

ISSUES FOR RESPONSIBLE INVESTORS

FORESTRY IN ASIA

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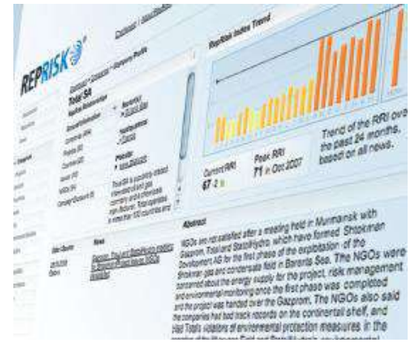

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EXECUTIVE SUMMARY

This report attempts to outline the environmental, social and governance (ESG) issues that responsible investors should consider when looking at the forestry sector and, by association, the pulp and paper industry in East, South and Southeast Asia. In doing so, it addresses the current state of forests in Asia, assesses the products and industry sectors in the market, reviews the sustainability of forest product users and considers ways to finance sustainable forestry. It further includes a benchmarking survey of 26 Asian forestry companies measured against publicly disclosed ESG indicators.

By virtue of their substantial and valuable forestry assets, as well as being dominant players in the wood products industry, there is a necessary emphasis on this report on three countries in particular: China, Indonesia and Malaysia. The report also covers both natural forest management and plantation forestry. Although both are included in the general term 'forestry sector' they are quite distinct in relation to their management approaches to generating forest products, cost structures and ESG risks.

China, Indonesia and Malaysia comprise over half of the forest lands across Asia. All three have struggled with deforestation, and their governments are actively encouraging the development of plantation forests, which are oriented towards wood production, not conservation. Several plantations are further 'intensively managed' to drive even more productivity. Rapidly increasing populations, demand for forest products, increasing designation of protected forest areas and the depletion of natural forest resources are all behind this increase in plantation investment.

In terms of the forestry market, Asia's share in the global wood products industry has increased significantly over the last ten years with total wood products imports rising from US$5.4 billion in 1990 to US$20.6 billion in 2006. Forestry companies in China, India and Malaysia are the dominant regional players in forest-related sectors such as furniture and construction. Korea and Japan are active in the pulp and paper industry, a sector that has experienced strong growth in the last five years, with a CAGR at 6.0 percent in Asia versus 2.2 percent for the world.

Competition for forestland in Asia is intensifying as a range of industries such as agriculture, palm oil and mining seek to expand their activities in forested areas. Demand for forest products is also on the rise with increasing urbanization and rising income levels. The overall result is a critical shortage of legal and sustainably managed wood supplies with significant ESG risks.

Environmentally, forestry risks include deforestation, driven by aggressive expansion of the palm oil industry, and pressures on land resources due to demand for biofuels and agricultural products. The growing mineral and mining industry poses other environmental risks, straining not just forests but surrounding areas and waterways. Another concern is the exploitation of forests with high conservation value and significant biodiversity. Indeed, even general poor management practices such as poor harvesting techniques can affect long-term sustainability. Forestry also directly impacts water resources. It is estimated that forest systems are associated with the regulation of 57 percent of total water runoff, they intercept precipitation and influence the amount of water in soils, the atmosphere and nearby water bodies. Climate change is another negative consequence of deforestation and degradation. As a result, the international community is working to determine a global strategy that will monetise the value of carbon in forests, making forest assets more valuable standing than logged.

From a social perspective, around 350 million people in Asia live in or near the forests' edges. Many of these are indigenous people whose livelihoods and homes are threatened by increased logging and destruction of forests. There are often no legal mechanisms in place to address their customary rights and unresolved land rights pose additional problems. Social conflicts that result from this are most likely underestimated and, as they often occur in remote locations, it is particularly challenging for investors to gain assurance that local communities' rights are being observed by investee companies. Other social concerns include the forestry industry's poor records on worker safety and accident rates as a result of breaches of safety standards. Moreover, employees are often foreign workers with little education who may be exploited or not aware of their rights as employees.

In terms of governance, illegal logging is a primary issue, with illegal timber estimated to be worth around US$10-15 billion per year at the expense of the legal market. Illegal logging in Indonesia is estimated to cover between 40 to 88 percent of wood production, while China is a substantial importer of this illegal lumber and distributes its product worldwide. Illegal logging is driven by corruption, inconsistent government policies and lack of enforcement. Disclosure also remains a persistent challenge for investors as the quantity and quality of ESG information disclosure by Asian forestry companies is generally poor. Forestry certification provides a useful benchmark as to the adoption of best practices and the legality of wood sources, but its usage in Asia lags the rest of the world. As the revised US Lacey Act and the EU FLEGT drive up demand for certified wood products, a market opportunity exists for Asian forestry companies to increase their supply of certified wood.

In further assessing these ESG risks, this report reviews the sustainability of the users of forest products. Most Asian companies do not widely integrate sustainability into their business models, although multinational and Japanese companies are encouraging better practices in the region. Sustainable sourcing in construction has yet to become a key consideration in Asia, although a growing number of companies engage in 'green building'. International NGOs are also actively targeting multinational DIY retailers to adopt a Responsible Purchasing Policy (RPP) in Asia, particularly China. This would help guide companies to develop a responsible business practice that is suitable for their individual procurement strategies.

This report also considers ways to finance sustainable practices in forestry. In the last five years there has been renewed interest in the sector caused by a combination of robust regional economic growth, improving equity valuations, low interest rates and a shortage of pulp. Many banks engaged in the sector have specific forestry policies, although these tend to be the major international lenders. For financial institutions that wish to invest responsibly in the forestry sector, they can utilize existing principles and standards such as the UN Principles for Responsible Investment, Equator Principles or IFC Performance Standards. There has also been increasing interest in novel projects including genetically modified plantations, community forestry, carbon income to support reduced income logging and funds focused on the forestry sector. Given the potential stable cash flow of forestry assets, it is also possible to monetize cash flows based on sustainable forestry management and/or carbon income in the form of 'forestry bond'.

Lastly in this report, as previously noted, 26 Asian forestry companies were assessed and benchmarked against a total of 109 publicly disclosed ESG indicators. Our research found that the Leaders among Asian companies in the sector on sustainability disclosure were Samling Global in China, Lingui Developments, Ta Ann Holdings, Jaya Tiasa and Subur Tiasa Holdings in Malaysia and Sumalindo Lestari Jaya in Indonesia.

CONTENTS
FORESTRY IN ASIA

PLEASE CLICK TO ACCESS SECTIONS

7 **KEY FINDINGS**

9 **INTRODUCTION**

15 **COUNTRY AND MARKET OVERVIEW**

49 **ENVIRONMENT**

71 **SOCIAL**

79 **GOVERNANCE**

101 **SUSTAINABILITY OF FOREST PRODUCT USERS**

113 **FINANCING SUSTAINABLE FORESTRY**

123 **ESG RISK FOR FORESTRY INVESTORS**

143 **BENCHMARKING**

149 **APPENDICES**

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KEY FINDINGS

1 **The lack of reliable and consistent data on many aspects of the region's forest resources is a significant challenge facing investors in Asia's forestry sector.** Our research has found that in addition to information gaps, data sources are often contradictory and incomplete, making it difficult to understand and reach consensus on issues such as rates of deforestation, extent of degradation, carbon stores, forest boundaries, land rights and the status of forest dwellers. This situation is compounded by limited transparency of the major companies in the sector, which typically disclose little on the key ESG risks of their operations. Although the increasing availability of satellite imagery and NGO activities on forest-related issues have assisted in understanding some ESG risks, it is likely that critical issues such as escalating social conflicts remain under-reported and thus not in the public domain.

2 **Forest resources in Asia will continue to be under considerable strain despite total net-forested area increasing in recent years.** Despite significant deforestation of natural forests across Asia, since 2005 there has been a net gain in regional forest cover of around 21 million hectares. This is principally attributable to significant plantation establishment in China. Other countries in Asia, such as Indonesia, also have ambitious forestry plantation targets despite reporting lacklustre performance from existing programmes. A significant proportion of plantations in the region have, moreover, been established for environmental protection, not specifically for industrial wood production. However, as natural wood resources continue to decline it is expected that there will be increasing reliance on wood sourced from industrial plantations. Some forecasts predict a figure of over 40 percent by 2020. As a result, pulp and paper capacity in the region is set to continue to rise, placing additional pressure on Asia's natural forest resources.

3 **China's demand for forest products and its approach to sector governance will be a key issue in combating the illegal timber trade.** As a world leader in industrial roundwood and wood-based panel production, furniture exports and paper manufacturing, China's appetite for forest products is a significant driver in the industry. In 2008, China imported 44 percent of its tropical timber requirements (including logs, sawn wood, wood veneer and plywood) and 21 percent of all timber requirements. This demand is undoubtedly fuelling the illegal timber trade. While other countries, such as Indonesia, are important sources of illegal wood, China is the main nation distributing it worldwide. Potentially exacerbating the situation, existing sources of China's wood supply are threatened. Russia, currently a key supplier of non-tropical wood to China, has threatened raising export tariffs, and overcutting in Papua New Guinea, Sabah and Sarawak could exhaust supplies in coming years.

4 **Monetizing forest carbon will be a potential game changer for the forestry sector in Asia if mechanisms to realize REDD+ come to fruition.** Reducing carbon emissions by addressing deforestation and forest degradation (REDD+) is widely recognised as a cost-effective means of fighting climate change is of material interest to governments in Asia. For example, Indonesia, as a result of the scale and nature of its national deforestation and forest degradation, has received the dubious accolade of being the world's third largest GHG emitter. As a result, there is both intense pressure from and an increasing sense of urgency within the international community to determine a global strategy that will monetise the value of carbon in forests, making these assets more valuable standing than cleared. The Asian region is responding to the potential opportunity and is consequently regarded as being further ahead with regard to national REDD+ strategy development, institutional capacity building and pilot projects that are often backed by multilateral funds. While this all appears positive for the region's forests, and could provide interesting opportunities for the forestry sector and be an impetus to revisit business models, the process of establishing an accepted mechanism for REDD+ is extremely complicated. As such, there is still a long way to go before carbon monies from Asia's forests start to flow.

5 **Disputed land tenure and social conflict over forest lands will continue to be a persistent ESG risks until the rights of indigenous peoples and local communities are formally recognized.** Ten of millions of indigenous peoples are estimated to be living in and around Asia's forests. Over the years these marginalized and poverty-stricken people have been highly vulnerable to the impacts of the paper, pulp and timber industry's expansion, often losing their livelihoods and homelands in the process. As a result there continues to be social conflicts involving millions of people across the region and these often lead to violence. The problem has arisen not just as a result of lack of legal mechanisms to protect and support

indigenous peoples' rights but also as a result of issuing rights to forestry companies before the status of lands has even been determined. This is a particularly challenging due diligence issue for investors because of the often remote nature of these disputed lands and the apparent legitimacy provided by government licenses. Some assurances however can be provided if investors can ascertain that recognised guidelines such as the IFC's standards and national or international certification requirements have been observed.

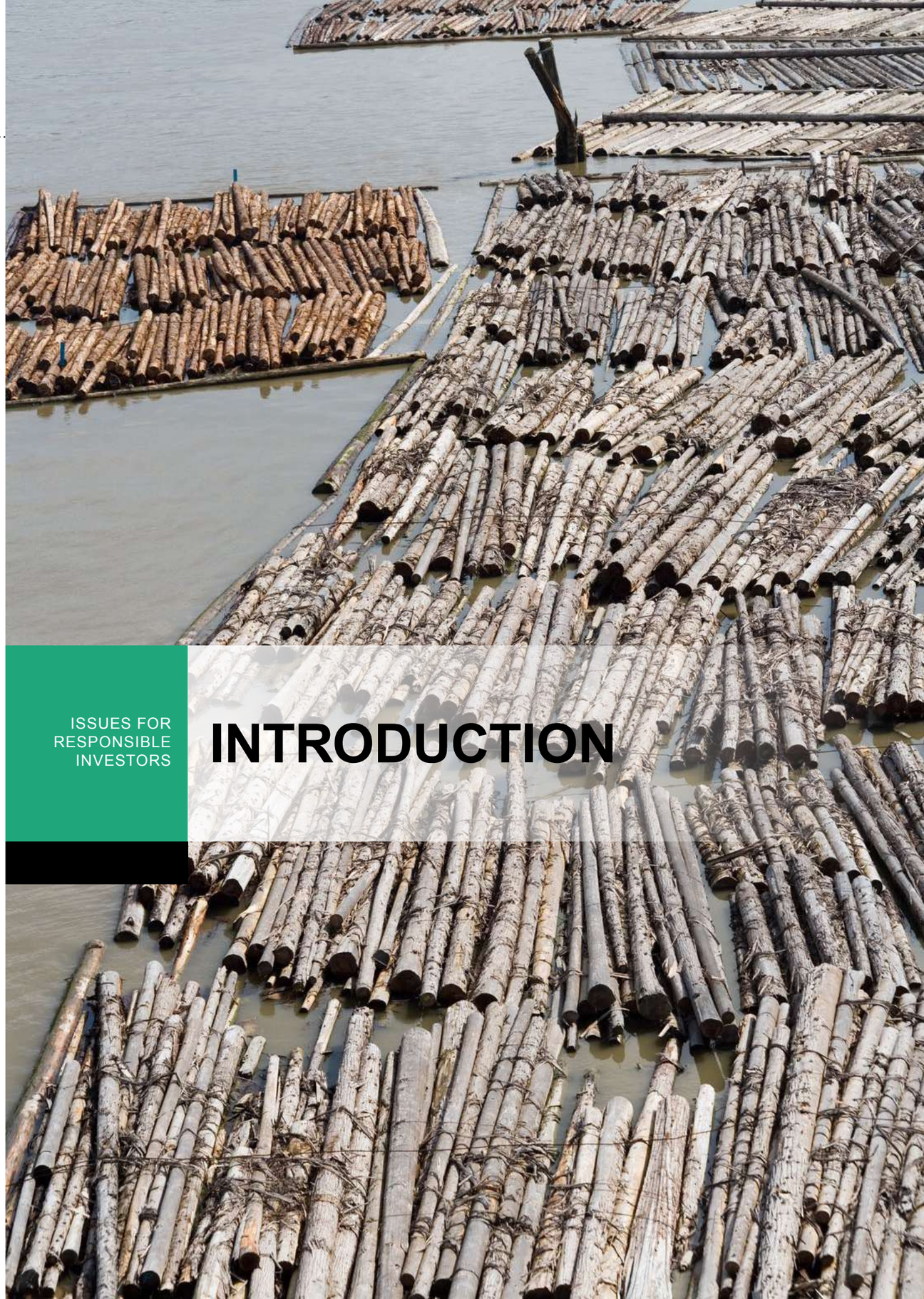
6 **Forest certification provides a useful benchmark for investors to gauge ESG risks but it is not yet widely implemented in Asia.** By providing a systematic approach to managing both natural and planted timber resources according to agreed sustainability criteria, certification provides a useful standard by which investors can gain some assurance as to the management of ESG risks. By May 2009, eight percent of the world's managed forests were being certified although Asia continues to lag significantly in producing certified wood. Issues that appear to influence the uptake include time, cost, unclear financial benefits and perhaps most importantly, relatively little interest from major importing countries such as China in demanding certification. As such there is no 'even playing field' for companies that wish to operate sustainably. Our research indicates that a number of foreign companies operating in the region are finding it difficult to gain access to FSC-certified wood, although the revised US Lacey Act and the EU FLEGT will potentially drive up its demand.

7 **While taking a larger role to secure future wood supplies, forest plantations must be planned and managed sustainably to avoid controversial impacts**. Intensively Managed Forest Plantations have increased significantly in South and Southeast Asia over the past decade in a trend that looks set to continue. Plantations have however proven to be extremely controversial as a result of large-scale land use and associated environmental and social concerns. Clearing natural forest for plantations has certainly occurred in Asia, further fuelling the controversy, while water crises in China have raised the issue of water availability. However, well-situated and well-managed plantations can deliver forest-related environmental services as well as restore land. Indeed there is a lot of degraded land in Asia that has potential for plantation development.

8 **Weak governance, corruption and inadequate enforcement continue to undermine sustainable management of Asia's forests.** Widespread corruption in some of the region's rainforest nations combined with perverse laws and corporate exploitation of weak government regulations have long been recognized as key drivers behind the region's unsustainable management of forest resources. Efforts are being made to address some of the key problems through enabling increased community participation, embarking on multilateral agreements to combat the illegal timber trade and recognizing the rights of indigenous peoples. While it is difficult to determine the overall impact of such measures, there are some positive trends, such as illegal logging in Indonesia falling, albeit from a very high level. Despite such encouraging signs, our research indicates that some of these issues will take many years to resolve; in the meantime governance remains a key challenge in the sector.

9 **Asia's natural forests provide fundamental environmental services that cannot be replaced.** The value of tropical forests besides timber is often not recognized beyond scientific and NGO communities. These ecosystems however are fundamentally important globally and locally. In addition to their values as immense carbon stores, they protect watersheds, coastlines, reduce soil erosion and are unique reservoirs of biodiversity. As such they are important natural resource providers and are the last refuge for many critically endangered and undiscovered species. The rich and diverse tropical rainforests of Malaysia and Indonesia in particular are recognized internationally as biodiversity hotspots of global importance. At the same time, forests provide livelihoods for people worldwide and play important economic, social, and cultural roles in the lives of many indigenous communities. Therefore, forests and forest biological diversity are innately linked to ecosystem and human well-being.

10 **Wood fuel is the single highest use of wood in Asia, supporting the cooking, heating and living needs of the rural poor.** In 2009, estimates suggest that around 78 percent of timber harvested in Asia was for fuel wood, with the remaining 22 percent use for industrial purpose. While it can generally be expected that wood fuel consumption will decline as access to electricity becomes available, trends will inevitably be linked to fuel prices. In the meantime Asia's rural poor remain key stakeholders in Asia's forests.



ISSUES FOR RESPONSIBLE INVESTORS

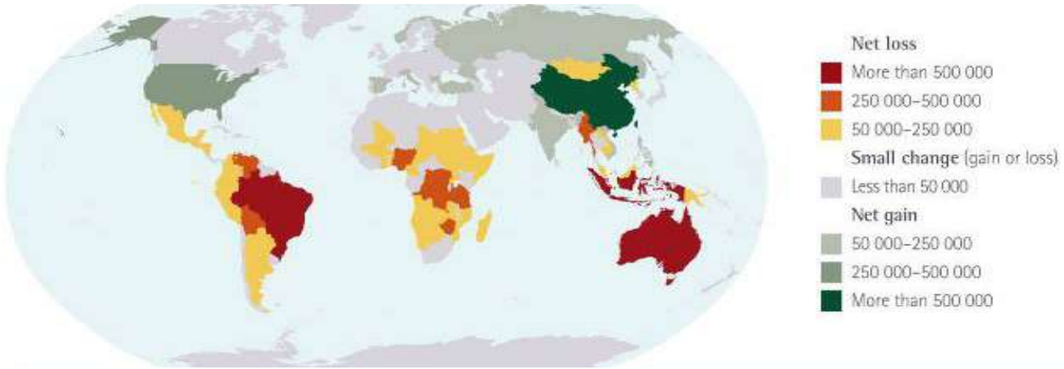
INTRODUCTION

INTRODUCTION

Forest lands across Asia[1] cover an area of over 500 million hectares, the majority of which are located in China (41 percent), Indonesia (18 percent), India (13 percent), Myanmar (6 percent), Thailand and Malaysia (4 percent each). The value of these forests for the provision of forest products and environmental services is enormous. In particular, the tropical forests of the region are vital carbon stores, reservoirs of biodiversity, homes to millions of ethnically rich indigenous people and sources of medicinal plants, food and both timber and non-timber forest products.

Despite their unique standing value, tropical forests in the region have suffered high rates of deforestation, in part to feed the demand for timber and wood fibre, as Asia's pulp, paper and timber industries have expanded across the region. Home to 16 percent of the world's remaining tropical forests, the region accounts for 25 percent of global forest loss.[2]

Figure 1: Net Change in Forest Area by Country, 2005-2010 (hectares per year)



Source: FAO (2010)[3]

In the foreseeable future, a number of factors including a rapidly expanding population and accelerating urbanization, are expected to drive the demand for wood products both within the region and globally. The opportunities associated with a world hungry for these products is not lost on companies in the sector. Despite tropical deforestation, Asia has actually reported an overall net gain in forested areas over the last decade, primarily due to large-scale afforestation projects in China. Not surprisingly, the percentage of industrial wood sourced from plantations worldwide is expected to grow dramatically.[4] Countries such as Indonesia and India are increasing forest plantations significantly, with China is becoming the global leader in plantation development, accounting for one-third of the world's plantations.

In Asia, China is the major importer and exporter of wood products. It is also the world leader in wood based panel production. In 2005 it became the world's leading furniture exporter and in 2008 it surpassed the United States as the world's leading paper manufacturer. Malaysia is currently a leader in tropical timber exports and has begun to explore the market for certified timber. Indonesia is a leading producer of wood pulp from a limited number of integrated producers, and has dramatically increased its wood pulp processing capacity in recent years – a trend which looks set to continue.

It may be fair to say that, historically, the pulp, paper and timber industry in the region has mismanaged the regions' forest resources. This is highlighted by frequently perverse national forest policies combined with generally poor governance both at the corporate and government level. In addition to unsustainable forest management, illegal forest fires are still frequently blamed on forestry companies opting for the cheapest way to clear land prior to establishing pulp wood plantations. These fires have arguably accelerated climate change by releasing millions of tonnes of carbon dioxide into the atmosphere as well as polluting regional airsheds.

As a result of poor governance and historical mismanagement, the industry in Asia is associated with deforestation on an unprecedented scale, unsustainable forest management, corruption, bribery, illegal logging and the imminent demise of critically endangered species such as the orangutan, the Sumatran tiger and Sulawesi's pig-deer, the babirusa.

Consequently, a large number of NGO's watch the sector closely and campaign relentlessly to raise public awareness attempting to prevent companies acting irresponsibly and targeting investors who deliver capital to what are judged as unsustainable operations and businesses. Increasing reputational risk therefore exists for all stakeholders within the sector, whether they are directly involved like the timber companies themselves, or serving as facilitators like investors.

The pulp, paper and timber industry is not the only protagonist in the story of deforestation and forest degradation in Asia. The mining sector has, and will continue to play, a large role, and pressure on land from other users such as agriculture, palm oil and the greater biofuels industry is also a major factor.

To some extent, companies are seeking to manage their sustainability (or ESG risks) through sustainable forest management and chain of custody certification. However, Asia has a long way to go in this respect, since relatively few production forests have been certified and even globally their numbers are relatively small. Indeed, the supply of sustainable wood in the region appears insufficient to meet current demand.

Nevertheless, an environment is emerging that has the potential to change the fundamentals of the sector in the medium term. Driven by the recognition that global deforestation and forest degradation account for about 20 percent of carbon emissions, forest assets could in the future be worth more standing than cleared. As negotiations for a post-Kyoto Protocol climate change deal continue, there continues to be interest in recognising the carbon value of forests in monetary terms. While talks have not yielded much evidence that a legally binding deal is imminent, the concept of Reduced Emissions From Deforestation and Degradation (REDD+) is firmly on the table and is being driven aggressively by governments in both developed and the developing nations, as well as by civil society.

Governments and companies in developed countries are responding with pledges of cash in return for conservation and thus, the carbon credit markets are developing. But most importantly, the rainforest nations are eager to take advantage of the opportunity toward conservation and are, with some multilateral assistance, active in building the necessary institutional and regulatory frameworks. Meanwhile entrepreneurs are developing schemes to capitalise on the emerging practice of preserving forests as valuable resources. Consumers are also becoming increasingly enlightened and large customers of the industry are now looking for sustainable sources of wood.

Despite these promising longer-term efforts, in the short term, the outlook for Asia's forests remains uncertain and the ability of Asian companies to continue to supply wood products for both domestic and international markets will depend on the sustainable management of these resources by the industry.

Reflecting the complexity of issues within the sector, many of the risk factors identified cover at least two if not all three aspects of ESG; environmental, social and governance.

In much of this report the United Nations Food and Agriculture Organization's (FAO) global Forest Resources Assessments[5] have been used for estimates and

description of the status of forests in the region. This is currently the only global resource that is widely recognised. However this data is problematic for a number of reasons. FAO depends on country submissions for the collation of data, which leads to inevitable inconsistencies between countries as well as raising issues of completeness. As noted by academics[6] the data is in the form of country averages, is not spatially explicit and so does not represent the situation at a specific location. An alternative source of data, derived from satellite photography is now publicly available but is often not accepted by the countries themselves. As a consequence FAO's data can differ significantly from other equally reputable sources including industry experts and academics.[7]

Investing in the sector

In monetary terms, the timber and forestry industry includes a broad range of asset classes from forest and paper product companies with significant amounts of forestland under management, to investment management structures and real estate investment trusts that invest solely in timber.

Investments in timber and forestry by large institutional investors, asset owners and pension funds have increased significantly in the past few years. Standard and Poor's estimates that institutional investment in timber and forestry assets has grown from approximately US$4 billion in 1981 to over US$18 billion at the end of 2005.[8] Harvard Management, the manager of Harvard' endowment and pension assets, has allocated US$2.7 billion (ten percent of its assets) to timber investments and some sovereign wealth funds are reported to be increasing their holdings in timber as well.

This increased interest is driven by the segment's characteristic as an asset class that provides stable returns over a longer term and relatively low correlation to traditional financial assets. A principal driver of returns from forests is biological growth which occurs independently of the movements of financial markets. The inclusion of forestry in a portfolio can potentially improve diversification and reduce volatility.

Despite the fact that the outlook for the industry looks strong, at least in terms of demand growth and constrained supply, the sector has many ESG risk factors investors must be vigilant about. Perhaps the most challenging issue for responsible investors is thorough due diligence. Given the lack of transparency in the industry and the remoteness of many forest locations away from public scrutiny, investors may not be aware or informed of the significance of the potential ESG impacts. In the past decade, investigative reports by journalists and NGO's have revealed plenty of credible evidence (as well as some not so credible) that some companies and their forestry assets have been far from sustainably managed, despite public claims to the contrary. An important change for activist groups today has come with increasing access to detailed satellite imagery, which provides veracity to many allegations. Even the standard app for Google Earth is proving useful for investors tracking their forestry asset management holdings.

Compounding transparency issues in the sector is the lack of reliable and consistent data on many technical aspects of Asia's forest resources, which make it difficult to understand and reach consensus on global and regional trends. This includes, for example, rates of deforestation, extent of degradation, carbon stores and numbers and status of forest dwellers.

For this report 25 Asian forestry companies were assessed and benchmarked according to their publicly disclosed sustainability practices. When compared to companies in Latin America, South Africa and the United States, Asian companies did not fare particularly well. On the environmental and social side (and with the exception of the majority of Chinese companies benchmarked) there appears to be awareness of the issues, and sixteen companies implement certified environmental management systems. However, only two companies have sustainable forest management certification. The issues of land rights and indigenous peoples are generally not addressed at all and little information is provided as to how these Asian forestry companies ensure the sustainability of their operations. On the governance side the companies fare better, possibly as a result of stock exchange requirements.

Despite the lack of leadership by Asian companies, the environmental and social impacts of forestry operations and their drivers have become a key focus for governments and many NGOs, potentially exposing companies to increased regulatory and reputational risk. As climate change and increasing environmental awareness focus the world's attention on forests, public scrutiny and regulatory pressure is on the rise. Now is an opportune time for companies in the sector to meet the increasing calls for improved sustainability practices and demonstrate effective and sustainable forest management.



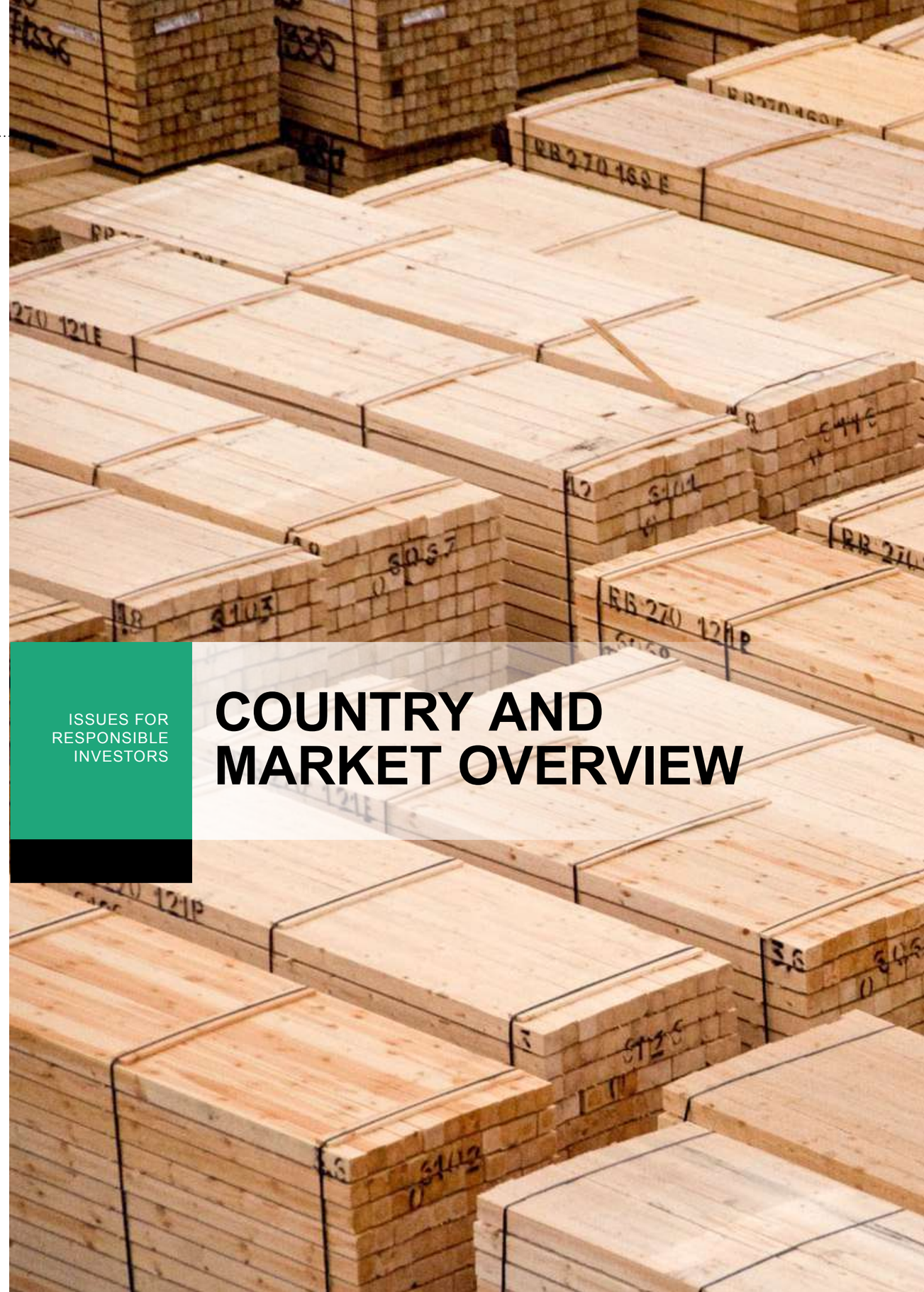
Table 1: Universe of Asian Forestry Companies Covered by the Asian Sustainability Rating™

(In US$ million, unless otherwise stated)

Name	Bloomberg Ticker	Market Cap @ 16.08.2010	Forest Under Management (Hectare)	Operation
Shandong Chenming Paper	000488 CH Equity	1,960.6	266,667	China
Yueyang Paper	600963 CH Equity	891.2	N/A	China
Yunnan Green-Land	002200 CH Equity	609.6	484	China
Jilin Forest Industry	600189 CH Equity	380.9	N/A	China
MCC Meili Paper Industry	000815 CH Equity	295.3	33,333	China
Sichuan Shengda Forestry	002259 CH Equity	316.9	N/A	China
Fujian Yongan Forestry	000663 CH Equity	264.8	N/A	China
Yunnan Jinggu Forestry	600265 CH Equity	188.1	N/A	China
Sino-Forest Corporation	TRE CN Equity	4,278.0	347,000	China
Cathay Forest	CFZ CN Equity	45.7	157,763	China
Lee & Man Paper Manufacturing	2314 HK Equity	3,344.5	100,000	China
China Forestry	930 HK Equity	1,356.5	171,780	China
Samling Global	3938 HK Equity	2,796.1	3,732,606	China
China Grand Forestry	910 HK Equity	248.6	500,000	China
China Timber Resources Group	269 HK Equity	204.0	33,333	China
Ta Ann Holdings	TAH MK Equity	377.7	440,389	Malaysia
Jaya Tiasa	JT MK Equity	332.1	712,247	Malaysia
Lingui Developments	LING MK Equity	246.5	891,000	Malaysia
Evergreen Fiberboard	EVF MK Equity	254.0	N/A	Malaysia
WTK Hldgs	WTKH MK Equity	156.7	9,552	Malaysia
Subur Tiasa Holdings	STH MK Equity	144.2	7,000	Malaysia
Samko Timber	SAMKO SP Equity	59.6	#N/A	Indonesia
Barito Pacific Timber	BRPT IJ Equity	786,223.9	500,000	Indonesia
Sumalindo Lestari Jaya	SULI IJ Equity	24,812.7	116,876	Indonesia
APP Group	N/A	N/A	2,388,468	Indonesia
Oriental Paper Industries	OPI IN Equity	229.0	#N/A	India

Source: Bloomberg (2010).[10] Responsible Research

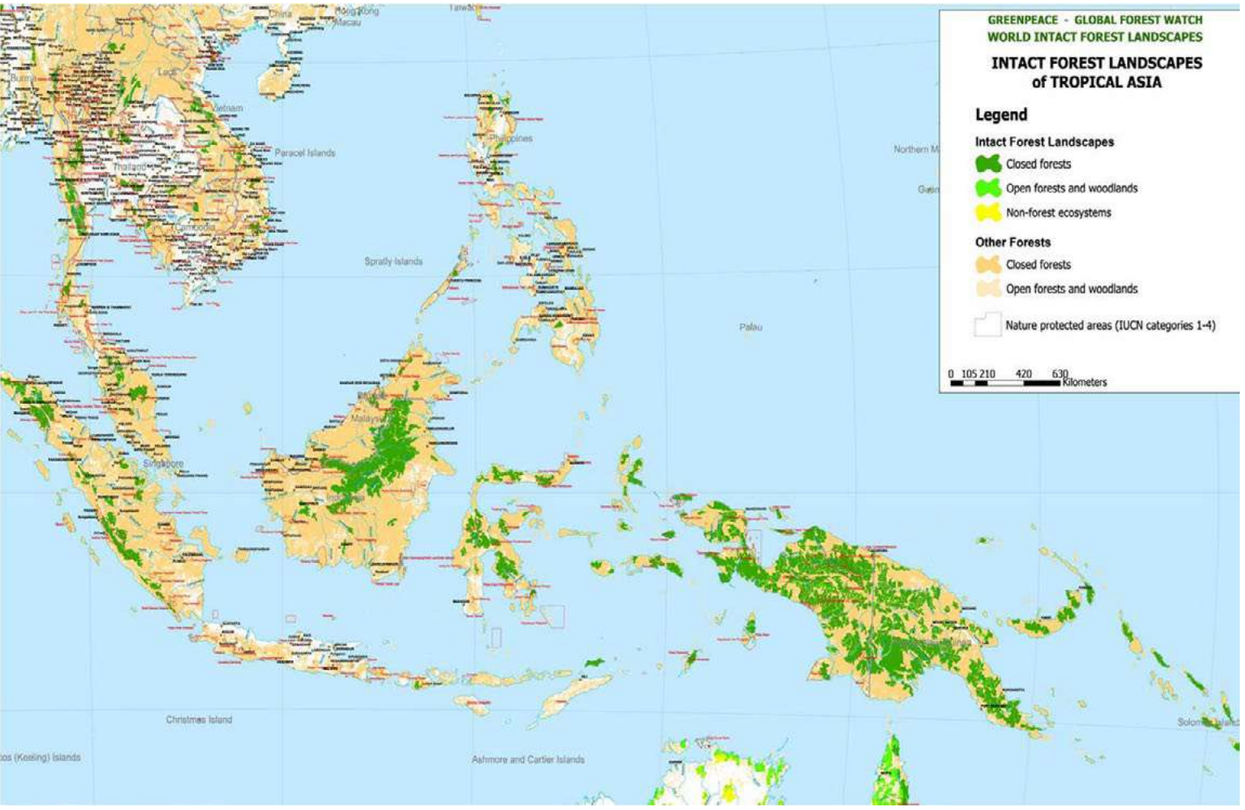
Note: APP is the pulp and paper subsidiary of the Sinar Mas Group. APP delisted from the New York Stock Exchange in 2001. AUM includes areas outside Asia.



ISSUES FOR RESPONSIBLE INVESTORS

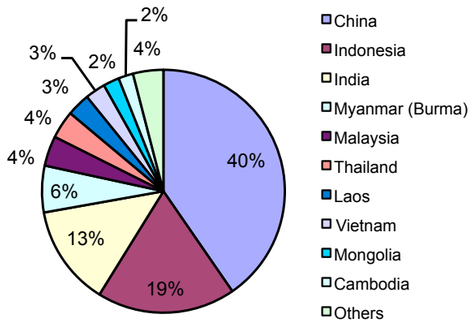
COUNTRY AND MARKET OVERVIEW

ASIAN FORESTS OVERVIEW



In 2010, forested lands in Asia cover an area of approximately 512 million hectares. These resources are highly concentrated, with five countries – China, Indonesia, India, Myanmar and Malaysia – accounting for 81 percent of forested land. Between 2005 and 2010, the region reportedly increased its net forest cover by around 21 million hectares, with the growth mainly coming from China.

Figure 2: Summary of Forests in Asia ex Japan and Korea, 2010



Source: FAO (2010),[11] Responsible Research

There are five main types of natural forests found in Asia. These include the tropical equatorial, peat and moist forests in the vicinity of the equator, as well as the temperate and boreal forests further north in parts of China.

Table 2: Summary of Type of Forests Commonly Found in Asia

Type of Forests	Location	Charecteristics
Tropical Equatorial Rainforests	Southeast Asian islands of Indonesia and Malaysia such as Borneo and Sumatra. Also in Laos and Cambodia.	Tend to have little seasonal variation and fairly constant sunlight throughout the year. As a result, tropical equatorial forests have the highest biological diversity and a well-developed canopy.
Moist Forests	Most of South-east Asia and certain parts of China such as Southern Yunnan, Hainan and Guangdong.	Moist forests are exposed to changing seasons, and during drier periods, the trees shed their leaves allowing more sunlight to reach the forest floor, resulting in the characteristically dense understory vegetation.
Peat Forests	Commonly found in parts of South-east Asia, particularly in Borneo and Sumatra.	These swamp forests appear in places where dead vegetation becomes waterlogged and accumulates as organic peat. As such, they are renowned for their capacity to store high concentrations of carbon. The peat forests are sponge-like, retaining moisture at times of little rainfall and absorbing water during monsoon rains.
Temperate/ Boreal Forests	Further north in parts of China.	Tree generation is slower because the growing season is short and temperatures can vary significantly throughout the year due to distinctive four seasons.

Source: Mongabay[12]

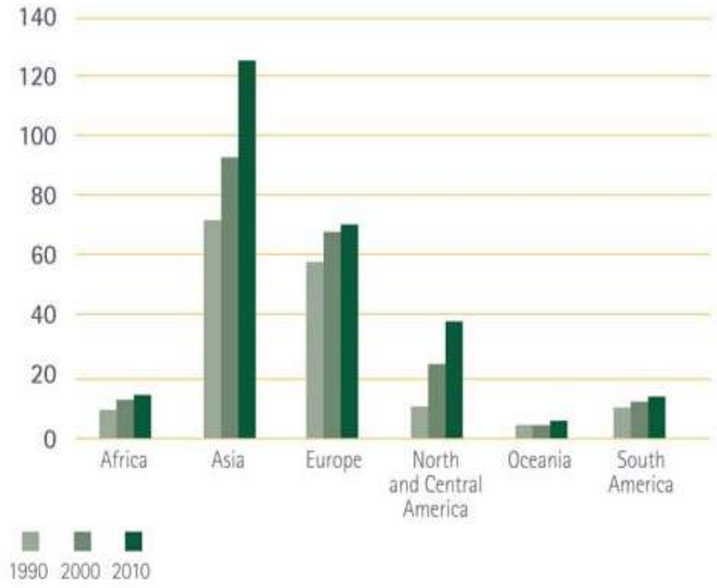
Plantation Forests

The FAO estimates that, over the past ten years, there has been an increase of 30 million hectares of planted forest in Asia.[13] This increase is most notable in China where the bulk of the forest gain has taken place; to date China accounts for about one-third of plantations established globally.[14] The proportion of the world's industrial wood sourced from intensively managed forest plantations is estimated at just over a third today[15] and has been forecast to increase to nearly 44 percent by 2020.[16] Despite the increase in plantations, FAO estimate that in the Asia Pacific region, up to a third is for the purposes of environmental protection.

Planted Forests	Planted forests include plantation forests, planted semi-natural forests, and various forms of agroforestry. Just over half of the world's 270 million hectares of planted forests are plantation forests
Plantation Forests	Plantation forests are typically even-aged monocultures of trees grown in blocks at regular spacing There are 140 million hectares of plantation forests globally, of which nearly 80 percent are production-oriented, as opposed to serving alternative functions, such as protected forests and High Conservation Value areas. The global extent of plantation forests has been increasing by an average of two percent annually.
Intensively Managed Planted Forests (IMFP)	More than 25 million hectares of plantation forests are 'intensively managed' i.e. are managed for higher productivity based on industrial wood production. IMFP's have evolved over time:- 1st generation: mostly conifers in temperate regions, grown for wood production on rotations of 25 years or more. Estimated at 13 million hectares. 2nd generation: mostly tropical acacias and temperate tropical eucalyptus, frown mainly for pulpwood, on shorter rotations of 5-15 years- known as 'fastwood'. Estimated at 13 million hectares. 3rd generation: tropical estate crops grown originally for non-wood products e.g. palm oil, but now also yielding industrial wood and fibre. Rubberwood is the most important covering 9 million hectares globally. The extent and importance of palm oil is increasing.

Source: Tropical Forests Dialogue Review Number 1, 2008 Intensively Managed Planted Forests Toward Best Practice

Figure 3: Worldwide Change in Areas of Planted Forests 1990-2010



In 2007, five companies accounted for 56% of Indonesia's pulpwood plantations:

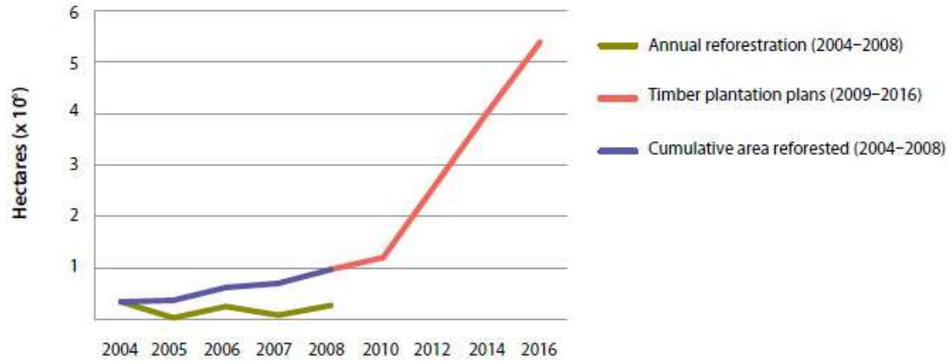
- PT. Arara Abadi (17%),
- PT. Musi Hutan Persada (13%),
- PT. Wira Karya Sakti (11%),
- PT. Riau Andalan Pulp and Paper (10%), and
- PT. ITCI Hutani Manunggal (5%).

Source: FAO(2010)[17]

China is not on its own when it comes to plantation development. In Indonesia in 2007, the following five companies accounted for 56 percent of Indonesia's pulpwood plantations: Arara Abadi (17 percent), Musi Hutan Persada (13 percent), Wira Karya Sakti (11 percent), Riau Andalan Pulp and Paper (ten percent) and ITCI Hutani Manunggal (five percent). The next data available was as of the end of December 2008, when we find that there were 227 Industrial Plantation (Hutan Tanaman Industri HTI) licences covering around 4.3 million hectares[18], approximately three quarters of which are for pulpwood (primarily Acacia and Eucalyptus). The Indonesian Ministry of Forestry now intends to increase this acreage of industrial plantations by an additional five million hectares by 2016.[19] Adding to this, MOF has a programme which started in 2007 to establish 5.4 million hectares of small holding timber plantations (Hutan Tanaman Rakyat- HTR) by 2016, although this has been slow getting off the ground.[20] Palm oil plantations are also expanding and, although figures from various agencies seem to contradict each other, are anticipated to increase from about seven million hectares in 2008 to 18 million hectares in 2020.

In Indonesia there is widespread conjecture however as to the actual level of planting as well as plantation productivity. Industry experts suggest planted areas are significantly below four million hectares, possibly as low as half that amount.[21] In addition planted lands are reported as not yielding timber at industry-recognised levels of performance, the reasons for which include a range of factors such as reporting gaps and errors, deliberate misreporting to of figures to avoid taxes, fire, and planting in unsuitable locations.[22] Nevertheless, the government anticipates the increase in plantations to provide a steady supply of pulpwood to the pulp and paper industry, and is encouraging increasing capacity of pulp and paper mills as a result.

Figure 4: Anticipated Growth in Timber Plantations - Indonesia

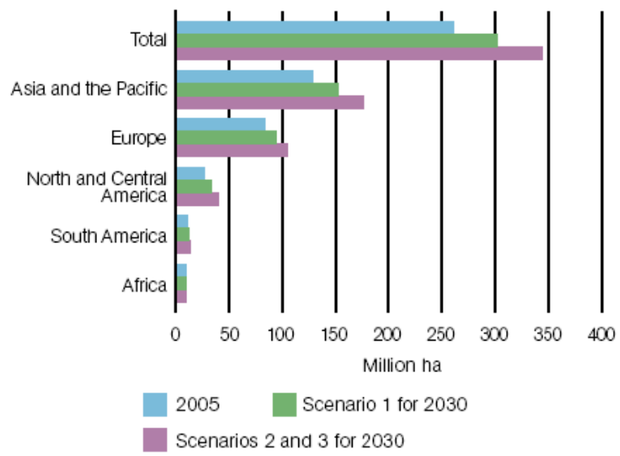


Source: CIFOR. (2010)[23]

Meanwhile the Federal Government in Malaysia is encouraging plantation development, and has plans to establish 375,000 hectares of forest plantation in the next 15 years. It has introduced a number of fiscal incentives as well as the provision of soft loans to selected private sector companies to plant a total of 16,100 hectares.[24] Both Sabah and Sarawak in Borneo have plantation targets: Sabah intends to have 500,000 hectares of forest plantations by 2020 and Sarawak is expected to have a total of 1.2 million hectares of forest plantation, having already awarded 39 'Licenses for Planted Forest', covering 2.4 million hectares, to the private sector.[25]

Globally, FAO recently projected the extent of plantation forests up to 2030 under three scenarios based on changes in level of productivity.[26] Under all scenarios, the projections indicate a significant increase in plantations, with the majority coming from Asia and driven by China.

Figure 5: Worldwide Projected Areas of Planted Forests in 2030



Source: FAO (2009)[27]

ASIAN TROPICAL TIMBER OVERVIEW

Examples of timber found in Asia's natural tropical forests are provided below. Typically as the supply of most favoured species dwindles, new species are logged and marketed.

Table 3: Examples of Asian tropical timber

Common Name	Location Found	Latin Name	Description
Kapur	Indonesia, Malaysia	Dryobalanops	Primarily sawn timber and plywood
Keruing	Indonesia, Malaysia	Dipterocarpus	Primarily sawn timber and plywood. Mainly used for structural purposes in construction
Merbau**	Indonesia	Intsia bijuga, Instia palembanica	Mostly for windows and parquet
Mersawa	Indonesia, Malaysia	Anisoptera	Primarily sawn timber and plywood
Ramin	Indonesia, Malaysia	Gonystylus bancanus*	Sawn timber, mostly sold for mouldings and frames
Meranti/Seraya/ Lauan, Mayapis	Indonesia, Malaysia, Philippines	Shorea	Primarily sawn timber and plywood , used particularly for the window industry
Teak	India, Indonesia, Malaysia, Myanmar, Philippines, Thailand- from planted forests	Tectona grandis	Main demand from veneer manufacturers; also high-quality furniture, interior finishing, decking, ship building, veneer

Source: UNCTAD, ITTO. *protected by CITES Appendix II ** under consideration for CITES

Note: The supply from natural forests is dwindling rapidly. Whilst there are new plantations, almost all have been planted to produce pulpwood (i.e. small logs produced quickly for paper and reconstituted wood products). As a result it is expected that there will be a huge shortage of higher value logs for uses such as solid wood flooring such as furniture and plywood that will lead to pressure to log more environmentally sensitive areas and to push into the remaining frontier areas of Indonesian Papua, as prices increase.

Note: the Convention on International Trade in Endangered Species of Wild Fauna and Flora, is an international agreement between governments which became in force in 1975. The agreement aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

Table 4: Summary of Key Statistics in Asia

	China	Indonesia	India	Burma	Malaysia	Laos	Thailand	Vietnam	Cambodia	Others
Forest Statistics hectares										
Forested Area in 2010 based on FRA 2010	**206,861**	**94,432**	**68,434**	**31,773**	**20,456**	**15,751**	**18,972**	**13,797**	**10,094**	**31,562**
As percentage of Asian Forest	40%	18%	13%	6%	4%	3%	4%	3%	2%	6%
Average Annual Deforestation Rate (2005-2010)	1.4%	-0.7%	0.2%	-0.9%	-0.4%	-0.5%	0.1%	1.1%	-1.2%	0.0%
Primary forest	**11,632**	**47,236**	**15,701**	**3,192**	**3,820**	**1,490**	**6,726**	**80**	**322**	**7,838**
% Primary Forest as Total Forest	5.6%	50.0%	22.9%	10.0%	18.7%	9.5%	35.5%	0.6%	3.2%	24.8%
Production Forest	**84,304**	**49,680**	**17,403**	**19,633**	**12,739**	**3,596**	**2,653**	**6,524**	**3,374**	**9,367**
Planted forest	**77,157**	**3,548**	**10,258**	**988**	**1,807**	**224**	**3,986**	**3,512**	**69**	**1,351**
Forest per Capita	0.15	0.41	0.06	0.63	0.73	2.45	0.28	0.15	0.67	N/A
Governance										
Corruption Perception Index (10 being highest score)	3.6	2.8	3.4	1.4	4.5	2	3.4	2.7	2	N/A
2008 Roundwood Production ('000 m^3)										
Industrial Roundwood	95,819	35,551	23,192	4,262	22,190	194	8,700	5,850	118	
Wood Fuel	196,031	65,034	307,782	16,789	2,908	5,945	19,503	22,000	8,735	
Total Round Wood Production	291,850	100,585	330,975	21,051	25,098	6,138	28,203	27,850	8,853	
2008 Production of value added products										
Sawnwood ('000 m^3)	29,311	4,330	14,789	1,610	5,142	130	2,868	5,000	3	
Wood based panels ('000 m^3)	79,947	4,332	2,592	148	9,088	24	3,788	564	7	
Wood Pulp ('000 tonnes)	7,105	5,177	2,308	1	123	N/A	818	300	N/A	
Paper and Paper Board ('000 tonnes)	83,685	7,777	4,183	45	1,062	N/A	4,108	1,324	N/A	
2008 Trade Figures										
Import of Industrial roundwood ('000 m^3)	38,044	120	1,768	0	217	0	159	203	1	
Import of Sawnwood ('000 m^3)	8,719	318	48	0	203	0	387	563	0	
Import of Wood Panels ('000 m^3)	3,359	656	126	4	401	4	186	488	4	
Import of Wood Pulp ('000 tonnes)	10,361	1,156	530	1	218	4	495	130	0	
Import of Paper and Paper Board ('000 tonnes)	5,388	401	1,734	34	2,016	8	756	648	44	
Export of Industrial roundwood ('000 m^3)	687	685	14	1,476	4,811	44	0	7	0	
Export of Sawnwood ('000 m^3)	911	73	40	315	2,475	84	384	129	6	
Export of Wood Panels ('000 m^3)	10,977	3,329	65	79	6,402	10	2,556	33	2	
Export o Wood Pulp ('000 tonnes)	38	2,733	21	N/A	9	N/A	127	0	0	
Export of Paper and Paper Board ('000 tonnes)	4,850	3,574	373	0	308	0	1,026	24	0	

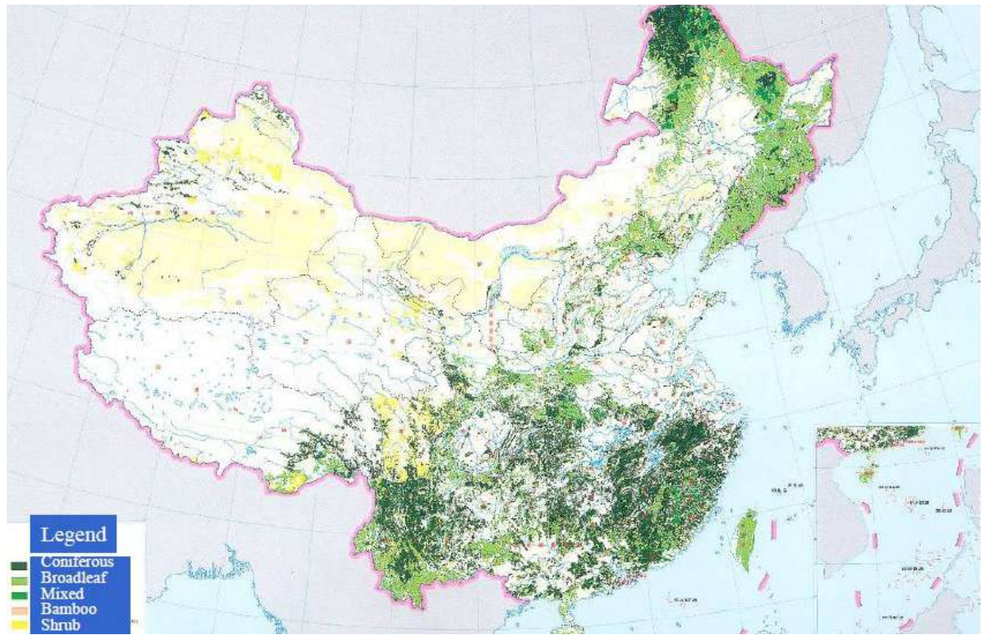
Source: FAO (2010)[28], FAO (2008)[29] Responsible Research

Table 5: Highlights of Forestry Issues in the Dominant Markets of China, Indonesia and Malaysia

	China	Indonesia	Malaysia
Forest Resources	▪ Within Asia, the second lowest forest resources per capita after India ▪ The majority of forest, nearly 60 percent, is managed by collectives, the remainder by the state ▪ Has experienced a net increase in forests due to reforestation policies	▪ Deforestation is significant; only a century ago, the country was 80-95 percent covered with forests but now it is well under 50 percent ▪ Virtually all forestlands are state owned, although ongoing disputes over ownership rights are common ▪ Indonesia is the third largest net contributor to Green House Gases (GHG) emissions globally as a result of deforestation	▪ Forestry assets are mainly concentrated in Sabah and Sarawak ▪ All forest land in Malaysia is owned by the government, except for a few thousand hectares of private plantation forests ▪ Forest resources are severely depleted as a result of urbanization, clearance for agriculture and excessive logging
Policy	▪ The 2005 to 2010 five year plan, includes an annual logging quota of around 250 million m^3 per annum ▪ Policy target is to preserve natural forest and total logging should not exceed total new plantations ▪ Initiated a reforestation programmethrough the development of plantation forests and the privatisation of forests which is estimated to cost up to US$59 billion by 2015 ▪ Introduced measures in 2007 to encourage plantation including government subsidy	▪ In 1999, the government initiated the decentralisation of forest administration which exacerbated deforestation due to corruption and increased authority of local governments ▪ In 2005, the Ministry of Forestry issued a five-year strategic plan with five key objectives for policy reform and management improvement to eradicate illegal logging ▪ Indonesia is the first country in Asia to introduce REDD legislation ▪ In May 2010, Indonesian signed a letter of intent for a two-year moratorium on all new concessions on forests and peatlands in a US$1 billion deal with the Norwegian government	▪ Each state is empowered to enact laws on forestry and to formulate forestry policies independently and decide over the use and allocation of resources ▪ In order to harmonise forestry policy, the National Forest Policy (NFP) was enacted in 1978, which was fully adopted by the states of Peninsular Malaysia with the support of Sabah and Sarawak ▪ In March 2009, the National Timber Industry Policy was initiated to help companies to achieve the US$17 billion target of timber-based exports by 2020, more than double the current performance
Forest Industry	▪ Industry focused on wood processing and plantations ▪ With the exception of the coastal southern provinces, much of the afforestation effort has been on meeting subsistence needs and the management of environmental problems ▪ End-user product producers are highly fragmented ▪ China is a major producer of wood and a net importer of wood	▪ Industry dominated by a limited number of integrated players (timber, pulp, paper) ▪ Pulp and paper industry is controlled by APP and APRIL, which accounts for 72 percent of combined market share ▪ The industry is plagued by illegal logging ▪ The plywood industry is relatively stagnant due to exhausted forest supplies ▪ Indonesia is a net exporter of forest products	▪ Most listed forestry companies are based in Sarawak ▪ Peninsular Malaysia produces more value-added products for the international market; Sabah and Sarawak produce primary and secondary products for the regional market ▪ Malaysia is a net exporter of wood

FORESTS IN CHINA

Figure 6: Forests in China



Source: Presentation by Zengyuan Li[30] (2005)

Forest resources

FAO's 2010 Forest Resources Assessment estimates that China's forests cover around 200 million hectares, equivalent to just over 20 percent of its land area.[31] Of this, about 40 percent is classed as production forest. In contrast to other countries in the region, China has experienced a net gain in forest area, having increased its forest cover by around 40 million hectares since the late 1970s,[32] mainly due to its policy of increasing plantation area. FAO indicates that in the five years since its 2005 Forest Resources Assessment, China gained almost 14 million hectares of forest cover. About 37 percent of China's forest lands are planted forests. Additional information including functional categories of China's forests and regional distribution are provided in Appendix I.

The majority of China's forests are concentrated in five regions, which account for around 85 percent of forest land. These lands are owned by the state and rights are assigned to collective farms and private enterprises, where, typically the lease term is around 40 years. Collectives manage nearly 60 percent of the forests. The remainder – mostly natural forest – is managed by the government in the form of 300 independent state forest farms and 135 state forest bureaus. The private sector remains a relatively small player.[33]

On a per capita basis, China's forest resources equate to around 0.15 hectares of forest land per capita. This is substantially lower than the global average, which was 0.6 in 2005.[34]

Deforestation

While there is very little public information on the extent of deforestation in China during the past 50 years, it is generally accepted that the practices resulting in deforestation has been widespread. It has been reported that, prior to 1949, the forested area of Sichuan province totalled 14 million hectares but by the early 1950s, it had decreased to just 0.7 million hectares.[35] It is estimated that

the proportion of forest destroyed during the Great Leap Forward (1958-1961) is in the region of one-third in the provinces of Hunan and Hubei, and one-tenth in Sichuan.[36] In the 1960s, large tracts of forests were clear-felled and replaced with pine, Chinese fir and rubber trees by the state forest farms in Guangdong, Guangxi, Yunnan and Hainan.[37] Much forest land was also converted to permanent agriculture.

After the devastating floods of 1998, the Chinese government initiated a programme of natural forest protection that covered 30 million hectares across 18 provinces, including a significant portion in Yunnan and Hainan. Since then, forest cover in China has increased significantly. Nevertheless, China has lost most of its primary forests and, by 2010, the portion of primary forests as a percentage of total forested area is a mere 5.6 percent. Compare this to the FRA figures from 2010 which suggest that the United Kingdom and Finland have no primary forest left whereas the United States has around 25 percent of the total forested area as primary.

Between 2000 and 2010, China is estimated to have increased its forest cover from 177 to 207 million hectares. Despite this net gain in forest area, China remains a net importer of wood and the wood deficit is expected to increase substantially over the next 20 years. In 2008, it imported 44 percent of its tropical timber requirements (including logs, sawn wood, veneer and plywood), and 21 percent of all timber requirements.[38]

Policy and regulatory overview

China's forest resources are primarily regulated by the State Council, which sets strategic policy, and the State Forestry Administration (SFA), which has a mandate for policy implementation, supervision of law enforcement, plantation establishment, conservation and industrial wood management. Below is a summary of major forestry policies.

Privatisation of forests

In 2003, SFA initiated the privatisation of the forestry sector converting collectively-owned land into private ownership.[39] This policy was initially implemented on a trial basis and formally rolled out in 2008. The reform provided farmers with legal title over commercial plantations, essentially setting the legal framework for the domestic private sector to participate in the forestry production business.

Logging quotas and reversing deforestation

China's current forestry policy, as detailed in its 2005 to 2010 Five Year Plan, includes an annual logging quota of 248 million cubic metres per annum.[40] The two key principles behind the quota are to preserve any remaining natural forest and to bring the annual growth and harvest of wood from China's forest estate into balance'.[41]

The policy aims to increase forest cover from 18 to 20 percent (this has already been achieved based on both SFA and FAO statistics) and reverse land degradation and desertification.[42] More recently, the Global Agricultural Information Network (GAIN) reports that, by 2020, China's aim is to increase forest coverage to over 23 percent, and by the end of 2050 to 26 percent.[43]

Development of Plantation Forests

Since 2003, the Chinese government has openly supported plantation development.[44] Importantly, in 2007 it introduced the outline forestry policy that was jointly issued with seven state bureaus including the SFA, National Development and Reform Commission of China (NDRC), Ministry of Finance, Ministry of Commerce, China Banking Regulatory Commission (CBRC) and China Securities Regulatory Commission (CSRC). Key provisions of the policy include:[45]

- Developing the private plantation industry to encourage the participation of foreign investors
- Assisting in the processing of transfers, leases, mortgages and pledges and making investments in joint ventures for plantations
- Strengthening financial support for the development of the plantation industry by continuing to provide long-term and low interest rate credit facilities. According to Deutsche Bank, approved plantations could be in line for a six percent interest subsidy for three years. Furthermore, the People's Bank of China has also set aside billions of renminbi as a credit line for forestry companies. In FY 2005, the Chinese banks lent out US$690 million for plantations.[46]
- Gradually establishing the Timber Industrial Zone composed of the Southeast Coastal Area, Southern Timberland and Huang-Huai-Hai Plain
- Establishing a sound product quality inspection and monitoring system and helping forestry corporations obtain the ISO 9000 quality management and ISO 14001 environmental management certification
- Providing insurance and financial services to companies and individuals in the forestry industry
- Establishing a platform for transactions of plantation land use rights

Recent developments

In response to the global financial crisis, in 2009, the SFA, NDRC, Ministry of Finance, Ministry of Commerce and State Administration of Taxation jointly promulgated the Plan for the Revitalisation of the Forestry Industry (2010-2012). The plan aims to increase both domestic demand for wood products and support the export of forestry products through the following methods:[47]

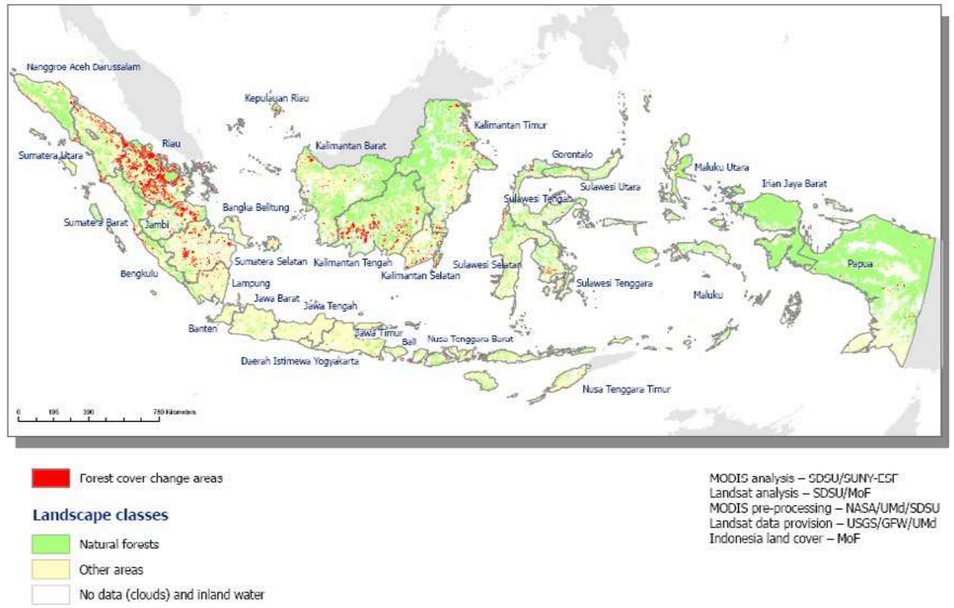
- Assisting 100 leading forestry enterprises in China
- Subsidising seedlings for plantations and reducing forest maintenance funds from 20 percent of sales to ten percent
- Encouraging forestry enterprises to raise working capital via issuing debt
- Upgrading forestry technology
- Promoting international cooperation
- Developing industrial plantations

According to the International Tropical Timber Organization (ITTO), the total value of China's national forest industry output (including non-wood forest products) was US$259 billion in 2009, up 21 percent compared to the year 2008, and is further set to increase to US$333 billion by 2012.[48] The average growth rate of the output has been about 20 percent every year since 2001.[49] The plan is to maintain growth at around 12 percent annually.

In March 2009, China launched its regulation on 'Forestry Certification Practices' as part of its initial steps to regulate the local industry.[50]

FORESTS IN INDONESIA

Figure 7: Forests in Indonesia

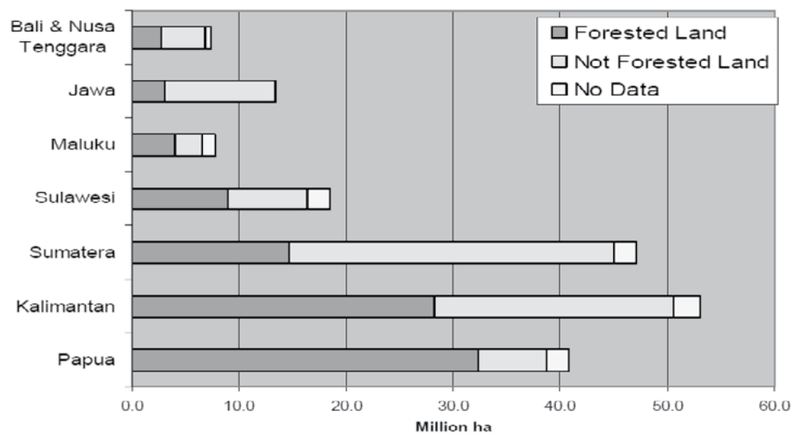


Source: WRI (2005)[51]

Forest resources

Indonesia is home to some of the world's most biologically diverse natural forests. Only a century ago, the country was densely forested, with trees covering an estimated 80-95 percent of total land area.[52] Aggressive deforestation, however, has taken its toll and today this figure has fallen to well under 50 percent. According to FAO, by 1990 the total forested area in Indonesia was around 119 million hectares[53]; just ten years later this had decreased to 94 million hectares.

Figure 8: Forest cover status by major islands in Indonesia (Centre for Forest Inventory and Mapping, Ministry of Forestry, 2005).



Source FAO (2009)[54] Source: FAO (2009)[55] from Centre for Forest Inventory and Mapping, Ministry of Forestry, 2005

Virtually all forest lands are state-owned, although on-going disputes over ownership rights are now an important factor in developing these forests. Historically, the country's forest resources have been mismanaged as a result of inappropriate policies and corruption, with little of the profits from logging being reinvested in creating a sustainable forestry industry. In 1984, the government introduced a Forestry Master Plan known as Tata Guna Hutan Kesepakatan (TGHK), in which the Ministry of Forestry (MOF) allocated land as having different types of 'Permanent Forest Status' - conservation, protected, limited production or production. In 1990, in response to pressure from local governments contesting forest boundaries, the TGHK was merged with the Provincial Regional Spatial Management Plan (Rencana Tata Ruang Wilayah Propinsi or RTRWP), which together delineate forests and form the basis for the control and development of the Right of Forest Exploitation (Hak Pengusahaan Hutan – HPH) and industrial plantation (Hutan Tanaman Industri- HTI).[56]

Policy and regulation

Indonesia's forest estate under the jurisdiction of the MOF currently amounts to about 70 percent of total land area, forest land outside the estate covers around eightv million hectares.[57] The most recent Global Forest Resources Assessment[58] indicates that just over 50 percent of Indonesia's forests are earmarked for production and about 50 percent are primary forest, the majority of which are located in Papua and Kalimantan. Note that these categories are not exclusive and some areas of primary forest are zoned for production. Additional data on functional categories are provided in Appendix II.

Land classified as 'production' forest, indicates that the MOF can grant non-transferable logging rights (HPH) for a period of 20 years,[59] which can theoretically be renewed thereafter. In 1985, the Suharto government imposed an export ban on unprocessed wood. This resulted in a significant increase in plywood production capacity in the country. The measure also forced many small concession holders without plywood processing capability to give up their licenses, which had the overall effect of consolidating concessions to a few very large players. By the mid-1990s, the ten largest concession holders controlled 45 percent of designated production forests.[60]

At the same time, the production of pulp was encouraged by the development of industrial plantation forests such that production capacity increased from one million tonnes per year in 1990 to five million in 2000.[61] The expansion continued after the collapse of the Suharto government in 1998, and by 2009 was estimated at around eight million tonnes per annum. Of this volume, the Sinar Mas Group controls 42 percent and APRIL controls 30 percent.

As part of the push to maintain a sustainable supply of timber for the pulp industry as well as to rehabilitate logged-over areas, in the mid-1980s, the government began to divert money from its restoration fund[62] to subsidize the development of industrial timber plantation under the HTI programme. The programme aimed to support the conversion of up to 30.5 million[63] hectares of degraded land to plantation forest.[64] To further make way for industrial forest plantation, HTI licence holders were granted permits to clear-cut natural forests. As a result further deforestation occurred and the pulp and paper industry expanded rapidly.

In addition to conversion to plantation forests, a large portion of degraded forests was also cleared for conversion to other agriculture uses such as palm oil. However this policy is generally regarded as having been widely manipulated and abused, resulting in the planned agricultural crops not always being planted after conversion.

Deforestation and forest degradation

Largely as a result of these poor policies, combined with chronic corruption, Indonesia has experienced substantial deforestation over the past five decades. During Suharto's 32-year reign (1966-98), the country lost approximately 40 million hectares of natural forest.[65] Riau province, where large pulp production facilities are located, has lost 65 percent of its forest cover over the past 25 years.[66] Kalimantan, another area where timber and pulp companies are active, lost 20 million hectares between 1950 and 1997. The speed of clearing has been increasing; on average, Indonesia lost approximately one million hectares of forest each year in the 1980s and about 1.7 million hectares per year in the early 1990s. By the mid-1990s, deforestation was reported to accelerate to approximately two million hectares per year.[67] Currently deforestation is thought to be between one and 1.6 million hectares per annum[68] although estimates vary widely. In a recent report the Centre for International Forestry Research[69] (CIFOR) indicates that if deforestation continues at current rates, forests will disappear from non-forest estate lands in about 20 years and in production and conversion forests in 100 years. Other sources indicate a period of 50 years. The great tragedy is that the lowland forests, home to the greatest biodiversity, carbon stores and where indigenous people historically would have been concentrated due to the productivity of the ecosystems, are the first to go.

While precise data on Indonesia's forest degradation is hard to come by, it is anticipated to be reasonably widespread and upper estimates are in the region of 96 million hectares.[70] Accepted definitions of what constitutes degraded forest land are equally hard to come by, but proposed definitions focus on loss of biological productivity capacity, diversity and carbon stocks. MOF relate degradation to the standing volume being below productivity thresholds (less than 20 cubic metres per hectare of commercial species with a diameter of 30 centimetres[71]) and indicate that significant portions of degradation – over 40 million hectares of critically degraded land is outside of the Forest Estate.[72]

Degraded forest land is important in so far as it relates to the implementation of REDD+, i.e. Reduced Emissions from Deforestation and Degradation or 'REED+' - a potential mechanism for paying for the conservation of forests in return for carbon credits (discussed in the Issues section of this report). It also has the potential to take some of the pressure off forest lands if plantation forests and oil palm can effectively be restricted to degraded areas.

Table 9: Summary of Underlying and Immediate Causes of Deforestation

Underlying Causes	Immediate Causes	Agents
Population growth and increasing expectation of wealth	Inappropriate forest and landuse allocation decisions	Transmigration
Corruption	Unclear legal status of forest lands	Concession holders employing poor logging practices
Minimal legal and political accountability of political, military and economic elites	Weak and inconsistent enforcement of forestry laws	Illegal loggers
Policies favouring large scale commercial forestry over community-based forestry	Excess timber processing capacity	Oil palm, pulp and timber plantation developers
Perverse incentives and pricing policies for timber	Conflict over forest land resources	Forest fire settlers
Official indifference to traditional forest land and resource rights	Rural poverty and landlessness	Small scale farmers
Poor quality data on forest status	Provincial/local government revenue needs	Developers of mines, roads and infrastructure
		Poachers of flor a and fauna

Source: Forest Watch Indonesia, World Resources Instituted, Global Forest Watch (2002)[73] Source: adapted from Forest Watch Indonesia, World Resources Instituted, Global Forest Watch (2002)[74]

Whilst considering the scale and causes of deforestation in Indonesia, it is worth remembering that some level of forest clearance in such a developing country is inevitable and reasonable, for example due to the need to make way for intensive agriculture, unless funds are provided to compensate for the opportunity cost of retaining forest lands.

Recent developments

In 2006, the Indonesian government once again attempted to revitalize the pulp and paper industry by announcing that it would promote the development of nine million hectares of new timber and pulpwood plantation by 2016 and expand pulp processing capacity to 18.5 million by 2020. The policy allows pulp producers to continue to convert natural forest areas until 2014.[75]

In 2007, a new regulation was introduced detailing the provisions and procedures for issuing 'Ecosystem Restoration Forest Timber Utilisation Permits for Natural Forests in Production Forests' This sounds complex but really means that the MOF is allowing degraded production forest concessions to be used for restoration purposes, sustainable harvesting of non-timber forest products and for environmental services.[76]

In 2009, the MOF issued a further decree on sustainable forest management and legal timber verification.[77] An accompanying 'Assessment Guideline' was also introduced, by the Director General of Production Forest Management.[78] The decree outlines the parameters for standards for sustainable forest management (SFM) and verification systems for timber legality. Concessionaires are to be granted SFM and/or timber legality certificates after being successfully assessed by an accredited independent assessor. NGOs are able to monitor the process, which is, theoretically, transparent.

Indonesia is the first country in Asia to introduce regulations on the implementation of REDD+. To date, the MOF has issued three ministerial decrees on the subject that cover a wide range of issues. In May 2010, the Indonesian government also signed a letter of intent with Norway that is intended to result in a two-year moratorium on new concessions to clear natural forests and peat lands, in exchange for a US$1 billion grant earmarked for forest conservation. By early September 2010, details of the deal were still being worked out, however Norwegian officials confirmed that initial funding of $30 million for preparatory work had been approved, following Jakarta's satisfactory assurance of credible implementation.[79] Final details are planned to be made public at the UN Conference of the Parties (COP16) in Cancun in December 2010.

Indonesia's REDD+ Decrees and their Regulations

December 11, 2008 – The implementation of demonstration activities: describes the permission and approval procedures for REDD+ 'demonstration activities' (pilot projects) so that the methodologies, technologies and institutions of REDD are practicable and evaluable. The challenge is how these activities can be transferred to real activities in the future.

May 1, 2009 - The mechanisms of REDD+: regulated procedures on the implementation of REDD+ including requirements that should be fulfilled by developers, verification and certifications, and terms and conditions of REDD+'s implementing bodies

May 22, 2009 - The procedures for approval of projects on carbon sequestration and/or storage in production and protected forests: includes revenue sharing, application, collection, depositing, and utilisation of revenues from REDD+ projects. This decree distinguishes between different type of forests and carbon sequestration and storage projects.

Source: REDD-I [80]

Although these regulations have been introduced, there is still much uncertainty given lack of recognition by the Ministry of Finance. It is also still not clear as to how the right to trade the produced carbon credits is secured.

Forest resources

Forests in Malaysia are estimated to occupy around 60 percent of the country's total land area, equivalent to around 20 million hectares.[81] These lands are mainly concentrated in Sabah and Sarawak. Most are categorised as 'Permanent Forest Estates' (PFE) that are set aside for sustainable forest management, national and state parks or other legally protected forests. PFEs are designed to be 'harvested' using selective practices, while 'State Lands' allow clear felling and conversion to other land uses such as agriculture and industry.[82] Except for a few thousand hectares of private plantation forests, the government owns all forestlands in Malaysia. Fifty-seven percent of Malaysia's forests are allocated for production. Planted forests (including rubber plantations) are estimated to be around 1.8 million hectares, up by 234,000 hectares since 2005.[83] More information on forestry in Malaysia is provided in Appendix III.

Deforestation

Between the 1950s and 1990s, Malaysia experienced significant deforestation. From 1965 to 1992, the total forest area in Peninsular Malaysia declined from 65 percent to 46 percent.[84] Today, most of Peninsular Malaysia's primary forests have been logged.[85]

In Sabah, by 1989 the area available for logging had declined dramatically and was less than 20 percent of what was available in 1971.[86] Forest clearance has slowed over recent years, after a period of rapid deforestation due to shifting cultivation practices and recognition that high palm oil prices were making oil palm plantation cultivation more viable.

Sarawak has also experienced significant deforestation. By the early 1990s, about 60 percent of Sarawak's land had been licensed for timber extraction and large areas have since been logged. Furthermore it seems that increased land pressure in Peninsular Malaysia and Sabah has meant the major timber productions have shifted to Sarawak where populations are less dense.

Deforestation in Malaysia is largely a result of urbanisation and agriculture development. In the late 1950s, the Federal Land Development Authority (FELDA) was set up to establish large-scale new land development programmes and settlements. Between 1956 and the 1980s, it was estimated that Malaysia converted more than 1.5 million hectares of forest for resettlement programmes.[87]

From the 1970s, a second wave of deforestation occurred as a result of commercial logging and the emergence of palm oil. Since the 1990s deforestation slowed, somewhat in tandem with industrialisation, at least in Peninsular Malaysia. Meanwhile commercial logging activities continued in both Sabah and Sarawak and are one of their significant sources of revenue.

Policy and regulation

In Malaysia, there is separation of power in land matters. Under Article 74(2) of the Malaysian Constitution, forestry comes under the jurisdiction of the respective state governments. As a result, each state is empowered to enact laws on forestry, to formulate forestry policies independently and decide over the use and allocation of resources. Each state has its own forestry department and other institutions to implement forestry policies. Meanwhile the federal government's role includes the provision of advice and technical assistance to the states. In addition, the federal government has power to establish departments or ministries for resource conservation of national parks and wildlife sanctuaries as well as trade polices.[88] The National Forestry Policy was introduced in 1978 and later updated in 1992, to provide direction on sustainable forest management and has been fully adopted by all states within Peninsular Malaysia. Sabah and Sarawak have adopted a similar policies.

Despite attempts to converge forestry laws, implementation and enforcement varies greatly amongst the states. Generally speaking, Sabah fares better and is considered relatively good when compared to Sarawak for example. Peninsular Malaysia produces more value-added products such as furniture, table and kitchenware and mouldings which target primarily international markets such as the United States and Europe. Primary products are extracted from Sabah and Sarawak and offen sent in to processing facilities in Peninsular Malaysia.[89] Consequently, Sabah and Sarawak tend to produce primary and secondary products such as logs, sawn timber and plywood to regional markets such as China, India and Japan.

Recent developments

Malaysia is one of the first countries in Asia to negotiate a Voluntary Partnership Agreement (VPA) with the European Union. Under the VPA, timber exported to the EU must be certified as legally harvested. Originally, Malaysia was expected to sign the agreement at the end of 2008 or beginning of 2009 but negotiations are still ongoing. A number of NGOs are calling for the negotiations to be put on hold until certain outstanding corruption allegations have been fully investigated.[90]

In an effort to reduce pressure on natural forests, in 2005, the Malaysian Ministry of Plantation Industries and Commodities (KPPK) was given the mandate to pursue aggressive development of large-scale commercial forest plantations.[91] Under this programme, the KPPK planned to develop 375,000 hectares of forest plantation at an annual planting rate of 25,000 hectares per year for the next 15 years. The programme is expected to produce 200 cubic metres of trees per hectare. The main species grown will be rubberwood and acacia. The government has also provided tax incentives as well as soft loans.

In March 2009, the National Timber Industry Policy was initiated to address issues such as the declining supply of raw materials, escalating production costs, human resource management and technological advances within the timber industry.[92] The policy hopes to help Malaysia achieve its target of US$17 billion in timber-based exports by 2020, more than double the current performance.[93]

FORESTS IN INDIA

In the 1970s, India's annual rate of deforestation was estimated at 1.3 million hectares.[94] This devastating trend was reversed when India introduced its National Forest Policy (NFP) in 1988. The NFP established a target that a minimum of one-third of the country's total land area should be forested. Today forest accounts for 21 percent of land area, while in 1990 it stood at 19 percent. Importantly the NFP empowered local communities to undertake forest protection and develop farm forestry on a usufruct-sharing basis[95] (the legal right to use and benefit from property that belongs to another, as long as the property is not damaged) through a scheme called Joint Forest Management (JFM).[96] In the JFM programme, village communities enter into an agreement with each other and the government to jointly protect and manage forestland adjoining villages and to share both responsibilities and benefits. By 2007, more than 22 million hectares were covered by the JFM programme involving 21 million people.[97]

In addition to the NFP, in 2000 the government initiated a National Afforestation Policy (NAP) that provides funding to local communities to conduct afforestation.[98] To further complement the NFP, most of the state forest departments have completely or partially banned logging in the remaining natural forests.[99]

The Ministry of Environment and Forests (MOEF) governs national forest resources, and is responsible for developing policy and legislation. There is also a National Forest Department that provides advice and guidance to both MOEF and the State Forestry Departments. These are the custodians of the public state forest resources and act as the local forest authorities.[100]

As a result of the NFP, the principal function of public forests has shifted towards conservation and fulfilling the demand for household wood fuel rather than wood production. It is estimated that about half of the wood supply in India comes from private forest sources outside government forestland.[101] Currently, a number of private companies, private forest owners, forest farmers and households with land, are getting involved in raising forest plantations, mostly in the form of agro forestry, where forestry is integrated with crops and livestock.[102] Currently the area of private tree planting covers over six million hectares and plantations mainly consist of eucalyptus and acacia. However it has been widely reported that productivity is very low and as a result, India has become a net importer of industrial roundwood.

Recently India's MOEF announced its draft 'Green India Mission' which envisages doubling afforestation and eco-restoration efforts involving ten million hectares of land across the country over the next ten years at an expected cost of US$9.4 billion. The mission targets all types of forests, grasslands and scrub, mangroves, urban forest land as well as degraded agricultural and fallow land. The mission is expected to reduce national GHG emissions by about six percent.[103]

Although production is minimal, due to the NFP, all the forested states of India have set up forest development corporations, which are responsible for production and processing within the public forest estate. In the private sector, the industry landscape is highly fragmented and most of the production units are poorly capitalized and run on outdated machinery.[104]

FORESTS IN THAILAND

In 1961, the total area of Thailand under forest was 27 million hectares or 53 percent of the country's land area.[105] Since then Thai forests have been heavily deforested through unsustainable timber production, slash-and-burn tactics, shifting cultivation, land resettlement, dam and road construction and agriculture. As a result, forest cover has declined to a level of around 37 percent.

In the last 20 years, deforestation has slowed, mainly due to a logging ban in 1989, although illegal logging and encroachment by agriculture continues. For the first time, Thailand experienced a net gain in forest between 2005 and 2010, amounting to 74,000 hectares.

Since Thailand imposed a logging ban, its forest management approach has had three main objectives:[106]

1. To expand designated protected areas

2. To expand plantations to substitute wood supplies from natural forests

3. To develop community forestry

The majority forest estates in Thailand are owned by the state. The Royal Forest Department (RFD) was established in 1986 to assume the overall management for forest resources and set policy direction. In 1997, the RFD was decentralised to allow greater autonomy for sub-district governmental units to assume the management of forest resources within their boundaries. The Forest Industry Organisation (FIO) is also a significant forest owner.

In order to secure a consistent flow of plantation wood, the RFD launched a series of measures to promote afforestation and the development of plantation forests, with mixed results. In 1994, for example, the RFD launched a forest plantation promotion project that targeted private owners and local famers to establish commercial plantations. Although over 80,000 farmers joined the programme, between 1994 and 2001 the actual planted area was only 169,400 hectares, well short of the initial target of 1.3 million.[107] According to FAO[108] between 2000 and 2010, Thailand managed to increase the overall area of planted forests by 875,000 hectares from 3.1 million hectares to 3.9 million hectares.

The most common species planted in Thai plantation forests are rubber, teak, eucalyptus and acacia mangium. However, the yield of timber is low. Teak plantations take at least 30 years to mature and therefore typically require long rotations. As a result, most are planted in agro-forestry systems.[109] For fast growing-species used for pulpwood, harvesting often occurs only after three to four years and before the trees are mature.

Despite the limited wood resources in Thailand, domestic production is able to meet most of domestic demand, and thus imports are only a relatively small amount of industrial roundwood. The largest segments of the industry in terms of production volume are pulp and paper, sawmilling and particleboard. Thailand is a net exporter of paper and wood-based panels.

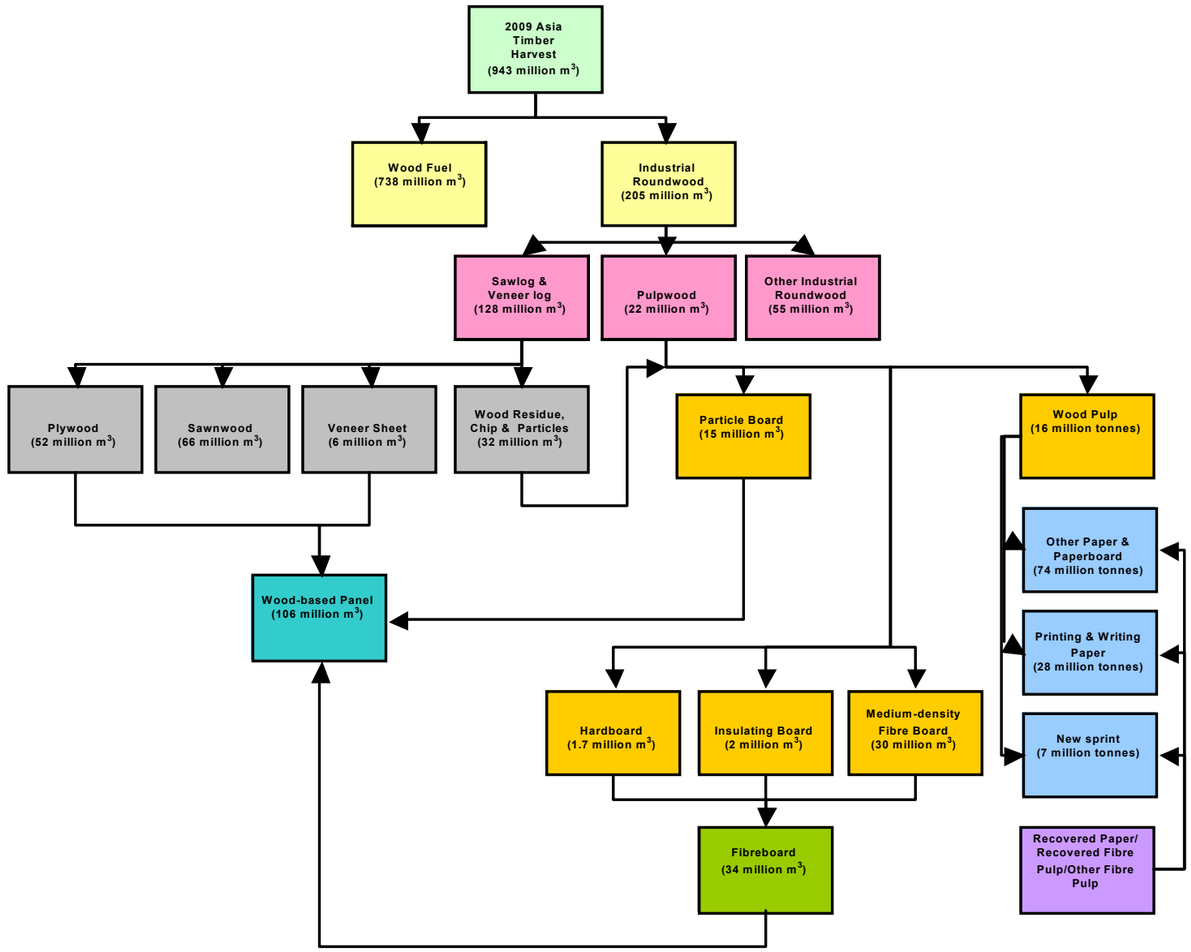
FOREST PRODUCTS MARKET

Overview of roundwood production in Asia

In 2009, around 78 percent of timber harvested in Asia was for fuel wood. The remainder, classed as industrial roundwood, is split between three main categories: sawlogs and veneer logs, pulpwood, and other industrial roundwood. The export of industrial roundwood within and outside of Asia amounted to US$1 billion in 2008.

Approximately 62 percent of industrial roundwood is processed into either sawnwood for industrial purposes or wood-based panels. Any residue is further processed into either particle board or wood pulp. Approximately 11 percent of roundwood is pulpwood used for either production of particle board, fibreboard or wood pulp which is then further processed into wood-based panels or paper. The remaining 26 percent, classified as 'other industrial roundwood', has a range of uses; such as for poles, piling and fencing, among others.

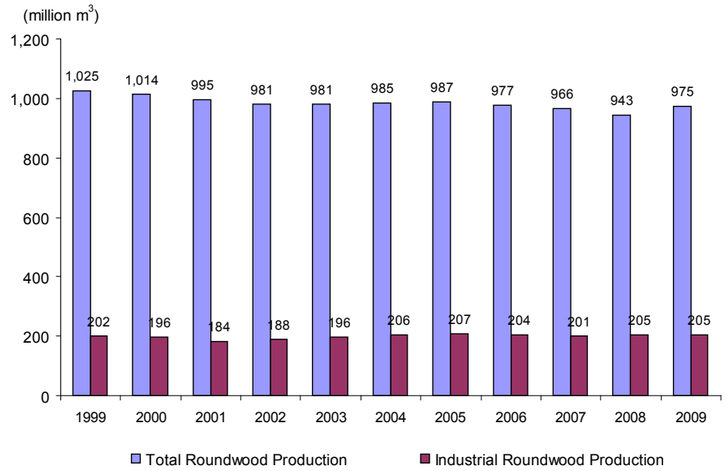
Figure 10: Summary of Asia's Forestry Product Value Chain 2009



Source: FAO (2009),[110] Responsible Research

Excessive logging in the past two decades, as well as changing trends towards more sustainable forestry policies by major producing countries, has led to a marginal decrease in roundwood production.

Figure 11: Asia Total Roundwood Production vs. Industrial Roundwood Production 1999 - 2009

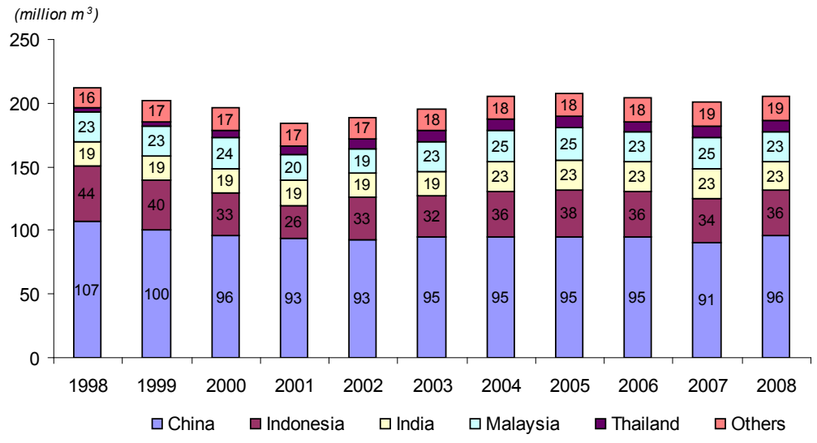


Source: FAO,[1111] Responsible Research

Note: The difference between Total and Industrial Roundwood Production is wood used for fuel.

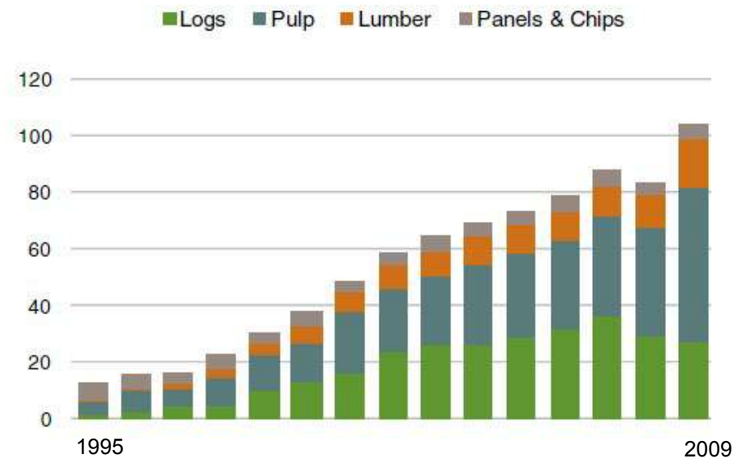
Despite the slow growth in industrial roundwood production, consumption for industrial wood has increased steadily. For example, although China is the biggest producer, accounting for almost 47 percent of production in 2008, the country remains a net importer from both within and outside Asia. This is mainly due to strong local demand as well as China being a low-cost manufacturing base for value-added wood products targeting the export market.

Figure 12: Asian Industrial Roundwood Production 1998-2008



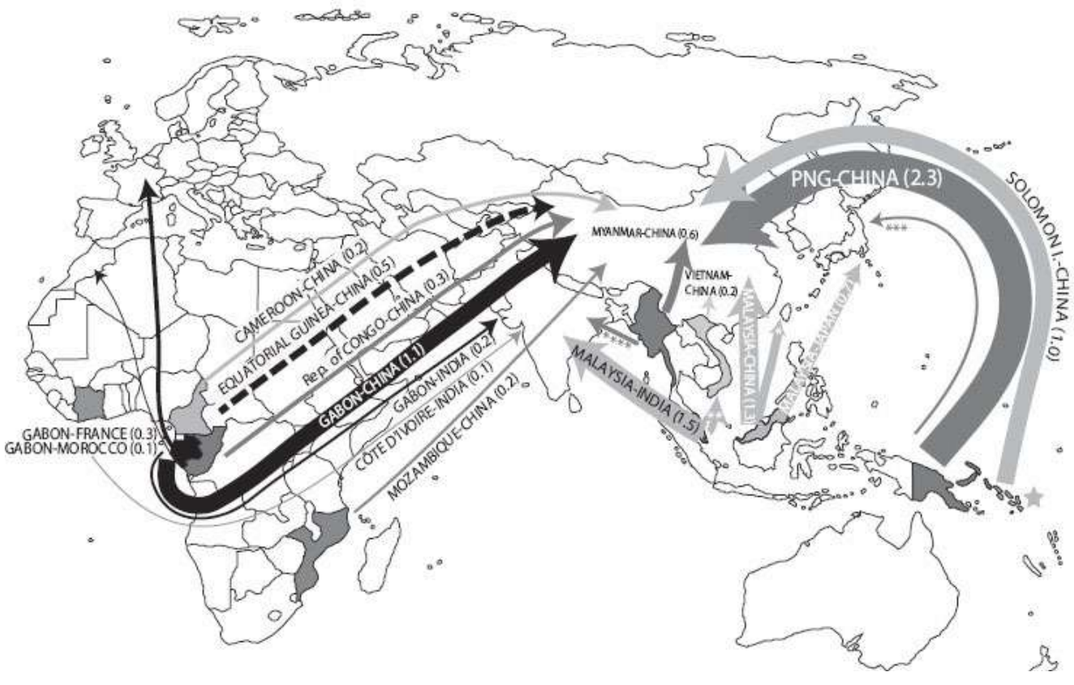
Source: FAO,[112] Responsible Research

Figure 13: China's Growing Timber Deficit (million m3 Roundwood Equivalent), 1995-2009



Source: Sino-Forest Corporation (2010)[113]

Figure 14: Major Trade Flows: Tropical Industrial Roundwood 2007 (million m3)



Source: International Tropical Timber Organisation (2008)[114]

Chinese demand for timber related products is putting tremendous pressure on forestry resources in Asia. Its non-tropical wood imports largely rely on Russia;[115] however this supply is potentially at risk as just before the current economic crisis the Russian government expressed its intention to raise export tariffs from 25 percent to 80 percent. Ongoing supply from Papua New Guinea is also at risk. If current logging rates continue, there will be no supply within less than ten years. Sabah also has virtually no natural forest supply for the next 20 years due to over cutting and Sarawak has overcut its resource such that supplies are also expected to plummet there.

Table 6: Summary of China's Major Importing Partners for Various Wood Products (2007)

Paper and Paper boad		Plywood		Wood Pulp		Industrial Round Wood (Coniferious)	
United States of America	9%	Indonesia	60%	Canada	22%	Russian Federation	90%
Japan	7%	Russian Federation	13%	Chile	13%	New Zealand	7%
Korea, Republic of	5%	Finland	13%	Indonesia	12%	United States of America	2%
Indonesia	4%	Malaysia	11%	United States of America	11%	Australia	1%
Finland	4%	Brazil	3%	Russian Federation	11%	Canada	0%

Source: FAO (2007)[116]

In Malaysia, the Peninsular States and the State of Sabah have suffered significant deforestation and as a result, there is limited new forest land available to logging companies. Most logging activities are now forced to concentrate their activities in the State of Sarawak, where soil quality is said to be inferior to those of the peninsular and Sabah.[117]

In Indonesia, the supply of natural forests for timber production is decreasing and historically there has been a heavy reliance on illegally sourced wood to sustain supplies. The conservation of remaining natural forests and their protection from timber interests is hoped to improve due the following reasons:

- In May 2010, the government of Indonesia agreed a Letter of Intent to impose a two-year moratorium on new natural forest timber concessions in exchange for US$1 billion to be invested in conservation.

- Restoration and Ecosystem (RE) licences were introduced in 2007.[118] These allow the conversion of degraded production forest to a 'concession' where the focus is in resoration and revenue generation from non timber products and environmental services. As a result there is little opportunity cost and little impact on timber supply.

  Due to this NGOs and some carbon speculators are establishing RE anticipating that revenues from carbon credits will pay for restoration and conservation. The first such concession to be established by Barung Indonesia totals around 98,000 hectares in Sumatra. In 2009, the Ministry of Forestry is reported to have received as many applications for forest restoration licenses as it did for logging concessions, and applications for forest restoration totalling a further two million hectares, are now being assessed.[119] Industry experts however note that entities are holding off paying the licence fee until regulations and markets are clearer.

Overall, expansion of natural forest harvesting has slowed in Asia because there is very little left that is economic. Indonesian and Malaysian companies have expanded into China where demand growth will be. They have also expanded into countries like New Zealand partly to gain access to improved forest management systems and FSC certified wood.

Table 7: Asian Forestry companies with overseas forest operations

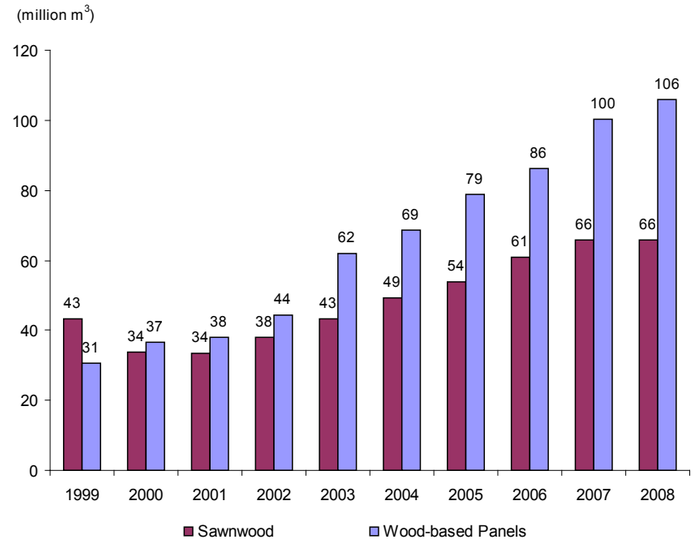
Company	Country of expansion	Remark
Samling Global (Samling)	Guyana, New Zealand and China	Samling's operations in Guyana account for 40 percent of forest under management.
Rimbunan Hijau	Papua New Guinea, Africa, China, Russia, and New Zealand	No additional information available.
WTK Holdings	Brazil, Central Africa and Papua New Guinea	Based on a recent article on WTK[120], but overseas operation was not mentioned in its annual report.
Asia Pulp & Paper (APP)	China	APP's Chinese arm, Gold East, has the fourth largest pulp and paper production facility in China.

Wood Products Sector

Asia's share in the global wood products industry has increased significantly over the last ten years with China driving change. Its total wood products imports rose from US$5.4 billion in 1990 to US$ 20.6 billion in 2006. Meanwhile India's wood products[121] imports rose from US$587 million to US$2.4 billion over the same period.

Regarding specific products, wood-based panel and sawnwood are the biggest intermediate users of industrial roundwood in Asia. Production of wood-based panels in particular has grown substantially, registering a compounded annual growth rate (CAGR) of 15 percent between 1999 and 2008. The growth is driven mainly by China, Malaysia and Thailand, that combined account for 91 percent of production. India is also emerging as a leading producer of wood-based panels, with a CAGR of 28 percent between 1999 and 2008.

Table 7: Total Asian Sawnwood and Wood-based Panel Production

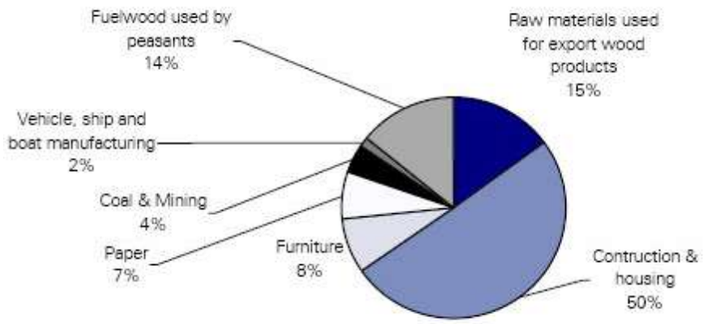


Source: FAO,[122] Responsible Research

1. Construction Industry

The construction industry is a significant consumer of sawnwood and wood-based panels, and demand for wood by the Asian construction industry is robust. Notably in China, approximately 50 percent of wood consumed is used in construction and housing and further industry growth is expected.

Figure 16: Key End Users of Wood in China



Source: Deutsche Bank (2007)[123]

In 2009, the Ministry of Housing and Urban Development budgeted US$9 billion for subsidising the construction of over five million apartments by 2011 in order to alleviate the country's chronic housing shortage. For these new housing units alone, Sino-Forest estimates roughly 800 million to 1.4 billion cubic metres of wood fibre will be required over the next three to five years for fixtures and fittings,including fibre for construction panels, furniture and infrastructure development.[124] This is highly significant when compared to China's total annual wood consumption of 160 million cubic metres in 2008. However, this is also a meagre figure considering that an estimated 300 million rural inhabitants are expected to migrate into cities over the next decade, indicating that a lot more houses will need to be built.

Wood demand and construction in Shanghai

According to FAO, the Yangtze River Delta is one of the Chinese regions undergoing the fastest growth rates in the country.[125] Over the past two decades, significant economic development has resulted in the rapid increase of Shanghai's demand for timber, influenced by the strength of the real estate market.

Shanghai's timber demands fall into two categories:

i) Local construction materials, fixtures and fittings: it is estimated that 30 to 35 million square metres of floor space for commercial residences and other new housing are being built every year, equivalent to 300,000 to 350,000 new apartments, while about 100,000 existing apartments are currently being fitted out and decorated. This has created a demand for timber, plywood and other wood products equivalent to three million cubic metres of logs.

ii) Manufacturing: The timber industry in Shanghai comprises mainly floorboard and furniture producers, which demand around two million cubic metres of logs a year. An additional one million cubic metres of timber is used yearly for construction of mould board, piano manufacturing and handicrafts. In total, Shanghai's demand for timber is about six million cubic metres a year equivalent to around four percent of China's annual wood consumption.

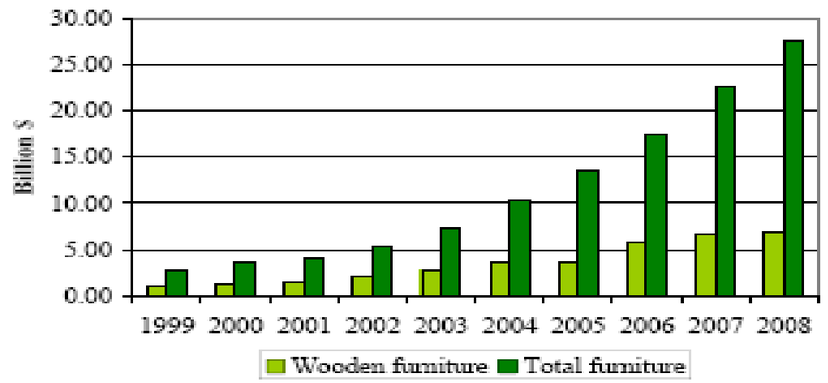
Source: FAO (2007)[126]

2. Furniture

China dominates the furniture industry in Asia

The furniture industry in Asia has developed rapidly over the past 20 years, with China leading the growth. In 2005 the country became the world's largest furniture exporter.[127] By 2008 the value of these exports has grown from US$13.8 billion in 2008, around half of which was destined for the United States.[128] The growth of the overall furniture market remains high with wooden furniture exports following a similar upward trend.

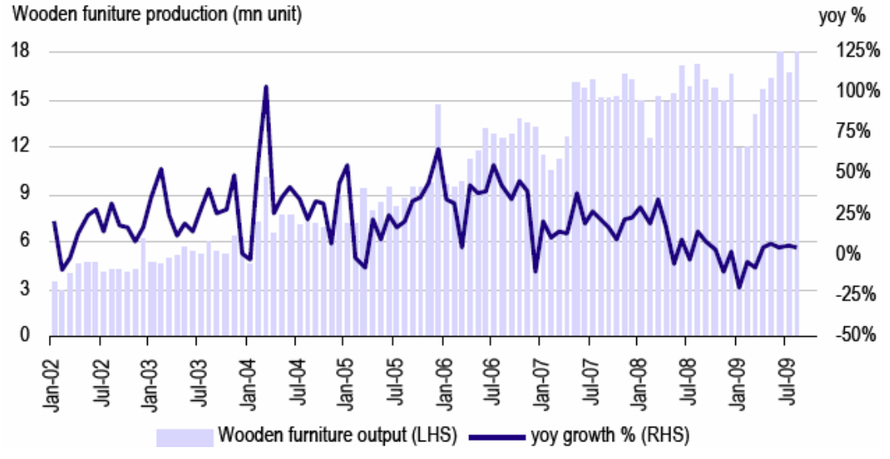
Figure 17: China's Furniture Export Value 1999 – 2008



Source: United Nations (2009)[129]

Domestic demand for wooden furniture is also strong with production growing from just three million units in the beginning of 2002 to around 18 million in 2009. In terms of wood consumption, while an up-to-date figure could not be obtained, as an indicator, in 2002 China's wooden furniture industry consumed 14 million cubic metres.[130]

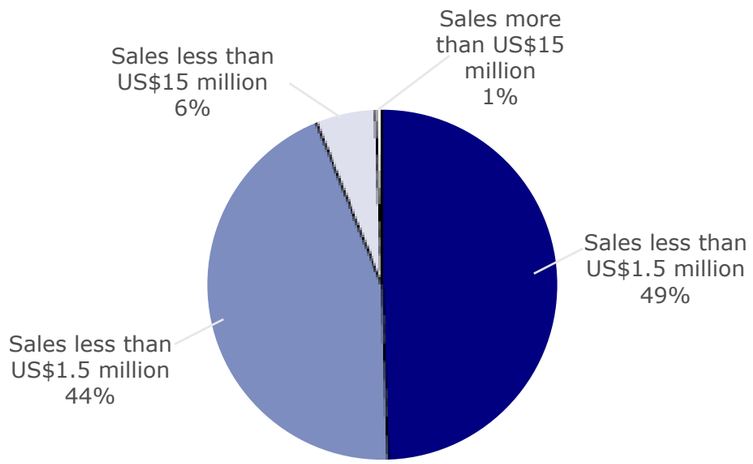
Figure 18: China Wooden Furniture Production



Source: UBS Research (2010)[131]

The wooden furniture industry in China is still highly fragmented with many small players and only one percent of companies in the sector have annual sales greater than US$15 million.[132] Due to the lack of information, we are unable to assess the sourcing practices of furniture companies in China. Nevertheless, we believe that many of them do not manage their supply chain sustainably.

Figure 20: Percentage of Wood Furniture Maker by Sales



Source: Deutsche Bank (2007)[133]

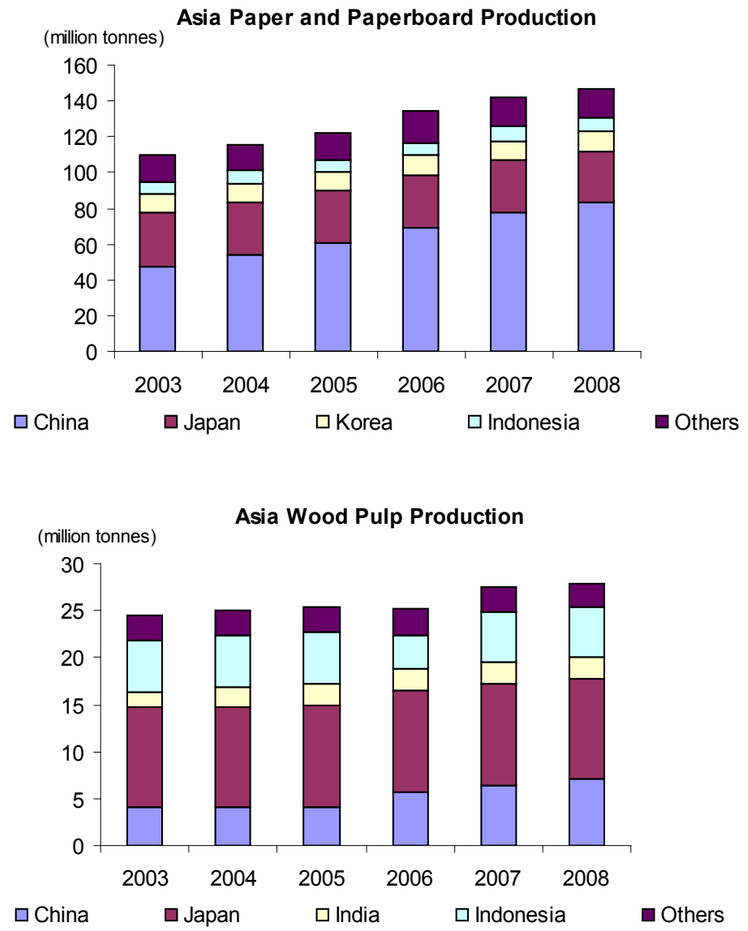
PULP & PAPER SECTOR

Industry Overview

Our review of this sector also includes Japan and Korea mainly due to their status as major importers of wood pulp as well as being large producers of paper and paperboard in the region.

The main paper products using wood pulp include printing and writing paper, packaging (paperboard), tissue and newsprint. The production of paper and paperboard in Asia including Japan and Korea has experienced strong growth in the last five years, with a CAGR at 6.0 percent versus 2.2 percent for the world.[134]

Figure 19: Paper & Paperboard and Wood Pulp Production in Asia 2008



Source: FAO[135]

Raw materials consist of wood pulp derived from wood chips and recovered waste paper. The use and the type of wood varies depending on the type and quality of paper[136] or paperboard. For example in Japan, wood pulp accounts for at least 80 percent of the materials for printing paper[137] whereas in China only 21 percent of wood pulp is used towards overall paper production.

Leading Players in Asia

Table 8: Summary of Key Players in Pulp and Paper in Asia

(USD millions, unless otherwise stated)

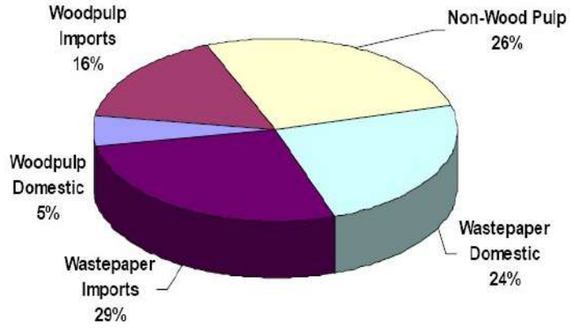
Company Name	Country	Ticker	Market Cap. @14.07.2010	Comments
Nine Dragons	Hong Kong	2689 HK Equity	6,432	
OJI Paper	Japan	3861 JP Equity	5,104	
Lee & Man Paper	Hong Kong	2314 HK Equity	3,260	
Nippon Paper	Japan	3893 JP Equity	3,104	
Shangdong Chenming	Hong Kong	1812 HK Equity	1,822	
Hokuetsu Kishu	Japan	3865 JP Equity	1,025	
Vinda	Hong Kong	3331 HK Equity	893	
Gold East	China	N/A	Non Listed	Affilated to APP. Oringinally planned for listing but aborted partly due environment issue.
APP	Indonesia	N/A	Non Listed	Sinar Mas Group, controlled by Widjaja Family
APRIL	Indonesia	N/A	Non Listed	Raja Garuda Emas International, controlled by Sukanto Tanoto

Source: Bloomberg, Responsible Research (2010)

China

In 2008, China took over the United States to become the world's largest paper and paperboard producer and accounted for 57 percent of Asian production. China is also a major importer as well as producer of wood pulp. It's supply comes mainly from Canada, Chile, Indonesia, Russia and the United States.[138]

Figure 20: Source of fibre for China's paper production



Source: China Paper Almanac (2004)[139]

The paper industry in China is relatively fragmented with the top five players accounting for around 18 percent of total market share. The remainder consists of a very large number of small manufacturers with capacity of less that 78,000 tonnes per annum.

Table 9: Production Capacity of the Top Five Paper Manufacturers in China

	2007	2008	Growth (%)	Mkt Share
Nine Dragons	3.8	4.4	16%	5.5%
Shandong Chenming	2.9	3.1	7%	3.8%
Lee & Man	2.4	3.0	26%	3.7%
Gold East Paper (APP)	2.2	2.3	5%	2.9%
Shangdong Sun Paper	1.4	1.6	15%	2.1%

Source: JP Morgan (2010),[140] Responsible Research

Indonesia

Indonesia ranks third for wood pulp production and fourth for paper and paperboard production in Asia. Indonesia's pulp prices are among the most competitive in the world. Indonesia's pulp prices are among the most competitive in the world. Approximately 50 percent of Indonesia's wood pulp production is exported and we estimate that around 20 percent of this is destined for China.[141] Given the extent of illegal logging in Indonesia, and the fact that China is believed to be a significant importer of illegal wood, it is reasonable to assume that a portion of the pulp being used by China's paper companies is illegally sourced.

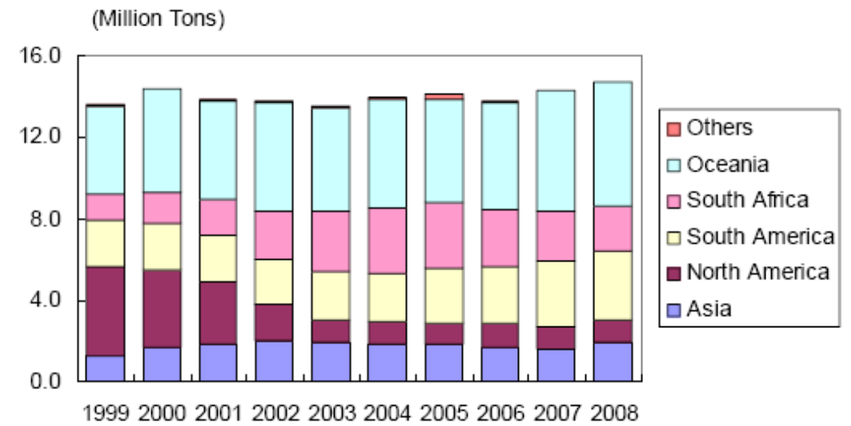
The pulp and paper industry in Indonesia is dominated by two highly influential local families through APP and Asia Paper Resources International Limited (APRIL), who together account for 72 percent of the country's pulp capacity. These two companies are therefore the most significant players in shaping current sustainability practices in the industry. Highly integrated these companies source raw material from related firms and from their own plantations which may contain natural forest. Through a related company, Sino Mas Forestry, APP indirectly controls 2.4 million hectares, whilst APRIL controlled 0.9 million hectares, as of the financial year ended 2007, the latest available figure.

The remaining 28 percent of Indonesia's pulp and paper industry consists of a large number of companies with capacity of less than 150,000 tonnes per annum.

Japan

Japan is Asia's second largest paper producer accounting for 25 percent of production. Japanese paper companies generally produce their own pulp using wood chips imported from around the world. The majority of its raw materials are imported from Australia, New Zealand, South America and other parts of Asia.

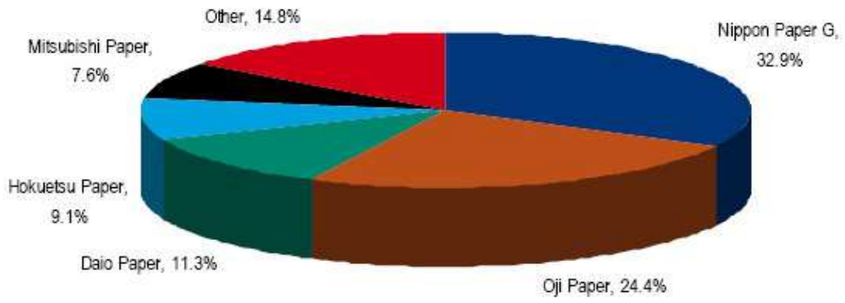
Figure 21: Breakdown of Wood Chips Imports into Japan from Around the World



Source: Bank of America Merrill Lynch (2009)[142]

Within the paper and paper board industry in Japan, 'printing' paper is the largest segment, accounting for 39 percent of overall market by volume in 2008. Japan's printing paper industry is highly concentrated, with the top three companies dominating 69 percent of market share and the top five, 85 percent.

Figure 22: Market Share of Key Players in Japan's Printing Paper Industry 2008



Source: Bank of America Merrill Lynch (2009)[143]

Overall processing capacity increasing beyond sustainable limits

Over the past twenty years, both Chinese and Indonesian pulp and paper companies have been aggressively expanding their pulp and paper production capacity without necessarily giving full consideration to the sustainability of the raw material inputs. This has taken its toll on natural forests and exacerbated illegal logging activities.

Between 1990 and 2008, Indonesia accessed global capital markets to increase its pulp processing capacity from one million tonnes[144] per year to around eight million tonnes.[145] Industry figures estimate that, in 2005, more than 70 percent of wood used for pulp production was derived from mixed tropical hardwood from 'degraded' natural forests.[146]

Based on FAO's 2008 figures for pulp production, Indonesia produced 5.2 million tonnes of pulp, or just 65 percent of installed capacity. Whilst demand for pulp globally remains robust, this shortfall in capacity utilization is a result of insufficient wood supplies. Despite this, in December 2006, the Indonesian government announced its intention to expand the country's capacity to 18.5 million tonnes by 2020, as well as paper and paperboard capacity from 6.5 million tonnes to 16 million tonnes.[147] In other words, by 2020, Indonesia will need 72 million cubic metres of wood per year (against the current 32 million cubic metres) in order to keep Indonesia's pulp processing machines running at full capacity.[148]

Figure 23: Existing and planned pulp and paper mills in Indonesia



Source: CIFOR (2010)[149]

We believe there is still no formal mechanism for the Ministry of Industry, which issues mill licenses, to coordinate with the Ministry of Forestry to ensure that national mill demand is in check with the legal supply of timber. Without doubt, Indonesia's forest resources are under considerable strain.

Case study: Pulp constraint at APP and APRIL

Recent analysis by industry expert, Chris Barr from Woods & Wayside International, indicates a worrying shortfall of wood supplies to satisfy Indonesia's pulp capacity. Barr cites APP and APRIL as having developed two of the world's largest pulp mills in Riau Province, Indonesia, which consume in excess of ten million cubic metres of wood per year.

APRIL's Riau Andalan Pulp & Paper (RAPP) mill has a 2.5 million tonne capacity and, according to Barr, is committed to source 100 percent of wood supplies from plantation forests which would mean developing some 330,000 hectares of fast growing trees. Despite this commitment, for fiscal year 2008 APRIL was still budgeting 1.2 million tonnes of pulp supply to be met through felling of natural forest indicating a significant shortfall in plantation wood.

Furthermore Barr reports that APRIL is planning to expand its RAPP mill to four million tonnes capacity per annum and concurrently expand its net plantable area to 1.2 million hectares in Riau, which seems somewhat ambitious. The question remains as to how the company is going to secure a sustainable supply of timber.

Source: CIFOR (2008)[150]

Note: Responsible Research analysts reviewed the APRIL and APP websites but found no comment on the above plans. The companies, however, say they are completely committed to sourcing from plantation forests.

Pulp and paper production capacity has also increased substantially in China. In its tenth five-year plan announced in 2001, the government stated its intent to increase paper capacity by 14 million air-dried tonnes per year by 2010.[151] To implement these targets, in 2001 the National Development and Planning Commission (NDRC) issued a list of 42 priority pulp and paper projects which would involve approximately US$24 billion in investment from both domestic and foreign sources by 2010. The incentives are in the form of discounted loans, with interest rates significantly lower than the standard loan interest rates set by the Central Bank and an extended repayment period of 10-15 years.

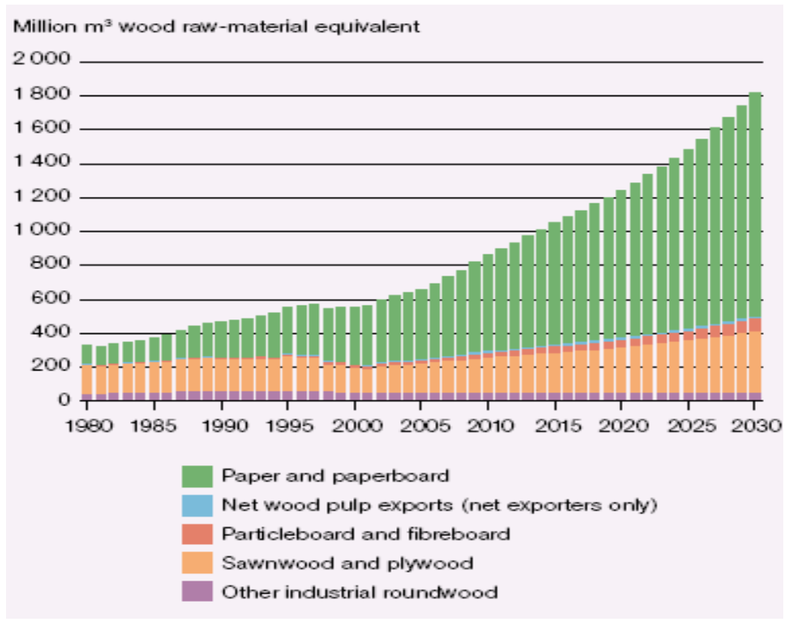
As a result, some parts of China have developed large-scale mills before fully securing a sustainable wood supply.[152]

Outlook for the forestry sector

The outlook for forestry in Asia looks positive when viewed in light of the level of forecast wood consumption which, despite the global economic crisis, is expected to remain strong, at least for the foreseeable future. As demonstrated, China is expected to take the lead, especially within the construction sector.

The paper segment is also expected to grow rapidly. FAO expects that paper and paperboard will become a much larger user of wood.

Figure 24: Projected Demand for Wood Raw Material, Asia and the Pacific



Source: FAO (2010)[154]

ISSUES FOR RESPONSIBLE INVESTORS

ENVIRONMENT

WOOD SUPPLIES UNDER PRESSURE

Demand for forest products is on the rise in Asia due to a combination of increasing urbanisation and rising income levels. To meet this demand, forest-rich countries in the region are encouraging the expansion of timber related production capacity arguably beyond its sustainable threshold.

At the same time, competition for forestland in Asia is intensifying as a range of industries such as agriculture, palm oil and mining seek to expand their activities in forested areas. Governments in the region are, however, beginning to recognize that deforestation at current levels is unsustainable, and some are introducing policies to mandate protection of natural forests or, at a minimum, financially encourage their restoration. The overall result is a critical shortage of legal and sustainably managed wood supplies.

Aggressive expansion of palm oil has driven deforestation across tropical Asia

In recent years the palm oil industry has expanded aggressively across Asia, contributing to deforestation. Responsible Research will cover this issue and other social and governance issues in the palm oil sector in its upcoming sector report on Palm Oil in Asia.

In 2003 global crude palm oil (CPO) production was 28 million tonnes but by 2008, it had reached 43 million tonnes, registering a CAGR of nine percent of which 86 percent came from Indonesia and Malaysia. Recently it has been estimated that global demand for palm oil will double by 2020.[154] The growth of palm oil production has outpaced the expectations of many industry observers, including NGOs.[156]

Table 10: World Crude Palm Oil Production 2003 – 2008

('000 tonnes)

	2003	2004	2005	2006	2007	2008	5-Year CAGR
Indonesia	10,600	12,380	14,100	16,050	17,270	19,330	12.8%
Malaysia	13,355	13,976	14,962	15,881	15,824	17,734	5.8%
Thailand	690	735	700	860	1,020	1,170	11.1%
Papua New Guinea	326	345	310	365	384	400	4.2%
Rest of the World	3,288	3,551	3,774	3,986	4,176	4,484	6.4%
TOTAL	**28,259**	**30,987**	**33,846**	**37,142**	**38,674**	**43,118**	8.8%

Source: Adapted from Malaysian Palm Oil Board (MPOB) data[157]

Palm oil is extremely versatile and used in a wide range of products including many foods, cosmetic products soaps, toothpaste, and even engine lubricants and biofuels. It is now found in some form in around ten percent of products sold in European supermarkets.[158] In recent years CPO has increasingly been used as a raw material in a biodiesel production, largely in response to increasing oil prices and concern over fossil fuel scarcity. Biodiesel is growing in popularity due to its biodegradable properties and low direct GHG emissions, excluding those arising from deforestation.

Currently, the European Union is the biggest market for palm oil, importing 4.9 million tonnes of CPO in 2008 and accounting for 16 percent of world imports. This is partly due to ambitious mandates by the EU government for the use of renewable energy, as defined in the Renewable Energy Directive,[159] which requires a 20 percent share of renewable energy in the total energy supply mix and ten percent in the transport sector by 2020. The United States remains a relatively small consumer of palm oil for biodiesel but demand is growing substantially.

The profitability of palm oil production is such that palm oil growers can generally pay more to secure suitable rural land than other land users. Although the industry often claims to establish plantations on land already used for agriculture, palm oil has been a major factor in the drastic loss of forest over the past 30 years. In both Indonesia and Malaysia, new plantations are often established on newly cleared rainforest and peat-swamp forests instead of on degraded land or disused agricultural land, such as old rice paddies or old plantation.[160]

While it is persistently argued that palm oil can grow on degraded land and should therefore be a net positive in the carbon equation, the conversion of natural forest continues because it costs much more to prepare and treat disused agricultural land for palm oil than it does to clear new land. A further incentive in many cases is that the plantation company can finance its new planting by logging and selling valuable tropical timber trees.

In 2007 Indonesia surpassed Malaysia as the world's leading palm oil producer. To date roughly 7.9 million hectares of palm oil plantations have been planted in Indonesia and another 2.1 million hectares are planned to be established by 2020,[161] with much of this expansion expected to take place on forested peatlands. The draining of peatlands to make way for palm oil plantations has been blamed for releasing millions of tonnes of carbon dioxide into the atmosphere. In the province of Riau, where a quarter of palm oil plantations in Indonesia are located, approximately one-third are estimated to be developed on peat and another three million hectares of peatland forests are earmarked for conversion over the next decade.[162]

In Malaysia, the size of palm oil plantations has doubled from two million hectares in 1990 to 4.3 million hectares in 2007,[163] largely through the conversion of non-forest cropland. The proportion of palm oil grown on cropland increased from 46 percent in 1990 to 76 percent in 2007. However, as supplies of non-forest cropland run out, palm oil is likely to start competing in earnest for forestland with logging companies.

Demand for agriculture products and biofuels increases pressure on land resources

In emerging market countries, growing populations and strengthening economies are increasing the demand for food for meat, dairy products as well as rice, pulses and vegetables, thereby increasing pressure on land resources.[164] In 2008 the Indonesian Ministry of Forestry indicated that the area of forest land altered to agricultural land was about 77,217 hectares, and in 2007 and 2006 it was about 73,000 and about 151,000 hectares, respectively.

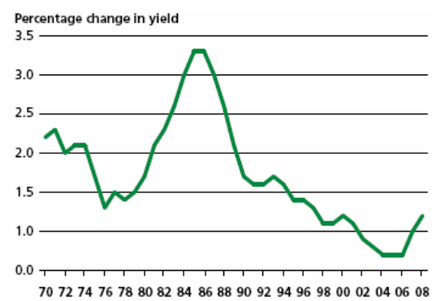
Over the last thirty years, improved technology and intensification of farming methods have increased agricultural yields significantly. However, yield improvements appear to be slowing, partly due to a lack of private sector funding for research and development and also a changing climate.

Figure 25: Percentage Yield Change for Wheat and Rice

Wheat



Rice



Source: FAO (2009)[166]

In 2008 there were signs that supply was beginning to fall short of demand with commodity prices reaching an all time high. Prices started to fall only when the credit crisis struck.

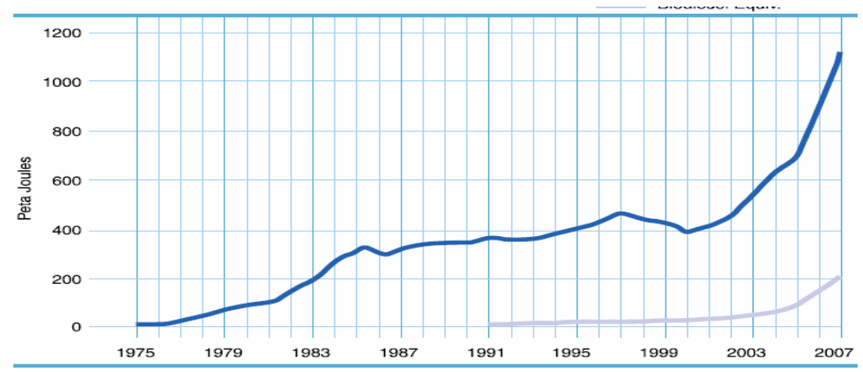
Figure 26: Historical Global Agriculture Commodity Prices



Source: FAO (2009)[167]

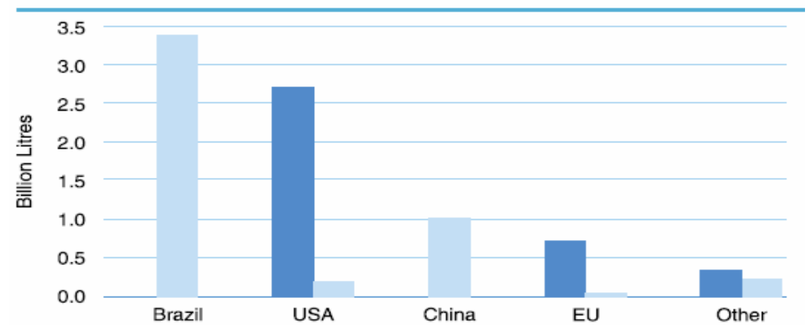
Demand for biodiesels (through palm oil) and bioethanol (through sugar crops) is also intensifying pressure for land resources. As interest grows, forest-rich countries in Asia, notably China, are responding in earnest. China, exported around one billion litres of bioethanol in 2006 and as global demand continues to increase, competition for agricultural land is only likely to intensify.

Figure 27: Global Bioethanol and Biodiesel Production 1975 -2007



Source: United Nations Environmental Programme (UNEP) (2009)[168]

Figure 28: International Trade in Ethanol 2006



Source: United Nations Environmental Programme (UNEP) (2009)

Gold, copper, diamonds and other precious metals and gems are increasingly being discovered in areas covered by rainforest, particularly in Indonesia. Much of the most commercially viable mineral ores and metals are found in forestlands, especially, it seems, in areas designated as protected forests.[169] In 2005 mining was estimated to be taking place across 11.4 million hectares of forests in Indonesia, of which 75 percent were in protected forests and the remainder in conservation areas.[170]

In 1999, in an effort to reduce deforestation, the Forestry Law prohibited open pit mining in forestlands. However, in 2004 after fierce lobbying by Indonesia's powerful mining industry, the government clarified that all mining contracts or licenses made prior to the issuance of the 1999 Forestry Law were still valid.[171]As a result, 13 mining companies that had acquired a mining contract or license in protected or conservation forest areas before the enactment of the 1999 Law were allowed to continue their activities.

Furthermore, in March 2010 the government issued new regulations that allow underground mining in protected areas.[172] The new rules will also allow activities such as power plants, renewable energy projects and transportation such as toll roads to be built in protected forests.

Forest lands are an important source of mineral ores and metals

Indonesia: In 2000, coal and mineral mining contributed approximately to three percent of Indonesia's total government revenue and three percent of its GDP. By 2007, this had increased to approximately eight percent and four percent, respectively.

The export of ores and minerals increased from US$3.2 billion in 2000 to US$7.2 billion in 2005, a CAGR of 18 percent. Indonesia is the third largest coal producer in the world, after Australia and China.

Source: Stimson. (2009). Exploiting Natural Resources: Growth, instability and conflict in the Middle East and Asia.

Case study: Mining in Kalimantan exacerbates existing deforestation

Kalimantan in Indonesia has rich coal deposits. In the eastern part of the province, loggers who in the 1980s had extracted timber, adapted their business in the 1990s to exploit coal deposits within forests. In the last six years, 1,212 permits have been issued to small-scale coal mining companies and 33 licenses to large companies in the area. Today, coal production in East Kalimantan amounts to 120 million tonnes per year, accounting for 70 percent of Indonesia's coal production.

Source: The Jakarta Post (2010)[173]

The impact of the mining itself is often quite small in terms of area and so it can seem quite inconsequential. But the roads open up areas for exploitation and the damage to waterways can be extreme and long lasting.

UNSUSTAINABLE FOREST MANAGEMENT

Exploitation of forest resources with High Conservation Value

Asia's natural forests are some of the most biologically diverse in the world and have significant conservation value. They are important in terms of forest genetic resources and are the last refuge for many critically endangered species. Malaysia and Indonesia's rich and diverse tropical rainforests in particular are recognized internationally as biodiversity hotspots of global importance.

In 1999, The Forest Stewardship Council (FSC) introduced the term High Conservation Value Forest (HCVF) in the context of forest certification. HCVFs are not certified as such, rather these areas are identified by companies and NGOs as areas of high conservation value due to biodiversity, cultural and landscape significance. HCVFs include the following qualities:

i) have globally, regionally or nationally significant concentrations of biodiversity

ii) have globally, regionally or nationally significant large landscape-level forests

iii) are in or contain rare, threatened or endangered ecosystems

iv) provide basic services of nature in critical situations

v) are fundamental to meeting basic needs of local communities

vi) are critical to local communities' traditional cultural identity

Since 1999, the term has been used more broadly in corporate environmental policies and in government planning processes.

National parks and conservation areas try to afford protection for some of these areas – in theory at least. Despite this, it is not uncommon to find areas of HCVF in forest concessions as well as areas slated for conversion, which will result in the degradation of these important forests.

Responsible forestry companies should first identify areas of HCVF within and in close proximity to their operations. Second, they should ensure that sensitive business practices be maintained or even enhanced through sustainable forest management. Areas of HCVF then are not necessarily no-entry zones, but do require careful management. As such, the presence and management of HCVF areas are useful performance indicators to investors, and HCVF assessments should be a basic part of due diligence for those interested in investing Asia's forestry sector. The Responsible Research forestry sector benchmarking with the Asian Sustainability Rating includes specific criteria on certification and on management of HCVF.

Reports of poor forestry practice in HCVF areas include the following examples:

- APP/Sinar Mas Group (April 2010): The Kerumutan peat forest in Sumatra is the last refuge for the endangered Sumatran elephant and the critically endangered Sumatran tiger. APP and Sinar Mas have allegedly cleared natural forest in this area. According to Eyes of the Forest, an NGO, if forest clearing is not halted in the area, both the Sumatran elephant and tiger could become locally extinct in a few years. Most of Sumatra's decline of local elephant herds, from 1,400 to less than 200, happened where large areas of forest were lost or severely fragmented.[174]

- APP/Sinar Mas Group (January 2008): according to the London Zoological Society, Bukit Tigapuluh is the only remaining area of dry lowland forest in Sumatra. Its home to over 100 orangutans reintroduced into the area after decades of research as well as 100 of the 400 surviving Sumatran tigers and 65 critically endangered Sumatran elephants, among other endangered species.[175] In 2008, a number of local and international organisations[176] including the Frankfurt Zoological Society and the Zoological Society of London called on APP/SMG and their associated companies to stop threatening the forest, its wildlife and the indigenous people, the Orang Rimba and Talang Mamak, who live there. APP is alleged to have built a highway through the forest to facilitate the logging in the area.

In May 2009, APP issued a statement refuting the allegations.

In November 2009, the Roundtable on Sustainable Palm Oil (RSPO) passed a resolution to expel any member that cleared forest in the Bukit Tigapuluh ecosystem.[177]

- PT WKS (November 2007): PT WKS was alleged to have cleared forest in the Bukit Tigapulu forest landscape to make way for plantation development in contravention of forestry regulations. NGOs have argued that the forest should be considered as HCVF and called for a definite landscape and HCV F assessment to identify all such areas.[178]
- Indah Kiat (January 2007): In 2007 the Rainforest Alliance terminated a contract with Indah Kiat to identify and monitor HCVF. Indah Kiat, which is part of the APP Group, buys its raw material from Sinar Mas Forestry. In a public statement, Rainforest Alliance wrote that Indah Kiat 'has not demonstrated a comprehensive, consistent or dedicated approach toward conservation management necessary to maintain or enhance the forest ecosystems fundamental to the survival of the HCVFs present there. Changes in HCVF boundaries, including some clearing of HCVFs identified for conservation, have occurred, which directly contravenes agreements between APP and the Rainforest Alliance.'[179]

Guidance on good practice can be found in a range of toolkits and guidance documents provided by the HCV Resource Network.[180]

The Asian tropical timber trade is focused on numerous tree species from several genera, some of which are threatened. Protected species, such as merbau, are also illegally traded (See below).

Table 11: Tropical Timber Species with Endangered Conservation Status

Meranti	Indonesia, Malaysia, Philippines	Of the 58 species of meranti on IUCN's REDD list, 65% are classed critically endangered and 29% classed as endangered – IUCN indicates that all species require updating
Seraya	Indonesia, Malaysia, Philippines	Of the 5 species of seraya on IUCN's REDD list, three are classed critically endangered, 2 are endangered – IUCN indicates that all species status require updating
Ramin	Indonesia, Malaysia	Heavily logged in vulnerable peat swamps & protected areas, especially prime endangered orang-utan habitat; on CITES Appendix II since 2002 (i) IUCN status: vulnerable, status needs updating
Teak	India, Indonesia, Malaysia, Myanmar, Philippines, Thailand- from planted forests	Decades of commercial logging & land clearing have sharply reduced habitat; most natural forest teak traded internationally is from Myanmar, where its trade has reportedly helped to fund the military junta (i) Some teak plantations in Indonesia provide FSC-certified supply
Keruing	Indonesia, Malaysia, Cambodia; India Myanmar; Philippines; Thailand; Viet Nam	Of the 46 species on IUCN's red list 34 are critically endangered and 5 are endangered. All species status, however, now require updating.
Merbau	Indonesia	Few natural stands survive. Currently under review for CITES protection; in Indonesia and Papua New Guinea, the object of large scale illegal logging and exploitation of communities (i)IUCN status: vulnerable (but possibly not assessed recently?)

Sourced from http://www.unctad.org/infocomm/anglais/timbertrop/characteristics.htm#asian. Sourced from Natural Resources Defense Council: http://www.nrdc.org/land/forests/woodguide.asp The IUCN Red List of Threatened Species™ provides a globally recognized listing of the conservation status of plant and animal species globally. This system is designed to determine the relative risk of extinction

Poor management practices can affect long-term sustainability

According to FAO, poor harvesting practices common in the tropics have ultimately contributed to the over-exploitation and degradation of forests. Poor management practices may also directly affect the productivity of plantation forests. In 2006, the Centre for International Forestry Research (CIFOR) estimated China's round wood production to be around 200 million cubic metres by 2015, versus China's State Forestry Administration's estimate of 328 million cubic metres. The difference, according to CIFOR, is attributed to poor soils, low quality stocks, sub-optimal silviculture management and high transportation costs.[181]

Examples of typically poor sustainable forestry management practices include the following:

Creating short cuts	According to an industry insider, companies often build access roads which simply cut cross the forests, disturbing HCVF and damaging trees and other flora along the way.
Poor harvesting techniques	Poor timber harvesting techniques can directly affect yields and remove nutrients that are important for subsequent harvesting cycles. In natural forests, erosion of topsoil generally results when the protective soil cover and anchoring roots are removed. Further erosion may occur especially where large leaved species such as teak funnel water onto bare soil surfaces.[182] In plantation forests, soil erosion often occurs following harvesting, when soil is exposed to erosion from rain and wind.[183]
Neglecting to leave riparian buffer zones	There are plant habitats along river margins and banks that preserve water quality, control erosion and provide important wildlife habitats as well wildlife corridors.

To ensure that forest assets are managed sustainability, some companies employ Reduced Impact Logging (RIL), which is defined as 'intensively planned and carefully controlled implementation of harvesting operations to minimize the impact on forest stands and soils, usually in individual tree selection cutting'.[184]

Practitioners estimate that RIL can reduce damage residual stands by as much as 50 percent. On the ground, this means employing practices such as planning skid trails to minimise disturbance to vegetation.

A relatively small number of companies in Asia are thought to practice RIL given that it tends to be more difficult to implement and is generally more time consuming and expensive. By adopting, RIL however, companies are moving closer to meeting the requirements of certification. In Sabah, for example, RIL has been implemented successfully across a number of forest management units including the 50,000-hectare Deramakot Forestry Reserve. The Forestry Department intends promoting the use of RIL techniques to forest concession holders.

Interest in RIL also appears to be growing. In 2009 the Nature Conservancy indicated that an increasing number of operators in Indonesia have been requesting training and 29 MOUs with concessionaires have been signed.

Table 12: A Review of Sustainable Policies and Practices amongst Asian Forestry Companies

Ta Ann	"All activities are carried out with minimal risk to the environment" and RIL is applied to both reforestation and development stages. The company is working toward FSC certification and is the first publicly listed company in Sarawak to join the Global Forest and Trade Network - Malaysia to implement sustainable forest management and pursue forest certification in multi phases. Source: Ta Ann annual report (2009)
Samling	Samling practices selective harvesting methods by only harvesting mature, commercial trees of a specific diameter on a rotational cycle. Harvested areas are then closed for a prescribed period of time before the next harvest cycle in the same area to provide younger trees a chance to grow to their full commercial potential, while removing aged trees that would otherwise die naturally, allowing forests to regenerate naturally. Samling also uses helicopter-harvesting to minimize disturbance. This involves lifting cut logs vertically from the forest to a landing zone, thereby eliminating the need for skid trails that would further damage the forest floor. Source: Samling IPO prospectus (2007) and website
Sumalindo Lestari	Sumalindo indicates that it practices RIL in all of its concessions and also has a comprehensive sustainability plan for all of its concession (see case study below). Source: Responsible Research conversation with company representative (2010)
APRIL	APRIL uses the Mosaic Plantation Concept (MPC)[185] as a solution to forest degradation in Indonesia. This technique is designed to ensure that no biological, ecosystem service, social or cultural values are compromised as a result of plantation development.[186] HCVF assessments are undertaken to ensure that plantations do not threaten any HCVFs and that only non-HCVF areas are converted. Through the MPC, APRIL and its partners have contributed over 240,000 hectares of protected natural forest to Indonesia's conservation landscape, setting aside up to 60 percent of their total concessions. Source: APRIL sustainability report (2008)
WTK Holdings	WTK adheres to proper engineering specifications for the planning and construction of roads for its forest operations, and in areas where required, carries out Environmental Impact Assessment studies to ensure its timber operations are conducted with minimal environmental impact. WTK also employs helicopter harvesting. Source: WTK Holdings annual report (2008)
Subur Tiasa	Based on the company's website, the company has no forestry management certification but practices sustainable forest management in its concessions. Trees are felled selectively to facilitate natural regeneration. Only a handful of high value dipterocarp species are extracted; selected trees are left for regeneration purposes. The company also uses selective extraction to create gaps for sunlight penetration to stimulate regeneration of the under-storey. The remaining trees are left for the next cutting cycle and to act as a shelter to the forest and sustain the biodiversity within. Areas with insufficient stocks are subsequently supplemented by planting seedlings of local species. Source: Subur Tiasa annual report (2008)

Numerous guides have been developed on sustainable forest management, and certification systems have been created that provide independent verification that a particular forest management unit is being managed sustainably. The IFC also publishes a guideline on controls to minimize soil erosion during harvesting.

Case study: Sumalindo's six-step process for plantations and natural forests:

	Natural forests with plantation forests	Plantation forests
Step 1	Submit application for management unification between HPH and HTI	Verify boundaries with stakeholders
Step 2	Boundary verification through participatory mapping	Arrange legal affirmation of borders to secure area
Step 3	Identify HCVF and key biological areas	Identify HCVF and key biological areas
Step 4	Environmental impact analysis	Develop plans for the plantation with regards protection of biodiversity, unique and endangered ecosystems
Step 5	Redesign concession area	Develop a chain of custody system by chaining and bench marking supplier companies
Step 6	Self assessment	Self assessment or by an independent consultant

In addition to the above, Sumalindo has also been working with the Central American and Mexico Coniferous Resources Cooperative (Camcore), a leader in conservation and domestication of forest genetic resources for sustainable economic, ecological, and social benefits.

Source: Sumalindo website with rewording of key phrases for clarity[187]

Of the 25 companies benchmarked for this report, 16 state that they have ISO 14001 certification for varying scopes of activity, while two have FSC certification for defined forest management units. Only Sumalindo appears to have both.

This may seem confusing to those unfamiliar with the standards since both relate to environmental management. FSC certification is awarded for forestry units as opposed to the company's overarching environmental management system. On the other hand, ISO 14001 is a process-oriented standard where a 'management system' is certified for a specified scope of activities. Since it is not a performance standard, two organisations may both be certified but have very different levels of performance. Certification simply implies that an organisation is in compliance with all relevant laws, and that it has a system in place to identify, assess and manage its significant environmental aspects on an on-going basis with a view to continual improvement.

ISO 14001 does not equal sustainable forestry management

Whilst an organization achieving ISO 14001 certification does not necessarily mean it has reached a high standard of environmental performance, it does indicate that the company is committed to environmental protection and has an effective, management system in place. By virtue of the system's requirements, the company should also have much of the necessary environmental data relating to its activities that can feed into the due diligence process.

However, a word of caution is needed. Certification is voluntary and a company wishing to be certified selects its own auditor. Furthermore, despite being accredited by an international body, different certification bodies apply different levels of stringency to the process, such that companies that want less scrutiny may pick a specific certification body. Finally, given the extent of corruption in some Asian countries and the practice of maintaining a double set of books (as is widely reported in China), we speculate that not all 14001 certifications are necessarily deserved.

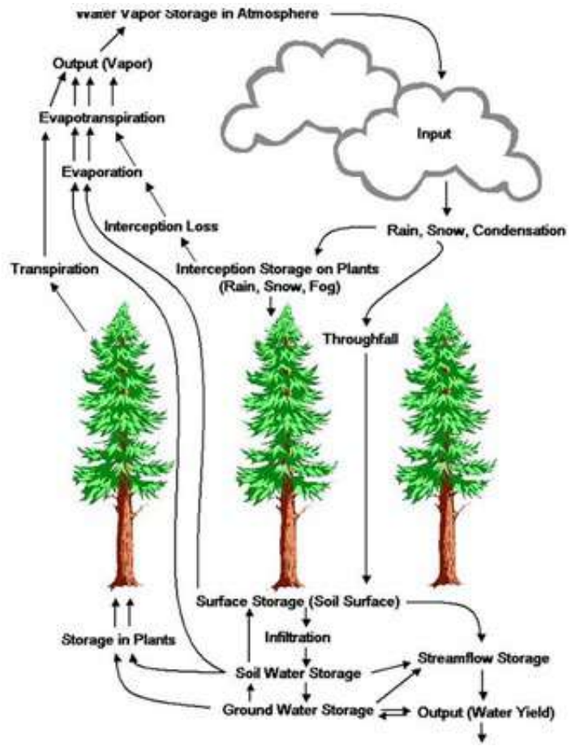
IMPACTING WATER RESOURCES

Forests, protecting a valuable resource

About 4.6 billion people worldwide depend on supplies from forest systems for all or some of their water.[188] This is largely a result of the important role forests play in the hydrological cycle through intercepting precipitation and influencing the amount of water in soils, the atmosphere and nearby water bodies. It is estimated that forest systems are associated with the regulation of 57 percent of total water runoff, through a variety of processes. As such, the world's forests have been likened to a giant sponge, filtering and recycling this valuable resource. Consequently, deforestation can have a significant impact on local watersheds that rely on this system for regulation.

The forest canopy for example, can absorb large amounts of water through intercepting precipitation. Transpiration on the other hand is responsible for drawing water from the soil, and combined with evaporation from the surfaces of leaves (evapotranspiration) returns water to the atmosphere. These and other processes depend on many variables including temperature, humidity and radiant energy. In simplified terms deforestation reduces interception and evapotranspiration, which has the overall effect of reducing water storage capacity. This in turn increases the risk of flooding as the likelihood of runoff rises. As soil storage capacity declines, deforested areas are also more susceptible to drought.

Figure 29: Forests and the Hydrological Cycle



Source: The Encyclopaedia of Earth, 2010[189]

In addition to tree harvesting, poor forestry management practices can impact water flows. For example soil compaction as a result of road building can increase run off. Removing vegetation can also cause soil erosion, leading to siltation of adjacent water catchments.

While deforestation is not generally believed to cause large scale flooding,[190] some evidence in Asia suggests that it can negatively impact local watersheds, creating simultaneous flooding and drought, particularly during the monsoon season. Furthermore climate change is thought to be exacerbating the phenomena. The following are some examples:

China 2010: Deforestation has been blamed for exacerbating the recent droughts in Yunnan. Media reports indicate that extensive forest clearance in Xishuangbanna prefecture between 1976 and 2003 shrank the primary-forest cover to 3.6 percent of its 1976 value. It was then replanted with rubber which now covers 20 percent of the prefecture's land. Thus, not only has the forest been harvested and its water regulating properties gone, but the rubber trees which replace it are known as 'water pumps' by locals.

Source: Jane Qiu (2010)[191]

Indonesia 2010: In Gorontalo province in North Sulawesi, significant and persistent deforestation over two decades has coincided with the drying out of the Paguyaman river. In 1989, the upper reaches of the river could be accessed by an outboard motor powered boat. By 1999 the water level had dropped such that this was no longer possible and 'katintings' were used from then on boats powered by a shallow motor. Today it is hard even for a 'katinting' to go up river for many periods throughout the year.

India 2008: Floods following a period of drought in Uttar Pradesh's Banda district in June 2008 have in part been blamed on increased runoff as a result of relentless deforestation in the area.[192] According to the Centre for Rural Development, "the greatest event of far-reaching consequences in Bundelkhand (a gently-sloping upland, of barren hilly terrain and sparse vegetation in Central India) was the destruction of forests. It changed the climate, the rainfall patterns, the perennial character of the rivers, the groundwater recharge pattern, soil productivity, people's life pattern, social mores and ethics...The loss of forest cover gave rise to flash floods in streams and rivers eroding the surface soils."

Philippines 2007: In Pagadian, Mindanao, deforestation is multiplying the impacts of changing weather patterns. Pagadian supported vast areas of rainforest until the 1970s. Upland forests retained water during the rainy season and made water available throughout the year. In the 1980s, there was rampant logging of upland areas, and almost all of the native forest was cleared. This changed the ecological balance and resulted in water shortages in upland areas and drought due to extended dry seasons.

Source: Working Group on Climate Change and Development (November 2007)

There is still a lack of statistical evidence to show how the relationships between deforestation, floods and droughts work. It is perhaps not surprising then that despite such large-scale deforestation, Asian countries would not appear to have sufficiently recognized the linkages, and efforts to introduce the issue into government policy have struggled.

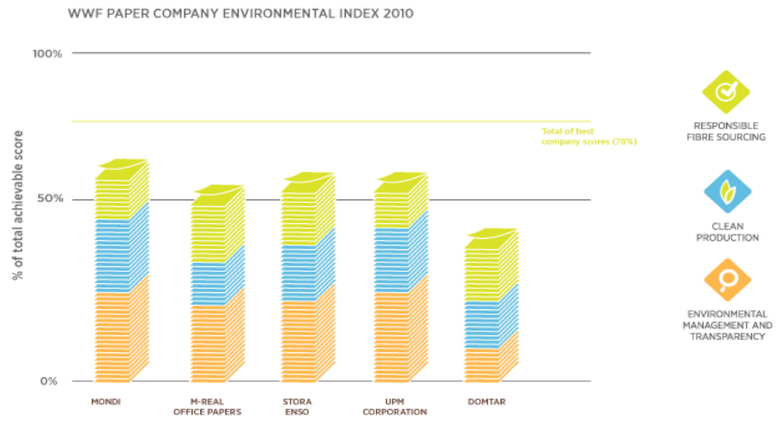
However, as water scarcity creeps up the political agenda, deforestation continues and climatic changes impact the region, the issue of water protection is likely to receive increasing attention from groups already focused on deforestation and, in the longer-term, from policymakers. Those companies seen to be degrading watersheds, exacerbating water scarcity and flooding are most likely to come under scrutiny in what is an already environmentally sensitive industry.

Pulp, paper and water

Globally, the pulp and paper industry is resource intensive, requiring vast quantities of water in its manufacturing processes. The industry also discharges significant quantities of wastewater, which requires treatment as a result of the hazardous chemicals used in pulping and paper manufacturing. Since paper and pulp mills are usually located in close proximity to water bodies for raw materials, there is also significant potential for pollution. This is of particular concern in Asia where environmental laws are, for the most part, inadequately enforced, if at all, and penalties are insufficient to prevent pollution reoccurring.

These environmental issues have not gone unnoticed and, in July 2010, the WWF introduced a new voluntary indexing tool for paper companies to assess and report on their global footprints. The index includes such issues as responsible fibre sourcing, clean production and overall environmental management and transparency. Whilst the index has been launched with five of the largest global paper companies, the intention is for the system to be applied in Asia, where the industry's sustainability performance lags its global peers.

Figure 30: WWF Paper Company Environmental Index 2010



Source: WWF (2010)[193]

Issues for responsible investors concerned with sustainability issues in the pulp and paper industry deserve dedicated research that is beyond the scope of this report. However we have highlighted some of the environmental challenges facing the industry in Asia.

China is an increasingly dominant player in the pulp and paper industry worldwide, as discussed in the overview. In our recent research report, 'Water in China: Issues for Responsible Investors', we highlighted the water intensity of China's pulp and paper industry. For example, Lee & Man Paper Manufacturing requires at least 840 million cubic metres of water per year (equivalent to 336,000 Olympic-sized swimming pools) to provide for its 4.2 million tonne capacity.

In terms of wastewater, in 2008 the pulp and paper industry was responsible for nearly 18 percent of China's total wastewater discharges by volume – an impressive four billion cubic metres per annum, significantly outstripping the textiles and chemicals industries.[194] Consequently the potential for pollution is significant. The smaller capacity and non-wood pulp players have been blamed in large part for the industry's pollution record, along with outdated equipment and technology and inadequate enforcement.

In 2009, Zhao Wei, secretary general of the China Paper Association, indicated that China's small-scale mills accounted for almost nine out of ten of the paper mills in the country. It is estimated that, whilst they represent 20 percent of production they probably account for two-thirds of related pollution. The government has mandated the closure of 7.5 million tonnes of small-scale capacity by 2011 to cut down on pollution and save energy per tonne of paper produced.[195]

Despite these moves, pulp paper manufacturing remains a potentially polluting industry. A review of the Institute of Public and Environmental Affairs (IPE) website,[196] which maps air and water polluters throughout China, has listed numerous and repeated violations by pulp paper companies. The table below notes violations by APP's related companies, including the low level of penalties, which probably does little to deter polluters.

It should be noted that polluting practices are not restricted to China and pulp and paper companies have been equally blamed for contamination of water bodies in other Asian countries, particularly in Indonesia.

Table 13: Water Pollution Violations by Pulp/paper Companies in China

Name of Related Company/ Subsidiary	Year of Violation	English translation of Violation
GX Paper	2007	Company's equipment outdated. System was able to handle 12,000 tonnes of waste water per day but actual discharge was 35,000 to 50,000 per day[197]
Ningbo Asia Pulp & Paper	2007, 2005, 2005	Fined US$1,500[198]
Ningbo Asia Paper	2007, 2005, 2004	'Mud' was spread over the area near the wastewater plant and discharged into to the river. Affected area up to 100 m in the river. The company was ordered to clean up the waste and fined US$6,000[199]
Gold Huasheng Paper	2007	Discharge reached national standards but over guidelines for 'total controlled' waste - potentially violated other environmental laws[200]
Asia Paper	2004	Recklessly discharged waste water[201]
Jinhai Pulp & Paper	2005	Faulty equipment resulted in excess waste water discharge[202]

In addition to these APP-related companies, there are many more pulp/paper companies listed in IPE's database. Between January 2010 to the end of July 2010,[203] 126 water-related violations by pulp/paper companies were recorded.

INTENSIVELY MANAGED FOREST PLANTATIONS

Intensively Managed Forest Plantations (IMFP) have increased significantly in South and Southeast Asia over the past decade. Globally, these highly productive plantation resources were estimated to contribute 40 percent of the world's industrial wood supply in 2008.[204] Given intense population pressures in the region and the shortage of sustainable wood supplies pitted against rising demand, this should come as no surprise. Looking forward, this trend looks set to continue with Asia leading the world in plantation development up to 2030.[205]

Plantations have proven to be extremely controversial as a result of large-scale land use change and associated environmental and social impacts. They have been the target of local protests throughout Asia and continue to be the subject of a range of allegations in relation to their adverse social and environmental impacts. Fast growing plantations in particular have been the cause of the following concerns:

- Clearing of natural forest for plantations can lead to biodiversity loss and initially an increased potential for flooding, which is likely to reoccur when the plantation is itself logged
- Use of non-native fast growing species such as acacia and eucalyptus are water intensive. Farmers in Thailand and China frequently claim that plantations have made it impossible to grow crops nearby.
- Use of monocultures reduce genetic diversity and increase susceptibility to disease and pests
- Invasion of nearby ecosystems
- Increased soil erosion
- Plantation proponents claim that one of the advantages of planted forests is to relieve pressure on natural forests. This however is not always the case. In Indonesia for example, natural forests have been logged at a rapid pace to provide the necessary land for plantations and to provide an upfront revenue stream for the plantation business.[206] In April 2010 an investigative report released by 'Eyes on the Forest'[207] accused two APP-associated industrial timber plantation companies, Bina Duta and PT Mutiara Sabuk Khatulistiwa, of continuing to clear natural forest and dig drainage canals under questionable circumstances

Forestry is not an exact science, and environmental impacts are highly variable and depend on a range of factors including local conditions, forest management practices and, importantly, the presence of an effective regulatory framework and good governance. Given that governance and regulatory enforcement in Asia are problematic, the environmental risks associated with plantations are greater. Good technical knowledge and management practice are thus even more important.

The following insights garnered from 'Fast Wood Forestry'[208] provide some useful considerations for responsible investors:

- Developing plantations in an area where they will use more water than existing vegetation is potentially problematic
- In drier environments, water use by plantations can cause problems where stream flow is the only water source
- Nutrient losses vary between soils. In the early years of establishment fast wood and particularly short rotation plantations are more prone to both soil erosion and decline in soil fertility than longer rotation crops, but are much less degrading to soil than many commercial and agricultural crops
- The impact of plantations on biodiversity is a function of what the plantations replace. Replacing natural forests increases biodiversity impacts, whereas planting on degraded land can have the reverse effect

On balance, well-situated and well-managed plantations can deliver forest-related environmental services as well as restore land. For example where natural forest cover is removed, the ground water level can rise, bringing salts in the soil into solution. This salinity can cause many environmental, economic and social problems. Planting trees which use more water than the existing grass cover lowers the ground water levels back towards pre-forest clearance levels and decreases salinity levels in ground water and rivers.Planned appropriately, they can be a buffer for areas of high conservation value where countries have developed national guidelines.

MONETIZING FOREST CARBON

Increasing pressure to address climate change through avoided defoestation

Deforestation in Asia continues to be a major contributor to the build-up of greenhouse gases worldwide. Indonesia is the largest global emitter of carbon emissions as a result of both deforestation and land use change, and ranks just behind the United States and China as the world's third largest carbon emitter. Consequently there is considerable international pressure on Indonesia to address its rampant deforestation and at the G20 meting in September 2009 President Susilo Bambang Yudhyono indicated a national target of cutting carbon emissions by 26 percent by 2020.[209]

Forest / carbon facts

- Forests are natural carbon sinks, sequestering and storing carbon in their biomass as a result of photosynthesis
- Tropical peat forest store considerable quantities of carbon, those in Indonesia alone are estimated to hold more than 50 gigatons of carbon
- Deforestation e.g. burning causes both the emission of stored carbon and at the same time reduces an important carbon sink.
- The historical carbon dioxide rise could have been 10 percent faster without the tropical forest carbon sink
- Degradation and deforestation combined accounts for about 25 percent of global carbon emissions, greater than the entire transport sector.
- Trees in tropical forests hold, on average, about 50 percent more carbon per hectare than trees outside the tropics
- If current trends continue, tropical deforestation will release about 50 percent as much carbon to the atmosphere as has been emitted from worldwide combustion of fossil fuels since the start of the industrial revolution.

Source: Met Office 2008, Forests and Emissions Contribution to the Eliasch Review, and Amazon Institure for Environmental research, (2005) Tropical Deforestation and Climate Change

'We are devising an energy mix policy including LULUCF (Land Use, Land Use Change, and Forestry) that will reduce our emissions by 26 percent by 2020 from BAU (Business As Usual). With international support, we are confident that we can reduce emissions by as much as 41 percent. This target is entirely achievable because most of our emissions come from forest related issues, such as forest fires and deforestation'.

We will change the status of our forest from that of a net emitter sector to a net sink sector by 2030'.

- Extract from President Bambang Yudyhono's speech, G20 Meeting, September 2009

A recent government report however indicates that whilst the country's green house gas emissions are projected to increase by about 60 percent by 2020, a reduction of 70 percent is possible, over two thirds of which lies in taking advantage of abatement opportunities related to land use change through curbing deforestation and peatland destruction.

Reducing deforestation and forest degradation is widely recognised as a cost effective means of fighting climate change.[210] As a result, there is an increasing sense of urgency in the international community to determine a global strategy that will monetise the value of carbon in forests, thus making forest assets more valuable standing than cleared, a concept embodied in REDD+.[211]

As mentioned, REDD+ requires that rainforest nations be paid to conserve their forests. Payments are to be based on the value of carbon (in the form of credits) that would be emitted if the forest were destroyed. Although the payment mechanism has yet to be established, one option is the issuance of tradable credits, with the ultimate objective of these being purchased to offset emissions from carbon intensive industries and projects in developed economies, as part of a national or international carbon offset compliance scheme. An alternative mechanism could be a pool of capital funded by wealthier nations and created specifically to purchase the credits, thus incentivising developing economies in tropical zones to leave their forests standing as an asset of global importance. Whilst such a model is, of course, fraught with difficulties – structure, ownership, accreditation and the possibilities for corruption, it could be a viable way forward, providing that compensation leads to enhanced livelihoods for those in forested areas.

Asia at the front line: two steps forward, one step back?

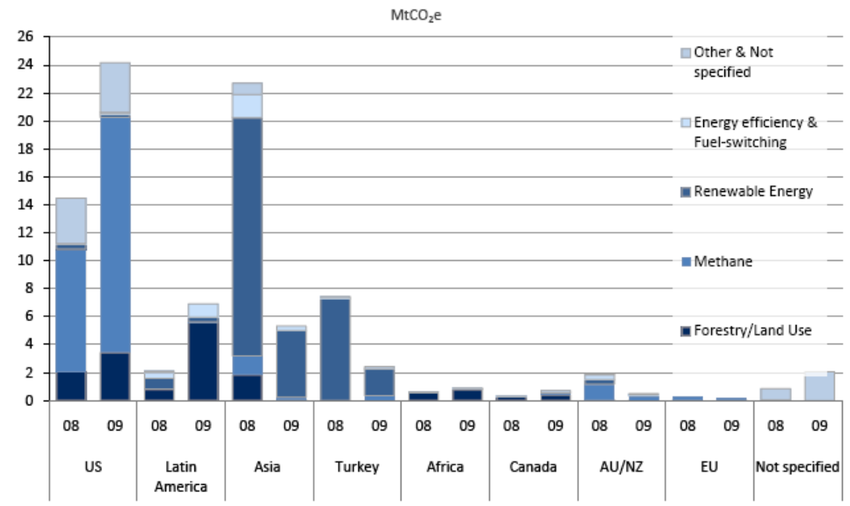
Today there is only a voluntary carbon market for 'avoided deforestation' carbon credits; the compliance market relevant to Asia is restricted to afforestation and restoration projects through the Clean Development Mechanism (CDM). The realization of a scheme to cater for avoided deforestation credits through carbon markets depends on the introduction of an international framework and potential in-country mechanisms to generate sufficient demand, such as the EU Emissions Trading Scheme and the US American Power Act.[212] This in turn depends on the struggling multilateral process currently under the auspices of the UN.

In December 2009, the UN failed to reach an agreement on the successor to the Kyoto Protocol that would provide the framework for global climate change action including REDD+ after 2012. Instead, Brazil, China, India, South Africa and the United States agreed to the 'Copenhagen Accord'[213] a non-legally binding set of principles, which was 'noted' rather than 'adopted' by the Conference of the Parties (COP15). Although many regarded it as a failure, the Accord recognised the crucial role of reducing emissions from deforestation and degradation and the immediate establishment of REDD+ to enable the mobilization of financial resources from developed countries. In contrast to much of the proceedings, REDD+ negotiations progressed relatively well, providing sufficient text to move forward and engage constructively to determine details of design, development and implementation.

Since Copenhagen, progress at the UN level has slowed somewhat and the Paris-Oslo process[214] now appears to be a driving force behind REDD+. Given the seeming lack of overall progress on multilateral climate change policy to date, there is talk of a separate REDD+ agreement. Meanwhile, billions of dollars are being earmarked for REDD+ as governments make political commitments to the concept and significant multilateral funds are already flowing to developed countries in support of REDD+ readiness and demonstration projects.

Globally, REDD credits transacted are on the rise, having increased three fold from 2008 to 2009. These are mostly traded in bilateral transactions in the voluntary market. In 2008 REDD accounted for just one percent (0.7 metric tonne carbon dioxide equivalent) of total voluntary market transactions, rising to seven percent (2.8 metric tonne carbon dioxide equivalent) in 2009.[215]

Figure 31: Voluntary Transaction Volume by Project Type, OTC 2008 vs 2009



Source: Forest Trends, Ecosystem Marketplace, Bloomberg New Energy Finance (2010)[216] Note: (based on 394 observations)

However, continued uncertainty over a global climate change deal, low prices for other traded carbon products and lack of regulations make it almost impossible to place a value on future cash flows. As a result pre-compliance buyers and investors in the region appear to be adopting a wait-and-see approach and many individual REDD+ projects seem to be developing slowly or have stalled. As Ecosystem Marketplace points out, 'despite significant potential for REDD in countries like Indonesia, forestry projects all but fell off the map in Asia in 2009, slipping from 1.8 metric tonne carbon dioxide equivalent to 0.09 metric tonne carbon dioxide equivalent.[217]

Nevertheless, the Asia Pacific region is generally regarded as being further ahead than most with regard to national REDD+ strategy development, institutional capacity building and demonstration projects.[218] Countries in the region have developed numerous projects, some of which are backed by multilateral funds, and REDD+ regulations are well on the way.[219]

In this regard the Norwegian/Indonesian letter of intent of May 2010 - agreeing a conditional two year moratorium on new logging concessions in an effort to reduce emissions from deforestation - is a significant event for Asia's forestry industry. Although, as noted earlier in this report, the details have still to be confirmed, this is a notable development for forestry companies operating in Indonesia with inevitable implications for the region, as companies seek alternative wood supplies.

REDD+ Projects Indonesia
In 2009, 35 REDD+ projects identified. Project size: 10,000 to 4.2 million hectares

International environmental NGOs are developing more than half of the REDD+ projects, working with local NGOs, government, timber and plantation companies and private project developers.

A quarter of REDD+ projects are being developed by the private sector, sometimes in partnership with NGOs or government.

Many project proponents in Indonesia are negotiating to purchase a concession and manage the forest for carbon, thus pre-empting timber extraction or conversion to plantations

Source: Sills E, Myers Madeira E, Sunderlin W, and Wertz-Kanounnikoff S, 2010. "The evolving landscape of REDD+ projects," in Angelsen Aed., Realising REDD+: National Strategy and Policy Options p.265-279. CIFOR

The challenges facing REDD+

While REDD+ seems to be an unprecedented opportunity to change the future of forests globally, there are reasonable concerns over its fair and equitable implementation. Indigenous peoples, not surprisingly, have voiced a number of concerns and are lobbying hard to ensure they are represented at the negotiating table. Risks affecting them include:

- The potential for increased land grabbing and speculation
- Increased conflict over land rights and tenure
- Increasing outsider/government control
- Lack of free prior and informed consent
- Allocation of funds away from forest communities
- Not having the requisite skills for involvement in ensuing conservation projects

Indeed the management of billions of dollars of REDD+ funds in countries, which have histories of corruption, embezzlement and lack of transparency, has raised red flags in a number of circles. There are concerns that REDD+ money may find its way into the coffers of those who have created the problem in the first place, such as state elites and corrupt forestry enterprises, pulp, paper producers and oil palm companies. A recent report on Indonesia's Forest Restoration (DR) Fund[220] illustrates the risks that need to be managed with respect to REDD+ funds given the catalogue of mismanagement, corruption and cronyism in Indonesia that led to the misappropriation of billions of dollars at the expense of local communities and the forests themselves. The report highlights 'a critical need to strengthen capacity for financial management and revenue administration at all levels' should REDD+ funds start to flow.

If a market mechanism fails to be established, the option of some form of global fund remains on the table, potentially administered by a multilateral body such as the UN. A hybrid system combining the two has also been debated.

It is conceivable that many of the forestry companies (or their affiliates) that benefited from the Reforestation Fund subsidies and/or the IBRA debt write-off will also be among those seeking to secure credits for carbon emission reductions under Indonesia's forthcoming REDD+ mechanism – a possibility that should raise red flags.

It will be important to review the track records of prospective REDD+ participants and to consider the implications if project owners fail to meet their obligations under REDD+ payment schemes.

Source: C.Barr, A.Dermawan, H.Purnomo, H. Komarudin, Financial Governance and Indonesia's Restoration Fund during the Soeharto and post-Soeharto periods, 1989-2009, 2010, CIFOR

Implications for forestry companies

Upstream forestry companies including integrated businesses may need to revisit business models and existing operations in light of the following six considerations:

1. Even if the price of carbon were sufficiently high to warrant an attractive IRR, investing in the REDD+ market has many risks and it is difficult to determine at what point it becomes an attractive option for existing forestry companies.

2. It remains unclear whether concessions will be allocated for REDD+, what, if any, impacts on existing logging concessions occur and whether governments will incentivize REDD+ over existing lucrative forestry operations given inherent risks and carbon price volatility.

3. There may be an immediate reduction in the supply of forest lands for logging, impacting companies that need to acquire concessions to meet timber demand in the future.

4. REDD+ would stimulate the certification market and facilitate the supply of certified timber from sustainably managed forests[221], noting that timber extraction is not expected to be banned completely provided it is harvested sustainably.

5. Illegal logging would be vastly reduced as much needed funds become available for active forest protection and capacity building.

6. Forest governance has the potential to be reformed, as is being observed in Vietnam.[222]



ISSUES FOR RESPONSIBLE INVESTORS

SOCIAL

INDIGENOUS PEOPLE'S RIGHTS

About 350 million people in Asia live in and around the forests edge[223] of whom tens of millions are indigenous peoples (IP). As these communities are often in remote locations and beyond the reach of population censuses, precise numbers are not available, however the table below provides some estimates.

Table 14: Estimate of Affected Populations and Legal Rights of IPs in Asia's Forested Nations

Country	Populations	Rights basis (customary use/ customary law)
Cambodia	1.5 million[224]	Recognised but not yet allocated
Malaysia	Peninsular Malaysia: 132,000 'aboriginal' people, Orang Asli Sarawak: 400,000 , 28 ethnic groups, mostly Dayaks[225] Sabah: 30 recognized IP groups. Hundreds and thousands of Kadazan-Dusun people	Peninsular Malaysia: Sarawak: Land Code recognizes (i) 'Native Customary Rights' in land, where these were established settlements prior to 1958 or have been extended by permit since (ii) allows the establishment of Native Communal Reserves, which can be divided up and titled to individuals. The Forest Ordinance permits the continued exercise of use rights in forests including areas granted as concessions. Sabah: Land Ordinance recognises customary lands after more than 3 years of occupation
Indonesia	40-60 million people 20 percent of the 49 million forest dwellers are estimated to be below the poverty line	Provisions that recognize land rights exist but these lack teeth when competing with other policies and economic interests[226] Hak ulayat (customary communal tenure) lacks implementing regulations for application Hutan adat (customary forest) provides limited usufruct rights but only in state forest areas; none actually allocated. PERDA: (District or Provincial level regulation) Has secured customary tenures in only three out of 450 districts
Thailand	Exact figures lacking. There are, however, several thousand upland communities in the country's forestlands including most of the half million members of the country's 'hill tribes'	Not recognized
Vietnam	25 million, a large proportion of which are from 54 officially recognized ethnic minorities	Not recognized
Data sourced from: Colchester and Fay (2007)[227], Fern (2006)[228]		

Whilst there is no standard definition of IPs,[229] they are generally regarded as distinct from local communities by virtue of their history being in situ pre-colonial/pre-settler societies and possessing specific characteristics. The IFC provides the following characteristics of IPs:[230]

- Self-identification as members of a distinct indigenous cultural group
- Recognition of this identity by others
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories
- Customary cultural, economic, social, or political institutions that are separate from those of the dominant society or culture
- An indigenous language, often different from the official language of the country or region

Often marginalized and living in poverty, IPs have over the years proven to be highly vulnerable in the face of the paper, pulp and timber industry's expansion across Asia's forestlands. As a result of limited legal recourse, they have been unable to prove customary rights over land and resources with devastating consequences, including loss of livelihoods and homelands. In addition, their cultures and traditions, by which they are defined, are often threatened and in some cases ultimately lost. Exposed to outsiders, indigenous peoples are also frequently susceptible to disease against which they have no natural defence.

The past two decades have seen the legal and political significance of these peoples gaining significant ground. One of the most important milestones to date, the UN Declaration on the Rights of Indigenous Peoples,[231] was established in 2007 and is regarded as the most comprehensive statement on the issue ever developed 'giving prominence to collective rights to a degree unprecedented in international human rights law.'

Embodied in the treatment of IPs is the concept of Free Prior and Informed Consent (FPIC).[232] FPIC refers to the consent of indigenous peoples in accordance with customary laws. It must be given freely, prior to the proposed development in question and founded on sufficient information.[233]

Reflecting the increasing significance of IPs internationally, many countries have begun to develop legal frameworks to enable communities to defend their rights and participate in the development process. However, in general, the speed of such reform and its implementation remains behind the rapid pace of industrial forestry expansion. The adverse impacts on IPs therefore remains a risk factor for investors in the sector, both in terms of exposure to reputational risk and maintenance of investee companies' social license to operate.

1982: Establishment of the first UN mechanism on issues: Working Group on Indigenous Populations of the Sub-Commission

1985: Establishment of the UN Voluntary Fund for Indigenous Populations

1989: Adoption of ILO Convention No. 169 on Indigenous and Tribal Peoples in Independent Countries

1993: Proclamation of the International Year of the World's Indigenous People Proclamation of two separate International Decades of the World's Indigenous People (1995-2004 and 2005-2014)

2006: The IFC's updated performance standards (#7) dedicate one of the standards specifically protect the rights of indigenous peoples.

2007: The UN general assembly formerly adopted the UN Declaration on the Rights of Indigenous Peoples

2009: Copenhagen Accord recognized IP rights

2010: The rights of IPs remains a key component in the on-going climate change negotiations focused on deforestation, and one of the few areas over which there was agreement in the COP 15 talks in Copenhagen, December 2009.

SOCIAL CONFLICT AND LAND RIGHTS

Even where legal mechanisms are in place to address disputes over customary rights, resolutions are often problematic and IPs as well as local communities can remain unprotected.[234] The situation is exacerbated by the lack of transparency regarding logging license issuance. As a result, it is not surprising that at least 30 forested developing countries have had violent conflicts[235] in the last 20 years, affecting some 20 percent of all forest areas in Asia.[236] The extent of conflict between IP and local communities and the forestry industry, however, is likely underestimated. Research by the Woodrow Wilson Centre in 2002, tracked media reports on social conflict related to the forestry, pulp, paper timber industry in six Indonesian papers over a 12 month period.[237] In total, 845 articles were recorded with only those extreme conflicts covering violence and death generally making it to press, suggesting that many more incidents go unreported and only a fraction make it to the international media. Furthermore industry insiders claim that local journalists are often intimidated or bribed not to report on conflict by the companies involved.

Whilst the above-mentioned survey was completed back in 2002, deforestation has continued at an alarming rate and there is little evidence to suggest that land right issues have been resolved or that abuse of IP and local communities' rights have improved significantly.

In 2006, attempts to quantify forest conflict by correlating deforestation with local forest populations indicated that in Indonesia alone, two million forest dwellers could be affected, with an additional 20 million affected within three kilometres of forest boundaries.[238] In Cambodia the figure was estimated to be 1.7 million people.

INDONESIA: Land rights - up for dispute

In Indonesia, conflict over land rights has been a thorny issue since the colonial era. Central to the problem is disagreement over the control of vast tracts of both forested and non-forest lands that currently reside under the jurisdiction of the Department of Forestry. It has been estimated that 120 million hectares of land have been classified as State Forest Zone. Of this, 90 percent has arguably yet to be assessed to determine land rights, meaning that significant tracts of land could reasonably be categorized as private forest.[239] Despite this, logging concessions and licenses continue to be authorised for the extraction of timber and/or development of plantations on such lands.[240]

A 2005 report states ominously, "In practice and nearly without exception, industrial resource extraction and land use licenses have been awarded over lands where the state has yet to determine where private rights exist".

Most forest lands in Indonesia remain adat–owned (traditionally owned by whole tribal communities), but not recognized by the state, which allocates plantation timber concessions on adat lands."[241]



In 1999 the Indonesian Alliance of Adat Communities (AMAN) was established to lobby for IP rights. There is a movement currently for Indonesia's IPs to map the boundaries of their customary land rights across the country in an effort to stem the abuse.

Source: Rainforestportal.org, 2009

Recent reports of community conflict are not hard to find in the Asian timber, pulp, paper sector:

- **Samling, Sarawak, Malaysia (2004-April 2010):** The Penan people of Sarawak have been in a long running and violent dispute with Samling to protect claimed native customary rights that extend over rainforests in the upper reaches of the Akah River. In 2004 they established blockades across logging roads and, at the same time, the Malaysian Timber Certification Council granted Samling a certificate for Sustainable Forest management over an area claimed to be affecting customary rights. In July 2007, the Penan filed a lawsuit against the Sarawak state government and Samling, in an effort to conserve customary lands.[242] After periods of further blockades by the Penan in April 2010, Samling is reported to have withdrawn its bulldozers from the upper reaches of the Akah River.[243] It is reported that the affected Penan communities are home to 3,000 people. Other companies accused of logging Penan customary lands include Shin Yang and Rimbunan Hijau.[244]

- **APRIL, PT Riau Andolan Pulp, Paper (PT RAPP) Kampar Peninsula, (October 2009):** According to the Forest Peoples Programme[245] up to 33,000 people are being affected by the activities of concessionaires operating in the Kampar Peninsula of Riau province in Eastern Sumatra, many of whom come from different ethnic tribes. One of the concessionaires, APRIL, has reportedly expanded its pulp capacity to such an extent that it has been sourcing wood from the province's natural forests through other companies such as APP, as well as its own subsidiary PT RAPP. According to 'Eyes on the Forest',[246] people from Teluk Meranti and surrounding villages are opposed to APRIL's plans to convert the forests into pulp-and paper plantations, because they realize the social-economic impacts will not be in their favour. Not surprisingly, PT RAPP has run into problems with local communities over land rights as it has acquired new. PT RAPP also trades with PT Sumatera Sylva Lestari (PT SSL). PT SSL supplies fibre to APRIL, and has been accused of abusing local communities (see below).

- **APRIL (April 2010):** In April of this year, SmartWood, an independent forest management certifier, suspended the interim certification of APRIL's pulp products amidst accusations that it is failing to recognize the rights of IPs.[247] The certification was suspended in part due to community conflicts over customary lands. As a result, it has been widely reported that UPM Kymmene cancelled a US$33 million contract with APRIL.

- **Rimbunan Hijau, Papua New Guinea (February 2010):** The Malaysian company Rimbunan Hijau continues to face accusations of illegal activities, this time leveled by a local organization in Papua New Guinea called Asples Madang.[248] The company is accused of acquiring land illegally and using brute force and bribery in its dealings with locals. It appears to be the subject of an on-going NGO campaign.

- **Malaysia, Sarawak (January 2010):**[249] A high court ruling declared that part of the land given to Lembaga Tabung Haji, and subsequently contracted to a Sabah-based oil-palm plantation company, is in fact land with NCR. As a result, the land is to be surrendered to 15 Iban communities.[250]

- **PT Sumatera Sylva Lestari (PT SSL) (May 2009):** PT SSL is reported to be in a long term dispute with members of the Bangun Purba tribe. In May 2009 the company was alleged to have used severe force on local communities in a dispute over land rights, killing one person and injuring 16 others,[251] PT SSL supplies wood to PT RAPP.

Because the scale of social conflict is significant, yet often in remote locations and most likely understated, it is particularly challenging for investors to gain assurance that IPs and local communities' rights are being observed by investee companies. The IFC provides guidance as to how the issue should be addressed in its performance standard no.7, 'Indigenous Peoples'. In addition, forest certification standards including the FSC, Lembaga Ekolabel Indonesia (LEI), the Programme for the Endorsement of Forest Certification (PEFC) and the Malaysian Timber Certification Scheme (MTSC) address customary rights of indigenous peoples and treatment of local communities in their respective principles and criteria.

EMPLOYEE WELL BEING

A labour-intensive sector prone to accidents

The forestry industry is relatively high risk as regards worker safety and has high accident rates as a result of breaches of safety standards. Incidents include the following:

- Improper use of chainsaws, axes and/or machetes during felling, crosscutting and de-branching activities
- High tension cables used to extract logs breaking
- Falling trees and loose branches
- Improper use of machines and vehicles, including tractors and harvesting machinery
- Transport of workers along poorly maintained roads, resulting in traffic accidents

As an example, in 2007 Malaysia reported 977 accidents in the forestry and logging industry including 77 fatalities.[252] This is surprisingly higher than other natural resources extraction industries such as mining, which reported 362 accidents for the same period. Reasons for forestry being a more hazardous business include:

Outdated/inadequate regulations	In Indonesia, there are laws that include specific safety and health standards in tree felling and log transportation, but these standards are not well known by the concession owners.[253]
Lack of enforcement of safety standards	In Malaysia the government's role in enforcing safety in the workplace relies on inspections that are often difficult to carry out due to remote location of forests.[254] Similar situations occur in Indonesia where inspection is often omitted because forests are difficult to reach and labour inspectors are not experienced in forest operations.[255]
Pay structure	Compensation structures for workers are sometimes based on the number of trees logged. This provides an incentive for workers to continue working even during difficult rainy seasons, which increases the likelihood off accidents.
Inadequate training and safety measures	Long working hours can contribute to accidents, as can lack of training and investment in protective equipment.

It should be noted that some logging activities are outsourced to contractors and therefore worker safety is often not even deemed to be the responsibility of the forest company.

Aside from accidents, the following health issues are also a factor in the timber industry:

- Noise-hearing impairment has become one of the most frequent occupational hazards in forestry[256]
- Diseases such as malaria or dengue fever are frequently contracted in the forest environment
- Improper use of pesticides and fertilizers pose health risks to silviculture workers

Fair wages

In the logging industries, there is an increasing trend towards companies hiring foreign workers or local communities to conduct logging operations. These workers are likely to be uneducated and know little of their human or employee rights. As a result, they are easy targets for exploitation. For example, a local community in Papua receives approximately US$11 per cubic meter of hardwood, a fraction of the ultimate selling price.[258]

Case Study: Rimbunan Hijau's workers in Papua New Guinea

IPs are hired by Rimbunan Hijau to log in Wawoi Guavi in southern Papua New Guinea. Due to remote the work location, workers are only able to eat at the company canteen. The workers are reportedly paid very low wages, and their food bill is deducted from that total, often leaving them with very little.[259] For example, a chain saw operator was paid US$99 for 88 hours of work. After the worker deducted his canteen bill, he was left owing money to the company.

Source: The Australian (2008)[260]

Benchmarks and indicators for investors on health and safety

The Occupational Health and Safety Advisory Service (OHSAS) series 18000 outlines the principles of a health and safety management system based on ISO management systems methodology. Its overall purpose is to control health and safety risks. Internationally recognized, OHSAS 18001 provides a basis for identifying health and safety at work place, and designs implementation systems to mitigate those risks. Of the companies benchmarked for this report, two report having OHSAS systems: Lee Man Paper and APP.

The IFC has published an Environmental, Health and Safety guideline for forest harvesting operations that covers the application of cutting equipment and procedures to avoid accidents during log extraction. The International Labour Organization (ILO) has also published the comprehensive 'Guideline for Labour Inspection in the Forestry Sector'.

Certification can also be used as tool to attain some comfort on labour and safety practices. FSC for example requires that companies respect ILO conventions (for the signatory country)[261] and meet applicable laws and/or regulations covering health and safety of workers and their families. Both LEI and MTCS have similar provisions and also requirements regarding fair wages.[262]

Case Study: Samling: health and safety issues

Samling had its FSC certification in Guyana removed as a result of "significant worker health and safety issues including concern over worker amenities, staff health, safety practices, monitoring of on-timber activities within operation areas, maintenance of buildings and equipment, fire safety and signage".

It was recommended that Samling conduct training on first aid treatment, install the necessary facilities at campsites within the Guyana concession and upgrade the necessary equipment. Although Samling claimed that it has taken the necessary steps to rectify the problems, its certification has not been restored.

Source: Samling (2007)[263]



ILLEGAL LOGGING AND CRONYISM

Illegal logging generally refers to unlawful practices related to the harvesting, processing, transporting and exporting of timber and wood products. The practice can significantly increase exposure to reputational risk. Today a growing number of NGOs are campaigning to increase awareness of illegal wood, and an increasing number of retailers and consumers, particularly in developed countries, are demanding verification of wood legality.

Not surprisingly, reliable estimates of illegal logging are difficult to ascertain, but are nevertheless thought to be considerable. Globally, illegal timber is estimated to be worth around $10-15 billion per year at the expense of the legal market.[264] [265] For example, in 2004 illegal logging was estimated to have depressed world timber prices by seven to sixteen percent.[266] [267]

Table 15: Summary of Available Estimates on Illegal Logging

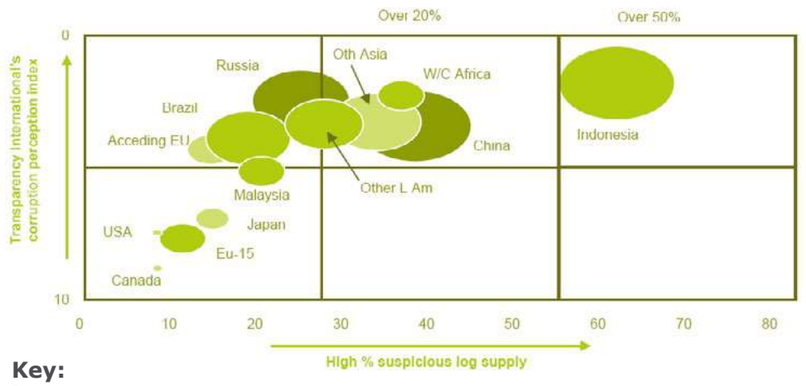
Country	Status of illegal logging	Source
Indonesia	50-70% wood illegally logged	Global Forest, WRI, Forest Watch Indonesia, State of Forest Indonesia (2002)
	76-80% of logging operations	Greenpeace China RPP,[268] 2008
	40-55% of production	Chatham House, 2008[269]
	73-88% of timber logged	UNEP[270] (2007)
	70-80% of production	Seneca Creek Associates & Wood Resources International, 2004.[271]
	60-80% of timber harvest	UK Department for International Development (DFID)[272]
Malaysia	35% of timber logged	Seneca Creek Associates & Wood Resources International, 2004.[273]
	22% of timber consumed	Chatham House, 2007[274]
China	75 million m^3 per year	Vice Head of SFA[275]
	100 – 116 m^3 per year	CIFOR, 2006[276]
Papua New Guinea	90% of logging operation	Greenpeace China RPP,[277] 2008

Source: Responsible Research (2010)

Illegal logging is evident in virtually all timber production countries in Asia. One of the main causes is the deep-rooted practice of corruption and bribery (or 'facilitation') in the region. In 2009 Transparency International showed that the Asian countries with the most active forestry sectors, scored poorly on its Corruption Perception Index.[278]

Figure 32: Relationship Between Corruption and Illegal Activities

2009 Corruption Perception Score:	
PNG	2.1
Indonesia	2.8
India	3.4
Thailand 3	3.4
China	3.6
Malaysia	4.5
UK:	7.5
US:	7.7
HK:	8.2
Singapore:	9.0



Key:
Low scores: most corrupt
High scores: least corrupt

Source: Seneca Creek Associates and Wood Resources International (2004)[279]

Illegal logging in Indonesia is extensive and is estimated to cover anywhere from 40 to 88 percent of wood production. In 2006, Bank Dunia and the World Bank estimated that industrial demand for roundwood equivalent was around 60 million cubic metres per annum. However, sustainable yield from existing natural production forests was estimated at only eight to nine million cubic metres per year and at three to four million cubic metres per year from timber plantations. Approximately 47 to 49 million cubic metres of roundwood equivalent would therefore have to come from illegal or unsustainable sources to meet existing demand.[280]

Although there have been moves to crack down on the practice in recent years, the illegal logging remains widespread. It can be found at all levels of the industry from small local communities to large conglomerates, and can equally occur in protected areas such as national parks. Government figures suggest that timber is illegally harvested from 37 of the nation's 41 national parks.[281]

The key reasons for this are a combination of weak government policies corrupt officials and a system that lacks transparency, governance and accountability. Put bluntly, the Suharto era has been described as one that "had order but no laws", and the post-Suharto regime as an era that "has laws but no order."[282]

Since decentralization in 1999, the district heads who now have substantial control over implementation of forestry policy are also criticized for being highly corrupt. Reports of bribery are commonplace, both among government officials and between the government and the private sector. As an example, when district heads are elected, they may return favours such as issuing licenses to private companies for clear-fell natural forests. There are recorded instances of local Bupatis (the chief of a 'regency' or district in Indonesia) granting logging concessions in national parkland that is controlled by the central government and instances have been mentioned where logging companies make regular payments to officials at the district, sub-district and village government levels.[283] Equally, unauthorized land conversion endorsed by district governments and without approval from the provincial and central governments appears to be commonplace. Some logging companies have also been observed coordinating local communities to conduct illegal logging and then forcing them to sell back the wood, with the threat of otherwise having their chainsaws confiscated.[284]

Illegal logging is driven by corruption and lack of enforcement

Indonesia: a leader in illegal wood

Similarly in a recent incident, in order to curry favour with the local community prior to an election, the Bupati was found to have allowed deforestation and illegal collection of forest products from a national wildlife reserve. These instances can escalate and, in some cases, become violent when rangers step in to protect the forest.

Table 16: Companies Historically Accused by Third Parties of Illegal Logging

Arara Abadi (Forestry division of Sinar Mas)	In 2008, a concession in the southwest corner of Bukit Tigapuluh National Park in Sumatra, the logging company PT Berjaya Indah Raya (a contractor of Arara Abadi) and other affiliates[285] of the Sinar Mas Group were found clearing natural forest which should have been illegal on conservation grounds: ▪ Operating without a proper licence ▪ Violation of technical legal requirements relating to conversion and timber plantations ▪ Destruction of HCVF Source: WWF (2008)[286]
Samling Global	Samling has been repeatedly accused of illegal logging activities in Guyana, where the company owns 1.6 million hectares of natural forests. It was reported in 2007 that Bharrat Jagdeo, President of Guyana, accused Samling of illegal logging and that the company might be seriously penalized for its activities. The company was accused of exploiting 408,000 hectares of tropical rainforest that it did not legally own. Separate reports also indicated that Samling was accused of under reporting the number of logs harvested from local firms.[287] Samling has also been accused of illegal logging activities in Cambodia and Papua New Guinea, which it has denied. In 2003, Greenpeace claimed that Samling was logging illegally on land that was in the possession of customary landowners around Lake Murray in western Papua New Guinea. Other NGOs including Global Witness, the Bruno Manser Foundation and local communities of the Penan people have criticized Samling for destruction of tropical rainforests in Sarawak. Thirty-seven NGOs in 18 countries launched protests against Samling's IPO at the end of February 2007. Source: www.illegal-logging.info[288]
Ta Ann	In 2007, Australian Senator Bob Brown condemned Ta Ann for destroying rainforests and polluting rivers in Sarawak, when it entered into a veneer manufacturing with timber company Forestry Tasmania. Source: www.illegal-logging.info[289]

Note: The reporting of these criticisms is to demonstrate potential reputational risk to companies for not managing their supply chains for sustainability. Responsible Research makes no judgement here on the veracity of the allegations above but feels it is important to summarise the various comments and accusations in order that investors can follow up themselves if interested.

Case Study: Ta Ann's efforts to stop using illegally sourced wood

In pursuance of Ta Ann's Group's policy for resource legality and sustainability, in 2009, Ta Ann appointed SGS, a third party certification firm, to carry out a verification audit under its Timber Legality and Traceability Verification (TLTV) programme to determine that timber products have been legally produced and sold throughout the chain of custody. A legality audit under SGS's TLTV was carried out on the group's timber licensed areas under Pasin Sdn Bhd, Raplex Sdn. Bhd. and Tanjong Manis Holdings Sdn Bhd and sawmills under Lik Shen Sawmill Sdn Bhd.

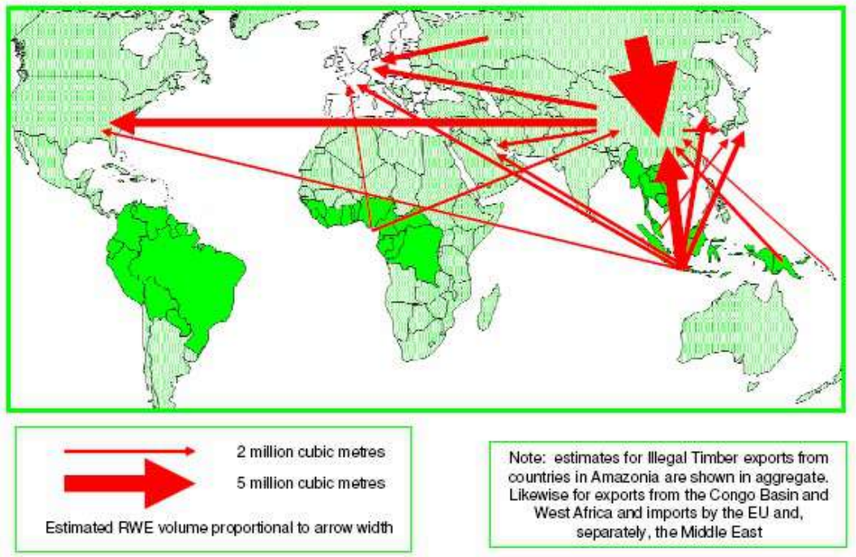
Ta Ann is hoping that from the TLTV, the company is able to advance towards full responsible forest management certification under a programme such as FSC. With the legality verification under TLTV, it is further hoped that the company would have access to high-value markets for timber products and markets that require timber products from legality-verified forests.

Source: Ta Ann Annual report (2009)

China is instrumental in spreading illegal wood worldwide

While Indonesia and some other Southeast Asian countries are important sources of illegal wood, China is the main driver in distributing it worldwide. In 2008, China imported substantial quantities of illegal timber. This wood was, in turn, processed and exported around the world.

Figure 33: Estimates of Bilateral Wood Trade in Illegal Timber 2008



Source: James Hewitt (2010)[290]

Timber exports are an important source of income for small forest-rich countries such as Papua New Guinea, the Solomon Islands and Burma. In 2008, as much as 85 percent of Solomon Island's 1.4 million cubic metres timber exports were destined for China as was 85 percent of Papua New Guinea's wood exports.[291]

Action in recent years has reduced imports of illegal wood, but not enough

Governments around the world recognize that illegal logging is a global issue. As a result, more government initiatives as well as collaboration between leading Asian producer countries and Western consumer countries are tackling the issue, including:

- Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreements
- The amended Lacey Act in the United States
- The Due Diligence Rule currently being considered by the European Union

Case study: Key legislation and cooperation agreements in addressing illegal wood:

US Lacey Act

The US Lacey Act was originally enacted in 1900 to prosecute wildlife crime by banning the US import of illegally sourced animal products. In May 2008, the Act was further amended to include trees and lumber products such as paper, furniture and flooring. Anyone found to be handling illegal timbers can at least expect to have the products confiscated. If it can be shown that 'due care' was not shown in acquiring the product, the violator could be subject to fines and imprisonment. However the notion of due care has not yet been determined through case law.

Source: Chatham House (2010)[292]

The European Union Forest Law Enforcement Governance and Trade (FLEGT) Initiative VPA

The European Commission adopted the EU Action Plan on Forest Law Enforcement, Governance and Trade (FLEGT) in October 2003. It seeks to improve governance in producing countries and establishing mechanisms that control the flow of illegal wood into the EU. It consists of a number of initiatives including negotiation of bilateral FLEGT Voluntary Partnership Agreements (VPAs) with producer countries, and the establishment of a licensing system designed to identify legal products exported from partner countries and license them for import to the European Union while denying entry to unlicensed products. Negotiations are ongoing with Indonesia and Malaysia regarding the establishment partnership agreements.

EU Due Diligence Rule

In July 2010, the European Parliament finally approved legislation that has been deliberated since 2008, requiring that timber operations establish a due diligence system to minimize the risk of illegal products entering the European Union. The European Commission is expected to formally adopt the legislation in September 2010 with a view to it coming into force in 2012. It is anticipated that European companies that place timber and timber products on the EU market will be required to operate a management system which will reduce the risk of trading in illegal timber as defined by the country of origin. The legislation is intended to work alongside EU FLEGT and is intended to boost European market demand for wood legally-licensed under the terms of FLEGT VPAs.

Public Policy Procurement in Developed Countries

Belgium, Denmark, France, Germany, Japan, the Netherlands, New Zealand and the United Kingdom require proof of legal origin for all or some central government purchases of timber and wood products. They also encourage, and in some cases require, the purchasing of sustainably produced timber.

Source: Chatham House (2006)[293]

CITES

The UN Convention on International Trade in Endangered Species of Fauna and Flora (CITES) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The text of the convention was agreed in 1973 and formally enacted in 1975. 175 parties (including China, Indonesia and Malaysia) have entered into a legally binding agreement.

In addition, countries have implemented their own measures. For example, in Indonesia, the following actions have been taken:

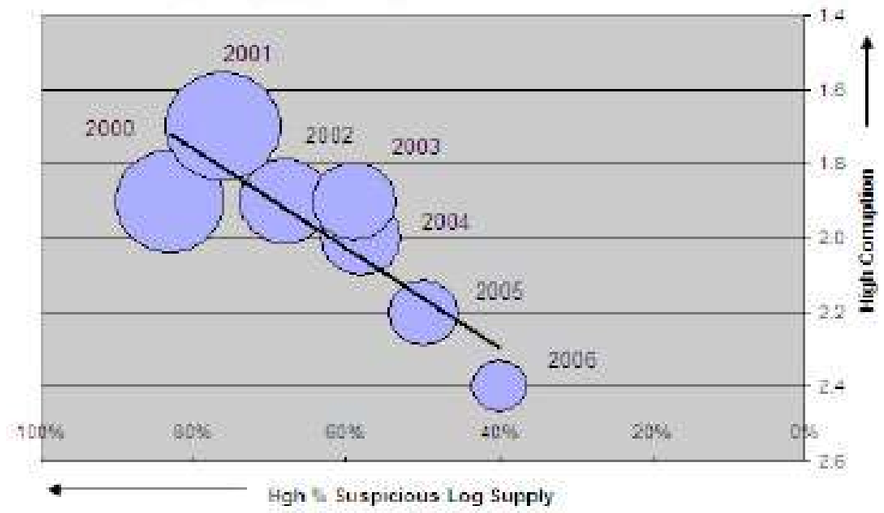
- The Corruption Eradication Commission (KPK) was established in 2002 as an independent body and targets logging-related crimes through investigations and trials in an anti-corruption court[295]
- Forestry and environmental crimes became predicate offenses in 2003,[296] making it an offence that is subject to the UN Convention Against Corruption on 'laundering of proceeds of crime'
- A Memorandum of Understanding (MOU) was signed with several importing countries including Australia (expired), China, Japan, the United Kingdom and the United States

Limitations as to the effectiveness of both international and local measures however persist:

- KPK's scope is limited to high-level officials but not potentially corrupt police and judiciary bodies
- Little action has been taken to address smaller scale illegal logging that targets the domestic market
- The MOUs with consumer countries are non-blinding and have no quantifiable objectives and timelines
- VPA negotiation with the European Union has been very slow since 2007, with no clear timeline. Since the publishing of the VPA action plan in 2003, only two bilateral agreements have been reached (Ghana and the Republic of Congo)
- No effective mechanism has been devised to prevent circumvention of the VPA. For example, timber produced in Ghana, processed in China and re-exported to the European Union would not need to show a FLEGT license at the EU Border[297]
- China has been relatively slow to address illegal logging. However NGOs indicate that the government is increasingly open to international dialogue to fight illegal logging. So far, the country has signed MOUs with the United States and Indonesia

Some indicators now show that illegal logging in Indonesia is on a downward trend. Research by Chatham House[298] found that it has fallen by as much as 50 percent, and the export of illegal logs and sawn timber have decreased by as much as 90 percent since 2005.[299] Despite these encouraging signs, illegal logging in Indonesia remains at a relatively high level.

Figure 34: Decreasing Trend in Illegal Logging in Indonesia



Source: Chatham House (2008)[300]

CORRUPTION

Political affiliations of listed companies

While the Malaysian government remains tight-lipped about illegal logging and reliable information is hard to come by, it has been widely reported that government officials are conflicted due to personal business interests in the forestry sector.

The problem seems to lie in the level of autonomy given to state governments and insufficient transparency and accountability. The situation is particularly acute in the state of Sarawak where most listed Malaysian logging companies have operations. Sarawak's economy strongly relies on the forestry sector, and politicians traditionally use forest concessions as currency to gain political support and funding.

Case Study: Criticisms mount against the political elite in Sarawak

The Chief Minister of Sarawak, Taib Mahmud, who has been in power since 1981, has authority over the Department of Land and Survey and Department of Forests. This means he has control over forestry, land development, mining and land development, including the gazetting of forests (both production and conservation) and issuance of timber licenses with the sole power to revoke timber outside the court process.

The Chief Minister has been widely reported to have stakes in licence holding companies and timber processing units and, in 2007, he was implicated in a scandal allegedly involving US$10 million in alleged kickbacks paid over seven years from nine shipping companies buying timber from Sarawak. According to various media reports, several Japanese companies made payments to a Hong Kong based agent that allegedly had a connection with the Chief Minister and his family. The Japanese tax authorities discovered the case due to irregular tax accounting treatment. It was also reported that these Japanese companies would likely have to pay back over US$4.7 million in taxes.

We strongly encourage responsible investors with holdings in companies with logging interests in Sarawak to independently investigate any areas of potential reputational risk. The protest against the beleaguered Chief Minister, for example, recently extended to Oxford, England, when he spoke at a recent conference on Islamic Finance. Placards below read 'Penan tribe say NO to logging' and 'Malaysia: Stop destroying the Penan tribe'. An open letter regarding illegal logging concessions in Sarawak was also issued recently by a group of Members of Parliament in the United Kingdom.



Sources: JOANGO Hutan (2006),[301] The Borneo Project (2007),[302] Indigenous Peoples Issues, July 2010[303]

Case Study - Indonesia

In September 2008, the Corruption Court convicted Tengku Azmun Jaafar, regent of Pelalawan District in Riau Province, of corruption related to the fraudulent allocation of timber extraction and plantation licences to 15 companies.

Many of the fraudulent licences were traded to a subsidiary of PT Riau Andalan Pulp and Paper (RAPP), flagship company of the APRIL Group.

The Corruption Eradication Commission (KPK) estimated that these acts of corruption and fraud resulted in state losses totalling US$134 million, including the losses of the timber harvested and the companies' failure to pay the forest resource royalty and the Restoration Fundlevy. In August 2009, KPK announced that it was expanding its investigation in Riau to focus on the possible issuance of illegal logging and land-clearing permits by the regent.

Source: CIFOR 2010[304]

'GAMING THE SYSTEM'

Companies exploit inconsistent government polices and lack of enforcement

The concept of sustainable forestry management (SFM) was introduced to ensure the conservation and maintenance of forest ecosystem services, while still allowing for continual use of forests for economic, social and cultural purposes.[305] SFM can be defined as the stewardship and use of forests and forestlands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels.

As pressure on Asia's forestlands continues to intensify, SFM in relation to both natural and plantation forests is increasingly important to ensure a sustainable flow of wood supply through organic growth, without relying too much on land acquisition. Although, by and large, forestry policies in Asia aim to promote sustainability they generally do not result in sustainable logging and in fact have created an industry with inherently flawed long-term business models. The combination of inconsistent and shifting polices and poor enforcement at a local level provides ample opportunity for some companies to over exploit resources and employ unsustainable practices.

As might be expected, logging companies seek to maximize short-term profits. Many tend to do just enough to meet the regulatory requirements and do not invest sufficient time and resources in activities such as such as identifying HCVF, creating buffer zones and building logging tracks to minimise the damage to forests.

Table 17: Poor Policy and Enforcement in Asian Forestry Management

Inconsistent and unsustainable policy	**Local government incentive** The forestry sector is an important economic driver for many Asian countries. Inevitably, governments use the sector to boost tax revenues. In Indonesia for example, the total number of logs extracted drives tax revenue. As a result, the local governments have an incentive to provide a concessions to companies that maximize short-term logging production and hence maximize government revenues. **Length of concession** The length of concession can also affect a company's logging behaviour. Generally the longer the concession period, the higher incentive for companies to adopt more sustainable practices. For example, in Peninsular Malaysia, some concessions are issued for a period as little as ten years, and some for even less than two years if the concession is less than 1,000 hectares. This provides a disincentive for the operator to pay attention to the land after its first rotation. **Cutting cycle versus tree growth cycle** In Sarawak, the government stipulates a 25-year cutting cycle, much shorter than the 70 years needed for most tropical Asian trees to reach maturity.[306] Although there are supplementary regulations governing the minimum size of tree that could be extracted, experts who have worked in the area tell us that it is not always strictly adhered to. This is likely to contribute to the fast depletion of forest stocks. **Permission to clear cut natural forests** In countries such as Indonesia, industrial plantation is promoted by providing pulp and paper companies with legitimate rights to clear-cut remaining natural forest in degraded forests and have thus significantly contributed to deforestation. **Government policy facilitates extraordinary profits** Forestry companies have also made profits on the back of low fees such as taxes and royalties, well below actual stumpage values.[307]

Government policy can be based on outdated information	The logging industry in Asia typically operates a quota system, whereby the government sets an annual cutting allowance it believes is sustainable. Most companies in Asia simply log up to their quota limit (and sometimes beyond). However, it should be noted that the quotas provided are not necessarily sustainable. For example, the information on which the governments base their decisions is widely reported to be inaccurate. As a result, areas that have yet to be identified or registered as HCVF can be incorrectly accounted for. As a result, truly responsible companies should not solely rely on government information but conduct their own surveys to analyse the growth rate of existing stocks and identify areas of HCVF.
Poor enforcement	**Indonesia** In theory Indonesian timber licenses mandate sustainable logging through the Sistem Tebang Pilih Tanam Indonesia (TPTI system[308]) that requires selective cutting and replanting. Unfortunately this is often not strictly adhered to. Indonesia also imposes a mandatory requirement for restoration of the forest after logging. To ensure this happens in 1984 a restoration fund was established in the form of the Reforestation Guarantee Deposit Fund (Dana Jaminan Reboisasi), whereby timber companies were required to post a bond held by the fund based on the quantity of wood harvested. The bond was in theory repaid post restoration. The Fund has since been redesignated as the Restoration Fund (Dana Reboisasi, DR) and extended to reforestation organisations beyond companies paying the fees. The success of the restoration fund has been limited, companies have tended to pay the bond without restoring the land. Many also overstate the net area to be replanted or even use the funds when disbursed for alternative purposes.[309] [310] As mentioned in this report's Environment Section, early in 2010 a landmark report[311] was released which details the persistent mismanagement and widespread misuse of the DR funds, including estimated losses of US$5.2 billion from fiscal years 1993/4 –FY1997/8 alone. This has undoubtedly contributed significantly to deforestation and degradation in the country. Indonesian logging companies have to file long-term and annual work plans for their concessions and the renewal of the concession. Research has found that some companies' work plans are 'pure works of fiction.'[312] Although there is no independent evidence to support such claims, we believe it is reasonable to assume that this is still widely the case today given the level of corruption in Indonesia.

POOR DISCLOSURE

The quantity and quality of ESG information disclosure by Asian forestry companies is generally poor, providing a significant challenge to investors interested in the sector. Below is a summary of average scores of our universe by stock exchange. We rate companies using our standard 100 question ESG scoring, the Asian Sustainabilty Rating™ plus sector specific criteria. Asian companies all fall significantly below the international benchmark, which we calculated by scoring a selection of global forestry leaders in non-Asian markets. For more information on the ASR™ and proprietary methodology, please contact info@asiansr.com.

Inadequate disclosure across the sector

Table 18: Average ASR™ for our Asian Forestry Universe

International Benchmark	63%
Listing Jurisdiction	
Canada (Sino-Forest and Cathay Forest)	12%
Singapore (Samko)	16%
China	24%
Hong Kong	28%
India	32%
Malaysia	35%
Indonesia	35%

Source: Responsible Research, 2010

Of the companies that did provide ESG information, only a handful of firms could be considered as leaders: Sumalindo, Lingui, Ta Ann, Jaya Tiasa and Subur Tiasa. Interestingly, despite the issues brought up earlier in the report, Samling also seems to have a renewed focus on sustainability practices and disclosure on ESG risks. The poor general ESG disclosure in the sector in Asia is perhaps not entirely surprising given the lack of mandatory disclosure requirements and lack of a really strong example of industry leadership in the region. For some stock exchanges, there is a requirement for CSR reporting, but the level of disclosure is fairly none specific. Surprisingly, the Canadian and Singaporean listed companies were the worst performers on sustainability disclosure, and the Indonesian companies came highest of all the Asian forestry companies under coverage.

Table 19: Summary of CSR Disclosures in Selected Asian Stock Exchanges

China	The State Council's Open Government Information Regulations and the Ministry of Environmental Protections' Environmental Information Disclosure Measure (EIDM) mandate the public disclosure of environmental data by companies. Under the measures, companies are required to disclose the requisite information within 30 days of being cited by local environmental bureaus for violating pollution standards.[313] Since May 2008, the Shanghai Stock Exchange has requested companies to come up with a social responsibility strategic plan, and post annual social responsibility reports together with their annual reports on the exchange's website.[314]
Hong Kong	Company disclosure of ESG issues is purely voluntary. There is no disclosure requirement for environmental aspect of operation with the exception of the mining and extraction industry.
Indonesia	Since 2007, Indonesia's Limited Liability Company Law has mandated that companies involved in or affecting natural resources create and implement corporate social responsibility programs.[315]
Malaysia	Since 2007 publicly listed companies are required to disclose their CSR activities in their annual financial reports.[316] The framework focuses on four areas: the environment, community, the marketplace and the workplace.

Good disclosure practice, however, does not guarantee good ESG practice on the ground. For example, both APP and APRIL have comprehensive sections on their websites detailing the importance of the environment and how the company is making every effort to conserve HCVF and respect the local and indigenous people. However, what really happens on the ground can be very different. In 2010, APRIL's interim controlled wood[317] certification, the lowest level of FSC certification, was suspended due to "evidence of conversion of rainforests for acacia plantations, the destruction of HCVF, draining peatland as well as continuing conflict with local communities."[318]

IPO disclosures need to take out 'boiler plate' language

In terms of regulatory requirements on disclosure, China appears to have made the most progress, although enforcement remains an issue. In October 2009, Greenpeace released a report entitled, 'Silent Giants: An Investigation into Corporate Environmental Information Disclosure in China,' which revealed that eighteen top Chinese and overseas companies were flouting the environmental disclosure regulation in the first year the law was enacted. Only three companies eventually published information but well over a year after the 30-day deadline.[319] Our review of some CSR reports in the sector shows that the main focus is on community investment rather than addressing high-risk ESG issues such as corruption, human rights and GHG emissions.

There have been few recent IPOs of Asian forestry companies. However a review of Samling's IPO document from 2007 provides some insight to disclosure practices. Generally speaking, and despite NGO protests at the time, the level of disclosure by Samling was thought to be relatively extensive when compared to the level of ESG disclosure typical of IPO prospectuses in Hong Kong.[320] Nevertheless, there was still room for improvement and the standardized language should be changed to provide additional information to address investor concerns. In the case of Samling, we noted the following:

- The term 'sustainable forest management' was widely used without giving a clear definition. In fact, out of 3.2 million hectares, the company only has 56,000 hectares certified by MTCS and 35,000 hectares certified by FSC.
- Its statement of having 'good working relation with its employees' conflicts with what we know of Samling having all of its FSC forest management certification suspended in Guyana due to worker amenities, staff health and safety practices.
- No specific information was provided on the areas that have been set aside for HCVF.
- Since 1993, the company has had a dedicated team to resolve Indigenous People's issues and yet there is little explanation why the Guyana affair has not been resolved.
- Little information is provided as to how the company intends to apply its US$83 million proceeds to acquire concessions, whether the company will be acquiring conversion forest, and what measures the company will take to ensure that processing capacity does not exceed sustainable supply.

There is currently no effective mechanism in Asia to prevent companies with poor ESG performance from accessing global capital through public offerings. China is trying to tackle the issue by introducing the 2008 'Green Securities' policy. Under the policy, Chinese companies operating in highly-polluting industries and seeking a listing must have passed an environmental review by the Ministry of Environmental Protection when submitting their listing documents to the CSRC during a ten-day pre-IPO evaluation period. As of September 2008, this process had rejected 20 out of 38 companies[321] and among them was Gold East Paper, which is affiliated with APP. Although the Gold East Paper IPO was ultimately approved, it demonstrates that the system is heading in the right direction, and other Asian stock exchanges should follow suit.

Best-practice reporting standards

There are numerous ESG reporting guidelines for companies, and one of the most internationally recognized is the Global Reporting Initiative (GRI). GRI is a network-based organization that develops guidelines for sustainability reporting and provides a framework for ESG performance reporting.[322] Although GRI has published a variety of sector reporting guidelines, a forestry guideline does not currently exist. In the Asian forestry sector, only APRIL has adopted GRI reporting but the company has not published a sustainability report since 2008.

In 2009, the Forest Footprint Disclosure Project (FFD Project)[323] was launched to address the lack of information disclosure by the forest and forest user sector. FFD is an important and widely supported initiative backed by the UK government and 45 financial institutions. FFD aims to help investors identify the impacts on deforestation of their investee companies (both in terms of operations and supply chain). Participating companies are requested to submit information in the form of a questionnaire that covers a whole range of areas of operation including policy, strategy, governance and sustainability. FFD would then publish key findings annually. It also provides individual report to their endorsers and feedback to companies on their performance and suggestions for improvement.

CERTIFICATION

The shortcomings of certification as a benchmark

Forestry certification emerged in the early 1990s in response to a perceived lack of political will in addressing sustainable timber production. This was most notably recognized in the failure of forest-rich nations to negotiate a legally binding global forest agreement at the UN Conference on Environment and Development (UNCED) in 1992.[324] As a result, in the years that followed, both international and national voluntary certification schemes were developed.

While the number of schemes can be confusing, those most relevant to Asia are listed below.

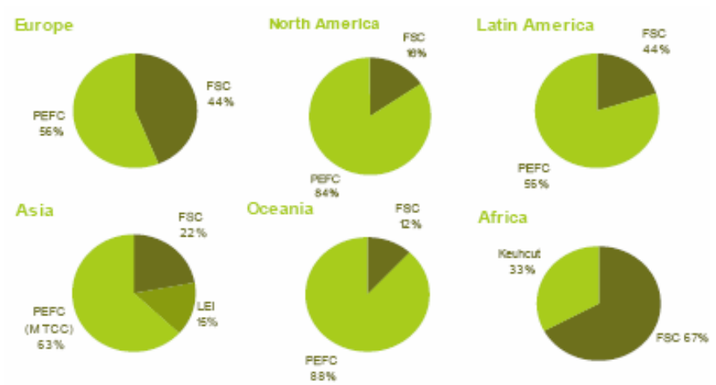
Table 20:Main Certification Schemes Relevant to Asian Companies

			Status
International	Forest Stewardship Council (FSC)	Created in 1993 by a group of NGOs and environmental organizations. FSC is a multi-stakeholder-owned system. A consultative process sets national standards in which economic, social, and environmental interests have equal weight.	As of 2 July 2010: Total FSC certified: 135 million hectares FSC (2008) estimated annual sales of FSC labelled products at US$20 billion[325] In Asia (May 2010): Total: 3.4 million hectares Of which: China: 0.9 million hectares Indonesia: 1.1 million hectares Japan: 1.0 million hectares Malaysia: 0.2 million hectares
	Program for the Endorsement of Forest Certification schemes (PEFC)	Founded in 1999 in Europe at the initiative of forest landowners as a certification system. PEFC later became an endorsement mechanism system. PEFC is initiated by producer groups. Works as a global umbrella scheme for the assessment and mutual recognition of national forest certification schemes.[326]	As of June 2010: Total PEFC certified: 225 million hectares worldwide
National	Indonesia: Eco-labelling Institute (LEI)	In May 2010, LEI and FSC entered into an MOU for an 18-month collaboration to explore potential areas of cooperation regarding responsible forest management and forest certification in Indonesia.	As of 22 June 2010: Natural forests: 1.1 million hectares Plantation forests: 453,000 hectares Community forests: 25,000 hectares
	Malaysia: Malaysian Timber Certification Scheme (MTCS), formerly known as MTCC	MTCS was endorsed by PEFC on 1 May 2009. Initially MTCS criteria and indicators were based on the 1998 ITTO Criteria and Indicators for Sustainable Management of Natural Tropical Forests. Also known as MC&I (2001) Since January 2005, the M&CI (2002) has been implemented and is based on FSC.	Under MTCS: 3.5 million hectares MC&I (2001) Under PEFC: 1.4 million hectares M&CI (2002)

By providing a systematic approach to managing both natural and planted timber resources according to established sustainability criteria, certification provides a useful benchmark to investors as to the adoption of best practice and the legality of wood sources. In the absence of other criteria, it has become the de-facto standard. As such, certification can substantially lower transaction costs for investors since it theoretically provides assurance that a minimum standard has been applied to forestry practice if a company has a substantial portion of its assets certified.

The main objective of all certification schemes is to ensure that producers are sustainably managing forest assets and/or that the origin of wood can be tracked throughout its supply chain, or chain of custody. Across different standards, the definition of Sustainable Forest Management is broadly the same, but the main difference is how the membership decision is structured and whether its evaluation is performance or system based. Several studies suggest that the FSC is the most rigorous of the standards.[327]

Figure 35: Worldwide Regional Application of the FSC, PEFC and LEI



Source: World Sustainable Business Council & PwC (2010)[328]

There are nevertheless shortcomings of any certification model that investors should be aware of:

Issue	Potential Shortcoming	Real World Observation
Membership structure	Membership structure can directly influence the independence and integrity of certification scheme. Some members may have vested interests.	The forest industry and forest landowners dominated PEFC. Industry groups have one-third vote in the general assembly of FSC.
Performance vs. System based	Performance standards require that specific or quantifiable performance be achieved in a forest. As a result, performance standards can provide a guarantee of quality.[329] System standards specify the management systems that must be in place by a forest company to ensure it is managing environmental and social performance consistently. It often requires forest companies to set their own performance targets and to use the management system to ensure they are reached.[330]	FSC and LEI are performance-based. PEFC is system-based.
Lack of auditor independence	Certification auditors' fees are paid by their certification-seeking clients, creating a potential conflict of interest. In worst-case situations, auditing staff may become a target for bribery – not a wholly unrealistic proposition given the fact that corruption and bribery have historically featured in Asia's forestry sector. In Asia a handful of auditing companies are currently active; SGS, Rainforest Alliance (SmartWood) and Bureau Veritas together account for 77 percent market share.	Research on two FSC-certified teak plantation forests in the Kanchanaburi province of Thailand claimed that FSC-certified plantations had replaced community forests, forced villagers out of their farmland and led to water scarcity and soil erosion.[331] The study claims misconduct of the auditor, who it is alleged did not properly address consultation from stakeholders, an area that FSC strongly emphasises. The study concludes that the auditor awarded certification on the basis of "hoped for rather than actual improvements".

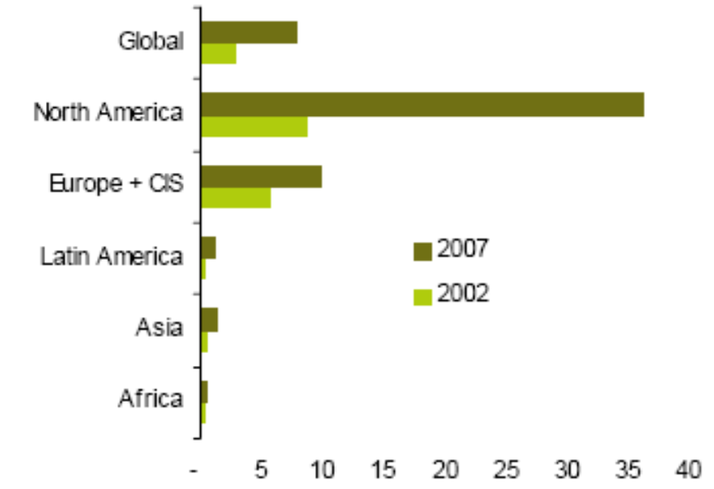
Source: Responsible Research, 2010

By May 2009, more than 325 million hectares, or eight percent of the world's managed forests, were certified, with Asia lagging significantly. For example, exports of Malaysian Timber Certification Scheme (MTCS) certified products in 2005 were less than two per cent of total forest product export volumes for that year.[332]

Asia lags its developed peers

The incremental increase in certified land area has also been very slow compared to the rest of the world. This makes it correspondingly difficult for investors in the region to use certification as a benchmark.

Figure 36: Percentage of Forests Certified by Region 2002-07



Source: World Sustainable Business Council & PwC (2010)[333]

The reasons for this lack of uptake in Asia are numerous and include:

- Low demand for certified wood in major importing countries such as China
- A shortage of experts and consultants to assist with development and implementation of systems
- Increased costs and reduced income and concerns over an unlevel playing field
- Worker resistance due to additional workload
- Unclear financial benefits
- Complex and expensive chain of custody
- Reputational risk associated with failure (not being able to get certified)

More details and examples are provided in the Appendix IV. In addition, a number of specific scheme weaknesses relevant to Asia have been reported, as seen in the table on the following page.

Table 21: Weakness of Specific Schemes in Relation to Asia

	Descriptions	Examples
FSC – Land Tenure	FSC Principles 1-3 require that forestry operations be in compliance with laws, and respect tenure users as well as indigenous rights. As discussed in the social section of this report, it is frequently difficult to verify land tenure, and concession boundaries often overlap with communities' land.[334] Due to a legacy of inconsistent policy and lack of communication between central and district governments, concessions may be issued that were previously granted or overlap with another concession issued by the central government.	World Rainforest Movement (WRM) reported that in Sumalindo's SLJ II FSC-certified concession, a very small part of the boundary has yet to be gazetted, making the concession technically illegal.[335] Nevertheless, Sumalindo's auditor, SmartWood, granted the certification on the basis that the company had done its best to address the boundary issues and that the company continues to use its best efforts to resolve the situation.
FSC -Plantation	FSC requires that after November 1994, any forest converted to plantation is ineligible for certification. This has effectively excluded some concessions due to past malpractice. Some hardliners argue that plantation forests should not be included in FSC certification at all, because they elevate water scarcity, do not store as much carbon and provide no biodiversity or benefits to local communities and IPs. FSC has reportedly certified a large number of plantations that are being opposed by communities and NGOs in many countries.[336]	In Indonesia, the plantation program based on the conversion of degraded land may also contain natural forests. Historically, the Indonesian government issued a cutting license to allow the clear felling of standing natural forests. As a result, the bulk of the plantation forests are unable to receive FSC certification.
MTCS – De-emphasis of the social dimension	Greenpeace has criticized MTCS claiming that there is no full recognition of land rights of local communities and IPs, and no requirement for full participation of these groups.[337] There has been no acceptable participation of environmental and social NGOs and representatives of IPs in the development of the certification standard.[338]	Fern reported that the MTCS plantation forest, Sela'an-Linau (held by Samling), which was granted in October 2004, encroaches upon an area over which the Pennan Tribe claims to have NCR.[339]
MTCS – Mixed wood source	MTCS's percentage-based standard allows companies to mix uncertified wood products with certified ones: up to a maximum 70 percent of the total batch for fibre products and up to 30 percent for solid wood products. Furthermore, no independent audit is required for the uncertified portion. As a result, MTCS certified wood could potentially contain illegal wood.	Greenpeace investigated the Malaysian Minho Group, the largest exporter of sawn timber that is MTCS-certified for chain of custody. The investigation revealed that a subsidiary of Minho Group had been importing mixed hardwood species from Sumatra in the form of rough-sawnwood. During that time, the export of rough sawn timber had already been banned. Although no evidence was found whether these rough-sawnwood were mixed with other certified timber, the investigation does highlight fundamental weaknesses of MTCS. This compares unfavourably with FSC where there is a requirement for the non-FSC wood portion to be independently verified as coming from a legal source, not from clear-felling of natural forest, and not containing genetic modifications.
LEI-Plantation	LEI does not have a cut-off limit for certifying plantation forests that are established from the clear cutting of natural forests.	In 2009, LEI was heavily criticised by WWF for certifying an industrial plantation owned by PT. Wirakarya Sakti (WKS), a subsidiary of APP. WWF claims that the WKS concessions lost more than 48,000 hectares (59 percent) of their remaining natural forest between 2007 and 2008.

Asian forestry companies pursuing certification seems to be limited to Sumalindo and Samling. However, even then the extent of their certification is limited.

Table 22: Asian Listed Companies with FSC certified Forests

Company Name	Scheme	Area certified
Samling	FSC	30,000 hectares (New Zealand)
	In Guyana, Samling had a FSC forest management certificate for an area of 570,000 hectares; however this was revoked in 2007[340] and has not since been restored. Since October 2009, Samling's 56,000 hectares of natural forests in Sela'an- Linau, Malaysia, originally certified by MTCC has expired. Wording in its 2007 IPO prospectus suggest that certification is important more as a marketing tool rather than as a means to ensure the sustainability of its forest assets. That said, Samling is now seeking to restore its certification at Sela'an-Linau.	
Sumalindo	FSC	267,000 ha
	Of all the benchmarking companies covered in this report, Sumalindo has made the most progress in terms of certification. As of 31 December 2009, Sumalindo managed 840,450 hectares of natural forests of which 31 percent was awarded a FSC forest management certificate.	
Companies that are also known to be working towards certification include: Ta Ann, Sino-Forest and Cathay Forest.		

Case Study: Samling on certification

Samling's IPO document 2007 sheds some interesting light on the company's attitude towards certification. Its prospectus suggests that the company believes certification's strength is to "build brand identity and to meet increasing market demand for certified wood products" and provide "competitive advantage over our competitors which do not have such certifications."

Samling also indicates that demand for its certified products is limited to "certain of our customers" such that 56,000 hectares of MTCS-certified forest is "sufficient to meet the requirements" of their customers. And even if their certification were suspended, the company can sell its logs to "alternate customers".

Such sentiments lead the reader to understand that Samling's management sees the production of certified wood as a reaction to consumer demand rather than a method of achieving long term sustainable growth in its forest asset management.

Source: Based on review of Samling's IPO prospectus. Full description is available in appendix V.

Case Study: Sumalindo Lestari Jaya- benefits of Certification

In 2009, Sumalindo indicated that FSC certification gives the company a competitive edge in terms of obtaining new concessions from the Indonesian government. As an example, in 2009, the government granted an additional forest concession covering 69,765 hectares in the Regency of Malinau, in East Kalimantan. The company also successfully obtained an extension of the period of its 63,550 hectares until 2055.

Source: Sumalindo Annual Report (2009)[341]

A market opportunity – demand for certified wood outstrips supply

Both the revised US Lacey Act and the EU FLEGT are driving up the demand for certified wood products. Furthermore, the European Union, the United Kingdom, Germany, France, Netherlands and Denmark all have sustainable wood procurement policies[342] requiring wood products purchased by government organizations to be certified. In the United Kingdom, the Timber Trade Federation (TTF), which represents around 85 percent of the nation's timber trade, has established a responsible purchasing policy that commits the Federation and its members to source timber from legal and well-managed forests. Failure to comply would result in expulsion from the TTF.[343] According to the FFD,[344] the market for certified products in the United Kingdom is already mature, and certified wood imports increased from 56 percent of total wood imports in 2005 to an impressive 81 percent in 2008.

Within the private sector, certified wood is being mandated by companies such as Home Depot and IKEA, often as a result of NGOs targeting supply chain companies and retailers rather than consumers. For example, Home Depot was a target of a Rainforest Action Network campaign for two years before announcing its commitment to avoid certain controversial tree species and they have a preference for independent third party certification.[345] IKEA now engages the Rainforest Alliance to conduct limited supply chain audits to ensure that its suppliers adhere to an acceptable code of conduct. In the United Kingdom, 90 percent of B&Q's timber is certified, with 70 percent certified by the FSC.[346] Recent establishment of the FFD will also increase awareness of the impact of deforestation within the business and investment community.

However, companies such as B&Q, a founding partner of FSC, are finding it increasingly difficult to get certified wood especially in Asia.[347] According to Greenpeace,[348] in 2007 B&Q in China pledged that it would source 100 percent of its wood from known legal sources within three years. As of yet, B&Q is still struggling with the policy, finding it difficult to locate certified wood. Home Depot in China is also committed to sustainable sourcing and experiencing similar problems.



SUSTAINABILITY OF FOREST PRODUCT USERS

THE PULP AND PAPER INDUSTRY

Sustainability is not widely integrated into the business models of Asian paper companies

Industry practices vary noticeably across countries. Chinese companies, for example, tend to lack awareness of sustainability issues including the legality of timber. Typically their focus is facility expansion and the need to secure sufficient energy and logistics. In contrast, large pulp and paper companies in Indonesia appear to have strong awareness of sustainability issues, but whether this translates into implementation is debatable given the lack of transparency and extensive NGO reports and research to the contrary. Japan is by far the leader in best practices in relation to sourcing sustainable wood fibre.

China

A review of websites, annual reports and financial statements indicates that wood sourcing strategies vary amongst companies:

- Shandong Chenming sources around 60 percent of its wood from its plantations in China[349]
- Gold East's sourcing strategy is difficult to determine, but most likely sources its wood from its own plantations within China and has chain of custody certification
- Lee Man does not disclose details of it sourcing strategy, but in 2007, it set up the company, Guangxi Lee & Man Forestry Technology, to develop its own plantation, which consists of a 100,000 hectares eucalyptus forest[350]
- Nine Dragons does not specifically mention how and where its wood comes from except that it has a joint venture partnership in Inner Mongolia that supplies kraft pulp.

The review found no specific reference to sustainable sourcing as a key part of company business strategy, although it appears Gold East has chain of custody certification.

Indonesia

Japanese companies source wood from outside Asia

Due to opaque and complicated ownership structures, lack of transparency and the non-listed status of the major players such as APP and APRIL, it is very difficult to ascertain the exact source of the companies' pulpwood. According to industry experts, the current production capacity of APP and APRIL exceeds the capacity of their own forest resources and it is not entirely clear as to where the additional pulp wood supplies are coming from. Nonetheless, these business practices have contributed to Indonesia's pulp prices being among the most competitive in the world.

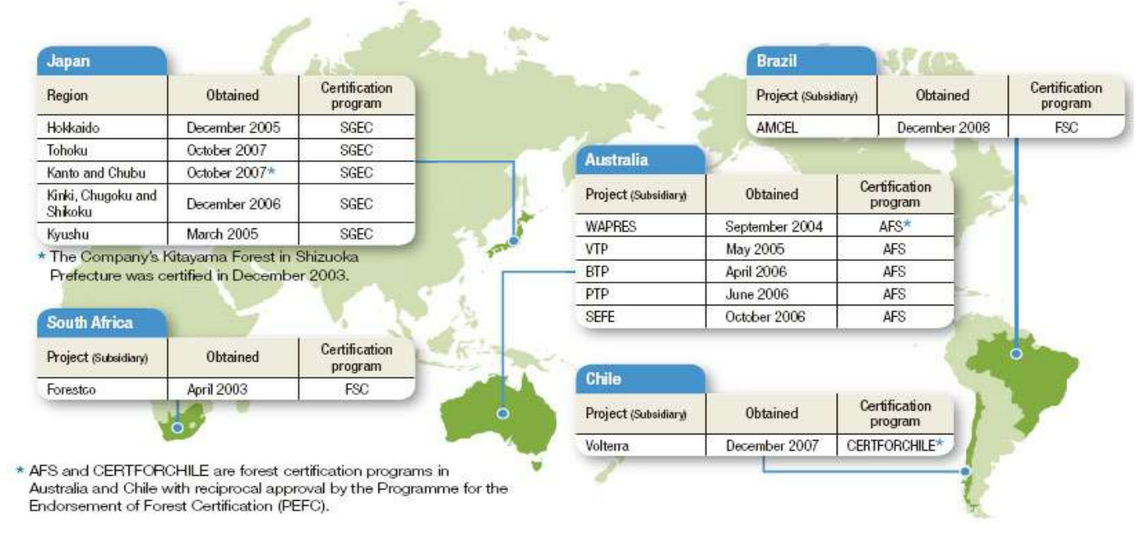
Japan

Oji Paper has 25 percent market share of Japan's paper industry. It sources the majority of its wood fibre from overseas plantations through various joint ventures. Most of the plantations are located in Brazil, Australia and New Zealand, although it also sources wood from Thailand and Vietnam.[351] The company has certain requirements in its procurement policy:

- Where possible, certified plantation wood, sawn-mill residue and low quality timber should be used. No certification preference is stated
- Suppliers be requested to verify where sourced wood is produced and prevent the inclusion of illegal timber

Nippon Paper, which has the largest market share of printing paper in Japan at 33 percent, has obtained forest certification for all of its company-owned forests. In addition it has a policy to procure all of its hardwood chips from plantations that are certified. Similar to Oji, the company does not have a preference for a particular certification scheme.

Figure 37: Breakdown of Nippon Paper Own-managed Forests



Source: Nippon Paper Sustainability Report (2009)[352]

United States

Multinational Companies embark on responsible sourcing

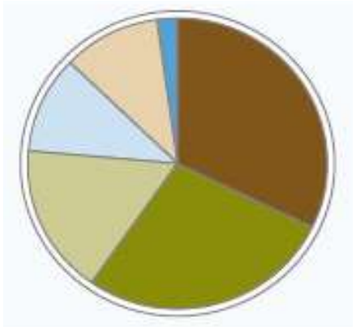
The US company International Paper, the world's biggest paper manufacturer, refuses to buy wood or pulp from Indonesia because of concerns over illegal logging and encroachment into natural forests.[353] International Paper recognizes PEFC, FSC, Sustainable Forest Initiative (SFI – a North American standard) and Cerflor, the Brazilian Program of Forest certification. In countries or regions of the world that do not have established certification standards, International Paper has ISO 14001 environmental management system certification that covers the purchasing systems in its facilities.[354]

Kimberly Clark (KC), a leader in sustainability, does not source raw materials from Asia. KC has a policy of prohibiting the sourcing of fibre from the following groups:[355]

- Naturally rare forests: identified as 'G1' (globally ranked critically imperilled) or 'G2' (globally ranked imperilled) communities by NatureServe/Natural Heritage Network
- HCVF: identified and mapped as 'no harvest areas' under the Forest Stewardship Council certification scheme
- Forests of Exceptional Conservation Value: identified and mapped as no harvest areas under the SFI scheme
- Primary Tropical Rainforest: defined as natural forests that have developed under natural processes, have never been logged on a commercial scale and which are located in an area with annual mean temperatures of at least 24°C and annual rainfall exceeding 2.0 metres evenly distributed throughout the year
- Areas mapped in applicable forest management plans as protected areas due to their unique features, including endangered species habitat
- Areas mapped by the government as a park or conservation reserve where commercial logging is prohibited.

KC may use wood fibre harvested from industrial forestlands that are converted as long as suppliers can demonstrate that the pre-existing forestlands are not part of any of the prohibited forests listed above. KC was the first major tissue company to set a goal of purchasing all of its wood fibre from suppliers that have certified woodlands and indicates a policy preference for FSC. Where FSC-certified fibre is not readily available, KC prefers to purchase wood fibre certified by SFI, CERFLOR, PEFC or the Canadian Standards Association's National Sustainable Forest Management Standards (CSA). By 2009, KC was able to purchase 98 percent of its virgin fibre and wood pulp from certified suppliers[356] of which 28 percent was FSC-certified.

Figure 38: Breakdown of Certified Wood Purchase by KC



Scheme	Amount	Percentage
SFI	812,713	32.7%
FSC	687,390	27.7%
CERFLOR	413,059	16.6%
PEFC	263,480	10.6%
CSA	262,846	10.6%
NOT CERTIFIED	43,488	1.8%
Total Pulp	2,482,976	
Total Certified	2,439,488	98%

Source: Kimberly Clark, Sustainability Report (2009)[357]

In 2009, KC announced the following enhancements to its fibre procurement practices:

- By the end of 2010, reduce its use of non-FSC certified Canadian Boreal fibre by 50 percent or more, as compared to its 2007 level of use. By the end of 2011, KC will stop purchasing non-FSC certified wood fibre from the North American Boreal region
- By 2011, ensure that 40 percent of its North American tissue fibre is either recycled or FSC-certified, representing a 71 percent increase from 2007 levels
- Support programs for the identification and mapping of Endangered Forests and HCVF to ensure that such areas are designated for appropriate protection
- Adopt a preference for post-consumer sources of recycled fibre

The use of tropical hardwoods in the construction industry is controversial because of issues previously outlined here such as illegal timber and unsustainable management. Despite this, sustainable sourcing in construction has yet to become a key consideration in Asia. For most real estate developers, construction is more about acquiring as much land as possible and erecting buildings as quickly and profitably as possible.[358] With the exception of a few industry leaders in Asia such as City Developments (Singapore), Ayala Land (Philippines) and Swire Properties (Hong Kong), little consideration has been given to the use of sustainable materials for construction such as certified timber.

Wood requirements under green building standards

The existing global green building market has been valued at over US$550 billion and is expected to grow at a CAGR of 108 percent through to 2015. Recent surveys indicate that Asia is expected to be the fastest growing market and the number of firms that are 'largely dedicated' to green building is expected to rise from 36 percent to 73 percent by 2013.[359] One driver behind the development of green buildings is the need to minimize energy and water-related risks that are escalating in the region, with wood usage as a secondary issue.

Numerous building assessment schemes have been developed globally. The Leadership in Energy and Environmental Design (LEED) in the United States and the UK's Building Research Establishment Environmental Assessment Method (BREEAM) are arguably the most established. LEED has developed a growing influence outside the United States with significant developments in countries with the highest construction growth rates including India and China. In these countries, some large MNCs are choosing certified green buildings in order to reflect their internal focus on corporate responsibility and their need to reduce their global carbon footprints due to external commitments. These projects are often large and high profile, providing marketing opportunities for both the certification scheme and the MNCs.[360] A number of Asian countries have also developed or are developing their own green building rating systems including the Philippines, Indonesia and Thailand.

Table 23: Summary of Asian Developed Green Building Rating Systems

Country	Name of Rating System	Policy on wood
International	LEED	50 percent of wood-based materials and products used for building components must be certified by FSC.[361][362]
India	Green Rating for Integrated Habitat Assessment (GRIHA) LEED India	No requirement for wood certification. Allows credits for FSC-certified wood. Currently there is no certification of wood in India
Singapore	Greenmark	Not determined
Hong Kong	Hong Kong Building Environmental Assessment Method (HK BEAM)	Credit for demonstrating at least 50 percent of all timber and composite timber products used in the project certified by FSC or the American Forest and Paper Association (AFPA).[363]
China	The star scheme from Ministry of Housing Urban Rural Development (MOHURD)	Not determined

Taiwan	The Green Building Program and Green Remodelling	Not determined
Japan	Comprehensive Assessment System for Building Environmental Efficiency (CASBEE)	Timber from sustainable forestry but details not available
Malaysia	Green Building Index	Over 50 percent of wood-based materials and products used are certified by FSC or MTCS.[364]

Source: Responsible Research 2010

At the moment, there is very little incentive for developers to embrace sustainable wood sourcing. As demonstrated in the table above, only a selected number of local schemes have a provision for type and provenance of wood. Also even if there is a provision, the credit given for sustainable wood procurement is extremely low, thus lowering incentives for its use. For example, under LEED, the use of certified wood only earns one point out of a total of 110 points.

Sustainable wood sourcing in Asia

In Responsible Research's Green Building report, we identified a number of Green Building leaders.[365]

Table 24: Global and Asian Leaders in Green Building

Asian Real Estate Green Building Leaders Asia MSCI (Ex. Japan)	Global Real Estate Green Building Leaders	Construction Green Building Leaders
City Developments	Lend Lease	Ambuja Cements
Ayala Land	Jones Lang LaSalle	Grasim
Swire	British Land	Siam Cement
CapitalLand		ACC Limited
Keppel Land		Lafarge Malayan
Hang Lung Properties		

Source: Responsible Research (2010)[366]

Despite being the overall leader based on publicly available disclosure, City Developments does not reference a specific sustainable wood sourcing strategy.

Similarly there is no emphasis on the use of certified wood by Ayala Land. Instead the company focuses mainly on energy, water and waste management. From 2009, the company introduced a green procurement survey, which keep tracks all of the company's top 100 suppliers. The survey covers ISO 14001 Environmental Management System (EMS), but does not mention whether wood procurement firms are included in the list, nor does it indicate whether ISO 14001 is mandatory for its suppliers despite its policy to "include environmental parameters in the accreditation of its suppliers."

Hong Kong's Swire Properties on the other hand emphasises sustainable wood in its design guidelines:

- Using only FSC certified timber for permanent, temporary and replacement timber which are used for refurbishment and repair, whenever available
- More generally using certified timber and avoiding timber products produced from old-growth timber or tropical hardwoods
- Using more sustainable alternative products to solid timber (e.g. composites made of recycled material or 'rapidly renewable' materials)
- Using re-usable formwork in the construction process

Although Swire makes every effort to follow these guidelines, they are not mandatory and implementation is influenced by practicalities, such as the availability of FSC wood. Most of Swire Properties' new projects however do use certified wood, especially for finishes.[367] Based on Swire's experience, which seems to be echoed throughout the region, it is difficult to obtain sufficient quantities of FSC-certified timber and sometimes wood certified by other schemes will be used instead.

Case Study: Swire wood strategy for Upper and Opposite House[368]

The Upper House in Hong Kong and the Opposite House in Beijing are luxury boutique hotels built and managed by Swire properties. The Upper House was completed in 2009 and The Opposite House was completed in 2008.

The Upper House



The Opposite House



Wood sourcing of the two hotels:

The Upper House used products from recycled plywood for the timber floor backing and incorporated renewable materials such as bamboo and sustainable wood in flooring, cabinet finishes and furniture.

The Opposite House used reclaimed existing timber from demolished traditional buildings for finishes. Continental oak is used for the wall cladding and flooring of the atrium and the guest room floors, while the guest room corridors are finished with panels of reclaimed red pine.

Source: www.upperhouse.com, www.theoppositehouse.com

THE DIY INDUSTRY

The furniture industry in Asia is highly fragmented and we did not identify any significant listed player in the space. Instead, we have turned our focus to international DIY operators especially operating in China.

The DIY market in China is estimated to be around US$12 billion and is growing at 13 percent per annum.[369] It is estimated to have around 40,000 players[370] and is highly fragmented. For example, B&Q is the biggest home improvement retailer in China despite having a mere two percent share in 2007.[371] Foreign DIY players operating in China include HomeMart, Home Depot, Maison Paris and Leroy Merlin.[372]

A survey conducted in April 2007 found that home improvement companies in China are selling many tropical and some endangered hardwood species, including merbau from New Guinea, teak from Burma, jatoba from the Amazon and sapelli from Africa. Moreover, illegal and destructive logging is common in each of these regions. Very few DIY chains are implementing policies that strongly prioritize purchasing sustainable wood and eliminate timber products from illegal operations or those using vulnerable species.[373]

As a result, international NGOs[374] have been actively targeting multinational DIY retailers to adopt a Responsible Purchasing Policy (RPP) in China. The RPP is intended to guide companies in the development of a policy suitable for their individual procurement strategies. The policy recommends companies take a step-by-step approach to move towards purchasing FSC certified wood products, typically within a three-year time frame.

Figure 39: Responsible Purchasing Policy Recommended by Greenpeace China



Source: Greenpeace China (2008)[375]

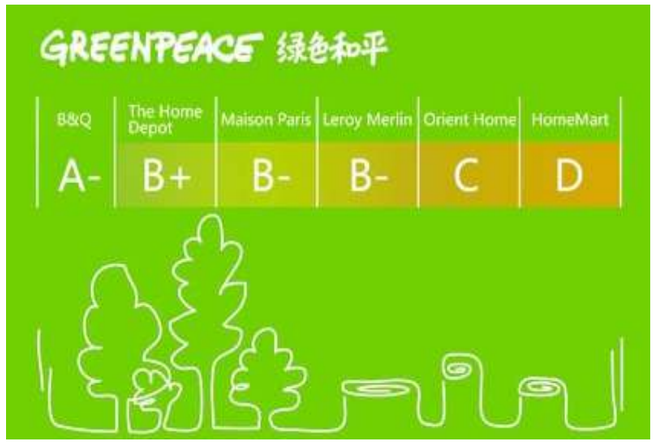
The adoption of RPP has been slow. Key challenges include insufficient supply of FSC wood and higher purchasing costs. However, companies that are looking at the issue strategically include IKEA, Home Depot, B&Q and Orient Home.

Table 25: DIY Multinational Company Actions on Sustainable Timber in China

Company	Action
B&Q	Agreed to a three-year action plan in 2007 to achieve the Sustainable Timber Category. Currently, it is still trying to fulfil the plan's requirements as sourcing legal wood is proving to be problematic.
Home Depot	Stated its intention to implement the RPP but has not committed to a timeline.
Maison Paris	Banned the sale of endangered merbau and indicated it will implement its parent company's ecological policy. However, it has not yet developed a responsible procurement policy on timber procurement.
Leroy Merlin	Stopped stocking merbau but has yet to set up a responsible timber procurement policy.
Orient Home	Supported by a Hong Kong-based NGO, has agreed to a three-year action plan commencing in 2009 to move towards Sustainable Timber Category.

Greenpeace also rated DIY companies in China based on the RPP.

Figure 40: Greenpeace's simple rating on Chinese DIY Companies



Source: Greenpeace (2008)[376]

IKEA and B&Q examples of leaders in best practice

IKEA is one of the world's biggest low-cost furniture retailers. It sells Scandinavian-style home furnishings and other house-wares in about 300 stores in more than 35 countries, with annual revenues of well over US$32 billion. It sources most of its wood from Poland, Russia, China, Romania and Sweden.

IKEA acknowledges that it inevitably sources wood from high-risk countries such as Russia and China. Despite this, in order to ensure sustainability, IKEA has a long-term goal to source all wood used in its products from FSC-certified forests.

In selecting its suppliers, IKEA uses risk maps developed together with the NGO, Global Forest Watch and the World Resources Institute (WRI). It also uses data from its 'wood origin questionnaire' to suppliers and undertakes risk assessments as the basis for selecting suppliers for wood supply chain audits.

All wood sourced must fulfil the following minimum criteria:

- Not have been illegally harvested
- Not be from forestry operations engaged in forest related social conflicts
- Not be harvested in uncertified Intact Natural Forests (INF) or other geographically identified HCVF
- Not be harvested from natural forests in the tropical and sub-tropical regions being converted to plantations or non-forest use
- Not be from officially recognized and geographically identified commercial Genetically Modified (GM) tree plantations

IKEA seeks to focus its sustainability management on suppliers from high-risk regions. Even though a supplier may be FSC-certified, they will still be audited by independent auditors every four months. Additionally, IKEA has a dedicated internal audit team for suppliers that have not yet obtained certification.

IKEA also proactively engages with a number of NGOs to address unsustainable practices in the forestry sector and to increase the availability of certified wood. In particular, it has collaborated with the WWF to ensure responsible forest management practices and to curb illegal logging, particularly in China and Russia,

IKEA is also a member of the Global Forest & Trade Network (GFTN) and works with the Rainforest Alliance on a trees programme in China, which is focused on attaining an additional one million hectares of FSC-certified forest by 2011.

In conjunction with Rainforest Alliance, IKEA also provides training to its supply chain. For example, between 2008 and 2009, the team engaged in more than 40 outreach and training events that reached more than 1,400 people on topics related to sustainable forest management and forest certification.

Source: IKEA Sustainability Report (2008)[377]

Case Study: B&Q

In 2007, the UK DIY retailer B&Q announced that all timber sold in its 60 stores in mainland China will be certified within three years.

In 2009, B&Q updated its purchasing policy, which aims to source timber only from proven, well-managed forests or recycled material. As a benchmark, the company aims to only source the following:

- FSC-certified wood products with full chain of custody
- Non tropical species that are PEFC-certified with full chain of custody, with following exceptions:

(i) PEFC-certified sources of European wood with full chain of custody and confirmation from the vendor that all material used originated in Europe

(ii) Other sources of PEFC-certified wood when supported with full chain of custody and evidence of independent assurance that the sources comply with the requirements of the FSC controlled wood standard (FSC-STD-40-005).

Products that are made from pre- or post-consumer waste recycled must have third party independent verification to prove the material is recycled waste. In some cases B&Q may choose to apply additional verifications should the credibility of a certificate be in doubt or to obtain further assurances that the source complies with the company's aim

Currently B&Q sells more than 13,000 wood products of which over 90 percent come from either FSC or PEFC full chain of custody certified sources.[378] All of B&Q's kitchen range is apparently now FSC-certified.[379]

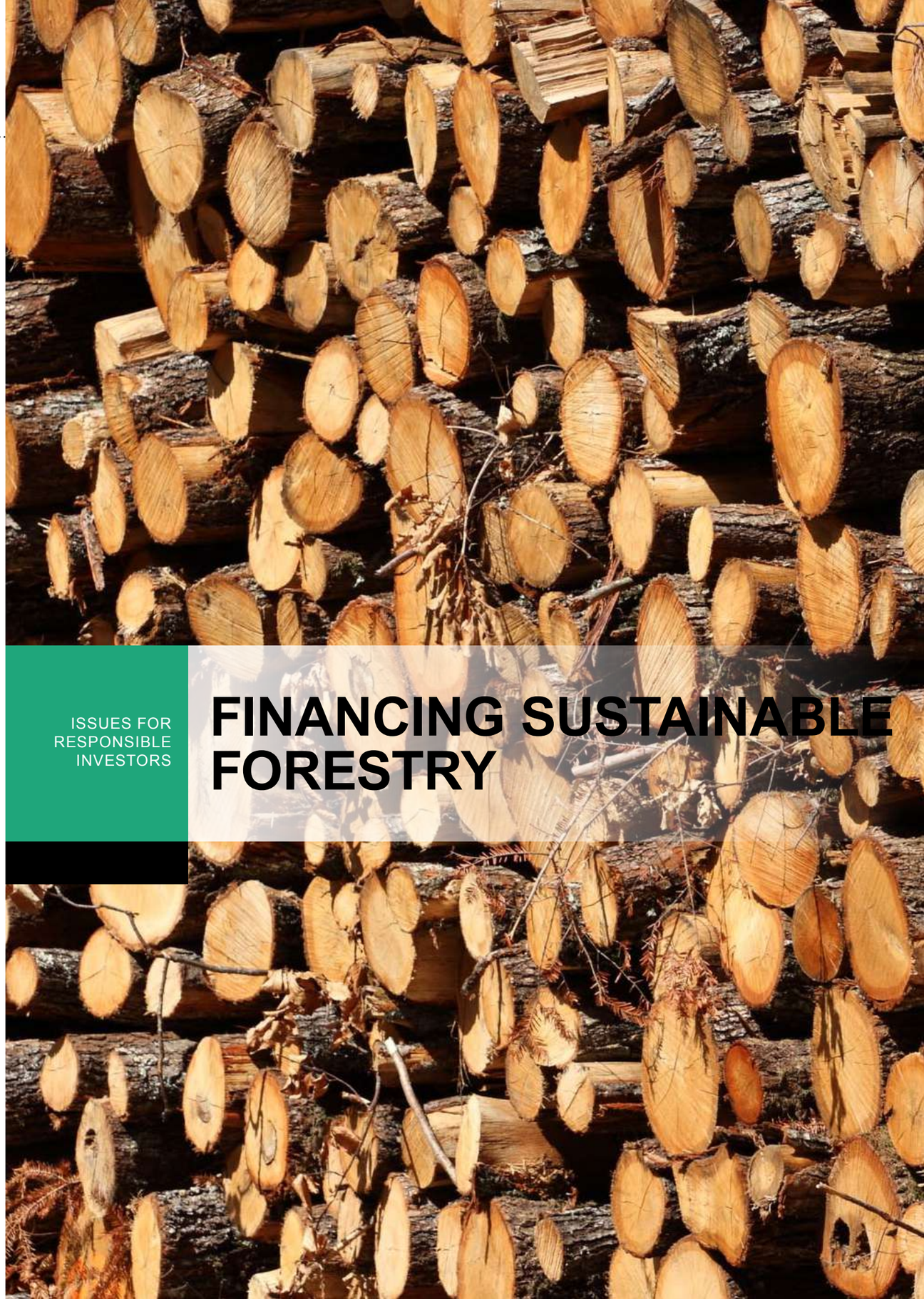
Source: Adapted from B&Q website[380]

Case study: Wal-Mart

A report by the Environmental Investigation Agency (EIA) in 2007 uncovered that a China-based manufacturer that has been producing over 200,000 baby cribs a year for Wal-Mart sourced its wood from a Russian company known to have been operating in an area where illegal logging is widespread. EIA found that employees of the same Russian company were handing cash to Russian police officers after local conservation experts suspected them of smuggling illegally logged timber.

Wal-Mart has since introduced measures to monitor its supply chains, and to implement a rigorous purchasing policy for wood products that includes auditing and tracking mechanisms.

Source: www.illegal-logging.info (2008)[381]



ISSUES FOR RESPONSIBLE INVESTORS

FINANCING SUSTAINABLE FORESTRY

OVERVIEW

During the 1990s international commercial and investment banks played a significant role in financing Asian forestry companies, especially large integrated firms. In a five-year period starting in 1991, Morgan Stanley, Merrill Lynch, Goldman Sachs and JP Morgan underwrote a total of US$5.6 billion in bonds for APP and its subsidiaries. In late 1997, Goldman Sachs privately sold US$845 million in APP bonds, and between 1997 and 2000, JP Morgan arranged for more than US$1 billion financing for APP through the bond markets. Then in 2000, Morgan Stanley underwrote a US$403 million offering for APP's China Group and a US$100 million bond in a second private placement handled by JP Morgan before APP finally defaulted on its bond in February 2001.[382] While this activity financed capacity expansion, it effectively also fuelled the illegal timber trade and caused massive deforestation so these companies could achieve their projected rate of return on investments in the absence of sufficient sustainable wood supplies. The rapid devaluation of Asian currencies in the late 1990s abruptly curtailed these financing activities, leaving many forestry companies in distress.

In the last five years, there has been renewed interest in the sector, caused by a combination of robust economic growth in the region, improving equity valuations, low interest rates and perhaps most importantly, a shortage of pulp. Most notably there is strong interest from investors looking into plantation projects in China. Between January 2005 and July 2010 in the forestry and paper sector, there were 43 equity offerings (including IPO, right issues and follow-on offerings) and 62 debt offerings raising a combined total of around US$9.5 billion. High profile private equity institutions are also investing in the sector. For example, in 2007, the Carlyle Group invested US$40 million in HK listed China Forestry.[383]

Table 26: Summary of Major Equity Fund Raising 2005 to 2010 in the Forestry and Paper Sector

(Amount in US$ million, unless otherwise stated)

Date	Issuer Name	Fund Raised	Type
24-Feb-06	Nine Dragons Paper Holdings Lt	504.0	IPO
10-Jun-08	Shandong Chenming Paper Holdin	409.9	Follow-on
11-Dec-09	Sino-Forest Corp	346.3	Follow-on
8-Jun-09	Sino-Forest Corp	340.1	Follow-on
1-Mar-07	Samling Global Ltd	321.5	IPO
16-Apr-07	Nine Dragons Paper Holdings Lt	260.5	Follow-on
20-Sep-07	QX PAPER	237.0	IPO
25-Nov-09	China Forestry Holdings Ltd	216.5	IPO
25-Jan-07	Lee & Man Paper Manufacturing	189.6	Follow-on
12-Jun-07	Sino-Forest Corp	188.4	Follow-on
13-Oct-09	Shandong Huatai Paper Co Ltd	185.5	Follow-on
14-Nov-07	Zhejiang Jingxing Paper Joint	163.9	Follow-on
30-Oct-06	Shandong Sun Paper Industry Jo	159.0	IPO
30-Oct-07	Shandong Bohui Paper Industria	90.0	Follow-on
5-Dec-07	China Sunshine Paper Holdings	82.7	IPO
20-May-10	Youyuan International Holdings	82.7	IPO
7-Sep-07	Lee & Man Paper Manufacturing	80.3	Follow-on
25-Feb-08	Samko Timber Ltd	78.3	IPO

Source: Bloomberg (2010)[384]

As highlighted throughout this report, investment in the Asian forestry sector is particularly sensitive due to significant ESG issues and consequent exposure to reputational and financial risks. As a result, financial institutions – whether they are financial advisors, loan providers, underwriters or investors – need to apply rigorous ESG due diligence. Research suggests however that historically the due diligence process applied to the sector (particularly regarding pulp and paper) rarely involves sufficient analysis of the key sustainability issues such as the sufficiency of raw materials to feed expanded and new pulp capacity. As an example, it has been found that bankers generally do not view illegal wood as a concern unless it affects a company's profit margins.[385]

Case Study: Sustainable Forestry Holding (SFH)

In 2009, SFH <723.HK> signed a five year exclusive right to clear-cut a 200,000 hectare forests in Rondonia, Brazil. The company is expected to provide almost 50 million cubic metres of commercial grade timber and residues.



Source: Google Maps, 2010

SFH claims the project is to make way for the development of a 3,150 Megawatts hydroelectric power plant in what would be Brazil's sixth largest hydropower project. The power plant project will cost around US$8 billion and is partly funded by Brazilian Development Bank. The project aims to provide a clean alternative energy for over 11 million households.

Some of the largest shareholders of SFH include the conglomerate NWS Holdings (13 percent), part of the New World Group, and UBS (2.3 percent).[386] NWS Holdings is invested by a large number of international financial institutions and UBS has a forestry guideline as part of their sustainability initiative.

Source: Investor presentation by SFM (July 2010)

The degree of ESG due diligence applied by financiers is influenced by a range of factors including the nature of the institution, the type and scale of finance provided and the level of risk. The overall challenges on how to integrate sufficient due diligence into the investment process have been discussed at length within the responsible investment industry. These include:

- Increased transaction costs
- The lack of a level playing field due to lack of regulation and enforcement
- Difficulties in quantifying and measuring ESG risks
- The perception that returns will be at risk

- Definitions of materiality
- Lack of clarity over fiduciary responsibility

The table below provides a review of some of the factors considered to influence ESG due diligence in the forestry sector. This area alone is a subject for research in its own right.

Table 27: Summary of Factors Influencing the Level of ESG Due Diligence by Financial Institutions

Institution	Types of Financial Service	Factors Affecting ESG Due Diligence
Development Banks e.g. IFC and ADB	Equity, Debt, Hybrid Finance, Trade Finance and Sustainable Finance	• These typically have strong due diligence practices and monitoring policies in place as part of their mandates. As such they tend to be leaders in addressing ESG issues and are in a position to lead others (for example, their ability to influence national banks through their role in funding financial intermediaries)
Commercial Banks e.g. Maybank	Bank Loans Project Finance Trade Finance Financial Advisory	▪ Since some asset-based lending has a lower risk profile by relying on collateral as security, there is the potential to overlook ESG risks ▪ Loan and risk officers may lack awareness and training on sector specific ESG issues ▪ Pricing of loans may not take into account of ESG risks ▪ The Asian forestry sector is notorious for complex company ownership structures and related party transactions, whereby companies may use their received funding to lend to sister companies which maybe involved in unsustainable forestry management.[387] This makes the due diligence process more challenging ▪ Involvement of Export Credit Agencies (ECAs) has been a significant factor in the industry and may create a moral hazard by providing non-collateralized guarantees[388]
Investment Banks e.g. UBS, Morgan Stanley	Project Finance Financial Advisory Underwriting Distribution	▪ The banker's fee is generally based on the total value of the amount raised, hence pressure to get deals approved ▪ Underwriters are obliged to purchase unsubscribed securities. As a result, the bank has a strong incentive to maximize distribution
Pension Funds e.g. Singapore Central Provident Fund	Invest in listed debt/ Equity	▪ The fast pace of the investor market presents a challenge to rigorous ESG due diligence ▪ Less incentive to practice non-financial due diligence due to lack of mandate from fund investors
Hedge Funds e.g. Sloane Robinson, Artradis Partners	Invest in listed debt/ equity and Illiquid investments across capital structure	▪ The hedge fund industry tends to be less regulated and therefore less transparent than traditional financial institutions ▪ Tendency to look for short-term gains by exploiting market inefficiencies rather than company fundamentals and ESG issues ▪ Less incentive to analyse ESG issues due to a lack of mandate from fund investors ▪ Larger equity stakes, however, and taking board positions may increase the likelihood of more rigorous due diligence due to increased reputational exposure
Private Equity/ VC e.g. Carlyle Group	Unlisted equity	▪ Larger equity stake and taking a board position may increase the likelihood of more rigorous due diligence due to increased reputational exposure

Source: Responsible Research 2010

Principles and standards in the forestry sector

The following principles and standards exist to assist financial institutions that wish to invest responsibly in the forestry sector:

UN Principles for Responsible Investment (PRI)

Established in 2005, the PRI was developed by a group of organizations including some of the world's largest institutional investors. Currently there are 800 signatories globally, of which over half are investment managers. The six PRI principles are:

1. Incorporate ESG issues into investment analysis and decision-making processes
2. Be active owners and incorporate ESG issues into ownership policies and practices
3. Seek appropriate disclosure on ESG issues by the entities they are invested in
4. Promote acceptance and implementation of the Principles within the investment industry
5. Work together to enhance effectiveness in implementing the Principles
6. Report on activities and progress towards implementing the Principles

If these guidelines are implemented effectively, PRI signatories invested in the forestry sector should go a long way to addressing the key areas highlighted in our issues section. PRI is however voluntary and the principles do not have specific provision regarding forestry investment. Due to the obligation for the signatories to report on progress organizations have been removed from the list for failing to report. In Asia, the PRI principles have still to be widely recognized by local fund managers with still only two investment managers currently signed up to the PRI in Hong Kong and Singapore respectively.

The Equator Principles

Launched in 2003, the Equator Principles (EP) are the most widely recognized sustainable banking principles. They consist of a voluntary set of standards for assessing and managing social and environmental risk in project financing. The underlying tenet of EP is derived from the performance standards on social and environmental sustainability developed by the IFC, the private sector arm of the World Bank. The performance standards include relevant policies on forestry, natural habitats and indigenous peoples. EP has increased ESG awareness within the financial community, but they do have limitations in relation to forestry sector investments:

- EP only applies to project finance with a minimum threshold of US$10 million. As the forestry sector in Asia is relatively small most financing does not meet this requirement, unless the company is integrated and has pulp and paper mill operations.
- Forest financing is not typically in the form of project financing. Most forestry companies use their own balance sheet to finance their expansion.
- Few Asian banks are signatories to EP and local banks are willing to lend without significant environmental due diligence. Consequently the playing field is not level for lenders.
- EP is a voluntary standard monitoring and compliance by signatories is not enforced.
- The implementation of EP lacks transparency and its open to interpretation by signatory banks.

- EP banks may be unwilling to disclose their lending activities to the public, due to client confidentiality

On forestry, EP banks are committed to:

- Excluding commercial logging operations or the purchase of logging equipment for use in primary tropical forest from investments;
- Financing only preservation and light, non-extractive use of forest resources in forest area of high ecological value; and
- Financing plantations only on non-forested areas or on heavily degraded forestland.

IFC Performance Standards

The IFC has implemented a policy on Social and Environmental Sustainability supported by eight Performance Standards (PS). The PS aim to help IFC and its clients manage and improve ESG risks and impacts. Importantly, the PS can and are used by other financial institutions, including some national development banks. The IFC has also produced specific guidelines on Forest Harvesting Operations, Board and Particle Based Products and Pulp & Paper Mills. IFC itself has not invested in tropical forestry for 25 years. Thirteen percent of its investments have been in plantations and 97 percent downstream in industrial processing.

IFC 's Eight Performance Standards

1. Social and Environmental Assessment and Management System
2. Labour and Working Conditions
3. Pollution Prevention and Abatement
4. Community Health, Safety and Security
5. Land Acquisition and Involuntary Resettlement
6. Biodiversity Conservation and Sustainable Natural Resource Management*
7. Indigenous Peoples
8. Cultural Heritage

* IFC is looking to revise the standards to introduce new requirements in case of the possible significant conversion and degradation of natural habitats as well as extending requirements related to ecosystem services

Asian Development Bank

ADB has a safeguard policy statement that aims to "avoid, minimize, or mitigate harmful environmental impacts, social costs, and to help borrowers/clients strengthen their safeguard systems". Under the policy ADB implements safeguards in the areas of environmental, involuntary resettlement, and indigenous peoples. In addition to the safeguards, ADB has a Forestry Policy that focuses on the promotion of sustainable forest management and also a Rapid Environmental Assessment Checklist that guides forestry projects into the appropriate risk category as regards the need for an environmental impact assessment.

Forestry best practices at financial institutions

In Asia, both international and local banks are active players in providing financing to the forestry sector and to pulp and paper companies, but their ESG practices can vary quite significantly. Below is a summary of the players active in the sector, their PRI and EP statuses, and highlights of their policy statements.

Table 28: Summary of Active Lending Institutions in Asian Forestry and Pulp & Paper

Institution	Signatories to:		In-house Forest Policies[389]	Policy highlights
	PRI	EP		
International Banks				
ANZ Bank	N	Y	Y	Effective March 2008, ANZ will only support legal logging activities and will avoid supporting the logging of high conservation value areas or areas protected by specified legislation or international environmental treaties and conventions The forest policy framework is comparable with internationally recognized certification schemes such as PEFC and FSC Source: ANZ website
Citigroup	N	Y	Y	Effective March 2006, reject all clients that significantly 'convert or degrade a critical habitat' For other high-risk clients, client must agree a plan to achieve FSC certification within a timeframe (e.g. three to five years). In the interim, must demonstrate intermediary milestones progress which is evaluated by a credible external party consistent with IFC's eight PS requirements In 2007 launched a training program with Rainforest Alliance to help bankers better understand illegal logging issues Source: Citi Sustainable Forestry Policy Sector Standard
Credit Suisse	N	Y	Y	Formalized a specific forest policy in 2008 to strengthen its existing sector risk management Based policy and guidelines regarding environmental and social standards on criteria defined by international organizations such as the UN and the World Bank. Source: CS Corporate Citizen Report (2009)
HSBC	Y	Y	Y	A forest policy was first introduced in 2004 and updated in 2008. HSBC will not provide financial services which directly support Illegal logging or plantations based on conversion and operations that disturb HCVF Will not finance the manufacture of pulp and paper where the raw material supplier of wood is not certified in a way that is in accordance with HSBC policy on certification Review consists of third party technical experts, publicly available information and specifically commissioned analysis Source: HSBC Forest Land and Forest Products Sector Policy (2008)

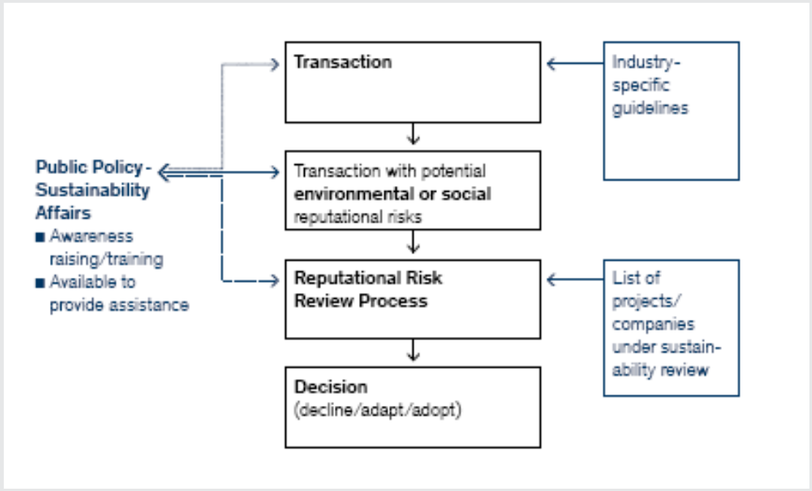
Institution	PRI	EP	In-house Forest Policies[390]	Policy highlights
Standard Chartered Bank (SCB)	N	Y	Y	Against financial services for commercial logging and purchase of logging equipment for companies directly purchase, trade or process timber from: primary tropical moist forest; HCVF and critical natural habitats; companies in violation of local or national laws in respect of illegal logging; and logging operations that include any species listed in CITES Encourages its clients to manage forests that are FSC-certified or demonstrate a credible path towards FSC certification or equivalent standard Source: Standard Chartered Bank Sector Policy on Forestry and Palm Oil
Chinese Banks				
Agriculture Bank of China (ABC)	N	N	N	Developed a structure for 'Green Credit' with strict restrictions on lending to industries with high-energy consumption, high pollution levels, and overcapacity levels or lending to 'redundant' projects. No specific measures identified regarding forestry lending Source: Agriculture Bank of China's CSR report
Industrial and Commercial Bank of China (ICBC)	N	N	N	Loans to high energy-consumption, high emissions companies and projects are strictly restricted. No specific measures identified regarding forestry lending Source: ICBC annual Report (2009)
Malaysian Banks				
Am Bank	N	N	N	No specific measures indentified to address environment and related risks as a result of its lending activities
CIMB Bank	N	N	N	No specific measures indentified to address environment and related risks as a result of its lending activities
RHB Bank	N	N	N	No specific measures indentified to address environment and related risks as a result of its lending activities
Singaporean Banks				
DBS	N	N	N	Has risk management measures in place to monitor significant incidents that may impact the group's reputation. Incidents are required to be reported based on certain established thresholds, but no mention of specific measures to indentify environmental and reputation risk as a result of its lending activities Source: DBS Annual report (2009)
OCBC	N	N	N	Has a reputation risk management programme that emphasises engagement with stakeholders. There is no mention of specific measures to identify environmental and reputation risks as a result of its lending activities. Source: OCBC Annual Report (2009)

Source: Responsible Research 2010

Case Study: Credit Suisse reputational risk screening process

Since 2009, Credit Suisse (CS) has incorporated industry sector guidelines for forestry and forest products as an integral part of its reputational risk review process. The guidelines are based on international organizations' standards and both existing and prospective clients are expected to comply. CS has its own internal department on sustainability affairs, which conducts in-depth reviews to determine whether potential clients adhere to its sector-specific guidelines.

Any highly complex transactions can be referred to the Reputational Risk Sustainability Committee, which is composed of several members of CS' top management and is chaired by the Chief Risk Officer. Below is a summary of CS's reputational review process:



In 2009, CS analyzed 144 transactions (not all forestry) to determine whether they posed environmental or human rights related risk. According to CS, there have been instances where potential forest clients were rejected as a result of non-compliance.[391]

Source: Credit Suisse Corporate Citizen Report (2009)[392]

ISSUES FOR RESPONSIBLE INVESTORS

ESG RISK FOR FORESTRY INVESTORS

To assess the risks and management challenges of managing a portfolio of forestry investments, there are several categories and questions on which investors can engage with companies:

General Management Policies	▪ What is the company's policy on SFM, and does the company have a long-term forest management plan? ▪ Does the company have ISO14001 Environmental Management certification for any of its operations? ▪ If so, what is the scope of certification? ▪ If not, has the company developed a clear policy on environmental management? ▪ Does the company have a policy to deal with conflicts with the communities where it operates? ▪ Has the company endorsed international collaborative measures to address relevant ESG issues such as human rights or labour rights?
Sustainable forest management	▪ Is the company involved in land-use change or forest conversion? If so what is the proportion of this as a percentage of forest under management? ▪ What was the condition of land prior to conversion (e.g. primary forest, secondary forest, degraded)? ▪ Does the company employ RIL? ▪ Prior to any logging activities, does the company have a process to ensure that areas of HCVF are protected? ▪ What measures are in place to control and prevent loss of biodiversity? ▪ What is the company's rate of replanting? Is replanting sufficient to replenish logging activities? ▪ Does the company have a policy in place to combat flooding, natural fire and other natural disasters? ▪ What pesticides does the company use and does it have a pesticide management plan? ▪ How does the company manage the potential impact of logging on nearby watersheds?
Certification	▪ Has the company developed a policy on certification? ▪ What is the proportion of certified forest under management? ▪ Does the company have a clear working timetable and target for forest certification? ▪ Is the company working with any NGO, trade network or consultants toward certification? ▪ Does the company have a policy for its supply chain to be certified? ▪ For integrated players, is there a system to segregate between certified and non-certified wood?
Compliance	▪ Have there been any legal claims relating to a breach in environmental legislation, land conflict, worker health and safety associated with the company's operations? ▪ How does the company keep abreast of the changing regulatory environment and assess regulatory risk? ▪ Does the company have systems in place to ensure that logging quotas and requirements set by the government is strictly adhered to?
Social Conflict	▪ Does the company have a system in place to ensure legality of land and that boundaries are clearly drawn? ▪ What strategies does the company employ to settle social conflict with local communities and Indigenous Peoples? Has the company been engaging with local communities and NGOs to understand local social and environmental issues ▪ Does the company have a policy of requiring free prior and informed consent of local communities before commencement of any logging activities? ▪ Is there a system in place to ensure that resolutions are fair to both the local and indigenous people? ▪ Is there a clear and transparent complaints procedure for indigenous people?
Legality	▪ Does the company have policies in place to ensure that its concession boundaries are protected against illegal loggers? ▪ Is the company participating in international collaborative measures to combat illegal logging such as the WWF Global Forest & Trade Network? ▪ What is the proportion of wood that is sourced from third parties? And is there is any system to ensure that such third-party wood can be verified?

Human resources, health and safety	▪ Is there a policy to ensure that migrant workers are paid and treated equally as local workers? ▪ Does the company have a safety policy, particularly on logging during the rainy season? ▪ What is the proportion of logging workers that are full time and outsourced? ▪ What is the compensation structure for logging workers? ▪ Does the company provide adequate training to both staff and contractors? ▪ Is personal protective equipment provided to all workers? ▪ How does the company ensure that all equipment is properly maintained? ▪ Is there a whistleblower procedure within the company? ▪ Is workers food and shelter in remote locations affordable and monitored for health and safety?
Disclosure	▪ Does the company publish a CSR/ environmental, health and safety and/or sustainability report or does it include any of these issues in its annual report? ▪ If the company does report, does it follow GRI? If so, is it audited by an independent third party? ▪ For concessions, does the company disclose the size, tenure, forest volume, logging rate, replanting rate, the proportion set aside for HCVF, yield and proportion of conversion land? ▪ Does the company conduct a valuation of assets and is the detail of the report disclosed to public?

FORESTRY FUTURES

Historically Asian forestry companies have not on the whole managed the region's forest assets sustainably. As highlighted, this is due to a variety of factors including a focus on short-term profits combined with poor governance and inadequate regulatory enforcement. There appears to be increasing interest from asset owners and managers globally to invest in sustainable tropical forests and it is hoped that these Investors will play a significant role in altering this short-term behaviour. A study conducted by McKinsey found that 82 percent of investors surveyed were interested in investing in afforestation projects and 70 percent were interested in sustainable timber.[393]

In addition to traditional logging activities, a number of investment platforms focus on sustainable business models. The question is whether returns would be sufficiently high enough to compensate for the risk. In this section, we attempt to outline ways in which companies and investors can consider technological and financial innovation to achieve a more sustainable business model in Asia, including the following:

1. Providing a sustainable flow of wood
    i) Plantation forests
    ii) Genetically modified trees
    iii) Community forestry
    iv) Reduced impact logging
2. Alternative investment vehicles
3. Unlocking the hidden value in the forest beyond timber
    i) Public-private partnerships
    ii) National level initiatives for REDD+
    iii) Payment for ecosystem services

SUSTAINABLE WOOD-FLOW

Plantation forests

Whilst controversial from a social and environmental perspective, properly managed plantation forests have the potential to substantially reduce pressure on global forest resources by providing large and continuous quantities of wood fibre from a relatively small land area, at the same time as providing livelihoods to local communities In the last ten years, many Asian companies have exploited this opportunity and begun to develop plantation forests.

Various studies by CIFOR have shown that, historically, plantation performance in Asia has fallen short of expectations, mainly due to poor soil conditions as a result of excessive logging. This has led to higher production costs and unstable yields. In China for example, investment returns on plantations were further weighed down by the cost of leasing land and the remoteness of plantations in relation to pulp mills. It has been argued that China's pulp production may not be as competitive as Indonesia and Latin America.[394]

This is changing however, mainly due to technological advancements in the sector. Newer and better clones of fast-growing species have been introduced and production has become increasingly stable if combined with good silviculture practices. At the same time, the price of wood has increased, making returns on plantation investment more attractive.

Figure 41: Wholesale Log Price in China (diameter 14-18cm)



Source: Sino-Forest (2010)[395]

Most notably, China has become an attractive destination for plantation developers due to favourable government policies, low-cost labour and the country's leading position as world's largest producer of furniture and paper. At the moment, collectives and state-run tree farms own the bulk of suitable plantation land. The Chinese government is playing an increasing role in helping foreign companies secure partnerships with local communities and more state-owned farms will become available to well-capitalized private enterprises in order to maximize production. For example, according to an industry article, the Chinese government is soon expected to begin offering its under-performing state-run 'tree farms' for sale. This is expected to open up an additional 24 million hectares to plantation operators.[396]

The key issue is that governments and responsible investors must ensure that the development of processing capacity does not outweigh the expected wood availability from plantation forests, otherwise wood will potentially be sourced from natural forests elsewhere and possibly from illegal sources.

Case Study: IFC plantation strategy in Indonesia

IFC is actively promoting plantation development in Indonesia. It recently developed its strategy to help companies find ways to profitably establish sustainable plantations. In particular, IFC seeks the following:

- To facilitate new investment in fibre/tree crop plantations on degraded non-forest, non-peat lands via a range of investment instruments such as equity, debt and guarantees. IFC also provides advisory services
- To integrate and promote the CDM and private financing to rehabilitate degraded lands
- To increase areas of certified forest plantation by helping reduce the costs of multiple certifications through consolidated data collection and management

In addition to the above, IFC aims to create employment opportunities for 90,000 people in rural Indonesia and to reduce carbon emissions by a minimum of 90 million tonnes.

Source: IFC (2009)[397]

Case Study: KeepTheHabitat

KeepTheHabitat (KTH) proposes a model based on the principles of sustainable forest management. The model is implemented with the consent of communities, businesses and all levels of government.

KTH employs people to establish forest plantations on degraded landscapes next to areas of virgin forest. Employment gives an incentive to protect the virgin forest. It raises awareness of the value of the forest. On-ground activities give on-ground protection from deforestation.

Once the initial area of virgin forest is protected, KTH measures the carbon emission saved by stopping deforestation. These carbon credits can be sold. Much of the revenue from the sale of carbon credits is then re-invested in helping establish more forest plantations to protect other virgin forest areas. In turn, this provides additional carbon revenue to help establish more plantations to protect more virgin forest. And so the cycle of employment, planting, protection, carbon revenue and re-investment continues.

With the Mamuju Habitat model, KTH re-invests much of the carbon revenue generated from stopping deforestation. This benefits both people and forests. The result is economically sustainable communities who benefit from sustainably managed natural forests. Communities prosper from a sustainable supply of plantation timber and new timber industries. In this way, individual prosperity is directly linked to forest protection, reforestation and sustainable forest management.

Source: adapted from http://www.keepthehabitat.org/index.cfm?fuseaction=page&p=185

Genetically modified plantations

A number of companies are now using genetically modified (GM) inputs for their plantations to enhance growth and yield. For example, Indah Kiat is reported to be working in collaboration with the University of Beijing on GM tree research.[398] Unlike traditional techniques where plant breeders cross plants of the same species or of closely related species, GM plantations allow scientists to modify trees by inserting genetic material from another tree of the same species, from another tree species, or from another species of plant or even animal.[399] As a result, some GM trees can grow faster, have less lignin (the glue-like substance which holds wood cells together) which could minimize bleaching during the pulping process, and are resistant to pests and herbicides.

However, the application of GM plantation is highly contentious and certification schemes such as FSC do not recognise plantations that use GM trees. There are additional key issues regarding GM plantations:

- Because they are quick growing, they are thought to consume even more water than the trees currently used in industrial tree plantations
- Trees with less lignin can be weaker, more susceptible to disease and easily damaged or destroyed in storms[400]
- Nutrients can be removed from the soil more quickly, requiring more chemical fertilizers
- GM plantations can be highly invasive of surrounding forests, crowding out vegetation and destroying the habitat of animals, birds, insects and fungi that have evolved to live in native forests[401]
- There is currently a lack of both regulation and research into the potential ecological impacts in the area of GMO plantations

Case Study: China Grand – GM mulberry

Traditionally, paper mulberry has been slow to grow and has weak disease resistance, which has prevented large-scale commercialization of the plantation. Since 1997, China Grand has been working with the Institute of Botany at the Chinese Academy of Science to successfully develop Genetically Modified Paper Mulberry (GMPM), a new species that overcomes the weakness of conventional paper mulberry and significantly improves its yield.

GMPM has a rotation period of only one to two years, which is much shorter than other popular Fast Growing High Yield (FGHY) trees in China such as eucalyptus (five to six years) and poplar (seven to eight years). Compared with many other FGHY tree species, GMPM has stronger disease resistance ability and does not require sophisticated plantation technology and management skills. Thus GMPM can survive in infertile soil, high salt and drought areas, which makes it particularly suitable to China's increasingly dry landscape.



According to a Deutsche Bank report, China Grand planted 3,333 hectares of GMPM between 2006 and 2007[402] in its nursery centres in Beijing, Shanxi, Hebei, Hubei, Hunan and Chongqing.[403] The latest annual report, however, did not include the total planted. The results so far are nonetheless encouraging: GMPM plantation accounts for around seven percent of China Grand's forests under management but represents ten percent of total revenue for the financial year ended 31 March 2009. None of China Grand's forestry assets are certified.

Source: Deutsche Bank (2007)[404]

Community forestry

Community forestry is an alternative business model that addresses issues of social conflict and land tenure.

FAO defines community forestry as "any situation that intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products for local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest products at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities."[405]

This approach provides for local livelihoods while also promoting sustainable forestry management. There are increasing opportunities for companies and investors to participate in community forestry, particularly in Indonesia where collectives of local people (forming a co-operative) can apply for a 'community forestry concession' under the Community Forest Program.[406] These concessions are typically 35 years in duration and are granted in relation to production forest.

In another drive to promote community forestry, in 2006 the Indonesian Government of Indonesia announced its intention to allocate 5.4 million hectares of plantation land to small landholders as 'Peoples Plantations' mainly in Sumatra and Kalimantan. Under this program, eligible households can receive up to 15 hectares of land to manage (but not own) for a maximum period of 100 years.[407] Investors and companies can play a significant role in providing financing and technology transfer to these Peoples Plantations in return for sustainable wood flows.

Case Study: Wirakarya Sakti timber plantation

Wirakarya Sakti (WKS) is an Indonesia based timber plantation holder with a concession area of about 250,000 hectares in Jambi Province. WKS has a capacity to produce 430,000 tonnes of pulp and paper per year.

Of the concession under management by WKS, an area of around 80,000 hectares could not be planted due to disputes over community ownership.

As a result, WKS entered into a partnership with the local community. The partnership was structured as two schemes. In the first scheme, WKS maintains full control of the production process (including seedlings, fertilizers, infrastructure, technology) and also provides the capital, while the community provides the land and labour. In this scheme, the business risk is borne equally by the company and the community, and the outputs are shared by both parties.

The second scheme gives full control to the community who provide seedlings, labour and technology. The company provides a limited amount of technical guidance. In some cases, the company provides seedlings and financing. All risk will be borne by the community and it is free to sell its products to any party of their choice.

Source: FAO (2005)[408]

Carbon income to subsidize reduced impact logging

As an alternative to using avoided deforestation (REDD+) to secure carbon income, a company can employ a hybrid strategy that uses both RIL and REDD+. Here the company will generate income from sales of wood while the costs of RIL can be subsidized by funds generated through REDD+.

Conventional logging practices can easily result in unnecessary emissions of carbon. The selective logging practices deployed under RIL reduce the likelihood of forest degradation and over the long term, forests can also regenerate more quickly. These carbon savings can be argued as additional and therefore could arguably qualify for REDD+ credits.

It is worth noting that RIL is mandatory under most forest certification schemes such as FSC. By adopting RIL, a company may have already eased the path to certification. The potential premium from selling certified wood can also be used to enhance overall profitability of sustainable forestry management.

ALTERNATIVE INVESTMENT VEHICLES

A number of investment vehicles have emerged in the forestry sector that fully or partially address sustainability. Below is a summary list of such vehicles both around the world and in Asia:

Table 29: Summary of Forest Funds

BioCarbon Fund	▪ BioCarbon Group Pte. Limited ("BioCarbon", the "Company"), registered in Singapore, has been established by IFC and Macquarie Bank to invest in Avoided Deforestation (AD) projects in emerging markets ▪ These projects will conserve forests from being converted into other forms of land-use and generate carbon credits – the sale of which will be the main source of income for the project ▪ Capital will be used for pre-development work in the identified sites for AD work; investment in concessions in Indonesia to be undertaken over the course of next 12-18 months; next two year development costs for projects in Indonesia; and development of a pipeline of AD projects outside Indonesia
Cambium Fund[409]	▪ Invests in a global portfolio of forestry based products and manages US$163 million ▪ Targets investments in North and South America and the Asia-Pacific region (including Australia and New Zealand), but may invest in other regions on an opportunistic basis ▪ Seeks to invest primarily in forestry assets that are or can be managed on an environmentally and socially sustainable basis ▪ Seeks out opportunities to gain value from the certification of its forest management systems, from the commercial development of environmental products and services, and from the reduction of risk by community engagement and workforce development ▪ Does not engage in processing facilities
Global Solidarity Fund	▪ An incubator for individual donors who prefer a hands-on approach to philanthropy. ▪ Fund size US$160 million, structured like private equity ▪ 450,000 hectares under management ▪ Invests in FSC-certified timberland ▪ Deal size US$10 million to US$46 million ▪ Strong emphasis on Southern Hemisphere emerging markets ▪ Minimum internal rate of return of ten percent

Global Emerging Market Forestry Fund[410]	▪ A joint venture between International Forestry Investment Advisors (IFIA) and Global Environmental Fund (GEF), an international private equity fund manager ▪ Invests in productive land and established plantations, especially those established by national governments or aid agencies ▪ Improves forest management by investing in processing facilities and marketing activities to connect forests to world markets ▪ Invests in solid-wood products manufacturing facilities to add value to the timberland ▪ Invests in technological innovation and in human resources development ▪ Certifies all forest assets to the FSC standard ▪ Deal size US$20 million to US$100 million[411]
New Forests[412]	▪ A timberland investment management company with expertise in monetizing eco-products, such as carbon and biodiversity, as added-value in timberland investments or as stand-alone assets. ▪ Manages the $500 million Australia New Zealand Forest Fund, investing in sustainable plantation forestry assets in Australia and New Zealand, and the Eco Products Fund, investing in conservation and mitigation banking instruments and pre-compliance carbon primarily in the United States. ▪ Executes investment strategies for sustainable forestry and eco-products in the Asia Pacific region with extensive carbon project expertise related to REDD+. ▪ Manages the Malua Biodiversity Bank in Sabah, Malaysia as a commercial investment in the conservation of 34,000 hectares of pristine orangutan habitat adjacent to recently converted palm oil plantations ▪ Invests in timberland and eco-products investments, such as carbon credits, biodiversity credits, mitigation banks and water quality improvements ▪ In the Asia Pacific region, focuses investments on greenfield timber plantations, existing rubberwood and timber plantations and mixed land-use areas, including REDD in Papua in Indonesia ▪ Targets investment opportunities in Malaysia, Indonesia, Vietnam, Thailand, Laos, the Philippines and the Pacific Islands ▪ Deal size US$5 million to US$20 million, target return of 14 percent net of management fees ▪ Clients include long-term institutional and private equity investors seeking exposure to the relatively stable returns from timber in mature markets and the higher risk-adjusted returns available from new geographic markets, such as Asia, and new asset classes, such as eco products ▪ Based in Sydney, Australia, with staff members in New Zealand, San Francisco, Washington, DC, Indonesia and Kota Kinabalu, Malaysia

Case study: Global Solidarity Fund investment strategy

A recent study by DFID identified GSF as the top performer in terms of track record, sector experience, operational team and ESG. GSF's strategy for choosing investments is based on the following preconditions:

- Potential of a minimum of 10 per cent real internal rate of return (IRR
- Highly favourable natural conditions for forestry
- Availability of land, either through ownership or long-term concessions from government
- Preference for concessions that are available directly
- Co-operation with a national partner
- A minimum of ten percent local ownership, to avoid future land conflicts
- No relocation of people
- No conversion of natural forests
- Project must be welcomed and endorsed by the host government
- Preference for establishing new forest enterprises
- For every hectare of new forest plantation, one hectare of protected or responsibly managed native ecosystem is set aside
- All of the company's investments are subjected to certification according to the FSC or a third-party verification by an accredited organisation
- All of the company's investments will adhere to the ten universal principles of the UN Global Compact, including ILO conventions on health, safety and the working environment, UN and ILO conventions on biodiversity, conservation, human rights, individual freedom, IPs and ethnic minorities.

Source: DFID[413]

UNLOCKING FOREST VALUES BEYOND TIMBER

REDD+

Despite its challenges, REDD+ has the potential to become a cost-effective solution to reduce carbon emissions and therefore presents a tremendous investment opportunity. The UK Government's Eliasch Review estimated that the financing required to halve emissions from the forest sector to 2030 could be between US$17-33 billion per year.[414] Despite this potential, investors generally have proven to be reticent to enter the market for a number of reasons:

Macro Level	- Uncertainty over shape and form of the REDD+ market post-2012 - Need for policy reform, an established legal framework and clarity as to who owns the carbon - Poor governance at the country level
Project Developer Level	- High risk - Requires large up-front finance in the form of patient capital- to measure carbon stock, verification, project design and implementation - Economies of scale
Buyer level	- Low liquidity - High transaction costs for due diligence, structuring and risk mitigation

The Forest Carbon Portal only lists two REDD+ deals in Asia as operational. That is, they have completed transactions of carbon credits, have communicated a volume of carbon dioxide-equivalent to a funder in exchange for funding, or have signed commitments to transfer carbon credits once they are generated. However many others in the region are in various stages of development, as detailed in Appendix VI.

Table 30: Summary of Current REDD+ Deals

Project Name	Country	Size (Hectare)	Total Reduction	Developer	Purchase
Oddar Meanchey Forest, Cambodia	Cambodia	60,000	8,500,000	Community Forestry International	N/A
Ulu Masen Project, Province of Nanggroe Aceh Darussalam, Indonesia	Indonesia	750,000	3,369,848	The Provincial Government of Nanggroe Aceh Darussalam (Aceh)	Bank of America (Merril Lynch)

Source: www.forestcarbonportal.com

Public-private partnerships can overcome some of the challenges identified above. Drawing on experience from the CDM market for Afforestation/Reforestation (A/R), multilateral development banks are starting to play a significant role in kick-starting REDD+. For example, the World Bank's Bio Carbon Fund is the biggest investor in A/R projects and has signed Emission Reduction Purchase Agreements (ERPAs) with 18 CDM A/R projects and three REDD+ projects in the two tranches of its portfolio. The first tranche requires around $55 million and the second around $37 million.[415]

Similarly, there are now more than 15 bilateral and multi-lateral initiatives to support REDD+ and climate change in general. Some key initiatives are identified below:

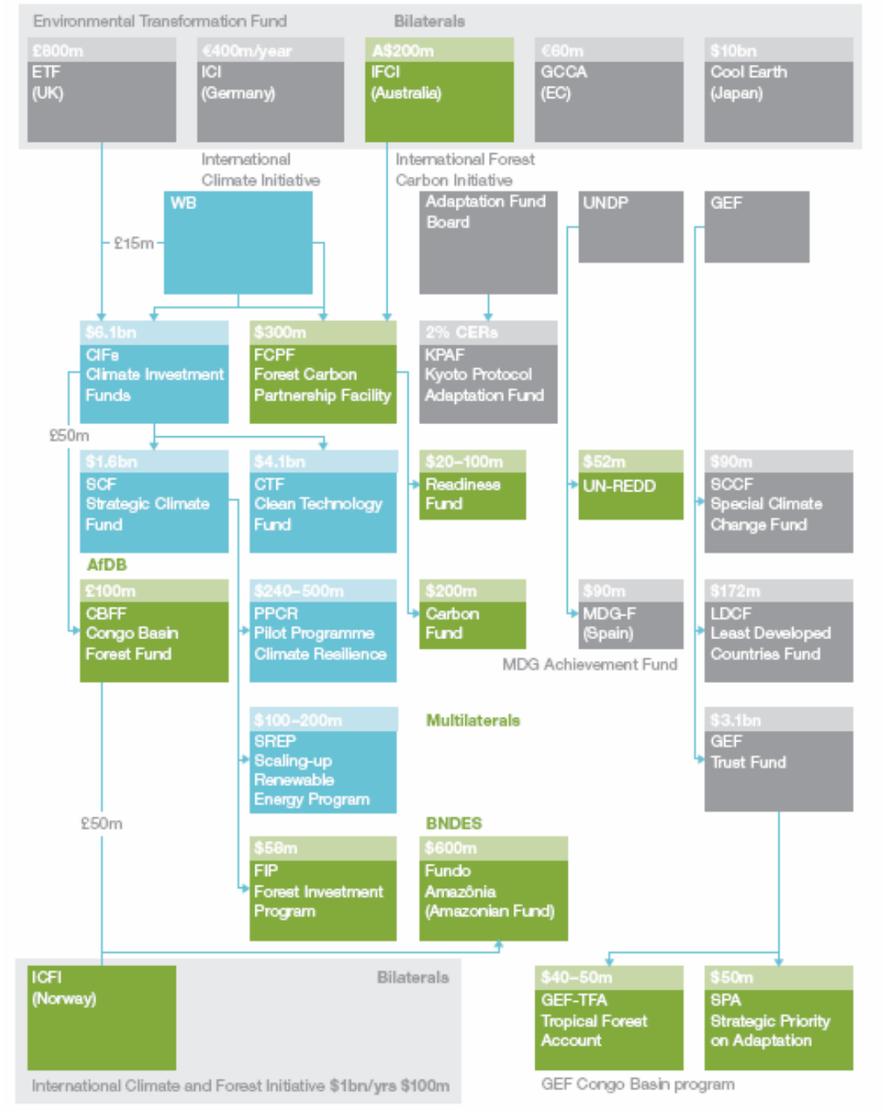
Table 31: Summary of Key Multi lateral and Bilateral Initiatives for REDD+

Program	Description
World Bank's Forest Carbon Partnership Facility (FCPF)	US$300 million fund which aims building capacity of developing countries in tropical and subtropical regions to do REDD+
World Bank's Forest Investment Programme (FIP)	US$58 million committed capital that provides scaled-up financing to developing for readiness reforms as well as public and private investment
UN-REDD Programme	A US$104 million initiative to assist developing countries to prepare and execute national REDD+ strategies
Norwegian government moratorium	In May 2010, the Norwegian government signed a US$1 billion MOU with the Indonesian government for a two-year moratorium on the conversion of natural forests and peatlands. The Norwegian government is also the largest donor to the UN-REDD Programme, committing US$52 million in 2009 and further US$30 million in 2010
REDD+ funds committed at Copenhagen	Six countries (Japan, Norway, Australia, France, the United States and the United Kingdom) offered $3.5 billion towards addressing deforestation under the UN's REDD scheme between 2010 and 2012

The key advantages of bilateral and multilateral initiatives include the following:

- Mobilisation of funds such as provision of seed money or up-front capital for capacity building for project developers
- Transfer of technological know-how
- Risk sharing with project developers
- Enhanced liquidity for the carbon market by participating as carbon buyers
- Enhanced creditability of project developers, lowering overall transaction cost

Figure 42: Summary of All Multilateral and Bilateral Initiatives for REDD+ and Climate Change



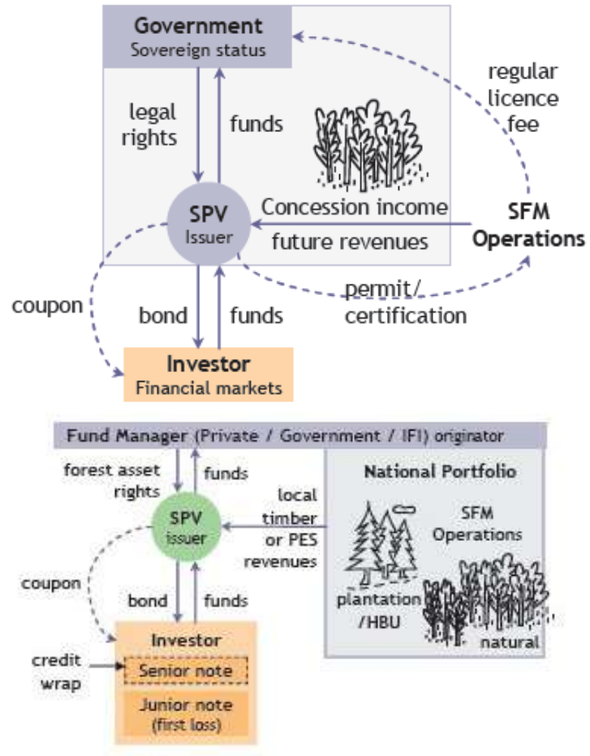
Source: DFID (2009)[416]

Securitizing forest assets

Given the potential stable cash flow of forestry assets, it is conceptually possible to monetize cash flows based on sustainable forestry management and/or carbon income in the form of a 'forestry bond'. The basic idea is to raise significant up-front capital into a special purpose vehicle (SPV) on which the investor will have a claim. In return, investors would receive a bond with a regular cash flow with a pre-determined rate of interest generated from the underlying forestry asset. The following are potential structures for a forestry bond:

- Bond backed by government secured against concession fees
- Bond backed by a portfolio of forests secured by future cash flow from carbon/ and wood sale

Figure 43: Potential Structure for Forestry Bond



Source: Forum for the Future and EnviroMarket (2007)[417]

There are key challenges and limitations of executing a forest bond:

- Monetization based on sustainable forestry is feasible but would be quite difficult for REDD+ given the current uncertain regulatory environment
- Pricing risk/ return appetite would be a key concern for investors. A sovereign guaranteed bond could significantly lower the risk
- Portfolios need to be sufficiently large to achieve diversification
- Poor governance at both company and government levels. A transparent mechanism for fund disbursement is required

Case Study: Securitization of 600,000 hectares by Tornator Group

In 2002, Stora Enso, the Finnish forest product company, spun off 600,000 hectares of Finnish forestland into a special-purpose vehicle by issuing three classes of asset-backed bonds raising US$715 million. The Tornator Group manages this new vehicle. The primary source of cash flow comes from the sale of felling rights to harvest wood, forest management services to third-party landowners and the disposal of selected land areas.

Source: International Finance Law Review (2003)[418]

Case Study: REDD+, Aceh and Merrill Lynch

Background

Aceh is an autonomous territory of Indonesia located on the northern tip of the island of Sumatra. It has 3.5 million hectares of tropical forests that are a critical last refuge for endangered tigers, elephants, rhinoceros and orangutans. These forests provide ecosystem services essential to Aceh's recovery, including clean water production, flood prevention, erosion mitigation and climate regulation. In 11 years, Sumatra has lost 30 percent of its forests equivalent to over 6.5 million hectares. Meanwhile after the 2005 tsunami that severely affected Aceh, demand for timber in the territory has rocketed, fuelling an illegal logging boom.

The Deal

In April 2007, Carbon Conservation and its NGO partner Fauna and Flora International (FFI) along with Irwandi Yusuf, the first elected governor of Aceh, signed an agreement to commit to delivering a huge reduction in deforestation across 750,000 hectares of tropical forest in Aceh's Ulu Masen region, the last remaining unprotected rainforest region on the island of Sumatra.

Under the agreement, legal logging will be curtailed and sustainably managed, while illegal logging will be prevented by government law enforcement in cooperation with FFI, which has existing operations in the area. The plan also includes increased manpower and improved equipment to patrol the rainforest. The deal is expected to avoid emissions of approximately 3.4 million tonnes of carbon dioxide per year for the 30 year life of the project.

The conservation activities were budgeted at US$48 million over five years, with US$26 million earmarked for direct payments to communities. The project is partially funded post-tsunami aid, the World Bank, Oxfam and the World Bank Forest Carbon Partnership Facility. Aceh also utilized microfinance institutions to provide financing for micro business to the local communities.

To further finance the project, Aceh sold US$9 million worth of carbon credits exclusively to Merrill Lynch in exchange for a guaranteed off-take agreement over the first four years and an additional call option for further carbon credits over six years.

Merrill Lynch's intention was to structure and distribute the carbon credits to clients in its investment banking, commodities and wealth management business. All the money raised will be put into a trust fund that is being managed by a steering committee that consists of the UN and all parties involved.

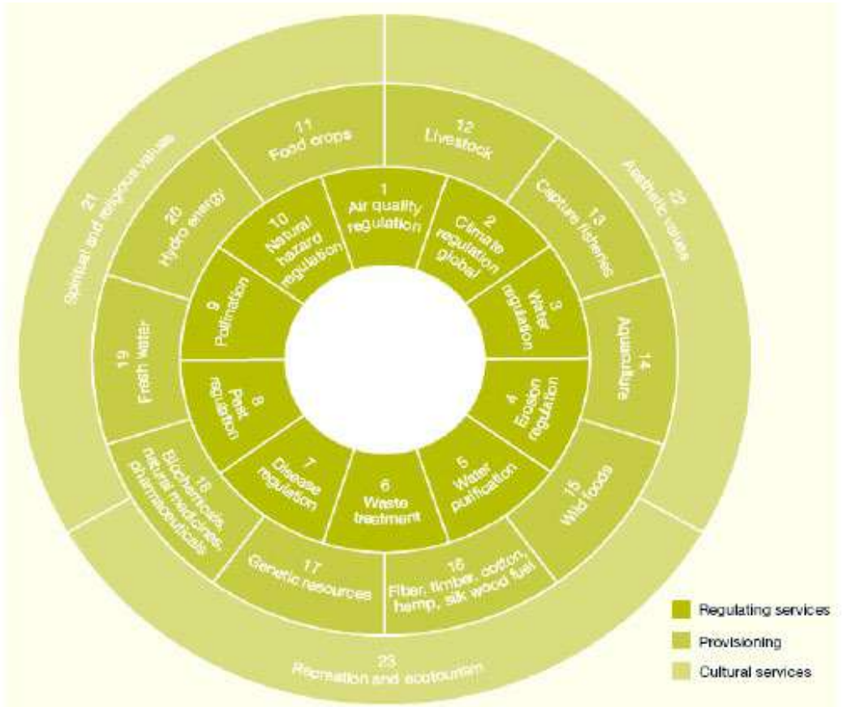
The project is progressing with land re-zoning for conservation areas, spatial planning to identify areas of high conservation value. Financing for carbon validation and verification has also been committed and is progressing.

Source: www.carbonconservation.com, pers comm

Payment for Ecosystem Services

So far our discussion has focused on carbon as a potential source of revenue. However there is also an opportunity to monetize other environmental services such as rainfall generation, climate regulation, biodiversity maintenance and water storage. Indeed, there is increasing interest in valuing rainforests as living entities rather than just timber commodities.

Figure 44: Services Provided by Forests as a Whole



Source: World Sustainable Business Council & PwC (2010)[419]

As previously shown, forests have a value in protecting watersheds, stabilizing soils, and guarding against flooding. At a macro level, they are also important in regulating rainfall, climate and conserving biodiversity. As such they are able to generate 'environmental services' which can be paid for. According to Andrew Mitchell of the Global Canopy Program, the concept of Payment for Environmental Services (PES) in relation to forests gained traction in 2005 when the prime minister of Papua New Guinea told developed countries at an international climate meeting that if they wanted tropical nations to stop cutting down their forests, they would have to pay them.[420]

Increasingly investors are beginning to explore similar ideas of PES in Asia in relation to forests such as biodiversity offsets.

According to the Business and Biodiversity Offsets Programme (BBOP),the idea is that such offsets should provide "measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented". The goal of the offsets is to achieve no net loss (and preferably a net gain) of biodiversity on the ground with respect to species composition, habitat structure and ecosystem services, including livelihood aspects. Companies that wish to offset biodiversity impacts are embracing this concept.

According to Ecosystem Marketplace, there are currently four active PES programs that cover biodiversity and endangered species in forests over 26,000 hectares[421] these include China's Forest Vegetation Restoration Program, Saipan's upland mitigation bank and the Malua Bio Bank.

Case Study: Canopy Capital (South America)

In 2008, Canopy Capital, a private equity firm, secured the rights to environmental services for a 370,000 hectare reserve in the forests of Guyana. The forests of the Guiana Shield generate rainfall that enables the production of agricultural commodities throughout northern Latin America and the southern Caribbean. The deal seeks to capitalise on the role that the Guiana Shield forests play in maintaining rainfall in South America. Canopy Capital plans to develop investment instruments such as ecosystem services bonds that will be sold in financial markets. The proceeds will be split with 80 percent going to the reserve and local communities.

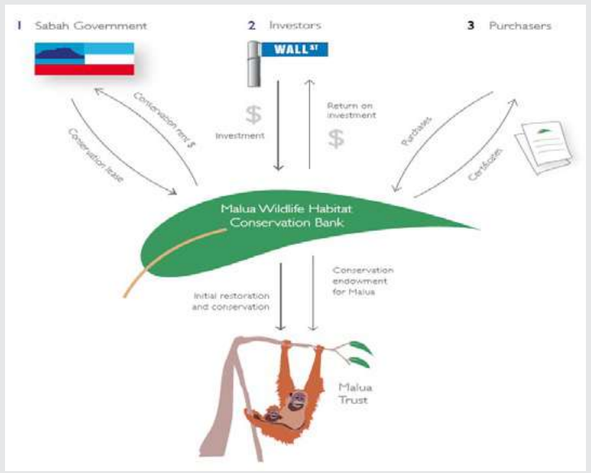
Source: Mongabay (2008)[422]

Case Study - Malua Bio Bank

Located on the island of Borneo, the Malua Bio Bank is a public-private partnership with the state government of Sabah to rehabilitate and protect the Malua Forest Reserve. The 34,000-hectare reserve provides vital habitats for one of the world's highest concentrations of orangutans, as well as for the Bornean clouded leopard and the pygmy elephant. Tracks from the critically endangered Sumatran rhinoceros have been spotted recently in Malua and over 300 species of birds inhabit this unique rainforest.

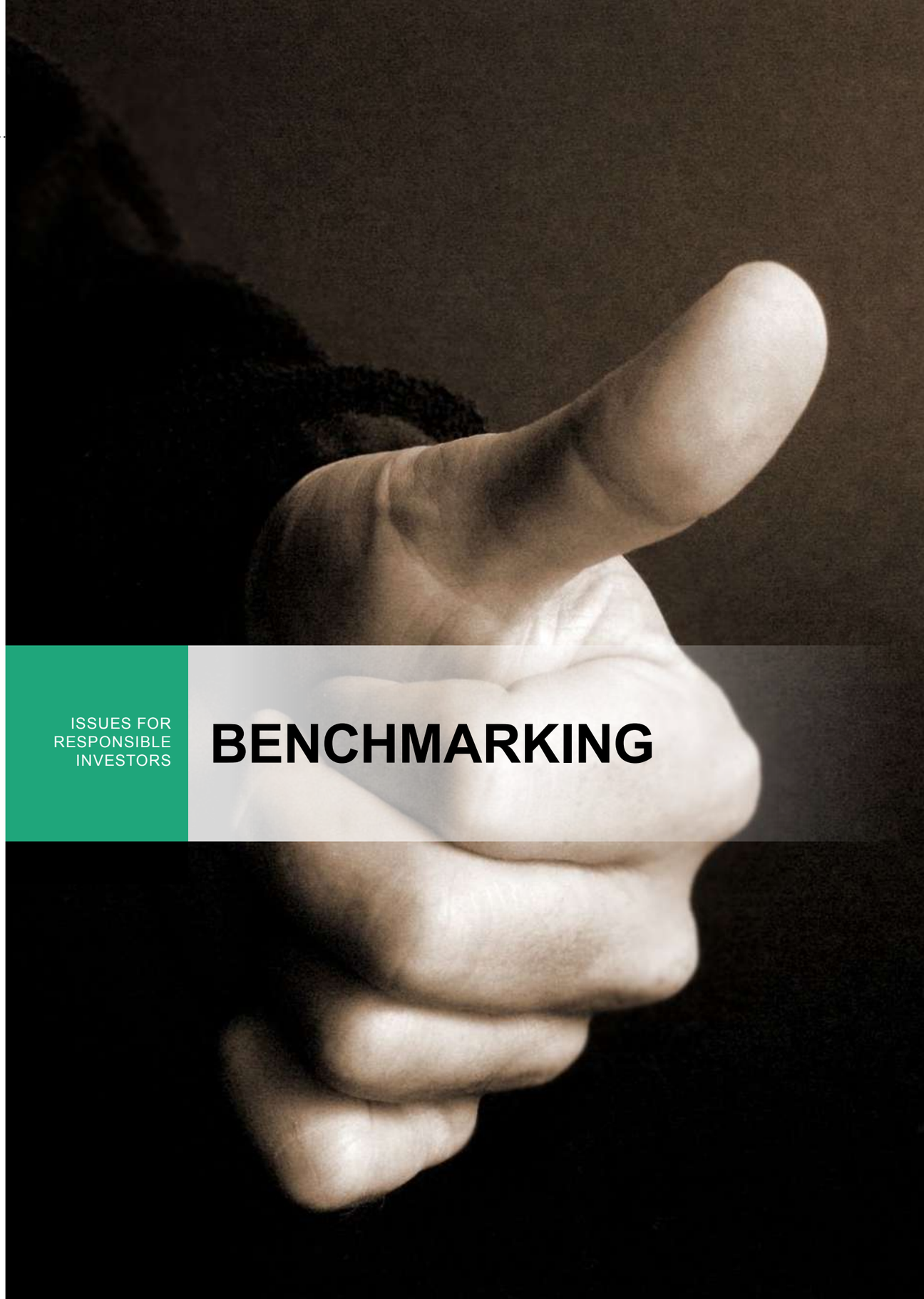
The Sabah state government has licensed conservation rights for a period of 50 years to the Malua Bio Bank and a private investor has committed up to US$10 million to the rehabilitation of the Malua Forest Reserve for the first six years.

After six years, the Bio Bank will sell Biodiversity Conservation Certificates, with each certificate representing 100 square metres of rainforest restoration and protection. Revenues generated from the sale of Biodiversity Conservation Certificates will be used to recover costs incurred and to endow a trust fund to manage the long-term conservation management of the Malua Bio Bank over the remaining life of the license. Any profits will be shared between the Sabah government and the Malua Bio Bank investor.



A conservation management plan was written for the Malua Bio Bank and reviewed by a team of scientists from local and international NGOs and research institutions. The rehabilitation process will include planting seedlings to re-establish key rainforest species and enhancing natural food resources for wildlife until the area regenerates into healthy tropical rainforest. Regular monitoring of forest regeneration, water quality and wildlife are just a part of the comprehensive conservation strategy. The Malua Bio Bank will also work with local communities and landowners to uphold the prohibition against hunting within the reserve and to prevent illegal logging.

Source: Malua Biobank website[423]



ISSUES FOR RESPONSIBLE INVESTORS

BENCHMARKING

Scoring methodology

In this report, 26 Asian forestry and integrated forestry companies from five countries were benchmarked against a total of 109 ESG indicators, covering corporate governance, the environment, human rights, labour and specific issues related to the forestry sector. One hundred of the indicators were those of the standard Asian Sustainability Rating™ (ASR™). The ASR™ was launched in October 2009 and assesses companies against over these carefully selected indicators covering as many elements of sustainability as possible.

The indicators are split into seven primary criteria:

1. CSR Strategy and Communication
2. Corporate Governance
3. Environment
4. Workplace and People
5. Marketplace and Supply Chain
6. Community
7. Specific forest-related areas such as replanting activities, dealing with indigenous people and treatment of HCVF

For each of the indicators, companies are awarded 0, 0.5 or 1 point for disclosure and performance. The scores have been converted into a percentage such that 100 in a category highlights that a company attained the highest level possible in this section.

Scoring is completed using only publicly available information such as company websites, sustainability, CSR and annual reports after 30 Sept 2008. Evaluation is based on information in English with a half score for reporting in local language.

A summary of the companies is as follows:

(In US$ million, unless otherwise stated)

Name	Bloomberg Ticker	Market Cap @ 16.08.2010	Forest Under Management (Hectare)	Operation
Shandong Chenming Paper	000488 CH Equity	1,960.6	266,667	China
Yueyang Paper	600963 CH Equity	891.2	N/A	China
Yunnan Green-Land	002200 CH Equity	609.6	484	China
Jilin Forest Industry	600189 CH Equity	380.9	N/A	China
MCC Meili Paper Industry	000815 CH Equity	295.3	33,333	China
Sichuan Shengda Forestry	002259 CH Equity	316.9	N/A	China
Fujian Yongan Forestry	000663 CH Equity	264.8	N/A	China
Yunnan Jinggu Forestry	600265 CH Equity	188.1	N/A	China
Sino-Forest Corporation	TRE CN Equity	4,278.0	347,000	China
Cathay Forest	CFZ CN Equity	45.7	157,763	China
Lee & Man Paper Manufacturing	2314 HK Equity	3,344.5	100,000	China
China Forestry	930 HK Equity	1,356.5	171,780	China
Samling Global	3938 HK Equity	2,796.1	3,732,606	China
China Grand Forestry	910 HK Equity	248.6	500,000	China
China Timber Resources Group	269 HK Equity	204.0	33,333	China
Ta Ann Holdings	TAH MK Equity	377.7	440,389	Malaysia
Jaya Tiasa	JT MK Equity	332.1	712,247	Malaysia
Lingui Developments	LING MK Equity	246.5	891,000	Malaysia
Evergreen Fiberboard	EVF MK Equity	254.0	N/A	Malaysia
WTK Hldgs	WTKH MK Equity	156.7	9,552	Malaysia
Subur Tiasa Holdings	STH MK Equity	144.2	7,000	Malaysia
Samko Timber	SAMKO SP Equity	59.6	#N/A	Indonesia
Barito Pacific Timber	BRPT IJ Equity	786,223.9	500,000	Indonesia
Sumalindo Lestari Jaya	SULI IJ Equity	24,812.7	116,876	Indonesia
APP Group	N/A	N/A	2,388,468	Indonesia
Oriental Paper Industries	OPI IN Equity	229.0	#N/A	India

Source: Bloomberg (2010)[424] Responsible Research

Score Summary

Company	Country of Operation	CSR Strategy & Communication	Environment	Governance	Workplace & People	Marketplace & Supply Chain	Community & Development	Sector-Specific	Total
Samling Global	China	38	22	68	47	0	63	78	**45**
Lee & Man Paper Manufacturing	China	38	39	60	26	0	38	0	**35**
Shandong Chenming Paper	China	25	35	80	21	0	13	0	**34**
MCC Meili Paper Industry	China	19	22	68	42	0	0	0	**30**
Yunnan Green-Land	China	6	13	80	16	0	50	0	**28**
China Forestry	China	25	9	72	16	0	25	22	**28**
Fujian Yongan Forestry	China	13	13	68	21	22	13	11	**28**
Jilin Forest Industry	China	19	26	56	11	0	13	0	**24**
Yunnan Jinggu Forestry	China	0	4	60	26	0	25	0	**21**
Sino-Forest Corporation	China	19	17	60	0	0	13	0	**21**
Yueyang Paper	China	0	4	68	5	11	0	11	**19**
Sichuan Shengda Forestry	China	0	4	64	5	0	0	0	**17**
China Grand Forestry	China	0	0	60	16	0	0	0	**17**
China Timer Resources Group	China	0	0	56	11	0	0	0	**15**
Cathay Forest	China	0	0	12	0	0	0	0	**3**
Lingui Developments	Malaysia	38	22	68	47	0	50	33	**40**
Ta Ann Holdings	Malaysia	25	13	68	42	0	50	78	**39**
Jaya Tiasa	Malaysia	25	17	72	42	11	50	44	**39**
Subur Tiasa Holdings	Malaysia	25	22	72	42	0	50	33	**39**
Evergreen Fiberboard	Malaysia	19	9	64	11	0	38	22	**26**
WTK Holdings	Malaysia	19	9	64	16	0	0	22	**24**
Sumailindo Lestari Jaya	Indonesia	38	9	64	47	0	50	44	**38**
Barito Pacific Timber	Indonesia	38	9	64	32	0	38	22	**22**
Samko Timber	Indonesia	6	0	60	0	0	0	11	**16**
APP Group	Indonesia	13	9	0	21	11	38	22	**13**
Oriental Paper Industries	India	13	35	72	21	0	38	0	**32**
GLOBAL PEERS BENCHMARKED USING THE ASR™									
Fibria	Brazil	69	70	60	68	44	50	67	**63**
Sumitomo Forestry	Japan	69	57	48	68	0	63	67	**55**
Sappi	South Africa	88	96	80	89	33	50	78	**80**
Mondi	UK	69	83	72	79	33	88	89	**74**
Plum Creek Timber	US	31	9	64	0	11	63	44	**30**
Weyerhauser	US	69	78	72	79	67	50	89	**73**

Global Peers Benchmarked using the ASR™

The global benchmark companies stand apart because of strong disclosure on environment and sector specific issues. For example, Mondi and Weyerhaeuser have very strong disclosure on forestry practices including good practices in relation to treatment of indigenous people and areas of high conservation value. Global benchmark companies are all strongly committed to wood certification.

We summarize the benchmarked companies into five main categories on their ESG disclosure and management:

Category	Company	Comments
Leaders	Samling Global Lingui Developments Ta Ann Jaya Tiasa Subur Tiasa Sumalindo	- Comprehensive disclosure provided as well as sound policies on governance such as independent remuneration committees, audit and nomination committees - Some disclosure of forestry practices but varies. Most are limited to general description and no specific data provided for replanting rate and yield etc. - Only Samling and Sumalindo have forest certification. Only Ta Ann expressed an intention to pursue certification
Followers	Lee & Man Paper Shangdong Chenming Barito Pacific Timber Oriental Paper MCC Meili Paper	- Lee & Man and Shangdong Chenming have good disclosure on governance and generally better disclosure on environment in terms of pollution and carbon emission but very little information offered on sourcing of raw material - Lee & Man is the only company in this category that hasapplied OSHAS
Timid	Yunnan Green-Land China Forestry Fujian Yongnan Forestry Evergreen Fiberboard Jilin Forest WTK Holdings Yunnan Jinggu Forestry Sino-Forest	- Generally, the A-listed shares in China have good disclosure on corporate governance and some disclosure on community investment, but most provide standard wordings
Laggards	Yueyang Paper Sichuan Shengda Forestry China Grand Forestry Samko Timber China Timber Resources Cathay Forest	- With the exception of Samko, all the companies in this category are plantation operators in China - In Cathay Forest's annual report, it only discloses a management discussion and analysis and financial statement. There is no section on corporate governance and CSR
Drop-outs	APP	- APP was formerly a listed company - APP has not published a sustainability report since 2007 and does not publish an annual report

Other general observations:

- In general we feel that the overall reporting quality in Asia is poor when compared to global best practices.
- With the exception of APRIL, which published its last sustainability report in 2008, none of the Asian companies under review have adopted the GRI reporting system. APP did publish a very thorough sustainability report in 2007, which was verified by a third party, but has not published any sustainability reports since then. Our review includes information published since 2008.
- Disclosure on supply chains is very weak across all Asian companies. None of the companies have reported to be active in engaging their supply chain on ESG matters.
- Companies tend to pay very little attention to product responsibility and do not engage with their business partners on ESG issues.
- Disclosure on operating parameters is very poor for all companies. For example, over the course of our analysis we found it extremely hard to locate data related to replanting activity, yield, rotation period and breakdown of planting by species and percentage land acquired through conversion.

Some integrated players do not disclose the area of forests or plantations that are under management, particularly Chinese A-listed companies including Shandong Chenming, China's second largest paper production company in terms of volume. According to JP Morgan, Shangdong Chenming manages 267,000 hectares of plantation, providing up to 80 percent of the company's pulp requirement.[425] However its annual report does not mention anything about the state of its plantation. The company has multiple listings on the Hong Kong, Shanghai and Shenzhen stock exchanges.

- Overall, we feel that Sumalindo makes the most commitment to sustainability. This is mainly due to its commitment to FSC certification. Proportionally Sumalindo has the most area under certification of all the benchmarked Asian companies. We are particularly impressed with the sustainability section of the company website in which it highlights a sustainability plan for each natural forest concession and plantation forests together with cleared defined timeline and goals.

APPENDICES

Appendix I: China

AI.1: Distribution of Forest Resource in China

(In thousand hectares)

	1990	2000	2005	2010
Production	114,103	107,986	85,384	84,303
Protection of soil and water	18,368	32,947	52,932	60,480
Conservation of biodiversity	2,978	4,284	7,487	8,904
Social Services	1,600	2,168	3,786	4,452
Multipurpose	20,091	29,616	43,454	48,722
TOTAL FORESTED LAND	**157,140**	**177,001**	**193,043**	**206,861**
Net Gain/ (loss)		*19,861*	*16,042*	*13,818*
Other Land	802,860	782,999	766,957	753,139
TOTAL LAND AREA	**960,000**	**960,000**	**960,000**	**960,000**
Quality of Forested Area:				
Primary	11,646	11,632	11,632	11,632
Secondary	103,544	110,975	114,192	118,072
Plantation	41,950	54,394	67,219	77,157
	157,140	**177,001**	**193,043**	**206,861**

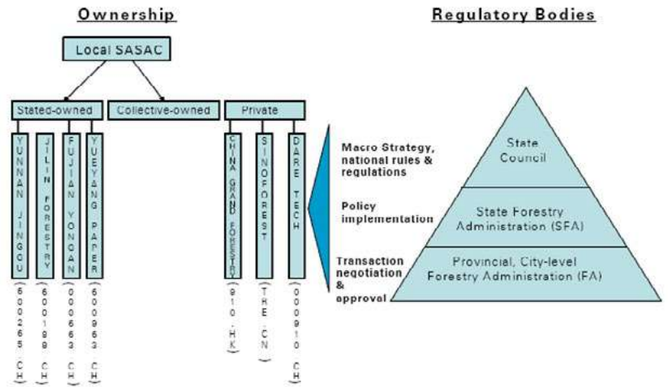
Source: FAO (2010), Responsible Research

AI.2 Distribution of Forest Resource in China

Region	Provinces	Forest coverage rate	Area (Million ha)	Stocking Volume (Million m3)
Northeast Inner Mongolia Forest Region	Heilongjiang, Jilin, Inner Mongolia	67.1%	35.9	3,213
Southwest Mountainous Forest Region	Parts of Yunnan, Sichuan and Tibet	23%	43.48	5,090
Southeast Low Mountain and Hilly Forest Region	Jiangxi, Fujian, Zhejiang, Anhui, Hubei, Hunan, Guangdong, Guangxi, Guizhou, Sichuan, Chongqing, Shaanxi	51.97%	57.81	2,565
Northwest Mountainous Forest Region	Parts of Xinjiang, Gansu, and Shaanxi	39.14%	5.09	531
Tropics Forest Region	Parts of Yunnan, Guangxi, Guangdong, Hannai and Tibet	44.57	11.8	863

Source: GAIN (2009)[426] Responsible Research

AI.3 Forest Administration in China



Logging Quota in China

In terms of implementing logging quotas, each year local forestry bureaus prepare a forestry operation plan for all forestry land within their respective area that includes the annual quota. The quota is then further approved by the provincial government before reaching the State Council for final approval. As a result, the local SFA are believed to be fairly powerful given both their authority to oversee and negotiate forest usage and logging concessions.[428]

Appendix II: Indonesia

AII.1: Distribution of Forest Resource in Indonesia

(In thousand hectares)

	1990	2000	2005	2010
Total Production Forests (HP+HPT+HPK)	52,342	51,628	51,225	49,680
Conservation Forest (HK)	16,415	15,324	15,228	15,145
Protection Forest (HL)	24,301	23,272	22,996	22,667
Designated Forest Land	**93,058**	**90,224**	**89,449**	**87,492**
Within Non Forest Land	15,487	9,185	8,408	6,942
TOTAL FORESTED	**108,545**	**99,409**	**97,857**	**94,434**
Other wooded land	*N/A*	22,627	22,206	21,003
Other Land	62,612	59,121	61,094	65,722
Inland Water Bodies	9,300	9,300	9,300	9,300
TOTAL LAND	**190,457**	**190,457**	**190,457**	**190,459**
Percentage Forested (%)	*57%*	*52%*	*51%*	*50%*
Net Loss hectares		*(9,136)*	*(1,552)*	*(3,423)*
Quality of Forested Area:				
Primary Forest	*N/A*	49,270	47,750	47,236
Secondary Forest	*N/A*	46,467	46,408	43,647
Planted Forest	*N/A*	3,672	3,699	3,549
	N/A	**99,409**	**97,857**	**94,432**

Source: FAO (2010), Responsible Research

Conservation Forest is a forest area having specific characteristics established for the purposes of conservation of animal and plant species and its ecosystem.

Protection Forest is a forest area designated to serve life support systems, maintain hydrological systems, prevent floods, control erosion and seawater intrusion and maintain soil fertility.

Production forest is a forest area designated mainly to promote sustainable forest production. Production forest is classified as permanent production forest, limited production forest and convertible production forest.

AII.2 Indonesia's Forest Management – Historical Background

The first piece of major forestry reform began in 1967 soon after Suharto came into power. Suharto's government took control over forestry assets in Indonesia's outer Islands by introducing the Basic Forestry Law (BFL). The law essentially gave the state comprehensive legal-regulatory jurisdiction over 143 million hectares of forests, and over-rode the traditional rights of forest dependent's indigenous peoples.[429]

Since 1999, the post-Suharto administration has taken control of Indonesian's forest assets by enacting new forestry laws and reforms, the most important being Forestry Law No. 41/1999, which superseded the 1967 Basic Forestry Law.[430]

Timeline of key reforms:

- In 1999, decentralization of forest administration initiated by handing over considerable administrative authority to district governments.[431]
- In 2002, the Commercial Timber Utilization Permits (Izin Usaha Pemanfaatan Hasil Hutan Kayu) replaced the HPH system, and concession for natural forests was extended to 55 years and plantation forests to 100 years.
- In March 2003, the Ministry of Trade set out that certain processed products of timber industry as listed in the relevant decree of the Minister of Trade can only be exported by timber products manufactures which have been registered with the Ministry.[432]
- In 2004, the central government tried to regain some control by stating that local governments can exercise authority but must cooperate with the central government.[433]
- In 2004, the Indonesian government issued a decree to require pulp companies to stop using wood harvested from the natural forest at their own plantation concession sites by 2009.[434]
- In January 2005, the Ministry of Forestry issued a five-year strategic plan with five key objectives for policy reform and management improvement to eradicate illegal logging, revitalize the forest sector and commit to rehabilitation and conservation of natural forest resources.[435]

Unfortunately, the above measures have not effectively stemmed the tide of deforestation and in some instances, such as decentralization of powers, are thought to have exacerbated it.

Appendix III: Malaysia

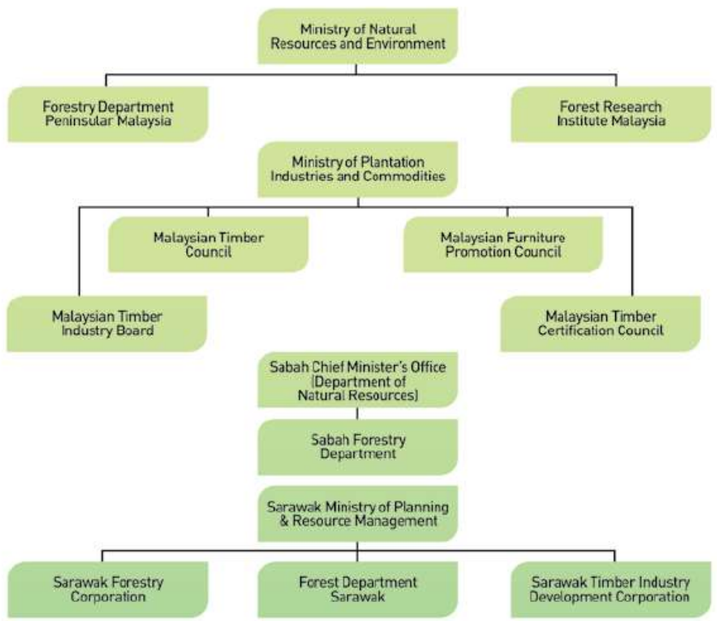
AIII.1 Distribution of Forest Resource in Malaysia

(In thousand hectares)

	1990	2000	2005	2010
Peninsular Malaysia	*4,750*	*4,800*	*4,800*	*N/A*
Sabah	*3,350*	*3,600*	*3,600*	*N/A*
Sarawak	*4,500*	*6,000*	*6,000*	*N/A*
Permanent Reserved Forest	**12,600**	**14,400**	**14,400**	**14,301**
Stateland Forest	6,820	4,640	4,141	3,077
National Park & Wildlife Sanctuary	1,120	1,120	1,120	1,946
Rubber Plantation	1,836	1,431	1,229	1,132
TOTAL FORESTED AREA	**22,376**	**21,591**	**20,890**	**20,456**
Net Loss		*(785)*	*(701)*	*(434)*
Oil Palm	2,029	3,377	3,802	*N/A*
Agriculture Crops	1,461	1,007	959	*N/A*
Urban and Other Uses	6,989	6,880	7,204	*N/A*
Inland Water Bodies	119	119	119	*N/A*
Other Land	22,376	21,591	20,890	*N/A*
TOTAL AREA OF COUNTRY	**32,974**	**32,974**	**32,974**	**32,974**
Forested Area by Function				
Production	11,736	12,921	11,819	12,739
Protection of Soil and Water	2,700	2,910	3,810	2,694
Conservation of Biodiversity	1,120	1,120	1,120	1,946
Multiple Use	6,820	4,640	4,141	3,077
	22,376	**21,591**	**20,890**	**20,456**
Quality of Forested Areas:				
Primary Forest	3,820	3,820	3,820	3,820
Secondary Forest	16,600	16,112	15,497	14,829
Planted forest	1,956	1,659	1,573	1,807
	22,376	**21,591**	**20,890**	**20,456**

Source: FAO (2010), Responsible Research

AIII.2 Overview of Forestry and Timber Agencies in Malaysia



AIII.3 Overview of Forestry Management in Malaysia

Peninsular Malaysia, Sabah and Sarawak have a common aim to harmonize forestry policy through the establishment of the National Forestry Council (NFC) which was set up in 1971. As part of that effort, the National Forest Policy (NFP) was enacted in 1978, which was fully adopted by Peninsular Malaysia with the support of Sabah and Sarawak that adopted very similar forestry policies. The NFP forms the basis for classification of roles, use and management of forests such as PFE and state-land forests. The NFP was subsequently updated in 1993 to place greater focus on the conservation and sustainable utilization of its forests. Some of the steps include the reduction of log production, strengthening R&D, rehabilitation of degraded forest, and the adoption of a National Conservation Strategy.[437]

In addition to the NFP, the National Forest Act (NFA) was enacted in 1994 to provide the state authority to constitute any land as PFE by notification in the Gazette and formed the police framework for sustainable forest management and implementation. The NFA was subsequently amended in 1993 to provide for heavier penalties for illegal logging and included a mandate for police and armed forces to carry out forestry enforcement to curb illegal logging.[438]

Key Forest and Forest-related Legislation[439]	
Peninsular Malaysia	▪ National Forest Act, 1984 ▪ Land Conservation Act, 1960 ▪ Environmental Quality Act, 1974 ▪ National Parks Act, 1980 ▪ Protection of Wildlife Act, 1972 ▪ National Land Code, 1965 ▪ Aboriginal Peoples Act, 1954 ▪ Occupational Safety and Health Act, 1994 ▪ Forest Rules, 1985
Sabah	▪ Forest enactment, 1968 ▪ Forest Rules, 1969 ▪ Wildlife Conservation Enactment, 1977 ▪ Land Ordinance, 1930 ▪ Cultural Heritage (conservation), 1997 ▪ Sabah Parks Enactment, 1984 ▪ Biodiversity Enactment, 2000 ▪ Conservation of Environmental Enactment, 1966 ▪ Water Resource Enactment, 1998 ▪ Environmental Quality Act, 1974
Sarawak	▪ Forest Ordinance and Land Code, 1958 ▪ Natural Resources and Environment Ordinance, 1997 ▪ Forest Rules, 1962 ▪ Wildlife Protection Ordinance and Rules, 1998 ▪ The Planted Forest Rules, 1997 ▪ Sarawak Biodiversity Centre Ordinance, 1997 ▪ Sarawak Biodiversity, 1998 ▪ Natural Resources and Environmental Ordinance, 1997 ▪ Water Ordinance, 1994 ▪ Occupational Safety and Health Act, 1994 ▪ Land Ordinance, 1952 ▪ Native Code, 1992 ▪ Native Code Rules, 1996 ▪ Native Custom Declaration, 1996

Appendix IV

Reasons for the low uptake of forest certification in Asia		
Concern over Reduced Impact Logging (RIL)	RIL is mandatory for certification. There is a common conception that RIL equals "Reduced Income Logging". This is mainly due to more expensive extraction methods.	For example, instead of clearing forestland to make way for in-road and use of bulldozer, logging company may have to use more labor intensive methods or even resort to the more expensive option such as the use of helicopter for extraction. An industry source indicated that resistant from workers is also strong for implementing RIL. For example, workers resistant to adopting practice which is different to what they are accustomed to. Also workers are resistant in adopting additional procedures and safety measures that they think are unnecessary.
Initial development costs are high so larger companies fare better	While cost of consultants and implementation of certification varies from concession to concession, certification generally requires high fixed costs, so larger concession holders may find better economies of scale.	A study conducted by WWF and GFTN in 2007[440] concluded that the average initial one-off implementation cost for either FSC or MTCC Forestry Management certification is around US$8 per hectare, although this varies depending on the size of the forests area.
Possible reductions in allowable cut - a disincentive	Companies adopting certification may have to set aside additional areas for areas of High Conservation Value, protected species, introduction of buffer zones around water courses, and reduce harvest yield.	Case study in Malaysia found that the implementation of sustainable forestry management could result in an average reduction of 33 percent of existing annual allowable cut level.[441]
Plantation owners forgo rights to clear fell, a clear financial disincentive	Companies who operate plantation forests are unwilling to adopt certification because if a forest company holding a plantation license with significant existing natural forest cover were to seek certification, it would need to forgo its right to clear-fell, which is financially more attractive.[442]	Indonesia, it is very common that clear-felling license is issued for plantation forests. Some of these plantations land could contain significant natural forests.
Financial benefits remain unclear	Based on a study of 20 Malaysian timber companies revealed that half of the respondents with FSC and MTCC certified products received overall premiums.[443] [444] Despite that the existence of price premium remains inconclusive, even if there is it may take some years before company can breakeven on their investment in certification.	FAO suggested that "certification provides access to markets where consumers prefer green products, but no price premium".[445]
COC complex and expensive	The implementation of chain of custody is much easier said than done. Chain of custody requires that the origin of each processing steps during production to be documented. Due to globalization, timber products are often exported to countries such as China for value-added processing and sometimes may be further exported to other countries for further processing. As a result, the tracing of document can become very expensive and paperwork could forge.	In Indonesia for example, concessions are legally required to produce annual work plans that involve a tour of the applicant's logging block. However, it is very difficult to implement because it is very labour intensive and time consuming especially for large concessions. According to Forest Footprint Disclosure (FFD), new tracking technologies for timber remain prohibitively expensive. [446]

Appendix V

Samling's attitude towards certification

Page 2: "Whilst our sustainable forest management practices and the legality of the source of our logs are not dependent upon our obtaining forest management certification for our forest concessions and plantations, we believe such certifications help us to build brand identity and to meet increasing market demand for certified wood products."

Page 37: "Our forest management and chain of custody certifications enable us to build brand identity and to meet increasing market demand for certified wood products. Such certifications are voluntary and we believe our efforts towards obtaining such certifications give us a competitive advantage over our competitors which do not have such certifications."

Page 156: "Neither FSC nor MTCC certification is essential for the sale of our wood products to overseas markets and such certifications are only required by certain of our customers. Our Directors believe that, notwithstanding the recent temporary suspension of our FSC forest management certification in Guyana, our current levels of FSC and MTCC certifications are sufficient to meet the requirements of our existing customers. In addition, given that forest management certification is voluntary and there has been limited demand for certified products from our customers to date, in the event that any of our FSC or MTCC forest management certification is suspended or withdrawn, there are alternate customers that we may sell our logs to."

Page 156: "However, currently neither FSC nor MTCC certification is essential for the sale of our wood products to overseas markets and such certifications are only required by certain of our customers. Our Directors believe that, notwithstanding the recent temporary suspension of our FSC forest management certification in Guyana, our current levels of FSC and MTCC certifications are sufficient to meet the requirements of our existing customers. In addition, given that forest management certification is voluntary and there has been limited demand for certified products from our customers to date, in the event that any of our FSC or MTCC forest management certification is suspended or withdrawn, there are alternate customers that we may sell our logs to."

Source: Samling IPO prospectus (2007)

REDD+ / carbon emissions projects in development

Project Name	Location	Total Area	CO2 savings/ year	Key Proponents	Current Status
1. Reducing Carbon Emissions from Deforestation in the Ulu Masen Ecosystem . A Triple-Benefit Project	Ulu Masen Ecosystem, Aceh	750,000 ha (7,500 km2)	3,300,000 tons	Carbon Conservation; Fauna and Flora International (FFI)	CCBA audit approved 6 Feb .08; MoU signed between Carbon Conservation and the Government of Aceh; Term sheet signed between Carbon Conservation and Merrill Lynch; Sales and marketing agreement signed with Carbon Conservation and the Government of Aceh; verification process on-going
2. Kampar Peninsular: Integrated Sustainable Development, Community and Conservation Landscape Management	Riau, Sumatera	350,000 ha overall landscape (4,000 km2)	Est. 3,000,000 tons	Two-phase private sector, government, community and NGO partnership integrating sustainable development, community and conservation. Partnership development in process: Lead by Alliance of NGO partner, community, Leaf Carbon Pty Ltd, Government and APRIL/RAPP	Science basis for hydrology management, emissions reduction, conservation spatial planning and calculation at advanced stage. Feasibility study complete. Project PIN, PDD in preparation pending finalization of project partnership. Community consultation ongoing
3. Kuala Kampar Pilot Project . REDD	Riau, Sumatera	700,000 ha (7,000 km2)	Unknown	World Wide Fund for Nature	Undertake feasibility study; Prepare PIN and PDD; Identify investors
4. Tesso Nilo Pilot Project . REDD	Sumatera	50,000 ha (500 km2)	Unknown	WorldWide Fund for Nature	Undertake feasibility study; Prepare PIN and PDD; Identify investors
5. Harapan Rainforest Project	Kabupaten Muara Jambi, Sumatera	101,000 ha (1,010 km2)	Unknown	Burung Indonesia; The Royal Society for the Protection of Birds; Birdlife	
6. Berbak Carbon Value Initiative	Jambi, Sumatera	250,000 ha (2,500 km2)	700,000 tons	ERM; The Zoological Society of London; Berbak National Park	Project Information Note (PIN) prepared

12. Central Kalimantan Peatland Project . REDD	Sebangau National Park, Central Kalimantan	50,000 ha (500 km2)	Unknown	WorldWide Fund for Nature; Deutsche Post; BOS Mawas Program;Wetlands Int.l Indonesia Program; Care Int.l Indonesia; Palangka Raya University	Undertake feasibility study; Prepare PIN and PDD; Identify investors.
13. Malinau Avoided Deforestation Project	Kabupaten Malinau, East Kalimantan	260,000 ha	1.1 million tCO2e per year, 25 year project	Global Eco Rescue; PT Inhutani II, Malinau Regency	Carbon Baseline established by Winrock International Project PDD being finalized; VCS and CCBA application in preparation; In final project agreement negotiation, Signed MOU with PT InhutaniII; Forest Management and Community Development Plans finalized; Community and local government stakeholder meetings held.
14. Berau, Indonesia Climate Action Project (Kabupaten Berau Forest Carbon Program)	Kabupaten Berau, East Kalimantan	971,245 ha (9,712 km2)	5,000,000 tons	The Nature Conservancy; World Agroforestry Center (ICRAF); Sekala; University Mulawarman;Winrock Int.l; University of Queensland.	Scoping phase completed; Detailed program design (Jun 09). Funding secured (Dec 09).
15. Heart of Borneo Pilot Project . REDD	Kalimantan	22,000,000 ha (220,000 km2)	Unknown	WorldWide Fund for Nature.	Unknown
16. Forest Land Use and Climate Change in North Sulawesi (FLUCC) in the Poigar Forest	Kabupaten Bolaang and Kabupaten Minahasa Selatan, North Sulawesi	34,989 ha (350 km2)	170,000 tons	Green Synergies	Working group formed; Case Studies Workshop (Sep 09)



17. Mamuju Habitat	Mamuju,West Sulawesi	30,000 ha (300 km2)	250,000 tons	KeepItHabitat; Inhutani I	Suspending legal forest harvesting; Protecting the area from illegal logging, clearing and burning.
18. Papua Carbon Project	Kabupaten Mimika, Kabupaten Memberamo	265,000 ha (2,650 km2)	1,000,000 - 2,000,000 tons	New Forests Asset Management; PT Emerald Planet	MoU signed with the Government of Papua to survey the identified sites and subsequently undertake a detailed feasibility study, marketing plan and business plan to support the creation of a commercially operated Carbon Project for validation under the Voluntary Carbon Standard. Legal review being undertaken to determine licensing process and structures.
19. Jayapura Pilot Project - REDD+	Papua	217,634 ha (2,176 km2)	Unknown	WWF	Undertake feasibility study; Develop baseline; Prepare PIN and PDD; Identify investors.
20. Merauke-Mappi-Asmat Pilot Project - REDD	Papua	Unknown	Unknown	WWF	Undertake feasibility study; Prepare PIN and PDD; Identify investors.

Source: World Bank (2009)[447]

ENDNOTES

1. Asia ex Japan and Korea. For the purpose of this report, we defined Asia as China, Mongolia, Bangladesh, Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Malaysia Maldives, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Timor-Leste and Vietnam.
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Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system. This historical continuity may consist of the continuation, for an extended period reaching into the present of one or more of the following factors:
a. Occupation of ancestral lands, or at least of part of them
b. Common ancestry with the original occupants of these lands
c. Culture in general, or in specific manifestations (such as religion, living under a tribal system, membership of an indigenous community, dress, means of livelihood, lifestyle, etc.)
d. Language (whether used as the only language, as mother-tongue, as the habitual means of communication at home or in the family, or as the main, preferred, habitual, general or normal language)
e. Residence in certain parts of the country, or in certain regions of the world

230. IFC Performance Standard 7.

231. Indicate number of nations signed to date As at April 2010 – the US were debating signing the declaration.

232. The Forest Dialogue, Yale University, provide the following useful summary of Free Prior and Informed Consent (FPIC) as it relates to the forestry sector : FPIC has emerged as a key principle in international law and jurisprudence related to indigenous peoples and is being widely considered in private sector policies of 'corporate social responsibility' in sectors like dam building, extractive industries, forestry, plantations, conservation, bio-prospecting and environmental impact assessment. It has also been endorsed by the Roundtable on Sustainable Palm Oil (RSPO) as a key principle in its Principles and Criteria (P&C). Likewise, 'free and informed consent' is a requirement of the Forest Stewardship Council. FPIC has now been adopted by the Asian Development Bank and IFAD in their policies on Indigenous Peoples and by the UN. The UN Declaration on the Rights of Indigenous Peoples is affirmed in the (draft) text on REDD that resulted from the UNFCCC negotiations in Copenhagen.

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