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The political economy of reforestation and forest restoration in Asia–Pacific: Critical issues for REDD+

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ABSTRACT

Under REDD+, the enhancement of carbon stocks through reforestation and restoration of degraded forest landscapes offers considerable potential benefits. In the Asia–Pacific region, however, many previous reforestation and forest restoration initiatives have exacerbated existing inequities by concentrating resources among powerful political and economic actors, often to the detriment of forest-dependent communities. Both in design and implementation, tree-planting programs have been guided by forest rent distribution practices of state forestry bureaucracies and by corporate accumulation strategies linked to increasingly globalized commodity chains.

This article examines the political economy of reforestation and forest restoration programs in Asia–Pacific and highlights governance challenges these pose. In various contexts, they have:

- consolidated the control of state agencies and corporate actors over 'degraded' forest landscapes, often resulting in the displacement of rural communities;
- exacerbated economic disparities by channeling large capital subsidies and resource rents to companies with close ties to state elites;
- facilitated corruption and financial fraud, in some cases on a grand scale;
- accelerated biodiversity loss by creating perverse incentives for the conversion of 'degraded' secondary forests; and
- generated mixed results for rural small-holders, at times locking them in inequitable agreements with plantation companies, and in other cases, offering enhanced tenure security.

To avoid the negative results of earlier reforestation schemes, REDD+ must incorporate: (1) rights-based spatial planning; (2) equitable and accountable distribution of financial incentives; (3) improved financial governance to prevent corruption and fraud; (4) policy reform to remove perverse incentives for forest conversion; (5) strengthening of economic benefits and safeguards for small-holders.

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1. Introduction

The crisis of global climate change has focused unprecedented attention on the rapid pace of deforestation and forest degradation, which account for a significant yet disputed portion of human-induced greenhouse gas emissions (Stern, 2006). Under the UN-led initiative known as REDD+, the international community is seeking to design mechanisms to compensate developing countries for reducing forest-related carbon emissions. Thus far, these efforts have focused heavily on funding policies and practices aimed at slowing the loss of forest cover associated with forest extraction and land-use change. However, in many countries likely to participate in REDD+, these efforts have encountered considerable resistance from stakeholders currently benefitting from high rates for forest exploitation and conversion.

Increasingly, proponents of REDD+ are also promoting the enhancement of carbon stocks through reforestation and restoration of degraded forest landscapes. In principle, the provision of financial incentives to encourage the restoration and regeneration of forests has much to offer. Most directly, many developing countries have extensive areas of forestland that have become degraded through logging, agricultural expansion, or fires, and often by a combination of the three. REDD+ payments could provide a unique source of financing for forest-based activities that would transform these areas into revenue-generating carbon sinks. Reforestation and forest restoration could also provide significant co-benefits. These might include, for instance, income opportunities for rural households; enhancement of biodiversity conservation; and more

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sustainable raw material supplies for small, medium, and large-scale forest industries (Sayer and Maginnis, 2005; Sayer et al., 2004).

In fact, many countries likely to participate in REDD+ have considerable experience with reforestation and forest restoration initiatives. In the Asia–Pacific region, national governments – often in cooperation with multilateral and bilateral donor agencies – have promoted large-scale tree-planting programs for several decades (Lamb, 2011). These have been designed to achieve a range of objectives, including:

- sustainable raw material supplies for forest industries;
- poverty alleviation and rural economic development;
- soil conservation;
- stabilization of sloping lands; and
- watershed protection.

Although these programs have often involved substantial investments of both capital and technical assistance, recent assessments suggest that they have achieved very uneven results and many have failed to meet planting targets and other measurable indicators of success (Lamb, 2011). In most cases, weak forest governance has been an underlying constraint.

In this article, we examine the political and economic factors that have commonly shaped reforestation and forest restoration initiatives in the Asia–Pacific region. We draw on case materials from the substantial literature on tree-planting schemes in Indonesia, Malaysia, Laos, Vietnam, India, and China. We argue that both in design and implementation, reforestation programs have often been guided, on the one hand, by forest rent distribution practices of state forestry bureaucracies; and on the other hand, by the accumulation strategies of corporate actors involved in increasingly globalized commodity chains. The convergence of these interests has meant that reforestation and restoration initiatives have frequently exacerbated existing inequities in the forestry sector by further concentrating resources in the hands of powerful political and economic actors, often to the detriment of forest-dependent communities.

We want to emphasize at the outset that our purpose in examining the political economy of reforestation and forest restoration is not to deny the many potential benefits of such initiatives. Rather, our aim is to highlight a set of risk factors that proponents of REDD+ will need to anticipate and address if efforts to promote the enhancement of carbon stocks through large-scale tree-planting and forest regeneration programs are to achieve their objectives in a truly equitable and sustainable manner. We view the potential for REDD+ to facilitate investments in forestry assets to be of considerable value, but only if the governance problems that have led to poor performance of past efforts can be addressed effectively.

2. Consolidating state control over 'degraded' forest landscapes

Across the Asia–Pacific region, many countries have a history of state control over forest resources that dates from the colonial era. As Peluso and Vandergeest (2001) have described, "the idea of state territorial sovereignty over a category of land called 'forests' emerged in Southeast Asia in the nineteenth century," and the creation of "political forests" became a common project among the region's colonial-era states and post-colonial national governments. Since then, governments have used a variety of strategies to assert control over forested landscapes and the resources they contained, including "territorial zoning and mapping, the enactment of land and forest laws delimiting legal and illegal forest uses, the constitution of state forestry institutions to implement these laws according to specified procedures, the constitution of forest police, and the creation of legal exemptions that became customary rights" (Peluso and Vandergeest, 2001; Peluso, 1992). Through such practices, "'forest land' became that land that was either demarcated by the state for permanent reservation or that land that was claimed by the state" (Peluso and Vandergeest, 2001).

As a result, many contemporary state forestry bureaucracies hold administrative authority over vast areas which have been designated as 'forest estate'. In Indonesia, for instance, the Ministry of Forestry is charged with administering a 'forest estate' of 132 million ha – amounting to approximately 70% of the nation's total land area – of which some 110 million ha are classified as 'permanent forest' (Direktorat Jenderal Planologi, 2010). Significantly, the Ministry reports that at least 28 million ha of the total area designated as 'permanent forest' are not currently under forest cover (Direktorat Jenderal Planologi, 2010).

As sociologist James Scott points out, such categories may simply reflect the limits of what the state is able to see (Scott, 1998); in fact, at least a portion of these 'non-forested' areas are known to be covered by agroforestry systems actively managed by local communities (Fay and Sirait, 2004; Contreras-Hermosilla and Fay, 2005). This underscores the extent to which the 'political forest' is a construction that does not correspond neatly to ecological definitions. As Peluso and Vandergeest (2001) note, this has been the case since state-controlled forests were originally demarcated: "Not all forest cover was included in the area allocated for state forestry, nor was all state forest land actually forested."

Just as the notion of the forest estate is politically constructed, so too is the concept of 'degraded forest'. Indeed, the definition of what constitutes 'degraded' forestland is variable and arbitrary, and even a specific institution's usage of the term can change over time. Barney (2008) examines, for example, the contradictory definitions that have been deployed in Laos PDR:

> There are various definitions for 'degraded forest' in Laos, and there is also little clarity in actual implementation. The Ministry of Agriculture and Forestry uses an area of less than thirty cubic meters of standing timber to define 'degraded forest'. For the 1994–2003 ADB Industrial Tree Plantation Project, degraded forests were defined as forestland with less than 20 percent crown cover. The World Bank, following standard sampling measures, uses a timber volume of less than seventy to eighty cubic meters for determining degraded 'production forest'... As with other countries in the region, the concept of degraded forests in Laos is associated with a significant obscurity: Is it based on a set of scientific criteria measuring characteristics of the vegetation, or on whether degraded forests are simply those forests declared and legally classified as such? (Barney, 2008).

Significantly, the act of defining an area of forestland as 'degraded' is fundamentally a political act which shapes decisions regarding land-use and access. In many contexts, the designation of an area as 'degraded forest' (or variations of the term, such as 'wasteland' or 'barren land') is often a prelude to the clearing and replanting of that space under the mantle of reforestation or forest restoration. As Barney (2008) poignantly notes: "Identifying forestland territories as degraded forest is useful for the political project of evacuating these zones of substantive social, economic, or ecological significance".

In countries where governments exercise control over a national forest estate, forestry bureaucracies routinely face questions of legitimacy over their continued administration of 'degraded' forest landscapes, especially when these areas have little or no (high-value) tree cover. This is often the case, for instance, in commercial concession sites following heavy timber extraction and in national parks following encroachment by illegal loggers or agricultural settlers. At the policy level, competing ministries often lobby to have

such areas reclassified so that they can be used for other purposes, such as mining or agro-industrial plantations. In countries with decentralized political systems, these areas can also be the subject of intense political struggles between government agencies at the national and sub-national levels, which invariably revolve around intra-institutional competition over revenue flows.[1] On the ground, state forestry bureaucracies often find themselves pitted in conflicts with rural communities over issues of access to and control over forest resources, and these conflicts can be particularly intense on 'degraded' forest lands.

Within these contexts, state forestry bureaucracies use reforestation and forest restoration programs as strategies to consolidate and, in some cases, to extend their territorial reach. In the face of competition from other government agencies, forestry departments can rarely make a more compelling case for continued administrative control over 'degraded' lands than by putting these areas back under tree cover. Successful implementation of reforestation programs can demonstrate a forestry bureau's technical competence, while the restoration of trees – if not a fully functioning forest ecosystem – on a landscape can reaffirm its status as 'state forest' within the national spatial plan. A forestry ministry's political and economic clout can be bolstered further by the fiscal flows associated with the regeneration of commercially productive forests, thereby reinforcing its claims to state budgetary allocations.

3. Rent transfer to political and corporate elites

Governments in forest-rich countries of Asia–Pacific historically have transferred substantial economic rents through the allocation of timber concessions to companies affiliated with political and military elites (Ross, 2001). For state powerholders, these practices have served multiple purposes by solidifying political loyalty from key individuals and institutions, while also generating lucrative economic profits for their own family members and business associates (Brown, 1999). Forestry ministries have also used their control over the allocation of forest rents – a process Ross has termed 'rent seizing' – to assert and maintain a prominent place in the political economic hierarchy of state institutions (Ross, 2001).

As selective logging concessions have declined, however, state rent transfer strategies in some countries have been adapted and repackaged through reforestation programs. Government forestry departments commonly distribute reforestation-related rents through the allocation of three types of assets:

(1) Commercial plantation licenses.
(2) Access to residual wood.
(3) Capital subsidies.

3.1. Commercial plantation licenses

Across Asia–Pacific, forestry ministries have scheduled tens of millions of hectares within state-controlled forest zones for conversion to industrial timber and wood-fiber plantations. Through the allocation of commercial plantation licenses, they have assigned operational control over large portions of these areas to both state-owned and privately-owned forestry companies. In many countries, government regulations allow companies holding plantation licenses to exercise legal authority over the areas in question for several decades or more. In Indonesia, for instance, current regulations provide plantation license-holders with the right to develop and manage the areas assigned to them for 100 years, with the possibility of renewal at the end of the license period.

For plantation companies, the state's provision of long-term control over large tracts of productive land endows them with a major competitive advantage in increasingly regional and global commodity supply chains. In growing parts of Asia–Pacific, companies receiving plantation licenses have established expansive monocultures of fast-growing tree plantations, often using exotic genera such as Eucalyptus or Acacia managed on short rotations of 5–7 years (Cossalter and Pye-Smith, 2003). On well-managed sites with appropriate species selection, some companies have established highly productive plantations which are among the world's lowest cost sources of wood fiber. To a very significant degree, the rapid expansion of 'fastwood' plantations in Asia–Pacific has been driven by skyrocketing demand for pulp and paper and other wood products in China and by projected future demand growth in both China and India (Barr and Stafford, 2009).

With both countries facing significant shortfalls in domestic wood fiber supply, transnational pulp and paper companies have sought to secure low-cost fiber sources by establishing fast-growing plantations in Indonesia, Thailand, Malaysia, Vietnam, and Laos, as well as within China. In some cases, plantation development has been integrated with multi-billion dollar investments in wood pulp mills; while in other cases, it has been oriented towards the export of pulplogs or wood chips. In this way, transnational investment strategies and commodity flows have a very direct effect in shaping land-use practices in forest landscapes across the region. Describing the dynamics of these processes in Laos, Barney (2008) notes that "significant economic imperatives and commodity relations ... have become intimately involved in 'defining degradation' and thus transforming ... upland forest spaces."

3.2. Access to residual wood

Governments routinely allow plantation companies to clear and utilize the residual timber, wood fiber, and biomass from sites designated for reforestation and plantation development. Although these areas are generally classified as 'degraded' forests or 'wastelands', it is sometimes the case that the standing stock of merchantable timber and wood fiber is still quite valuable (Meijard and Sheil, 2007). This is often particularly so in former selective logging concessions which have been scheduled for conversion and in areas within a commercial distance of pulp mills and other wood processing facilities. It is frequently the case that the levies governments place on timber and pulpwood harvested from land-clearing sites are substantially lower than those associated with selective logging concessions. In this way, forestry companies are able to capture sizeable economic rents on the wood they harvest through land-clearing, as long as they are able to get the wood to market.

In Indonesia, it has been estimated that commercial plantation companies cleared approximately 1.3 million ha of land with varying densities of forest cover during the 1990s. The companies were required to pay only nominal fees for wood harvested through land-clearing activities, as the Ministry of Forestry set levies at rates that were (and continue to be) well below stumpage value. For small-diameter pulpwood, for instance, government levies amounted to less than US$ 2.00 per tonne. Depending on assumptions used regarding the average commercial volume of the standing stock, it has been estimated that the companies obtained timber and wood fiber from these sites with a market value of between US$ 908 million and US$ 2.7 billion (Barr et al., 2010).

[1] Awareness of the harmful impacts of the lack of clarity over institutional responsibilities for forests is however achieving prominence in the forest discourse – President Yudhoyono of Indonesia has flagged this issue as a leading obstacle to the achievement of his country's emissions reductions target (Jakarta Post, September 30, 2011).

3.3. Capital subsidies

As in other regions, many Asia–Pacific governments have also provided substantial direct and indirect capital subsidies to promote reforestation and plantation development. Depending on the country, direct subsidies have included cash grants, discounted loans from state banks, tax breaks, and subsidized seedlings, fertilizer, and other inputs. In addition, plantation companies have also frequently benefitted from government fuel subsidies, infrastructure development linking rural areas to markets, and investments in research and development (to improve, for instance, the quality of the genetic material available for tree-planting initiatives).

In China, for instance, the national government has allocated some US$ 8.6 billion (RMB 71.8 billion) in financial subsidies to support the development of 13.3 million ha of commercial tree plantations during the period 2001–2015 (AF&PA, 2004).[2] Under this plan, the State Forest Administration has identified 99 priority plantation projects to be carried out by state forest farms, private companies, and farmers' cooperatives which are eligible to receive discounted financing (Barr and Cossalter, 2004). Program subsidies are structured as follows:

- State policy banks provide 70% the program's total financing through the provision of loans with reduced interest rates and extended repayment periods (10–15 years).
- The Ministry of Finance distributes 20% of program financing through loan interest subsidies.
- Local governments cover 3% of program costs.
- Entities receiving government financial subsidies are expected to cover 7% of program costs through commercial loans or equity contributions.

Governments providing subsidies for reforestation and plantation development have offered various rationales to justify the use of public funds in this way. They have frequently claimed that forestry companies require incentives to carry out tree-planting activities on degraded lands and that subsidies help forestry companies to reduce economic risk by lowering capital costs (Bull et al., 2006). They have also argued that private sector financial institutions are often reluctant to finance reforestation and forest restoration activities on a commercial basis, and state assistance is, therefore, necessary to catalyze investments in such projects.

Meanwhile, critics argue that government subsidies distort markets by artificially reducing the cost of capital, giving subsidy recipients an unfair advantage over plantation companies or other land-users who do not have access to such support (Bull et al., 2006). Not infrequently, reforestation and plantation subsidies have been allocated disproportionately to companies with close connections to state elites, thereby reinforcing existing patronage structures and exacerbating inequities within the forestry sector (Barr et al., 2010). In some cases, the allocation of subsidies to promote reforestation and plantation development has been accompanied by a significant degree of moral hazard, as companies receiving support apparently have less incentive to ensure their sites are managed productively, as less of their own money is at risk. Moreover, as described below, the allocation of capital subsidies to forestry and plantation companies can also result in substantial losses of public funds when effective mechanisms to ensure financial accountability are not in place.

[2] Although this figure is quite substantial, it must be noted that it represents only a fraction of the US$ 30 billion that the Chinese government has budgeted for reforestation and afforestation under its Sloping Land Conversion Program (Grossjean and Kontoleon, 2009).

4. Corruption and financial fraud

In forest-rich countries of Asia–Pacific, as in other regions, weak legal-regulatory institutions coupled with the availability of lucrative resource rents have facilitated widespread corruption and fraud within the sector. In many countries, forest-related corruption is prevalent at all levels, ranging from a Minister receiving bribes to allocate timber concession licenses ('grand corruption') to local forestry officials accepting payments to turn a blind eye to timber harvesting in protected areas ('petty corruption'). In the absence of effective law enforcement, forestry companies also sometimes engage in fraudulent practices to secure illicit profits well above the legal earnings from their operations. Under-reporting of harvested volumes, transfer pricing, and a broad array of other practices are widely used to capture rents that would otherwise accrue to the state.

The considerable financial and material incentives that governments have mobilized to promote reforestation and forest restoration activities' have frequently made these initiatives particularly susceptible to corruption and fraud. In many countries, governments have established national forestry funds dedicated to financing reforestation and other aspects of sectoral development, and these have generally been placed under the administrative control of forestry ministries or their functional equivalents. A review of 40 national forest funds conducted by the UN Food and Agricultural Organization (FAO) in 2001 found, however, that forestry departments frequently have only limited capacity for financial governance and that such funds are often administered with low levels of transparency and external accountability (Rosenbaum and Lindsay, 2001).

In some cases, poor accounting practices and weak financial oversight have meant that funds earmarked for reforestation and forest restoration have not been used for their intended purpose (cf. Barr et al., 2010). Forestry departments have sometimes diverted these funds to cover other priorities within their own budgets, while in other cases they have channeled reforestation revenues to support projects and political activities outside the forestry sector. More commonly, perhaps, senior forestry officials have often been able to exercise high levels of discretionary control over how such funds are allocated. This has enabled them to channel disbursements to companies with close ties to state elites and has made such funds vulnerable to misappropriation by corrupt officials.

The scope and dynamics of reforestation-related corruption and fraud are illustrated by the cases of Indonesia's Reforestation Fund and recent regulatory actions taken against Sino-Forest Corporation, a Toronto-listed plantation company with forestry holdings in China.

4.1. Indonesia's Reforestation Fund[3]

The Government of Indonesia established the nation's Reforestation Fund (*Dana Reboisasi*) in 1989 with the stated mandate of financing reforestation and rehabilitation of degraded forest lands. Funded by a volume-based levy on selective-logging timber concessions, the fund quickly emerged as the largest source of state revenues from Indonesia's forestry sector. At its peak in the mid-1990s, receipts from the Reforestation Fund amounted to over US$ 500 million annually, and the fund continues to generate

[3] This section's summary of Indonesia's experience with its Reforestation Fund has been adapted from Barr et al. (2010). Financial Governance and Indonesia's Reforestation Fund during the Soeharto and Post-Soeharto Periods, 1989–2009: A Political Economic Analysis of Lessons for REDD+, Center for International Forestry Research, Bogor, Indonesia. Any citation of the material presented in this section should reference the original study.

approximately US$ 200 million per year (Barr et al., 2010). Over the past two decades, the Government has collected an estimated US$ 6.2 billion in aggregate revenues from the reforestation levy.

Until the end of the Soeharto regime in 1998, the Ministry of Forestry held full administrative authority over the Reforestation Fund, which it managed as a discretionary financing facility outside the state budget (Barr et al., 2010). An independent audit conducted by Ernst and Young in 1999 found that the Ministry managed the fund in a highly non-transparent manner, using accounting practices and fiduciary controls that fell well short of international norms (Ernst and Young, 1999). Such practices made the Reforestation Fund vulnerable to misappropriation of funds by corrupt officials and irregular disbursements for uses that had little relation to reforestation and forest rehabilitation. During the 1990s, the Ministry disbursed at least US$ 600 million to finance politically favoured projects, many of which were linked to the President's family or close business associates (Ascher, 1999). These included, for instance, allocations of US$ 190 million to a state-owned aircraft company and US$ 250 million for the controversial 'One Million Hectare Peatland Development Project' in Central Kalimantan.

During the 1990s, the Ministry of Forestry allocated approximately US$ 1.0 billion from the Reforestation Fund in cash grants and discounted loans to promote reforestation through the development of industrial timber plantations (Ernst and Young, 1999). Approximately two-thirds of this amount was allocated to ten forestry companies closely affiliated with the Soeharto family and the Indonesian military (Barr et al., 2010). Several of the companies receiving the subsidies are alleged to have engaged in fraud to increase the size of the subsidies they received. In various cases, they did so by 'marking up' their investment costs; over-stating the areas they planted; and diverting disbursements from the Reforestation Fund for purposes other than plantation development (Ernst and Young, 1999) Such fraudulent practices allowed a handful of powerful actors to secure enormous profits, while providing few long-term public benefits in terms of reforestation or plantation development.

Altogether, Ernst and Young (1999) documented some US$ 5.2 billion in losses from the Reforestation Fund through the end of the Soeharto era in 1998. Approximately half of these losses were attributed to the Ministry's failure to collect the reforestation levy at adequate levels, while the remainder was associated with financial mismanagement after the revenues had entered the Ministry's accounts. During the post-Soeharto period, the Government of Indonesia has taken important steps to administer the Reforestation Fund in a more transparent and accountable manner (Barr et al., 2010). Nevertheless, ongoing weaknesses in financial management and revenue administration have meant that reforestation and forest restoration initiatives in many parts of the country continue to fall well short of their objectives.

4.2. Case of Sino-Forest Corporation

Recent regulatory actions taken against Sino-Forest Corporation by the Ontario Securities Commission underscore the fact that reforestation-related fraud is not limited to mismanagement of government-run forestry funds. Incorporated in 1994 and listed on the Toronto Stock Exchange since 1995, Sino-Forest has expanded rapidly over the past 17 years to become one of the largest operators of commercial forestry holdings in China. According to company reports, Sino-Forest "operates and manages approximately 894,200 ha of plantations (as at June 30, 2011) and downstream manufacturing operations spanning eleven key provinces across China" (Sino Forest website, October 11, 2011). The company has also set ambitious expansion targets, projecting that its annual planting will increase from 19,000 ha in 2009 to 200,000 ha in 2013; and that its overall fiber output will more than double from 14.2 million cubic meters (m^3) in 2009 to 30.0 million m^3 in 2013 (Sino Forest website, October 11, 2011).

Arguing that it is strategically positioned to supply China's rapidly growing demand for commercial timber and wood fiber, Sino Forest has raised several billion dollars from international investors over the past decade. It has done so through a series of equity offerings and debt issues, several of which have been facilitated by leading investment banks such as Credit Suisse, Bank of America Merrill Lynch, and Morgan Stanley. Sino Forest reported that its market capitalization at the end of 2010 was US$ 5.7 billion (Sino Forest website, October 11, 2011).

In August 2011, the Ontario Securities Commission halted trading in Sino Forest's shares on the Toronto Stock Exchange (OSC, 2011). This action by Canada's top securities regulator came several weeks after a US-based financial research firm released an analysis of Sino Forest's operations alleging that it has "engaged in aggressive fraud from the time it went public" (Block, 2011). The report, by Muddy Waters LLC, asserts that Sino Forest has fraudulently inflated its profits by maintaining "a convoluted structure whereby it claims to run most of its revenues through 'authorized intermediaries'" (Block, 2011). According to Muddy Waters, Sino Forest has used this model "to invent sales figures" for fictive transactions, supposedly involving the buying and selling of logs and standing timber, in which the company "risked no capital and moved no physical goods" (Block, 2011). The report notes that Sino Forest declines to identify all but one of these intermediaries, and the one it does identify appears to be an affiliated company.

The Muddy Waters report further alleges that Sino Forest "massively exaggerates its assets" (Block, 2011). In particular, the report calls into question Sino Forest's claim that it has purchased US$ 2.891 billion in standing timber plantations since 2006. It suggests that the Sino Forest's contracted forestry holdings are substantially less than the areas and volumes reported by the company and that in some provinces, the company has apparently overstated its purchases of forest lands from local agents. In particular, the Muddy Waters report claims that Sino Forest "overstated purchases from [its] Yunnan agent... by approximately [US]$ 800 million" (Block, 2011). Sino Forest has allegedly used such practices to channel illicit proceeds to undisclosed subsidiaries which then move the funds offshore to some 20 affiliated entities domiciled in the British Virgin Islands (Block, 2011). Describing the company as a "multi-billion dollar Ponzi scheme," the Muddy Waters report notes that "Sino Forest to date has raised over [US]$ 3.05 billion from the capital markets and has not paid a cent back from free cash flow, nor has it paid a dividend" (Block, 2011).

Not surprisingly, Sino Forest has strongly denied these allegations, arguing that the Muddy Waters report is an aggressive effort on the part of a short-seller to undermine the company's share value. To address the allegations, Sino Forest has retained the multinational auditing firm PriceWaterhouse Coopers to assist an 'independent committee' of company directors in reviewing the activities and business of Sino Forest and its subsidiaries. In its final report, issued in January 2012, the committee concluded it could not independently verify several of the core claims made by the company. Noting "there remain issues which have not been fully answered," the committee reported that ""much of the information which it is seeking lies with non-compellable third parties, may not exist or is apparently not retrievable from the records of the Company" (Independent Committee, 2012).

The Ontario Securities Commission's decision to take regulatory action, which was reportedly based on information provided by Sino Forest's independent committee, appears to broadly affirm several of the allegations against the company. In its order to halt trading of Sino Forest shares, issued on August 26, 2011, the Commission states that its own investigation has found:

- Sino-Forest, through its subsidiaries, appears to have engaged in significant non-arm's length transactions.
- Sino-Forest and certain of its officers and directors appear to have misrepresented some of its revenue and/or exaggerated some of its timber holdings by providing information to the public ... which may have been false or misleading.
- Sino-Forest and certain of its officers and directors... appear to be engaging or participating in acts, practices or a course of conduct related to its securities which it and/or they know or reasonably ought to know perpetuate a fraud (Ontario Securities Commission, 2011).

Clearly, the Sino Forest case is far from over, and the company has not yet acknowledged that it or its directors have violated any laws. However, to the extent the allegations now being made by the Ontario Securities Commission prove to be true, the case would appear to be what one industry analyst has called "a Madoff moment" for commercial tree-planting initiatives in China.

5. Perverse incentives for forest degradation and conversion

Ironically, government policies ostensibly promoting reforestation have, in some cases, accelerated biodiversity loss by providing perverse incentives for unsustainable management and conversion of natural forests. In the Asia–Pacific region and beyond, Repetto and Gillis (1988) documented the significant role that weak forest fiscal systems and timber concession regulations have played in encouraging deforestation and forest degradation. They noted that governments' failure to capture much of the economic rents associated with commercial timber extraction have given concession-holders a strong incentive to undervalue the forest resources which they were charged with managing sustainably.

In particular, Repetto and Gillis noted that in Indonesia, Malaysia, and the Philippines, governments had introduced reforestation deposits which companies were ostensibly required to pay in order to guarantee they would carry out enrichment planting and other rehabilitation activities in logged over concession areas (cf Gillis, 1998a,b; Boado, 1998). However, in each case the government had set these deposits at levels that were well below the costs that timber companies would realistically incur if they actually carried out post-logging restoration. Not surprisingly, most timber companies viewed the reforestation deposit as an outright tax which they could pay in order to absolve themselves of government regulations requiring concession-holders to replant the areas they had harvested.

More generally, state regulations allowing the clearing and replanting of timber concession areas once they reach a specified threshold of degradation have provided logging companies with a strong incentive to over-harvest their concession sites (Meijard and Sheil, 2007). This has been the case in Indonesia, for example, where the Ministry of Forestry since the late-1980s has allowed selective logging concessions on 'degraded' sites, yet which often have significant commercial standing stocks remaining, to be cleared for industrial plantation development. In the absence of effective law enforcement, forestry companies have routinely extracted timber from their concession areas well above legal and sustainable harvest levels; and in many cases, they have been rewarded for doing so by receiving licenses to clear the remaining forest cover from their now 'degraded' concession sites as part of the Ministry's reforestation program (Barr, 2002). For recipients of financial subsidies from the state's Reforestation Fund, these incentives have been compounded substantially.

In spatial planning processes, forestry ministries in some countries have explicitly designated large areas of 'degraded' secondary forests for conversion to commercial tree plantations. With the stated aim of promoting reforestation, government policies encourage the removal of remaining forest stock before these areas are replanted. Under such circumstances, reforestation can effectively catalyze the loss of natural forest cover and the biodiversity it supports (Brockerhoff et al., 2008).

6. Land conflicts and resistance from upland communities

In many countries across Asia–Pacific, large-scale reforestation initiatives have catalyzed conflicts between rural communities, on the one hand, and state forestry agencies and commercial plantation companies, on the other. This is particularly the case in areas where governments have asserted state control over forest landscapes theretofore managed by local communities under customary tenure systems. Although national forestry laws often recognize the existence of traditional tenure systems, they generally define customary rights as being subordinate to statutory claims over forest resources and stipulate that rights of exclusion under customary systems are enforceable in only limited circumstances (Peluso and Vandergeest, 2001). In most Asia–Pacific countries, few institutional mechanisms exist to resolve competing claims and other contradictions between national forestry laws and customary tenure systems (Vandergeest and Peluso, 2006).

Conflicts between rural communities and state forestry agencies are especially common in 'degraded' forest landscapes which the latter have scheduled for reforestation or conversion to plantations. This is frequently the case, for instance, in areas where the degradation has resulted from unsustainable harvesting practices in government-allocated timber concessions. All too often, forestry departments have drawn land-use maps and defined concession boundaries without regard to the extent these may overlap with areas managed by forest-dependent peoples under customary tenure systems (Peluso and Vandergeest, 2001). Not surprisingly, the extraction of timber by outside logging companies often results in the disruption of agro-ecosystems and the loss of cultural and material resources for local communities. As Fried (2000) notes, however, the resulting displacement of local communities can be exacerbated significantly when these areas are converted to plantations, as this process generally involves intensive and long-term industrial use of the *entire* concession area by the corporate license-holder.

In other contexts, government forestry departments view upland communities as being agents of forest destruction and use national laws to curtail land-use practices which they perceive as contributing to degradation of forest lands (Barney, 2008). This is commonly the case, for instance, in areas where upland communities use swidden agricultural systems which depend on rotational clearing of forest plots for subsistence crop production. In Malaysia, Indonesia, Laos, and perhaps other parts of the region, state agencies have actively sought to resettle upland communities practicing swidden agriculture and to induce them to adopt sedentary agricultural production systems. Although governments have justified such policies as being necessary for 'development' and integration of remote communities with the market economy, they are also often motivated by a desire to make forest resources available for timber extraction and conversion to commercial plantations. In many cases, state agencies and plantation companies have used pressure, intimidation, and at times, physical coercion to compel upland communities to participate in such resettlement programs, while offering nominal compensation.

Barney (2007) describes the dynamics of one such resettlement process carried out by the Sarawak state government and a plantation company in support of the planned Borneo Pulp and Paper

(BPP) mill project in the early-2000s. To secure lands for the development of a 750,000 tonne/year kraft pulp mill and a 200,000 ha plantation base, the company sought to relocate several thousand Iban Dayak villagers, including some 1800 individuals living in twelve longhouses along the River Tatau in Bintulu District. According to Barney (2007), the affected communities were offered compensation by the plantation company, but the process through which this was negotiated was highly inequitable and provided few guarantees for their livelihood security:

> For the Iban longhouse communities living along the River Tatau, the resettlement scheme was initiated through a company-led program in which, though the subject of regular visits by company negotiators, the longhouse inhabitants feel they have little control or negotiating position.... A major issue of contention for members of the three longhouses facing immediate resettlement was the future security of their landholdings on the opposite bank of the river. One *tuai rumah* (headman) in particular feared that once they accepted the resettlement plan and moved to [the relocation site 150 km away], they would be unable to maintain their dispersed *pulau* holdings (often high-quality longhouse forest reserves, managed for local timber, non-timber, and hunting purposes). The longhouses claimed that timber companies had already extracted much of the timber from the *pulau* without paying compensation. Others feared the remaining lands might be seized by other oil palm plantation companies if they were forced to leave. The fact that the Land and Survey Department entered and surveyed land belonging to the longhouse groups without permission, and the company then cleared land without first agreeing to compensation, both in violation of longhouse adat [customary law], has resulted in loss of confidence concerning the good faith of state agencies and company negotiators.

Although members of some longhouses accepted the company's resettlement package, many did not. As Barney (2007) notes, this resulted in several Iban communities taking up active resistance against the BPP pulp mill and plantation project, including protests, road blockades, and legal action to defend their land rights in state courts.

Confrontations between rural communities and plantation companies have, in some circumstances, led to violent conflicts. Harwell (2003) documents a series of attacks on villagers in Indonesia's Riau Province carried out between 1997 and 2002 by the Mobile Brigade (Brimob) of the National Police Force and private security contractors working with Asia Pulp & Paper (APP)'s parent conglomerate, the Sinar Mas Group. In one instance, Harwell describes villagers being subject to "violent attacks by organized mobs of hundreds of club-wielding company enforcers, trained by and sometimes accompanied by state police," following community protests to prevent their eviction from lands the company wanted to plant (Harwell, 2003). Civil society organizations Watch Indonesia! and WALHI (2008) describe a more recent incident in December 2008, in which security forces working with an APP-affiliated plantation company used violence to remove local people from disputed land. To force community members to leave the land, they report, "Hundreds of police and paramilitaries attacked the Sumatran village Suluk Bongkal in Riau Province with tear gas and guns [and] a helicopter dropped incendiary devices on the village" (Watch Indonesia! and WALHI, 2008, cited in Barr et al. (2010)). In a statement released following the incident, APP reported that these actions had been taken to prevent "ongoing destruction of the existing plantation area" by members of the Riau Farmers Union (*Sarikat Petani Riau*) and claimed that "the Riau Police... had followed legal and appropriate procedures" (APP, January 20, 2009).

7. Opportunities and challenges for rural livelihoods

In spite of the challenges they frequently pose, reforestation initiatives and other types of tree-planting schemes are often promoted as being potential catalysts for economic development and poverty alleviation in rural areas. In Asia–Pacific and other regions, governments, multilateral development banks, and bilateral donor agencies have advanced various models for engaging upland communities in tree-planting activities. These range from partnerships between local communities and commercial plantation companies, on the one hand, to programs aimed at promoting reforestation activities by groups of small-holders either on their own land or on state-controlled forest land. It is commonly anticipated that such initiatives will generate a host of benefits for rural communities, including employment and wage labor; access to credit; the provision of low-cost seeds, fertilizer and other inputs; and in the case of commercial tree-planting programs, a ready market for the wood produced (Lamb, 2011).

In India, the national government has promoted tree-planting by rural smallholders since 1976, when it launched an extensive social forestry program (Saxena, 1997). Through the late-1980s, the program's main objective was to relieve pressure on state-controlled forests by encouraging farmers to grow trees on village and private lands. The program catalyzed widespread tree-planting on privately-owned farms, particularly in regions with wood industries.[4] In most of the country, however, social forestry failed to achieve its planting targets on village lands (Saxena, 1997; Kumar et al., 2000). India's social forestry projects were often hindered by tenure uncertainties and non-participatory decision-making processes, which left most of the authority for planning and implementation in the hands of state forestry departments. As Saxena (1997) concludes:

> Community plantations in fact, whatever the theory, have usually been bureaucratic impositions on villages. Participation has been limited, at best confined to a few members of a village elite. Community members, especially the poor, have not accepted these plantations as their own. People's involvement has been limited to the handing over of common lands to the Department and to wage employment. They have otherwise remained passive spectators of the raising of trees on their land (SIDA, 1990, cited in Saxena (1997)).

India's Forestry Department adopted a program of Joint Forest Management (JFM) in 1988 and began collaborating with community groups in the protection and regeneration of forests under state control (Saxena, 1997). With assistance from the World Bank and other international donors, many JFM projects have taken a two-pronged approach: on the one hand, "increasing the stake of the neighboring communities in the management and utilization of the forests," and, on the other hand, "creating alternative sources of employment to reduce the pressure on forests," including through tree-planting and regeneration of degraded lands (Kumar et al., 2000). Joint Forest Management is widely credited with expanding the usufruct rights of local villagers to state-managed forests and forestlands. However, the extent to which tree-planting projects under JFM have generated tangible benefits for economically marginalized groups – including women and the rural poor – has often depended on local power relations and the structure of the community groups involved (Sarin, 2003; Sekher, 2001; Kumar et al., 2000).

[4] According to Saxena (1997) "In terms of simply amount of planting of new trees, the Social Forestry programme has been immensely successful. Between 1980 and 1987, the Government claims to have grown 18,865 million trees (Chambers et al., 1989). If the estimate of survival of 60% is taken as correct (IIPO, 1991), and taking the number of villages as 580,000, the average number of surviving new trees per village comes to nearly 19,500."

In other countries across the region, governments and multilateral institutions have sought to encourage small-holders to participate in tree-planting initiatives and to manage reforestation sites over the long-term by providing them with enhanced access and tenure security. In China, for instance, the government has promoted participation in its Sloping Land Conversion Program by offering mechanisms for participating farmers to secure long-term property rights over the areas on which they plant trees. A recent review of the program has found that the opportunity to gain more secure tenure far outpaced other incentives, including cash subsidies, in attracting the sustained participation of rural households. Summarizing their findings from Guizhou Province, for example, Grossjean and Kontoleon (2009) conclude that:

> Households... would be willing to maintain reforested lands even if hardly any direct subsidies are offered provided that they receive enhanced tenure and renting rights over their reforested lands as well as improved usage rights that would allow for the uninhibited selection and management of planted tree types as well as their full commercial exploitation.

Similarly, in Vietnam the government has encouraged small-holders to participate in its Five Million Hectare Reforestation Program by giving farmer groups extended use rights to state forest land, as well as access to finance and other inputs (Sikor, 2001, 2011). While devolution of forest rights has been a strong factor motivating farmer participation, however, this formalization of new tenure arrangements has, in some cases, restricted access to economically important resources for women and 'the poorest of the poor' (McElwee, 2009; Clement and Amezaga, 2009).

For plantation companies and wood industries, mutually beneficial partnerships with local stakeholders carry the promise of enhanced profits through long-term stability of commercial operations (Nawir et al., 2003). In several Asia–Pacific countries, partnerships between rural small-holders private forestry companies have had highly variable impacts and, in some contexts, have posed significant risks for participating communities. Reviews of these experiences in China and Indonesia have shown that participating villagers often have little leverage in negotiating agreements with plantation companies, which in many cases have the backing of forestry departments and other state agencies (cf Lu et al., 2002; Mayer and Vermeulen, 2002). Moreover, once agreements are reached, small-holders frequently have few mechanisms to ensure accountability on the part of the companies. In a review of company-community partnerships in Indonesia, Nawir et al. (2003) note that several companies negotiated their agreements with local elites, leaving most participating villagers unsure of what they had committed to:

> The companies had dominant roles and did not commonly use participatory approaches to socialize or deliver information about rights and responsibilities to the wider tree-grower audiences. Tree-growers commonly only had a general understanding or were confused about the content of the agreement... Furthermore, a copy of the contract was not provided to the tree-growers in most of the case study locations. The few copies of the contract document and contractual agreement were provided only to the Head of *Dusun* (sub-village) or the Head of the Farmer Group.

In southern China, commercial plantation companies have sometimes used third-party brokers to negotiate land rental contracts and out-grower agreements with local communities. A 2010 case study of Stora Enso's activities in Guangxi Province, for instance, describes the Scandinavian pulp and paper producer as relying heavily on brokers to secure 120,000 ha to support its fiber supply for a planned kraft pulp mill project in that province. The report alleges, however, that the brokers sometimes used strong-arm tactics to pressure farmers' cooperatives to enter into long-term lease agreements with the company, in apparent violation of Stora Enso's own corporate social responsibility commitments:

> Extensive fieldwork indicates that the legal procedure was not followed for the acquisition of both household forestland rights and rights to collective-managed forestland. Due to a lack of public notice and approval by collective members, many farmers have been completely unaware of the transfer terms. A widespread lack of documentation further limits public knowledge and clarity. In some cases farmers were even deceived or physically threatened into transfer deals. Systems for notification and resolution of disputes have been unavailable or inadequate. It appears that Stora Enso's primary dependence on government power under the guise of middlemen to acquire collective forestland rights is largely to blame for these violations (Ping and Neilsen, 2010).

Where mechanisms for mutual accountability are absent, inequitable land-rental contracts and out-grower agreements can have extremely detrimental effects for rural small-holders (Cossalter and Barr, 2005). Indeed, plantation companies and brokers often have sophisticated strategies for tipping the economic balance of such partnerships in their own favor. In some cases, the companies and/or intermediaries extend credit to participating farmers, either in the form of cash or material inputs; and they later use the farmers' indebtedness to manipulate the terms of the agreements. Alternately, some companies structure out-grower contracts so that the company provides seeds, fertilizer, and other inputs, with the understanding that these up-front costs will be deducted from the price the company pays for the wood at harvest. However, once farmers are ready to harvest, an unscrupulous company may report these costs at inflated levels, thereby ensuring that the farmers receive an artificially low price for their wood. Plantation companies can exert considerable leverage over wood prices when they are able to restrict the species that farmers plant and/or when they are the only (or even the largest) buyer within a commercial distance of the small-holders' tree farms.

8. Implications for REDD+

In this article, we have shown how the mediation of reforestation and forest restoration programs by powerful political economic interests have been accompanied by a host of governance challenges and tradeoffs in countries across the Asia–Pacific region. In various contexts, they have:

- consolidated the control of state agencies and corporate actors over 'degraded' forest landscapes, often resulting in the marginalization or displacement of rural communities;
- exacerbated economic disparities in the forestry sector by channeling large capital subsidies and resource rents to companies with close ties to state elites;
- facilitated corruption and financial fraud, in some cases on a grand scale;
- accelerated biodiversity loss by creating perverse incentives for the conversion of 'degraded' secondary forests; and
- generated mixed results for rural small-holders, at times undermining livelihood security by locking them in inequitable agreements with plantation companies, and in other cases, offering enhanced tenure security over replanted areas.

Collectively, these outcomes pose fundamental challenges for efforts to enhance carbon stocks through reforestation and forest

restoration under REDD+. To avoid the negative results of many earlier large scale reforestation schemes, REDD+ initiatives will need to incorporate the following principles.

8.1. Rights-based spatial planning

As planning processes are carried out to identify areas where REDD+ may support reforestation and forest restoration activities, it will be essential that these be structured in a manner that explicitly addresses the rights of local communities. In particular, an approach will be needed to resolve competing claims between rural communities managing land and forest resources under customary tenure systems, on the one hand, and state agencies and private sector actors relying on national legal codes, on the other. Proponents of REDD+ can support participatory and accountable planning processes by committing to the principles of free, prior, and informed consent on the part of affected rural communities before REDD+-funded spatial planning processes and reforestation projects are approved and funded (Colchester, 2010). Community involvement in the spatial planning process can be strengthened through the use of participatory mapping of lands and forest resources managed under customary tenure systems.

For REDD+ to succeed, forest and land rights for rural communities must be clear and must be defendable under national law. Given the diversity of institutional arrangements and the large number of claims being made, achieving clear rights in situations which have hitherto been governed under informal common property regimes will undoubtedly take time and resources. If it is to be fair, the process must not be hurried and must be supported by technical resources and funding. Given the fundamental importance of clear land and property rights in achieving desirable forest outcomes, it is justified to use REDD+ funds to support broader processes of tenure reform and rationalization of state-controlled forest zones.

8.2. Equitable and accountable distribution of financial incentives

As mechanisms are created to distribute financial incentives through REDD+, care will need to be taken to ensure that they promote the equitable distribution of the program's benefits and not allow these to be captured disproportionately by the sector's most powerful actors. Doing so will necessarily require the design of financial disbursement mechanisms to support the flow of REDD+ payments to participating rural communities, rather than channeling them primarily through large-scale plantation companies or project developers, who often have close ties to state elites. Funds may also be used to support pro-poor policy measures such as participatory planning processes and the strengthening of tenure rights for rural communities and small-holders.

To ensure accountability, it will be important for legitimate representatives of forest peoples' organizations, rural community groups, and civil society institutions to be involved in the design and implementation of such mechanisms, and for these processes to be carried out in a transparent and participatory manner from the outset. Moreover, institutions administering REDD+ funds must conduct robust due diligence to help ensure that all recipients of REDD+ payments are likely to meet their obligations during the commitment period. Assessments of prior performance of plantation companies that received reforestation subsidies under previous initiatives can help determine whether they are reliable partners under REDD+.

8.3. Improved financial governance to prevent corruption and fraud

For REDD+ to succeed, it will be essential that funds allocated to support reforestation and forest restoration activities (and other forest-related mitigation activities) be administered in an accountable manner and utilized for their intended purpose. To minimize the loss of funds to corruption and fraud, countries and agencies participating in REDD+ will need to ensure that the institutions established to administer program funds have adequate capacity to meet international standards for good financial governance. In addition to capacity for budgeting, accounting, and fiscal administration, this must include robust 'checks and balances', including strong internal financial controls and routine external audits to ensure that funds are properly managed.

Moreover, it is critical that REDD+ recipient countries demonstrate strong political will and budgetary support for government institutions involved in the prevention and mitigation of forest and carbon-related corruption. These include, for instance, dedicated anti-corruption agencies and financial crimes units in both the executive and judicial branches of government. Support for these agencies can be strengthened through collaboration with international institutions and governments in other jurisdictions, as well as civil society organizations focusing on transparency and accountability issues.

8.4. Policy reform to remove perverse incentives for forest conversion

If REDD+ is to succeed in mitigating forest-related carbon emissions and enhancing forest carbon stocks, policies supporting perverse incentives for forest conversion must be changed. It is particularly important that reforestation initiatives not be used to justify the large-scale clearing of areas that still have significant forest cover, recognizing that such areas are often classified as 'degraded' secondary forest. This can be achieved by making forestry departments' spatial planning processes more transparent and opening land-use planning decisions to public review. REDD+ financing for reforestation and forest restoration activities should be restricted to projects that do not involve the removal of natural forest cover prior to replanting, and adequate mechanisms for measuring, reporting, and verification (MRV) should be put in place to ensure this is the case.

In addition, there is a need for improved monitoring and enforcement of timber concession regulations to ensure that concession-holders are not intentionally over-harvesting their selective logging sites in order to have these areas reclassified as 'degraded forest' eligible for conversion. In jurisdictions where taxes and levies on wood harvested through land-clearing operations are artificially low, governments should raise the rates and improve collection of these fees in order to remove a strong economic incentive driving forest conversion.

8.5. Strengthening of economic benefits and safeguards for smallholders

To the extent that REDD+ supports the enhancement of carbon stocks through reforestation and forest restoration, there is a pressing need to structure these initiatives so that they will support the livelihoods and well-being of rural smallholders. Fundamentally, this must involve the prioritization of tree-planting programs that support not only the participation of, but more importantly, the flow of benefits to rural households and communities. This will require the design of effective institutional mechanisms to ensure that farmers choosing to participate in such programs are able to negotiate with both corporate actors and state agencies in a fair and equitable manner, and that all parties to any agreements can be held mutually accountable.

In addition, it will be essential for rigorous and independent social impact assessments to be conducted before REDD+ projects are initiated, and for regular monitoring of social and economic impacts to be carried out as the program is being implemented.

Strong safeguards will be needed to avoid negative impacts on the livelihoods and well-being of smallholders. Effective approaches will also be needed to anticipate and mitigate conflicts over land and forest resources before they become violent.

In conclusion, we note that a number of recent initiatives may provide useful lessons for REDD+ in promoting reforestation and restoration schemes that offer a broad array of public goods and also contribute to the livelihoods of local people. The Global Initiative for Forest Landscape Restoration, which is led by the International Union for Conservation of Nature, the United Kingdom Forestry Commission and the United States Forest Service, has the goal of building assets for people and nature (IUCN, 2011). The Global Initiative is based upon principles of multi-stakeholder decision making for activities that are undertaken at a landscape scale; and it aspires to achieve a hierarchy of institutional responsibilities from the household and community up to industrial corporations and state forest services. It does, however, place heavy emphasis on shifting the locus of control from the state to local stakeholders. The International Tropical Timber Organization's Guidelines for the Reforestation, Restoration and Rehabilitation of Degraded Tropical Forest Lands (ITTO, 2005) also provides a useful framework that can inform efforts to use REDD+ resources to support reforestation and restoration.

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References

American Forests & Paper Association (AF&PA), 2004. China's Fiber Resources and Forestry Industry Development. <http://www.afandpa.org/>.

Asia Pulp & Paper (APP), 2009. Clarification on Human Rights Violations Linked to Asia Pulp & Paper. <http://www.asiapulppaper.com> (dated 20 January, downloaded 12.03.12).

Ascher, W., 1999. Why Governments Waste Natural Resources: Policy Failures in Developing Countries. The John Hopkins University Press, Baltimore.

Barney, K., 2007. Uprooting communities and reconfiguring rural landscapes: industrial tree plantations. In: Vandergeest, P., Idahosa, P., Bose, P.S. (Eds.), Development's Displacements: Ecologies, Economies, and Cultures at Risk. UBC Press, Vancouver, pp. 82–110.

Barney, K., 2008. China and the production of forestlands in Lao PDR: a political ecology of transnational enclosure. In: Nevins, J., Peluso, N. (Eds.), Taking Southeast Asia to Market: Commodities, Nature, and People in the Neoliberal Age. Cornell University Press, Ithaca, pp. 91–107.

Barr, C., 2002. HPH timber concession reform: questioning the 'sustainable logging' paradigm. In: Colfer, C.J.P., Resosudarmo, I.A.P. (Eds.), Which Way Forward? People, Forests, and Policymaking in Indonesia, Resources for the Future, Washington, DC.

Barr, C., Cossalter, C., 2004. China's development of a plantation-based wood pulp industry: government policies, financial incentives, and investment trends. Int. Forestry Rev. 6 (3–4), 267–272.

Barr, C., Stafford, B., 2009. Emerging scenarios in the Asia–Pacific pulp and paper sector to 2020: a preliminary assessment of implications for wood demand and land use. In: Leslie, R.N. (Ed.), The Future of Forests in Asia and the Pacific: Outlook for 2020, FAO, Bangkok.

Barr, C., Dermawan, A., Purnomo, H., Komarudin, H., 2010. Financial Governance and Indonesia's Reforestation Fund during the Soeharto and Post-Soeharto Periods, 1989–2009: A Political Economic Analysis of Lessons for REDD+. Center for International Forestry Research, Bogor, Indonesia.

Block, C., 2011. Muddy Waters Research – Company: Sino-Forest Corporation (TRE: TO, OTC: SNOFF). Muddy Waters, LLC, 39 pp. <http://www.muddywatersresearch.com>.

Boado, E.L., 1998. Incentive policies and forest use in the Philippines. In: Repetto, R., Gillis, M. (Eds.), Public Policies and the Misuse of Forest Resources. World Resources Institute and the Press Syndicate of the University of Cambridge, New York, pp. 165–203.

Brockerhoff, E.G., Jactel, H., Parrotta, J.A., Quine, C.P., Sayer, J., 2008. Plantation forests and biodiversity: oxymoron or opportunity? Biodivers. Conserv. 17, 925–951.

Brown, D., 1999. Addicted to Rent: Corporate and Spatial Distribution of Forest Resources in Indonesia: Implications for Forest Sustainability and Government Policy. <http://www.geocities.com/davidbrown_id/Atr_main.html>.

Bull, G.Q., Bazett, M.T., Schwab, O., Nilsson, S., White, A., Maginnis, S., 2006. Industrial forest plantation subsidies: impacts and implications. Forest Policy Econom. 9 (1), 13–31.

Chambers, R., Saxena, N.C., Shah, T., 1989. To the Hands of the Poor: Water and Trees. Oxford University Press and IBH, New Delhi and Intermediate Technology, London.

Clement, F., Amezaga, J.M., 2009. Afforestation and forestry land allocation in northern Vietnam: analyzing the gap between policy intentions and outcomes. Land Use Policy 26 (2), 458–470.

Colchester, M., 2010. Free, Prior, and Informed Consent: Making FPIC Work for Forests and Peoples. Yale University, New Haven, Connecticut, The Forest Dialogue, 42 pp.

Contreras-Hermosilla, A., Fay, C., 2005. Strengthening Forest Management in Indonesia through Land Tenure Reform: Issues and Framework for Action. Forest Trends, Washington, DC.

Cossalter, C., Barr, C., 2005. Fast-growing Plantation Development and Industrial Wood Demand in China's Guangxi Zhuang Autonomous Region. A Report Prepared for the Guangxi Forestry Bureau and the World Bank. Center for International Forestry Research, Bogor Indonesia.

Cossalter, C., Pye-Smith, C., 2003. Fast-Wood Forestry: Myths and Reality. Center for International Forestry Research, Bogor, Indonesia, 59 pp.

Direktorat Jenderal Planologi Kehutanan, 2010. Luas Kawasan Hutan dan Perairan Berdasarkan Keputusan Menteri Kehutanan Tentang Penunjukan Kawasan Hutan dan Perairan Serta Tata Guna Hutan Kesepakatan (TGHK), Ministry of Forestry, Jakarta. <http://www.dephut.go.id>.

Ernst and Young, 1999. Special Audit of the Reforestation Fund – Final Report. Unpublished Audit Report Prepared by Ernst and Young Corporate Nominees Limited for the Republic of Indonesia's Ministry of Finance, Jakarta, Indonesia (dated 27 December).

Fay, C., Sirait, M., 2004. Indonesia's agrarian and forestry legal frameworks: challenging the national dual system of land administration. In: Paper Presented at the International Conference on Land Tenure, Jakarta, 11–13 October, 2004.

Fried, S., 2000. Tropical forests forever? A contextual ecology of Bentian rattan agroforestry systems. In: Zerner, C. (Ed.), People, Plants, and Justice: The Politics of Nature Conservation. Columbia University Press, New York, pp. 203–233.

Gillis, M., 1998a. Indonesia: public policies, resource management, and the tropical forest. In: Repetto, R., Gillis, M. (Eds.), Public Policies and the Misuse of Forest Resources. World Resources Institute and the Press Syndicate of the University of Cambridge, New York, pp. 43–113.

Gillis, M., 1998b. Malaysia: public policies and the tropical forest. In: Repetto, R., Gillis, M. (Eds.), Public Policies and the Misuse of Forest Resources. World Resources Institute and the Press Syndicate of the University of Cambridge, New York, pp. 115–163.

Grossjean, P., Kontoleon, A., 2009. How sustainable are sustainable development programs? The case of the sloping land conversion program in China. World Devel. 37 (1), 268–285.

Harwell, E., 2003. Without remedy: human rights abuse and indonesia's pulp and paper industry. Human Rights Watch, New York 15 (1), 93 pp.

IIPO, 1991. Survival Rate of Trees: 1983–84 to 1987–88. Indian Institute of Public Opinion, New Delhi.

Independent Committee of the Board of Directors of Sino-Forest Corporation, 2012. Final Report. <http://www.sinoforest.com/companyreleases.asp> (dated 31 January, downloaded 12.03.12).

International Tropical timber Organisation (ITTO), 2005. Restoring Forest Landscapes: An Introduction to the Art and Science of Forest Landscape Restoration, ITTO Technical Series No. 23, ITTO/IUCN.

International Union for the Conservation of Nature (IUCN), 2011. Elements of FLR. <http://www.iucn.org> (downloaded 11.10.11).

Kumar, N., Saxena, N., Alagh, Y., Mitra, K., 2000. India, Alleviating Poverty through Forest Development. World Bank Operations Evaluation Department, Washington, DC, 221 pp.

Lamb, D., 2011. Regreening the Bare Hills; Tropical Forest Restoration in the Asia Pacific Region. Springer, New York, 547 pp.

Lu, W., Landell-Mills, N., Jinlong, L., Xu, J., Can, L., 2002. Getting the Private Sector to Work for the Public Good: Instruments for Sustainable Private Sector Forestry in China. International Institute for Environment and Development, London, 168 pp.

Mayer, J., Vermeulen, S., 2002. Company-Community Forestry Partnerships: From Raw Deals to Mutual Gains? International Institute for Environment and Development, London, 176 pp.

McElwee, P., 2009. Reforesting 'bare hills' in Vietnam: social and environmental consequences of the 5 million hectare reforestation program. AMBIO 38 (6), 325–333.

Meijard, E., Sheil, D., 2007. A logged forest in Borneo is better than none at all. Nature 446, 974.

Nawir, A., Santoso, L., Mudhofar, I., 2003. Towards Mutually-Beneficial Company-Community Partnerships in Timber Plantations: Lessons Learned from Indonesia. CIFOR Working Paper No. 26. Center for International Forestry Research, Bogor, Indonesia, 77 pp.

Ontario Stock Exchange, 2011. Temporary Order, Section 127 (1) and (5) in the Matter of the Securities Act R. S. O. 199, c.S.5, as amended, and in the Matter of Sino-Forest Corporation, Allan Chan, Albert Ip, Alfred C. T. Hung, George Ho and Simon Yeung. <http://www.osc.gov.on.ca/en/Proceedings_rad_20110908_sino-forest.htm> (downloaded 11.10.11).

Peluso, N.L., 1992. Rich Forests, Poor People: Resource Control and Resistance in Java. University of California Press, Berkeley.
Peluso, N.L., Vandergeest, P., 2001. Genealogies of forest law and customary rights in Indonesia, Malaysia, and Thailand. J. Asian Stud. 60 (3), 761–812.
Ping, L., Neilsen, R., 2010. A Case Study of Large-Scale Forest Land Acquisition in China: The Stora Enso Plantation Project in Hepu County. Guangxi Province, Rights and Resources Initiative and the Rural Development Institute, Washington, DC, 58 pp.
Repetto, R., Gillis, M. (Eds.), 1988. Public Policies and the Misuse of Forest Resources. Cambridge University Press, New York.
Rosenbaum, K.L., Lindsay, J.M., 2001. An Overview of National Forest Funds: Current Approaches and Future Opportunities. International Workshop of Experts on Financing Sustainable Forest Management, Oslo, Norway, 22–25 January, 2001. Food and Agriculture Organization of the United Nations, Rome.
Ross, M.L., 2001. Timber Booms and Institutional Breakdown in South East Asia. Cambridge University Press, UK.
Sarin, M., 2003. Devolution as a threat to democratic decision-making in forestry? Findings from three states in India. Overseas Development Institute, London, 72 pp.
Saxena, N.C., 1997. The Saga of Participatory Forest Management in India. Center for International Forestry Research (CIFOR), Bogor, Indonesia, 227 pp.
Sayer, J.A., Maginnis, S., 2005. Forests in Landscapes; Ecosystem Approaches to Sustainability. Earthscan, London.
Sayer, J., Chokkalingam, U., Poulsen, J., 2004. The restoration of forest biodiversity and ecological values. Forest Ecol. Manage. 201, 3–11.
Scott, J., 1998. Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed. Yale University Press, New Haven.
Sekher, M., 2001. Organized participatory resource management: Insights from community forestry practices in India. Forest Policy Econom. 3, 137–154.
SIDA, 1990. Report on Pilot Market Studies of Farm Forestry Produce in India. Swedish International Development Agency, New Delhi.
Sikor, T., 2001. The allocation of forestry land in Vietnam: did it cause the expansion of forests in the northwest? Forest Policy Econom. 2, 1–11.
Sikor, T., 2011. Financing Household Tree Plantations in Vietnam: Current Programmes and Future Options. Center for International Forestry Research, Bogor, Indonesia, Working Paper 69, 40 pp.
Sino Forest, 2011. Data Downloaded from Sino Forest Website on October 11, 2011. <http://www.sinoforest.com>.
Stern, N., 2006. The Economics of Climate Change (Pre-Publication ed.). Executive Summary. HM Treasury, London.
Vandergeest, P., Peluso, N.L., 2006. Empires of forestry: professional forestry and state power in Southeast Asia, part 1. Environ. History 12 (1), 31–64.
Watch Indonesia! and WALHI, 2008. Aerial Bombardment of Peasants in Sumatran Village. Unpublished Press Release Dated 23 December.