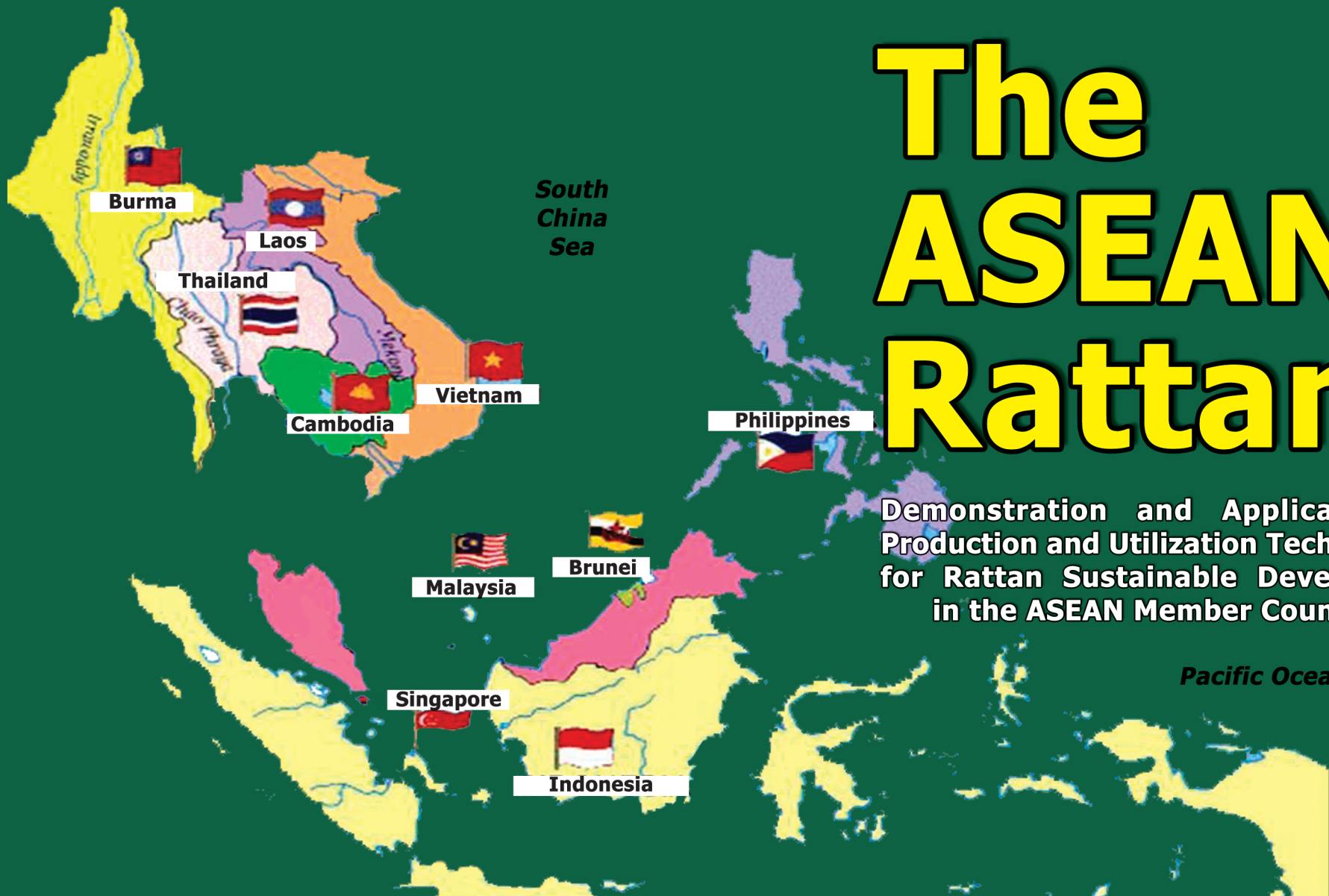


The ASEAN Rattans



Demonstration and Application of
Production and Utilization Technologies
for Rattan Sustainable Development
in the ASEAN Member Countries



ITTO-Philippines-ASEAN Rattan Project
ITTO PD 334/05 Rev. 2 (I)



The ASEAN Rattans

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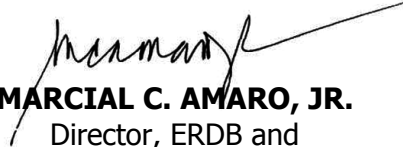
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FOREWORD

In the Southeast Asian region and other tropical countries, rattan continues to be one of the most important non-timber forest products. Among the ASEAN nations, rattan is one of the traditional sources of materials for furniture and handicrafts that are highly in demand in domestic and international market. Rattan is also important as a source of livelihood for the communities living near or adjacent to the forests. Despite its seeming prominence, not to mention the numerous commercial values of rattan, basic knowledge of this natural resource is still scanty.

The ASEAN Rattans intends to disseminate pertinent resource information to our readers. It is an output of the photo-documentation activities undertaken during the implementation of the ITTO Rattan Pre-project from 2003 to 2004, and the ITTO-Philippines-ASEAN Rattan Project from 2006 to 2010. The publication presents general information about each of the 10 ASEAN countries and showcases their non-timber forest products and their rattan resources which includes their taxonomy, distribution, ecology and uses.

May our readers from all ASEAN countries benefit from the knowledge that this publication may convey.



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ITTO PD 334/05 Rev. 2 (I)

ACKNOWLEDGEMENT

The authors are grateful to the International Tropical Timber Organization (ITTO) particularly Dr. Emmanuel Ze Meka, Executive Director, Mr. Ramon Carrillo Arellano, Project Manager and Dr. Lauren Flejzor, former Project Manager, for their financial support and guidance throughout the entire duration of the project .

Utmost appreciation is also due to all the ASEAN Contact Persons namely, Mr. Chhang Phourin (Cambodia), Mr. Bambang Wiyono (Indonesia), Mr. Sounthone Ketphanh (Lao PDR), Dr. Raja Barizan (Malaysia), Mr. Tint Khaing (Myanmar), Mr. Jerdpong Makaramani (Thailand) and Ms. Do Thi Ngoc Bich (Vietnam), for their commitment and continued collaboration with the project.

Recognition is due to the Project Management Team namely, Mr. Marcial C. Amaro, Dr. Armando M. Palijon, Dr. Magdalena Y. Giron, Dr. Florentino O. Tesoro, Ms. Imelda C. Pangga, Ms. Cristina D. Apolinar and Ms. Norma Pablo for all their supportive actions and contributions.

The continued guidance of the Project Steering Committee namely, Mr. Ramon Carrillo Arellano (ITTO), Mr. Eriberto C. Argete (DENR-Planning), For. Marlo D. Mendoza (Forest Management Bureau), Dr. Rex Victor O. Cruz (UPLBCFNR) and For. Felix Tamolang (FPRDI) are also very much appreciated.

We also acknowledge the former members of the PSC namely, For. Romeo T. Acosta (FMB), Dr. Florence P. Soriano (FPRDI) and Dr. Ramon A. Razal (UPLBCFNR).

And, to all people who, in various ways, contributed in the project implementation and the publication of this document, thank you very much.

INTRODUCTION

What is rattan?

The word rattan originated from the Malay terms “rotan”, the local name for climbing palms (Sunderland and Dransfield 2002) and “raut” which means to pare, smoothen or whittle. This term also refers to the operational process when a rattan collector drags down a pole, twists it around a convenient rough-barked tree trunk, and rubs off the prickly leaf sheath (PCARRD-DOST 1992).

Rattan is a spiny climbing or trailing palm (Sastry 2001) exploited for their flexible stems that form the basis of a significant market for cane and cane products (Sunderland and Dransfield 2002). Majority of rattan species have long, flexible climbing stems and long hooked whips which they use to cling to other trees for support (Evans et al. 2001). Rattan has long and very flexible stems. The longest cane ever recorded was over 175m long (Royal Botanic Gardens Kew).

Taxonomy and Distribution

Rattan plants are classified in the Division *Magnoliophyta*, Class *Liliopsida*, Order *Arecales* and Family *Palmae* or *Arecaceae*. They belong to a large sub-family of palms, *Calamoideae*, with more than 600 species belonging to 13 genera which are concentrated solely in the old world tropics (Sunderland and Dransfield 2002) and subtropics (ITTO 1997). Of the 13 genera, one is distributed from Africa to Australia, 2 are found in Africa while the rest are in Asia-Pacific region.

Three (3) of the 13 genera are endemic to Africa namely, *Laccosperma* (syn. *Ancistrophyllum*), *Eremospatha* and *Oncocalamus*

(Sunderland and Dransfield 2002). The remaining ten genera are *Calamus*, *Calospatha*, *Ceratolobus*, *Daemonorops*, *Korthalsia*, *Plectocomia*, *Plectocomiopsis*, *Pogonotium* and *Retispatha*. *Calamus*, with about 370 species, is the largest of the rattan genus which is primarily found in Asia. Its distribution range covers the Indian subcontinent and the south China southwards and east through the Malaysian region, Fiji, Vanuatu and tropical and subtropical parts of eastern Australia (Sunderland and Dransfield 2002).

General Morphology

The diameter of the rattan stem ranges from 3cm to 10cm. Large diameter rattans can reach 20cm in size (Anonymous 2000). PCARRD-DOST (1992) describes rattans as follows: Some species of rattans are single-stemmed, others are multi-stemmed. The stem is smooth with somewhat regularly spaced scars or internodes and surrounded by a leafsheath which is a tube-like part of the leaf circling the stem before the actual leafstalk branches out and usually spiny. These spines are sometimes arranged in neat rows and interlocking to form galleries where insects, like ants, build their nests, and in return provide protection to the plant.

Rattan has two major climbing organs, the cirrus (plural: cirri) and flagellum (plural: flagella) which anchor the plant to the neighboring trees and appear as long whips barbed with reflexed thorns. These organs come from different origins. The cirrus which is present in some rattan species, is a whip-like extension at the apex of the midrib. The flagellum, present in other rattan species, is a filament-like appendage that stemmed from the leafsheath in the same place as the inflorescence thus making it look like an extension of an infertile inflorescence.

The leaflets can number from a few to more than 100 which are regularly or irregularly arranged. These can be small or narrow, or broad and long, or even diamond-shaped, with different spines and different forms of the tips.

The flowers are usually fragrant or slightly fragrant and the time span between the emergence of inflorescence and the opening of the flowers depends on the species. Flowering season is generally from two weeks to two months prior to pollination and eventual fertilization.

The fruits are usually in clusters and covered with scales and containing one to three seeds depending on the species.

Ecology

The primary habitat of rattan is the tropical rainforest. It can be found in a wide range of forest and soil types (Sunderland and Dransfield 2002). Some of the rattan species are found in the understorey, gap vegetation and in swamp and seasonally flooded forest. Other species are more common on dry ridge tops. Rattan can be grown in degraded forest and marginal soil. It can also be artificially introduced in natural forest without disrupting the ecological balance.

Uses of Rattan

Traditional uses. Rattans contribute to the survival of several forest-based indigenous communities in various ways. In Nicobar Islands, India, the spiny sheath of rattan is used for scraping coconut while the tribal people of northeastern India make widespread use of long canes in bridge construction. Certain species of rattan are used in tribal rituals, festival and have great cultural values.

The Tharu people, an ethnic group in Nepal, use rattan sticks in temples, believing that these are holy and capable of deflecting evil spirits. Harvesting of rattans inside the compounds of the temple is prohibited, and thus, protected (Renuka 2001).

In Bangladesh, rattan is considered as important natural resource from the forests. Indigenous people from this country are using young leaves, roots and shoot tips of rattans for medicines and vegetables.

In Sri Lanka, 18 of the 24 districts are involved in rattan craft, which is considered as a traditional occupation.

Other traditional uses of rattan are the following: edible fruits and shoots for food; fruits, shoots and roots for medicine; fruits as source of red resin for dye; leaves for thatching; leaflet as cigarette paper; leaves as vermifuge; leafsheath as toothbrush and grater; and rachis as fishing pole.

Commercial uses. The cane, or stem, is the most important product of rattan (Sunderland and Dransfield 2002). The cane is solid, strong, uniform and highly flexible and can be used in whole or round form for furniture frames or split or cored for matting and basketry. Other uses of rattan canes include fish traps, hats, walking sticks, tool handles, ropes, tying bundles, food, medicine, dye, and a host of other uses.

It is estimated that 20% of the known rattan species have commercial value (Sunderland and Dransfield 2002). Other species are not commercially beneficial due to poor physical and mechanical properties of the cane i.e., inflexible and prone to breakage.

Nursery Technique

Propagation of rattan can be done through the use of seeds or vegetative parts like suckers or rhizomes. Propagation can also be done through layering and tissue culture.

Plantation Establishment and Management

Cultivation. Rattan can be cultivated in natural as well as in artificial plantations. It can also be mixed or intercropped with other plant species or other rattan species.

Harvesting

Harvesting. Rattan harvesting activity is labor intensive and typically carried out by a team of gatherers. Rattan farmers or gatherers climb the trees, then start hacking or cutting the rattan, and split off the outer layer and peel out the core rattan. The bare canes are then taken out of the forest. Subsequently, they are partially processed before being sold to middlemen.

For clustering rattan species, the mature stems selected for harvesting are those without leaves (i.e., the leafsheath already evaded). Usually, only the basal portion of the stem, 10m to 20m long, is harvested. The upper portion which is the "green" part of the cane is too soft and inflexible for use. It is often left in the canopy or the shoot is collected, cooked and eaten, or sold in the market.

The Commercial Rattan Trade

The international rattan trade started in the middle of the nineteenth century (Corner 1996) and it flourished into a multimillion-dollar industry. According to International Tropical Timber Organization or ITTO (1997), the annual rattan trade at present is worth roughly US\$6.5 billion.

Rattan product exports have greatly contributed to national incomes. Asian countries such as China, Indonesia, Malaysia and the Philippines exported rattan and rattan products amounting to US\$1.68 billion in 2004 (INBAR 2006).

Threats

The continuous rattan collection from the "wild" due to high demand for rattan products worldwide has resulted in the overexploitation of rattan resources. This is further aggravated by the rate of deforestation especially in the Southeast Asia which is causing alteration and destruction of the natural habitat of rattans (IPGRI 2000).

Rattan plantation establishment and development is therefore very necessary to replenish the diminishing rattan resources and to provide sustainable supply to the industry.



BRUNEI DARUSSALAM



Full country name:

**Negara Brunei
Darussalam**

Area:

5,765 sq km (576,500 hectares)

Capital city:

Bandar Seri Begawan

Bordered by South China Sea to the north and by Malaysian province of Sarawak on all other sides

Population:

322,000

Currency:

Bruneian Dollar

Languages:

Malay (official), English,
Chinese

Religions:

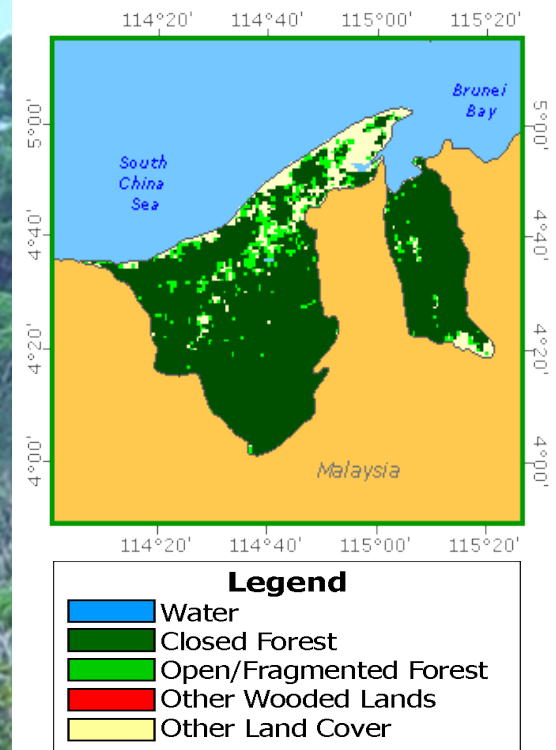
Muslim (67%), Buddhist (13%),
others (20%)



Source: www.bergoiata.org.bmp



Forest Cover Map



Map source: Global Forest Resources Assessment 2000, base map: ESRI (www.fao.org)

Land area = 5,765 sq km

Primary forest = 58%
(ca. 341,000 hectares)

Only 15% of the country is cultivated.

Non-wood Forest Products (NWFPs) of Brunei

Latex	Bamboo
Cutch	Leaves
Firewood and charcoal	Fibers
Wild animals	Bark
Rattan	Fruits

Uses of NWFPs

Food - Shoots of bamboo, rattan, and fern

- Fruits of petai (*Parkia javanica*), terap (*Artocarpus odoratissimus*), kembayao (*Dacryodes* spp.), and durian (*Durio* spp.) are local favorites.

Medicine

Building houses

Domestic and commercial applications (furniture, handicraft, boats, and other uses.



(A)



(C)



(B)

(A, C) Nursery of rattans and tree species in Brunei
(B) Rattan fruits and wine



(A)

Rattan Resources

Eighty (80) species.

Most species are found elsewhere in Borneo, particularly in eastern Sarawak; uniquely, two (2) species, *Calamus temburongii* and *C. maiadum* are endemic to Brunei.

Species with commercial value include *Calamus optimus*, *C. ornatus var. ornatus* and *C. scipionum*.

Established plantation is more than 900 hectares.

Species use in plantation:

- Rotan Manau (*Calamus manan*)
- Rotan Jelayan (*Calamus merrillii* Becc.)
- Rotan Segu (*Calamus caesius* Blume)



(B)



(C)

(A) Forest in
Brunei
(B, C) Rattan
plantations

Contribution of the rattan sector to National Economy is very minimal or almost insignificant. The entire forestry sector contribution to GDP is only 0.20%
Rattan furniture, mostly imported from the neighboring countries, are of high quality with good finish and unique designs though quite expensive (around B\$ 3,000 – 5,000), are preferred by the more affluent Bruneians.

- (A) Rattan furniture (Dining set) made of rattan with wood as the main frame
(B) Side/Corner table made of rattan with iron as main frame
(C) Chair made of rattan with iron as main frame



(A)



(B)



(C)



(A)

Rattan finished products include:

- Furniture: chairs, tables, cabinets and dividers
- Handicraft: baskets of various shapes and sizes; back pack locally known as *baku*; handfans, mats, canes, picture frames, jewel boxes, vanity cases and handbags, clothes hangers, flower bases, lamp shades, etc.



(B)



(C)

- (A) Mat from split rattan
 (B) Backpack
 (C) Chair made of a combination of rattan and cushion with wood as main frame

Solid canes are used as tool handles; walking sticks; some items of utensils are sieves/strainers, brushes, dough rollers, hotplate mats, pestles, fruit trays, etc. Split rattans are from small diameter rattan canes. They are normally used for: tying or securing firmly together the solid cane main frames; bracings and for decorative lacings of armrests and other exposed front parts of any furniture pieces; and for weaving the back-rests and seat portions plaiting.

(A) Rattan bags
(B, C) Decorative items out of rattan



(A)



(B)



(C)



(A)



(B)



(C)

Rattans are still of considerable importance to local people as a source of fiber for basket weaving, matting, general tying purposes and others.

*(A) Indigenous way of scraping a rattan using a tin can lid with sharp holes.
(B) Rattan products of the Iban Tribes of Brunei located in Temburong and Tutong Districts, Brunei Darussalam.*

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CAMBODIA



Full country name:

Kingdom of Cambodia

Capital:

Phnom Penh

Land Area:

181,040 sq km (18.1M hectares)

Lies in the southwestern corner of
the Indochina peninsula

Population:

13.4 million

Currency:

Riel

Languages:

Khmer (official) (95%), French,
English

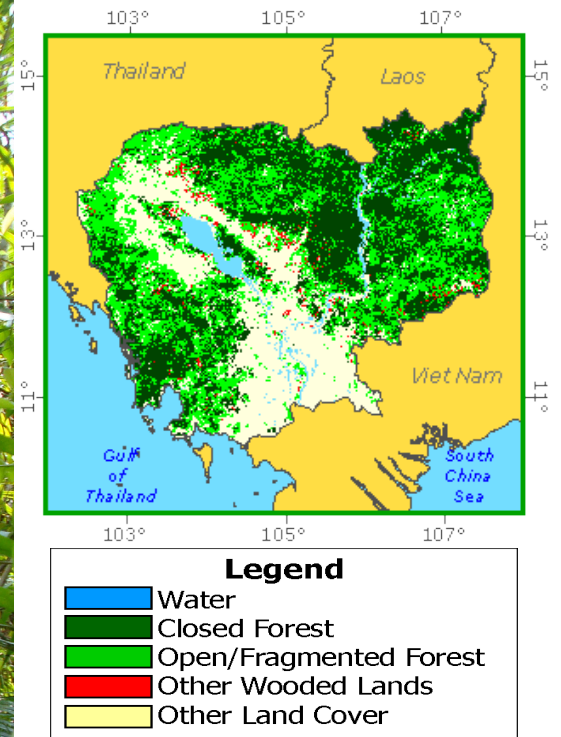
Religions:

Theravada Buddhism 95%,
Islam, animism, Christian.





Forest Cover Map



Map source: Global Forest Resources Assessment 2000, base map: ESRI (www.fao.org)

Total forest area : 13.8M ha or 63% of total land area.

-2.5M ha or 18.2 % of the forest cover are evergreen, mixed and flooded forests including the main rattan habitats.

-9.9M ha or 78.1% are deciduous forests, shrub land, scattered woodland and plantations.

NWFPs

Utilized for housing, health care and small industries.

Increased demands for forest and non-wood forest products are due to the needs of the people for shelter, household facilities, furniture, and others.

Products used for domestic and export markets include:

- timber
- fuelwood
- NWFPs (rattan, bamboos, resin, sandalwood, medicinal plants, wild animal products, honey, wax and lac.)



(A)

(A, B) Harvested rattan fruits for sale



(B)



(A)

(A, B) Rattan seedlings raised in the nursery for the establishment of pilot demonstration of ITTO-Philippines-ASEAN Rattan Project in Cambodia



(B)

Rattan Resources

Eighteen (18) species representing the following genera:

- *Calamus*
- *Daemonorops*
- *Korthalsia*
- *Myrialepis*
- *Plectocomia*
- *Plectocomiopsis*

More species may be occurring in the country but not yet found and identified.

No rattan species are endemic to Cambodia.

Rattan Resources

Distribution : Kampot, Kampong Speu, Koh Kong, Pursat, Kampong Thom, Battambang, Kratie, Rattanakirie, Mondulkiri, and Steung Treng Provinces.

Only 6 species of rattan are mainly used in Cambodia:

- *Calamus rudentum*
- *C. tenuis*
- *C. poilanei*
- *C. viminalis*
- *C. tetradactylus*
- *C. palustris*

(A) Training on rattan nursery and planting stock production in Cambodia

(B) Rattan seedlings intended for planting in pilot demonstration area

(C) Nursery secured with fence made of fishnets



(A)



(B)



(C)



(A)

(B)

Rattans, depending on the species, are thriving in all forest types from sea level to the highest mountain (1813m) in the country.

Calamus viminalis Willd. is common and most abundant species followed by *C. salicifolius* Becc.

Plectocomiopsis gemiflora (Griff.) Becc. is only found in Mondulkiri Province.

C. godefroyi Becc. is only occurring in Tonle Sap (Great Lake) and the Mekong River.



(C)



(D)

(A, B) Rattans bearing fruits in the forest

(C) Wild rattan growing in swamps

(D) Grown rattans

About 20 ha of buffer land in Bokor N.P. is being used for rattan cultivation under WWF sponsorship.

Five (5) ha rattan plantation in Kampong Chhnang Province has been established by ITTO-Philippines-ASEAN Rattan Project as a demonstration plot.

Rattans are included in a governmental conservation decree for non- timber forest products.

Local people are allowed to use rattans for traditional uses and on small scale trading.

Commercial harvesting requires official permission.



(A)



(B)



(C)

*(A, B) Rattan seedlings
outplanted at Prek
Thnot Commune,
Kampot Province
(C) Rattan growing in the
wild*



(A)



(B)

Not much commercial extraction of rattan from the forest. The highest quantity extracted from the wild is only by means of ox cart.

The industry producing fishing instruments is the biggest user of rattan cane, located at the Tonle Sap lake of Cambodia.

Second biggest rattan user are handicraft industries located in Phnom Penh city.

No modernized rattan industry in Phnom Penh except the handicraft industries.

Traditional processing methods are practiced, such as:

- Sundrying
- Debarking
- Splitting
- Bending
- Weaving
- Sulphur fumigation and
- Finishing

(A) Harvested rattan canes
(B) Scraping of rattan

The selling price of rattan varies, depending on the season, quality and diameter: around 1000 Riels (about US\$0.25) to 5000 Riels (about US\$1.25) for a 5m-long rattan pole.

(A, B, C) Small handicraft workshops employing 5-10 skilled workers, mostly women.



(A)



(B)



(C)



(A)



(B)

Cores, splits, skins and washed sticks of small diameter canes are used as webbings, weavings, binds, basketry, and/or furniture components.

*(A, B) Rattan cabinets/shelves
(C) Rattan sala set*



(C)

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INDONESIA



Full country name:

Indonesia

Land area:

2 million sq km
(200 million ha)

Capital:

Jakarta

With more than 13,000 islands
and shares borders with Malaysia
and Papua New Guinea

Population:

240.3 million (July 2009 est.)

Currency:

Rupiah

Religion:

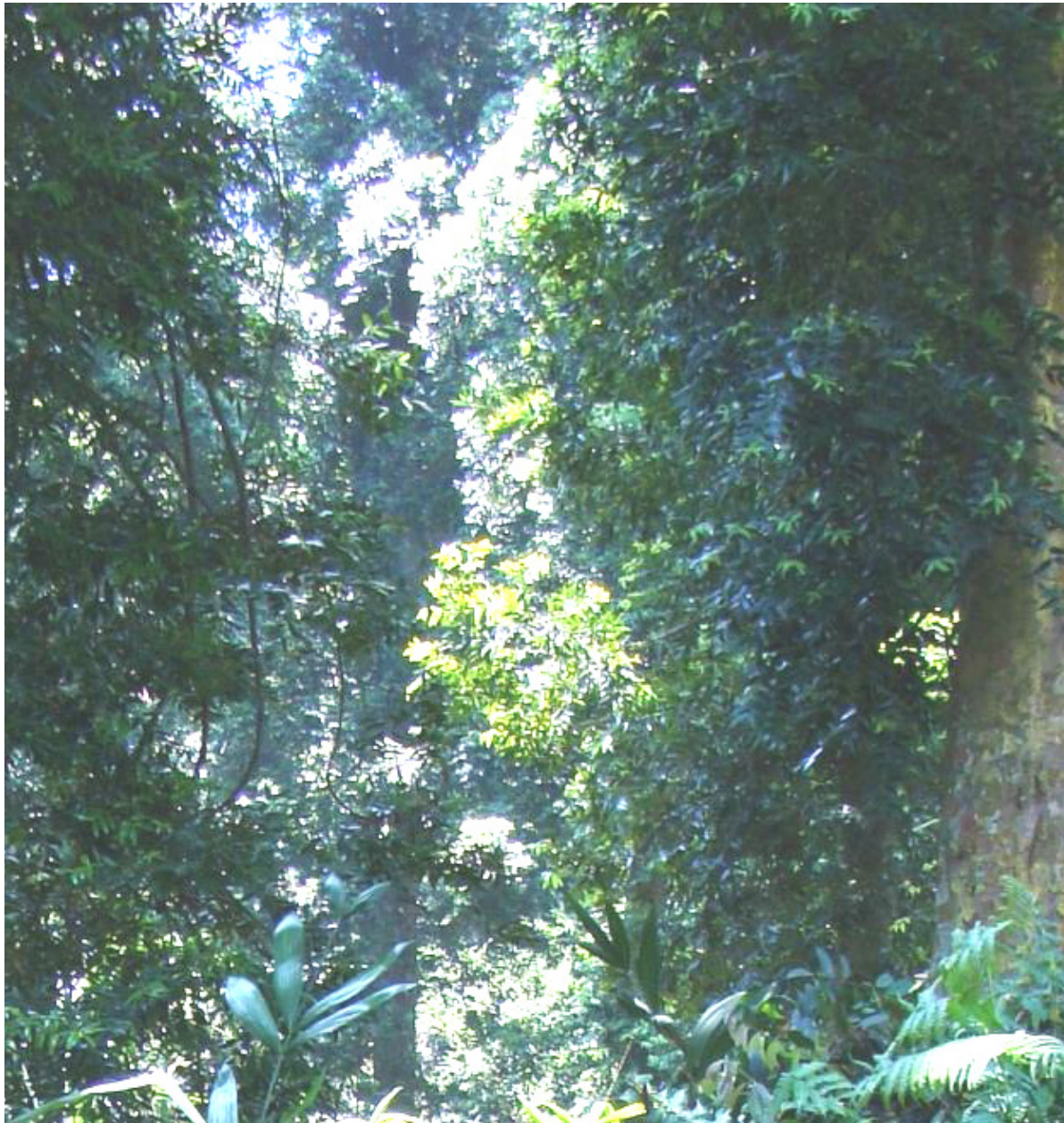
Muslim 86.1%, Protestant 5.7%,
Catholic 3%, Hindu 1.8%, others
3.4%

Languages:

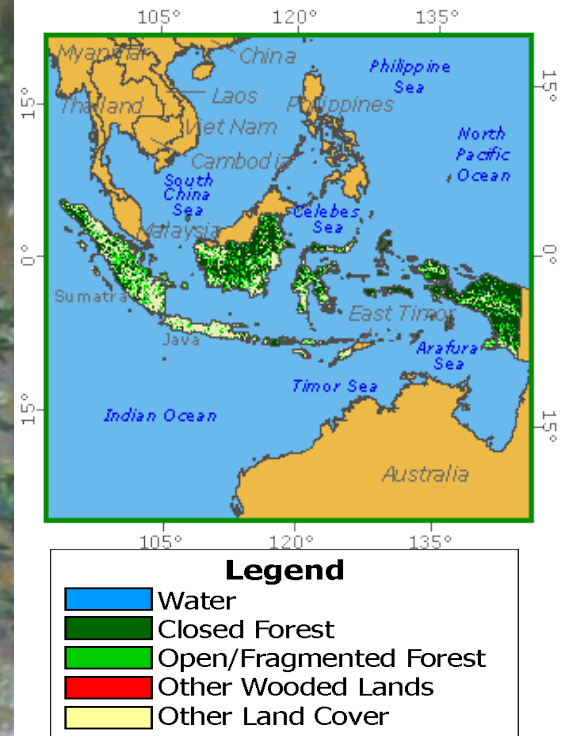
Indonesian (official), local
languages, the most prevalent of
which is Javanese.



Source: www.wikitravel.org



Forest Cover Map



Map source: Global Forest Resources Assessment 2000, base map: ESRI (www.fao.org)

Total Forest Area:

2/3 of the total area or 134 million ha consist of woodland, forests and mangrove swamp mostly found in Sumatra, Kalimantan, Sulawesi and Irian Jaya.

Less than 10 % of the land area is used for farming.

NWFPS

The rich natural environment supports a diversity of flora and fauna.

Forest products are the second largest foreign exchange earner in the last decade.

Rattan is the second most important forest product after wood (Priasukmana 1989).



(A)



(B)



(C)

(A, B, C) Some of the non-wood products harvested, either for home consumption or for sale



(A)



(B)



(C)

Rattan resources

One of the major rattan producing countries in the world (Silitonga 2002).

Two (2) major rattan resources: natural forests and plantations.

Rattans are well distributed in primary and secondary forests.

Over 3 million ha of forests produce 570,000 tons of rattans annually.

(A) Rattan Pilot Demonstration in Indonesia established thru the ITTO-Philippines-ASEAN Rattan Project
(B, C) Rattan seedlings in nursery

Rattan plantations cover about 1,165 ha and are distributed in Kalimantan (Central, South, West and East), Sulawesi North, South and Southeast), Gorontalo, Aceh, Riau, Jambi, N. Sumatera, Bangka Belitung and West Java.

Rattan species used in plantation include:

- *Calamus manan*
- *C. caesius*
- *C. trachycoleus*
- *C. inops*
- *D. robustus*,

Around 312 rattan species representing 7 genera (listed below) have been documented:

- *Calamus*
- *Ceratolobus*
- *Daemonorops*
- *Korthalsia*,
- *Myrialepis*
- *Plectocomia*
- *Plectocomiopsis*
- *Pogonotium*



(A)



(B)



(C)

(A, B) *Calamus* and *Daemonorops*
species of rattan
(C) Germinants of rattan



(A)



(B)

(A) Part of the 25 hectare rattan pilot demonstration area established at Tamansari II Village.
 (B) Height measurement of semambu rattan is part of the pilot demo activity.

Of the 312 rattan species, only 53 species are being used in various forms, locally and commercially. About 28 of the 53 rattan species have high commercial value namely: *Calamus ornatus*, *C. axillaries*, *C. caesius*, *C. trachycoleus*, *C. manan*, *C. tumidos*, *C. axleyanus*, *C. marginatus*, *C. impar*, *C. laevigatus*, *Calamus sp.* (pulut hijau), *C. inops*, *C. scipionum*, *C. optimus*, *C. leiocaulis*, *C. javensis*, *C. zollingeri*, *C. crinitus*, *Calamus sp.* (tarompu), *Calamus sp.* (andaru), *C. mucronatus*, *Korthalsia rigida*, *Daemonorops lamprolepis*, *D. hystrix*, *D. melanochaetes*, *D. angustifolia*, *D. rubra*, *Korthalsia flagellaris*.

Rattan is second to wood in terms of foreign exchange earnings.

Rattan products exports during the last two year increased in terms of volume, but not in value.

The 135,805 tons of rattan export in 2001 valued at US\$ 300,929,134, while export of 139,892 tons in 2002 had only a value of US\$ 291,037,031 lower than the previous year due to decrease in export prices of almost all product types.

(A, B) Split rattans

(C) Rattan canes after scraping and cut into standard sizes



(A)



(B)



(C)



(A)

About 72 rattan processing enterprises are producing primary products such as whole rattan, rattan W&S (washed and sulphurized), split rattan and course polished rattan. The semi-finished products group comprises products of rattan W&S which include fine polished rattan, skin, separate furniture component, and core.

- (A) *Bending of rattan canes*
- (B) *Dyeing of split rattans*
- (C) *Treating of split rattans*



(B)



(C)



(A)



(B)

Rattan finished products include carpet, Sabrina, any basket, hat, mat, handicraft, furniture components, and furniture.



(C)

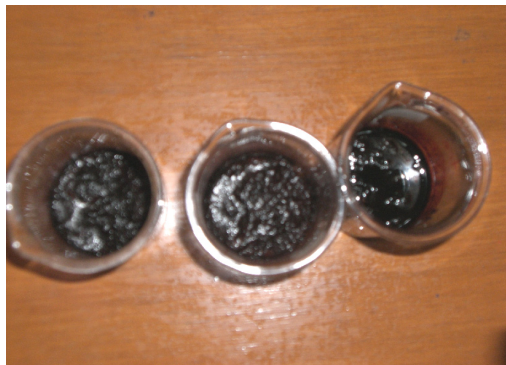
(A) Rattan mats
(B) Split rattans
(C) Rattan chair



(A)



(B)



(C)

Dragon's blood, a resin extracted from fruits of various rattan species specifically from Genus *Daemonorops* (*Daemonorops draco*, *D. didymophylla*, *D. draconcellus*, *D. malthanensis*, *D. microcantha* Mart, and *D. branchystachys*) is another important rattan product.

Traditionally, dragon's blood was one of the major products from rattans of tropical forest of Indonesia.

Rattan fruit scales when crushed produce dyes called dragon's blood ranging from orange to red color. This dragon's blood is used to dye textile and baskets.

Production of dragon's blood is one of the sources of livelihood particularly of people living adjacent to the forest.

Dragon's blood provides various benefits for subsistent needs, such as medicine and food.

The demand for dragon's blood is continuously increasing but the supply is diminishing.

Export of dragon blood significantly dropped from 70-75 tons in 1991 to 2.5 tons in 1996.

Currently, the price of this product at the gatherer's level has reached USD120 – 150/kg.

Due to its variety of uses, dragon's blood should be managed on a sustainable basis to sustain supply and meet the demand.

(A) Seeds of *Daemonorops draco* (Dragon's blood)
 (B) Screening of dragon's blood seeds
 (C) Dried dragon's blood

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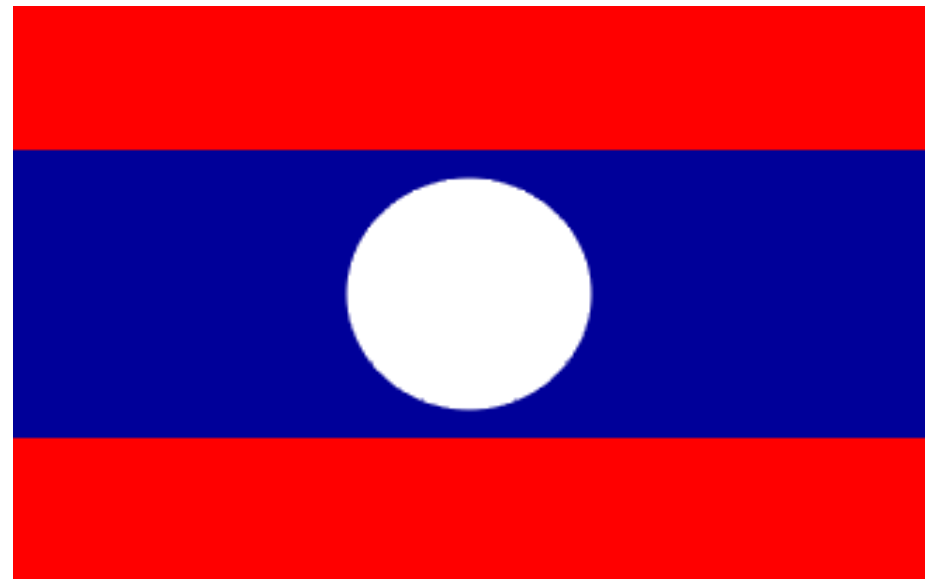
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LAO PDR



Full country name:

Lao People's Democratic Republic

Land area:

236,800 sq km (23.68 million ha)

Capital:

Vientiane

Bordered by Thailand, Cambodia, Vietnam, China and Myanmar (Burma).

More than 70% of the country consists of mountains and plateaus.

Population:

23 million

Currency:

Lao Kip

Religions:

Buddhism-65%; Christianity-1.3%; others (principally animism, also Ba'ha, and Islam)-33.7%.

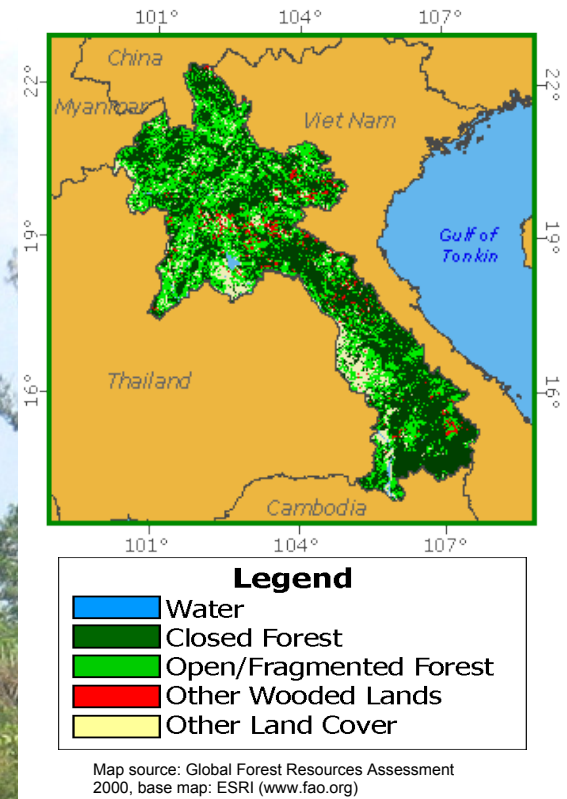
Languages:

Lao (official), French, English, and various ethnic languages.





Forest Cover Map



Total forest area: 16,142,000 ha
(69.9% of land area)

Primary forest cover: 1,490,000 ha
(6.5% of total land area and 9.2% of total forest area)

Forests provide shelter, food, medicinal products and other materials needed for household consumption. Forests are the source of a wide range of NWFPs. NWFPs are among the country's most important export commodities. They are also sold in local markets

- (A) Edible shoots of rattan
- (B) Bamboo shoots
- (C) Edible shoots of rattan



(A)



(B)



(C)



(A)



(B)



(C)

Rattan resources

43 rattan species

At least 20 species have moderate or high quality canes.

Cane production is entirely from natural forests.

- (A) *Cleaning of rattan seeds prior to seed sowing*
 (B) *Transplanting of germinated seedlings to polyethylene bags*
 (C) *Rattan nursery in Phnom Penh*

Remaining areas for cane production are in the mountainous regions.

Commercially important species include:

- *Calamus poilanei*
- *C. nambariensis*
- *C. platyacanthus*
- *C. wailing*
- *C. viminalis*
- *C. gracilis*
- *C. solitarius*
- *C. palustris* var. *cochinchinensis*
- *C. tetradactylus*
- *C. acanthospathus*
- *C. tenuis*



(A)



(B)



(C)

(A) Growth measurement of edible rattan for shoot production.
(B) Seedling of edible rattan.
(C) Rattan species in the forest.



(A)

Plantations of rattan for edible shoot are established mostly by local people along Mekong River and Nam Nhgum. Rattan edible shoot production will be the focus of activity over the next few years since there is a growing domestic and export market.

Plantation for edible shoot does not need special policy support since gestation period is short and production from *C. tenuis* is rapid and high economic return is assured.

(A) Outplanting of edible rattan at Thadindeng village, Saithany District, Vientiane Capital; part of the 40 hectare pilot demo area.

(B,C) Established edible rattan plantations



(B)



(C)

Rattan canes preservation is traditionally done by simply drying the canes under sunlight or by use of smoke by hanging the canes above the traditional stove (fuelwood drying).

Only large and medium-diameter canes (*C. poilanei* and *C. platyacanthus*) are boiled to remove moisture, waxy materials, resins and gums.

Uses of rattans:

- Young tips or shoots for food

- Leaves for roofing and cigarette paper

- Edible fruits for medicine and food

- Small cane for home use and handicraft

- Large and medium canes for handicrafts in factories

Rattan handicrafts include:

- Baskets

- Hunting and fishing tools

- Mats



(A)



(B)

(A) Air drying of harvested rattan canes
(B) Split rattans



(A)

Many neighboring countries import rattans, process them and then re-export.

Rattan handicrafts in communities and village levels are quite successful.

30% of the rattan handicrafts is absorbed in local markets while 70% is exported to the northeastern part of Thailand through the Mekong River.

(A) Training on rattan bleaching and finishing technologies conducted in Phnom Penh.

(B, C) Canes are used to make frame structures and woven sets for furniture.



(B)



(C)



(A)



(B)



(C)

Large-scale handicrafts and furniture manufacturers and small factories throughout the country trade their products directly to neighboring countries.

Recently, Lao tried to explore the markets in Japan and in some European countries.

However, only small quantity of finished products is exported to Japan and European countries.

Export earning from NWFPs is about 2.5-4% and the income from rattan is about 1% of total GDP.

(A, B, C) Different products made out of rattan.



(A)



(B)

The rattan factories have an annual net benefit of about 15 to 20% of total investment. The labor wage ranges from US\$40-60/month.

50% of the total income of villagers comes from rattan harvesting.



(C)

*(A) Small seats locally used in Lao
(B) Bed from rattan
(C) Small rattan products in the local market*



National Agriculture and Forestry Research Institute Forestry Research Center Lao PDR

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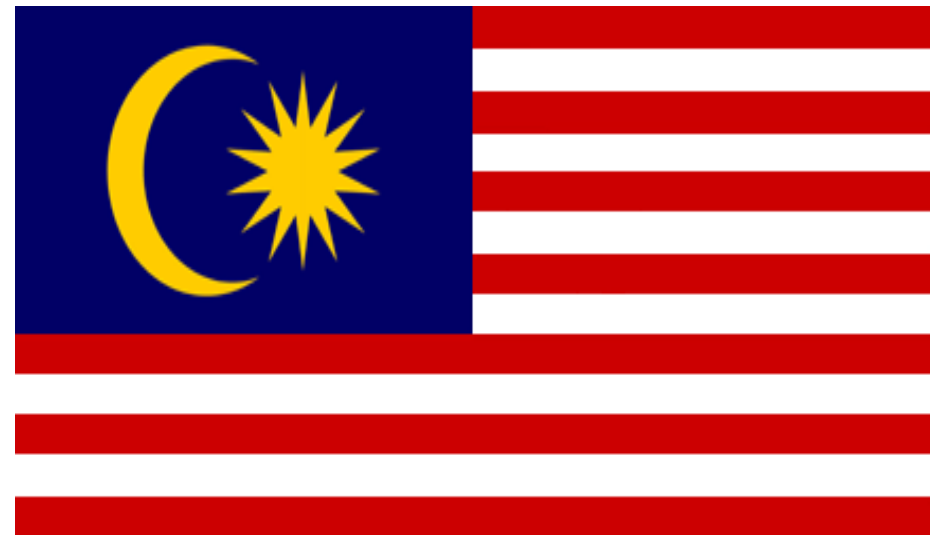


World Wildlife Fund – Lao PDR

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MALAYSIA



Full country name:

Malaysia

Land area:

29,748 sq km (2.97 million hectares)

Capital:

Kuala Lumpur

Two distinct parts: the Peninsular Malaysia and the East Malaysian provinces of Sabah and Sarawak in North Borneo.

Population:

27.5 million (2008)

Currency:

Malaysian Ringgit

Religions:

Islam (60.4%), Buddhism (19.2%), Christianity (9.1%), Hinduism (6.3%), others (5.0%)

Languages:

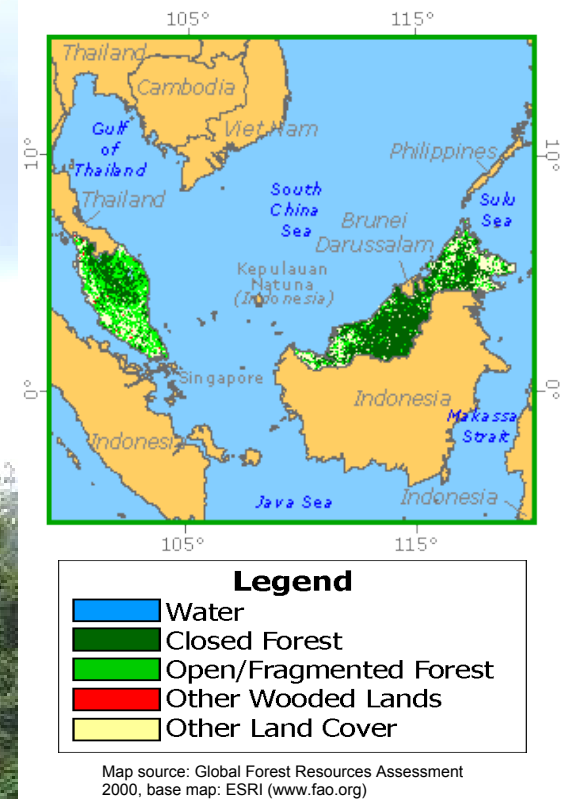
Bahasa Melayu (official), Chinese (various dialects), English, Tamil, indigenous.



Source: <http://www.naryves.com/pj/asia/kl/petronastwintowers.jpg>



Forest Cover Map



Total forest area: 20.89 million ha
(63.6% of land area)

Primary forest cover: 3,820,000 ha
(11.6% of land area; 18.3% of forest area)

8,000 species of flowering plants
(Peninsular Malaysia)

Rattan (i.e. *Calamus manan* and *C. caesius*) is categorized as a major forest product under the National Forestry Act of 1984. Rattan harvesting, its uses and marketing have affected the social, economic and cultural livelihood of the local communities as well as long-term national socio-economic development.

(A) *Calamus manan* intercropped in African Oil Palm plantation
(B) *Calamus manan*



(A)



(B)



(A)



(B)

Rattan resources

9 genera in Malaysia

104 species in Peninsular Malaysia

29 species in Sabah

105 species in Sarawak

Only 21 species are widely utilized and marketed

Great number of species are endemic to Sarawak.

Most commercially important genus is *Calamus* and its species such as:

Calamus manan (Rotan manau)

C. caesius (Rotan sega)

C. scipionum (Rotan semambu)

C. ornatus (Rotan dok)

C. tumidus (Rotan manau tikus)

(A) Rattan plantation with African Oil Palm as support
(B) Rattans with pine trees as support

Total area of rattan plantation in Sabah: 23,157 has as of mid 1996.

Species used for plantation include:

- | | |
|------------------------------|----------------------------|
| - <i>Calamus manan</i> | - <i>C. javensis</i> |
| - <i>C. tumidus</i> | - <i>C. caesius</i> |
| - <i>C. palustris</i> | - <i>C. trachycoleus</i> |
| - <i>C. ornatus</i> | - <i>C. axillaris</i> |
| - <i>C. scipionum</i> | - <i>C. speciosissimus</i> |
| - <i>C. peregrinus</i> | - <i>C. insignis</i> |
| - <i>C. optimus</i> | - <i>C. laevigatus</i> |
| - <i>C. subinermis</i> | - <i>C. densiflorus</i> |
| - <i>Daemonorops grandis</i> | - <i>C. diepenhorstii</i> |
| - <i>D. angustifolia</i> | - <i>D. didymophylla</i> |
| - <i>D. propinqua</i> | - <i>D. micracantha</i> |
| - <i>Korthalsia rigida</i> | - <i>K. flagellaris</i> |
| - <i>K. laciniosa</i> | |



(A)



(B)

(A, B) Rattan plantation in combination with Rubber tree



(A)

(A) Tissue culture of rattan
(B) Tissue cultured rattan planted in the field



(B)



(A)



(B)

Rattan industry is dependent on availability of skills and technologies.
Suitably operated as a community co-operative business since the villagers are the workforces.

(A) Sun drying of raw rattan canes
(B) Open air-drying in a wigwam position for 10-14 days depending on the species
(C) Stacking of rattan canes for storage



(C)



(A)

Rattan is the livelihood of some rural communities, providing employment and contributing significantly in raising their living standards.

Among the products of small-diameter canes are cores, splits, skins and washed sticks which are then used as webbings, weavings, bindings, and basketry. Also, they are used as furniture components.

Large-diameter canes are normally used as natural or debarked furniture frames.

*(A) Cleaning with saw dust and manual straightening of canes
(B) Dipping in a diesel oil bath as preservation method
(C) Cleaning of cane with pressurized water*



(B)



(C)

Contribution of the rattan-based industry to the country's economy is relatively very small, US\$21.7 million, in contrast to that of the wood-based industry, which can generate almost a billion US\$ in export earnings.

(A, B) Scraping of rattan canes
(C) Sorting of small rattan canes



(A)



(B)



(C)



(A)



(B)



(C)

(A) Rattan chairs and shelves
(B) Rattan mats
(C) Rattan chairs

Forest Research Institute Malaysia (FRIM) Malaysia

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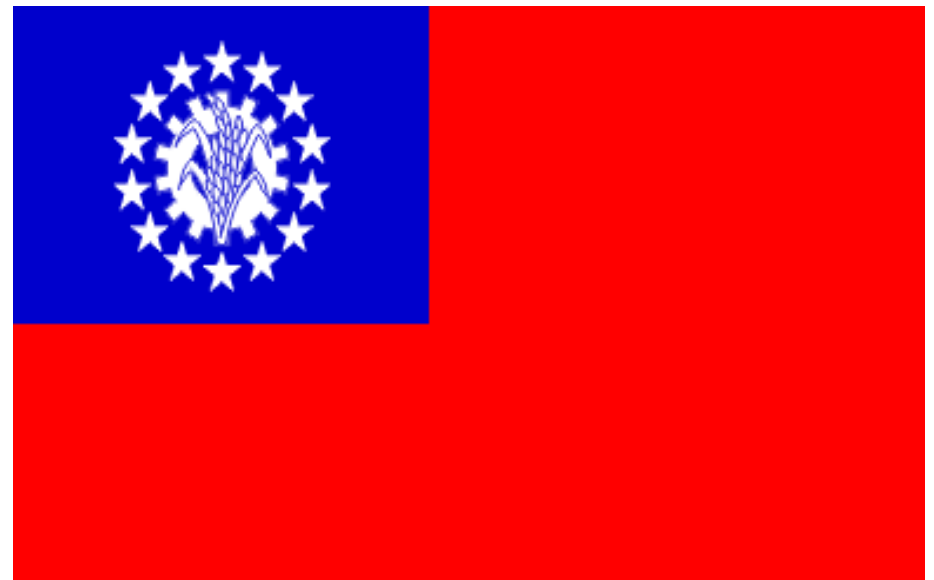
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MYANMAR



Full country name:

Myanmar

(Old name: Burma)

Capital City:

Yangon

Total land area:

678,500 sq km (67.85 million ha)

Largest country in mainland Southeast Asia; 40th-largest in the world.

Population:

About 56 million

Currency:

Kyat

Four major linguistic families:

Sino-Tibetan (most widely spoken; Burmese, Karen, Kachin, Chin), Chinese Kradai, Austro-Asiatic, and Indo-European.

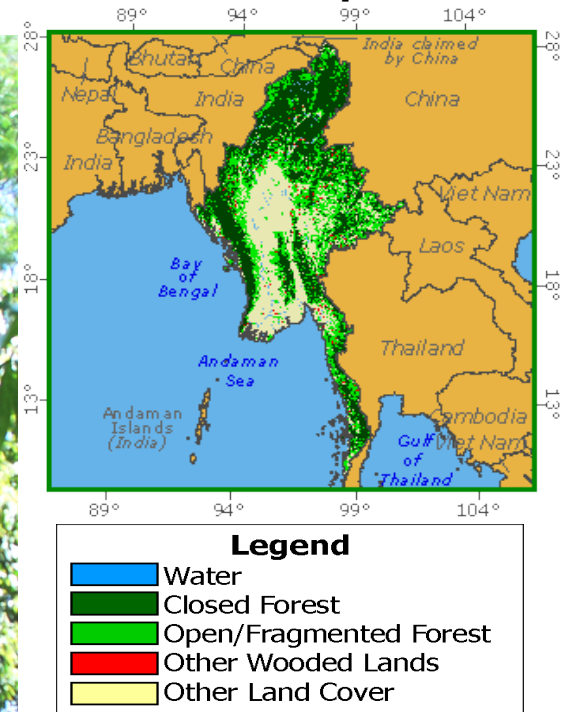
Religions:

Buddhism (89%), Muslim Rohingya people (4%), and Christians in Chin State (4%), traditional animistic beliefs (1%), and other religions (2%) (Mahayana Buddhism, Hinduism, Chinese religions and the Bahá'í).





Forest Cover Map



Map source: Global Forest Resources Assessment
2000, base map: ESRI (www.fao.org)

Forest cover: 27.14 million ha (40% of the total land area)

More than 3/4 of the population depends heavily on forest products.

About 43% of total land area under closed forests while 30% woodland.

Plant: about 7,000 species (1,071 endemic).

Trees: 2,088 species (85 species produce multipurpose timber of high quality).

NWFPS

Important NWFPS are bamboo, rattan cane, cutch, bark, plant fibre, nipa palm, and honey.

Rattan is one of the major export items among NWFPS.

Foreign exchange earnings from rattan and rattan products were valued at US\$10 million for the period 2002-2003 accounting for 5% of the total export value of US\$202.8 million from timber and value added products for the same year.

(A,B) Transplanting of germinated rattans in polyethylene bags
(C) Outplanting of rattan seedlings in the field



(A)



(B)



(C)



(A)



(B)



(B)

Rattan Resources

36 species belonging to five genera.
More new species are likely to be found.

- (A) Rattan nursery
(B) Village people involved in the rattan pilot demo establishment
(C) Growth measurements of rattan in the 25 hectare pilot demo area

No inventory data on rattan are available.
Rattan canes are harvested mainly from the natural forests.

- (A) Outplanted rattan seedling being maintained in the 25-hectare pilot demo area in compartment 7 of Chaung Thar Reserve Forest, Patheingyi Township, Ayeyarawdy Division.
(B) Village people involved in the rattan pilot demo establishment
(C) Rattans in the forest of Myanmar



(A)



(B)



(C)



(A)



(B)



(C)

Commercially important species include:

- *Calamus laetifolius* Roxb (Yamata Kyein)
- *Calamus longisetus* Griff (Kabaung Kyein)
- *Calamus platyspathus* Mart (Kuet-u Kyein)
- *Calamus floribundus* Griff (Ye Kyein)
- *Calamus guruba* Ham (Kyein Ni)

Commercially important rattan species are harvested and processed for both local and international markets.

(A, B, C) Rattan plantations

Some rattan species with poor quality canes are used by local farmers for making household utensils.

- (A) Rattan canes
- (B) Stacking of rattan canes
- (C) Split rattans



(A)



(B)



(C)



(A)

Foreign exchange earnings from rattan and rattan products were recorded at US\$10 million for the year 2002-2003 accounting for five per cent of the total export value of US\$202.8 million from timber and value added products for the same year.

About 35 percent of foreign exchange earning is accounted from raw rattan exportation.

Myanmar has been far behind in the development of rattan industry within the region and, therefore, there is ample room for development of the industry in the country.

(A, B, C) Rattan processing



(B)



(C)



(A)

Regional rattan trade was initiated by Myanmar Timber Enterprise (MTE), under the Ministry of Forestry. Purchasing centers in Myitkyina, Kachin State and Tanintharyi Division were opened in 1969-1970 which made cane and cane products export to bloom.

(A, B, C) Handicrafts and furniture making



(B)



(C)



(A)



(B)



(C)

Exports of handicraft and furniture to Germany, Hong Kong, Karachi, Moritua and Singapore (Myint Wai 1993). Offers by some companies from Singapore, Hong Kong, Thailand and Japan to buy Myanmar rattan poured in. The sought-after species were Yamata (*C. latifolius*), Kabaung (*C. longisetus*), Kyet-u Kyein (*C. platyspathus*).

(A, B, C) Finished products from rattan

Forest Research Institute Forest Department Ministry of Forestry

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PHILIPPINES



Full country name:

Republic of the Philippines

Capital City:

Manila

Total land area:

30 M hectares

An archipelagic country with 7,100 islands.

Located between latitudes 5°N and 21°N and longitudes 116°E and 127°E.

Population:

Over 92 million; world's 12th most populous nation.

Currency:

Philippine Peso

Religions:

Catholic (80%), Protestant (10%), Islam (5%), Ethnic/Folk religions (2%), Buddhism/Chinese religions (2%), Others (1%)

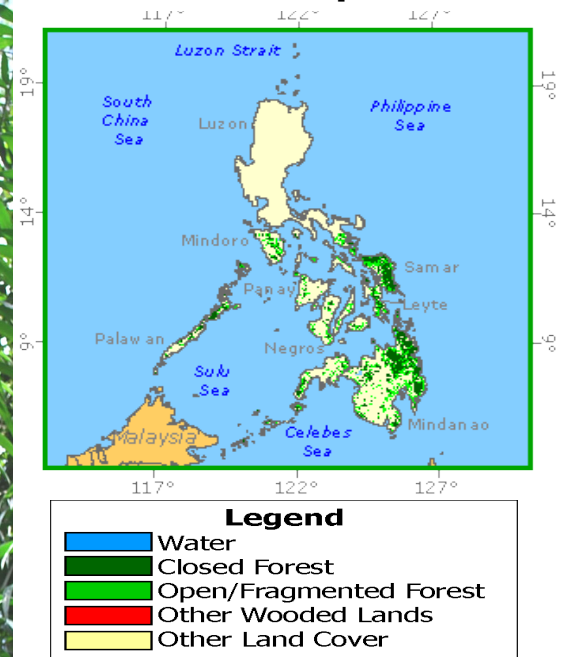
Languages: Over 180 native languages, and dialects; Filipino, and English.



Source: http://en.wikipedia.org/wiki/nang_palace_view.jpg



Forest Cover Map



Map source: Global Forest Resources Assessment 2000, base map: ESRI (www.fao.org)

Forest cover: 15.86 million ha (or 53% of land area); 14.77 million ha of the forest cover are classified (93%) and 1.09 million ha are unclassified (7%).

Classified forest land: consists of established forest reserve = 3.273 million ha; established timber land = 10.228 M ha; national parks, game refuge and bird sanctuaries and wilderness areas = 0.893 M ha; military and naval reservations = 0.130 M ha; civil reservation = 0.166 M ha and fishponds = 0.076 M ha.

(A, B) Cleaning of rattan seeds prior to germination or storage



(A)



(B)

NWFPS

Most important NWFPS: rattan, bamboo, vines, palms, fibers and exudates.

Other NWFPS include essential oils, dyes, medicinal plants, wild food plants, honey and butterflies.

Serve as an important source of food for rural people, valuable raw material for furniture and handicraft manufacture in cottage industry as well as a principal source of fiber and forage.

Valuable sources of materials for low-cost housing, clothing materials, food and beverages, medicine, soap and shampoo, plastic paint and varnish, and other valuable products.



(A)



(B)

Rattan Resources

66 species representing 4 genera, namely: *Calamus*, *Daemonorops*, *Korthalsia* and *Plectocomia*.

47 species are endemic.

Calamus is the largest genus with 59 species, followed by *Daemonorops* with 14 species, *Korthalsia* with 5 species and *Plectocomia* with 2 species.

Rattan occurs throughout the country.

Naturally found in *Dipterocarp* and other forest types.

- (A) Collection of rattan wildlings
- (B) Putting soil media in polyethylene bags
- (C) Transplanting wildlings in the bags



(C)

Economically and commercially important rattan species include: *Calamus merrilli* Becc., *C. ornatus* var. *philippinensis* Becc., *C. mindorensis* Becc., *C. ramulosus* Becc., *C. scipionum* Lour., *C. dimorphacanthus* Becc., *C. javensis* Blume, *C. microsphaerion* Becc., *C. filispadix* Becc., *C. caesius* Blume, *Daemonorops mollis* (Blanco) Merr., *D. pedicellaris* Becc. var. *halconensis* (Blanco) Baja-Lapis.



(A)



(B)



(C)

- (A) Rattan seedlings grown in the nursery ready to be outplanted in the field.
 (B) Rattan seedlings in the community nursery of San Jose Rattan Pilot Plantation Organization (SANJORAPPO).
 (C) A PO member planting rattan seedlings in the 25 ha pilot demo area in Bicol Natural Park (BNP).



(A)

Rattans comprise nearly half of the entire palm flora of the Philippine Islands.

Rattan plantations have also been developed throughout the country to supplement the decreasing supply of raw materials.

Calamus merrillii and *C. ornatus* var. *philippinensis* were mainly used in these plantations due to their importance for the furniture industry (Tesoro 2000).

Through the ITTO-Philippines-ASEAN Rattan Project, a total of 62 hectares of rattan pilot demonstration areas were established: 30 ha in Bicol Natural Park and 30 ha in Amas, Kidapawan City and 2 ha in Camarines Norte State College.

(A) *Rattan in the forest*

(B, C) *Rattan pilot demonstration in Bicol Natural Park*



(B)



(C)



(A)



(B)

Different methods of improving rattan products:
Non-chemical and Chemical Treatment of Rattan
Processing Technologies



(C)

(A) Sun-drying of rattan poles
(B) Steam conditioning chamber used in bending rattan poles
(C) Bending of rattan poles using a jig



(A)



(B)



(C)

Rattan products are generally classified as primary (canes), secondary (splits, wicker and core) and finished (furniture, handicrafts, baskets, etc.). Canes and splits are raw materials that have undergone first stage processing such as scraping, drying and splitting. Wicker and core are raw materials that have undergone second stage processing.

(A) Bundling of rattan splits
(B) Cutting of rattan poles into desired length
(C) Basket making

Rattan industry contributes significantly to the Philippine economy through generation of foreign exchange, income and employment. Rattan ranks second to wood in terms of market share in the total furniture export of the country. From January to October 2003, export of rattan furniture reached US\$ 44.567 million (BETP 2003).

(A, B, C) Manufacturing of various rattan handicrafts and furniture



(A)



(B)



(C)



(A)



(B)



(C)

In 2001, 20 thousand kg of rattan raw materials were exported to the US and Hong Kong amounting to US\$33,000 (Philippine Forestry Statistics 2001).

Revenues generated by the government through forest charges amounted to PhP 8.71 million or around US\$158,320 at the exchange rate of PhP55/dollar in 2001.

(A, B, C) Various rattan handicrafts and furniture

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SINGAPORE



Full country name:

Republic of Singapore

Capital City:

Singapore City

Total Land Area:

704 sq km (70,400 hectares)

With about 60 small adjacent islands at the southern tip of the Malay Peninsula, Southeast Asia.

Population: 4,987,600

(2009 estimate)

Currency:

Singapore Dollar

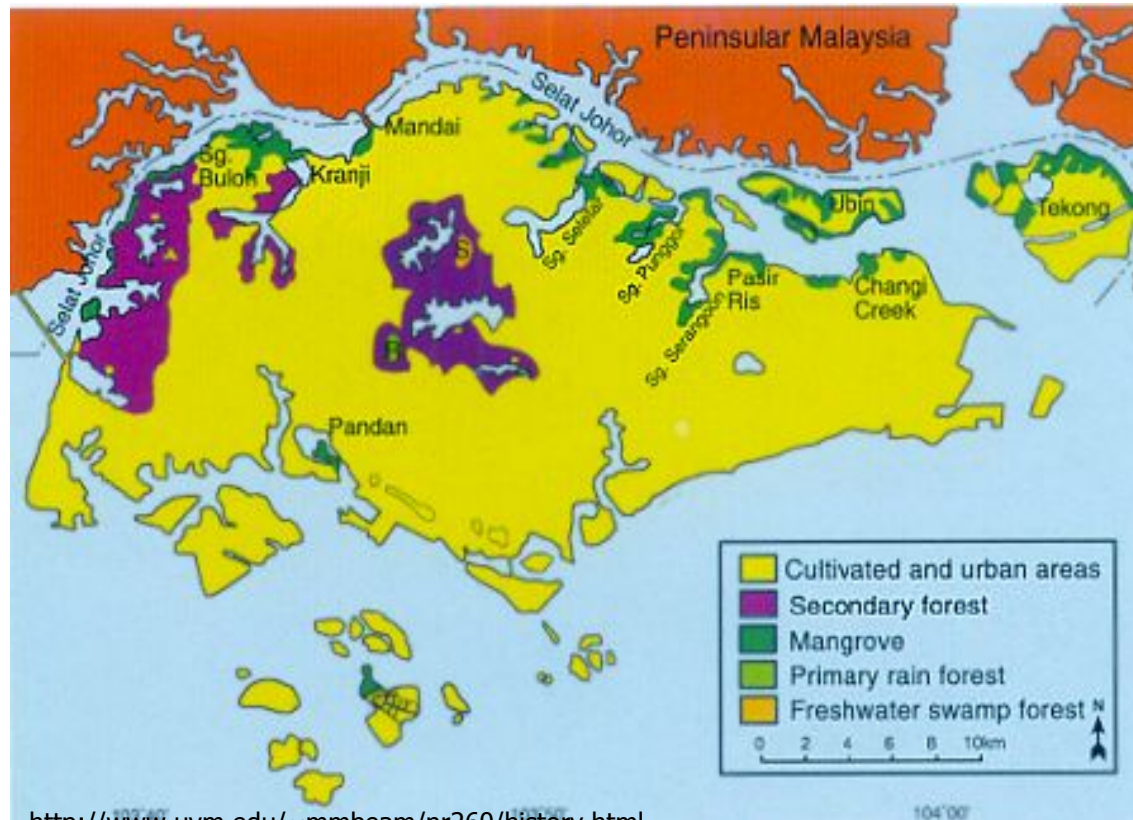
Languages:

Official languages are Malay, Mandarin Chinese, Tamil, English

Religions:

Buddhists (42.5%), Islam (14.9%), Christians (14.6%), no religion (14.8%), Taoism (8.5%), Hinduism (4%) and others (0.6%).





<http://www.uvm.edu/~mmbeam/nr260/history.html>

Total forest area:
2,000 hectares (2000 estimate)
or 2.84% of the total land area.

Singapore exported rattan products valued at US\$23 million.



(A)

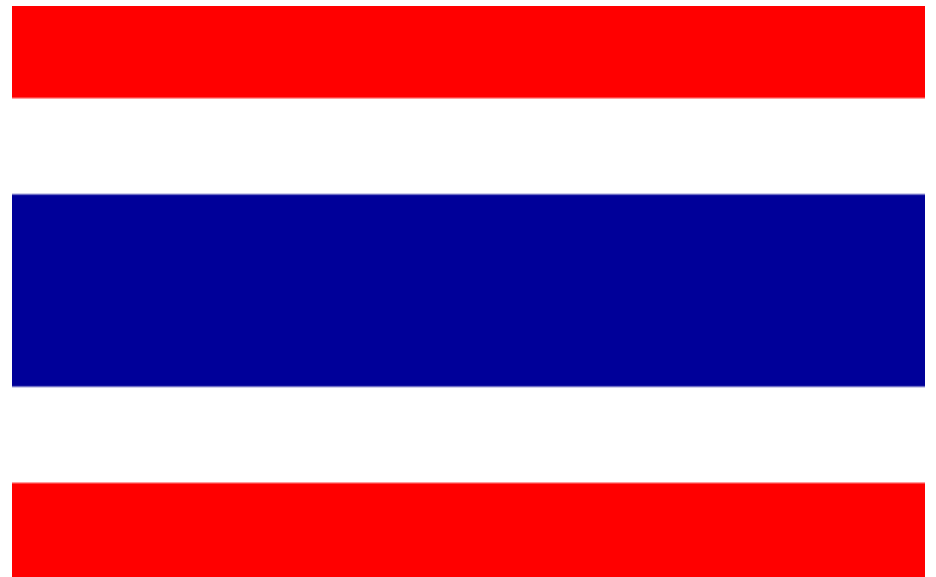


(B)

(A) *Basket making in Singapore (Photo courtesy of Manfred Leiter)*

(B) *Rattan harvesting in nineteenth – century Singapore (Photo courtesy of 1 Up Info and Library of Congress)*

THAILAND



Full country name:

Kingdom of Thailand

Capital City:

Bangkok

Total Land Area: 513,115 sq km (51.31 million ha); world's 50th largest country in terms of total area.

Population:

63,525,062 (December 2009 estimate)

Currency:

Thailand Baht

Languages:

Official Thai language is Kradai language. Other dialects: Southern Thai, Northern Thai, minority and tribal languages - Lao, Yawi, Teochew, Mon, Khmer, Viet, Mlabri, Cham, Orang Asli, Hmong, Akhan, Karen, other Tai languages. English is a mandatory school subject.

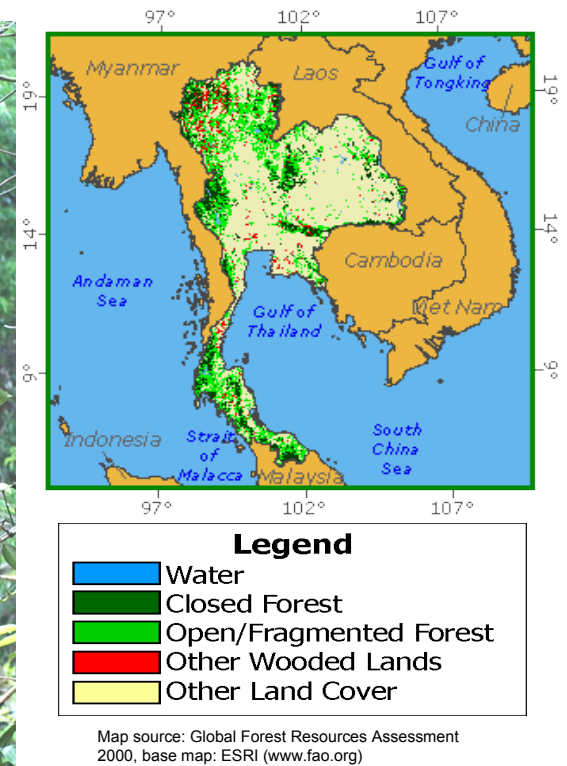
Religions:

Buddhists (94.7%), Muslims (4.6%), Christians (0.5%), small population are Sikhs, Hindu and Jewish.



Source: en.wikipedia.org

Forest Cover Map



One-fifth (1/5) of Thailand is covered by monsoon forest or rainforest.

80 national parks and 32 wildlife sanctuaries cover 13% of the land area of the country.

NWFPs

In the past, NWFPs were ignored by policy makers due to high revenue derived from forest logging.

After 1989 when logging was banned and the issues of forest conservation and sustainable forest management became the priorities, NWFPs gained importance.

Government realized the direct and indirect benefits derived from NWFPs.

The most important NWFPs include bamboo, rattan, honey, gums and resins, lac, spices, medicinal plants, food and bark for tanning and dyeing.

(A, B, C) Various NWFPs (rootcrops, bamboo shoots, rattan shoots)



(A)



(B)



(C)



(A)



(B)

Rattan Resources

82 species representing 7 genera (Dransfield et al., 2004):

- *Calamus* (54 species)
- *Ceratolobus* (1 species)
- *Daemonorops* (5 species)
- *Korthalsia* (5 species)
- *Myrialepis* (1 species)
- *Plectocomia* (4 species)
- *Plectocomiopsis* (2 species)

More than 40 species are found situated mainly in Southern Thailand mostly in moist evergreen forests from the plains to mountain tops at elevations up to 1,000 masl.

(A, B) Rattan nursery in Thailand
(C) Rattan seedlings



(C)

Rattan plantation was established by the Royal Forest Department in the following areas:

1968 - National Forest Reserves "I-SA-TEAR" Rangae District, Narathiwat Province; 1,330 rai or 213 ha of *Calamus caesius*.

1980 - King's Project at Sukirin District, Narathiwat Province. The total plantation area of 4,730 rai or 757 ha, planted to various species such as *Calamus caesius*, *C. manan*, *C. longisetus* and *C. peregrinus*.

1979 - Ngoa Waterfall, Muang District, Ra-nong Province; Khao Tha Petch, Muang District, Suratthani Province; Ka Poh Waterfall, Tha Sae District, Chumporn province, each with plantation area of 100 rai or 16 ha.

1989 - Central and Southern Region with 250 rai or 40 ha. Presently, the programme consists of 12 projects in 4 regions with total plantation area of 13,652 rai or 2,184 ha.

1991 - Tuek Khao Ban Tad Rattan Research and Development Station No.2 with an area of 1,315 rai or 210 ha. Five species namely, *Calamus longisetus* (865 rai or 138 ha), *Calamus latifolius* (300 rai or 48 ha), the other three species of *Calamus palustris*, *Calamus caesius* and *Calamus rudentum* (each with an area of 50 rai or 8 ha.) were planted in rattan plantation intended for research purposes.



(A)



(B)

(A) Rattan nursery
(B) Rattan Plantation



(A)



(B)



(C)

(A, B, C) Part of the 25 ha rattan pilot demonstration area of the ITTO-Philippines-ASEAN Rattan Project

Economically and commercially important rattan species include; *Calamus longisetus* (Wai Kam Puan), *C. wailong* (Wai Nam Pueung), *C. erectus* (Wai Kee Sien) *C. rnanan* (Wai Kor Dum), *C. peregrinus* (Wai Nguang), *Calamus caesius* (Wat Ta Kha Thong) *C. blumei* (Wai Khae Pueng) *C. pandonosmus*, (Wai Lek) and *Calamus densiflorus* (Wai Khee Rae).

Imported rattan was highest in 1996, valued at 115.25 Million Baht (US\$3.57 million) in 1996 while lowest in 2003 with only a value of 47.5 Million Baht (US\$1.47 million). Exported furniture was highest in 1994 with a value of 87.95 Million Baht (US\$2.72 million) while the least in 2003 with a value of 32.80 Million Baht (US\$1.02 million).

(A, B, C) Raw materials of rattan



(A)



(B)



(C)



(A)



(B)



(C)

Rattan has played an important role in contributing to National Economy.

(A, B, C) Various rattan handicrafts

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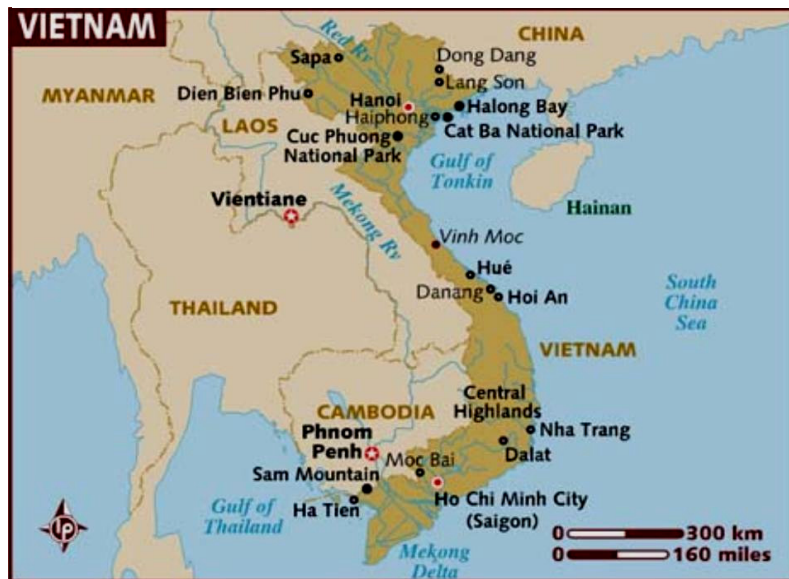
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VIETNAM



Full country name:

Socialist Republic of Vietnam

Capital City:

Hanoi

Total Land Area:

Approximately 331,688 sq km
(33.16 million hectares) in area
(excluding Hoang Sa and Truong
Sa islands).

Population:

85,789,573

(2009 mid-year estimate)

Currency:

Viet Nam Dong

Languages:

Vietnamese as a native language.
Other languages are Tày, Mường,
Khmer, Chinese, Nùng, and
H'Mông.

Religions:

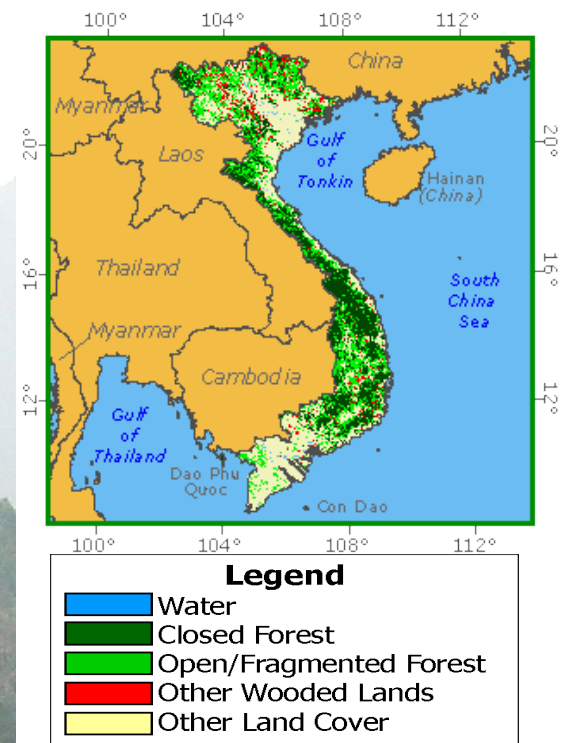
Buddhists (85%); Hòa Hảo (2%);
Christians (8%) (7% Catholics and
1% Protestants); Caodaism (3%);
Tribal animism (2.5%); less than
70 thousand Muslims; small Hindu
communities (over 50 thousand
people) and a small number of
Baha'is and Jews.



Source: www.flickr.com on images.search.yahoo.com



Forest Cover Map



Map source: Global Forest Resources Assessment 2000, base map: ESRI (www.fao.org)

Total Old Growth Forest: 85,000 hectares of old-growth forest (0.66% of its forest cover and 0.26 % of land cover), as of 2005.

1986: launched massive reforestation project.

1990: the area covered by plantations has expanded from 967,000 ha to more than 2.7 million ha.

NWFPs

Include handicrafts (from rattan and bamboo), essential oils, resin, spices, medicines, mushrooms and honey. Rural households mostly rely from NWFPs for their subsistence particularly ethnic minorities who are living in upland areas. Around 54 ethnic groups with about 150 subgroups. NWFPs are being domesticated by households in home gardens and agroforestry.

(A, B, C) Different NWFPs



(A)



(B)



(C)



(A)



(B)



(C)

Rattan resources

32 rattan species representing 6 genera namely *Calamus* (21 species), *Daemonorops* (4 species), *Korthalsia* (2 species), *Myrialepis* (1 species), *Plectocomia* (3 species) and *Plectocomiopsis* (1 species).

Most important rattan species: *Calamus tetradactylus*, *C. tonkinensis*, *C. rudentum*, *C. platyacanthus*, and *C. poilanei*.

Principal sources of commercial rattan species are the evergreen/ semi-evergreen lowland forests and the evergreen hill forests.

- (A) Putting of soil media in the polyethylene bags
 (B) Lecture on how to assess a good planting material for outplanting in the field
 (C) Rattan seedlings grown in the nursery

Rattan supply mainly comes from the natural forest.
Cultivation of rattan started in the northern Vietnam more than a hundred years ago.

(A) Rattan seedlings grown in the nursery
(B, C) Outplanted rattan seedling in the pilot demo area



(A)



(B)



(C)



(A)

Rattan has been mainly planted at the household garden scale for home use.

So far, there are 4 rattan species planted namely: Maay neeps, Maay ddawngs (*C. tonkinensis*), Song maatj (*C. platyacanthus*), Song ddas (*C. rudentrum*), of which Song maatj (*C. platyacanthus*) planted at small scale in Hoa Binh.



(B)



(C)

(A) Rattan inflorescence.
(B) Part of the 25 ha rattan pilot demo of the ITTO-Philippines-ASEAN Rattan project located at Phuc Tien Commune, Ky Son District, Hoa Binh Province.

Exported rattan handicrafts amount to 20,000 tons.
Interest on rattan by various sectors: government, organizations, manufacturers, villagers are increasing.
Utilization is improving while rattan supply is becoming exhausted, thus plantation establishment is necessary.

(A, B, C) Raw materials of rattan



(A)



(B)



(C)



(A)



(B)



(C)

Rattan is important as raw material for the local/domestic industry. Rattans have been used for more than thousand of years as raw material for weaving and making products such as tables, baskets, chairs, hats, fans, handbags, flower handles, armchairs, bookshelves, screens, walking sticks, bicycles, and others.

(A, B) Bleaching and finishing of rattan
(B) Treatment of rattan poles against insects and fungi

According to the Vietnam-Finland Forestry Sector Cooperation Programme (VFFSCP), there are at least 2 to 3 million people who are employed in rattan and bamboo industry in Vietnam (FAO 2002).

Around one million unskilled workers have been employed in the handicraft business.

Around 3,000 to 4,000 workers are generated for every US\$1 million earned from the handicraft exports (FAO 2002).

Japan, China, Hong Kong, Taiwan, the United States and the European Union are the main destinations of finished bamboo and rattan handicraft products.

(A,B,C) Manufacturing of various rattan handicrafts



(A)



(B)



(C)



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Concluding Remarks

Timber was previously recognized as the major forest product with high economic value. Rattan was then considered as a minor forest product only. However, due to diversity of uses of rattans, particularly as a raw material for manufacture of furniture and handicrafts, their importance has broadened. Currently, rattans rank second to timber in importance. The rattan sector flourished into a multi-billion dollar industry.

Social significance of rattans is also highly recognized since they provide sustainable source of income to communities living in the uplands.

Further development of the rattan industry to sustain sources of livelihood for the communities must be pursued further. To proceed, various issues on rattan must be addressed. Among the threats are the unsustainable management of its natural habitat, over-harvesting and deforestation. Other concerns include the following: lukewarm concern on plantation development, the low priority in forest conservation policies, and limited research and development programs.

There is hope in the horizon in making rattan industry in the Asia Pacific Region bright. But, we only need to be serious by giving priority to the development of rattan industry in the region through continued and more aggressive collaboration.

With the available information, this book highlights the importance of rattan as a raw material for products that people in the ASEAN region have integrated, particularly rattan production and utilization practices, in their way of life. But more than what the contents could reveal, there is much to be done concerning the production and utilization technologies of rattan.



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Publisher: ITTO PD 334/05 Rev. 2 (I)
(ITTO-Philippines-ASEAN Rattan Project)

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Manuscript Editor: Mr. Eliseo Baltazar

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Disclaimer: The document was prepared with the financial assistance from ERDB and ITTO. The views expressed herein are those of the Consultant and Project Staff and do not represent any official view of ERDB and ITTO.

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Suggested Citation:

Amaro Jr., M.C., A.B. Lapis, K.G. Bueser and A.M. Palijon. 2010. The ASEAN Rattans. Ecosystems Research and Development Bureau (ERDB) and International Tropical Timber Organizations (ITTO), College, Laguna.



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