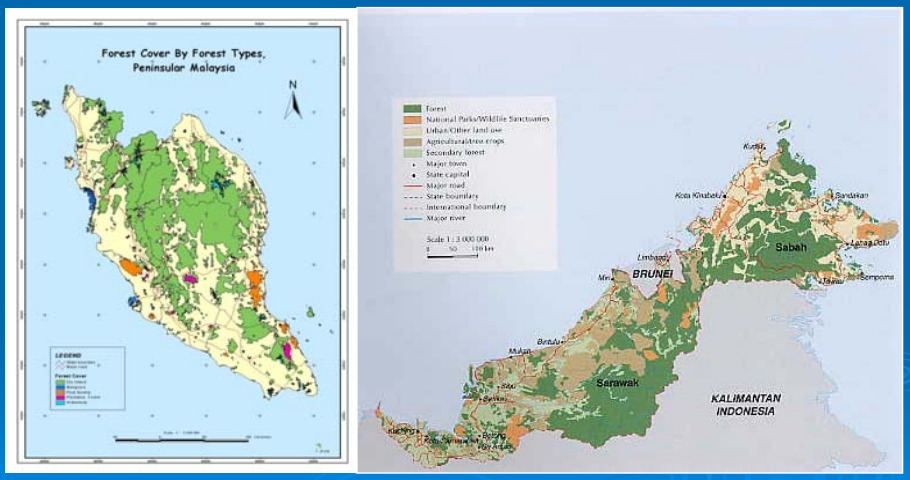
General Distribution of Tropical Rainforests in the World



4

Climate Change and Forest Biodiversity : Research Needs

The Distribution of Tropical Rainforests in Malaysia



5

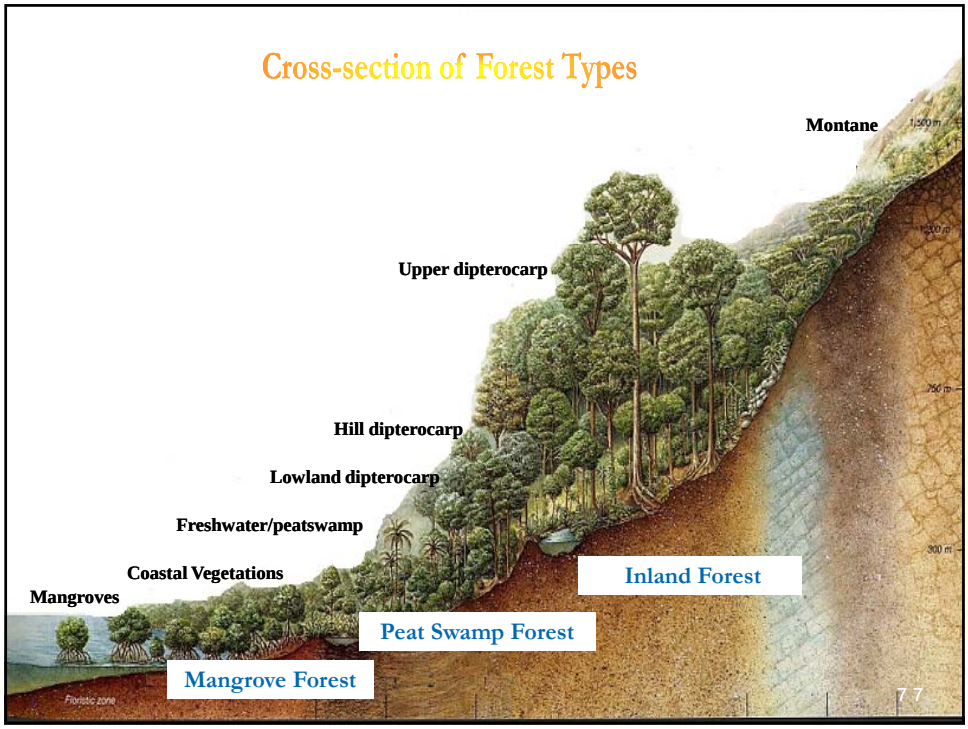
Climate Change and Forest Biodiversity : Research Needs

The Distribution of Tropical Rainforests in Malaysia

(million ha)

Region	Land Area	Natural Forest			Plantation Forest	Total Forested Land	% of Total Land Area
		Dry Inland Forest	Swamp Forest	Mangrove Forest			
Peninsular Malaysia	13.16	5.37	0.30	0.10	0.08	5.85	44.7
Sabah	7.37	3.83	0.12	0.34	0.11	4.40	56.7
Sarawak	12.30	6.91	1.12	0.14	0.06	8.23	66.9
Malaysia	32.83	16.11	1.54	0.58	0.25	18.48	56.4

6


Cross-section of Forest Types
Montane
Upper dipterocarp
Hill dipterocarp
Lowland dipterocarp
Freshwater/peatswamp
Coastal Vegetations
Mangroves
Inland Forest
Peat Swamp Forest
Mangrove Forest
7 7


2. The Richness of Flora in Our Tropical Rainforests
15,000 flowering plants
195 palms
500 orchids
1,159 ferns & fern allies
400 fungi
432 mosses
NRE, 2006
8

2. The Richness of Fauna in Our Tropical Rainforests

- 286 mammals
- 736 birds
- 268 reptiles
- 158 amphibians
- 449 fresh water fishes
- 150,000 invertebrates

NRE, 2006

9

Climate Change and Forest Biodiversity : Research Needs

3.0 Current Knowledge on the Effect of Climate Change on Tropical Rainforest Biodiversity

Changes in environmental conditions, namely climate change have direct and indirect impact on biodiversity patterns. However, current knowledge on the effect of climate change are very limited.

Potential Direct impacts of Climate Change :-

- Changes in flora and fauna distributions.
- Changes in life-cycles (phenology) in flora.

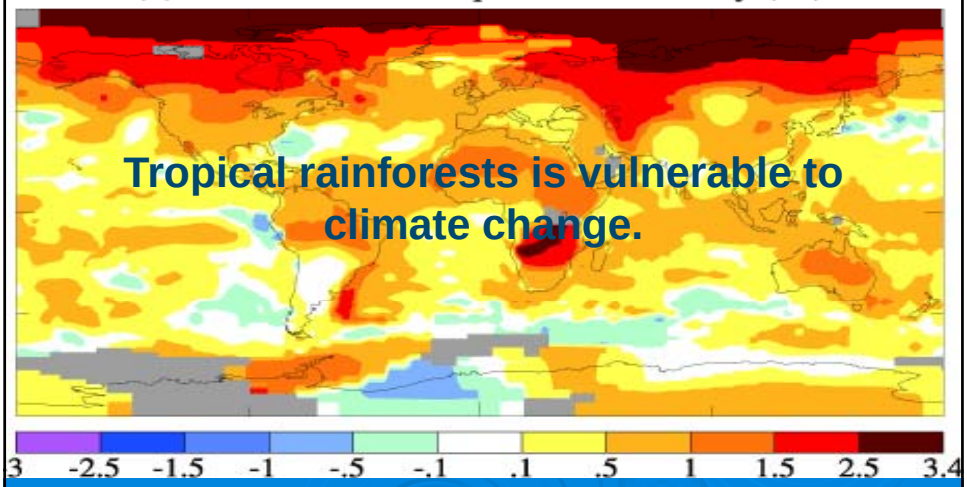
Potential Indirect impacts of Climate Change :-

- Changes affecting the structure and function of ecosystems.
- Changes affecting flora diversity and composition.

10

Climate Change and Forest Biodiversity : Research Needs

(b) 2005 Surface Temperature Anomaly (°C)



Tropical rainforests is vulnerable to climate change.

11

Climate Change and Forest Biodiversity : Research Needs

4.0 Future Research Needs

Study on the Direct impacts of Climate Change :-

- Changes in flora and fauna distributions.
- Changes in life-cycles (phenology) in flora.

Study on the Indirect impacts of Climate Change :-

- Changes affecting the structure and function of ecosystems.
- Changes affecting flora diversity.

12

Climate Change and Forest Biodiversity : Research Needs

5.0 Future Strategies

Malaysia's National Policy on Biological Diversity, 1998 : aims ……

"To conserve Malaysia's biological diversity and to ensure that it's components are utilised in a sustainable manner for the continued progress and socio-economic development of the nation"

Biological Diversity has the significant contribution to :-

(i) Economic benefits;

(ii) Food Security;

(iii) Environmental Stability;

(iv) National Biological Heritage;

(v) Scientific, Educational and Recreational Values; and

(vi) Bio-Safety.

13

Climate Change and Forest Biodiversity : Research Needs

5.0 Future Strategies (continues….)

The Establishment of Malaysian Biodiversity Communication and Action Plan, aim to halt the loss of biodiversity.

Undertaking Ecosystem Assessment aim to provide a comprehensive appraisal of the consequence of ecosystem change for human well-being.

Undertaking robust forest biodiversity conservation and protection programmes to reverse the loss of flora and fauna diversity.

Undertaking robust R&D programmes on the effect of climate change on the forest biodiversity.

14

Climate Change and Forest Biodiversity : Research Needs

6.0 Conclusion and Recommendation

Tropical rain forests will continue to play it's crucial role and contribute significantly to the socio-economic development of the country (in terms of tangible and intangible values for the human livelihood).

The richness (Mega-Diversity) of the tropical rain forests will continue to provide wide ranging of uses and benefits for present and future generations as well as for human well-being.

Thus, it is imperative and crucial to undertake R&D works to study the direct and indirect effect of climate change on forest biodiversity, as our tropical rainforests is vulnerable to climate change.

15