

CONSERVATION

A World Bank-commissioned study found that it costs about \$3.50 (£2) per hectare to recognise forest people's land. The costs of protecting forests under REDD (Reduced Emissions from Deforestation and Forest Degradation) have been estimated as about £2,000 per hectare.

"There is lots of evidence from around the world that communities conserve their forests when their [land] rights are recognised. There are now about 400m hectares of forest formally owned by communities. These 400m hectares conserve about 20-40m Gigatonnes of CO₂. This means that it costs about \$1.6bn (£925m) to achieve this conservation. It has been estimated that it would cost about \$17bn year to stop deforestation, which works out as far more expensive", said the report's author.

Norway's Minister of Environment and International Development, Erik Solheim, said that efforts towards reduced emissions from deforestation in developing countries should be based on the rights of indigenous people to the forests they depend on for their livelihoods, and should provide tangible benefits to them consistent with their essential role in sustainable forest management.

"In addition to reducing emissions from deforestation and forest degradation, early action, pilot projects and demonstrations should safeguard biodiversity, contribute to poverty reduction and secure the rights of forest-dependent communities in order to achieve any degree of permanence, legitimacy and effectiveness," said Solheim.

The UK and Norwegian governments pledged £108m earlier this year to protect the forests of the Congo basin.

Source: <http://www.guardian.co.uk/environment/2008/oct/17/forests-endangeredhabitats>

Approximately 800,000 hectares in Malaysia are protected as parks; about one million hectares as reserves; 600,000 hectares as wildlife reserves; 100,000 as "protection forests" plus a few others, altogether amounting to about 1,700,000 hectares (c. 0.5% of the total land area). Only the national forest, Taman Negara, is secure, and it represents only one ecosystem – lowland moist forest, and contains only 3% of the endemic tree species and 30% of known palm species in Malaysia. Completely unprotected are mangrove forests, wetland forests, and highland forests. Many of the reserves are fragments only, and of these, a substantial number have been reduced in size or used for other purposes. Wildlife sanctuaries have restrictions on hunting but are not completely protected. In Malaysian Borneo, which formerly had huge forests, exploitation is rampant, protection is inadequate, there is little forest management, and there is much illegal agricultural conversion and logging. The protected areas are not adequate to maintain the wide range of biodiversity in this rich area. It is anticipated that, at present rates of deforestation, more than 50% of Malaysian forest species will become extinct, many of them endemic to this area.

Source:

http://www.wwf.org.my/about_wwf/what_we_do/forests_main/forest_protect/

WWF-Malaysia has had a long history of involvement in protected area work, starting with Pulau Gaya (part of what is now the Tunku Abdul Rahman Park in Sabah) in 1975. One of our most significant protected area projects was the Perlis State Park Project (2000-2002) which led to the establishment of the approximately 4,500-hectare Perlis State Park.

Source: http://www.wwf.org.my/about_wwf/what_we_do/forests_main/forest_protect/protect_projects/stong/

The Heart of Borneo

The Heart of Borneo is a conservation agreement initiated by the World Wide Fund for Nature to protect a 220,000 km² forested region on Borneo island. The agreement has been signed by the governments of Brunei, Indonesia and Malaysia in Bali on 12 February 2007 to support the initiative. The region provides habitat to 10 endemic species of primate, more than 350 birds, 150 reptiles and amphibians and 10,000 plants. From 2007 to 2010 a total of 123 new species have been recorded in the region. A status report from 2012 found that the lowland rain forest within the area is deteriorating and under threat.

The proposed Heart of Borneo region includes a number of areas already under protection, such as: Batang Ai National Park, Lanjak Entimau Wildlife Sanctuary, Gunung Mulu National Park, Crocker Range National Park, Kinabalu National Park in Malaysia, the Kayan Mentarang National Park, Bukit Baka Bukit Raya National Park, Danau Sentarum National Park in Indonesia and the Ulu Temburong National Park in Brunei.

In February 2007, the three countries that share Borneo, the world's third-largest island, signed on to a conservation and sustainable forest development program initiated by the World Wildlife Fund to protect a vast swath of forest.

Source: http://en.wikipedia.org/wiki/Heart_of_Borneo

Five years on, officials concede that the Heart of Borneo program faces daunting challenges. In its latest status report on the area, the environmental organization notes that lowland forest in the 220,000-square-kilometer zone stretching across the island is under threat and needs immediate rescuing. What makes the situation dire is that this type of forest is prime habitat for endangered species such as pygmy elephants, orang-utans and rhinos.

Stephan Wulffraat, forest and species conservation ecologist at WWF, attributed the decline to increased illegal logging and forest fires. "The result showed 63 % of remaining historic lowland rainforest is classified as good, but this is misleading because it's now quickly becoming rare due to logging and forest fires," he said.

He added that of the many types of tropical forest in the Heart of Borneo, however, the most threatened were heath forests. In the 2008 report, their condition was classified as fair. Now, very few swaths remain in Central and East Kalimantan. "Even these are not pristine condition, as several areas have been burned in the past 25 years," Wulffraat said. "Their restoration is extremely difficult. Existing heath forest is 48 % of historic levels compared with the proposed viable extent of about 60%."

In 2000, WWF Germany made a dire prediction for Borneo's forests. That year, 75% of the island was forested, and the group projected that by 2010 the forest cover would halve. "Fortunately, the projection for 2010 didn't happen," said Adam Tomasek, the leader of the Heart of Borneo program. However, he said huge areas of forested land were still lost, leading to the decline in the number of endemic species.

Source: <http://www.thejakartaglobe.com/archive/5-years-on-heart-of-borneo-faces-big-conservation-challenges/498312/>

World Land Trust (WLT) Borneo Orang-utan Appeal, Malaysia

[WLT is a UK based international conservation charity, which protects the world's most biologically important and threatened habitats acre by acre and was founded in 1989]

Borneo's Orang-utans are losing their habitat to the oil palm industry but strongholds for their survival still remain. While more than 74,000 acres (30,000 hectares) of forest are under protection in the Lower Kinabatangan floodplain, the forest reserves are fragmented. WLT and its partners aim to purchase strategically vital areas of forest to create wildlife corridors that will link these fragmented patches and ensure a continuous habitat is protected for wildlife and local communities alike.

The WLT is working hard to raise funds for strategic land purchases in Borneo and has already secured two important corridors, the Kretam – Kulamba Corridor and a first corridor in the Kinabatangan Floodplain. Together the corridors total 894 acres. Working with project partners, WLT is now focusing on a third, critical Orang-utan corridor, the Keruak Corridor, which will link Lot 2 of the Lower Kinabatangan Wildlife Sanctuary to the Keruak Forest Reserve. WLT is urgently raising funds in a bid to secure this land which will save 166 acres and connect the two protected areas.

In addition to securing corridors, by working in partnership with HUTAN [a French NGO with the primary aim of studying orang-utans in Sabah, Malaysian Borneo], WLT has helped fund land protection and the development of management plans for the land saved. HUTAN works hand in hand with local communities to manage lands purchased with WLT funding, and to encourage sustainable, traditional practices such as collecting wild fruits and medicinal plants. HUTAN employs 50 local people in its research, habitat restoration and education teams

Protecting the Kinabatangan forests also conserves traditional fishing grounds close to the banks of the Kinabatangan River, maintaining an important source of protein for local families.

Source: <http://www.worldlandtrust.org/projects/malaysia>

DEBT-FOR-NATURE SWAPS

Debt-for-nature swaps are one of these solutions that have begun to play an important role in rainforest preservation. Debt-for-nature swaps are not a cure-all mechanism for saving the rainforests. However, they are an innovative solution that have experienced trial by fire and appear to be working.

A. The Mechanism of Debt Exchange

International banks created debt exchange programs in order to manage the developing countries' escalating debt. The banks created a secondary market, where they trade loans amongst themselves and eventually sell the debt back to the developing countries at a reduced rate. For example, suppose the debt is \$200. In the secondary market, a bank sells the debt to an organization for a reduced price, approximately \$50. The organization then sells the debt back to the developing country, for \$100. The developing country has lowered its debt, the bank has reduced liability, and the transactional organization has made a profit. Economists feel that this system actually has fewer transaction costs than if the developing countries tried to manage their debt on their own. In a debt-for-nature exchange, an international conservation organization arranges the debt transaction. The organization uses the profit from the debt sale to fund conservation efforts in the developing country.

B. Issues

International organizations which arrange debt-for-nature swaps do not always allow the government to retain control of the preserved land. In 1987, the National Parks Foundation purchased \$5.4 million of Costa Rican debt for \$918,000. They exchanged the debt for Costa Rican bonds at seventy-five per cent of the face value. The proceeds of the swap went to purchase land towards the Guanacaste National Park. The Costa Rican government will not gain title to the Park until the Park is complete and all conditions of the swap are met. Although the Costa Rican government agreed to these terms, the long-term contract does impinge on Costa Rica's sovereign right over control of its natural resources.

Perhaps one reason that these agreements are acceptable to foreign governments is that the controlling bodies are international conservation organizations, not other governments. Additionally, the countries may feel that they have more bargaining power in an arrangement with a conservation organization as the conservation organization's only goal is to preserve natural resources.

Debt-for-nature swaps also subvert the sovereignty rights of indigenous peoples as they are not usually represented in the transaction discussions. One debt-for-nature swap between Conservation International (CI) and Bolivia ignored the rights of the Moxo Indians. In order to preserve their homelands, the Moxo had attempted to obtain title to the land that was ultimately purchased by CI. For a period of time, the Moxo's way of life was threatened by CI's management over their former homeland. Although the Moxo had sustainedly lived off the forest for centuries, they were not allowed to use the forest to scavenge for food or fuel. Rangers were paid to keep the Moxo out of the forest lands. CI subsequently apologized for its practices and has allowed the Moxo to gain title to parts of the preserved lands.

C. Solutions?

One suggestion is to invite indigenous groups to participate in the negotiations in the swap agreements. In situations where it has been possible to include indigenous peoples, the results have been successful. The United States has entered into debt-for-nature agreements with the Philippines in which indigenous people are used similarly to park rangers, patrolling the area. In a time when most countries complain that the rainforest is too large to police, funding to educate indigenous peoples to protect their own sovereignty is a creative idea. This could be a workable solution for the Amazon. Besides the indigenous tribes, there are many small farmers living off the land. If these people were taught to sustainably manage their land, they would be motivated to protect it. This participation would acknowledge indigenous peoples' sovereign rights and promote successful enforcement of conservation programs.

<http://environs.law.ucdavis.edu/issues/24/2/articles/eitman.pdf>

Example of Debt-for-Nature swaps: Colombia

In 2004, Colombia agreed a debt-for-nature swap with the United States to allow it to invest at least \$10 million over the next 12 years to protect nearly 11 million acres of its tropical forests. The U.S. Department of the Treasury will contribute \$7 million to the deal, while Conservation International's (CI) Global Conservation Fund, The Nature Conservancy and (World Wildlife Fund) WWF will contribute an additional \$1.4 million.

In exchange for cancelling part of their debt to the United States, Colombia will invest at least \$10 million to protect tropical forests in key areas of the Andes, the Caribbean coast and the Llanos, or plains, along the Orinoco River. Colombia is one of the five most biologically diverse countries on the planet, harbouring one of every 10 species of plants and animals in the world.

Funds from the debt swap will be focused in three areas key for tropical forest conservation. In the tropical Andes, funds will go toward 1.7 m ha that are home to some of the nation's last remaining stands of oak. In the Llanos of the Orinoco River basin, the funds will go toward the 1.4 m ha Tuparro National Park and its buffer zone. A UNESCO Natural Biosphere Reserve since 1979, the park is also home to dozens of unique species including jaguars, river dolphins and the endangered giant armadillo and the critically endangered Orinoco crocodile, which is found only in this part of South America. The Llanos are also a major nesting ground for migrating bird species from North America.

<http://worldwildlife.org/press-releases/colombia-debt-swap-yields-10-million-for-tropical-forest-conservation>

ECOTOURISM

By Rhett Butler, July 22 2012

<http://rainforests.mongabay.com>

Ecotourism is a leading way for developing countries to generate revenue by preserving their rainforests. Eco-tourists pay to see a country's natural beauty, not the destruction caused by short-run exploitation. Money spent directly in the local economy helps put a monetary value on forest preservation. Local people, along with the government, can see the importance of keeping the forest intact. And many tourists are willing to pay directly for preservation in the forms of park entrance fees and donations.

Ecotourism can provide local people with economic assistance by offering employment opportunities as wildlife guides, park rangers, and service workers in hotels, restaurants, and lodges. With eco-tourism, income is earned from preserving the ecosystem, and forest clearing is discouraged because it is detrimental to income. Similarly, ecotourism can reduce the need for poaching and hunting of forest animals for income. For example, in West Africa, former poachers are hired as park rangers since they have intimate knowledge of local animal wildlife. Ecotourism also provides opportunities for education that might not otherwise be available, both directly in the form of training and indirectly through conservation funds contributed to local schools.

Ecotourism can also boost demand for local handicrafts.

But while ecotourism is promising, tourism can have serious downsides. The risk is that as an ecotourism operation becomes successful, it may transition to mass-market nature-oriented tourism, which can be very damaging to the environment as well as local social conditions if not developed responsibly. A surge in tourist interest can drive hotel construction in sensitive areas; exacerbate conflict between operators, the local government, and communities; contribute to resource depletion (e.g. harvesting hardwoods for tourist handicrafts); and overwhelm a forest areas with a flood of visitors. Examples abound. Some parks in Costa Rica now have too many tourists, while poor oversight of orang-utan tourism in parts of Indonesia has led to increased mortality among wild apes (orang-utans can be infected by human diseases, which are transmitting when tourists offer food to the primates). Meanwhile an influx in relatively well-heeled foreigners can highlight wealth disparity and contribute to problems like prostitution.

Thus to ensure sustainability, ecotourism requires careful evaluation and planning. Short-term tourism development can doom forests as easily as unsustainable logging. Too many people, inadequate facilities, and poor park management can spell the end for the "eco" in ecotourism. Eco-tourism, when carried out in a sustainable fashion, can be beneficial to local people, the economy, and the environment. It should not be restricted to legally protected areas, but should also be promoted in natural areas that lack protection. The presence of tourists, when properly managed, protects the area from over-exploitive activities

The Nanga Sumpa community tourism project in Sarawak

Leong Siok Hu

<http://ecomalaysia.org/articles/longhouse-visit.html>

In 1987, Kuching-based travel adventure company, Borneo Adventure (BA) scouted the rural areas of Sarawak to search for an 'alternative' tourism product. They found an Iban community living near a pristine area, a two-hour boat ride from the Batang Ai jetty. The villagers farm rice and cash crops like pepper for their main income. Fishing, hunting and gathering of jungle produce put food on their dining tables.

BA came up with the concept of visitors arriving as "guests" of the longhouse people. The focus of the trip is the upriver travel via handcrafted longboats, hiking in a tropical jungle and experiencing the day-to-day life of a small farming community. Through their stay, visitors gain an insight into today's rural Iban lifestyle in Sarawak. Initially, BA gave out interest-free loans to individual families to buy the outboard engines enabling the families to retain ownership and take full responsibility of the boats.

After crossing the massive Batang Ai dam, we entered a small river tributary flanked by lush, verdant forest. The engine's soft drone and the swishing water lent a tranquil ride as the boat snaked through the winding river. Surprisingly, the Sumpa River is pristine and crystal clear, unlike the typical *teh-tarik* -coloured Malaysian rivers.

To minimise visitor impact, BA built a wooden lodge away from the longhouse, using over 90% material and labour from the community, to house their guests. Village ladies make up the six groups of cooks who take turns whipping up delicious meals for guests at the lodge.

30 families, about 290 residents, live in the longhouse. During our visit, the longhouse was due for renovation so it was half its original size. Yet the roomy *ruai* carpeted with weaved *pandanus* mats looks cosy as the longhouse folks chilled out after dinner. A smorgasbord of crafts from the elaborate *pua kumbu* (Iban blanket), colourful bead necklaces to fancy weaved baskets lined the walls. Since tourism came to the longhouse, the womenfolk have revived traditional crafts and make extra income from craft sales. Each family makes between RM3000 and RM4000 each year from sales of handicrafts.

In Nanga Sumpa's vicinity sits one of the last natural habitats of the orang-utan (a fully protected species in Malaysia). At first, the villagers saw the primates as pests that destroy fruits trees and cash crops. But over time, they realised that the primate is a tourist attraction. Local guides accompanying treks are tipped lucratively each time there's an orang-utan sighting. Now they're keen to protect the orang-utan and keep the forest intact.

More than just a lovely longhouse experience, Nanga Sumpa defines a community tourism project done right and the symbiotic relationship between BA and the community. BA's role is to bring visitors to Nanga Sumpa. The community provides transportation, local guides, helpers and cooks.

Each visitor is charged a "head tax" of RM10 per person as a form of rental to the longhouse since the land where the lodge sits belongs to the community. BA sets up an education fund for the villagers and to date, RM31,520 has been given out for education purposes - school supplies, fees and scholarships. The community has produced 12 university graduates as a result of this fund. Half of the total sales goes back to the longhouse, 20 to 30% for guide services and transport from Kuching to the jetty. BA only keeps the other 10%.

At first, tourists only bought something small but now the village committee makes a monthly average of RM25,000 to RM40,000. Another committee member, who is also a carpenter for the lodge, receives financial help from BA for medical care and his eldest son received a scholarship to further his studies.

The villagers were approached by a timber company who offered to buy their land for a huge amount of money, but they refused. One village committee member said, "They will pollute the water, we will lose tourism and we don't trust them. We have worked with BA for 20 years, we are familiar with their policies and philosophy, and basically we trust them."

EDUCATION

When we talk about the things that we can do to save the rainforests, it often sounds very easy. There are, however, many reasons why this is not a simple problem. Many rainforests are in developing countries. These countries have a number of short-term problems which cannot be ignored, such as feeding and housing people. There are things that can be done which take into account the delicate situation of such countries. The problem then is achieving global education. It will also require that we put more thought and effort into what we do each day. It is important to consider the long-term environmental effects of rainforest destruction, as well as the short-term benefits for developing countries.

One of the most valuable actions that can be taken to save the rainforests is to educate people around the world.

It is important to educate people on sustainable development - ways to use the resources the rainforest provides in a way that the rainforest can survive - and why it is important. This means that people need to understand the importance of the rainforests, what they provide the world and what they provide the many life forms within them. It is also important to convince the governments of rainforest countries to commit to rainforest protection.

It is not only important to educate people living within rainforest countries. People all around the world also need to understand the value of the rainforests. With this knowledge, people are more likely to understand why it is important to change the way we live. By boycotting certain products that come from the rainforests and by supporting companies that do not use rainforest products, we are taking steps towards ending the destruction of rainforests. Small actions, such as reducing paper use, and larger actions, such as educating people on how to farm in a sustainable way can all help to protect the rainforests.

It is also important to educate people who move into rainforest areas about how to live without harming the rainforests. Indigenous peoples have been living in the rainforests for a long time without causing any damage.

Source: http://www.skwirk.com.au/p-c_s-1_u-20_t-210_c-702/education-and-support/nsw/hsie/global-environments-rainforests/protecting-the-rainforest

There are many tribes in the rainforests of the Malaysian state of Sarawak. Sarawak is part of Borneo, the third largest island in the world.

The Penan, who say simply "this land is our origin" are the last surviving hunter-gatherer tribe in South-East Asia. There are about 10,000 Penan in all, but due to the impact of logging on their lands, less than sixty families are now able to continue the traditional way of life described here. The rest are either semi-nomadic or live in settlements. Life for the Penan is now extremely difficult because of the destruction of their forests. Malnutrition and other health problems are common.

The Penan's society is egalitarian and non-hierarchical. Traditionally, they depend entirely on the forest for their existence, their culture and their beliefs. Bird calls from a certain direction bear good tidings; from another, they bring bad news; entire hunting parties turn back if they hear the call of the banded kingfisher.

The Penan are acknowledged masters of tracking and hunting, and masters of the blowpipe. This is the weapon for the rainforest. It is light and made of forest materials. Ammunition is readily replaced and the darts kill silently, allowing more than one kill, or more than one shot at the target. As well as wild pigs, which the Penan hunt, the forests are full of monkeys, birds and orang-utans. Fishing is done with either a spear or one of at least ten wholly biodegradable fish poisons. The Penan fish for more than 30 species.

Fruit and vegetables are obtained from the forest too. There are more than 100 wild fruits to harvest, many fungi, wild greens and edible palms. Sago is to the Penan what rice and wheat are to other cultures. There are six varieties of sago palm, and during harvesting, great care is taken not to damage the roots to ensure that the palms regenerate. A meal of rice, say the Penan, leaves them hungry in an hour, whereas a bowl of sago will sustain them for days.

When a Penan enters unknown territory, she or he begins using *mal cun uk* ("follow your feelings") a process that enables them to accomplish amazing feats of orienteering. For the Penan land cannot be bought or sold. It is not that the Penan own the land; it is the land that owns the Penan. The land is alive, the trees blessed with spirits, and the animals endowed with magical powers. It is taboo to kill a tree, as that would release its spirit.

The greatest transgression for the Penan is *see hun* which roughly means “a failure to share”. All children are taught from an early age to share anything caught or picked.

Source: <http://www.rainforestinfo.org.au/background/people.htm>

Solutions to Rain Forest Threats

Sustainable-logging regimes that selectively cull trees rather than clear-cut them would save millions of acres of rain forest every year.

Campaigns that educate people about the destruction caused by rain forest timber and encourage purchasing of sustainable rain forest products could drive demand down enough to slow deforestation.

Encouraging people who live near rain forests to harvest its bounty (nuts, fruits, medicines) rather than clear-cutting it for farmland would save millions of acres.

Government moratoriums on road building and large infrastructure projects in the rain forest would save many acres.

Source: <http://environment.nationalgeographic.co.uk/environment/habitats/rainforest-threats/>

There were an estimated ten million Indians living in the Amazonian Rainforest five centuries ago. Today there are less than 200,000. In Brazil alone, European colonists have destroyed more than 90 indigenous tribes since the 1900's and with them have gone centuries of accumulated knowledge of the medicinal value of rainforest species. As their homelands continue to be destroyed by deforestation, rainforest peoples are also disappearing.

Most medicine men and shamans remaining in the Rainforests today are 70 years old or more. Each time a rainforest medicine man dies, it is as if a library has burned down. When a medicine man dies without passing his arts on to the next generation, the tribe and the world loses thousands of years of irreplaceable knowledge about medicinal plants...

Of the 121 pharmaceutical drugs that are plant-derived today, 74% were discovered through follow-up research to verify the authenticity of information concerning the medical uses of the plant by indigenous peoples. Since Amazonian Indians are often the only ones who know both the properties of these plants and how they can best be used, their knowledge is now considered an essential component of all efforts to conserve and develop the rainforest. Scientists have realized that using medicinal plants identified by Indians makes research more efficient and less expensive. It is now understood by bioprospectors that the tribal peoples of the rainforest represent the key to finding new and useful tropical forest plants. The degree to which these indigenous people understand and are able to use this diversity sustainably is astounding. A single Amazonian tribe of Indians may use more than 200 species of plants for medicinal purposes alone.

However, the indigenous peoples don't always see the full benefits of this. First-World capital must seek out opportunities to partner with organizations that have the technical expertise to guide these programs of sustainable economic development. In addition, programs teaching techniques for sustainable harvesting practices and identifying profitable, yet sustainable, forest products can enable developing countries to improve the standard of living for their people, service national debt, and contribute meaningfully to land use planning and conservation of natural resources.

Today entire communities and tribes earn five to ten times more money in wild-harvesting medicinal plants, fruits, nuts, and oils than they can earn by chopping down the forest for subsistence crops. This much-needed income source creates the awareness and economic incentive for this population in the rainforest to protect and preserve the forests for long-term profits for themselves and their children and is an important solution in saving the rainforest from destruction.

When the timber is harvested for short-term gain and profits, the medicinal plants, nuts, oils, and other important sustainable resources that thrive in this delicate ecosystem are destroyed. The real solution to saving the rainforest is to make its inhabitants see the forest and the trees by creating a consumer demand and consumer markets for these sustainable rainforest products that will give them the economic incentive to protect their sustainable resources for long-term profits, rather than short-term gain.

Source: <http://www.rain-tree.com/facts.htm>

INTERNATIONAL AGREEMENT ON THE USE OF HARDWOODS

Logging tropical hardwoods like teak, mahogany, rosewood, and other timber for furniture, building materials, charcoal, and other wood products is big business and big profits. Several species of tropical hardwoods are imported by developed countries, including the United States, just to build coffins that are then buried or burned.

There is a clear need for industrial countries to sincerely and effectively assist the tropics in a quest for sustainable forest management and development if the remaining rainforests are to be saved. The governments of the developing countries need help in learning how to manage and protect their natural resources for long-term profits, while still managing to service their debts, and they must be given the incentives and tools to do so. Programs to redefine the timber concessions so concessionaires have greater incentives to guard the long-term health of the forest and programs to revive and expand community-based forestry schemes, which ensure more rational use of forests and a better life for the people who live near them, must be developed.

Source: <http://www.rain-tree.com/facts.htm>

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora)

... is an international agreement to which countries (known as Parties) adhere voluntarily. Although CITES is legally binding on them it does not take the place of national laws. Rather it provides a framework to be respected by each Party which has then to adopt its own domestic legislation to ensure that CITES is implemented at the national level. CITES currently has 178 Parties. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES was drafted in 1963, was finally agreed at a meeting of representatives of 80 countries in Washington, D.C., on 3 March 1973 and came into force on 1 July 1975.

Geneva, 28 September 2011 – The Governments of Madagascar and Panama have requested 111 hardwood species be listed in CITES Appendix III, in an effort to curb the increase in illegal timber trade by enabling verification of legal origin under CITES standards.

The listing of ebony wood and rosewood species in CITES Appendix III will help facilitate detection of fraud and make critical trade information available to exporting and importing countries. CITES Appendix III regulations mean that all cross-border shipments now have to be authorized by the issuance of a document certifying the origin of the products covered by the listing.

Timber species have relatively recently started to be covered by CITES. However, as loggers scour the remaining tracts of forest and selectively remove high-value timbers, support has grown for better controls, and CITES is increasingly seen as having a valuable role to play. The CITES member States have already agreed to include Latin America's bigleaf mahogany, Southeast Asia's ramin and Africa's afrosomia in Appendix II.

Sources: <http://www.cites.org/eng/disc/what.php>
http://www.cites.org/eng/news/pr/2011/20110928_timber_appendixIII.php

Hardwood Trade Restrictions by U.N. Group Likely to Spur Demand for Modified Wood

On March 14, the United Nations Convention for International Trade on Endangered Species (CITES) announced new restrictions on trade of various plant and animal species, including 100 species of tropical hardwood. International trade in a range of rosewoods and ebonies from Asia, Central America, and Madagascar will now be regulated by CITES. In the last two decades, the use of tropical hardwood in the developed world, especially in EU countries, has come under scrutiny and most EU countries now require tropical hardwood imports to be FSC-certified. The changes required to get FSC certification likely raise the production costs, and as a result the use of tropical hardwood has fallen significantly from 1998 to 2007 in Europe.

The new restrictions will boost the demand for modified wood products such as those produced by Kebony, a Norwegian company that treats fast-growing softwoods, such as pine, with liquid biowaste giving it comparable qualities to tropical hardwoods like teak.

Source: <http://www.luxresearchinc.com/blog/2013/05/hardwood-trade-restrictions-by-u-n-group-likely-to-spur-demand-for-modified-wood/>

Forest Stewardship Council (FSC)

...is an international not for-profit, multi-stakeholder organisation established in 1993 to promote responsible management of the world's forests. Its main tools for achieving this are standard setting, certification and labelling of forest products. [Wikipedia]

FSC certification ensures that products come from well managed forests that provide environmental, social and economic benefits. There are currently 469,450 ha of FSC certified forest in Malaysia and 154 chain of custody certificates (*Global FSC certificates: type and distribution, June 2013*). The latter applies to manufacturers, processors and traders of FSC certified forest products. It verifies FSC certified material and products along the production chain.

On Kolombangara Island – part of the Solomon Islands in the South Pacific Ocean Kolombangara Forest Products Limited (KFPL) has assisted in the creation of a unique conservation NGO in partnership with the indigenous landowners. By international standards KFPL is a smallscale producer of small-sized logs. Lacking economies of scale and located far from major markets, KFPL faces high costs that make it difficult to compete with large scale producers of plantation timber in North and South America, New Zealand and Africa. Instead KFPL aims at niche markets, and here FSC certification provides a strong selling point.

Currently demand outstrips KFPL's ability to supply FSC certified logs and timber. Although the market is still relatively small and seasonal, demand is growing for higher value FSC certified wood, and is starting to attract investment from major European manufacturers and furniture dealers. And large building works within the Solomon Islands, such as the reconstruction work in Choiseul and Western Provinces following the 2007 earthquake and tsunami, used entirely FSC certified timber.

All this is good news for Kolombangara Island where KFPL is the largest permanent business, operating year round and providing stable, continuous employment to 160 fulltime employees and a consistent contract workforce of 600 people. Faced with an influx of logging companies seeking access to Kolombangara's forest resources, and at the same time aiming to increase indigenous control over land management, the indigenous landowners established the Kolombangara Island Biodiversity Conservation Association (KIBCA) in 2009. The move was prompted and assisted by KFPL's management. KIBCA provides the landowners with a clear voice in the conservation and management of 19,400 hectares located above the 400m contour line of the whole island, which includes 11,650 hectares managed in partnership with KFPL on the company's lease-holding.

Sources: <https://ic.fsc.org/certification.4.htm>

Celebrating Success: Stories of FSC Certification, <https://ic.fsc.org/importance-of-forest-stewardship.349.htm>

The International Tropical Timber Organisation (ITTO)

...was established under the International Tropical Timber Agreement, which was sponsored by the UN Conference on Trade and Development and was ratified in 1985. It aims to promote sustainable management and legal harvesting of forests that produce tropical timber, and to promote expansion and diversification of international trade in timber from these forests. [Wikipedia]

The Programme for the Endorsement of Forest Certification (PEFC)

...is an international non-profit, NGO dedicated to promoting Sustainable Forest Management (SFM) through independent third-party certification. PEFC works throughout the entire forest supply chain to promote good practice in the forest and to ensure that timber and non-timber forest products are produced with respect for the highest ecological, social and ethical standards. Thanks to its eco-label, customers and consumers are able to identify products from sustainably managed forests. With about 30 endorsed national certification systems and more than 220 million hectares of certified forests, PEFC is the world's largest forest certification system.

One of PEFC 's projects is ECOFORAF (Support for ecocertification of forest concessions in Central Africa) – funded by the *Fonds Français pour l'Environnement Mondial* and managed by *Association Technique Internationale des Bois Tropicaux*. This initiative aims to encourage and enhance sustainable forest management in Central Africa and to extend forest certification, especially in the Congo Basin region. The three-year project promotes the exploitation of wood resources while ensuring the preservation of forests and forest-related services so that present and future populations at local, national and global levels will be able to benefit from them.

Source: <http://www.pefc.org/projects/forest/africa-development-initiative>

REPLANTING

The extent of degraded forests and lands in the tropics is large and getting larger. Improving forest management will help limit this expansion, but what is to be done with the 800 million hectares or so of forests and forest lands that are already degraded? The International Tropical Timber Organisation (ITTO) worked with partners such as International Union for Conservation of Nature (IUCN), the Centre for International Forestry Research, the Food and Agriculture Organization of the United Nations, and the Worldwide Fund for Nature to develop Guidelines for the restoration, management and rehabilitation of degraded and secondary tropical forests. These guidelines were introduced to policy-makers and practitioners through a series of regional and national-level workshops. A manual, *Restoring Forest Landscapes: An introduction to the art and science of forest landscape restoration*, has also been developed and published by ITTO in cooperation with IUCN to clarify the concepts and strategies associated with forest landscape restoration. National workshops are being conducted in selected countries to promote the implementation of the guidelines and the use of the manual. In addition, ITTO has developed a field program to assist governments and local communities to restore and manage degraded and secondary forests for the benefits such forests can provide.

ITTO also supports the establishment of plantations with the primary purpose of producing timber and/or fuelwood. In 1993 it published Guidelines for the establishment and sustainable management of planted tropical forests and has funded a field program to stimulate plantation establishment and management, mainly by communities. In Togo, an ITTO project has assisted a community to harvest, expand and manage a neglected teak plantation: in the process, the community has improved its water supply, restored a medical clinic and established other income-generating industries. They have also protected remnant natural forest and initiated a process of restoration.

ITTO is also promoting activities under the AR-CDM (Afforestation/Reforestation Clean Development Mechanism*) of the Kyoto Protocol that can contribute to increasing the extent of forests and forest resources. In Colombia, another ITTO project seeks to curb the degradation of about 72,000 hectares of forests with the involvement of local communities and the participation of international investors through the AR-CDM mechanism. A Letter of Intent has already been signed by the World Bank for the sale of 470,000 tons of CO₂.

[*The Clean Development Mechanism allows emission-reduction projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO₂. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol.]

Sources: <http://cdm.unfccc.int/about/index.html>, <http://www.itto.int/feature09/>

Two projects funded by Mitsubishi Corporation (MC):

The Malaysian Experimental Project in Tropical Forest Regeneration, launched in 1990 is based on the idea of re-creating native forests with native trees, on the concept of potential latent natural vegetation. It is based on research by Dr. Akira Miyawaki, professor at Yokohama National University when the project began and presently director of the Japanese Center for International Studies in Ecology. Its aim is to demonstrate the feasibility of restoring degraded forest land to conditions that closely resemble a natural forested ecosystem within 40 to 50 years, by intensive mixed planting of native tree species. The project site is being conducted on land remaining after being cleared, burnt, and used for agriculture near Bintulu in Sarawak, Malaysia.

Three hundred thousand seedlings were planted on about 50 hectares. Now, after just over ten years, some of the tallest trees have reached heights of more than 20 metres, and the site is taking on the appearance of a luxuriant forest. In addition, ecotours from Japan bring participants, who work with local people to continue the work of tree planting.

The Brazilian Experimental Project in Tropical Forest Regeneration, started in 1992, started near Belem at the mouth of the Amazon, in the state of Para, Brazil. This is a collaborative project with the Para Agricultural University and other organizations. With help from local students from primary, middle, and trade schools, more than 400,000 trees of about 100 species have been planted to date.

The challenge here was to plant trees on severely degraded land that had become devoid of vegetation, due to runoff carrying away soil nutrients during the rainy season and severe aridity during the dry season. The project

involved covering the ground with mounds made from waste wood and soil, and then planting a mix of fast growing tree species to promote afforestation under these harsh conditions.

Now, ten years after the project began, some of the pioneer trees are over 20 metres tall and growing at a surprising speed. As the above-ground vegetation grows, we are expecting that the ecosystem, including biological communities in the soil, will return to a state close to that of the original natural forest.

Source: <http://www.mitsubishicorp.com/jp/en/csr/contribution/earth/activities03/>

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[p39] The World Conservation Union defined enrichment planting as the planting of desired tree species in modified natural forests or secondary forests or woodlands with the objective of creating a high forest dominated by desirable species. Enrichment planting enhances the productivity of an area by increasing the composition of high quality commercial timber species. In Peninsular Malaysia, enrichment planting is carried out in 'poor forests' and 'open areas'. 'Poor forests' are referred to as forests that have stocking of 153m³/hectare while 'open areas' are degraded forest areas or gaps created through activities such as shifting cultivation, forest encroachment and logging. Enrichment planting practices involve the planting of high quality commercial timber species such as *Shorea leprosula* (*Meranti tembaga*), *Shorea parvifolia* (*Meranti sarang punai*), *Dryobalanops aromatica* (*Kapur*), *Hopea odorata* (*Merawan siput jantan*), etc. Two types of planting approaches practiced are line planting and group planting. To date, a total 33,015 hectares of Permanent Reserved Forests (PRF) in Peninsular Malaysia have been rehabilitated through the enrichment planting programme.

[p40] Twenty-six Million Trees Planting Campaign

This is campaign (one of the tree planting campaigns /activities organized by Forestry Department Peninsular Malaysia (FDPM) under the public awareness programmes with participation of government agencies, NGOs, private companies, school children and the general public) was launched on 22 April 2010 at Putrajaya. The theme was 'Green the Earth: One Citizen, One Tree'. The campaign was in line with the government's efforts to ensure that at least 50% of the country has forest cover in accordance with Malaysia's commitment made at the Earth Summit in Rio de Janeiro, Brazil, in 1992. The campaign was also one of the strategies to meet Malaysia's commitment to voluntarily cut 40% of the country's carbon emission by 2020. Twenty six million trees will be planted by 2014 and this will over approximately 13,066 hectares throughout the country. As of Jun 2011, a total of 8,896,512 trees had been planted over 4,469.22 hectares. Various agencies are involved in this tree planting campaign and FDPM is responsible for monitoring the progress of planting under this campaign.

[p41] Issues, challenges and the way forward

Forest rehabilitation involves manpower and constant funding. Planted trees have to be treated periodically to ensure good survival and production of quality timber. Under the Federal Constitution, forestry and land are State matters. Therefore, full commitment and strong financial support from the various State Governments are essential for the successful implementation of Sustainable Forest Management (SFM) and in particular the implementation of forest rehabilitation programmes by FDPM.

Each forest is unique and requires different silviculture (the growing and cultivation of trees) treatment to achieve the maximum productivity. The regeneration of forest depends on the climatic, soil and biotic factors of an area and the failure to understand these dynamics may lead to inappropriate silvicultural prescriptions. More research on the dynamics of tropical rainforests needs to be carried out to ensure the successful implementation of forest rehabilitation programmes.

Landscape level information on the species composition and stocking of flora and fauna in the various forest types are essential for the rehabilitation of tropical rainforest. Currently, this information is limited and insufficient. Further research needs to be carried out to determine a practical and cost-effective technique of forest inventory.

In conclusion, forest rehabilitation is essential for the enhancement of timber productivity, sustainable supply of timber, conservation of biodiversity and stability of environment. It is an important component in the Sustainable Forest Management practices implemented by FDPM.

Source: <http://www.forr2.upm.edu.my/frp/images/abstract19.pdf>

SELECTIVE LOGGING

Selective logging is the practice of cutting down one or two trees e.g. mahogany (Brazil), teak (Africa & Asia) and Meranti (a dipterocarp from Malaysia) while leaving the rest of the trees intact. It is often considered a sustainable alternative to clear-cutting, in which a large swath of forest is cut down, leaving little behind except wood debris and a denuded landscape.

The individual trees are selected by surveying areas and marking them for felling. Access tracks are cut for heavy machinery to get to the tree and to remove the timber once it has been felled, though more recently helicopters have been used.

Some scientists believe that selectively logged tropical forests, especially if they are logged gently and with care, retain most of their biodiversity and continue to provide ecosystem services – acting as carbon sinks and maintaining important hydrological and climate systems. The WWF have also pointed to research that shows that selective logging has helped to protect and strengthen populations of Malaysian tigers.

However others argue that by targeting only a few key tree species in the forest, loggers quickly plunder these species, rapidly changing the overall structure of the ecosystem and undercutting the very ecological system that allows their favoured trees to replenish. Virtually all currently high-value timber species are exceptionally long lived and slow growing, occur at low adult density, undergo high rates of seed and seedling mortality, sustain very sparse regeneration, and rely on animal diversity for reproduction. In other words these tropical trees probably need very large continuous areas of ecologically intact forest if they are to maintain viable population sizes.

The particular ecology of these trees has resulted in most logging companies simply entering a primary forest, cutting all high-value species, and then leaving it to colonizers or razing everything for cattle pasture or monoculture plantations (such as pulp and paper, rubber, or palm oil). Also, while initial logging can be quite profitable, later harvests bring in less-and-less money: fewer target trees can be found and the regenerative process for such species is compromised overall. Finally, even "low-impact" logging leaves 20-50 per cent of the canopy open allowing debris left on the forest floor to quickly dry out. This means that forest fires (almost unheard of in primary rainforest) can quickly start and spread.

In some places, however, attempts have been made to make selective logging more sustainable. In the Marovo Lagoon area in the Solomon Islands' Western Province the Solomon Islands Eco-forestry Project was set up as a joint initiative of Greenpeace, the Solomon Islands Development Trust, the Foundation for the People of the South Pacific, and the New Zealand Imported Tropical Timber Group.

The project empowers the local communities by helping them manage, maintain and market their own natural resources in sustainable ways while protecting their own environment and culture. Since 1995 the programme has been helping village communities to organize themselves, manage their forests sustainably, and then mill and market a product they can now call eco-timber.

Mature trees are identified for felling, then any attached lianas are cut to prevent them pulling down smaller trees and the felling direction is carefully chosen to minimise damage caused by the falling tree. A rig is brought in by hand and assembled on-site to saw up the tree into planks allowing all of the timber to be removed without the need for damaging access roads to be cut through the forest.

Only a few trees are felled from any given area as it is so labour-intensive a process. This means that the forest is able to regenerate relatively quickly. Also, as only small – almost natural – gaps are created in the canopy the forest floor doesn't dry out enough for there to be a risk of fires. To aid more rapid regeneration, saplings of the same tree species are planted where the tree has been felled – thereby helping to maintain the biodiversity of that area of the forest.

Although they do not produce much timber, because it can be marketed as eco-timber, it can sell for a high enough price to support the local community and help them maintain their way of life.

Sources:

<http://news.mongabay.com/2012/0718-hance-sustainable-logging.html>

<http://www.wrm.org.uy/bulletin/41/Solomon.html>

<http://wwf.panda.org/?158821/Tigers-not-deterred-by-selective-logging>

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[p37] Selective Logging under the Selective Management System (SMS)

Forestry Department Peninsular Malaysia (FDPM) has been practising SMS in Permanent Reserved Forests (PRF) since 1978. The system focuses on a flexible timber harvesting regime which has a cutting cycle. The cutting cycle for each forest type is different as the natural regeneration of different forest types vary, for example 30 years for rainforest or 20-50 years for mangrove forest. The SMS involves three key stages, namely inventory before logging (pre-felling), logging (felling) and inventory after logging (post-felling). Selective logging with prescribed cutting limit is regulated by predetermined Annual Allowable Cut which is revised every 5 years. In rainforests, under SMS, only 7 – 12 matured trees are felled in every hectare and 32 residual trees are left to form the next crop to be felled in the next rotation in 30 years.

[p38] Retention of selected timber trees for fauna conservation

Tropical rainforest of Peninsular Malaysia is a complex ecosystem with dynamic interdependency of flora and fauna forming the rich forest biodiversity. To maintain this rich forest biodiversity, in particular the conservation of fauna, FDPM has taken the initiative to forbid the felling of 32 timber species during logging operations in the PRFs. These timber species produce fruits and seeds as food for many fauna such as primates, birds and squirrels.

Source: <http://www.forr2.upm.edu.my/frp/images/abstract19.pdf>