

FHU 5204: Sem 1 2009-2010: Lecture Series#1 (2jam)



Importance of Sustainable Forestry: From Yesteryears to 21st Century

by

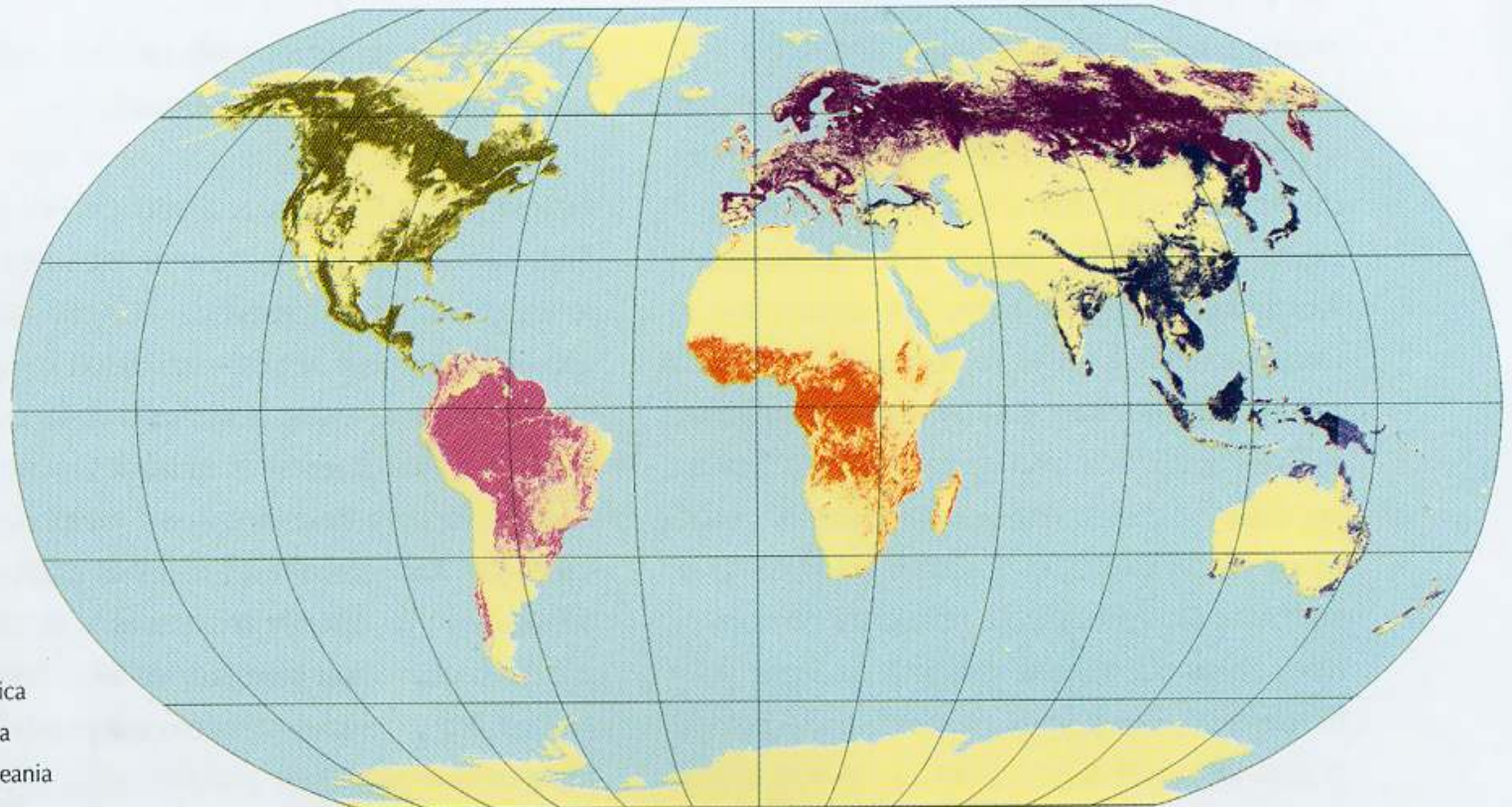
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[Dipl. Agric.; B. Sc. For; M. Sc.; Ph.D]

With Knowledge We Serve



- ✉ **INTRODUCTION**
- ✉ **WORLD FORESTS & TROPICAL FORESTS**
- ✉ **MANAGEMENT OF TROPICAL FORESTS**
- ✉ **SUSTAINABLE FOREST MANAGEMENT**
 - **Past & Present Philosophy,**
 - **Myths of SFM**
 - ✉ **FORESTRY IN MALAYSIA**
 - **Environment Related Legislation**
 - **Our Sciences, Economics & R&D**
- ✉ **FORESTRY SCENARIO IN THE 21st CENTURY**
- ✉ **CONCLUSIONS**

Figure 3: Location of Forests by Regions

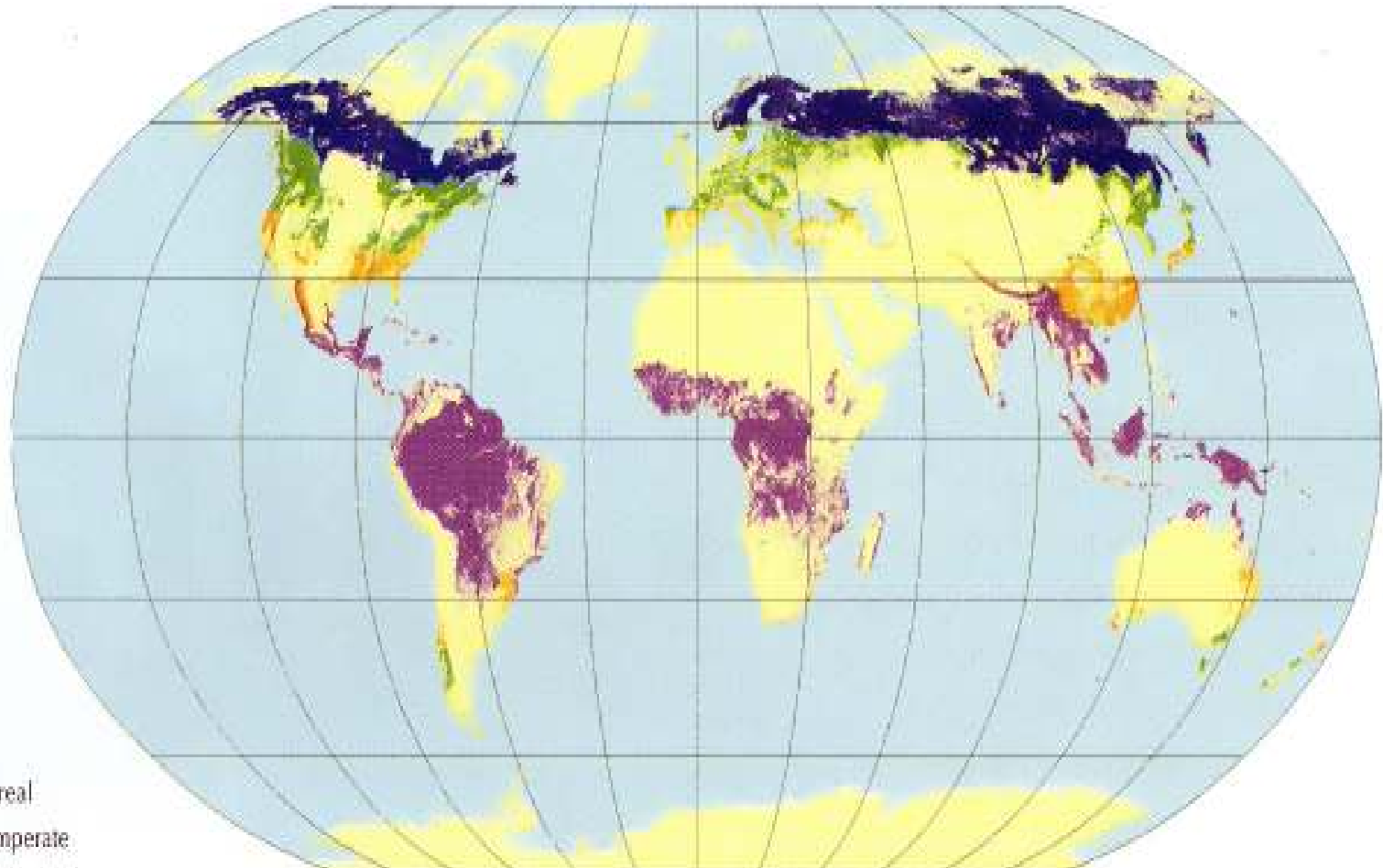


- Africa
- Asia
- Oceania
- Europe
- North and Central America
- South America

1990 Total Forests 3963 mil. ha

2000 Total Forests 3442 mil. ha

Figure 7: Distribution of the World's Forests by Major Ecological Zones



- Boreal
- Temperate
- Subtropical
- Tropical

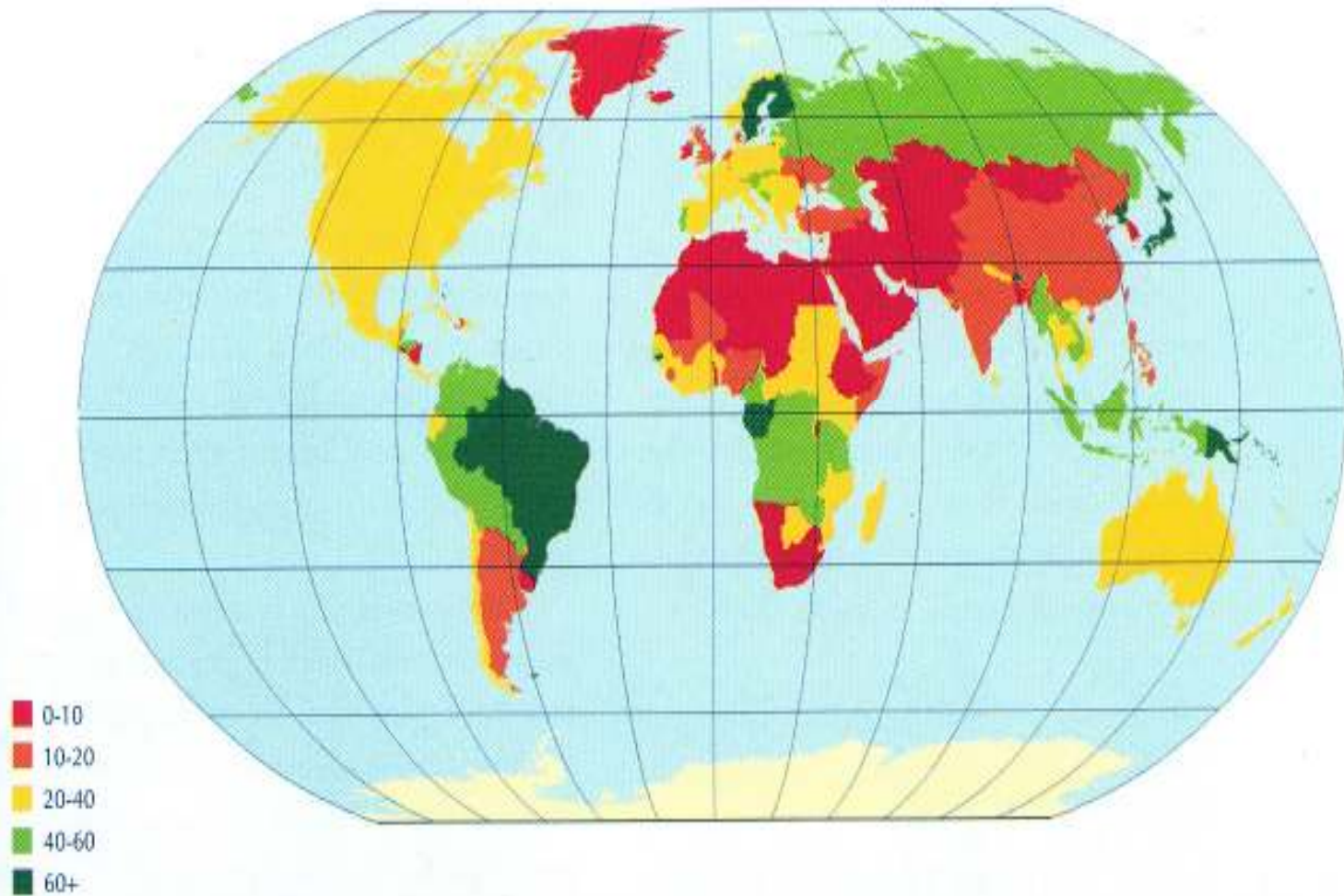
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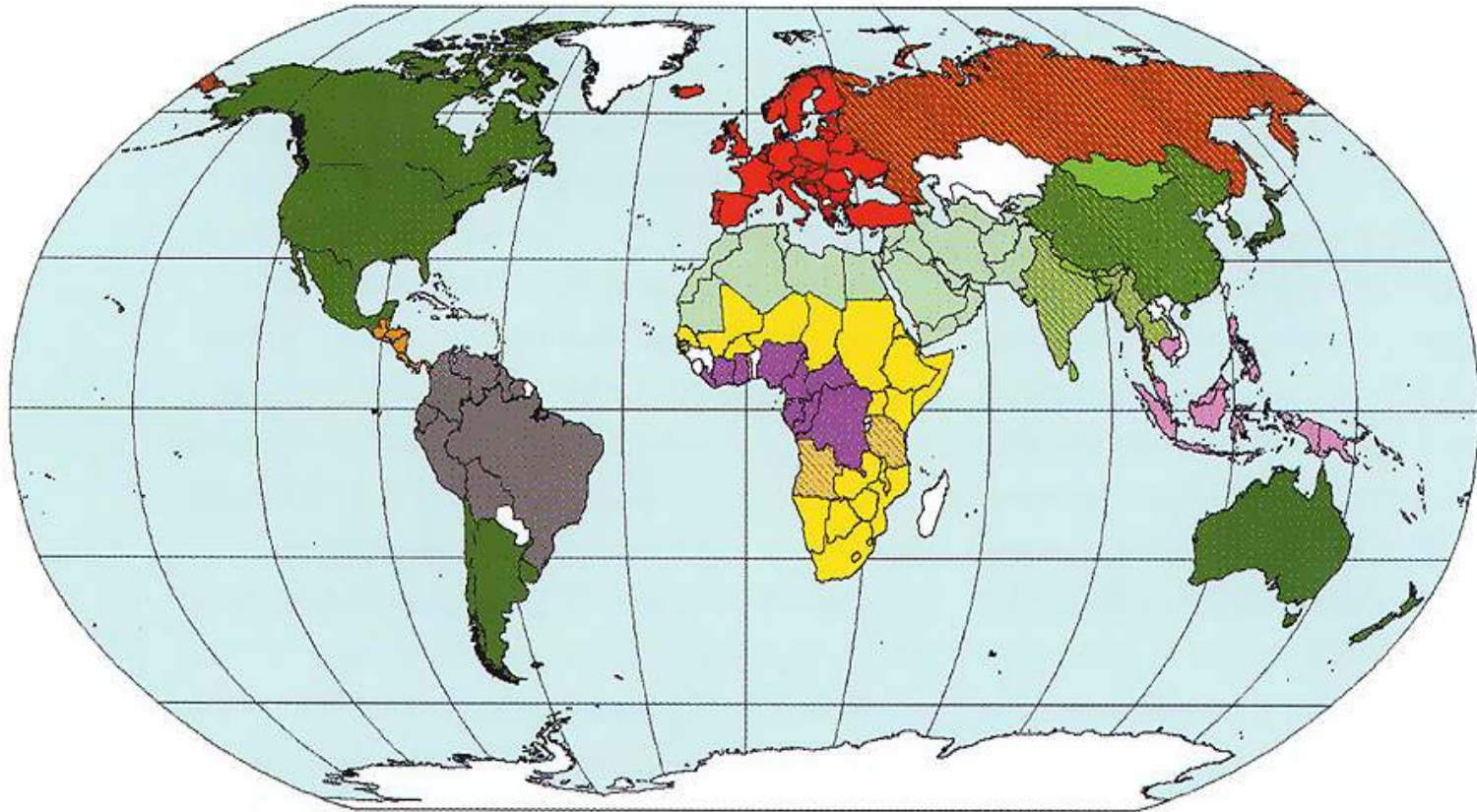
Source: FRA 2000

Figure 6: Forest Area as Percentage of Country Land Area



Source: FRA 2000

Figure 14: International Initiatives on Criteria and Indicators for Sustainable Forest Management



- | | | |
|-------------------------------|--|---|
| ■ Dry Zone Africa Process | ■ Tarapoto Proposal | ■ African Timber Organisation Initiative |
| ■ Pan-European Forest Process | ■ Near East Process | ■ Regional Initiative for Dry Forests in Asia |
| ■ Montreal Process | ■ Lepaterique Process of Central America | ■ ITTO |



TROPICAL FORESTS

1990*

2000s**



WORLDWIDE

1945 MIL. HA

1990

*Total Forests 3963 mil. ha

1803 mil. Ha.

2000

**Total Forests 3442 mil. ha

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TROPICAL AMERICA

32 COUNTRIES

855 mil. ha (48%)

1980s: 896 mil. ha

1990s: 868 mil. ha

 RAINFOREST

296 mil. ha (yr. 2000s)

598 mil. ha (yr. 1990s)

Year 2000

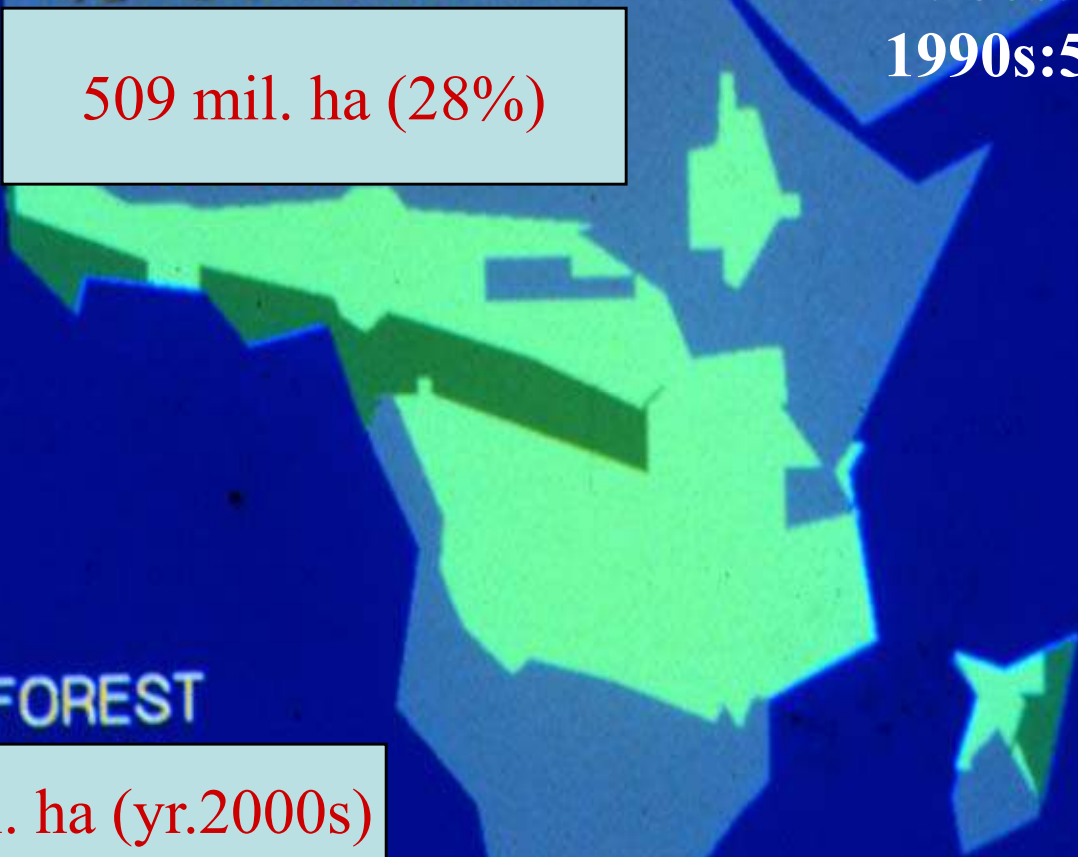


TROPICAL AFRICA

40 COUNTRIES

1980s: 704 mil. ha
1990s: 547 mil. ha

509 mil. ha (28%)



 RAINFOREST

122 mil. ha (yr. 2000s)
196 mil. ha (yr. 1990s)

Year 2000

TROPICAL ASIA

15 COUNTRIES

1980s: 546 mil. ha
1990s: 530 mil. ha

439 mil. ha (24%)

■ RAINFOREST

231 mil. ha (yr.2000s)
256 mil. ha (yr.1990s)

Year 2000



(TROPICAL) FORESTS: YESTERYEARS





20th Century

TROPICAL FORESTS: A GROWING CONCERN

But Voted as Planet of the Year 1989 by TIME



(TROPICAL) FORESTS: 20th CENTURY

CLIMATE CHANGE
ISSUES: NOBLE PEACE
PRIZE 2007 (IPCC & AL-
GORE)

EXPLOITATION -
UNIMAGINABLE!

DEFICIT IN
MOST
COUNTRIES

SURPLUS - IS OF
THE PAST

LOSS OF BIODIVERSITY
- RAMPANT

RENEWABILITY
AT STAKE!

SUSTAINABILITY -
QUESTIONABLE!

TROPICAL FORESTS



GLOBAL CONCERN

- EXCESSIVE LOGGING
- DEFORESTATION
- SHIFTING CULTIVATION
- SOIL EROSION & FLOODING





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BERI

TROPICAL FORESTS



GLOBAL CONCERN

- ENVIRONMENTAL PROBLEMS
- LOSS OF SPECIES DIVERSITY
FOOD SECURITY
SUSTAINABLE LIVELIHOOD
- ANTI-TROPICAL HARDWOOD

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OUR FURTHER CONCERN / CONSEQUENCE

QUICKTAKE

Facts that figure

LEADING CO₂ PRODUCERS

IN 2004
(TOP 30)

#1. USA

#2. CHINA

#3. RUSSIA

#4. INDIA

#5. JAPAN

#14. INDONESIA

#8. UK

#22. THAI

#26. M'SIA

6. Germany, 7. Canada, 9. Korea (Rep. of), 10. Italy, 11. Mexico, 12. S. Africa, 13. Iran, 15. France, 16. Brazil, 17. Spain, 18. Ukraine, 19. Australia, 20. Saudi Arabia, 21. Poland, 23. Turkey, 24. Kazakhstan, 25. Algeria, 27. Venezuela, 28. Egypt, 29. UAE, 30. Netherlands

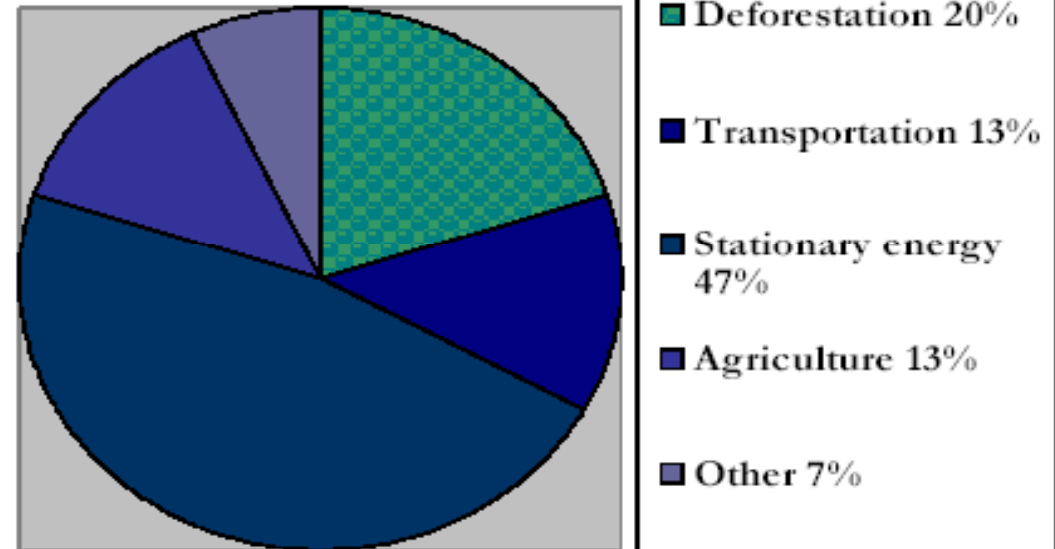
OUR FURTHER CONCERN



Global Greenhouse Gas Emission by Source

- Deforestation is the second largest source of GHG emissions globally
 - ~6 billion tonnes pa
- 13 million ha of forest is cleared each year
 - 71,000 football fields a day

GHG emissions by source



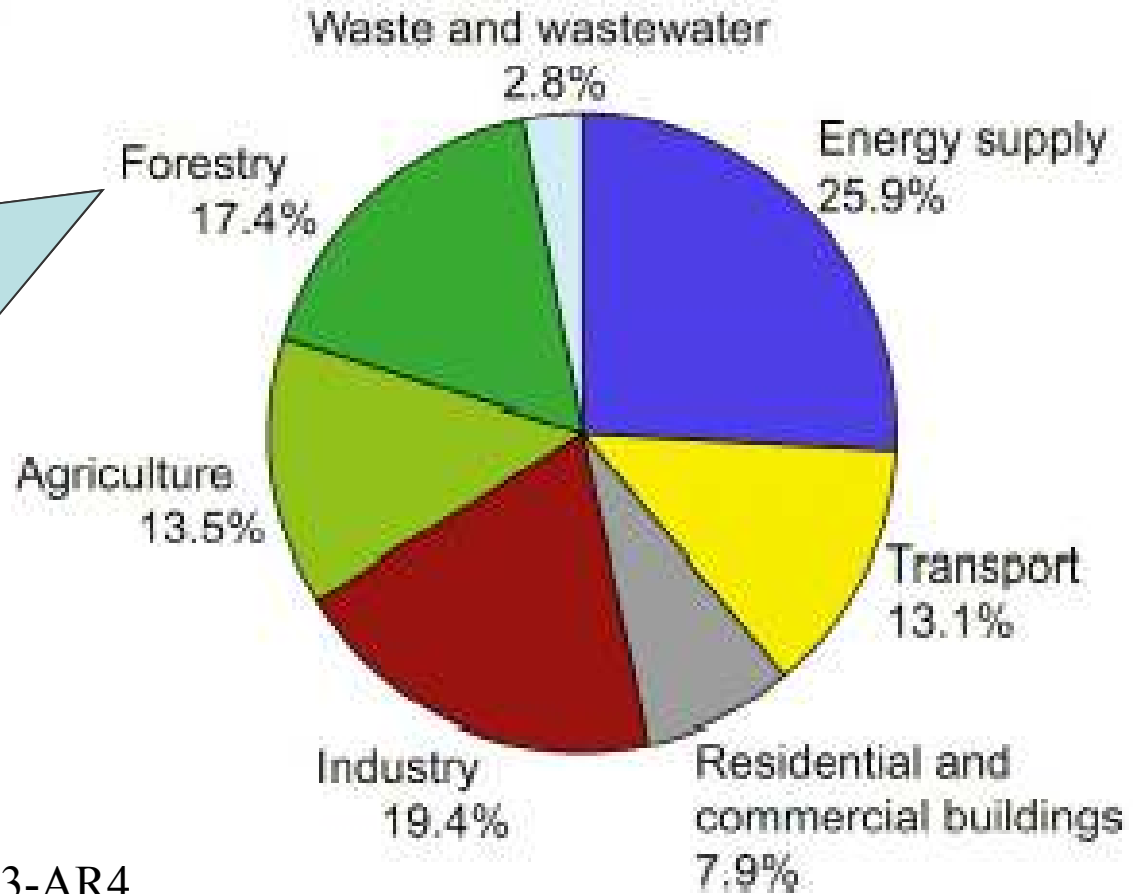
Data source: World Resources Institute 2005

OUR FURTHER CONCERN



Share of Different Sectors in Total Anthropogenic Greenhouse Gas Emissions in 2004 in Terms of CO₂- equivalent

- Deforestation
- Decay / decomposition above-ground biomass
- Peat fires
- Decay of drained peat soils



Source: IPCC, 2007: WG3-AR4



TROPICAL FORESTS FOR MANKIND.....



**ENERGY SOURCE:
2.5 BILLION
PEOPLE**

**WORLD BIO-DIVERSITY
SOURCE: >50%**



TROPICAL FORESTS FOR MANKIND.....

 **ENERGY & BIO -
DIVERSITY SOURCES**



**FOOD SECURITY & SUSTAINABLE
LIVELIHOOD: 200 MILLION PEOPLE**



TROPICAL FORESTS FOR MANKIND.....



ENERGY & BIO-DIVERSITY SOURCES
FOOD SECURITY & SUSTAINABLE
LIVELIHOOD

**EXPORT EARNINGS: 33 DEVELOPING
COUNTRIES**

Economics



NATURAL FOREST MANAGEMENT SYSTEMS

- OPTIMIZING TIMBER YIELD
- IMPROVING REGENERATION

■ MONOCYCLIC SYSTEMS

MUS
TSS

■ POLYCYCLIC SYSTEMS

QSS TPI
SLS SMS

The logo of Universitas Padjadjaran (UPI) is located in the top left corner. It consists of a red shield with a white diagonal line and the letters 'UPI' in white.

MANAGEMENT OF TROPICAL FORESTS

** Philosophy **

NATURE DESIGNED A FOREST WITH
INTERRELATED PROCESS. WE ARE
TRYING TO DESIGN A FOREST
BASED ON ISOLATED
PRODUCTS.....

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Past Philosophy of Forest Management..... Economics

Clyde Martin in 1940s wrote: "Without more complete and profitable utilization we cannot have intensive forest management..... When thinnings can be sold at a profit and every limb and twig of the tree has value, forest management will come as a matter of course."

Martin's notion still predominates: "anything without monetary value has no value, and anything with immediate monetary value is wasted if left unharvested". Short-term economic profitability is always the bottom line.



Present Philosophy of Forestry Management.... Sustainability (incl. Economics), Environment & People.....

The philosophy of the 20th century exploitation must be replaced by a 21st century **conservation and protection of forests with a view toward biological sustainability. Forestry as a profession must be founded on documented ecological truth - "**new forestry science**", "**progressive forestry**" or "**scientific forestry**" as envisage by people in the profession today.**



The Past Economic Myth.....

The Soil-Rent Theory: Is a classic, liberal, economic theory that is used as a planning tool to maximize industrial profits. It has been unfortunately adopted by foresters and become the overriding objective for forestry worldwide.

The Soil-Rent Theory had Six Flawed Primary Assumptions:



The Past Economic Myth..... Cont.

The Soil-Rent Theory had Six Flawed Primary Assumptions:

- the depth and fertility of the soil in which the forest grows is a constant,
- the quality and quantity of the precipitation reaching the forest is a constant,
- the quality of the air infusing the forest is a constant
- biological and genetic diversity are non-essential,
- the amount and quality of solar energy available to the forest are constants, and
- climate stability is a constant.



TROPICAL FORESTS



THE NEW FORESTRY SCIENCE:
SUSTAINABILITY OF ECOSYSTEM
MUST BE PRESERVED

Many definitions of SD
and SFM !
e.g WCED, ITTO



Definitions:

Sustainable Development (SD): Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.

WCED: Our Common Future 1987

Sustainable Forest Management (SFM): Is the process of managing forest land to achieve one or more clearly specified objectives of management without undue reduction of its inherent values and future productivity or undesirable effects on the physical and social environment. ITTO 1992

Some Myths for thoughts...



Although both WCED and ITTO define SD and SFM, neither relates the definitions to: **what to sustain?, level to sustain? and time it takes to sustain?, i.e. all points to lack of economics.** To complicate the definitions many want to **use SD or SFM as a measure of worthiness of managing tropical forests.** Simply put, a dilemma is apparent if SD or SFM would become a criterion in evaluating the worthiness of managing tropical forests without due regards to economics, i.e. **non-sustainable tropical forests are simply irrelevant when compared to tropical forests that have low and uneconomic yield (of a product or products) but are sustainable !**



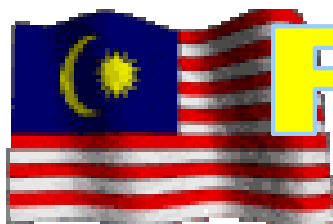
Vision 2020

Overview of Forest
Resources in Malaysia



Vision 2020

Malaysia will not waste its valuable resources. The land must remain productive and fertile, the atmosphere clear and clean, the water unpolluted, the forest resources capable of regeneration - able to yield to the needs of the nation's development



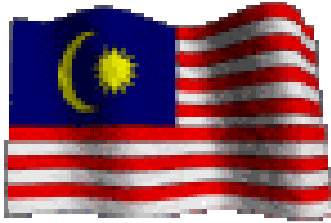
FOREST RESOURCES

2007

(million ha)

REGION	PENINSULAR MALAYSIA	SABAH	SARAWAK	MALAYSIA
PFR	4.74	3.60	7.00	15.34
• Productive	3.56	3.01	6.00	12.57
• Protective	1.18	0.59	1.00	2.77
National & Wildlife Parks	0.70	0.28	1.00	1.98
Stateland Forest	0.40	0.44	0.07	0.91
TOTAL	5.84	4.32	8.07	18.23
% of Land Area	44.37	58.62	65.61	55.53

Total Land Area : 32.83 million ha.



DISTRIBUTION & EXTENT MAJOR FOREST TYPES

2007

(million ha)

REGION	PENINSULAR MALAYSIA	SABAH	SARAWAK	WHOLE MALAYSIA
Land Area	13.16	7.37	12.30	32.83
Dipterocarp	4.25	3.67	6.86	14.78
Swamp	0.21	0.12	0.94	1.27
Mangrove	0.10	0.34	0.14	0.58
Other Forest Types *	1.28	0.19	0.13	1.60
TOTAL	5.84	4.32	8.07	18.23

* Forest Plantations +
Stateland & Wildlife
Reserves

Source: KPPK, STATISTICS ON COMMODITIES 2008

BIOLOGICAL SPECIES RICHNESS in Malaysia ... Our Sciences

15,000 Angiosperms (flowering plants)

- **8,500 species in Pen. Malaysia**

293 species of mammals,

12,000 species of moths,

600 species of mosses,

1,200 species of birds,

449 species of freshwater fish,

294 species of reptiles,

1,200 species of fern and fern allies,

171 species of amphibians, and

> 100,000 species of other invertebrates (insects, worms, etc).



The 12 Mega-Diversity Countries of the World ... Our Science able rank Malaysia @12th position

- Indonesia (1.90 m km²) 1.000_{nbi}
- Colombia (1.14 m km²) 0.935_{nbi}
- Mexico (1.96 m km²) 0.928_{nbi}
- Brazil (8.55 m km²) 0.877_{nbi}
- Ecuador (0.27 m km²) 0.873_{nbi}
- Australia (7.68 m km²) 0.853_{nbi}
- Venezuela (0.93 m km²) 0.850_{nbi}
- Peru (1.28 m km²) 0.843_{nbi}
- China (9.57 m km²) 0.839_{nbi}
- Costa Rica (0.05 m km²) 0.820_{nbi}
- Madagascar (0.59 m km²) 0.813_{nbi}
- **Malaysia** (0.33 m km²) 0.809_{nbi}

nbi=National Biodiversity Index

**Source: Global Biodiversity Outlook
(2001)**



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#1.

21st CENTURY FORESTRY SCENARIO

???

PFE's

PLANTATION

AGRICULTURAL
CROP

CELLULOSE

FIBER



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#2

21st CENTURY FORESTRY SCENARIO

???

Second Rotation Logging



More Environmental Friendly

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#3. 21st CENTURY FORESTRY SCENARIO

???

Wood Based Industries



High Technological Processing

#4. **21st CENTURY
FORESTRY SCENARIO**

???

Improved Planting Material



Biotech.



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#5. **21st CENTURY
FORESTRY SCENARIO**

???

Multipurpose Species



More Prominent



CONCLUDING REMARKS

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RESOURCES



MANPOWER

**ECONOMIC GLOBALIZATION REQUIRES PROFESSIONALISM &
INTERNATIONAL NETWORKINGS**



POLITICAL COMMITMENT

To Implement the Formulated Policies & Strategies Legislation

Lord Ashby 1977: Reconciling Man With the Environment: "When the final decision was taken, ministers were less influenced by any expert advice or facts than their political instincts, greatly swayed by pressure groups and political lobbies...a distressing reality, but a reality nevertheless."



A 21st CENTURY FORESTRY

Will crisscross institutions, disciplines, organizations, specializations, roles, and identities. Foresters will enter the debates on when, where, why, and how forests should be managed, including for what purpose and by whom. No longer foresters be specially authorized to determine how forests are managed.....

Margaret Shannon & Alexios Antypas: 1997



'EARTH HAS ENOUGH FOR
EVERYONE'S NEEDS
BUT NOT FOR EVERYONE'S
GREED'

- GANDHI

An aerial photograph of a dense forest with a winding path. The path is a mix of dark and light brown, suggesting different types of trees or perhaps a dirt path. The surrounding forest is a mix of green and brown, indicating a diverse ecosystem. A dark brown rectangular box is overlaid on the center of the image, containing the text "Terima Kasih" in a yellow, italicized serif font.

Terima Kasih